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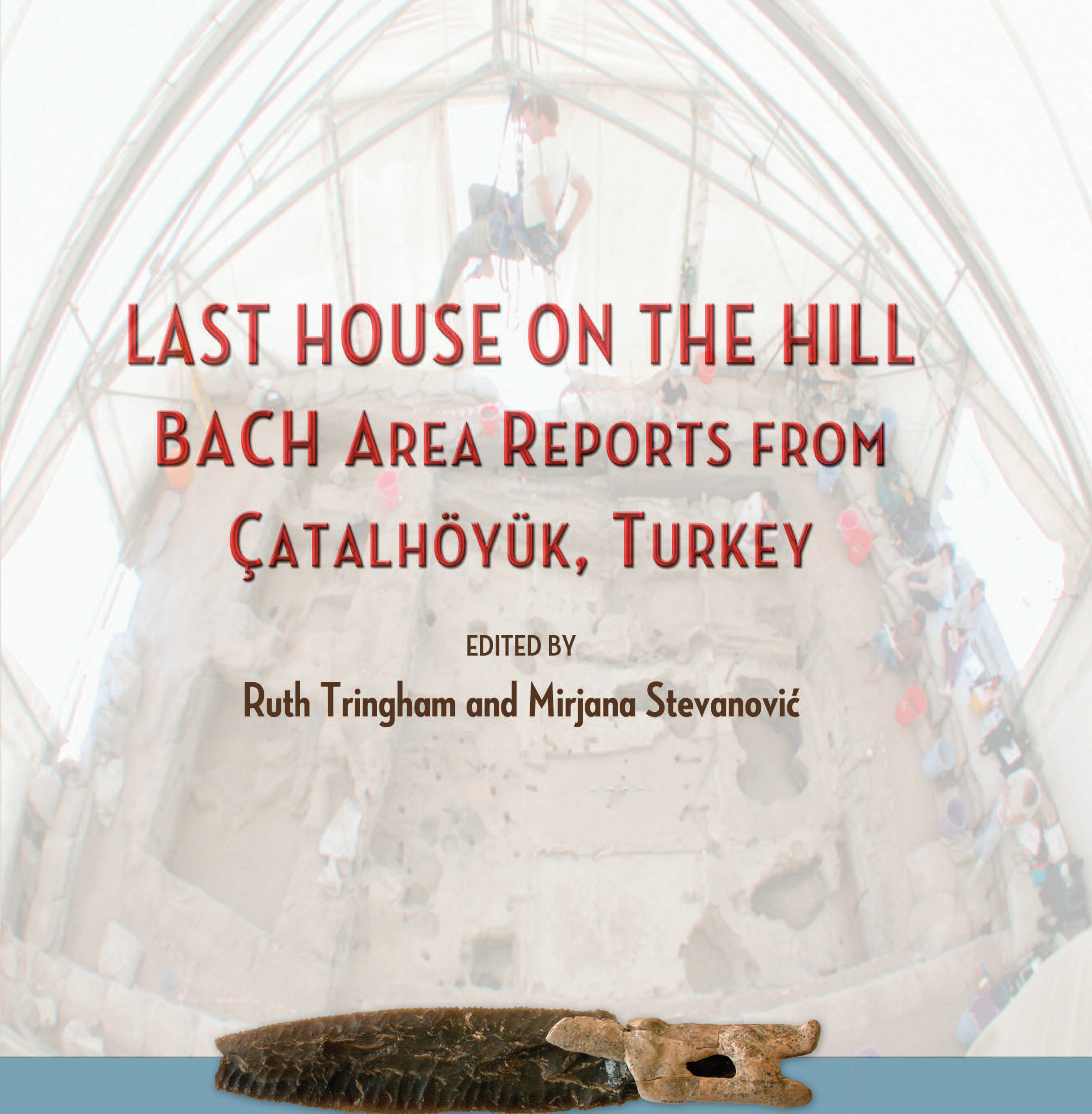

LAST HOUSE ON THE HILL
BACH Area Reports from Çatalhöyük, Turkey

EDITED BY

Ruth Tringham and Mirjana Stevanović

MONUMENTA ARCHAEOLOGICA 27

COTSEN INSTITUTE OF ARCHAEOLOGY PRESS

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Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey

Frontispiece: Two skulls found together on the latest floor of Space 86.

Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey

Çatalhöyük Research Project Series Volume 11

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[1] Conventions employed in this volume include: special or "X" finds that are expressed with their unit number as 8501.X1 and samples as 8501.S1; finds retrieved after excavation from heavy residue, etc., receive a variety of identifiers such as 8501.D1, 8501.H1, 8501.A1.

[2] Each skeleton has its own unit number (often expressed as digits in parenthesis). The skeleton unit is part of a burial feature that also includes units for the burial fill, burial cut, and any other associated layers or materials.

[3] Figures, tables, and appendices followed by [on-line] and showing an asterisk (*) in place of a page number are available only in the on-line edition of this book. Go to *http://www.codifi.info/projects/last-house-on-the-hill* to access these elements.

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Preface

This volume is the seventh book to be published (numbered Volume 11) in the Çatalhöyük Research Project Series. It comprises a record of the University of California at Berkeley research project at Çatalhöyük (BACH) from 1997 to 2003. The first volume of the Çatalhöyük Research Project related to the initial phase of surface work, from 1993 to 1995 (Hodder, ed. 1996). The second volume focused on issues of the reflexive methodology (Hodder, ed. 2000). The third, fourth, and fifth volumes present the results of excavations of three areas at Çatalhöyük, known as SOUTH, NORTH, and KOPAL, between 1995 and 1999, and their analysis and interpretation (Hodder, ed. 2005b, 2005c, 2007). This monograph presents the excavation results of the BACH project and their analysis and interpretation in one volume.

As with the other Çatalhöyük volumes, the results of the excavations (Chapters 1–5) are followed by chapters that present the analysis of excavated data (Chapters 6–21), which are followed by chapters of synthesis and interpretation (Chapters 22–26). However, in keeping with the reflexive methodology, we have attempted throughout the volume to avoid the separation of the presentation of data from their interpretation.

The life histories of people, places, and things are topics that continue to interest all of those who participate in the Çatalhöyük Research Project. We arrived at Çatalhöyük with long experience and enthusiasm for Neolithic architecture, and this is certainly borne out in this volume. We address in this volume a number of topics that reflect the interests of the BACH team and have not been addressed so explicitly in previous volumes. For example, the intricacies of house construction and maintenance; replication and experimentation with full-scale models to investigate prehistoric life and the formation of the archaeological record; digital documentation of the excavation process and open access to the recontextualization of the media record; the construction and the multisensorial experience of place both now and in the past, including vision, sound, and touch at Çatalhöyük; exploration of virtual representation and the presentation of our work on the Internet.

Our attitude to the sharing of our knowledge with the public (making the process of our archaeological interpretation transparent in order to engage them more intensively in our work) and our attitude to breaking the strict bondage of the empirical data is, we feel, very close to that of the Çatalhöyük team as a whole. And it is this feature that has made it always such a pleasure to work there and that is reflected, we hope, in this volume.

We feel that this printed edition of *Last House on the Hill*, which appears to be a definitive—or at least finite—statement, is but a prelude to a richer, more colorful, and certainly more intricate and entangled expression of what we do and how we think, to be published as a digital online presentation. The narratives in this book have been built out of the rich body of data and media that are available and accessible in this digital on-line edition. The advantage of the digital version is that it is an open-ended document that can grow and—as long as it is well curated—can live for many decades.

Chapter 1

Introduction to the BACH Project

Ruth Tringham and Mirjana Stevanović

This chapter outlines the general aims and history of the University of California at Berkeley (BACH) research project at Çatalhöyük, Turkey, from 1997 to 2003 (Figure 1.1). It provides a short description of the location of research at Çatalhöyük in Central Anatolian prehistory. It puts the BACH research into the context of the previous and ongoing research at Çatalhöyük. Finally, we introduce in this chapter some of the broader issues and significance of our research.

Short Introduction to Çatalhöyük

Çatalhöyük is a tell settlement southeast of Konya, in the Konya Plain of Central Anatolia, Turkey, near the town of Çumra and village of Küçükköy (Figure 1.2). This region was the site of a Late Pleistocene lake that dried up and, in modern times, is filled with salinized soils. It is now a dry plateau 1,000 m above sea level drained by the Çarşamba River. During the occupation of Çatalhöyük, this river flowed close to the Neolithic settlement and created a rich biomass (Baird 1996b; Hodder et al. 2007; Roberts et al. 1996) (Figure 1.3). Rosen and Roberts (2005) report that at the time of the first Neolithic settlement at Çatalhöyük (ca. 7400–7100 cal B.C.), increased drainage from higher rainfall led to the active buildup of the Çarşamba alluvial fan, and a seasonal marsh developed around the area of the site.

There are two mounds of accumulated debris from the Neolithic period in this spot: the "East Mound," located east of the river, which is larger (16 ha) and higher (max. ca. 14 m above the present level of the plain, probably 20 m above the original surface of the plain) and was settled earlier (7250–6150 B.C.) than the "West Mound," situated on the other side of the river and dating to the Late Neolithic period (Figure 1.4). The location of the research of the Berkeley Archaeologists @ Çatalhöyük (BACH) project is the East Mound, with its superimposed cultural deposits identified as Early Ceramic Neolithic (Mellaart 1975; M. Özdoğan 1999).

Previous Research and Research Concurrent with the BACH Project at Çatalhöyük

The site of Çatalhöyük was excavated by James Mellaart in 1961–1963 and 1965 (Hodder et al. 2007; Mellaart 1967). Mellaart's excavations focused on the southwestern corner of the East Mound. By the end of the 1965 season, Mellaart had excavated almost 200 "houses and shrines" in an area of 80 × 80 m, and the site of Çatalhöyük became famous the world over—and still is—as the "earliest city," the "birthplace of European agriculture," and "home of goddess worship," because of the spectacular preservation of its architectural remains, including the embellishment of the walls and floors by relief sculptures in clay and painted frescoes (most recently, see Shane and Küçük 1998).

Mellaart defined 12 building levels in the architectural remains (ca. 12 m of depth of debris) (Todd 1976). In a small test trench, he found that the deposits continued even deeper and that the earliest may have been 5 m or more below the present level of the plain. Mellaart had planned a long-term excavation at Çatalhöyük, but these plans were thwarted by a sudden refusal to grant him any more permits to excavate after the 1965 season. The site was closed down for almost 30 years.

Ian Hodder was able to secure a long-term permit to excavate the site and survey the surrounding region starting in 1993. The permit for the Çatalhöyük Research Project (CRP), of which Ian Hodder is the overall director, is provided by the Turkish Ministry of Culture, Directorate General of Monuments and Museums, and is granted under the auspices of the British Institute of Archaeology at Ankara. The BACH project during its life (1997–2003) operated under the umbrella of the Çatalhöyük Research Project. Moreover, the work of the CRP provided the basis for the planning and design of the Berkeley project.

During 1993–1994, the Cambridge team focused on making an accurate, detailed topographic map of the East Mound at Çatalhöyük in order to lay a grid that would be

Figure 1.1. The BACH team in 2000 outside the BACH shelter and at work.

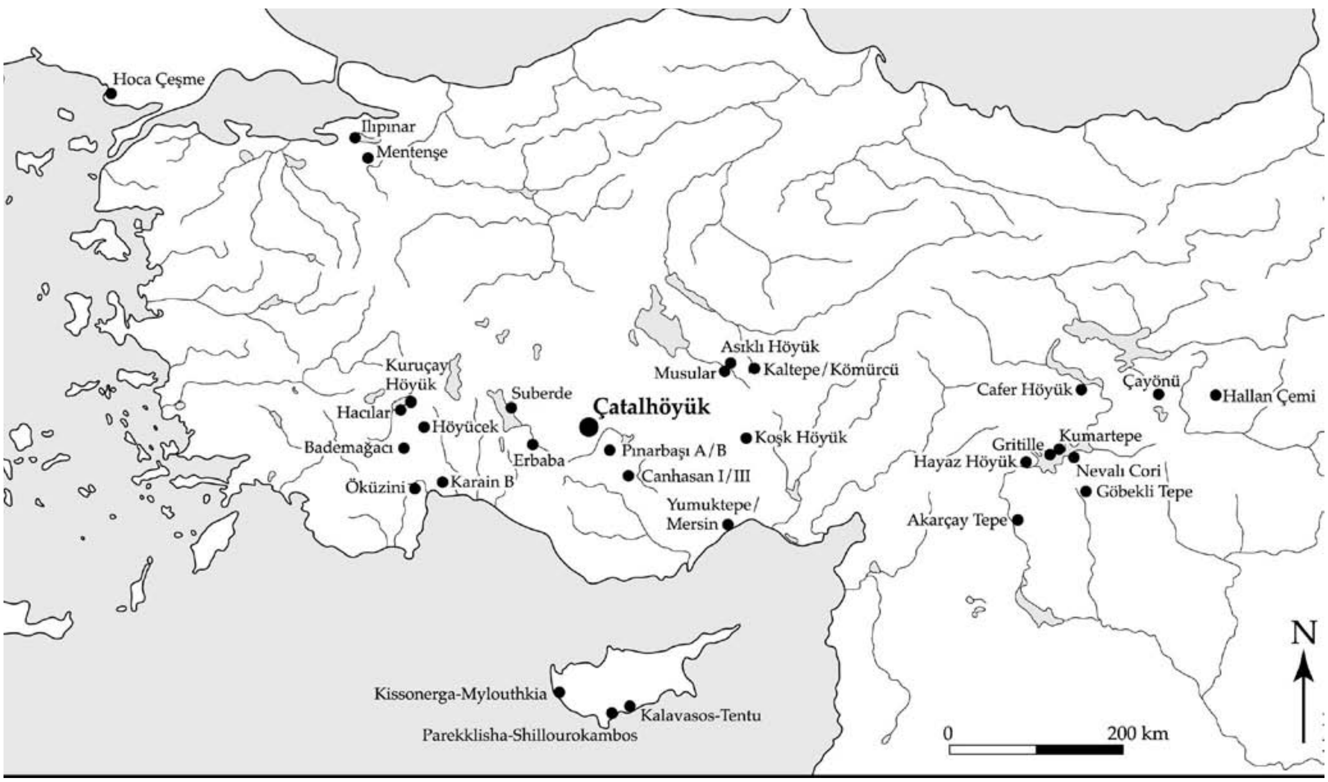

Figure 1.2. Çatalhöyük in the context of contemporary sites in Anatolia and adjacent regions (after Hodder et al. 2007:Figure 1.1).

the basis of all subsequent research at the site (Hodder 1996a). They carried out a systematic surface collection of the whole site and a surface scraping of a sample, in which they observed undisturbed areas in the northern part of the East Mound. In this latter area, they were able to draw plans of Neolithic architectural features at the surface of the mound (Matthews 1996a). Within this area, Building 1 was excavated in 1995–1997 and Building 5 in 1998–1999. From 1995 until the present, excavation has been carried out in both this area (referred to as NORTH) and the area originally opened by Mellaart (referred to as MELLAART, and since 1999 as SOUTH) (Hodder 2006a).

In 1999, a six-month season explored the area of Mellaart's deep sounding to evaluate the effect of recent irrigation on the archaeobotanical preservation. In 2000, the main "Cambridge/ Stanford" team carried out a study season that was continued in 2001 to prepare the publications of the 1995–1999 research, which are now published (Hodder 2005a,

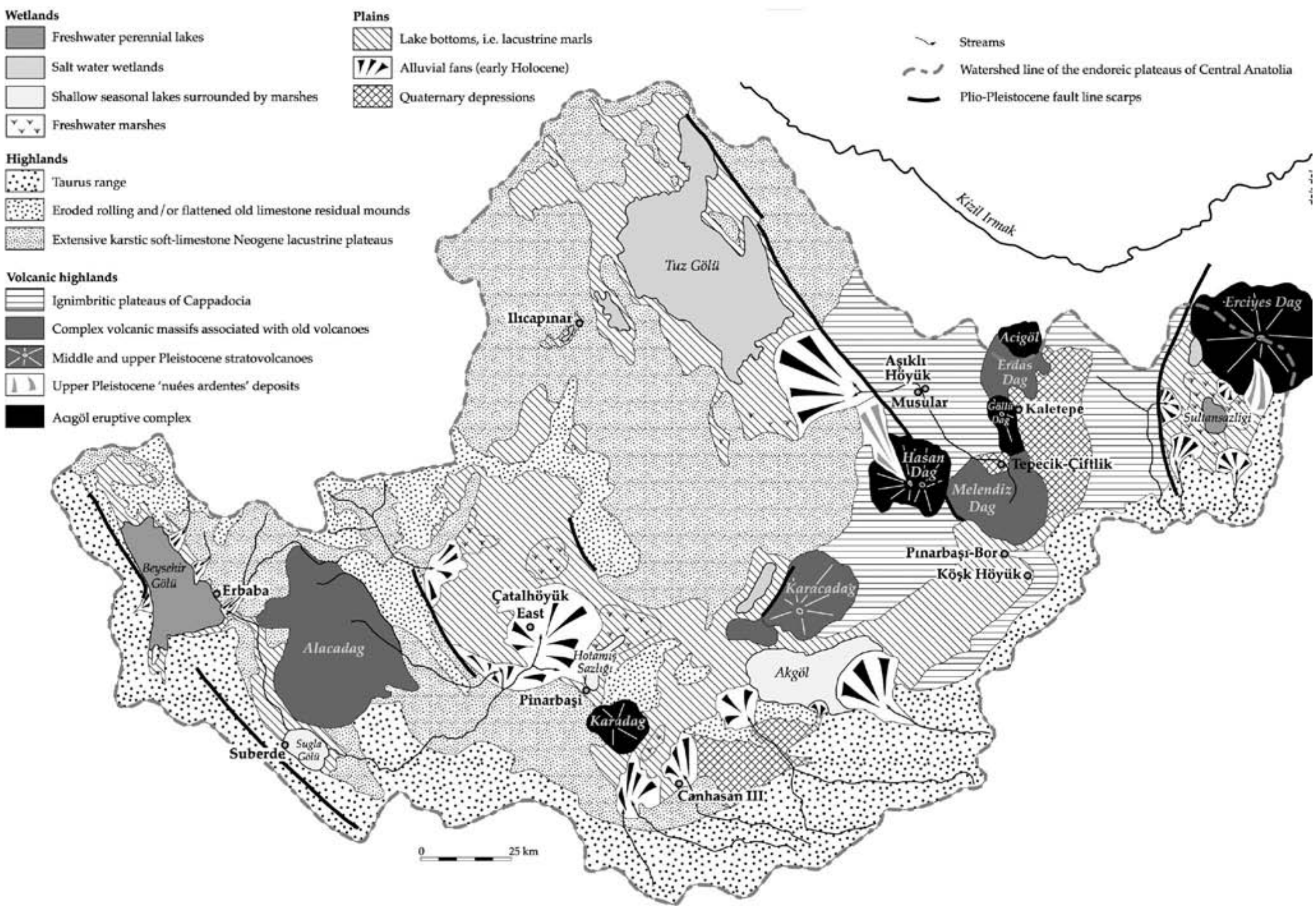

Figure 1.3. The geomorphology of Central Anatolia (after Hodder et al. 2007:Figure 1.1).

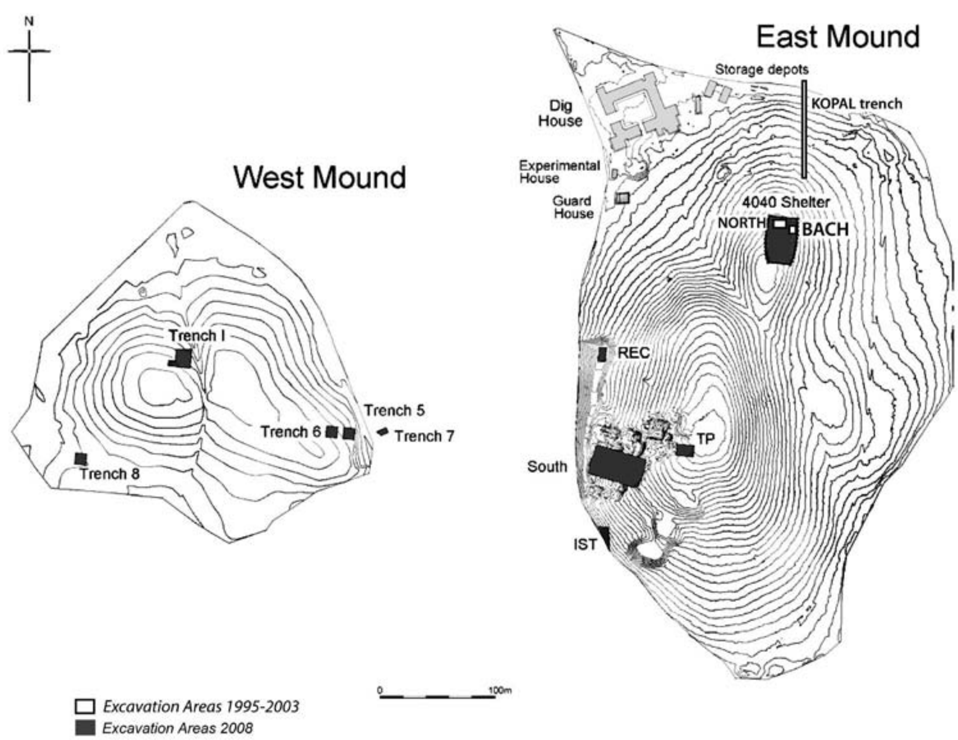

Figure 1.4. Plan of Çatalhöyük East Mound and West Mound 2008 (after Çatalhöyük Archive Report 2008:Figure 5).

2005b, 2005c, 2007). In that these publications and this research cycle of the CRP focused on specific buildings and their history, this publication of the BACH project complements them. In *Last House on the Hill*, we cover in one volume what was covered in the four volumes of the Çatalhöyük Research Project excavations of 1995–1999, including the excavation report, specialist analyses reports, and interpretive themes. Our content reports on the excavation of a small fragment of the site—the BACH Area—as opposed to the large areas covered by the CRP reports. However, in the different sections of *Last House on the Hill*, we have tried to mirror the format of the four CRP volumes wherever it is relevant to the BACH Area. To keep the work within one volume, we have minimized the repetition of many details from the preceding four volumes and hope that the reader has access to these volumes to complement information on, for example, the history of research at the site, environmental research at the site and its hinterland, details of other excavation areas at Çatalhöyük, and the methodological procedures adopted by the CRP as a whole.

In *Last House on the Hill,* we offer the results of a detailed investigation of a building in the immediate vicinity of the published Buildings 1 and 5 in the NORTH area that belongs to the same period in the sequence of buildings on the East Mound at Çatalhöyük, forming part of a "neighborhood" in the middle of Mellaart's sequence (Phases VI–VIIa). The investigations of the NORTH area provide significant guidelines for the interpretation of the adjoining area known as 4040 Area, the research into which was begun in 2003.

During the life of the BACH project, other teams were added to the umbrella project, including, from 1997, a team from the University of Thessaloniki, Greece (directed by Dr. Kostas Kotsakis), and, from 2001, a team from the University of Poznan (directed by Dr. Arkadiusz Marciniak and Dr. Lech Czerniak), as well as survey, palaeoenvironmental, teams and excavation teams on the West Mound.

History of the UC Berkeley (BACH) Çatalhöyük Project

We (Ruth Tringham and Mirjana Stevanović) directed excavation in the BACH project area, Ruth Tringham taking overall lead of the project and Mirjana Stevanović taking the lead in the excavation. We collaborated for many years in the excavation of large stratified sites in the former Yugoslavia and in Bulgaria, focusing on the architectural data of houses in Neolithic settlements. Mirjana Stevanović participated in the Çatalhöyük Research Project from 1995, focusing on the process of brick-making and house construction through archaeological analysis, ethnographic observation, and experimental replication (Stevanović 1996).

In 1996, Ruth Tringham visited the site and, with Ian Hodder and Mirjana Stevanović, selected an 11 × 7 m area for excavation by the Berkeley (BACH) project immediately to the east of the NORTH area for various intellectual and practical reasons (Figure 1.5; see also Figure 24.8).

An important element for us in joining the Çatalhöyük Research Project was the excellent preservation of architecture—a primary focus of the BACH project. We were also persuaded by the fact that there was in place an interdisciplinary team prepared to integrate our and their results in a way that is both multivocal and multiscalar. The theoretical aims of the "reflexive methodology" practiced by all the teams and projects at Çatalhöyük has been expressed in detail in a number of recent volumes (Hodder 1997a, 1999a). We felt, therefore, that our collaboration would not only broaden the spatial exposure of excavated buildings but also that it would be mutually enhancing and lead to a truly innovative investigation into the nature of Neolithic transformation.

One of our aims was to link the excavated architecture in the BACH Area with the NORTH Area to be able to consider the question of life histories of houses in a "neighborhood." Spaces 86 and 89 had been very productive of architecture and artifacts in the surface scrape of 1994 and in the magnetometer survey of 1994–1995 (Matthews 1996a; Shell 1996), including a burned area of high magnetic intensity and what appeared on the surface to be a complete

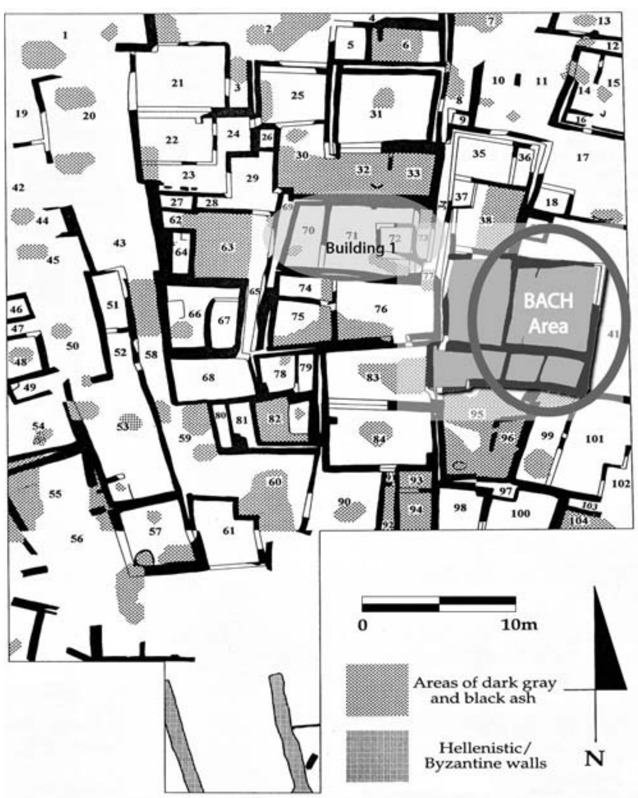

Figure 1.5. Plan of visible architecture in the NORTH Area after surface scraping in 1993–1995, with the BACH Area marked (after Matthews 1996a:Figure 7.3).

Figure 1.6. Aerial photograph of the East Mound, looking northeast.

building (Space 86/Building 3), in addition to three small cells to its south (Spaces 87–89) and a midden to its west (Space 85). This was an important consideration in our constructing what would be a permanent fixture (i.e., a shelter) over the excavated area. The shelter also required a relatively flat area for its foundations, which this location provided.

The team from UC Berkeley started excavation in the BACH Area in 1997 with limited funds from National Science Foundation (NSF) grant SBR94-04840 and continued in 1998–2000 with a major research grant from the NSF (SBR-9805755). Excavation continued in 2001 with other funding, notably with gifts from John Coker.

The BACH project of excavation and analysis (1997–2004) was planned as part of the second cycle of work of a longer-term project at Çatalhöyük (1995–2002) whose goals included the expansion of the excavation in the NORTH area of the East Mound into deeper levels in order to investigate the physical and social/cultural formation of the East Mound itself and, in a broader sense, the continuity of place (Figure 1.6).

Research Objectives of the UC Berkeley (BACH) Çatalhöyük Project

The Physical Formation of the Tell

The investigation of the physical formation of tells has been the subject of few books and articles (Courty et al. 1990; Davidson 1976; Matthews 2005b; Rosen 1986). The fact that the specialist team at Çatalhöyük included a micromorphologist—Wendy Matthews—meant that questions that are almost always taken for granted in discussions of tell formation could be addressed by empirical micromorphological data. Such data include the addition, deposition, and accumulation of building materials (especially clays) and foundation materials to the original soil matrix; the processes of destruction and weathering of abandoned buildings; the erosion of the tell surface during periods of abandonment, including the period since the final Neolithic abandonment; the accumulation of humus in areas not built up; the deposition and accumulation of garbage in and outside pits, including human and animal waste; and the recognition of "natural" deposits added to the mound, such as water-laden deposits (through heavy rain and snow) and wind-laden deposits.

Investigation of Constructional Clays

In the BACH project at Çatalhöyük, we treated the archaeological record of architecture as the *focus* of our research, rather than as the context of the associated finds. The architecture of Neolithic Southeast Europe and Central Anatolia is dominated by the use of clay as a building material (Stevanović 1997). In contrast to the wattle-and-daub architecture of Neolithic Southeast Europe, however, the architecture of Neolithic Central Anatolia is characterized by the use of mud bricks. The buildings at Çatalhöyük are constructed of walls of large, unfired clay mud bricks glued together with thick layers of "mortar" and covered with layers of white marl clay. Their walls and floors are extraordinarily well preserved. An important research aim was to determine the composition of the different clays used in the buildings of the East Mound at Çatalhöyük, whether this varies within buildings, between buildings that are contiguous, or between buildings whose histories do not overlap (see Chapter 22).

Reconstructing the Use-Lives and Life Histories of "Spaces" at Çatalhöyük

The architecture at Çatalhöyük gives the impression of a honeycomb of rooms (termed "spaces" in the excavation record of the CRP). James Mellaart, in keeping with traditional methodology of interpreting such architecture, grouped the individual events of building construction and abandonment into "building horizons." In the BACH project, as in the umbrella project itself, we proceeded with the assumption that such generic slices of time miss the complexities of building modification and replacement and that these complexities could be retrieved only by careful attention to the data on site formation and by treating each "space" as a separate entity, with a life history that is unique (Hodder 2006a; Matthews 2005a; Tringham 1995, 2000a). We assumed, therefore, that each house—including our Building 3—would provide significantly different evidence on location, construction, occupation, modification, destruction and abandonment, and "replacement" or "rebirth" from that of its neighbors (see Figure 4.3).

Excavation of the BACH Area

The main research activity of the BACH team from 1997 was the excavation of Building 3 in the NORTH area of the East Mound. This is an early Neolithic building dating to ca. 7000 B.C., probably the equivalent of Mellaart's Phases VIIB–VI (see Chapter 4).[1] Building 3 is ca. 6.36 × 5.7 m in area and is preserved in its entirety in our excavation area (Figure 1.7; see also Figures 4.1, 5.100). Also included in the BACH Area were two complete small rooms (Spaces 88 and 89) abutting Building 3 on its south side. Southwest of Building 3 was a third space (Space 87), of which only half was included in the BACH Area. In fact, it is likely that Space 87 is part of a larger building that extends farther to the south. The west wall of the BACH shelter cut across a midden (Space 85) that was deposited along and outside the west wall of Building 3, separating the latter from Buildings 1 and 5. Finally, parts of other buildings north and east of Building 3, and south of Spaces 88 and 89, were also covered by the BACH shelter but could not be excavated, for fear of undermining the shelter's foundations.

Six burials from the Roman period (first to third centuries A.D.) had been dug into the fill of Building 3 and Space 88 (see Figure 14.1). In addition to information on the Roman perception of the Neolithic mound, these graves provided a valuable window into the Neolithic fill of Building 3, such as part of the collapsed house roof.

[1] For a discussion of chronology and integration into the different phasing systems at Çatalhöyük, see Chapter 4 of this volume.

The excavation of Space 89 began in 1997. This small space (1.85 × 2.15 m) had inspired some interest before excavation because of the poorly preserved remains of a bucranium and burned clay visible on the surface of its fill (see Figure 5.122). During the excavation of the top few centimeters of fill during the 1997 season, a remarkable dagger, broken but otherwise complete, was discovered next to the bucranium. The dagger, with its carved bone handle and pressure-flaked flint blade, has been compared with a similar find made in a burial by James Mellaart (Hodder 2006a:Figure 105; see Figures 4.14, 19.3, 25.15, and cover photo).

The 1998 and 1999 seasons focused on the removal of the post-occupation deposits in Building 3. These did not comprise deliberate infill but, rather, collapsed building material and its debris. One of the most striking features of Building 3—and a highly unusual occurrence in the prehistory of the Near East and southern Europe—was the presence of substantial remains (nearly half) of its collapsed roof (see Figure 5.92). These covered much of the northern half of Space 86 and rested directly on the platforms and central floor area. By the end of the 1998 season, we arrived at the latest floor of Building 3—the platforms in the northern part of Space 86. The 1999–2002 seasons proceeded with the systematic excavation of floors, platforms, and—from the end of 1999—burials in Building 3 (see Figure 3.10a).

Toward the end of the 2002 season, the earliest floor of Building 3 was removed, revealing an underlying midden deposit. In 2003, the plaster, bricks, and mortar of the walls of Building 3 were analyzed and recorded in detail and then removed. This process involved further intensive excavation of the three small cells (Spaces 87, 88, and 89) immediately to the south of Building 3. Excavation in the 1997–1999 seasons had given the impression that the history of these three cells bore little relationship to that of Building 3 since they were separated from the latter by a double wall. Excavation in the three smaller rooms was halted after the second season (1998). In addition to the complexity of the deposits, the small dimensions of these buildings created difficulties in maintaining stratigraphic excavation. When excavation of these cells resumed in 2002, and especially in 2003, the relationships between Building 3 and the small rooms, as well as the relationships between the rooms themselves, were clarified in a rather different way (see Chapter 4).

In 2004, the place that had contained Building 3 was filled in to surface level (Figure 2.22). Its south wall and the three small rooms (Spaces 87, 88, and 89) were conserved before infilling, since they might at some future time need to be reexamined. The shelter that had shaded the BACH Area since 1997 was then removed. By 2005, it was hard to tell where the BACH Area had ever been located (Figure 1.8). And in 2008 the new NORTH Shelter covered the previous BACH Area (Figure 1.9; see also Figure 25.4).

Figure 1.7. Aerial photograph of Building 3 in 2002 (looking west; north is on the right) recorded by a suspended photographer.

Figure 1.8. The BACH Area becomes invisible (a) in 2004 and (b) in 2007.

The Broader Context of BACH Research

Both James Mellaart (1967) and Ian Hodder (2006a) have drawn attention to the social and material changes that appear to have been part of the lives of the East Mound occupants after Mellaart's Level VI and VIIa. So the period to which Building 3 as well as neighboring Buildings 1 and 5 belonged was possibly quite crucial in this transformational process.

How Complex Is the Settlement and Social Organization at Çatalhöyük?

There are several existing ideas in a broad spectrum of literature about Çatalhöyük, to whose investigation we thought the BACH project could contribute. First, James Mellaart defined what he saw as a "typical" house plan at Çatalhöyük whose form, configuration, and spatial diversity survived as an idea throughout the different building phases

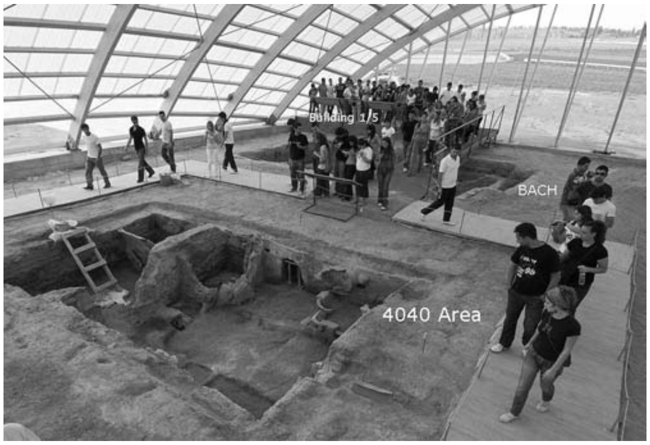

Figure 1.9. Building 5, the invisible BACH Area, and the 4040 Area under the new (since 2008) shelter.

(Mellaart 1967; Todd 1976). One of the aims of the BACH research (as in the Çatalhöyük research as a whole) was *not* to assume conformity to some normative "typical" house but, rather, to treat the details of the house and its history as objects of investigation.

Second, Çatalhöyük has been termed by James Mellaart and most secondary authors as a "city"—in fact, "the earliest city" (Shane and Küçük 1998b) because of the assumed simultaneous occupation of the dense agglomeration of rooms. An important research aim was to investigate (and challenge) this powerful claim. In such a pattern of aggregated rooms at Çatalhöyük, it is no easy matter to identify specific social units, such as households, within houses and to tell which buildings were occupied at any one time (Hodder 2006a). This is an objective that the BACH project took on (in conjunction with the results of buildings already excavated by the Cambridge team—Buildings 1 and 5) by investigating the detailed life histories of the BACH Area buildings in relation to those of neighboring buildings. We wanted to explore whether such a simultaneous occupation of spaces could be confirmed or whether the archaeological data were a manifestation of a more complex network of overlapping house histories. This issue has been addressed by Mirjana Stevanović in Chapters 4 and 5 of this volume and by Ruth Tringham in Chapter 26. It has also been the subject of a number of associated articles on Neolithic Çatalhöyük as a house-based society (Asouti 2005a), and as a society in which the household was the basic unit of social reproduction (Tringham 2012a).

Third, in his idea of village-wide (or town-wide) conformity, Mellaart interpreted some rooms as neighborhood "shrines" that were centers of ritual activity, rather like Pueblo kivas. The "shrines" were identified by the richness of their symbolic elaboration—sculptured reliefs, paintings, bucrania, and the like (Mellaart 1967:77–130). On a visit to the site in 1999, Mellaart expressed his opinion that Building 3 was a shrine (because of its screen wall, among other features) (Ian Hodder, personal communication, 1999). We were especially interested in exploring alternative interpretations of the "shrine-like" elaborations, including the possible changing role of a building or part of a building during its life history—for example, from residence to ancestral "shrine." In addition, we thought that the data from Building 3 could contribute to the recent comparison made between the apparently domestic scale of ceremonial space in Central Anatolian Neolithic settlements (Hodder 1999b, 2006a; Hodder and Cessford 2004) and the public scale of ceremonial spaces in other Near Eastern Neolithic settlements such as Asıkı, Cayonü, Nevali Cori, Göbekli Tepe, Hallan Cemi, and others (Cauvin 2000; Esin and Harmankaya 1999; Hole 2000; Özdoğan and Özdoğan 1998; Schmidt 2001).

The "Neolithic Revolution" and Its Spread to Europe

The backdrop to the project at Çatalhöyük has consistently been the transition to a subsistence strategy based on domesticated plants and animals—"The Neolithic Revolution." In this "revolution," the Anatolian Neolithic–Chalcolithic sequence (including Çatalhöyük) has been interpreted, on the one hand, as the northern margin of the area where primary experiments in domestication of plants and animals and ceramic production took place. On the other hand, it has been regarded as the source of inspiration and actual population for the spread of these same innovations to Europe (Gimbutas 1991; Hodder 1991; Mellaart 1975; M. Özdoğan 1994, 1997, 1999a; Redman 1978; Renfrew 1987; Tringham 2000b).

The Çatalhöyük Research Project—and the BACH project, in particular, since we had all previously worked only in Europe—aimed to bring together the prehistory of two regions, the Near East (specifically Central Anatolia) and Europe, that have traditionally been culturally constructed as separate entities. The Bosporus separates two continents, Europe and Asia, but these continental areas—or at least their boundaries—are as much culturally constructed as are nation-states. Anatolia and its prehistoric trajectory have most frequently been regarded as having had no connection to Europe. Mellaart was, in fact, one of the few foreign archaeologists to see the two areas—Southeast Europe and Anatolia—as part of an interactive cultural continuum, from the period of the Early Neolithic (Bailey 2000; Mellaart 1975). The detailed investigation of the nature of this dual role has been a focus of the larger project at Çatalhöyük, including the BACH project.

The nature of how transformative, in terms of food resources and foodways, the "Neolithic Revolution" was in this area was a focus of the four volumes reporting on the CRP and of many of the specialists working on the BACH materials. The results of their work are delightfully ambiguous, some arguing for a greater reliance on domesticated plants, even agriculture, others arguing for a more complicated web of seasonal and daily scheduling in a very mixed repertoire of food resources. The aim of the BACH project was to contribute data to these discussions, and perhaps add some clarification, as Russell (Chapter 8) and Cane et al. (Chapter 12) are able to articulate.

Sedentism and Continuity

The question of sedentism dominates (albeit implicitly) all of the models of the "Neolithic Revolution." In many of these models (not necessarily that of the current editors), it has been argued that sedentism (defined by us as "residing at the same site for more than a generation") is a precondition of complex society (Brown and Price 1985; Harris 1978). It has been assumed traditionally that the establishment of "tell" settlements represents a definite increase in sedentism and a commitment to a particular location through many generations of time (Mellaart 1975).

Tringham has argued, however, that it is not the formation of a tell by itself that is the important variable, but the *way* in which it is formed physically and culturally (Tringham 1990:585–589; 2000a). She has further argued that the significant archaeological demonstration of the social concomitants of sedentism at work is the nature of house replacement and life history—that is, the extent to which there is an intentional *continuity* of occupation of "place" (Tringham 1994, 2000a). The first of the two ways we wished to investigate the intentional continuity of place was by a detailed analysis of the life history of a specific house (see Figure 4.3). Here we were seeking to understand ways in which social memory was embedded in the architectural features of the house, by repeated plastering and other tasks, through the modifications of its furniture and walls by bricking up and deconstructing while at the same time maintaining continuous spatial differentiation within the house, and by intentional burial of people and artifacts within the house.

Second, we sought to demonstrate continuity by a detailed analysis of the relationship of Building 3 to the life histories of neighboring houses whose occupation and abandonment might have predated or been synchronous with Building 3, or that might have replaced the abandoned Building 3 (see Figures 26.2, 26.3). Through these means, architecture became mediator, indicator, and encourager of patterns of dominance, social conformity or resistance, social memory, generational transmission, and the continuity of place (Hodder and Cessford 2004; Tringham 2000a: Figure 6-5).

Traditionally, in the excavation of prehistoric settlements, the life history of a house and its replacement has not been a subject for investigation. The main efforts of archaeologists have been geared toward the identification of "building horizons" in both tell and stratified "open" sites. What may have begun as a convenient excavation strategy has led to individual events of abandonment being subsumed as a generic "horizon." This excavation procedure has greatly affected our understanding of the continuity of settlement and degree of sedentism. The current excavations at Çatalhöyük since 1995 have provided an exception to this strategy, as have the excavations at Ain Ghazal, Jordan (Banning and Byrd 1989; Byrd 2000; Hodder and Cessford 2004). The disadvantage is that this strategy requires more detailed, labor-intensive excavation so that a smaller sample of houses can be studied, although in greater detail.

When we started the BACH project, we were well aware of the challenges that our focus on the life history of a house would give us, especially in relating this life history to other neighboring houses, to other areas of the site (including the Building Horizon scheme that Mellaart had constructed in the SOUTH Area), to the currently exposed 4040 Area immediately south of the BACH Area, and to the chronological situation of Çatalhöyük as a whole. The responses we made to these challenges are described in many of the chapters that follow, especially Chapters 4 and 26.

Among the questions expressed in the current set of Çatalhöyük publications—especially in light of the intensive surveys carried out by Douglas Baird in the region surrounding Çatalhöyük, in which he found no contemporary settlement of comparable size and a paucity of any settlement—are why there was such an intensive agglomeration of settlement at this point, and how it was possible that it was sustained economically, and especially socially, for such a long time (Baird 1996b, 2005; Hodder 2006a).

Part 1

Strategies of Research, Analysis, and Interpretation

The strategies of research of the Çatalhöyük Research Project (CRP) were described in detail in Chapter 1 of Volume 3 (*Excavating Çatalhöyük*; see Hodder et al. 2007) of the 1995–1999 reports. The chapters of this part of *Last House on the Hill* summarize these strategies and add details specific to the BACH project (Chapter 2), and add discussion specifically on the digital documentation of the BACH research (Chapter 3).

Chapter 2 describes all of the strategies of sampling, retrieval, and analysis that were employed in the BACH project. Some of these strategies, such as surface and subsurface reconnaissance and soil chemistry, did not end up as separate publications in *Last House on the Hill* but were published as chapters in previous CRP volumes.

Digital documentation was not a particular emphasis of the CRP 1995–1997 reports; we have added a chapter on it, however, because of the special experience of the BACH project in which the span of the project, 1997–2003, made us highly aware of the transition from the use of analog to digital media in documenting fieldwork. In addition, both authors of Chapter 3 had been very active in the development and dissemination of digital frameworks for archaeological documentation, representation, and remediation.

In both chapters in this section, we have emphasized the authorship of documents of all kinds, from archaeological unit sheets to visual media and field measurement, plus collection and analyses of samples and material remains. We feel that too often the details of authorship—especially if the author is a lowly assistant—is subverted by the object of the author's effort. In this, we are very much in line with the concept of reflexivity that is at the heart of the Çatalhöyük Research Project. In addition, the sequence of authorship—as the object passes through the process from first retrieval to final publication—becomes itself part of the project's research history.

Chapter 2

Research Methodology

Ruth Tringham and Mirjana Stevanović

This chapter describes aspects of the excavation, recording, sampling, and analysis methodologies practiced in the BACH project, all of which are critical to an understanding of the results presented in this volume. We begin here with a discussion of many of the issues that become the focus of later chapters, including the methodology of constructing the life history of the buildings, of using the evidence of stratigraphic and microstratigraphic analysis along with detailed spatial analysis of residues, artifacts, and features. Other issues include the development of digital recording techniques, extrapolation of data from the house to the neighborhood and beyond, and the planned destiny of the excavated area and its physical data. Many of the issues described in this chapter have also been discussed in the previous volumes of the Çatalhöyük Research Project, including in our own contribution to the second volume in the series (Tringham and Stevanović 2000).

The Meeting of Methodologies

In our 2001 proposal to the National Science Foundation, we wrote that "The methodology of retrieval, sampling, recording and analyzing the data from the four excavation areas at Çatalhöyük is identical, making them entirely compatible." The standardized protocols through which the remarkable feat of making the work of teams from the United Kingdom, Turkey, the United States, Poland, and Greece comparable and synthesizable have been described in a number of publications. An important aim of the renewed investigations at Çatalhöyük was a demonstration of reflexivity (Conolly 2000; Farid 2000; Hodder et al. 2007) and multivocality in the archaeological process (Chadwick 1997; Hodder 1997a, 1999a, 2000). The Berkeley Archaeologists at Çatalhöyük (BACH) incorporated fully all the standards and protocols of the umbrella project into their excavations, not only to make them compatible with the other research at the site but also because this was our favored style of excavation.

Even so, the excavation methodology at Çatalhöyük has not been entirely uniform. As we showed in our 2000 article, there have been multiple excavation methodologies in the renewed investigations (Tringham and Stevanović 2000). We argued that differences in research "training, organization, status/power that, to a certain extent, are the result of regional methodologies, . . . are also the result, we believe, of variation in the field experience and intellectual histories of the individual researchers" (Tringham and Stevanović 2000:111). We (Ruth Tringham and Mirjana Stevanović) have worked together for many years, but our individual research and intellectual histories are different, and neither of us practices what is typical of an "American" or "Balkan" excavation strategy, although the United States has figured largely in our project in terms of funding, student personnel, and our own employment (Tringham and Stevanović 2000).

Our Background in Field Research in Europe

We were invited to participate in the Çatalhöyük project because of our experience and familiarity in excavating large Neolithic stratified sites in the former Yugoslavia (Serbia) and Bulgaria, and because of our collaborative research on the life history of houses and the interpretation of architectural remains (Stevanović 1997; Stevanović and Tringham 1998; Tringham 1994, 2000a). We had developed a strategy of excavating architecture during our collaboration in the USA-Yugoslav excavations at Opovo (1983–1989)

(Tringham et al. 1985; Tringham et al. 1992), Gomolava (1979–1981), and Selevac (1976–1979) (Brukner 1980; Tringham and Krstić 1990), and in Bulgaria, at the tell site of Podgoritsa (1995) (Bailey et al. 1998). This strategy involved excavating the architectural features in a broad exposure of natural levels, combined with the excavation of non-architectural features in arbitrary levels. In recording, although we did not use the Harris matrix per se, we followed a system of single-context excavation based on the locus. Thus, it was not a significant challenge for us to adapt to the single-context method of excavation and recording employed at Çatalhöyük. By contrast, the transition to the excavation of mud-brick architecture from wattle-and-daub, with which we were both more familiar, was much more of a challenge.

Putting the Reflexive Methodology into Practice

The reflexive methodology employed at Çatalhöyük was discussed at length in the second volume reporting on the renewed investigations (Hodder 1997a, 1999a, 2000). In our contribution to that volume, we noted that we already shared an interest in putting a reflexive methodology into practice. At Opovo, we were one of the few teams in the Balkans whose excavation and recording strategy was designed by a core research team rather than by the individual authority of the directors. At Çatalhöyük, an essential motivation in the development of the rich digital audiovisual record of the BACH team (Chapter 3) was to capture the discussion and debate that proceeds with such a methodology at many different levels. We noted that although the recording of ideas, ambiguities, and discourse on paper and with digital media slowed down the pace of deposit removal, in the end the results did indeed reflect the amount of thought and effort that goes into interpreting the archaeological data of Çatalhöyük. This record certainly made it easier to create transparency in the archaeological process which could be shared with others. However, we are well aware that it took our team seven years to excavate one building, while James Mellaart excavated almost 200 in three seasons!

Organization of Work: Excavators, Specialists, and Conservators

The direction of the BACH project field research rested in the hands of both of us (Tringham and Stevanović), and the two of us were present at the site throughout each field season from 1997 to 2003. For the most part, our excavation labor force comprised students and archaeologists who were already skilled and experienced in this work, from the United States, the United Kingdom, Turkey, and the former Yugoslavia (Serbia)[1] (see Figure 1.1). Local workers were employed in screening, flotation, and washing and sorting finds and heavy fraction samples.

In our 2000 article, we described the organizational structure of the BACH team's work as one that contrasted with that of the main "umbrella" team of the Çatalhöyük Research Project. In the BACH project, units—new or already open—were assigned and reassigned to team members on a daily basis. Thus, each participant, while excavating a restricted area, had to be reminded constantly of the situation in the whole building. The archaeologist was expected to excavate, record, and keep track of finds—with the field directors looking over her or his shoulder—but the ongoing creation of the visual record—drawing, electronic distance meter (EDM) mapping, photography, and videography—was done by a specific team member assigned to this task.

For the most part, the BACH team did not employ specific specialists to analyze the data for our team. The exceptions were our lithic specialist, Heidi Underbjerg, and the human remains specialists, Lori Hager and Başak Boz, who, during the seasons in which burials occurred in the BACH Area (2000–2002), worked with the BACH team exclusively. In general, however, we took advantage of the main Çatalhöyük team specialists—for example, for macrobotanical, faunal, macrocrystalline rock, and other artifact analyses, as well as for the collection and analysis of samples for soil and micromorphology and conservation projects.[2]

Geophysical and Surface Reconnaissance in and around the BACH Area

The BACH team was not directly involved in any above- or below-ground reconnaissance or remote sensing of the BACH Area. However, the area was intensively surveyed during 1993–1995 before our excavation started in 1997 (Matthews 1996a, 1996b; Shell 1996).

Pre-Excavation Surveys

Systematic Surface Collection

The systematic surface collection of the entire East and West Mounds was carried out in the first season (1993) of the Çatalhöyük Research Project (Matthews 1996b). In this survey, 36 liters of soil from each of the 2 × 2 m squares located every 20 m was passed through a screen, whose mesh size was 5 mm. In the map of the survey results for the

[1] See the on-line edition of *Last House on the Hill* for details on these team members.

[2] Among this number, Mirjana Stevanović was part of the team studying the Neolithic architectural remains. Moreover, several of the members of the specialist teams at Çatalhöyük had already worked with us in Serbia and Bulgaria, such as Nerissa Russell, who became a key member of the faunal team, and Julie Near, who was part of the palaeobotanical team until 2000 and worked with us in Bulgaria.

East Mound, it can be seen that the NORTH Area, including the BACH Area, produced relatively few artifacts compared with the central and southern parts of the mound, due—Roger Matthews suggests (1996b: Figure 6.1)—to the heavy bias on distribution caused by the large mass of post-Neolithic pottery in the latter areas.

Surface Scraping

Surface scraping of the top 5–10 cm of soil was carried out in sampled areas of the East Mound in 1993–1995 (Matthews 1996a). The sampled areas included nineteen 10 × 10 m squares at the top of the northern end of the East Mound, within which were the subsequent NORTH and BACH excavation areas. The method was very successful in the NORTH Area of the East Mound, revealing an impressive pattern of Neolithic truncated house walls (see Figure 1.5). Each "room" was given a "space" number, without any interpretation (such as "house") beyond that. On the eastern edge of the survey area, the four spaces that would become the focus of the BACH Area (Spaces 86–89) could be seen. To the west of this group, Space 85, which turned out to be filled with midden deposit, was defined; to their south was a group of large spaces (Spaces 95, 99, and 100); and to their east, Space 41—enticing but not explored by the survey—was defined.

Magnetometric Survey with Fluxgate Gradiometer

A magnetometric survey with a fluxgate gradiometer was carried out in a sampled area of the East Mound in 1993–1995 (Shell 1996). The aim was to be able to define—without excavation—areas of burning (including ovens) and boundary lines between spaces or rooms, even if the actual walls could not be identified. Because of the nature of the mud brick and its structural similarity to the surrounding matrix, Shell (1996:101) rejected the use of resistivity techniques in favor of magnetometry as a means of subsurface penetration. The area chosen for the magnetometric survey included the NORTH surface scrape area, extending both slightly northward and southwest to the northern edge of the Mellaart (SOUTH) excavation area (Shell 1996:Figure 8.7). The ability to compare the magnetometer survey results with the ongoing surface scrape turned out to be a valuable aid to Shell's interpretation in the NORTH Area (see Shell 1996:Figure 8.7). The burned area at the surface of Space 89 (including the bucranium that had been defined in the surface scrape) was not picked up by the magnetometric survey, possibly because the anomaly was not as intensive as it seemed on the surface (see Chapter 5). Intensive anomalies, however, that were probably caused by more intense fire activity, can be noted in Space 41, to the east of the BACH Area, and in Space 95 to its southwest. The latter was also noted in the surface scraping. The only anomaly noted within the BACH Area itself was a mild one in the southwest corner of Building 3.

Ground-Penetrating Radar Sensing

Further geophysical investigations at Çatalhöyük were conducted by Don Johnson and Clark A. Dobbs in 2000 (Dobbs and Johnson 2005). Their study comprised a magnetometric reconnaissance with a gradiometer, a resistivity survey, and ground-penetrating radar (GPR) exploration, in three areas of the East Mound, including within the BACH Area. They aimed at obtaining geophysical data about the site and evaluating the effectiveness of different instruments and the role that this type of study can play in archaeology. In the BACH Area, only the effectiveness of high-resolution GPR was explored in order to obtain results of anomalies at depths greater than might be reached by the other two methods.

In Building 3, high-frequency radar (with a 1-GHz antenna) was used to obtain information at depths between 20 and 80 cm below surface for different episodes of construction activity, or in pits dug for burials below platforms. The tests were conducted from the floor of an unexcavated platform (F.170) on the east margin of Building 3 (Dobbs and Johnson 2000). Five transects parallel to the long axis of Building 3, spaced approximately 30 cm apart, and one perpendicular line across the platform were collected. Readings were taken every 2 cm along each transect. Even though a series of responses was collected here (see, for example, Dobbs and Johnson 2000: Figure 23), no obvious cultural features corresponding to the source of the radar responses were identified during the subsequent excavation of this platform (see Chapter 5).

EXCAVATION, OBSERVATION, AND RETRIEVAL STRATEGY

Single-Context Excavation

Excavation proceeded by the definition and excavation of single contexts, referred to as "units," each one identified and recorded as a unique depositional event. Because of the density of significant architectural and other features at Çatalhöyük, excavation proceeded for the most part by troweling. The single contexts were revealed and excavated wherever possible in their sequence of deposition and then were constructed into a microstratigraphic sequence using a Harris matrix (Harris 1989). In the BACH project, we diverged in some respects from this ideal protocol, devised by the Museum of London Trust (Farid 2000; Museum of London 1994) (Figure 2.1).

In keeping with our strategy that we transferred from Southeast Europe, we frequently did not excavate units (contexts) in their sequence of deposition. We would often excavate several units of a depositional sequence simultaneously,

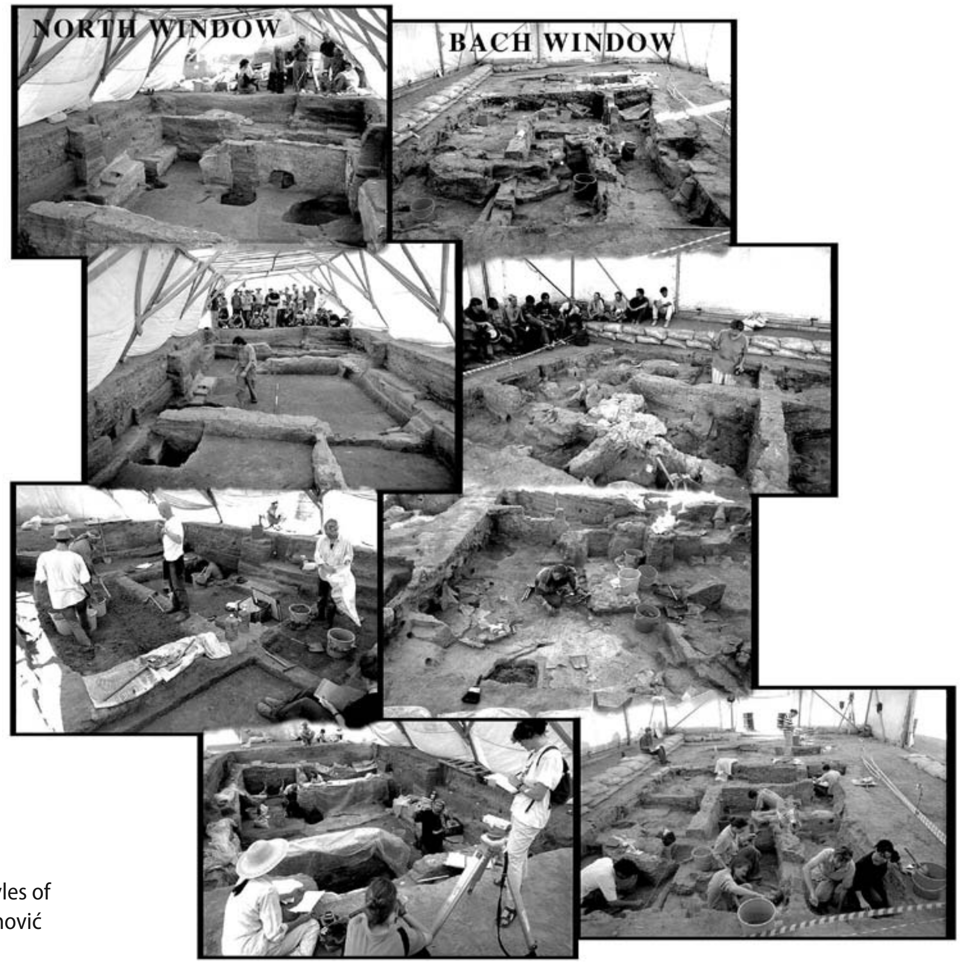

Figure 2.1. Collage of contrasting styles of excavation (after Tringham and Stevanović 2000:Figure 9.3).

since we believed that our treatment and interpretation of the later part of a sequence might change as a result of a better understanding of the earlier part. This practice, of course, tested the patience of the flotation crew and other "specialists," who waited to analyze a complete unit and sometimes had to wait for several sessions of the excavation of that unit. It also tested the patience of our archaeological colleagues who were accustomed to the clarity of single-context excavation and found our excavation process confusing.

As with the similar strategy we had developed in Southeast Europe, we reached the definitive cleaning of a feature only very slowly, since we were interested as much in the nature of the superstructural collapse and debris of a building, room, or feature as we were in its cleaned floor-plan. At each stage of cleaning, the feature was recorded by photography and drawing. In other words, we felt that the feature did not have to be definitively cleaned before it was recorded.

We saw a need to adapt single-context excavation strategies to different depositional contexts. For example, we chose to excavate the floor and the platforms as units of meter squares—essentially quadrants within the larger site grid—rather than as larger units of, for example, a complete platform. It is a standard feature at Çatalhöyük that the floors were constructed in at least two layers—packing below a smooth polished plaster floor layer. On the platforms, where the floor plaster and packing could clearly be distinguished as distinct depositional units, each layer of floor plaster was removed as a separate unit from its underlying packing. In the Central Floor area, however, where packing separating the many layers of floor plaster was often very thin or missing, excavation of individual floors was almost impossible.

Use of Profiles and Baulks

During our excavations in Southeast Europe, we had monitored the microstratigraphic relationship of arbitrary and natural layers by retaining a network of temporary baulks linking up to the main grid of the site (Tringham et al. 1992). We applied this same method to the excavation at Çatalhöyük during the 1997–1999 seasons in order to understand how one part of the post-occupational fill of Building 3 related to another. The proliferation of temporary baulks was criticized as redundant when excavating single contexts. Strictly speaking, single-context excavation recorded by the Harris matrix does not "need" control baulks; on the contrary, it is actually disruptive to the process (Farid

Figure 2.2. Ruth Tringham and Mirjana Stevanović study a cross section through the collapsed roof provided by the N–S baulk in Building 3 in 1998.

2000). In retrospect, this is probably the case, but in practice in our first three years of excavation, we found it comforting to have them there; they were valuable as a visual aid to demonstrate and document stratigraphic relationships, as a supplement to the schematized demonstration of the Harris matrix (see Figures 5.97, 5.98). They were especially useful during excavation of the roof, which would have been very difficult to accomplish by single contexts, because of the fused nature of the deposits (Figure 2.2).

Excavation of Burials

We were very keen in the BACH project to associate burials with the floors from which their graves had been cut. For this reason, the excavation of burials was actually carried out in a procedure that followed much more closely the Museum of London protocols (Chapter 13). First, the human remains specialists were responsible for every stage of their excavation and documentation; and second, the grave tended to be excavated from its associated floor before any earlier parts of the surrounding platform were touched, until the skeleton and the fill of its grave had been excavated (Figure 2.3).

Sampling Strategies in the Field

Intensive sampling for a number of different purposes is a characteristic of all excavation projects at Çatalhöyük (Farid 2000; Matthews and Hastorf 2000). In the BACH Area, as in other areas of the Çatalhöyük Research Project, each unit was sampled for phytolith remains and soil chemistry (phosphorus content and ICP) analysis (Hodder et al. 2007:19–20). In addition, a standard sample of the depositional matrix (200 g) of each unit was kept as an archive. Each unit provided a maximum of 30 liters of sediment for flotation and

Figure 2.3. Excavating burials in Building 3: (a) Lori Hager and Başak Boz documenting the skeletal remains under the north-central platform (F.162) in 2001; (b) Başak Boz excavates a child's burial in the Central Floor area in 2001.

Figure 2.4. The flotation setup at Çatalhöyük in 1998.

Figure 2.5. The Turkish team sorting heavy-residue samples in the compound in 1998.

Figure 2.6. Wendy Matthews collecting a sample for micromorphological analysis from the "clean" area of the collapsed roof of Building 3.

wet-screening—an essential source of data for heavy-residue materials, such as small chips of obsidian, charcoal, shell, and microfaunal remains in addition to macrofloral remains (Figures 2.4, 2.5). The remaining materials were dry-screened on-site through 4-mm^2 mesh.

Microstratigraphic excavation and observations and intensive sampling from building floors, plasters, and walls for micromorphological analysis were characteristic of the CRP from its inception in 1993 (Matthews 2005b; Matthews and Hastorf 2000). Wendy Matthews (Chapter 7) extended this research to the BACH Area from 1997, removing blocks for micromorphology profiles through floors and platforms at regular intervals[3] (Figure 2.6). Some contexts were sampled more intensively—for example, the collapsed roof, storage bins, and ovens.

RECORDING STRATEGY

The standard procedures of documentation in the Çatalhöyük Research Project have been described in a number of places (Farid 2000). The basic recording element—the smallest common denominator—is the "unit,"[4] described as representing a "single context" or "single identifiable depositional event" (Hodder et al. 2007:13). This is the key to the entire archaeological documentation at the site. The recording system was debated at length until a consensus was reached in 1996. After this, few changes—mainly refinements—were made to the basic system. Observational and interpretive terms have been agreed on and defined in detail in the introduction to the 1995–1999 excavation report (Hodder et al. 2007:13–18) and should be consulted there for clarification.[5] In the BACH project, we conformed completely to these definitions and the recording system as a whole.

Field Documentation: Paper

Observations and measurements of the excavation process were recorded by hand in the field on the standard CRP forms for units, features, and skeletons (Hodder et al. 2007). The BACH Area was assigned a certain set of numbers for units, features, and field drawings by the CRP field director, to avoid any accidental repetition of numbers by more than one team at the site.

On the two-sided expandable unit sheet, there were spaces to fill in the dimensions, soil matrix details, Harris matrix, preliminary interpretation, samples, associated media, and special associated finds, referred to as "X-finds" (Figure 2.7). On the backside of the sheet were spaces for an informal sketch of the unit and for a discussion of the observations and interpretations. Excavators were encouraged to write down their doubts and worries as well as their more confident statements about the unit (Figure 2.8). As noted above, the BACH sheets were often made more complicated by the fact that more than one excavator might work on a unit in a sequence of days. Each excavator was required to sign his or her work. After observations in the

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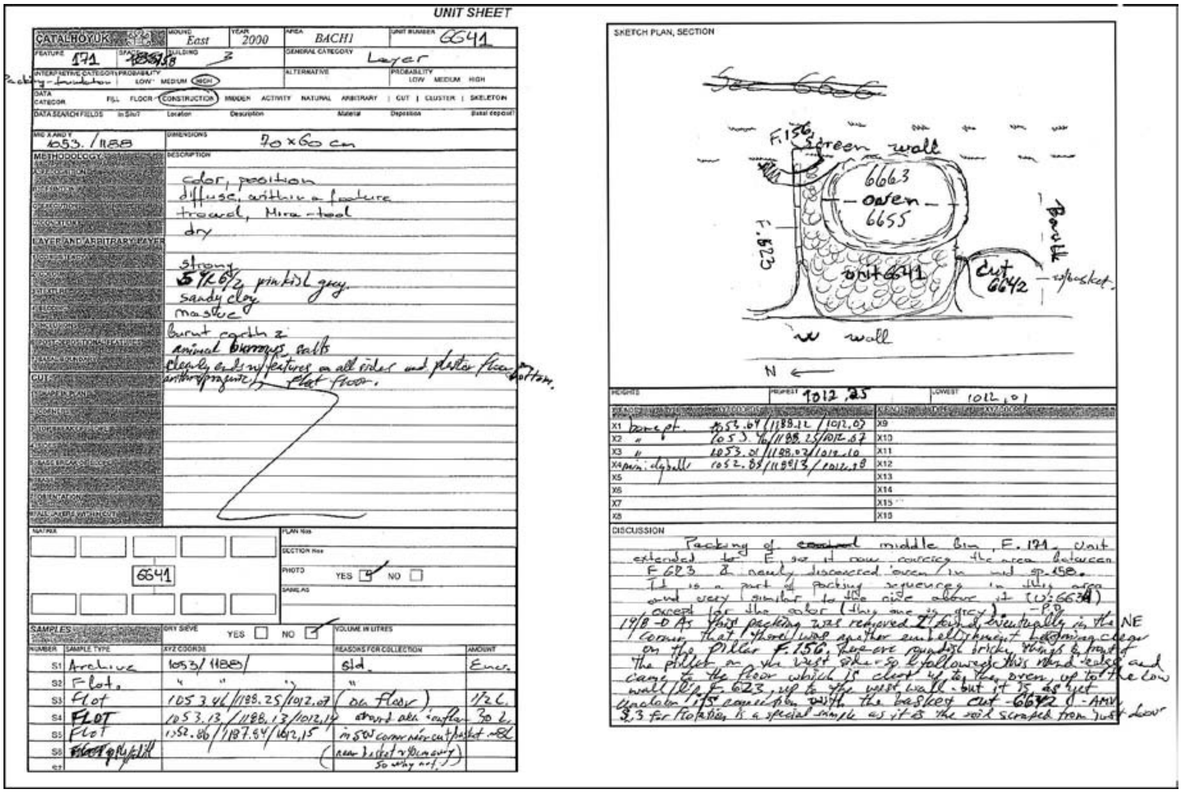
[3] She was assisted in 1998–1999 by Anne-Marie Vandendriesch in collecting samples in the field.

[4] Represented in this volume as its 4-digit number within parentheses, e.g., (8501).

[5] Conventions employed in this volume include: special or "X" finds that are expressed with their unit number as 8501.X1 and samples as 8501.S1; finds retrieved after excavation from heavy residue and other contexts receive a variety of identifiers, such as 8501.D1, 8501.H1, 8501.A1.



UNIT SHEET

ÇATALHÖYÜK | MOUND East | YEAR 2000 | AREA BACH1 | UNIT NUMBER 6641

FEATURE 171 | SPACE 158 | BUILDING 3 | GENERAL CATEGORY Layer

INTERPRETIVE CATEGORY: Packing-foundation | PROBABILITY: LOW MEDIUM HIGH | ALTERNATIVE | PROBABILITY: LOW MEDIUM HIGH

DATA CATEGORY: FILL FLOOR CONSTRUCTION MIDDEN ACTIVITY NATURAL ARBITRARY | CUT | CLUSTER | SKELETON

DATA SEARCH FIELDS: In Situ? Location Description Material Deposition Basal deposit?

MID X AND Y: 1053. / 1188 | DIMENSIONS: 70 x 60 cm

METHODOLOGY / DESCRIPTION:
color, position
diffuse, within a feature
trowel, Mira-tool
dry

LAYER AND ARBITRARY LAYER:
strong
5YR 6/2 pinkish grey
sandy clay
massive
burnt earth
animal burrows, salts
clearly ends w/ features on all sides and plaster floor bottom.
anthropogenic, flat floor.

CUT

MATRIX: 6641

PHOTO: YES ☑ NO ☐

DRY SIEVE: YES ☐ NO ☑

SAMPLES

NUMBER	SAMPLE TYPE	XYZ COORDS	REASONS FOR COLLECTION	AMOUNT
S1	Archive	1053/1188/	std.	Env.
S2	Flot.	" "	"	
S3	Flot	1053.46/1188.25/1012.07	(on floor)	1/2 L
S4	FLOT	1053.13/1188.13/1012.14		30 L
S5	Flot	1052.86/1187.84/1012.15		
S6				
S7				

SKETCH PLAN, SECTION

HEIGHTS | HIGHEST 1012.25 | LOWEST 1012.01

X1 bone pt.	1053.64/1188.12/1012.07	X9	
X2 "	1053.46/1188.25/1012.07	X10	
X3 "	1053.21/1188.07/1012.10	X11	
X4 min. clayball	1052.88/1188.13/1012.18	X12	
X5		X13	
X6		X14	
X7		X15	
X8		X16	

DISCUSSION

Packing of middle Bin, F. 171. Unit extended to E, so it now covering the area between F 623 & newly discovered 'oven' in mid sp. 158. It is a part of packing sequences in this area and very similar to the one above it (U: 6634) except for the color (this one is grey). – P.D.
19/8 – D As this packing was removed I found, eventually in the NE corner, that there was another embellishment belonging clear on the Pillar F.156, there are roundish bricky things in front of the pillar on the west side – so I followed this hard edge and came to the floor which is clear up to the oven, up to the low wall (?) F. 623, up to the west wall – but it is as yet unclear its connection with the basket cut – 6642. – AMV
S3 for flotation is a special sample as it is the soil scraped from just above floor

Figure 2.7. An example of a filled-in unit recording form (unit 6641).

Figure 2.8. Jim Vedder and Heidi Underbjerg fill out their unit forms in 2000.

Figure 2.9. Laura Steele and Vuk Trifković using the EDM to document measurements on a field drawing in 2000.

field, the feature sheet was more likely to be completed in the lab, after noting the associated unit sheet details. Skeleton sheets were filled out almost exclusively by the BACH human remains team (Boz and Hager).

Field drawings were made of individual features and larger areas of the excavation once the relevant areas had been cleaned. The sequence was photography first and then drawing. As we mentioned above, the formal field drawings were made by team members who were assigned this task as a specialization (Figure 2.9).[6] In general, the draftspeople did not also excavate, unless there was a lull in drafting needs; in each case, however, they were assisted by the ex-

[6] Ivan Butorac (1997–98), Paolo Pellegatti (1999), Predrag Dakić (1999, 2003), Dušan Borić (1999), Laura Steele (2000–2001), Bleda Düring (2002), and John Matsunaga (2002).

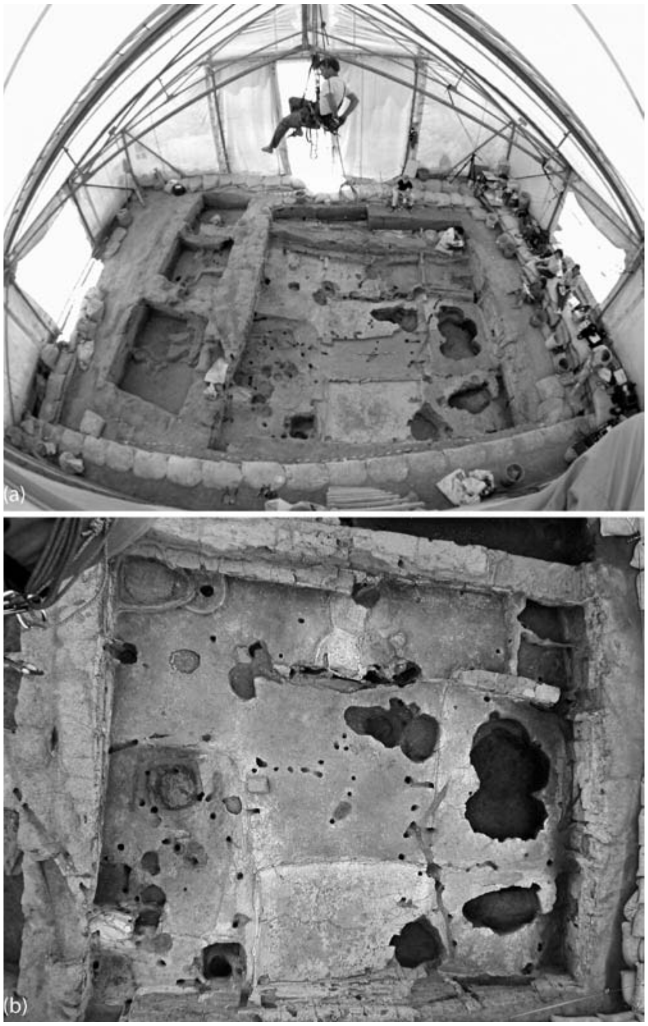


Figure 2.10. The mountaineering trapeze set up for aerial photographs in the BACH Area: (a) Jason Quinlan swings from the trapeze preparing to photograph the excavation in 2001 (this photo was recorded by Michael Ashley who is suspended even higher); (b) aerial photograph of Building 3 in 2002 (north is on the right) recorded by a suspended photographer.

cavator of the unit or feature being recorded (Chapter 3). In 2000–2002, drawing of burials was done by the human remains team themselves (see Figure 3.4a; see also Chapter 13). The number of drawings ranged from 40 to 80 per season, comprising both plans and sections.

Field Documentation: Digital Media

Beginning in 1998, media specialists Michael Ashley and Jason Quinlan were responsible for recording and capturing the excavation process of the BACH project, first on 35-mm slide film and then with increasingly high-resolution digital cameras (Chapter 3). From 2000, we relied entirely on digital photography; beginning in 2001 video capture was exclusively on digital tape. From 2001, in order to capture completely horizontal aerial views, a mountaineering trapeze was constructed by which the media specialists were suspended from the tent rafters (Figure 2.10; see also Figure 3.10).

Regular and frequent video recording was characteristic of the BACH team excavation procedure from 1998. These videos acted as formal descriptions of features during their excavation; they also acted as a place for informal soliloquies and discussions with team members and lab specialists (Figure 2.11), as well as regular diary entries of excavators (see Chapter 3; Figure 3.12; Brill 2000). In addition, QuickTime VR (including panoramas and Cubic VR) movies were made at regular intervals during the excavation and have provided a valuable research record as well as a powerful demonstration tool for visitors to Virtual Çatalhöyük (see Figure 3.11).[7]

Throughout the BACH project (1997–2003), different members of the excavation team—depending on their electronic skill level—were given responsibility for the electronic distance meter (EDM) readings each season, in addition to their excavation tasks (Chapter 3; Figure 2.9).[8]

From the Field to the File

The data recorded in the field sheets were entered into a central CRP database (Windows/Microsoft Access) during the excavation season (electricity permitting) (Chapter 3; Wolle and Tringham 2000). The reliability of data entry and digital media capture was greatly improved by the upgraded electrical system in 2000 and by the Ethernet and wireless networking in the labs that was expanded in 2003.

Daily field diaries were also entered into the database, but not so regularly by the BACH team. Several of us kept daily field diaries but did not necessarily enter them into the public database.[9] Every participant in the project had access to the database in the field. The public as well as team members are now able to access the CRP excavation database on-line through their Internet browser.[10] To what extent this access is meaningful to the public is discussed in Chapter 25 of this volume.

Field measurements that were recorded with an EDM were uploaded immediately into an Excel spreadsheet. These data were not entered into the excavation database

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[7] From the main Çatalhöyük website you can take a tour using VR (virtual reality) technology: *http://www.catalhoyuk.com/visitors/vrtour.html*. Several years earlier, the Science Museum of Minnesota created a QTVR tour of the site for their Mysteries of Çatalhöyük website: *http://www.smm.org/catal/virtual_tour/tour_the_dig_site/* (accessed 6 September 2011).
[8] 1997: Jason Bass; 1998: Vuk Trifković; 1999: Alex Gagnon; 2000: Vuk Trifković; 2001: Predrag Dakić; 2002: Kevin Bartoy; 2003: Predrag Dakić.
[9] Many more of the BACH field diaries are available in the on-line edition of *Last House on the Hill*.
[10] *http://www.catalhoyuk.com/database/catal/* (accessed 6 September 2011).

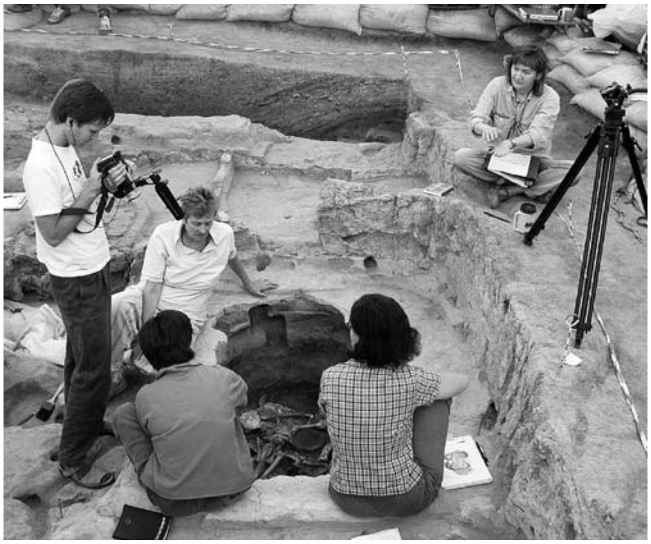

Figure 2.11. Jason Quinlan video-records a discussion about the burials under the north-central platform (F.162) between Mirjana Stevanović, Ruth Tringham, Lori Hager, and Başak Boz in 2001.

as a list, but as measurements associated with individual unit sheets.

Formal field drawings were also digitized during the excavation season and, for the BACH project, a catalog was created to record their details (Chapter 3). However, neither the formal field drawings nor the informal sketches drawn by the excavators on the unit sheets were entered into the main CRP excavation database.

The digital photographic and videographic media of the BACH project were cataloged and provided an immediate visual record while the features were still being excavated; they continue to be meaningful long after the project has finished (Chapter 3). Until the on-line edition of this publication, there has not been a direct articulation of the excavation database with the excavation media catalogs (including field drawings).

A quite revolutionary step was taken by the entire Çatalhöyük Research Project team in 2007, which was to make the complete digital data of the project, including all media assets, openly and freely accessible to the public (including other archaeologists) through a Creative Commons license 2.0[11] (Chapter 25).

ANALYSIS AND INTERPRETATION OF THE EXCAVATED DATA

Stratigraphy and Chronology and Their Extrapolation to a Wider Context

The BACH project was based on the premise that a building was constantly being modified throughout its occupation by the practices and rhythms of its occupants as well as by the vagaries of weather and entropy.

Building the Sequence of Single Contexts: Analysis of Use-Life and Life History

The analysis of excavated buildings using the idea that a building has a life history—as was done, for example, for Building 1—has demonstrated the complexity of the endeavor (Hodder 2007; Hodder and Cessford 2004). In the BACH Area, the history of Building 3 was no less complex and very different from that of Building 1. Our aim in analyzing the architectural features and identifying the sequence of depositional events was to construct the history of Building 3 by defining major changes that we call "phases," in which a number of depositional events happened in association. Such major events included moving the location of the main oven in the building and repositioning the bins and basins; or the link between burial events under platforms with their major replastering (sometimes with color) and a reconfiguration of the shape and boundary of platforms; or the partitioning of space, not only by horizontally lifted platforms but also by vertical walls.

We identified eight phases in the occupation of Building 3 (B3.1A–D, B3.2, B3.3, B3.4A–B) and at least two phases of its gradual abandonment and collapse, short-lived reopening, and final fall into oblivion (B3.5A–B) (see Chapter 4, including Table 4.1; Figure 4.3). Each of these phases has a complex Harris matrix scheme to represent the detailed stratigraphic relations of its units and features (Figure 2.12) (and see Chapter 5).[12]

Micromorphology and Microstratigraphy

Microstratigraphic observations and sampling combined with micromorphological analysis provided the key to addressing the BACH project's goals to construct the life history of the buildings in the BACH Area. Wendy Matthews carried out the post-excavation preparation, analysis, and interpretation of the thin-sections at the University of Reading (Chapter 7). The analysis of the samples included a detailed examination of the depositional and contextual relationship between "natural" and constructional and other anthropogenic sediments, artifacts, and inorganic and organic remains, and eventually the identification of the processes of deposition and postdepositional alterations. Detailed life histories of individual buildings cannot be reconstructed without these observations (Boivin 2000; Matthews 2005a). In the case of Building 3, the micromorphological samples also provided essential information on the interpretation of the collapsed roof remains (Chapter 7).

[11] *http://creativecommons.org/about/licenses/* (accessed 6 September 2011).

[12] The Harris matrices representing the depositional events of the BACH Area are accessible in the on-line edition of *Last House on the Hill*.

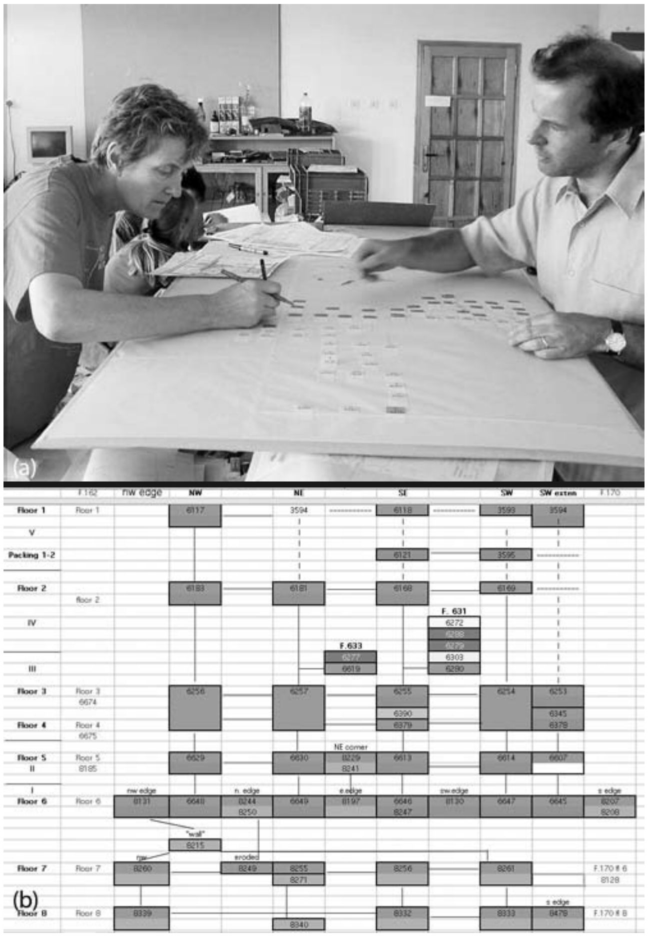

Figure 2.12. Constructing the Harris matrix of the sequence of depositional events in the BACH Area: (a) Ruth Tringham and Roger Matthews construct the matrix in 1999; (b) matrix of the northeast platform (F.173); color versions of all Harris matrices are available in the on-line edition, but even in this grayscale version the burial pit and posthole cutting through the floor layers of the platform are clear.

Investigation of Constructional Clays

Mirjana Stevanović conducted research on the constructional clays of the BACH Area. Currently this has expanded to the whole of the East Mound (Stevanović 2005, 2008) and parallels other such studies at Çatalhöyük (Doherty 2007; Love 2007; Tung 2008). Starting with Neil Roberts's earlier regional geomorphological survey, the researchers generally agreed on the identification of the local marshy backswamp as the source of the clay for both bricks and mortar (Roberts et al. 1996; Chapters 6 and 22, this volume). Beyond the identification of clay sources, Stevanović investigated the "recipes" used in mixing the clays with tempering materials in different parts of the buildings of the BACH Area.

Analyses of the archaeological bricks were complemented by an ethnoarchaeological study on the one hand, and a project of experimental replication on the other.

Figure 2.13. Mirjana Stevanović inspects the mud-brick walls of the Replica Neolithic House in the early stages of its construction in 1999.

Stevanović carried out a study of techniques of brick-making and brick-building in local villages in the Çumra area, in consultation with local brick-builders (Matthews et al. 2000). As part of this investigation, she directed the construction of a full-scale replica of a Neolithic building that is modeled on both Building 1 and Building 3 (Figure 2.13; Chapter 22).

The Slow Death of a House

The latter stages in the life history of a building interested us no less than its construction and midlife. We observed that the process of abandonment and collapse of Building 3 seems to have been especially long, drawn out, and complicated. The excavation of the remains of this process took place during the first three years of the BACH project (1997–1999). We identified numerous processes at work in the "slow death" of Building 3 (Chapter 4): the collapsed roof, the deposition of large mammal bones, removal of posts, wall collapse, and midden deposition. While we were excavating the latest phases in the history of Building 3 in the early years of the project, we had the impression that our slow rate of progress was due to our lack of experience in excavating this medium. In retrospect, however, we believe that the complexity of the process itself deserved the detailed excavation and recording that we gave it.

Chronometric Dating of the BACH Area Buildings

Ideally, the stratigraphically based phasing of the buildings on the East Mound should have been supported by chronometric dating methods, as was carried out for Building 1 in the NORTH Area (Cessford 2001, 2005a, 2007c:536–539; Hodder and Cessford 2004). Chronometric measure-

Figure 2.14. The BACH Area in relation to the neighboring buildings in the NORTH and 4040 Areas.

ments were taken on the BACH samples, however, at a more modest scale. Their context and results are discussed in Chapter 4 of this volume, along with their linkage to the overall East Mound system of relative dating by building horizons (Mellaart 1967) and phases (Farid 2008) (Figure 2.14).

Specialist Analyses

The compound at the bottom of the northern end of the East Mound is the heart of the Çatalhöyük Research Project (Figure 2.15) (see details in Chapter 23 and Chapter 25). In the compound, material from the excavation is turned into digital data and media after being examined, analyzed, and documented. Here the material from the excavation travels through a documentation process that ends in storage either in the compound itself (Figure 2.16) or—if it is chosen by the Turkish government representatives—in the Konya Archaeological Museum. At the end of each season, the storage room is sealed, the compound is closed, and the security of the site is maintained only by guards.

Figure 2.15. The compound at the base of the East Mound, as it appeared in 1998.

Figure 2.16. One of the secure locations of the physical data from the BACH project.

Under Turkish law, it is difficult to open the sealed storage for analysis outside of the field season, but at the same time it is encouraged that as little material as possible leave Turkey. The process of exporting samples is quite complex. The BACH team conducted study seasons at Çatalhöyük in 2004 and 2005. The preliminary analysis of faunal, lithic, ceramic, and other artifactual materials was completed during the field seasons by the various "specialist teams." Samples of other materials were exported for more detailed analysis at home institutions.

Sampling Strategies: Priorities in Analysis and Publication

The analysis of the materials from the excavations of the Çatalhöyük Research Project was carried out by "specialists"[13] who in general worked full-time in their laboratories during the excavation period and continued post-excavation analysis at their home institutions. The BACH team provided funds for preliminary examination and analysis of materials during the excavation season, but the responsibility for detailed examination and final publication of the results was undertaken as individually funded research projects post-excavation by members of the main Çatalhöyük Research Project specialist teams.

During the first season of the BACH project (1997), in response to the lack of contact between the excavation teams and the specialist teams, the Çatalhöyük Research Project instituted what became known as "priority tours" (Tringham and Stevanović 2000; see also Chapter 24). During these tours of the site by specialist teams, every two or three days priority units for sampling and analysis were identified by the consensus of specialists and excavators[14] after discussion at the actual location of the sample (Figure 2.17). Priorities might be chosen for their significance for potential archaeobotanical samples, or faunal data, but more often for multiple reasons. The roof remains, for example, offered a multitude of sampling possibilities for a number of specialists (Figure 2.18). Thus, while excavation was proceeding, very fast feedback from specialists on analyzed samples from certain important contexts was made possible, along with discussions by all the archaeologists concerned with the different kinds of analyses and interpretation of the feature. From 1999, all priority tours in the BACH Area were video-recorded in their entirety and are available in the on-line edition of this volume.

During the seven field seasons of the BACH project (1997–2003), approximately 400 of the total 1,200 units in the BACH Area were identified as priority units and given a preliminary examination in the field. For the purposes of this volume, however, following the example of the publication team of the 1995–1999 CRP volumes, the BACH authoring team selected 200 "top" priority samples for more detailed analysis to form the basis of their published chapters (Appendix 2.1).[15] Of these units, a great majority (175)

Figure 2.17. Ruth Tringham leads a discussion between excavators and specialists at a priority tour in 1999.

Figure 2.18. From left to right: Bill Middleton, Wendy Matthews, Ruth Tringham, Christine Hastorf, Frank Matero, and Arlene Rosen discussing the sampling of the collapsed roof remains in 1998.

were from Building 3, with only an average of 8 each from Spaces 87, 88, and 89. As might be expected, the selected priority units clustered around fire installations, possible storage facilities, burials, special deposits, and representative floors from all phases.

Faunal Analysis

The faunal remains, which make up the largest data set (after architecture and heavy residue/flotation samples) from the BACH Area, were studied by a team of five to six faunal analysts at any one time.[16] The bulk of the detailed analysis of the BACH data was carried out by Nerissa Rus-

[13] Many of us found this term to be problematic, implying that the excavators were somehow less skilled or less specialized in their training. It also implied a division into two teams: field and lab. Gradually, during the many seasons of the project's life, these implications have been resolved.

[14] Some of the BACH excavators—for example, Mirjana Stevanović, Heidi Underbjerg, Katy Killackey, Lori Hager, and Başak Boz—might also be "specialists."

[15] The appendices are available only in the on-line edition of *Last House on the Hill.*

[16] Led by Nerissa Russell and Louise Martin, assisted at different times by Levent Atıcı, Banu Aydınoğluğıl, Dušan Borić, Vesna Dimitrijević, Sheelagh Frame, Chris Hills, Stephanie Meece, Kamilla Pawłowska, Katheryn Twiss, and Lisa Yeomans.

sell, who took the lead in its publication (see Chapters 8, 9, and 15).

Russell was able to subject almost all of the macrofaunal remains to a procedure she called "Phase 1 assessment" (mirroring a similar procedure [their Phase 2] in the analysis of macrofloral remains); then approximately 50 percent of faunal remains from significant contexts—including and beyond the 200 priority units for the publication—were subjected to a detailed analysis. The macrofaunal analyses have been designed to answer questions of taxon/age/sex profiles, animal–human relations, diet, nutrition, domestication, butchering practices, and secondary products within a contextual analysis. Of special interest to the research aims of the BACH project, and to Nerissa Russell herself, were questions of the social meaning of animal use such as feasting and the disposal of bones (Martin et al. 2000). We welcomed Russell's broadening of the traditional parameters of faunal analysis and interpretation to include the symbolic significance of the visual representation of animals and the deposition of their remains in clay bricks and mortar of walls, as, for example, in the screen wall in Building 3 (Russell and Meece 2005).

Macrobotanical Analysis and Flotation Sampling

Flotation samples are obviously the primary source of information on the many diverse wild and domesticated plants (Hastorf 1998). Flotation itself took place in an off-site location at the base of the mound (Figure 2.4). The BACH team provided at least one full-time assistant—often more—during the lifetime of the project[17] and four to six local workers who were engaged in processing and sorting the flotation and heavy-fraction samples (Figure 2.5). The team that organized flotation was also responsible for the examination and analysis of the macrobotanical remains on-site.[18]

The process of retrieving, examining, and analyzing the macrobotanical remains in the Çatalhöyük Research Project followed protocols established by the team led by Christine Hastorf (Hastorf 2005) and modified by Andrew Fairbairn (Fairbairn, Near, and Martinoli 2005). In this process, Phase 1 assessment was a general sorting of materials from flotation into light, heavy, and screen botanical fractions, which was completed on-site. Phase 2, which was the analysis of macrofloral remains by class or category, was carried out on the exported selection of BACH samples post-excavation in Christine Hastorf's laboratory at the University of California, Berkeley. Phase 3 analysis comprises the taxonomic identification of plants in different categories. Because of time constraints, this phase has not been included in the current contextual analysis of the BACH macrofloral remains.[19]

Human Remains

From 2000 to 2002, Lori Hager and Başak Boz carried out the excavation and documentation (except for photography and videography) of the BACH Area human remains from start to finish on-site, continuing in the compound laboratory (see Figures 2.3, 2.11, 3.4a).[20] Boz had been part of the Çatalhöyük Research Project team excavating and publishing the burials from Building 1 and elsewhere during 1995–1999. Hager joined the BACH team as a human remains specialist in 2000, Neolithic burials having been discovered at the end of the 1999 season.

Of the 19 Neolithic burials in the BACH Area, 10 were discovered in Building 3, and 9 under a platform that filled most of the excavated area of the small Space 87, to the southwest of Building 3. In addition to developing a robust database of skeletal details and measurements, their investigation focused on demographic profiles, human life histories, diet, nutrition, health and disease, and an exploration of genetic relations within and between buildings. In addition, Boz carried out a detailed study of dental health of the prehistoric population at Çatalhöyük, including the BACH Area (Molleson et al. 2005:293). Their interpretations have also included a detailed study of the process of opening and disturbing burials as part of the ritualized construction of social memory (Goring-Morris 2000). Details of the burial process from a microstratigraphic point of view, treating each burial as a unique case, made an important contribution to the investigation of the life histories of the buildings in the BACH Area. Their data provide links between the life histories of houses and the life histories of the inhabitants.

During the first season (1997) of the BACH project, five post-Neolithic burials were discovered at or very close to the surface of the BACH Area; a sixth was excavated in 1998. These were excavated by the BACH team members,

[17] Including Kathryn Killackey, Slobodan Mitrovic, and Meltem Ağcabay.

[18] At the beginning of the BACH project (1997–1999), this team was led on-site by Christine Hastorf (UC Berkeley), assisted by Julie Near, Meltem Ağcabay, Steve Archer, Margaret (Peggy) Hauselt, Kathryn (Katy) Killackey, and Harpreet Mali. From 2000, UC Berkeley graduate student Katy Killackey took over responsibility for the on-site examination of the BACH macrofloral remains, with the help of Aylan Erkal and Meltem Ağcabay. Katy continued to supervise the on-site examination of the macrofloral remains until 2002 and carried out the post-excavation analysis at UC Berkeley as part of her graduate student research. In 2003, the on-site flotation retrieval and on-site examination of BACH macrofloral remains were supervised by Meltem Ağcabay. From 2002, Christine Hastorf no longer took part in the field seasons at Çatalhöyük but continued to supervise Katy Killackey's post-excavation analysis.

[19] Although it is the subject of current doctoral dissertation research by Dragana Milosević at the University of Oxford.

[20] Assisted by undergraduate students from UC Berkeley: Tonya Van Leuvan-Smith (2000), Erica Tyler (2001), and Libby Cowgill (2001–02).

without the benefit of human remains specialists, although many members of the team had prior experience in excavating human remains. They provided the only evidence of post-Neolithic activity in the BACH Area.

Lithic Analysis

The analysis of microcrystalline rocks, flaked or "chipped" into usable forms, comprising predominantly obsidian but also cherts and flint, has been used to ascertain chronological and spatial variability in the current Çatalhöyük Research Project (Carter, Conolly, and Spasojević 2005). Obsidian sourcing has been an important focus of the lithic analysis of materials from the East Mound excavations ever since the earlier excavations of James Mellaart, when the settlement's proximity to obsidian sources was cited as a significant motivation for its precocious complexity and urban status (Mellaart 1967). Tristan Carter took the lead in using updated technology to identify East Mound artifacts from a number of obsidian sources in the mountains surrounding Çatalhöyük (see Figure 19.1) (Carter et al. 2008; Carter and Shackley 2007). Carter's contribution to the analysis of the BACH assemblage in 2005 was based "on a very quick survey of a sub-sample of the material."[21] The basic examination and analysis of the BACH lithic assemblage was carried out by Heidi Underbjerg.[22]

Macrocrystalline Rock Analysis

During the field seasons of the BACH project (1997–2003), the analysis of macrocrystalline rocks that had been made into grindstones and edge tools, hammers, and other heavy-duty tools by grinding and polishing was carried out by Adnan Baysal for the Çatalhöyük Research Project team and—by extension—for the BACH project. His analyses included examination for use, reuse, and breakage, leading to interpretations of the use-lives of these artifacts.[23] This is a method we had initiated in our excavations of Neolithic sites in Serbia (Tringham and Krstić 1990) and found useful in understanding intensification of resource use as well as the life histories of artifacts. From 2005, the "ground stone team" was augmented by Katherine (Karen) Wright from University College London who led their publication and also contributed a chapter specifically on stone, bone, and clay beads.

Ceramics and Other Clay Artifacts

Although clay was clearly essential to the material, social, and symbolic life of the inhabitants of Çatalhöyük, and may be counted as the most abundant archaeological remains on the East Mound, there are few Neolithic ceramic finds in the occupational debris on the East Mound of Çatalhöyük, and Building 3 is no exception. The frequency of ceramics is an important chronological indicator when considered in the broader context of the East Mound as a whole (Last 2005). It is clear, for example, that at least until Mellaart's Level VI, ceramics were very rare indeed on the East Mound. Thus, Jonathan Last, who analyzed and published the BACH ceramics, suggests that the infrequency of ceramic sherds in the BACH Area indicates a date similar to Levels VI–VII in Mellaart's scheme (see details in Chapter 4).

There is a rich assemblage of other clay artifacts, including clay balls, which were analyzed by Sonya Atalay as part of her Ph.D. dissertation research (Chapter 18; Atalay 2003). Her analysis of the clay balls from the BACH Area was based on the methodology developed for the same materials from the 1995–99 excavations of the Çatalhöyük Research Project (Atalay 2003). In her study, she examined not only the clay matrix of the balls but also the damage (contact traces and breakage patterns) sustained during their use-lives. In this way, she has incorporated her study into a collaborative study of food preparation at Çatalhöyük.

The clay anthropomorphic and zoomorphic figurines from the Çatalhöyük Research Project are currently being analyzed by Lynn Meskell and Carolyn Nakamura. Their methodology diverged from that of Naomi Hamilton, who wrote about the 1995–1999 excavated materials (Meskell et al. 2008). From 2005, Meskell and Nakamura worked together to examine and analyze the clay figurines from the BACH Area, and Nakamura took the lead in their publication (Chapter 17).[24]

Spatial Analysis into Place Analysis: In Situ Activities

In the publications of the 1995–1999 excavations at Çatalhöyük, it was pointed out by both May and Cessford that, although the specialist analyses of sampled priority sets have contributed to the understanding of tasks, activities, and repetitive practices, the analyses of the built environment and heavy residues—including microfaunal and microartifactual data—from the ubiquitous flotation samples have provided the essential information on spatial differentiation within buildings (Cessford and Mitrovic 2005). Since they are so closely tied to depositional events and specific floor levels, they provide essential information on the significance of changing spatial configuration within a building through time. They also provide information on repeated associations of task-specific debris, from which

[21] Tristan Carter, personal communication, September 2008.

[22] A member of the BACH excavation team in 1999–2002, as part of her M.A. dissertation for the University of Copenhagen.

[23] As part of his Ph.D. dissertation research.

[24] The Stanford Figurine Project may be viewed at *http://figurines. stanford. edu/* (accessed 6 September 2011). In addition, the part of their database that pertains to the BACH Area has been incorporated into the on-line edition of *Last House on the Hill.*

conclusions on rules about specialized areas of buildings may be drawn. The statistical analyses, scatter-plots, and distribution maps from Building 1 demonstrated the value of this information in terms of in situ activities.

Microartifactual Analysis

Similarly, heavy-residue debris from the BACH Area flotation samples provided the most standardized data set from the occupational floors in buildings where few obvious artifacts were deposited (Matthews and Hastorf 2000). Slobodan Mitrovic[25] supervised a team of six to ten local women who sorted the BACH debris meticulously into categories, including plant, insect, bone, mollusk, fish-scale, eggshell, obsidian, flint, stone (macrocrystalline rock), pottery, clay figurine or other clay fragment, bead, dung, metal, mineral, painted plaster, and coprolites (see Figure 2.5). The results of heavy-residue analysis of the roughly 1,200 flotation samples from the BACH Area have not been included in this volume but are published in the on-line edition.

Microstratigraphy, Micromorphology, and the Analysis of Constructional Clays

We have already mentioned above the process of these analyses during and after the excavation in the BACH Area. These observations also made substantial contributions to the micro-scale understanding of the life history of the house and its modification through time (Hodder 2007). Microstratigraphic observations, for example, were of crucial importance in demonstrating that the roof was repeatedly damaged, not only by weather but also by smoke and burning, leading us to view the roof as a locus of domestic activity (Figure 2.19; see also Chapter 7). Likewise, the detailed study of in situ constructional features has led to, among many other inferences, the sequencing of wall building, partitioning, and plastering in different parts of Building 3, all of which contributed to the paths of movement and communication in the building (see Chapter 4).

Microbotanical (Phytolith) Analysis

Although Arlene Rosen suggested that phytolith research is still in its infancy in the Çatalhöyük Research Project, its potential may be seen in her publication of these materials from the 1995–1999 excavations (Rosen 2005), which provides significant information about the spatial organization of the buildings. Rosen was on-site during 1998–2000 to supervise the collection of phytolith remains across the East Mound and to carry out their post-excavation analysis at the University of London.[26] In 1998–1999, for example, she identified the phytoliths of wild grasses at the base of the primary post-occupational midden deposit in the south part of Building 3, beneath the large animal scapulae that were interpreted as possibly a building closure deposit (Chapter 5). Later, Emma Jenkins interpreted these grasses as the material binding or acting as a mat for the bones (Chapter 10). Jenkins extracted and examined 43 exported samples from the BACH priority units, including from a variety of contexts from Building 3, Space 87, and Space 88 (Chapter 10).

Figure 2.19. Michael Ashley and Frank Matero carving up the roof remains for archive blocks and for subsequent microstratigraphic sampling.

Soil Chemistry

As mentioned above, along with phytoliths, every unit was sampled for two soil chemistry samples: for phosphorus, and for ICP (inductively coupled plasma-atomic emission spectroscopy) analysis. The latter enabled multi-element characterization of different activity soil residues which were collected for the first time in 1998 in the BACH Area and other areas on the East Mound by William Middleton.[27] The report on this method in 2005 made some general statements about the BACH Area samples collected in 1998 (Middleton et al. 2005), with a promise of a more detailed report, hopefully in the on-line edition of this volume. Many of the BACH samples taken by Middleton in 1998 were from the collapsed roof remains and should be very enlightening in terms of activities on the roof (Figure 2.20). His argument was that ICP samples would give more precise

[25] Mitrovic, who joined the BACH excavation team in 1999, became the specialist responsible for analyzing the heavy-residue materials for the Çatalhöyük Research Project excavations, including the samples from the BACH Area, and remained in that capacity until 2007.

[26] In 2004, Emma Jenkins, then on a postdoctoral fellowship at University College London under the supervision of Arlene Rosen, took over the analysis of the Çatalhöyük (including BACH Area) phytoliths.

[27] In subsequent years, the samples were collected by excavators and shipped off to Middleton for post-excavation analysis at the University of Wisconsin, Madison.

Figure 2.20. Collecting in situ samples for soil chemistry (Bill Middleton), macrofloral (Christine Hastorf), and phytolith (Arlene Rosen) remains in and around the collapsed roof in 1998.

information about the residues on a surface, such as a floor, whereas heavy-residue sampling was more likely to contain "noise" from below the floor plaster surface itself (Middleton et al. 2005). The analysis of the floor surfaces of Building 5 (NORTH Area) demonstrated the potential contribution of this method to spatial information about the Neolithic buildings.

Conservation and Storage

Conservation in the Field

Conservation measures during the excavation season changed during the history of the BACH project. In 1997, conservation of buildings, wall plaster, and artifacts was carried out as a separately funded project, led by Frank Matero of the University of Pennsylvania. In 1998, Matero, with Lindsay Falck, supervised the sampling and conservation of the roof remains, in which two large blocks and two smaller blocks were created and carried to the on-site Interpretive Center and the palaeobotanical lab, respectively, for later study and micro-excavation (Figure 2.19). In 1999, Kent Severson and Matero took care of conservation of artifacts on-site and in the lab. In 2000–2002, artifact conservation in the BACH Area was carried out by Emin Murat Özdemir, who preserved the basket (F.760) (2000) and mini-clay-ball feature (2001) in Space 158 (Figure 2.21) and the baby burial in a basket (2001) (see Figures 5.52, 5.53). The same basket (F.760) was analyzed by Willeke Wendrich, who contributed a study of basketry at Çatalhöyük in the report on the 1995–1999 excavations (Wendrich 2005).

In 2003, the final year of the BACH project, the CRP conservation team was taken over by the University College London conservation department, led by Elizabeth Pye.

Storage of Physical Data

As mentioned above, according to Turkish law, with which we concur, all the materials excavated in the BACH Area, unless exported under special license as samples or chosen to be placed on display or storage in the Konya Archaeological Museum of Anatolian Civilizations in Ankara, remain in the storage area of the Çatalhöyük Research Project facilities in the compound (Figure 2.16). A heritage center is planned to be constructed in the future at the site of Çatalhöyük or nearby. Storage of the materials will then be moved into this building.

When to Fill It In: The Final Dilemma—To Frame a Jigsaw or Pull It Apart?

The final dilemma for the BACH project was one that has been faced time and again during the Çatalhöyük Research Project. The question was, should this building be (a) preserved in this state for visitors to see; (b) excavated further and, like Building 1, used to explore the underlying deposits; or (c) excavated entirely and then filled in? We were faced with the dilemma in 2002, when we were at the surface of the earliest floor of Building 3, with the walls and their plaster coatings still intact. But for Building 3 there really was no dilemma! Building 5, our neighbor to the west, had been chosen as the "visiting house"; unlike Building 1, there was no building under Building 3, only midden.

The decision to excavate Building 3 in 2003 slightly beyond the perimeter of its walls and into the neighboring Spaces 88 and 89, as well as a few centimeters into the underlying midden, was fortuitous because it enabled us to work out the riddle of the sequence of wall-building. It became clear that Building 3 was built in tandem not only with Spaces 88 and 89 but also with the neighboring build-

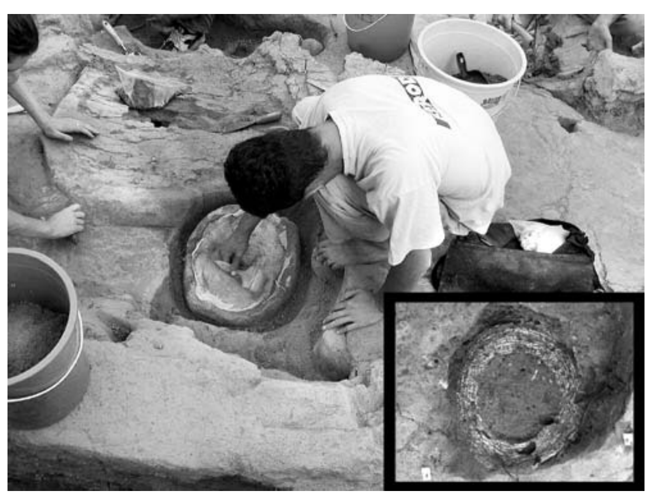

Figure 2.21. Emin Murat Özdemir conserving the basket in Space 158 (unit 6642) in 2000 (insert: view before the basket was conserved).

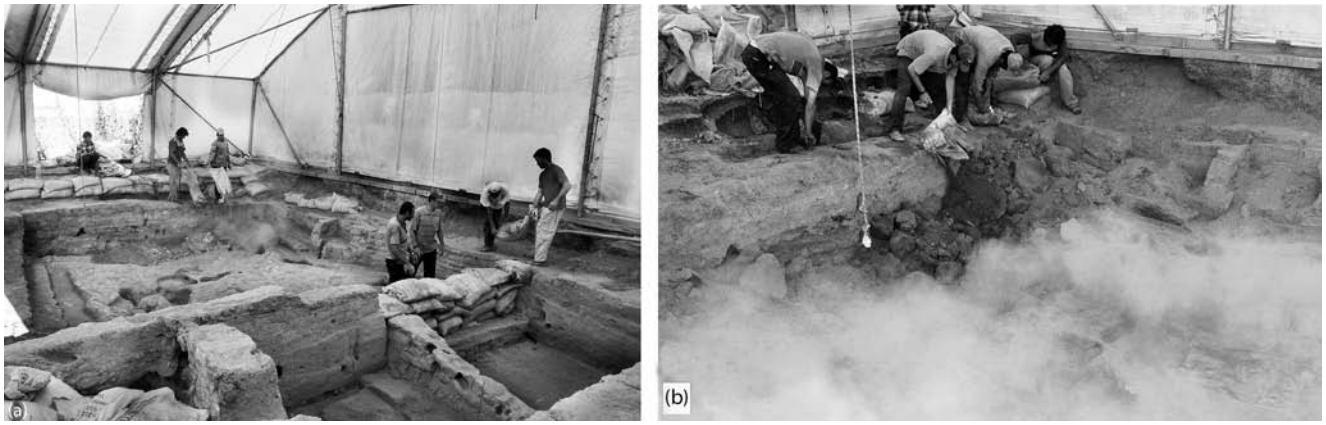

Figure 2.22. Filling in the BACH Area in 2004: (a) preparing the partially excavated Spaces 87, 88, and 89 for further excavation before filling in; (b) emptying sacks of dry "sterile" soil into the vacuum left by Building 3.

ing to the east (Space 41). Even so, on July 19, 2004, it was hard to gaze into the empty hole that had once been filled with the remains of Building 3 and not feel a certain amount of regret as it was filled in with an intensity of dust that could only be equaled in the desert (Figure 2.22)! After the dust settled, the BACH shelter was lifted off the excavation area. For a short while, it was placed in a new location, over the TP (Team Poznan) Area (see Figure 24.22). After it blew off there in a winter storm in 2005, however, its remains lay ignominiously for many years at the foot of the East Mound near the compound.

There is still hope for further excavation in the BACH Area. Space 87, just beyond the southwest corner of Building 3 and just beyond the northeast corner of another building, was carefully conserved before its shallow depth was filled in to be revealed in the future. Now the original BACH Area is entirely invisible (see Figure 1.8) and lies under the northern end of the new NORTH shelter (see Figures 1.9, 25.4). We await further excavation of its neighbors on all sides!

Chapter 3

Creating and Archiving the Media Database and Documentation of the Excavation

Ruth Tringham and Michael Ashley, with Jason Quinlan

Digital Recording by the BACH Team

When we started the BACH project in 1997, there was an established digital recording system for the excavated and analyzed data already in place for the umbrella Çatalhöyük Research Project (CRP), based on the Museum of London single-context protocol. The BACH team adopted the system completely, making all of our data entirely comparable with that of the other areas being excavated. The on-line database (Microsoft Access) and recording protocols have been described in detail in the CRP volumes and elsewhere (Hodder 1999a; Wolle and Tringham 2000).

A variety of media were used to document the excavated and analyzed objects, observations, and interpretations (Hodder et al. 2007:17–18):

- unit and feature sheets, which form the bulk of the excavation database (see Figure 2.7);
- diaries (texts) that are included in the database;
- field drawings, which are digitized and their ID recorded on the unit sheet but are not included in the excavation database (see Figure 2.9);
- electronic distance measurements (EDM) of the excavation and survey record, which are included in the excavation database;
- photographs and videos that are digitized but are not included in the excavation database. The latter are now cataloged using two different cataloging software programs.

Thus, it can be seen that in the CRP documentation, there are a number of different sources of information on the excavation record. Moreover, each laboratory team has tended to create its own database (which is not always interoperable). We discuss below the implications of this fact and some of the attempts that were made by the BACH team to integrate the audiovisual media into the excavation data.

From the start of the BACH project, there were some important differences in the protocols for the audiovisual documentation. Attention has already been drawn (Chapter 2) to organizational differences that distinguished the BACH excavation team's practices from those of the main CRP excavation, including the use of staff specialized in documentation rather than having excavators be responsible for their own documentation (Tringham and Stevanović 2000:116). This may have been due partially to the personal interest in such documentation on the part of many members of the BACH team, including the field directors. On their previous excavations in Southeast Europe, Ruth Tringham and Mirjana Stevanović had not used professional photographers, but rather archaeologists—including themselves—who were skilled and experienced in photography. Michael Ashley was one such archaeologist-photographer, who had acted in this role in the excavations at Podgoritsa, Bulgaria, and joined the BACH team in 1998. He was assisted in the BACH project by UC Berkeley anthropology undergraduates Caitlin Gordon (1999) and Adriana Garza (2000). Jason Quinlan joined the team as photographic and video assistant in 2001 and became the other half of the BACH project's media team until the end of its last field season in 2003. After 2003, Michael Ashley and Jason Quinlan became the media team of the larger Çatalhöyük Research Project. In fact, in 2004 and 2005, they guided UC Berkeley undergraduates in a field school to train future digital documentation specialists (Ashley 2004b; Ashley and Quinlan 2004).

Behind our "early adopter" attitude to digital technology in archaeological documentation lay a history of innovation in digital education as a result of the development of the UC Berkeley Class of 1960 Multimedia Authoring

Center for Teaching in Anthropology, more conveniently known as the MACTiA. This facility was started by Ruth Tringham and Meg Conkey in 1998, with Michael Ashley as its main advisor and manager. Together we developed courses aimed at training undergraduate and graduate students to become skilled in digitally documenting the archaeological process and cultural heritage places and then recontextualizing these media into new content about archaeology. Thanks to the MACTiA, we were able to try out and borrow much of our digital recording equipment and its associated software for use at Çatalhöyük.

THE DIGITAL DATABASE

The Digital Database at Çatalhöyük

The Çatalhöyük Research Project has had a digital database to complement the physical recording system of excavation sheets since the beginning of the project (Wolle and Tringham 2000).

Managing the Digital Assets of the BACH Project

Media recording with the BACH team was always intended to integrate with the larger project aims. We treated photography, video, audio, illustration, and spatial coordinates as additional lines of evidence that must be handled with the same level of rigor as other excavation recording. Throughout the project period, we were able to streamline processes and methods of recording the core data (metadata), especially for images and video, to describe the media so that it would be maximally beneficial to the team and future audiences.

The media recording sheet (Figure 3.1) was a printed document for capturing the essential information about a photographic (or video) "event." If you think about it, many pictures may be taken in a matter of moments in the field: multiple exposures, different angles, a series throughout the day or over a span of days. All of the media that capture a particular event must be tied together and bound to the subject—in most cases, a feature or unit or space or building in the excavation area. Thus, unlike a unit or feature sheet that is highly detailed but focuses on one object of investigation, the photographic recording sheet must be able to record much broader information, and quickly, to accommodate any number of "scene" combinations.

In designing the recording sheet for the BACH project, we elaborated the existing CRP logsheet as we focused in on the needs of the project. Our approach to the data we recorded in 1998 was virtually the same as what followed in 2003, and this is a good thing, a testament to the stability and usefulness of the system. The recording sheet was designed to be a physical database, a portable instance of the larger, digital system. As much as possible, it was intended to rely on the other recording sheets for detailed descriptions of the features, units, spaces, and the like (Figure 3.1).

Some of the fields are derivatives of other fields, and this was intentional. We found that different people and systems required information from the media database for their specific needs. For example, it was convenient to have the year as a separate search field. In some years, we used the logsheet number as part of the file name, and almost always used the date, all of which were useful when searching the drives without the database.

The log/recording sheet reflected a highly relational database schema, tied together through the "observation" field. A good archaeological photograph should capture the scene that the archaeologist is intending to describe—a working shot of a unit in progress, or the relationship of one feature with another. Since we relied on the full descriptions of each feature or find that was in the other recording systems, we needed to capture the key field of these systems on the media recording sheet. For example, Figure 3.2a is a photograph taken by Tringham; she describes the image as being of unit 2259. From the unit database, we see that unit 2259 is "house fill w/ much white gypsum. N-corner Bldg. 3." Her description of the photo places the shot in the north part, west side of the N/S profile. This specific description helps orient us and differentiates her next shot, Figure 3.2b, which documents the east side.

During post-excavation, or on-site during lab hours, the media team took the data from the recording sheets and imported it into the digital media database, as defined by the fields shown in Figure 3.3. Finally, the media items were recorded in the main Çatalhöyük database, associated with the excavation features or units.

PCD Number	Log	Filename	Date	By	Observation	Keywords	Scale	Year	Area	Building	Space	Feature	Unit	xFind	Sample	Technical
PCD0013	CH98002	PCDD0013_068.tif	7/21/98	RET	view from BACH tent to Dig House	Arch-		1998	Dig House		General					
PCD0013	CH98002	PCDD0013_069.tif	7/21/98	RET	N/S profile, North part,West side,platform	Arch-	yes	1998	BACH	3	86					
PCD0013	CH98002	PCDD0013_070.tif	7/21/98	MA	2250/2255 - plan, daily	Arch-		1998	BACH				2250/2255			
PCD0013	CH98002	PCDD0013_071.tif	7/19/98	MA	profile - 45º- daily	Arch-		1998	BACH				2250/2255			
PCD0013	CH98002	PCDD0013_072.tif	7/19/98	MA	plan view - daily	Arch-		1998	BACH				2261			
PCD0013	CH98002	PCDD0013_073.tif	7/19/98	MA	profile - daily	Arch-		1998	BACH				2261			

Figure 3.1. The media recording sheet.

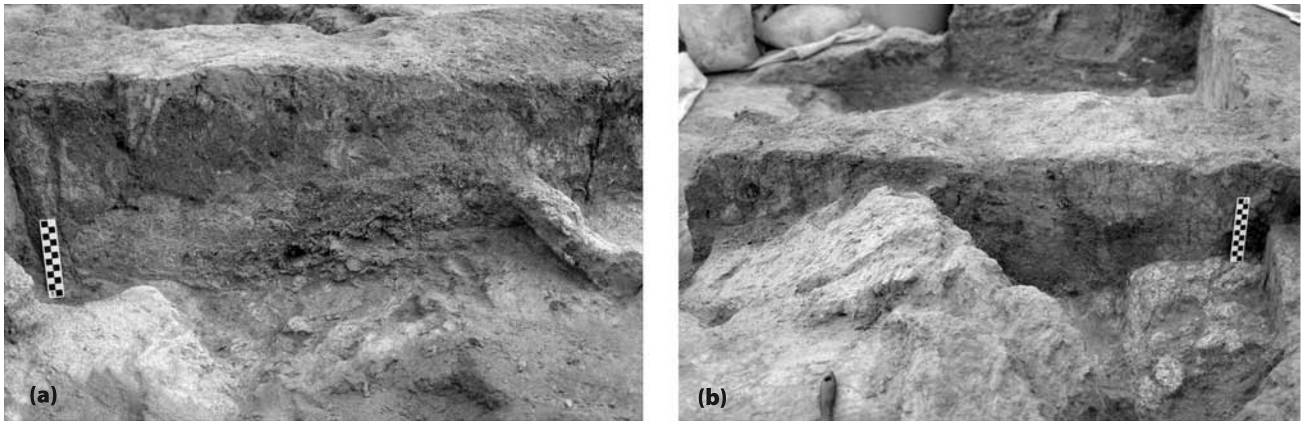

Figure 3.2. Documentation of unit 2259 in 1998 by two sequential photographs. (a) PCD0013_064.tif ; (b) PCD0013_065.tif.

Field	Description
Log	Logsheet number - A unique number assigned on site Helps to guarantee each recording device has its own sheet
Filename	Unique filename for the digital media original or scan
Date	Date of image creation
By	Creator of the media - photographer, illustrator, videogrpaher
Observation	Description of the scene Normally described in dialog with the archaeologist or requester of the media creation
Keywords	Used since 2003, a keyword that best describes the intention of the image
Scale	Yes if a scale is in the shot
Year	Season
Area	Official area on site where scene took place
Building	Building captured in the shot
Space	Space captured in the shot
Feature	Feature(s) captured in the shot
Unit	Excavation unit(s) captured in the shot
xFind	Find number
Sample	Sample number
Technical	Any technical information about the shot. Experimental lighting, flash, panorama, digiplan
Direction	Cardinal direction camera is facing - N,S,E,W
View	Plan, profile, perspective, VR, ortho

Figure 3.3. Fields used for documentation in the digital media database.

Digital Mapping and Drawing

Unlike the main CRP procedure, in which CAD copies of the drawings were at least begun in the field by specialists working in the lab during the day, the BACH field drawings were digitized post-excavation, with the exception of the "digiplanning" experiments (see below).

Electronic Distance Meter (EDM)

Throughout the BACH project (1997–2003), we were very fortunate in being able to have the use of an electronic distance meter (EDM)—a Leica Total Station TC 800—loaned to us by the UC Berkeley Archaeological Research Facility. This had the huge advantage of enabling quick and accurate three-dimensional measurements of details of units, samples, special ("X") finds, and field drawing points at any stage during the excavation (see Figure 2.9). Moreover, the readings were stored in the EDM and downloaded at regular intervals—usually immediately at the end of the working day—as an Excel worksheet. As with any digital data set, it was still necessary to add descriptive metadata to make sense of the readings and to make sure that the readings were accurately mirrored in the unit sheets and field drawings. All of these tasks, however, were completed during the field season. The complete EDM record is included in the on-line edition of this volume.

Digital Planning and "Digiplanning"

Post-excavation digitization of the hand-drawn plans was carried out in three formats. First, the hand-drawn drawings were scanned and converted to .jpeg and .tiff files. Next, Laura Steele created .dxf and .dwg files using AutoCAD. Finally, using both the scanned images and the CAD drawings, Predrag Dakić, John Matsunaga, Lu'Chen Foster, and Laura Steele produced vector files (.ai files using Adobe Illustrator), which could be then converted into raster files (such as .jpg or .tif).[1] The full series of images in these

[1] Predrag Dakić has been responsible for the final standardization of drawings for publication.

different formats are provided with their catalog in the on-line edition of this volume.

Traditional production of field drawings by hand is a time-consuming process. Starting in 2000, and led especially by Laura Steele and Michael Ashley, the BACH team developed protocols for a form of photogrammetry that we referred to as "digiplanning," in which rectilinear, high-resolution digital photography was used in conjunction with hand drawing (Tringham and Ashley Lopez 2001). In this process, we placed planar points around the object or area to be drawn using the EDM and then photographed the scene from as far away as possible in order to use a long lens and reduce distortion. The digital image was scaled in Photoshop to match the EDM points, usually at a scale of either 1:5 or 1:10, depending on the requirements of the drawing. Hard-copy printouts of these images were taken back to the site, where extensive notes and preliminary sketches were made on the photo. The feature was then drawn off-site using a Wacom digitizing tablet (using Adobe Illustrator), with the photograph as a background layer for the vector image. The drawing was finally spot-checked for accuracy against the actual situation in the field. We used this process for complex illustrations, such as burials, walls, and ovens (Figure 3.4a, b). We found that it could save considerable time because we moved directly to a traced, digital, publication-ready illustration, and much of the work was done during non-excavation lab time.

The digiplanning process was revisited in 2005 by Elizabeth Lee, who compared the time and accuracy of hand-drawn versus digiplanned illustrations at Çatalhöyük (Lee 2006).[2] She found a definite resistance on the part of the excavators to trust the digitally planned drawings over the hand-drawn images on paper, even though she was able to show advantages in terms of speed (as long as the planners were familiar with the technology) and accuracy and detail, especially when the photograph backed the drawing. However, digiplans still had the same disadvantage as hand-drawn plans in lacking the metadata to fully describe what was being shown in a two-dimensional image. To get this depth of support data—such as possible points of ambiguity and discussion about what was being represented—she showed (later, in her thesis) that geographic information systems (GIS) would be the best tool. Although we did not use GIS software in the BACH project, it would certainly be possible to incorporate our data into such an analysis post-excavation, as is demonstrated in the on-line edition of this volume.

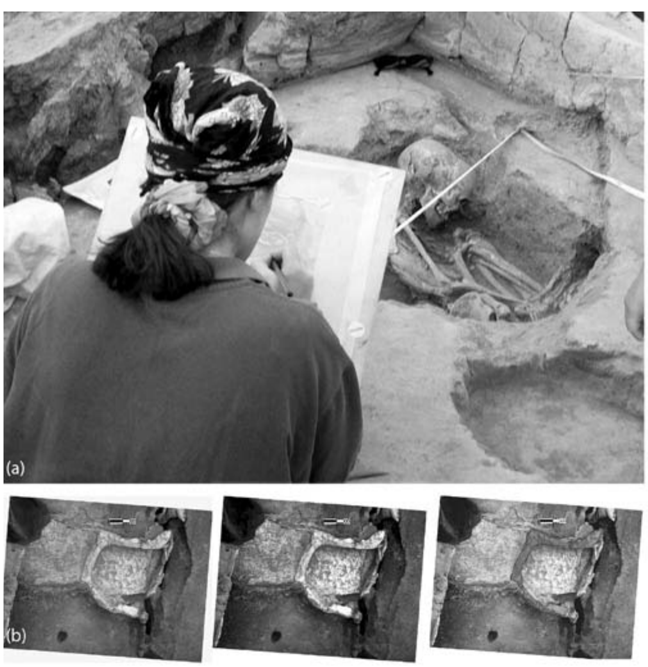

Figure 3.4. "Digiplanning" in the BACH Areas: (a) Başak Boz digiplanning a burial in 2001; (b) collage of the digiplanning process in Space 87 in 2002.

DIGITAL PHOTOGRAPHY

It is remarkable how dramatically documentation shifted technologically after the BACH team joined the Çatalhöyük project in 1997 (Tringham 2010) (Table 3.1). Digital photography has become the de facto standard of practice in excavations over the past several years. It is difficult to imagine a film-only world in our digital age, but that is where this story begins, in the pre-digital era of the mid-1990s. In this section, we outline our experience with photography as we transitioned from film to pixels. We discuss the exceptional benefits as well as the perils of digital documentation, the many techniques we experimented with, and the digital management tools we used to hold it all together.

The Context of Photography at Çatalhöyük

The Çatalhöyük Research Project has employed best practices in excavation photography from the start in 1993. Photography kits were deployed across the site, consisting of a 35-mm camera, recording logsheets, scales of various lengths, and a standard methodology for how recording shots should be taken. Typically, the excavators and specialists took their own pictures and, for the most part, shared the resulting images for reports and publications. Throughout the years and with the introduction of digital technology, the methods for recording have been augmented, but overall, the photographic record of Çatalhöyük is exceptional and robust.

The BACH team followed the photographic protocols of the overall project, with one important exception—a

[2] Elizabeth Lee carried out experiments as part of her UC Berkeley senior thesis. This and the details of the BACH digiplanning process and results are fully documented in the on-line edition of this monograph.

Table 3.1. Media forms used in the Çatalhöyük Research Project and those added by the BACH project

Integrated in CRP Database	Core to CRP, not integrated	Added by BACH
Excavation records		
Diary entries		
	Field drawings	
Spatial data (Electronic Distance Meter)		
	Photos	Photo database in Extensis Portfolio
	Videos	Video database in CatDV

dedicated media specialist was responsible for recording. This was possible due to the relatively small size of the excavation area, but also because this was the preferred method of the field directors. Photography is a specialization unto itself, similar to illustration, geomatics, or remote sensing. The main idea was to have a comprehensive media record of the excavation and a continuity of practice from season to season as the media team members transitioned, as happens on excavations with long histories.

The History of BACH Photography

While affordable digital photography has only been with us since the late 1990s—and to this day, the merits of film over digital are still arguable—the BACH team went digital from the project start. From 1997 to 1999, 35-mm slides and negatives were scanned or professionally digitized and brought into a digital asset management system for organization and annotation. The many advantages of digital documentation—desktop publishing, virtual organization, integration with field records in a coherent database—were tempered by the additional costs—namely, the migration and curatorial requirements of having to manage two distinct sets of media, analog and digital.

There was also the quality question. Depending on film type and lens quality, 35-mm slide film yields a resolution of around 22 megapixels (22 million pixels).[3] Today (2011), the top-of-the-line Canon EOS-1Ds Mark III can shoot 21.1 megapixel (1 million pixels) images, but at $8,000 for the body only, this is nevertheless impractical for most projects. Until only recently, it would have been advantageous to shoot both analog and digital images for excavations, from both quality and archival perspectives.

For the first several seasons, the BACH team did exactly this, converting all slides to professional Kodak PhotoCDs, (Figure 3.5), at the time the gold standard for digital archiving, yielding an 18 megapixel image. Working with a local (Berkeley, California) professional lab, we were able to develop a protocol for matching film emulsion to the scanning process, preserving the specific film attributes. The results were spectacular, with color and resolution closely matching the original slides. The downside was cost. A professional PhotoCD costs more than $1 per image, so over a season where thousands of images were shot, this added a substantial cost to the archival development of the slides.

The Digital Revolution

In 1999, Nikon introduced a "pro-sumer" (consumer/professional) digital camera with a resolution of 2.11 megapixels. While significantly lower in quality than a film camera, the COOLPIX 950 (Figure 3.6) had the advantage of being small (pocket size), instant, and remarkably versatile. Images from the camera were quite usable, despite their inferiority to film, and a myriad of new uses became possible. For the first time, we could immediately see what we shot right in the field and confirm that we had adequately captured the desired image. The exceptional macro lens and small body size meant we could take shots in the excavation trench, something that had never before been possible. And digital photography was simply a lot of fun.

Figure 3.5. Kodak's gold standard, PhotoCD.

[3] *http://www.vrphotography.com/data/pages/askexperts/pano/filmvdigpanos.html* (accessed 2 November 2011).

Figure 3.6. Nikon 995, introduced in 2001, superseded our first digital camera, the Nikon 950, in use in the BACH Area since 1999.

Figure 3.7. Capturing the human experience of the BACH excavation: Mavili Tokyağsun and other Turkish workers, by Caitlin Gordon, 1999, in file 990728_143453.

Thus, in 1999, BACH's deep dive into digital photography began in earnest. While we continued to shoot color slides for all archival recording, the freedom afforded by digital photography was compelling and transformative. Suddenly, we could turn the camera away from the excavation trench and record sweat, emotion, laughter, as well as process, method, and daily production. Media team member Caitlin (Casey) Gordon was especially talented at capturing the human experience of the excavation (Figure 3.7).

The additional benefits of digital photography—at the time revolutionary—revealed themselves as we worked with the images in a digital asset management application (DAM) called Extensis Portfolio. We could extract the embedded EXIF metadata—data about data buried within the images at the time of capture—to help manage our media, but also for documentary purposes. For example, we know

Device make: NIKON
Device model: E950
Color space: RGB
Profile name: sRGB IEC61966-2.1
Focal length: 20.4
Alpha channel: 0
Red eye: 0
FNumber: 4
Exposure time: 1/61
Last opened: Wednesday, June 21, 2000 6:42 AM

Figure 3.8. EXIF metadata embedded in the same digital photograph as Figure 3.7.

that this photo of Mavili Tokyağsun (Figure 3.8)—a regular member of the heavy-residue sorting team—was taken at 2:30 in the afternoon on July 28, about 30 minutes before the end of the day's work. This automatic recording at the micro-scale has proven invaluable as we try to reconstruct the fieldwork events, match them to diaries and the excavation database, as well as tell stories about life as archaeologists at Çatalhöyük.

In 1999, while we shot about as many film pictures as in 1998 (about 1,850 vs. 2,055 in 1998), we shot over double this number digitally—a total of over 6,000 images in three months. If all of these had been shot on film, given costs for producing PhotoCDs, this would have totaled over $6,000. Thus, if we had been restricted to film photography, we would not have recorded nearly as much detail, nor as freely. In hindsight, while the effort to maintain the digital media database is very high, the benefits of this rich record are tremendous for many unforeseen reasons.

Several historic events in our transformation from analog to digital can be highlighted (Figure 3.9).[4]

- 1997–1998: Analog photography only; all film images were transferred to PhotoCD.
- 1998: Dedicated media team was introduced to the BACH excavation.
- 1999: Nikon introduced COOLPIX line of pro-sumer digital cameras. BACH team began shooting digitally, resulting in a 240 percent increase in image production.
- 2001: Team moved to 3.1 megapixel digital cameras for virtually all of its photography; over 6,000 digital images were produced.
- 2003–2004: Media team was merged with overall site team. Totals included photography for entire site.
- Overall: Since 1996, photography production has increased 1,600 percent.

[4] *http://www.catalhoyuk.com/newsletters/02/video.html* (accessed 2 November 2011).

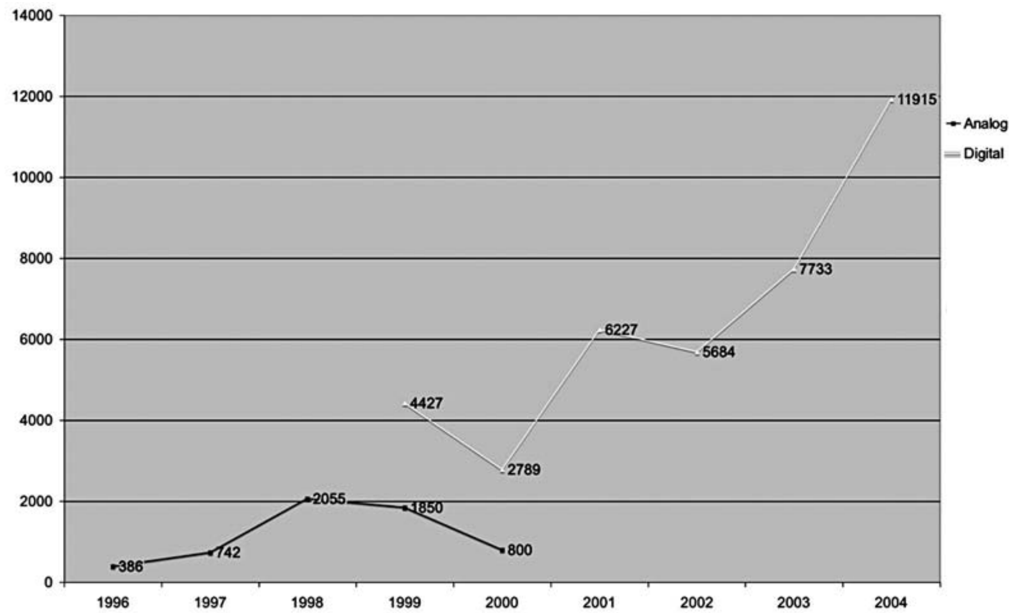

Figure 3.9. Chart showing the evolution of digital and analog photography in the BACH Area.

Summary Implications and Benefits of Going Digital

Cost

Slide film, processing, and digitization remain very expensive relative to digital imaging. Digital photography requires a substantial up-front investment in equipment to do things right—we would not recommend COOLPIX cameras for archival imaging, and redundant backup drives are a must—but the savings over time are tremendous. At the time (late 1990s), the long-term preservation costs associated with maintaining a digital archive were not considered. Today, digital stewardship must be factored into the overall budget. This is a nontrivial problem.

Rapid Access to Media Data

In most cases, especially in overseas projects, the media record is unavailable to researchers until they return home, where film can be developed and videotape viewed. Digital media are immediately available to the field researchers, providing important feedback and confidence that the feature or archaeological situation is properly documented.

Organization

There are many inexpensive and powerful media cataloging (or digital asset management) software applications available that can make the nightmare of managing the mass of digital "artifacts" a reasonable task. Extensis Portfolio, for example, can catalog, manage, and track digital assets. The application works on multiple operating systems and serves as the backend for a web-based, searchable database for all project-associated photographs, video, and illustrations. Using off-the-shelf products, a digital archiving solution can be designed that will provide in-the-field access to annotated images and video, an exceptional resource for field research. Images can be tagged and described on the spot, and additional photos or video footage can be shot if necessary to assure adequate coverage (see "Digital Asset Management Using Portfolio and CatDV" section below).

Environmental Control

Changing weather and lighting conditions from one time of day to the next can challenge anyone who is trying to document an excavation. Some work areas at Çatalhöyük are sheltered and others are not; the color of each shelter is different, and the exposed sun is exceptionally bright. This is a real problem for traditional photography, where the color balance is fixed. Most digital cameras can be "white-balanced" to match the changing lighting conditions. This is very useful, especially when trying methodically to document features such as painted walls or colored objects in the field. As part of his Ph.D. dissertation research, Michael Ashley tested the comparative color quality in different excavation locations of the Çatalhöyük Research Project in order to standardize the recorded color-based observations, such as the color of painted plaster (Chapter 24). The dissertation itself (Ashley 2004a) comprises an exploration of visual stimuli (light, shadow, color) and visualizations of the architecture at Çatalhöyük.

Metadata and Standards

Many digital recording devices, cameras, and video cameras create files that include important metadata that can be automatically retrieved. This includes date and time to the second, shutter speed, color balance information, file type, camera model, and resolution. Tagging and metadata communication protocols, such as EXIF and XMP, are embedded into the actual file data, making the images themselves digital artifacts. Standardized file formats are becoming common on higher-end digital cameras, helping to assure file readability in the future.

Creativity

The freedom of low-cost, easy-to-manage, high-quality, and quickly accessible digital media offers an opportunity for field recorders and archaeologists alike to create richly authored presentations. Some of the most interesting situations in archaeology happen behind the scenes, and inexpensive digital imaging can help these untold stories come to light.

Subjects and Methods of BACH Photography

The BACH media team was interested in capturing as much of the archaeological life at Çatalhöyük as possible. From documentation shots, working shots, dighouse life, tours, off-site holidays, parties, finds, and other events, we wanted to catch it all. As the seasons passed and our desires to improve the visual record increased, we devised or adopted new methods to get the shots we wanted. Some of our methodologies were quite traditional, others not.

Field Recording

On any given day during the field season, the media team would be on call to the BACH excavation team. Typically, one member would be on-site and the others would work on data entry or other photography projects, such as finds recording. Having a dedicated photography team may seem like a luxury for most excavations, but our experience was that with 10 to 18 excavators working on several units at the same time, calls for photos, like calls for EDM points, could happen rapidly and often (Figure 3.9). Since all work had to stop so that a photo could be taken, it was highly advantageous to have a trained photographer get in, take the shots, and get out so that the excavation team could get back to work.

For example, on June 21, 2001, team member Jason Quinlan took his first photo of a mini-ball assemblage (Feature 758) at 8:19 AM (see Chapters 4, 5, and 18; Figures 5.43, 18.5, 18.6). He took 17 working shots before his next call at 9:19 AM: unit 8142—posthole fill. After breakfast, unit 8159—black midden—required a series of final shots before the excavation team could take it out. At 11 AM, Quinlan was off-mound and on assignment to follow the human remains team as they conducted their analysis. At 11:45, it was back to the BACH tent to take more working shots of Feature 758. Sonya Atalay had removed all of the clay balls. After lunch, Michael Ashley covered the BACH Area to give Quinlan a chance to catch up on data entry. The afternoon was quiet for photography as the team worked diligently, but at the end of the day, he shot a 360° panoramic image of a double child burial after its removal. As is often the case with such photography, this series took place during the afternoon break so that the team could rest and the media team could take their time.

Aerial Photography

Obtaining rectilinear, high-resolution images of the full excavation area was very difficult, especially in the sheltered areas where using a crane, "fishing pole," or scaffold was not possible. Beginning in 2001, the BACH media team devised a system of ropes and webbing, traditionally used for "big wall" mountain climbing. Load-bearing on the tent and other safety factors required three months of research and training in the preseason. Ashley and Quinlan typically shot aerial and/or digiplan shots on a daily basis during the regular season, flying on their mountaineering trapeze suspended from the tent rafters (Figure 3.10a, b; see also Figures 1.7, 2.10).

QuickTime Virtual Reality

QuickTime Virtual Reality (QTVR) is an Apple Computer technology where a series of images are stitched together with software to produce a seamless panorama. The BACH team used the technology—and its later evolution CubicVR—to provide an immersive view of the excavation in different seasons, but also to record features, such as small floor cuts, where traditional cameras simply do not fit. The stitched-together files can yield high-resolution images of 50 megabytes or larger. If carefully shot, distortion can be dramatically reduced such that the images can be used for digiplanning (Figure 3.11). A number of QTVR scenes were produced during the project of Building 3, and even within burial pits, and are accessible through the on-line edition of this volume.

Digital Videography

Video-recording of the archaeological process at Çatalhöyük was considered an important aspect of the "reflexive methodology" of archaeology (Hodder 1999a), as a record of the process of discourse that goes into the construction of knowledge at the site.

> The aim is to situate such documentation at the centre of our work at the site. . . . The documentation allows us to get closer to a full "hermeneutic" process in our work. The video records what we decide as we go along. It records our interpretations as they are made, changed and challenged. It also records what the trenches looked like as we dug them. Thus at a

Figure 3.10. Aerial photography from the rafters of the BACH shelter: (a) aerial shot of the BACH Area, a busy day in 2000; (b) the mountaineering trapeze helps Jason Quinlan take the shot.

Figure 3.11. QuickTime Virtual Reality (QTVR) panorama of Building 3 captured in 1999.

> later date it will be possible to return to this audio-visual "diary" and reconsider our decisions. The documentation can be used in later re-interpretation of the site. Over a long project, and long after the project, it will be possible to look back and reconsider, in a continuing circle of interpretation. (Hodder 1996b)

Videography at Çatalhöyük

Video-recording of the archaeological process was started in 1995 by a team from the Stätliche Hochschüle für Gestältung und Medienkunst, Karlsrühe, and the University of Karlsrühe, Germany (Brill 2000; Cee et al. 1996). From 1995 to 1998, they recorded the excavations of the Çatalhöyük Research Project. Their aim was to integrate videos of archaeologists at work in the new excavations with virtual reality visualizations of scenes inside and outside the Neolithic houses, based on the early (1960s) excavations of James Mellaart. The videographers were professional filmmakers who knew little about the process of archaeological investigation; consequently, they were—at least at first—dependent on the archaeologists to call them when there was something "worth recording." However, as professionals, they had a schedule of interviews and scenes to follow to create their product. The final product was a self-standing hypermedia CD-ROM[5] (Brill 2000; Emele 2000) that was obtainable as a demo until 2000, but now sadly is unobtainable and, moreover, will not work on recent operating systems.

A second professional team of videographers from the Science Museum of Minnesota (SMM) recorded the archaeological process of the Çatalhöyük Research Project in 1998–2000 as part of their exhibit and website, "The Mysteries of Çatalhöyük." The videographers in this case were general museum and television professionals—again, not archaeologists. In response to recommendations from teachers in the United States, their focus was to communicate and involve their audience in the process of archaeology as a set of problem-solving activities rather than to provide information (Shane and Küçük 1998a). The edited version of their video-record is available as a DVD and on-line.[6] It is the latter that allows this project to have some long-term sustainability—that, and the fact that the videos

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[5] Catal Höyük—als die Menschen begannen, in Städten zu leben CD-ROM, published 1998. Currently out of print and unavailable.

[6] *http://www.smm.org/catal/activities/video_tours_and_interviews/* and *http://www.smm.org/catal/archive/* (accessed 2 November 2011).

can be downloaded and repurposed without restriction (Wolle and Tringham 2000).

In 1999, Lucy Hawkes, an archaeologist with the project since 1997, took over the video recording of the Çatalhöyük Research Project excavation after the end of the participation of the Karlsrühe team. The digitized footage of both these teams is fortunately available as an archive of the Çatalhöyük Research Project and is made available for reworking.

History of BACH Digital Videography versus Analog Videography

Many of the remarks already made earlier in this chapter in regard to the transformation from analog to digital photography apply equally to the transformation from analog to digital videography. The first video record of the BACH project was a one-hour recording by Sonya Atalay on an analog Video 8 tape. Sonya was a member of the team excavating in the BACH Area in the first season (1997). At that time, she was a graduate student interested in education and archaeology. She later became responsible for the analysis of clay balls and, more recently, community archaeology at Çatalhöyük (Atalay 2005 and Chapter 18). Her video was recorded as much for family and friends and grade-school children as it was as a record of the events under the BACH shelter.

In 1998, three 60-minute Hi-8 tapes were devoted to the BACH Area, focusing on the excavation of the roof remains. The videographer in this case was Michael Ashley, using equipment loaned either by the Karlsruhe or SMM teams. The Karlsruhe equipment recorded in PAL format, which was then dubbed to NTSC. Recordings of the BACH excavation were also made by the Karlsruhe and SMM teams themselves. It is interesting to note differences in the subjects and opportunities for recording that appeared during this season and are manifested in the recordings by these different teams, including the BACH team. In this season, the BACH team also brought its own digital recording equipment in the form of a Ricoh digital camera that could record an audio message in association with a still image.[7]

In 1999, we brought a Canon Hi-8/Digital camcorder (loaned to us by the SMM) and a Sony DCR TRV510 Digital-8 camcorder[8] into the BACH Area and started our own video record. Both of these recorders used 8-mm format tapes that could be recorded as analog or digital, depending on the tape used. We chose to use the higher-quality Hi-8 tapes always in digital mode (the only disadvantage being that the tapes could record for only half the time [60 minutes] of the analog mode [120 minutes]). The advantage of Hi-8/Digital-8 tapes was that they could be digitized (captured) directly to a computer hard drive, complete with time code and other embedded metadata. Michael Ashley and Caitlin Gordon were responsible for recording the 11 hours of video in 1999. In addition, the Science Museum of Minnesota created several hours of BACH excavations in 1999, which they edited into a video entitled "BACH Excavation"[9] for their DVD and for a time-lapse video[10] of the excavation of the latest burial (Feature 617) in the north-central platform (Feature 162) of Building 3.

In 2000, we brought two Sony DCR TRV510 Hi-8/Digital-8[11] camcorders to the site. The limitations on creating the video record included the cost of tapes and our inability to digitize them in the field. Michael Ashley, Ruth Tringham, and Adriana Garza were responsible for the 11 hours of video record of the 2000 season.

In 2001, we brought the BACH project Sony DCR TRV510 Hi-8/Digital-8 camcorder to the site. In addition, Jason Quinlan, who became the Çatalhöyük Research Project videographer after 2003, brought his own Sony DV camcorder that used mini-DV tapes,[12] which could be purchased much more cheaply than the 8-mm tapes and had a higher resolution. Jason Quinlan and Michael Ashley were both responsible for recording the 23 hours of excavation footage.

In 2002 and 2003, we had two such Sony Mini-DV camcorders.[13] Although we brought the Sony Hi-8/Digital-8 with us, we used it only for reading and dubbing 8-mm tapes. In 2001–2003, with the mini-DV format revolution, our use of video doubled (Table 3.2). With parallel advances in digital storage technology, we were able to increase digitization (capture) of the media on-site, taking advantage of storage on DVDs and external hard drives. Michael Ashley and Jason Quinlan were now firmly established as the media team, setting practices and protocols for the whole project. These included practices of capturing and cataloging video. We have kept track of the contents through an indexing system using SquareBox's CatDV, which is linked to the capture software called LiveCapture.

Subjects of Digital Videography

The BACH team filmed the complete archaeological process in our area from 1998 to closure in 2004 (Figure

[7] RDC-2, #123933; value: $600.

[8] Purchased with BACH project National Science Foundation funds.

[9] *http://www.smm.org/catal/activities/video_tours_and_interviews/movie_viewer/qt_viewer.php?movieid=excavation&name=BACH%20House%20Excavation* (accessed 2 November 2011).

[10] *http://www.smm.org/catal/activities/video_tours_and_interviews/movie_viewer/qt_viewer.php?movieid=burial_lapse&name=Burial%20Excavation%20Time%20Lapse* (accessed 2 November 2011).

[11] One of these was the BACH project camcorder; the second was borrowed from the Department of Anthropology, UC Berkeley.

[12] Sony 3CCD TRV 900 Mini-DV.

[13] In addition to that of Jason Quinlan, the BACH project borrowed the second from the UC Berkeley MACTiA.

Table 3.2. The transformation from analog to digital video in the BACH project

Year	Analog 8-mm tapes	Digital 8-mm tapes	Digital MiniDV tapes	Total digital	Total hours
1997	1				1
1998	6				6
1999	2	9		9	11
2000		11		11	11
2001		3	22	22	25
2002			14	14	14
2003			7	7	7

2.22). The videographers in this case were students trained in archaeology (including [then] graduate student Michael Ashley) or, on occasion, the field directors Ruth Tringham and Mirjana Stevanović. As Stevanović states in an article written based on the 1998 season, the BACH team recordings were more informal and more detailed because they were made as a form of archiving of the excavation for the archaeologists by the archaeologists (Stevanović 2000). This article sets out some of the rationale for the subjects that became a characteristic of the BACH videographic project. It was written, however, when our video recording was very much in its infancy, but reflects the planning and design by the media team[14] in 1998, built up from several years of experience working with video on excavations within the limitations and costs of analog technology. The potential and aspirations of video recording in the BACH Area were only realized with the purchase of our own equipment in 1999 and especially with the adoption of the mini-DV format in the 2000 season.

Figure 3.12. Video-recording diaries in the BACH project.

The BACH video record is very detailed and was recorded as a regular part of site documentation. The videos act as an important part of the formal description of the features during their excavation; they include daily diaries, weekly syntheses for the entire team, detailed recording of specific features for later referral by the archaeologists, as well as discussions with specialists (priority tours) (Figure 3.12; see also Figure 2.11) (Ashley-Lopez 2002; Stevanović 2000).[15] Short "digital diaries" were recorded every morning prior to excavating. The timing was deliberate, for it allowed the directors to collect their thoughts overnight, after the previous day's work had been assessed and the current day's work planned. BACH videography also included recording informal gatherings (Thursday night parties), opportunistic events (visits by archaeologists, journalists, and tourists), discussions with excavators and lab specialists, and a variety of casual moments specifically shot to capture the ambience of the excavation at different times of day.

Those of us who have been preparing the BACH project results for publication have found the video record an invaluable trigger to remembered and textually described observations.

[14] The main people involved in the design of BACH videography were Michael Ashley, Mirjana Stevanović, and Ruth Tringham.

[15] Details of the contents of video clips are included in the on-line edition of this volume.

General Observations on Digital Recording

From the Field to the File

To track all the media on-site—slides or black-and-white film, digital images, video, and illustrations—the Çatalhöyük team developed a system of log numbers and paper sheets, one for each device (or person, in the case of illustrations). Logsheets were entered in the field using Filemaker Mobile on Palm PDAs in shorthand, recording the essential information only. The files were downloaded to Apple Macintosh laptops during lab hours. We found that it helped to reduce confusion and chaos by keeping one logsheet per device per day. During lab hours, we used the paper logsheets and the images themselves to complete the entries in a Filemaker Pro database. Images were downloaded from the media cards and automatically renamed and cataloged with Extensis Portfolio. We used a simple export script in Filemaker to export the records and import them into Portfolio. Finally, the complete archive was backed up onto three separate external hard drives and periodically written to CD or DVD-R.

Back in Berkeley, the new season's additions were merged with our master catalog. We provide on-line access to the catalog using Extensis NetPublish, a service that comes with Portfolio. NetPublish uses a macro language that makes it easy to create query templates for searching the catalog dynamically. We can make modifications and additions to the catalog entries, and the changes will appear live in the on-line edition.

Digital Asset Management Using Portfolio and CatDV

Earlier we introduced the challenges of managing digital assets and discussed the advantages of a digital asset management system. Creating digital originals protects the original media from loss and damage from overhandling and exposure. The original media become another archive resource, and the digital originals are what we use for lectures and presentations. High-resolution digital originals, either from slide scans or digital cameras, can be converted into physical slides and prints and are usually acceptable for publication purposes. The original physical media are always available for high-resolution posters and books, but for the most part, the digital originals are adequate.

At the heart of our media recording system is a digital asset management (DAM) program. DAMs come in many varieties, from custom-programmed, high-end solutions to the thumbnail browser built into Windows XP. In essence, any system that manages collections of images is a digital asset manager. We use Extensis Portfolio, a robust and flexible application that is cross-platform compatible and highly customizable. We believe in using off-the-shelf solutions whenever possible, for two reasons. First, custom solutions are usually very expensive and labor-intensive to develop. The benefits of having a "glove-fit" solution have rarely outweighed the situation created when the developer, usually an underpaid graduate student, moves on from the project, leaving those who stay behind with a poorly documented and inflexible disaster (Figure 3.13).

The other reason is just as practical. Companies such as Extensis and Filemaker are in business to make money and continue research and development of their products to stay competitive. Recent versions of both Portfolio and Filemaker Pro are sufficient for our needs and are highly customizable. Off-the-shelf solutions allow us to focus on our specialty, archaeology, and to develop systems and protocols that will work for other projects and in other disciplines in terms of ease of use, availability and expense.

As mentioned above, we use a combination of Live-Capture and CatDV to capture the videos and create low-resolution previews of the tapes. During the creation of the previews, the software breaks the 60-minute tape into clips at each break of scene (Figure 3.14). The preview clips can be played and edited using QuickTime player and broadcast successfully over the web. Using the player built into the cataloging software, it is possible to make notes, create descriptions, fill in field options, and add other metadata to the catalog. These metadata can be exported as a tab-separated file and imported into other cataloging software such as Extensis Portfolio and Filemaker. CatDV also articulates with video editing software, specifically Final Cut Pro, to allow the recontextualizing of clips into new videos. When the editing is complete, the specific parts of the high-resolution video on tape can be uploaded to complete the video capture process.

Incorporation of Digital Recording into Site Database (or Not…)

We are at a unique point in history, where cultural heritage professionals must work to care for the physical past while assuring that there will be a digital record for the future. Peter Brantley, Executive Director of the Digital Library Foundation (personal communication, UC Berkeley, 2008), believes that the "problem of digital preservation is not one for future librarians, but for future archaeologists." If one imagines that the well-intentioned efforts of researchers and scholars in the modern era might be unreadable only 50 years from now, there is tremendous responsibility on individual Çatalhöyük professionals to ensure a future for their digital work.

In the mid-1990s, the International Council of Monuments and Sites (ICOMOS), the Getty Conservation Institute (GCI), and the International Committee for Architectural Photogrammetry (CIPA), who together formed RecorDIM

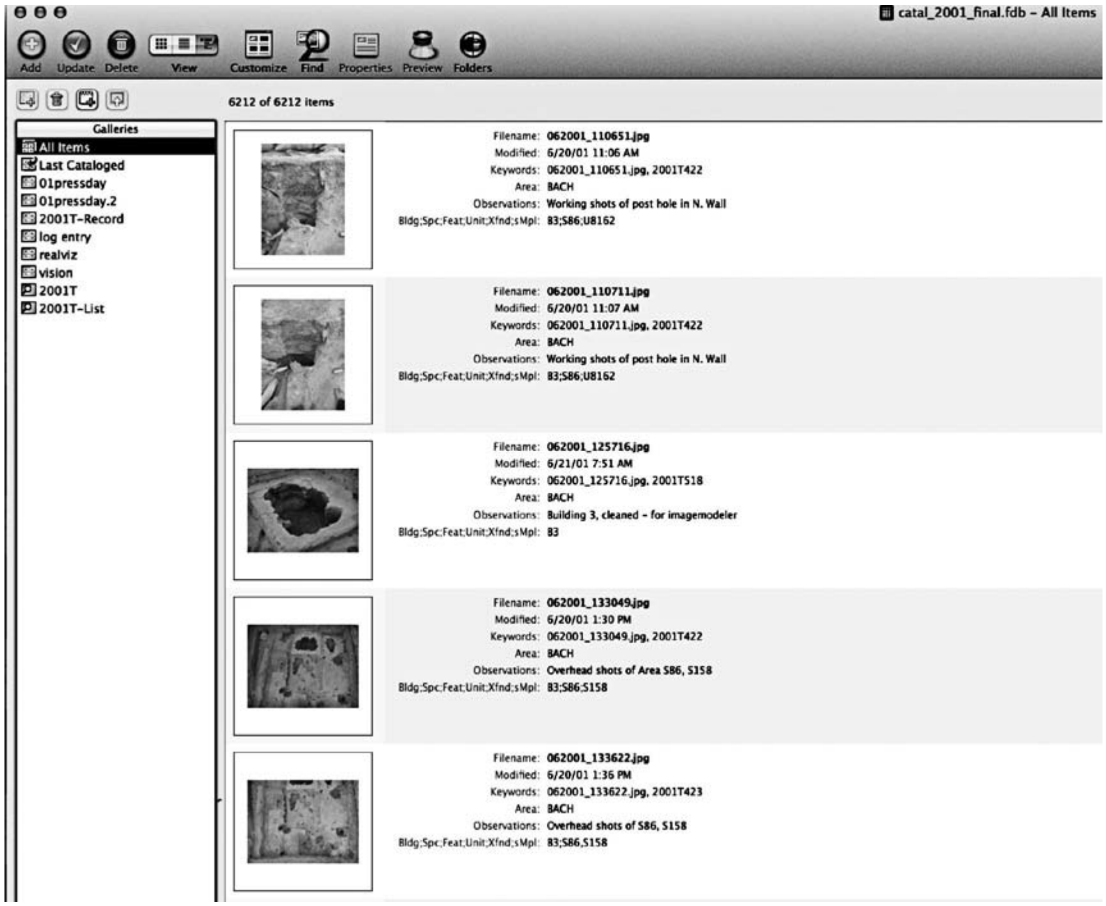


Figure 3.13. Screenshot of the Extensis Portfolio Media Catalog.

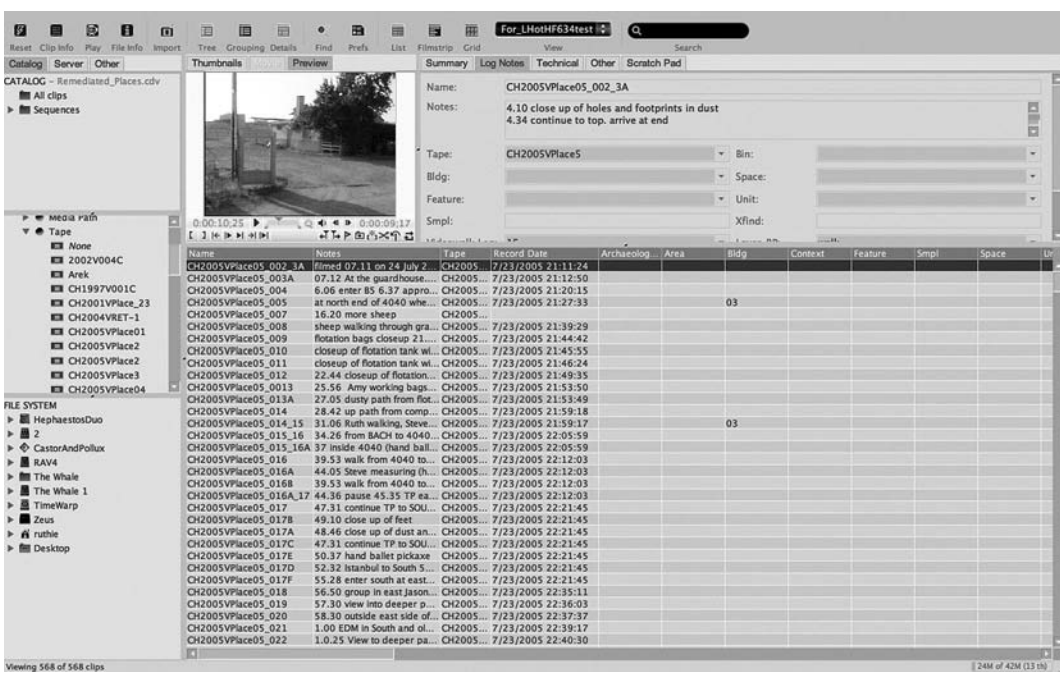


Figure 3.14. Screenshot of CatDV video catalog of a BACH video record.

(for Heritage Recording, Documentation and Information Management) Initiative Partnership (Getty 2006), identified a critical gap between those who provide information for conservation through construction of digital heritage documentation (providers) and those who use it (consumers). A 2006 GCI-led literature review demonstrated that most of the key needs identified in RecorDIM are evidently still with us. After reviewing the last 20 years of cultural heritage documentation, the authors concluded that "only 1/6th of the reviewed literature is strongly relevant to conservation" (Eppich and Chabbi 2007). Their suggested remedy is to correlate the needs of conservation with the potential documentation technologies by involving more diverse audiences and by creating active partnerships between heritage conservationists, heritage users, and documentation specialists.

We are focusing on another gap, between cultural heritage and digital heritage, which has been created as we have shifted away from paper in favor of pixels throughout all of our communication and analytic processes globally (Ashley 2008b). In 2002, the Library of Congress recognized that "never has access to information that is authentic, reliable and complete been more important, and never has the capacity of libraries and other heritage institutions to guarantee that access been in greater jeopardy" (Library of Congress, quoted in Gladney 2007:23).

We see the crisis not between producers and consumers of digital data, but in the capacities of cultural heritage specialists to produce the content for themselves in ways that can adhere to the principles defined by the Library of Congress and other key international standards bodies. There is a desperate need for methodologies for digital heritage conservation that are manageable and reasonable and, most importantly, can be enacted by cultural heritage professionals as essential elements of their daily work. The collaboration between cultural heritage professionals and digital specialists should lead to the democratization of technology through its widespread adoption, not the continued mystification of technology that is still being defined by the persistence of a producer/consumer model (Tringham and Ashley Lopez 2001).

Stewarding the Archive

Digital Artifacts

In any given field season at Çatalhöyük, the media team will generate over 10,000 still images and log over 40 hours of video. The question that looms is, what use is all of this media if no one can find or access it? If all of the media are stored in archive folders in Cambridge or Berkeley, neither researchers nor the public can gain access to them in the off-season or during the field season. In other words, while it is typical to develop an excellent and useful recording system for the artifacts and units we uncover, it is less typical and quite difficult to build a system for the artifacts we create, the media record.

Archive Stewardship

Project analog archives on photographic film (and paper or vellum for field drawings) are usually guarded and conserved with great care, selecting slide film for color photographs (typically Kodachrome for its stability), slow ISO negative film for black-and-white photographs, acid-free paper or vellum and india ink for illustrations. Archiving is carried out in dark, dry, humidity-controlled conditions. Originals are treated with great care, for once the archaeological site is excavated, it is gone and cannot be put back together again. Thus, it is typical to create duplicate slides or to scan them and create digital copies for publication and general use.

Managing an analog media archive is expensive and painstaking. Editorial decisions are made to limit the number of images that are considered the primary, publishable archive. Often this is done before the season begins, by limiting the circumstances under which pictures and drawings are taken or made in the field to begin with. High-resolution scanning of slides and negatives can be outsourced, saving time but at increased expense.

Digital photography has many advantages over traditional film photography in this scenario. We shoot digital images at a ratio of 20:1 to slide film, coming home with a reasonable 500 slides and 10,000 digital images per season. The great fear among all of us is the ephemeral nature of digital images and the relatively short shelf-life of digital media. How does one ensure that the images will be preserved for future generations who may not have the technical means to view them?

Digital Originals

One answer lies in treating the digital images exactly the same as analog slides or prints, as *digital originals*. This concept means that the digital archive gains the same level of respect and care as the physical media archive and requires similar maintenance and upkeep in order to ensure data integrity. We call this D.U.M.P., a Digital Upgrade and Migration Program. Digital sources are stored on high-grade CD-ROMs but also on hard disks and network servers. Digital originals are migrated from one media source to another at the first sign of physical degradation or as part of a regularly maintained backup system that takes technical advances into consideration.

Digital Video Archive

A very important step in archiving the video is to create a duplicate set of the original tape format, without which high-resolution digital capture will be lost. From this point of view, the BACH video record is akin to high-definition transparency film, with similar arguments for and against that we have discussed above. As we write this chapter in 2011, however, the video record in tape format is being challenged by high-definition digital hard drive and secure digital (SD) formats, which are not in the scope of this volume.

Sharing and Reusing the Archive

Where Are the Digital Media

Where are the digital media in the world and how can we (the public) access them? How do we share and communicate a sense of place to another person or a larger audience—academics, professional archaeologists, teachers, life-long learners, or journalists—when this place is physically remote or even inaccessible without a large budget? How do we express the senses of a place that in the past was alive with people, events, and meaning, and now seems dead and empty? Digital sharing sites, such as Flickr and YouTube, empowered through social networking, are transforming the way we can communicate through and with digital media. Projects such as Second Life, and the explosion of Facebook use (over 800 million users in April 2011) can offer boundless ways to reconceptualize and reshare our original archaeological data, keeping it real, keeping it fresh.

Reusing the Digital Media

We have found (and continue to find) limitless opportunities to recontextualize (or remix) the photographic imagery and video footage into new creative products about the archaeological process and the experience of Çatalhöyük. Moreover, we have encouraged our students to do the same, as a way of engaging with the process of interpreting the Çatalhöyük data (see detailed discussion in Chapter 25). At the annual meeting of the American Anthropological Association in November 2000, Ruth Tringham presented a one-minute video of the excavation of the skull of the female skeleton (F.634) under the north-central platform (F.162) of Building 3, in which the original soundtrack was replaced with a recording of "Dido's Lament" from Purcell's opera *Dido and Aeneas*. The following year in September 2001, Michael Ashley, Jason Quinlan, and Ruth Tringham, using video footage and images from the 2001 season, performed a mixed-media presentation of "Real Audiences, Virtual Excavations" at the Virtual Systems and Multimedia (VSMM) conference in Berkeley (Figure 25.16; Chapter 25) (Tringham and Ashley Lopez 2001). This was performed in September 2002 at the annual meeting of the European Association of Archaeologists in Thessaloniki, Greece, and was converted to an on-line version (RAVE).[16]

The Çatalhöyük videos and images, and the protocols that were developed for their data management, became the backbone for the undergraduate and graduate education in multimedia authoring and digital documentation at the MACTiA (see above) at UC Berkeley. Jason Quinlan used them as a basis for teaching video editing to archaeology students at the University of Halle, Germany, in 2002–2003. Long after the end of the final field season of the BACH project, the videos and images have continued to be at the forefront of a number of other projects, including the award-winning Remixing Çatalhöyük project (Figure 25.22)[17] and the mirror site of Çatalhöyük built on Okapi Island in Second Life (Chapter 25; Figure 25.23).[18] The video that introduces the visitors to Çatalhöyük at the Interpretive Center at the site, created in 2004 by UC Berkeley student and MACTiA alumna Ona Johnson and Stanford student Karis Eklund, relied heavily on using the BACH media in their production.[19] The Remediated Places project, led by Ruth Tringham and Michael Ashley, uses "video-walks" in which the BACH media are embedded to keep alive the memory of the BACH project and to prolong the life of the media themselves through daily use (Chapter 25; Figure 25.24) (Tringham et al. 2007).

The video and image record has continued to be created after the end of the BACH project in the new cycle of excavation, with Jason Quinlan as the current CRP media team leader. The asset management system of the media, using Portfolio and CatDV, that was spearheaded by the BACH project continues in the post-BACH CRP project.

Some Poetics of the Visual Record, So that We Remember and No One Forgets

Documenting the Invisible

So far, we have argued some of the reasons for "going digital" in site recording primarily from a data management and cost perspective. There are less practical but exciting reasons for exploring other methods of documenting archaeological sites. Alternative recording techniques, such as QTVR, video diaries, time-lapse photography, microphotography, digital infrared and ultraviolet photography, digital Z-ray, 3-D modeling via uncalibrated digital imaging, and tent-aerial photography, can breathe life and imagination into an otherwise static and stale image record. Most of these

[16] *http://diva.berkeley.edu/projects/bach/rave/default.html* (accessed 2 November 2011).

[17] *http://okapi.dreamhosters.com/remixing/mainpage.html* (accessed 2 November 2011).

[18] *http://okapi.wordpress.com/projects/okapi-island-in-second-life/* (accessed 2 November 2011).

[19] *http://www.archaeologychannel.org/* (accessed 2 November 2011).

techniques are not complicated to learn or employ and are practically "free" of cost once the initial equipment investment is made.

But why do them? Time on an excavation is precious and expensive enough that sometimes getting the minimum amount of documentation is a challenge. There are many ways to minimize the cost in time and energy that alternative documentation can cause, but the key is to think about it creatively. We were fortunate at Çatalhöyük to have had not only individuals whose full-time job was documentation but also a project-wide understanding that alternative media are not, in fact, alternative, but an integral part of the archaeological process. Most members of the teams contribute in one way or another, from simply picking up a digital camera and taking a few snaps to participating in interviews or making suggestions for new ways to tackle some aspect of field recording.

The rewards of the effort are paramount. We use the media record for print and on-line publication, lectures and presentations, museum installations, and on-site seminars. We allow students to have full access to the materials in courses taught at UC Berkeley, where they are encouraged to produce self-authored multimedia projects, many of which are adopted for other undergraduate courses or for our outreach program with the local primary and secondary schools.

From a more methodological perspective, we use alternative media to help archaeologists make decisions in the field or to feel confident that a certain feature or artifact is properly documented so they can move forward with the excavation. We can carefully document ephemeral materials, such as small bits of colored pigment or a friable pot, in situ more thoroughly and with better accuracy than with traditional film. Time-lapse photography allows us to see the subtle play of light across the mound, both under shelter and in the glare of the exposed sun, providing useful information for planning future shelters and insight into what lighting conditions may have been like for the original inhabitants at Çatalhöyük.

On the Cusp of the Digital Revolution in Archaeology

Much of the rationale for the detail with which we have discussed the documentation of the BACH project is to give an account of the transformation to the digital world with which our project coincided. Were we aware that we were in the midst of this digital revolution? Were we aware of the part that we played in it in archaeology? The answer to both these questions is a definite yes. At the 5th World Archaeology Congress held in 2003 in Washington, D.C., we both gave papers on the theme "Archaeology in a Digital Age" (Ashley 2003; Tringham 2010). Our publication record suggests that we were and continue to be aware of the ethical responsibilities in becoming immersed in and enamored of these technologies—for example, the possibility that fewer people in the world have access to our digital world than to the paper world, or the need to make the mass of stored media and other data meaningful to more than a handful of archaeologists, and the danger that these data will be irrecoverably lost if not maintained and sustained (Ashley 2008a; Tringham 2004b).

As archaeologists, when one of us, or any member of our team, took a photograph or a video of a house—for example, Building 3 at Çatalhöyük—we were not just capturing and fixing a trace of the architectural remains, but we were creating a memory of the context—why at that time, why that view, what were we imagining or theorizing? Who was the intended audience of this photo or video? The image or video is not a crutch for the memory as much as a vehicle in which to embed that memory (Tringham 2010). This is very hard and cumbersome to do in a printed publication, but can be done elegantly and accessibly in a digital format that is searchable with metadata (keywords, photographer, date, image context, how the photo has been used by others). As you look at the images in this two-dimensional paper representation in their different formats, and read the text that seems to go along with them, ask yourselves these same questions about the context of the media. In the digital version of this book, you may find some of the answers in the descriptive metadata of the media database.

Acknowledgments

Among our thanks to the members of the BACH team who have participated in the media documentation of the project, we would like to single out Jason Quinlan for his contribution to the media team. Without his efforts and patience, much of the work described in this report would have been very difficult.

Part 2

Retrieving and Understanding the Sequence of Depositional Events of the Buildings

The chapters in this part of *Last House on the Hill* include a summary of the field project and the detailed excavation report, both of which are modeled after those in Volume 3 *(Excavating Çatalhöyük)* of the 1995–1999 Çatalhöyük Research Project excavations. In addition to introducing the buildings of the BACH Area, the summary of the field project in Chapter 4 introduces a number of themes about everyday Neolithic life on the East Mound of Çatalhöyük that are manifested—sometimes uniquely—in the BACH Area, including the life histories of the buildings, food preparation and storage, pyrotechnology, ritualized places, living with neighbors, and the continuity of place. This chapter also includes a section on the chronological issues of the BACH Area in relation to the Çatalhöyük chronology in general, but especially the perennial problem of its links to other areas of the site.

The detailed excavation report is structured around the life histories of Building 3 through its ten phases and three spatially differentiated areas, and the three small spaces 87, 88, and 89. Mirjana Stevanović argues that the latter—at least Spaces 88 and 89—are integrally associated with Building 3, not the isolated cells that were first suggested. The analysis shows also that the history of the buildings in the BACH Area are as interesting for their "slow death" as they are for their long and complicated occupation.

An important aim of the excavation program at Çatalhöyük—and the BACH Area was no exception—was to construct movement through space within and around the houses, delineating the tasks that were carried out in different parts of the house, on its roof, and outside its walls; the social practices of communication with members of the household (dead and alive) and with neighbors; and this in terms of repetitive practices and rules and short- and long-term changes. This part also provides details of the microstratigraphic and architectural remains which comprised an important part of Volume 4 (*Inhabiting Çatalhöyük)* of the 1995–1999 Çatalhöyük Research Project excavations in its discussion of "The Settlement and Its Sediments." In that section, as in this volume, Wendy Matthews wrote a chapter on Micromorphology and Microstratigraphy. In Chapter 7 of *Last House on the Hill*, she develops her micromorphological analysis in the direction of providing information on the life histories of buildings, in line with the research aims of the BACH project.

Mirjana Stevanović provides a detailed analysis of another aspect of settlement that was only partially covered in Volume 4 of the CRP's 1995–1999 excavation reports by Burcu Tung—that is, the construction of bricks, mortar, and plaster used for buildings and the maintenance of buildings during their life histories. We have included it in this part of *Last House on the Hill* rather than within Part 4 on material culture in order to demonstrate its close relevance to the accumulation of deposits and life histories of buildings that are the predominant themes of this section. The information in this chapter articulates closely with the detailed excavation report in this volume (Chapter 5).

Chapter 4

Summary of Results of the Excavation in the BACH Area

Mirjana Stevanović

This chapter summarizes the main characteristics of the buildings in the BACH Area that have been described in greater detail in Chapter 5. The topics under each subheading draw out a number of general themes pertinent to the BACH Area that recur across the site and have been addressed in the previous volumes (Hodder et al. 2000, 2005a, 2005b, 2007).

The renewed research at Çatalhöyük brought about a different methodology of excavation and a more complex and layered interpretation of the houses and their surroundings than was presented by James Mellaart's work in the 1960s. Whereas the description of individual houses uncovered in the early excavation suffered from the absence of time depth, the recently excavated structures in the BACH Area and in other parts of the site have been analyzed as houses that evolved and changed over time as social conditions and circumstances changed. The numerous phases through which Building 3 developed are explained here as ways of materializing similar but changing notions of domestic space.

It is also suggested that all the structures in the BACH Area can be treated as linked and dependent on one another and as part of a neighborhood of related and codependent buildings and communities. The architecture at Çatalhöyük speaks to the existence of homogeneous communities and a strong degree of social integration.

We suggest that the BACH Area structures were used for different activities that were repeated as daily routines associated with domestic life, such as food procurement, storage, preparation and consumption, sleeping, and household activities related to maintaining the living space. Other practices that may have occurred less frequently in these buildings were rituals and ceremonies likely linked to birth and death but which could also have marked other important and unique experiences of the occupants.

Building 3 stands out as the only house excavated so far with preserved (albeit partially) roof remains (see Figure 5.92), whose analyses indicate the possibility of a second-story room. The roof remains contained occupation deposits that indicated it was at least partially covered, even matted, by a protective, probably lightweight structure on the roof (Chapter 7). Such roof shelters are known worldwide where flat-roof entrances were in use.

Some notable characteristics of the interior are also discussed in this chapter, such as the symmetry and hierarchy of space created by the built-in features, and changes in the style of these features. The burials in Building 3 and Space 87 are discussed relative to the possible relationships among the occupants of the two spaces and relative to the potential correlation of the burials with painted walls in both Spaces 87 and 86. This is followed by a description of the ritual closure of the house after its abandonment. Finally, the position of Building 3 within a "neighborhood" in the NORTH and 4040 Areas and its role as housing an independent unit of social reproduction (household) are discussed.

The BACH Area Structures

The excavated structures of the BACH Area comprised the large Building 3, two complete small structures (Spaces 88 and 89) abutting Building 3 on its south side, and a partially excavated structure (Space 87) abutting its southwest corner. Space 87 was part of a larger building that extended farther to the south and west. East of Building 3 was another large but unexcavated building represented by Space 41. North of Building 3 another unexcavated structure was represented by Space 38 (Figure 4.1; see also Figure 1.7).

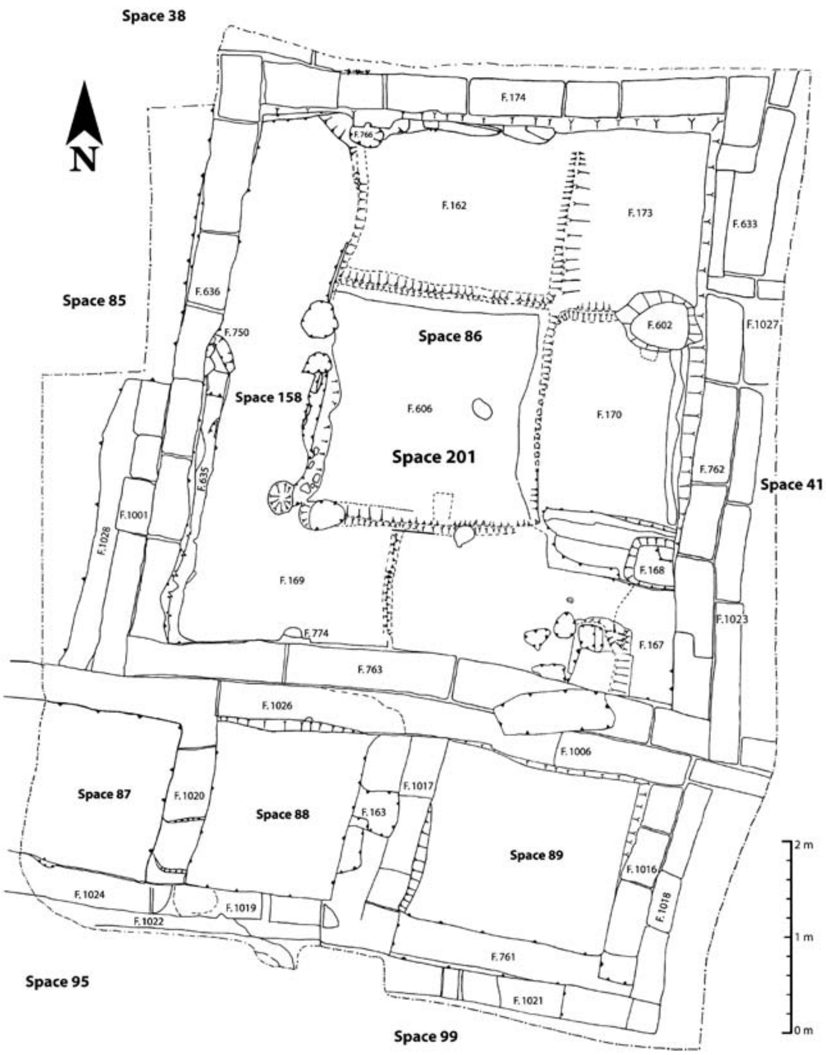


Figure 4.1. General plan of Building 3 and Spaces 87, 88, and 89.

The structures in the BACH Area appeared at first glance to be individual buildings. Building 3, measuring externally 6.36 m north–south × 5.70 m east–west (Figure 5.2) with a total floor size of 31.41 m^2, was separated from the three smaller spaces (Spaces 87, 88, and 89) and from the unexcavated building in Space 41 to its east by double walls that suggested independent construction and isolation from each other. The absence of any access openings between the three rooms (Spaces 87, 88, and 89) and Building 3 further implied that they were isolated. Furthermore, whereas houses with interior rooms on their northern side have frequently occurred at Çatalhöyük, associated rooms on the southern end of houses have been much rarer—although they have occasionally occurred, for example in Mellaart's Level II Shrine 1 (Mellaart 1963), strengthening the idea that the small spaces (Spaces 87, 88, and 89) adjacent to Building 3 were independent constructions.

Despite their autonomous appearance, however, the excavation of the BACH Area established several points of connection between all the buildings in the BACH Area, suggesting that they were at least partially, if not fully, contemporary.

Building 3 was bordered on the west by a large open space (Space 85) that was filled during the lifetime of Building 3 and possibly during and after its abandonment with midden deposits. Artifactual links have demonstrated that garbage from Building 3, Space 88, and Space 87 contributed to this midden, but it is likely that this was the trash disposal area also for Buildings 1 and 5 (that formed the western edge of Space 85), as well as for other buildings surrounding it, such as those represented by Spaces 76, 71, and 38, and possibly Spaces 83, 33, and 95. Such a gradual accumulation of "midden" in these open areas may be interpreted as a "typical" process in the life of the East Mound settlement, in which, during the lifetime of a building, the "unoccupied" space was filled up by the gradual accumulation of midden deposits, reaching a height equal to the top of the surviving parts of the walls. After a building's abandonment, the trash deposition might be extended to its interior (Martin and Russell 2000).

Spatial Divisions of Building 3

The houses of Çatalhöyük demonstrated evidence for a great deal of internal division that was created by partition walls and other physical barriers and more subtle means, such as changing floor height (platforms). Further, spaces have been described as being divided into "clean" and "dirty" zones based on the nature of the plaster floor coats, the location of features, and traces left on the floors by different types of activities (Hodder 2006a). In Building 3, space was similarly divided, except that the role of partition walls was minimal.

At the time of construction, Building 3 was conceptualized as an open and apparently undivided space, but it was nevertheless structured even then as three zones (the L-shaped South-and-West, the L-shaped Northeast, and the Central Floor Zones),which served for different types of activities (Figure 4.2). The South-and-West Zone was predominantly for storage, food preparation, cooking, and house entry. The Northeast Zone was covered by three platforms (F.162, F.170, F.173) distinguished by "clean" white floors created by numerous layers of white silty clay plaster coats that accumulated over time to increase the heights of all the platforms. These showed no traces of domestic activities, but became the prime location for burials. The Central Floor Zone was the lowest part of the house, an area of transition, and the location for the burial of children.

In fact, there was some evidence to suggest that the zoning of the house floor started below the earliest floor itself. For example, a layer of organic material, which might represent the remains of reed matting or loose reeds, was placed under the house between the underlying midden and the earliest floor of Building 3 in the Northeast Zone. It is tempting to suggest that this placement of reeds was linked to the later treatment of this area as the "clean floor" area and as the location for burials. Moreover, the concentration of generally rare red deer bones under the southwest and central part of the floor, but not elsewhere below the house, suggests a deliberate preparation of the interface between the underlying midden and the first house floor (Chapter 8).

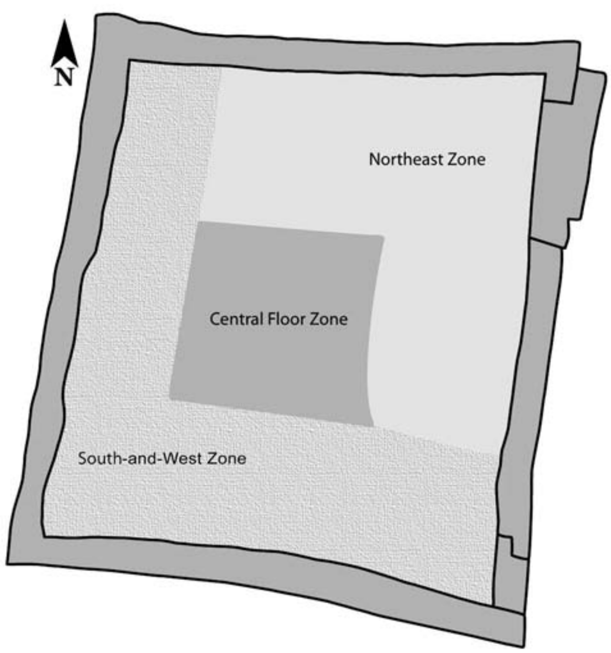


Figure 4.2. The tripartite division of the floor space in Building 3.

The initial floor in Building 3 was laid out over the entire house. The platforms were created by elevating the earliest house floor. The size of platforms at Çatalhöyük ranged from small (1.30 × 1.30 m = total of 1.69 m^2) to large (2.60 × 1.30 m = total of 3.38 m^2) (Düring 2001:5). In Building 3, the largest platform (F.162) was larger (total area = 3.6 m^2) than these "norms," while others—3 m^2 (F.170), 2.85 m^2 (F.173), and 2.8 m^2 (F.169)—all fell within the size range of "large" platforms.

At first, the floor along the western side of the house was level with the platforms from F.169 in the south to F.162 in the north. The difference in elevation between the platforms and the central and southern floors remained constant throughout the use-life of the house, as did the elevation of the western area. Toward the end of the occupation of the house (in Phases B3.4A and B3.4B), the previously open and fluid space of Building 3 became more structured, with partitioning walls dividing the space into two distinct rooms (Spaces 86 and 158).

The Life History of Building 3 and Spaces 87, 88, and 89

In Chapters 2 and 5 of this volume, we have described the criteria by which we have identified changes in the configuration of the buildings and the definition of phases in their life histories. The life history of Building 3 is summarized as a period of prolonged stability and gradual changes that were carried out through four subphases of Phase B3.1, followed by a period of possibly major social disturbance (Phase B3.2), which changed the organization of the house substantially (Figure 4.3; Table 4.1). After these major changes to the house, there was a return to the original organization of the interior space (Phase B3.3) in which the earliest burials (of three children) occurred. Another major change (in Phase B3.4) coincided with structural difficulties of the house caused by deterioration of the west wall and a marked increase in the physical partitioning of the house into two distinct rooms (Spaces 86 and 158) and the interment of all the burials in the northern platforms of the building. This was followed by the household abandonment of this building and—presumably—the occupants' move to a new or different house. As the surviving members of the household established a new

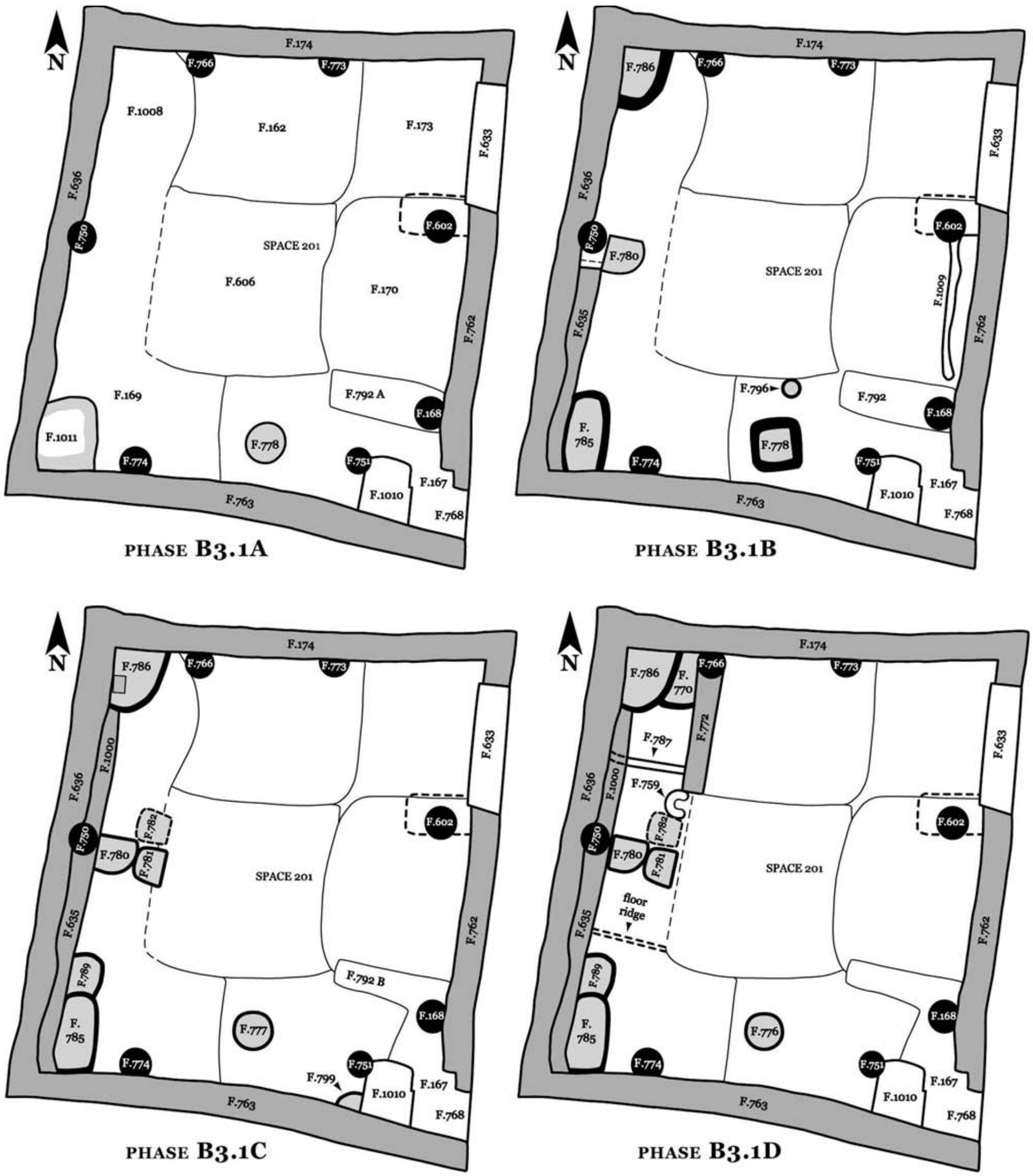


Figure 4.3. The life history of the occupation of Building 3. *Above:* Phase B3.1 (A–D); *facing page:* Phases B3.2–B3.4.

location of residence, the old house was taken through an elaborate and symbolically intense process of closure.

The spatial arrangements and the activities in the house indicate that in the initial stages of its occupation, few domestic features were built; these were gradually acquired through time. Thus, we assume that those activities that were not performed in Building 3 in the early phases took place elsewhere in the settlement. As features were built into Building 3, their associated tasks and activities were brought inside it. For instance, at the end of Phase B3.1, as the accumulation

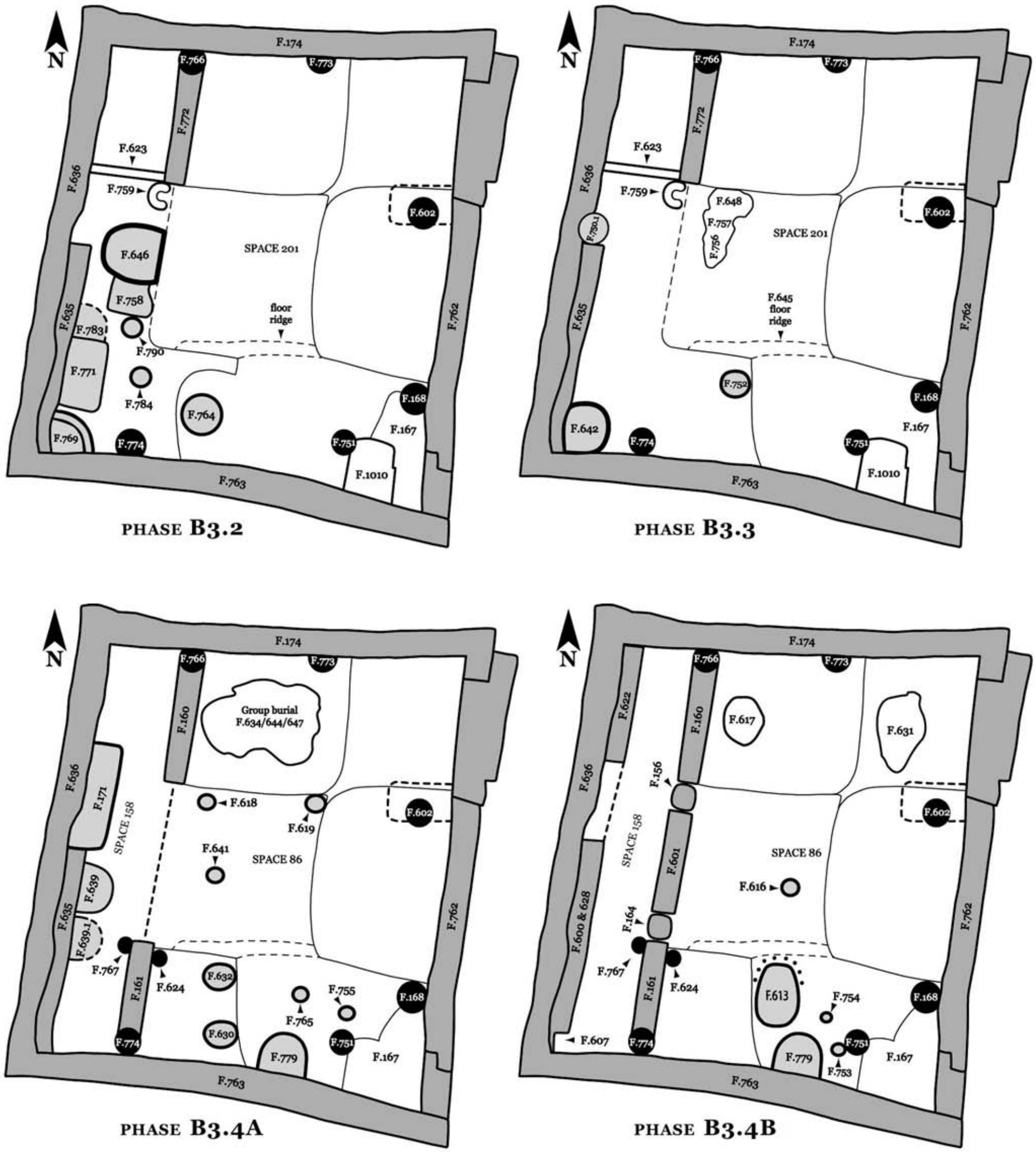


Figure 4.3 (*continued*). The life history of the occupation of Building 3: Phases B3.2–B3.4.

of the necessary interior facilities was completed, the crawl hole between the two houses was closed, perhaps indicating that the occupants of Building 3 could now act more as an independent social and economic entity.

The details of the phases are described in Chapter 5. In this chapter, only a summary is presented.

House Construction (Phase B3.1)

The floor area of Building 3 was 36 m^2 in extent; this is comparable to the average house size in Mellaart's Level VIII but smaller than the average house in Mellaart's Level VII–VIB, which measured 44 m^2 (Düring 2001). The north and south walls of Building 3 were placed partially on the

Table 4.1. Phases in the life history of Building 3

Building 3 Phase	Major Events
Phase B3.1A	House construction: few domestic features; side and roof entrance
Phase B3.1B	House construction: increase in interior domestic features: storage
Phase B3.1C	House construction: increase in interior domestic features; new storage bins
Phase B3.1D	House construction: increase in interior domestic features; more storage
Phase B3.2	First house rebuilding: oven in center of building; side entrance blocked
Phase B3.3	Second house rebuilding: few domestic features; oven to corner; first burials (children; Central Floor area)
Phase B3.4A	Third house rebuilding: increased domestic features; multiple burials in north-central platform (adults); north and south partition walls; oven against south wall
Phase B3.4B	Third house rebuilding: screen wall completes partition of west room (Space 158) from Space 86; burials under both northern platforms; reduced storage facilities
Phase B3.5A	Rituals of closure: deposition of animal scapulae, human skulls; truncation of features; roof collapse in north; post removal; plaster removal; abandonment of building; infilling with upper wall material etc.; reuse for midden deposition
Phase B3.5B	Post-Neolithic (Roman, first–third centuries A.D.) burial, disturbing Neolithic deposits of BACH Area

walls of an earlier building and partially on the midden, while the east and west walls were located completely on the midden below the house.

The preservation of the walls in the BACH Area was good, considering that Building 3 stood at the top of the mound and its remains were exposed to the elements for thousands of years. The higher portions of walls at nearly all Çatalhöyük houses were absent, since they had been truncated in prehistory. From 11 to 12 courses of bricks survived in all four walls of Building 3.

The occurrence and preservation of plaster on walls in the BACH Area was typical for this settlement. The four main walls of Building 3 and the later partition walls were plastered with multiple layers of white clay that amounted to over 100 coats (Chapter 7). Initially the plaster was white, but this changed with time, when particular walls or their sections were painted with red and black pigment.

All four walls of Building 3 had a number of coats that were covered with black soot, starting at the height of 0.60 m from the earliest floor. The greatest concentration of soot occurred in the southwest corner, where multiple ovens had been situated.

The posts of Building 3 were placed in pairs on the north and east walls to support the roof structure; there may also have been a pair on the south wall, where one of the pair would have been the post that held the entry ladder. However, on the west wall, only a single post in the middle of the wall was established, though it did not last throughout all the phases.

In the BACH Area, as in other buildings at Çatalhöyük, no physical evidence of the ladder entryway survived, because the top sections of the houses were deliberately truncated and collapsed. The southeast corner of Building 3, however, had distinct indicators of what was considered a roof entrance—namely, the platform (F.167) and bench (F.1010), ladder emplacement cuts (F.751, F.755) in the floor, as well as the rough-surfaced and frequently patched floors.

The initial spatial arrangements (in Phase B3.1A) and the activities performed in the house indicated few built-in domestic features beyond the five low platforms. With time (in Phase B3.1B–D), the number of incorporated domestic features increased dramatically (Figure 4.3), their placement shifting the locus of domestic activities from the south to the west of the house but still within the South-and-West Zone. This trend toward using the west part of the house for domestic activities continued to the end of Phase B3.1—for example, by the construction of two clay basins (F.780, F.782), two storage bins (F.786, F.770), and the main oven, all in the western part of the building.

Already at this early stage of the house, its entire west wall had to be shored up by two low walls (F.635, F.1000).

In our view, these were established primarily to protect the house from water seeping in from outside (Chapters 5, 6). Their secondary role could have been to provide a shelf or even a bench for sitting.

First House Rebuilding (Phase B3.2)

A major reconstruction of Building 3 started with a marked change made in the floor packing. In the western half of the house, it comprised a massive layer of redeposited building material that was applied in layers of burned oven floor and wall fragments, overlain by organic material, which in its turn was covered by a layer of sticky, beige packing clay. Even the Phase B3.1 wall/bench (F.1000) and the storage bins in the north (F.786, F.770) were permanently buried by this packing. This was the only time that such packing composition occurred.

The South-and-West Zone continued to be the most visibly impacted by built-in features, but these underwent significant changes in form and location (Figure 4.3). A new large horseshoe-shaped freestanding oven (F.646) was prominently set in the west-central house area, in contrast to the previous oval-shaped ovens that had been attached to the walls of Building 3 in its southwest corner. In place of the Phase B3.1 oven in this area, a series of white clay basins were established (F.769, F.771, F.783). Thus, during this phase, activities in the southwest corner of the house required "clean" white floors in contrast to the preceding "dirty floors" associated here with fire installations.

Second House Rebuilding (Phase B3.3)

The second remodeling and relocation of features in Building 3 (Phase B3.3) was probably short-lived, since very few traces of its activities have survived (Figure 4.3). The placement of a new, circular oven (F.642) in the southwest corner of Building 3 represented a return to the location of the Phase B3.1 ovens and to the traditional or original spatial arrangement of the house.

No remains of storage facilities in the form of basins or bins from this phase were found preserved, but a white-clay-lined depression in the northwest floor may represent the base of an almost completely truncated storage facility. Alternatively, storage in Phase B3.3 may have taken place in movable containers such as bags or baskets that have not been preserved; or, more likely, storage was located outside of Building 3. Space 88, which contained storage features—a basin, bin, and wall niche—could have housed the storage for Building 3 at this time.

The interment of three children in the floor of the Central Floor Zone represents the earliest burial events in Building 3 as well as the first modification of this zone.

Third House Rebuilding (Phase B3.4)

The third and final phase of house rebuilding and remodeling in Building 3 (Phase B3.4) has been divided into two subphases (B3.4A and B3.4B). In this phase, the open layout of Building 3 was broken up by the construction in Phase B3.4A of two partition walls (F.160, F.161) placed on a north–south alignment (Figure 4.3), creating two rooms (Space 158 in the west and Space 86 in the east). This process was completed in Phase B3.4B by the construction of a screen wall (F.601/155) between the two internal walls.

The screen wall was constructed of wooden posts, planks, and wattle-and-daub inserted between them. The east face of the screen wall (facing Space 86) was completely plastered over and, judging by the fragmented remains of the collapsed plaster, the wall carried a large relief sculpture (see Figure 5.78).

This division of the house interior may have been warranted by a structural problem that seemed to have occurred either on the higher sections of the west wall or on the roof above this area. This structural problem was solved by the insertion of the shoring west wall (F.622, F.600, F.628), which was successfully masked by the interior walls, pillars, and screen wall that kept the wall and Space 158 from being visible from Space 86. The area between the shoring wall and the screen wall was subsequently filled with mixed, redeposited rubble and made inaccessible and invisible to the occupants of the house.

It is interesting to note that to make the screen wall, a composite construction of interior walls, pillars, and wattle-and-daub framework was chosen over a single mud-brick wall. The latter solution would have been especially favorable if the main function of the interior walls had been to support the roof and bear most or some of the weight of the west wall. Was the choice of a composite construction made for economic reasons, being less costly in terms of building materials and/or labor? The quantity of wood (planks and posts) and plaster clay incorporated into the screen wall construction does not seem to support this proposition. It is possible that Building 3 was at a stage in its use-life—for example, if the need for the screen wall was unexpected and had to be accomplished in a short time—when only this kind of composite construction was considered practical. On the other hand, the screen wall may have been constructed for other purposes, such as providing a framework for symbolic expressions, such as the plaster relief found on it.

In Phase B3.4, the house oven was again relocated, this time to the middle of the south wall. A large, horseshoe-shaped oven (F.779) was tucked in the shallow niche made in the south wall right below the roof opening. A variety of shallow cuts and small pits or depressions occurred in the floors of this same area. Three circular cuts (F.753, F.754, F.765) in the vicinity of the oven may have been for the emplacement of pots or baskets—for example, water containers—that were fixed in the floor.

Other circular cuts (F.784, F.790) in this same area, with smooth, vertical sides and flat bottoms, filled with packing clay, seemed to be linked to remodeling and renovation activities. They could have acted as emplacements for temporary posts that would have been required during the construction of the interior walls and the screen wall or during the resurfacing of the house roof (see Chapter 6). A pair of white clay basins was introduced (F.639, F.626) in their traditional area along the west wall, once again placed on a white clay floor. To their north on an orange-brown clay floor stood a tripartite feature (F.171) comprising basins and bins.

During the final habitation phase (B3.4B) of Building 3, the range of domestic activities markedly diminished. The fire installations continued, but there was no evidence of basins in use in this subphase, and the only storage in the house was a cave-like niche (F.607) in the southwest corner of Building 3, which held large quantities of fruits and nuts.

During Phase B3.4 in the Northeast Zone, multiple intersecting burial pits (F.634, F.644, F.647, F.631, F.617) were made in the north-central platform (F.162). The plaster of the nearby face of the interior wall (F.160) was painted red on multiple occasions, most likely in association with the burials. After the last burial (F.617), the interior wall (F.160) was painted one more time, and subsequently it was covered with a coat of white plaster. A minimum of one more series of white plaster floors on the platform postdated the burial.

This very last stage of occupation in Building 3 (Phase B3.4B) was marked by floors of lesser quality and with a lower level of maintenance. These floors were made of thick gray plaster coats across the entire house, even in the "clean" zones of the house. As the residential phase of Building 3 ended, the upper parts of the house were truncated and collapsed inward (Phase B3.5A). This complex process of house abandonment was accompanied with the ceremonies and rituals that are discussed in the "Ritual House Closure, Abandonment, and Destruction of Building 3" section.

DATING THE STRUCTURES IN THE BACH AREA WITH RUTH TRINGHAM

Chronometric Dating

The length of occupation of the East Mound has been estimated by radiocarbon dating to fall within the range of 900 to 1,150 years (Cessford 2005a). The earliest occupation dates to the period around 7400 to 7100 cal B.C.; the end of the Neolithic occupation probably occurred between 6200 to 5900 cal B.C. (Cessford 2005a). The overall chronometric dating sequence at Çatalhöyük is now relatively well under-

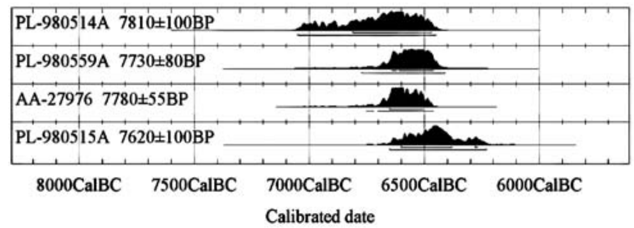


Figure 4.4. Chart showing the calibrated AMS dates for the BACH Area (1997 series).

stood in each excavation area (see Cessford 2001, 2005a), but the lack of direct stratigraphic relationships between different excavation areas has prevented us from making a wider comparison of the structures. Thus, currently the chronometric dating of the BACH Area buildings has been achieved by a few radiocarbon dates for Building 3 itself and by its relationship to its neighboring Buildings 1 and 5. Since 2003 in the NORTH Area, a new, larger excavation location (referred to as the 4040 Area) has been opened, in which numerous houses have been exposed to their latest floors. The dating sequence, which will be established in the future for this particular location, will enable a more refined chronological relationship between Buildings 3 and 1.

Four samples for radiocarbon dating were collected from the BACH Area early on in the project (1997) while we were still excavating the post-occupational fill of Building 3. These were analyzed in the Purdue and Arizona AMS Labs and yielded the results for the BACH Area seen in the upper part of Table 4.2 and in Figure 4.4 to a range of 7020–6230 cal B.C. (Cessford 2001, 2005a:84; Gökturk et al. 2002). Based on these results, Cessford (2005a) suggested that the BACH Area structures were probably earlier than those of Building 1, and that they appear to equate approximately with the dating of Level VIII in Mellaart's original sequence of building horizons.

A second, larger set of samples from the BACH Area was analyzed by AMS procedures in the Poznań Radiocarbon Laboratory by Dr. hab. Tomasz Goslar in January 2004 (Figure 4.5).[1] The 16 analyzed samples were collected from 2001 to 2003 and mostly comprised charred seeds found within the internal features or on the house floors corresponding to different phases in the occupational deposits in all spaces of the BACH Area structures (Figure 4.6).

When using seeds for the AMS analyses, there was the potential for contamination by the presence of residual earlier or intrusive later seeds in the samples, which could

[1] Dr. Goslar has provided intervals of calendar age, where the true ages of the samples encompass probabilities of ca. 68 and ca. 95 percent. The calibration was made with the OxCal software (Stuiver 1998; Bronk Ramsay 2000, 2001).

Table 4.2. Radiocarbon dates from the BACH Area collected in 1997 and analyzed in 1998

Unit	Lab ID	Material	Context	Space	Building Phase	Age (B.P.)	Age (cal B.C.) at 68.2% probability	Age (cal B.C.) at 95.4% probability
2215	PL-980514A	Charred seed	Fill	86	B3.5A	7810	6810–6470	7050–6450
2255	PL-980559A	Charcoal	Post-occupation midden	86	B3.5A	7730	6640–6460	6770–6410
2255	AA-27976	Charcoal	Post-occupation midden	86	B3.5A	7780	6650–6500	6750–6460
2256	PL-980515A	Charred seed	Post-occupation midden	86	B3.5A	7620	6600–6270	6650–6230
2229	PL-98	Charred seed	Post-occupation midden	86	B3.5A	7810		6810–6480
2229	Poz-6566	7 whole cereal grains and 2 cereal fragments	Post-occupation midden	86	B3.5A	7580	6465–6395	6510–6340
8589	Poz-6565	7 whole cereal grains	Pre-occupation midden	Under 86	Pre-B3.1A	7780	6650–6500	6700–6460
8375	Poz-6567	9 whole cereal grains	Debris on the late floor	87	87	7720	6600–6470	6650–6460
8467	Poz-6569	12 whole cereal grains	Late floor	87	87	7750	6610–6500	6650–6460
8463	Poz-6570	4 whole cereal grains and 2 cereal halves	Burnt deposits on floor	88	88.2	7800	6690–6560	6800–6450
8518	Poz-6647	8 whole cereal grains and 5 fragments	Floor packing	88	88.2	7710	6590–6470	6640–6450
8533	Poz-6648	9 cereal fragments	Earliest oven (F.1011)	201	B3.1A	7830	6710–6570	7050–6450
8394	Poz-6653	16 nut shell fragments	Oven (F.785)	201	B3.1A–D	7810	6690–6570	6710–6500
8539	Poz-6654	6 whole cereal grains and 1 half grain	Hearth (F.778)	201	B3.1A–B	7830	6700–6590	6830–6500
8305	Poz-6645	6 whole cereal grains, 2 fragments	Storage bin (F.172)	158	B3.3	7760	6640–6500	6650–6470
8235	Poz-6644	9 whole cereal grains and 1 half grain	Oven (F.646)	86	B3.2	7750	6600–6500	6650–6470
6389	Poz-6650	2 whole grains and 5 half grains	Oven/hearth (F.613)	86	B3.4	7810	6690–6560	6900–6450

Continued on next page

Table 4.2 (*continued*). Radiocarbon dates from the BACH Area collected in 1997 and analyzed in 1998

Unit	Lab ID	Material	Context	Space	Building Phase	Age (B.P.)	Age (cal B.C.) at 68.2% probability	Age (cal B.C.) at 95.4% probability
8253	Poz-6651	8 whole cereal grains and 1 half grain	Midden	85		7780	6650–6500	6700–6460
8388	Poz-6652	Wood	Infill	89	89	7740	6600–6500	6650–6470
8570	Poz-6656	Wood	Earliest house floor at entry platform (F.167)	201	B3.1A	7850	6820–6590	7050–6500
8483	Poz-6646	Wood	Earliest floor of platform (F.162)	201	B3.1A	7940	6840–6740	7050–6680

NOTE: Atmospheric data from Stuiver et al. (1998); OxCal v3.5 Bronk Ramsey (2000); cub r:4 sd:12 prob usp[chron].

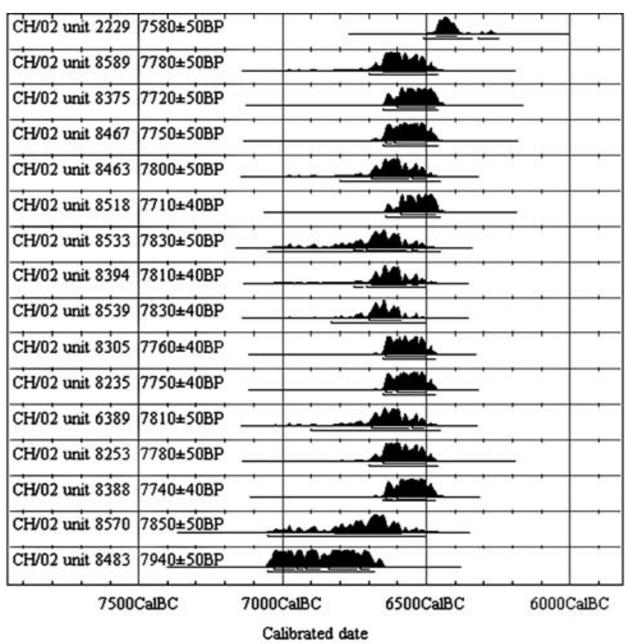


Figure 4.5. Chart showing the calibrated AMS dates for the BACH Area (2004 series).

give a misleading date. However, the large majority of the dated seeds from the BACH Area (Table 4.2) came from features that were found in sealed contexts and very likely not subject to such contamination.

Table 4.2 shows certain features within Building 3 to be from the earliest phase of its history—that is, the earliest house floor in the roof entry area (F.167, Poznan sample 6656, unit 8570), the earliest hearth against the south wall (F.778, Poznan sample 6654, unit 8539), and the earliest house oven (F.1011, Poznan sample 6648, unit 8533) located in the southwest corner of Building 3. Thus, according to the stratigraphy and the AMS dates, these floors and features were constructed synchronously. Moreover, according to both AMS dates and stratigraphy, the Phase B3.1B–D oven (F.785, Poznan sample 6653, unit 8394) is later than the earliest oven (F.1011, Poznan sample 6648, unit 8533). In the same table, we can see that the Phase B3.2 oven (F.646, Poznan sample 6644, unit 8235) and the Phase B3.3 storage bin (F.172, Poznan sample 6645, unit 8305) are contemporary. Considering that these two features belong to these two consecutive phases, it is not surprising that the AMS analyses suggest that they were close in date.

Two samples (Poznan sample 6566, unit 2229; Poznan sample 6646, unit 8483) whose contexts were less closed and more disturbed are precisely those that show some discrepancy of dating in relation to the other samples from the BACH Area. In addition to these two outliers, the sample from the Phase B3.4 oven/hearth (F.613, Poznan sample 6650, unit 6389) has produced a rather early date, making it contemporary with the Phase B3.1 hearth (F.778, Poznan sample 6654, unit 8539). According to the stratigraphy of the excavated deposits, however, this could not be the case.

Relative Dating and the East Mound Phasing Systems

In spite of the mass of radiocarbon dates and recent careful stratigraphic and artifactual observations, a major challenge remains in the Çatalhöyük Research Project as a whole—namely, the linking of the chronological sequences of the two groups of areas of excavation: SOUTH/TP/IST, on the one hand, with NORTH/BACH/4040, some 200 m to its northeast, on the other (see Figure 1.4) (Cessford 2005a). Until very recently, the only chronological sequence that

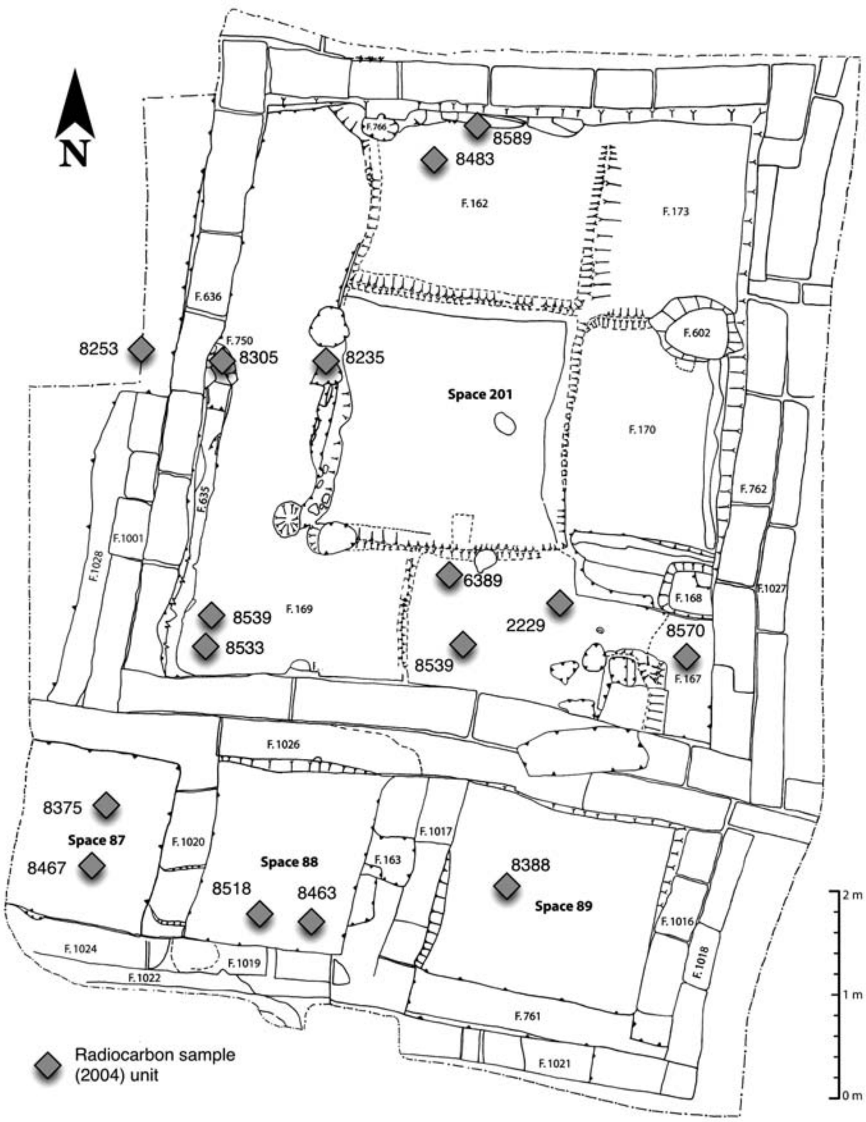


Figure 4.6. Location of radiocarbon AMS (2004) samples in the BACH Area.

linked the building histories of all the East Mound excavation areas was the building horizon scheme devised by Mellaart, based on his excavations in the 1960s in the area now called SOUTH (Mellaart 1964:Figure 3; 1967; Todd 1976). This scheme, however, was not appropriate for defining phases within a building, but for defining where a building—for example, Building 3—lies in the chronological schema of the East Mound as a whole. In the NORTH/BACH/4040 Areas, the assignment of a building to one of the SOUTH Area phases is based not on stratigraphy but on the materials associated with the deposits as a whole, including ceramics, lithics, clay artifacts, and, to a certain extent, architectural materials and styles. Thus, Building 3 has been defined variously as belonging to pre-Level VI (lithics), Levels VI–VII (ceramics), and Levels VII–VIII (Cessford 2001, 2005a). After a reanalysis of the NORTH Area AMS samples, however, Bayliss and Farid (2008) were more inclined to suggest that Buildings 1, 3, and possibly 5 were more likely to be from Levels VI–VII.

Recently, detailed and extensive excavation, along with additional taphonomic and AMS dating analysis in the SOUTH Area, has led to the construction of a new sequence of occupation phases there (Farid 2008). In this sequence, the Mellaart phases later than VIA have been the most subject to revision. The phases that are relevant to the BACH Area—Mellaart's VII, VIB, and VIA—are the equivalent of SOUTH Area M, N, and O, respectively. In addition, the recent expansion of excavation at the northern eminence of the East Mound to embrace the large 4040 Area south of the BACH and NORTH Areas, and the excavation of foundation trenches around the whole northern end of the East Mound for the new North Shelter, have also opened up the possibility of linking the histories of the different buildings stratigraphically. But the essential connection between the sequences of the two area groups is still not supported by any empirical data, beyond some artifactual patterns. Nevertheless a tentative equivalence has been made (Nerissa Russell, personal communication, 2011) in which SOUTH Area N–O = 4040 Area G = Buildings 1 and 3 (NORTH Area) = Mellaart VIB–VIA.

Artifact typologies, particularly ceramics, supported the idea that the BACH Area buildings and Buildings 1 and 5 in the NORTH Area are close in sequence (Chapter 16). According to Last (Chapter 16), the cluster of pottery sherds found in Building 3 that he named Group 1 was most closely comparable, in terms of pottery fabric, to the small group of sherds from Building 5, which he assigned to Mellaart's Level VII. If, however, we excluded these Group 1 sherds, which may have represented a single pot, the statistical significance of his Group 3 sherds increased considerably to make Building 3 more comparable with Building 1, which Last assigned to Level VI. Last concludes that, at the very least, we can say that the BACH assemblage is consistent with that from the NORTH Area, and Building 3 can be broadly dated to Levels VII–VI.

In his detailed analysis of the pottery from Building 3, Last (Chapter 16) has broken down the pottery fabric types in the main spaces of Building 3 (Spaces 86, 158, 201) by phase (see Table 16.2). He notes that a distinction emerged between the occupation phases (B3.1–4), in which about 35 percent comprised Group 1 sherds (those that were common in Building 5), and the closure/post-abandonment phases (B3.5A–B), in which only 5 to 10 percent of sherds belonged to this group. This might suggest that the main occupation of Building 3 was more likely to be contemporary with Building 5 than with Building 1. Moreover, this analysis of the ceramic fabric groups may be confirmed by the typological analysis of ceramic rims, which also indicated that Building 3 was slightly earlier in date than Building 1. However, these typological results may also reflect variations in the functions of vessels in the assemblages of the two buildings.

In summary, we can say that, according to the AMS and conventional ^{14}C dates, pottery typology, and the relative stratigraphy, Building 3 and other BACH Area structures were occupied for perhaps one to two generations in the middle of the occupation of the East Mound at Çatalhöyük (equivalent to Mellaart's Levels VI–VII), ca. 7000–6500 cal B.C. The implications of this challenge are discussed in Chapter 26 of this volume, and form an important aim of the current third cycle and future fourth cycle of CRP excavation on the East Mound.

Daily Life in the BACH Area

The deposits in Building 3 and the three adjacent rooms (Spaces 87, 88, and 89) demonstrated a range of functions and activities performed indoors and on the roof. The frequency and type of those activities varied across the spaces and through time. As already mentioned, the early phase (B3.1) of Building 3 was characterized by a gradual accumulation of household features and a gradual increase in activities occurring in the house. The accumulation of activities accelerated during the subsequent phases of the house.

Activities in Building 3

Building 3 kept the same major spatial organization of activities within zones, which defined some areas as dynamic and constantly modified while other areas were more static, with very little change (Figure 4.2). The South-and-West Zone underwent the highest frequency of feature replacement, and presumably most activities took place in this dynamic part of the house. Storage and food processing were integrated and took place mainly in the north and central parts of the South-and-West Zone, whereas cooking/heating and some food preparation were kept to the southern part of this zone. By contrast, the Northeast and Central Floor Zones were characterized by clean, white clay floors that were kept uncluttered by furniture (although they could have been locations for portable objects) and revealed no traces of either cooking or storage activities.

Some activities certainly took place on the flat house roof (see Cluster 2; Chapter 6). A roof oven (F.159) of substantial size was excavated inside the house, where it had been placed at the time of the house closure (see Figure 5.91). Traces of another roof oven or hearth were recorded in the micromorphological samples. A cattle skull with large horns was mounted on the roof, possibly indicating that activities of a symbolic nature took place on the roof as well. (In West Ethiopia, horns of animals are placed on roofs of Bertha houses for protection against thunderstorms [Gonzalez-Ruibal 2006].) Micromorphological evidence suggested that there was a range of spatial boundaries and activity areas on the roof (Chapter 7). Some daily activities on the roof were of a seasonal nature, such as food sorting, drying, and cooking. A variety of other activities would have been carried out on the roof throughout the year, such as fuel collection and storage, and possibly bone tool production and maintenance (Figure 4.7).

The roofs also provided walking areas connecting buildings, since not many streets existed between the tightly packed houses in this settlement. It is feasible that additional structures, such as a room made of lighter construction materials, existed on some roofs (Cutting 2005), and this was possibly indicated by the micromorphological data from Building 3 (Chapter 7).

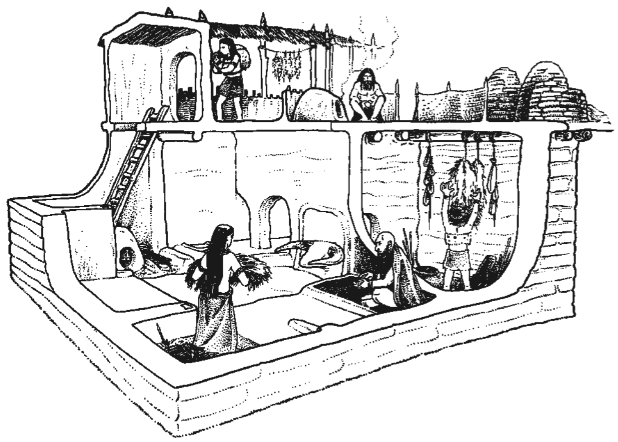


Figure 4.7. Reconstruction of a Neolithic building with living area on the roof, based on the excavations of Building 1 (John Swogger in Hodder 2006a).

Activities in the Northeast Zone of Building 3

Mellaart (1967:60) suggested that platforms in the Çatalhöyük houses were used for sleeping, and that each house could comfortably sleep a maximum of eight people on its platforms. However, the most obvious activity in this zone is the burial of the dead below the platforms. The north-central platform (F.162) rose 25 cm above the level of the central house floor at the time of its construction, and nearly 40 cm by the time of the final residential phase. As in other buildings at Çatalhöyük, this platform was well maintained and, for the most part, its finishing plaster coats showed no traces of dust on their surfaces, indicating that the platform was covered with fine mats, soft furnishings, or animal skins (Chapters 7 and 11). However, the last three floors on it were made of gray clay and did contain dust on their surfaces, suggesting that in the latest phase of Building 3 (Phase B3.4B) the platform was not as well maintained as before and/or it was not protected by matting (Chapters 7 and 11). Four burials were interred in this platform.

The northeast platform (F.173) was at first a transition route for communication through the door (F.633) connecting Building 3 with the adjacent building (Space 41). Long after the door closure, this platform was also the location of the final burial in the house in Phase B3.4B. Nevertheless, the presence of a burial so near the doorway might seem to have been inappropriate for a Çatalhöyük building, where a strict order against such proximity seems to have existed in similar situations in other buildings at the site.

The east-central platform (F.170) did not contain any burials but featured two zones of wear visible on the floor (ca. 0.50 m in diameter), which we interpreted as "sitting spots," where two household members may have sat habitually.

Activities in the Central Floor Zone of Building 3

The Central Floor Zone was also marked by few traces of activity. Three children were interred under its floor, representing the earliest burials in the house. The placement of burials away from platforms has occurred elsewhere in Çatalhöyük houses, so that their presence in the Building 3 Central Floor Zone was not a deviation from the custom. Four small, shallow cuts with sharp, vertical edges (F.616, F.641, F.615, F.620) occurred in the later phase of the house (Phase B3.4) and seem to have been aligned in a curving line across the Central Floor Zone. Because of the sintered stones and rubble contents of Feature 615, we suggested that these features may have served as a "heating device."

Activities in the South-and-West Zone of Building 3

This zone was characterized by many activities associated with domestic life. Two platforms, the step entry platform (F.167) and the large southwest platform (F.169), were elevated above the floor between them that was generally at the level of the Central Floor Zone. The orientation and linear distribution of the occupation deposits, as seen in the micromorphology samples, suggested that, at least periodically, the platforms were covered with mats (Chapter 7). A high level of activity in the zone is demonstrated by the frequent replacement of features and by the "dirty" floors that surrounded them. The ovens and hearths produced large quantities of debris from fuel used in the fire, and in Building 3 they were often set into a sunken floor that was surrounded with raised curbs that helped to contain the debris (see "Oven Appearance" section, below).

The occurrence of pottery inside Building 3 was restricted to the South-and-West Zone. In this area, several emplacement holes were discovered near the oven that conceivably served to hold ceramic pots or baskets. Obsidian and flint caches in Building 3 were also limited to the South-and-West Zone. As was the case elsewhere on the East Mound, these (F.796, F.799, and possibly a deep cut made in the floor of the ash receptacle, F.789) appeared to be associated with ovens in the house (Chapter 19).

No traces of industrial activities, such as those related to the production of tools of obsidian, macrocrystalline stone, or bone, were detected inside the building. This could be partly due to the custom of sweeping the floors, as documented by the micromorphological analysis (Chapter 7), especially before floor renovation.

Activities in Spaces 87, 88, and 89

The activities in the three adjacent rooms (Spaces 87, 88, and 89) were varied and contrasted with the obviously residential character of Building 3 in that they were used as places for specialized activities.

Space 88 contained, almost exclusively, evidence of production activities, especially the grinding of various materials. In fact, Wright (Chapter 21) suggests that, along with the ground stone items (e.g., three complete grinding slabs) and handstones, this collection represents a coherent tool kit for multiple tasks. At least some of the collection was a "closure deposit" resting on the final floor of the building. There was no direct evidence of what substances were processed with these tools; they could have been either food or non-food items. However, unlike in all the other BACH Area structures, no fire installations in either primary or secondary contexts were present in Space 88.

Although Space 87 has been only partially excavated, the exposed part of it strongly demonstrated that the interment of human burials under the large platform was the singular activity in this space. A comparison of the weight percent of phytoliths in Spaces 87 and 88 and Building 3 suggested either that Spaces 87 and 88 were kept cleaner than Building 3, or that these rooms were not used for food processing (Chapter 11).

Space 89 showed only a single in situ activity, one that was symbolic in nature. In contrast to most of the infill of Space 89, its top layer of infill contained elaborate installation materials, including a bucranium, a human jaw, a ceremonial flint dagger with a bone handle, beads, and feasting deposits that were probably deliberately burned. In this sense, the installation of this room resembled a much larger installation in the nearby Building 52 (Doru 2005).

Activities That Surround Ovens and Hearths

In the BACH Area, seven ovens and eight hearths were found in situ, all in the South-and-West Zone of Building 3. In addition, one oven/hearth (F.159) and possibly a second stood on the roof. Ovens and hearths went through multiple renovations, like the sequence seen in F.785A–C, which represented three generations of an oven in the same location (see Figures 4.3, 5.20).

Oven Location

Farid (2007) suggested a transformation in the location of ovens at Çatalhöyük, from earlier ovens located within house walls and abutting the walls to later ovens placed away from the walls. The ovens in Building 3 show that both these oven locations could take place within the span of a single house lifetime, although all but one of the ovens abutted the west or south walls of the building. However, all the hearths in Building 3 were constructed detached from the house walls, albeit close to the south wall. At Çatalhöyük, hearths and ovens might be set in close proximity to each other, or they might be dispersed in two rooms—as, for example, in Building 6. In Building 3, the ovens and hearths remained at some distance from each other until the final phase of the house (B3.4B), when they were brought close together. This move coincided with the partitioning of the single open space of Building 3 into two rooms, at which time both oven and hearth were established in the main room of the house (Space 86) (see Figure 4.3).

The ovens in Building 3 were unusual in that, for most of the building history, they were located in the southwest corner of the house, which was away from the entry ladder and the roof opening in the southeast corner. Only late in the history of Building 3 (Phase B3.4A) was the oven located close to the southeast corner of the house and below the roof opening, which is the most common location in the settlement as a whole. These ovens were all accessible from the north side and would have been built with their mouths on the north side. By contrast, the single freestanding oven (F.646), located exceptionally in the middle of the west side of the building, had its mouth on the east side facing Space 86, so it would have been easily accessible from the Central Floor Zone of Space 86 (see Figure 5.41).

The placement of ovens and hearths was at least partially linked to smoke ventilation, so that their relocation to an untraditional area of the house very likely required additional solutions to let smoke escape. The ovens in Building 3 are especially interesting from this point of view. As mentioned above, most of the ovens were located in the southwest corner; thus, some kind of smoke ventilation, such as a chimney, in addition to the ladder entry, must have existed in the roof above those in the southwest corner, as well as above the freestanding oven (F.646) in the west of the house. Only the late oven that was placed under the roof entry did not require a special roof opening for smoke ventilation. The maintenance of several openings in the west part of the roof may have contributed in the long term to the deterioration of the roof and the west wall below it, structural damage that eventually brought about the partitioning of the house in Phase B3.4.

By contrast with the ovens, the hearths of Building 3 were all located near the south wall and thus somewhat closer to the roof entry. Moreover, the smoke produced inside the hearths was much less regulated and probably remained within the house to a greater extent.

Oven Appearance

The ovens and hearths inside Building 3 varied in their shape, size, color of burning, and location. The oven shapes in plan ranged from round (F.646) and oval (F.785) to horseshoe-shaped (F.646). The smallest oven (F.642) measured 0.73 × 0.42 m, whereas the largest one (F.779) was 1.0 × 0.80 m. We know very little about the superstructure of the ovens, due to their truncation at the time of renovation. Some superstructural traces from the oval-shaped oven

(F.785) were preserved on the south wall of Building 3. They indicated that the oven might have had walls up to 0.50 m high, which were wider at the base and gradually narrowed as they approached the flattened top of the oven. The late oven (F.779) that was set in the south wall and was all but completely destroyed during the abandonment phase resembled the oven (F.242) in Building 5, whose superstructure comprised a high dome with a large oven mouth.

At Çatalhöyük, clay balls were often found in association with ovens, but the mini-clay-ball feature (F.758) in Building 3, which was actually attached to an oven (F.646), is unique so far (see Figure 5.43). There were 785 mini balls, ranging in diameter from 0.9 to 2.8 cm, neatly arranged in a basin-like layer of wet white clay and covered with a layer of the same white clay (Chapter 18) for use as a possible and occasional "hot plate." Stone and clay ball fragments were often built into the base of ovens and hearths at Çatalhöyük, probably to improve their heat conductivity. However, no such features were discovered in the BACH Area.

Micromorphological analysis found that the floors in the southwest part of Building 3 contained more oven/hearth rake-out remains than the other areas in the house. Moreover, these deposits were similar to oven rake-out found in the roof remains, pointing to the use of the same fuel indoors and outdoors, which included various plant remains but not dung (Chapters 7 and 11).

Hearths

Hearths in Building 3 were, with one exception (F.778-B), uniform in shape (round) and size (ca. 0.50 m in diameter). Each hearth was carefully constructed and set in a concave base that was dug to varying depths into the house floor.

The poorly preserved oven/hearth F.613 (Phase B3.4B) was distinguished by unusual elements in its superstructure. A large number of stake holes followed the edge of the oval-shaped floor of F.613 and may have represented the original wooden frame construction of an oven dome (see Figure 5.79). However, in other domed ovens at Çatalhöyük, no evidence of such stake holes was found. Another interpretation suggested that it represented a hearth that was surrounded with a shallow wattle-and-daub wall.

Occasionally in Building 3, several contemporaneous hearths existed (e.g., F.630 and F.752, Phase B3.4A), possibly for cooking several different foods at the same time. This implies that specific hearths or types of fire may have been required for specific tasks (see "Food Preparation" section, below).

Effects of Burning

Variability in the color of clay in the fire installations helped to indicate the level, intensity, and conditions of their burning. In Building 3, all the ovens (F.779, F.785, F.1011, F.646, F.642) and two hearths (F.776 and F.778) had floors that were scorched black, with only a little red scorching, indicating that the clays were enclosed without exposure to oxygen and/or fired at low temperatures, or they were fueled with organic materials that released large quantities of carbon. By contrast, the floors of five hearths (F.777, F764, F.630, F.752, F.613) had been intensely scorched to a reddish color, as a result of higher temperatures and/or open fires with exposure to air and/or the use of fuel that did not produce large quantities of carbon.

The use of fuel other than dung in indoor ovens at Çatalhöyük is considered unusual. However, the fuel that was part of the remains of an oven on the roof, which was detected only by micromorphological analysis, included a mixture of reeds and grasses that probably were used as tinder, as well as charred deciduous woods, including oak (Chapter 7). Matthews (Chapter 7) hypothesizes that the absence of dung as fuel in Building 3, and a reliance on oak wood, reeds, and Gramineae, may indicate that by the time of Building 3, households had become increasingly distant from direct animal management. The selection of fuel, however, has also often been linked to other sociocultural factors (Asouti 2005b). Moreover, macrobotanical samples from the midden excavated within Building 3 indicated the presence of dung as fuel (Chapter 12), although it should be noted that the midden postdates the occupation of the building and does not reflect the food practices within Building 3.

The effects of fire and smoke were found in the thin-sections of wall plaster in the south area of the house as alternating layers of soot and whitewash within each annual sequence (Chapters 7 and 11). However, soot did not occur on all the plaster coats but seems to have been cyclical, possibly indicating seasonal use of indoor ovens and hearths. We assumed that during summer months, ovens and hearths on the roofs would have been used rather than those indoors.

The effects of fire and smoke could also be seen on the bones of the buried occupants. Black lung disease has been known at Çatalhöyük and was also established in the cases of three individuals (F.634 and two juveniles from Space 87) from the BACH Area, probably caused by spending more time than others in the smoke-filled interior through specific domestic tasks (cooking, smoking meat) or because of illness and/or physical incapacitation (Chapter 13).

Food Preparation

The evidence for food preparation in the BACH Area was found in ovens and hearths as well as on the roof, but it was relatively scanty due to the custom at Çatalhöyük of thoroughly cleaning floors, ovens, and hearths after use and especially at the time of their renovation. This practice led to the removal of most traces of food from their original context within the house. The collapsed roof of Building 3 has provided richer evidence due to a lack of such meticulous sweeping.

Of all the fire installations in the BACH Area, the freestanding oven F.646 contained the widest variety of food materials, including a large amount of cereal (Chapter 12). The analysis of phytolith samples showed that the earliest oven of Building 3 (F.1011) contained clear evidence of wheat and barley husks among the various different taxa of grasses (Chapter 11). However, the strongest archaeobotanical evidence for food preparation in the BACH Area came from the roof. It is suggested that although the task of winnowing grain from the chaff may have taken place elsewhere, the final cleaning, drying, grinding, and even cooking occurred on the roof (Chapter 11). In her micromorphological samples, Wendy Matthews found that the oven and hearth rake-out deposits from the Building 3 roof indicated that seasonal cooking was a major activity conducted there (Chapter 7). In addition, she discovered that the roof oven contained burned plant remains in a cluster of articulated awn phytoliths from cereal grain heads, suggesting that intact cereal plants were brought to the site (Chapter 7).

Current research at Çatalhöyük has suggested that in Mellaart's Level VII, there was a shift to the increased use of pottery in cooking and a decline in the use of clay balls in this task (Last 2005). This change could have had multiple implications, in terms of cooking becoming more complex, varied, and controlled (Hodder 2005b). The variety of ovens and hearths in Building 3 and the coexistence of two fire installations might be an indication of such increasing complexity in food production. Cane at al. (Chapter 12) suggest that hearths have higher quantities of wild plants than the ovens, which are richer in domesticated plants; this may indicate that in Building 3, slightly different foods were cooked in these two different burning settings. Such practices have been reported in the ethnographic data. Gonzalez-Ruibal examined the Bertha people in Ethiopia, who considered a "real house" as having two hearths, one for cooking and one for preparing coffee and for warmth (Gonzalez-Ruibal 2006). Alternatively, Kramer (1979) suggested that the number and location of ovens related to the number of semi-independent women in a household.

The faunal data from Building 3 indicated that sheep/goat meat was overwhelmingly present in the diet, suggesting their daily preparation and consumption (Chapter 8). Some of the bones showed traces of fire scorching and burning, even though it was impossible to say whether they were cooked inside the house, on the roof, or elsewhere. The animal bone analysis from Building 3 showed that evidence of butchery and cooking traces also occurred on bird bones. Traces of burning that may have resulted from roasting, and specific body-part distributions occurred on several bird specimens, including grebes, egrets, swans, coots, and, to some extent, geese, dabbling ducks, and crows (Chapter 9), indicating their use as food. Elsewhere on the site—for example, in Buildings 1 and 5 and the SOUTH Area—only bustards and coots were thought to be used as food (Russell and McGowan 2005).

The cattle remains from Building 3 were mainly present in feasting and ceremonial contexts. Russell and Martin (2005) suggested that the BACH Area diet may have been more varied than that of the average Çatalhöyük house, since it included a large intake of deer—meat that does not seem to have been consumed on the East Mound in general after the early levels (Mellaart's Level VIII and earlier) of occupation. They considered the low frequency of equids and bustards in the BACH Area to indicate some kind of taboo and an avoidance in the use of the steppe zone resources; this also represented a significant difference from the other households at Çatalhöyük and led them to suggest that individual households may have specialized in the exploitation of specific landscapes.

In their analysis of the skeletons buried in the BACH Area, Hager and Boz (Chapter 13) found, as in other burials across the site, diseases that could be linked to food consumption (or lack of it), such as anemia and possible infant malnutrition. They also note the frequent instances of dental caries, which they attribute to the high consumption of carbohydrates and starch food from an early age.

Storage and Processing of Goods: Bins and Basins

Food storage and processing features in the BACH Area have been classified as bins and basins. All the bins and basins in the BACH Area had been emptied and scoured prior to their replacement, so there was little evidence of their original content.

Bins were storage features (e.g., F.786, F.770) with tall walls made of moist, greasy, orange-brown or beige clay, oval in plan, and closely resembling the bins from Buildings 5 and 52 (see Figure 5.23). Phytolith remains from the bins suggested that they were probably used to store cereals and may have been lined with reed matting as a form of protection for the seeds (Chapter 11). The floors in the northwest corner of the house, where the main storage area was located, were built of compacted clay that included an abundance of small obsidian chips, possibly to secure the storage of food from rodent intrusion. The clearly minimal presence of animal holes in this area of the house, in comparison with other parts of the building, supported this interpretation.

Baskets and ceramic containers were another means of storage. For example, a later circular storage bin (F.172, Phase B3.3), set in the house floor, contained a basket whose plant remains show that the feature was used for food storage (Chapter 12).

A minimum of two storage bins could be associated with any one phase of Building 3, with the exception of Phases B3.3 and B3.4B (niche F.607). During the short-lived Phase B3.3, storage facilities for Building 3 were possibly outside the premises or plant food was stored in baskets. In Phase B3.4B, a small wall niche (F.607) served for the storage of nuts. Possible bins may also have existed in Space 88, although the niche (F.627) located in the single wall between Spaces 87 and 88 showed no signs of its original contents.

Basins were the most frequent domestic feature category in Building 3; however, no basins were recorded in Phases B3.1A, B3.3, or B3.4B. A minimum of seven basins were found in Building 3 (F.780, F.781, F.782, F.639, F.626, F.771, F.773) (see Figure 5.30). All the basins were attached to the west wall of Building 3 and were constructed of brown-reddish clay that was well packed and covered with a white clay coat of plaster. They were constructed in similar sizes and shapes, in pairs or in groups. In the earlier phases (B3.1, B3.2), the basins and ovens alternated in the same locations of Building 3, but this practice did not continue in later phases (B3.3, B3.4).

In Building 3, it was possible to define several types of basins on the basis of their size, shape, function, and their post-utilitarian treatment. Three early (Phase B3.1B–D) basins (plus a probable fourth) of oval plan (F.780, F.781, F.782) were distinguished by their central location in the west side of Building 3. A pair of later (Phase B3.4A) basins had a semicircular plan (F.639, F.626) similar to such features in Building 5 (F.355, F.356).

In Building 3, several tripartite compartmentalized features, referred to as a "bin/basin," were also found. It was difficult to determine if these functioned as bins or basins or were a combination of the two. For example, Feature 171 (Phase B3.4A) was constructed of the same greasy, orange clay that was used to construct bins, but its central compartment was shaped like a large basin, without the usual coating of white clay, while its two smaller lateral compartments were shaped more like bins than basins. Another tripartite "bin/basin" feature, which was coated with multiple white plaster layers, comprised a large rectangular basin (F.771 in Phase B3.2) abutted by two oval basins (F.783, F.769), one of which had tall sidewalls like a bin.

These tripartite features may be linked to food preparation activities that required three separate receptacles—for example, when different food parts should not be mixed but would have to be processed at the same time or in a close sequence, or when complementary activities in food preparation were performed by two to three individuals simultaneously. The two examples of this type of feature in Building 3 were completely different in the materials from which they were made and in the type of floor with which they were associated. The Phase B3.2 group (F.771, F.769, F.783) was constructed of white clay and was linked with a white, clean floor, whereas the Phase B3.4A group (F.171) was constructed of orange-brown clay.

The botanical data from the basins in Building 3 are inconclusive as to whether they were actually storage or processing features. It has been suggested, on the basis of their higher correlation with cultigens (for example, a solid layer of carbonized cereals was found on the floor of the earliest basin [F.780] sealed by a coat of white clay), that basins may have served a more specific food-related function, such as some kind of food processing, possibly even soaking or fermenting (Chapter 12).

We suggest that basins could have served a variety of functions. It is likely, for example, that the three basins in Phase B3.1, which were constructed tightly together and not equally accessible, had a specialized function around curing or storage, possibly for cereals. The walls of these basins—as with most basins in Building 3—were truncated, but in one case they were preserved and indicated that originally the sides were at least 10 cm high, approaching the height of storage bins. Basins, however, were constructed of white clay instead of the orange clay of the bins. Different seed foods might have been stored and processed in features that were made of different materials. We know from Buildings 1 and 52 that legumes and Cruciferae seeds would have been stored in the bins made of reddish clay like the ones in the northwest corner of Building 3 (Phase B3.1). It is conceivable that cereals or other highly valued (or symbolically significant) plants would have been kept in basins constructed of white clay, as with F.780 (see Figure 5.36), described earlier. Moreover, the Phase B3.1 basins were symbolically marked by the plastered pillar (F.750) that stood in their vicinity, just as in Building 5, where two basins were constructed in association with a pillar (F.354).

It is notable that in Building 3, only one ash collector (F.789) (see Figure 5.31) occurred and only in association with the oval oven sequence (F.785B–C, Phase B3.1C–D) coinciding with the double twin basins (F.780, F.781, F.782). It is conceivable that certain foods that were stored or, as Cane at al. (Chapter 12) suggested, were cured in these basins, had to be prepared initially in the oven, and that this preparation would have benefited from having the ash collected, possibly for use in the process.

Domestic versus Nondomestic Use of Building 3

Activities in Building 3 can be summarized as domestic predominating in the South-and-West Zone and nondomestic activities predominating in the Northeast and the Central Floor Zones. Two benches were placed on the borderline between the domestic and nondomestic zones, as though intended to make crossing the boundary a clearer act of transition.

The different zones are characterized by their floor surface, their features, the activities performed there, and the frequency with which these characteristics changed during the use-life of Building 3. The South-and-West Zone experienced frequent changes of floor type and features. In fact, specific types of floor were consistently associated with particular types of features. White, clean floors were connected with basins and with unusual features, such as the tripartite bin/basin features or the mini-clay-ball feature. Dark (orange-brown or beige), dirty floors were linked with ovens, hearths, bins, obsidian and flint caches, floor emplacements, and the ladder entry into the house. This "domestic" area of the house was also transformed by the partitioning of space, leading ultimately to the entire western part of the South-and-West Zone being eliminated from the active house.

By contrast, the locations of nondomestic activities in Building 3 were remarkably stable. The floors remained white and clean and, apart from the platforms, no features were constructed in the Northeast and Central Floor Zones. The activities were limited to burying the dead, performing rituals, and presumably sleeping and sitting on the platforms.

It is interesting from this point of view to think about the two "entrances" into Building 3, the ladder/roof entry in the southeast corner and the doorway (F.633) (see Figure 5.6) in the northeast corner. Judging by the entry platform (F.167), the entry bench (F.1010), and the ladder emplacement, the roof entrance was used continuously from the earliest phase of the history of the house until its closure. Thus, both entrances were in use throughout Phase B3.1. It is possible that the roof entrance enabled the communication with the outside world, while the doorway (F.633) was the communication portal with another enclosed space (Space 41). It is also possible that F.633 was constructed in the same area as the "clean" platforms precisely because it meant communicating between enclosed structures, while the roof entry was located in—and contributed to—the "dirty" area.

Feature Style and Neolithic Aesthetics

A fondness for molding and for producing a variety of forms in clay was evident in Çatalhöyük's portable objects—its pottery, figurines, and clay balls—but it was also manifest in the construction of built-in features, in moldings on the walls and posts, and in the creation of rippled wall surfaces. Various results of such manipulation of clay could be observed in the changing form and size of the buildings' interiors.

Platforms, benches, ovens, hearths, basins, and bins recurred throughout the life history of Building 3 in slightly modified forms. Some of the changes in the features were probably driven by particular needs and functions. These modifications, however, were applied consistently to all the features in a particular phase of the building's history. Thus, it is suggested here that they reflected differences in styles and the changing aesthetics of the Neolithic occupants. Some, but not all, changes in feature appearance were generated by the buildup of the coats of plaster clay that were periodically applied in the course of house maintenance.

The most vivid example of such stylistic changes could be seen between Phases B3.1 and B3.2 in the shape of the platform edges and the shape and size of ovens, hearths, and basins. The early platforms (Phase B3.1) had sharp, angular edges, contrasting with the rounded edges of the later (Phase B3.2) platforms. The basins transformed from early small horseshoe-shaped forms, through larger, semicircular basins, to the final large, rectangular basins. The ovens changed from early oval forms to later round ones. The case of a single freestanding oven is another departure from the tradition of ovens abutting house walls.

How can these transformations and variations be explained? Some of the changes were probably initiated for functional reasons, such as the availability of building materials or an increase in the size of a household that required larger storage facilities and ovens. Other changes in style, however, such as from sharp to rounded platform edges, or from square to rounded hearths, cannot be explained by the same logic, especially if we take into consideration that traditions at Çatalhöyük were long lasting and that there was a resistance to change. We may interpret them as an outcome of the capabilities and innovative energy of an individual and/or the personal aesthetics of the particular generation of house occupants.

It has been pointed out that constructing a house in small-scale societies provides a unique lifetime opportunity for individuals to create their own living environment and, in the process, to express their identity and personality (Fathy 1973). Fathy reported that in their various small domestic constructions, the villagers of Gourna (Namibia) allowed themselves to shape the most individual and beautiful plastic forms. "Thus the plan of a room or the line of a wall would not be a dull, square, measured space but a sensitively molded shape, like a pot" (Fathy 1973:3). He added that a particular kind of plasticity and informality was conceived as the house was built, like modeling in clay.

The Çatalhöyük houses have many formal commonalities and articulate shared traditions of the community. It is conceivable, however, that "irregularities" in a house, its spatial arrangements, and its positioning of the furniture, could be a reflection—intentional or not—of the occupant's/builder's personality. We should not exclude the possibility that they also reflected demographic diversity within a household—for example, perhaps young individuals joined the work force as they came of age and took their turn in the production activities of the house, or a household was supplemented by the adoption of individuals coming from slightly different traditions who would introduce changes to the features. Novelties introduced in this way might have been applied in a house renovation but not necessarily maintained for a long time, as seems to have been the case in Building 3.

Continuity and Selective Replacement of Features

Strategies to achieve material and social continuity in a specific place are especially visible in the "tell" settlements of Anatolia, such as Nevali Çori (Hauptmann 1999) and Aşikli Hüyük (Esin and Harmankaya 1999), to mention just two. Similarly at Çatalhöyük, including Building 3, manifestations of a continuing tradition can be seen, such as repetitive house construction on the foundations of a previous building, the recurrence of the same internal spatial configuration, and rebuilding features in the same place.

The spatial organization of Building 3 that was initially set in Phase B3.1 was largely maintained by the repetition of features in particular locations, especially in the Northeast and Central Floor Zones. Even within the South-and-West Zone, the location of hearths and ovens was especially consistent, followed by bins, and then basins. These practices may have been primarily or exclusively guided by very practical considerations. For instance, fire installations that were built on the previously fired surfaces of earlier ovens had an advantage in terms of heat conductivity.

In addition to a strong repetitive pattern of domestic features, we could also follow a pattern of selective replacement. Ovens and basins were regularly replaced, sometimes by the same feature (e.g., oven over oven), but often by a different feature (oven over basin [F.646, F.642], basin over oven [F.771, F.780, F.781, F.782], or even oven over basin over oven [F.785]). As with ovens on ovens, superimposing a basin over an earlier oven took advantage of an already prepared floor.

Storage bins were the one feature type that stayed in the same location, never to be overlain by any other type of installation. The reason for this may have been the special preparation of their floors, involving protection of the underlying packing clay by obsidian chips and redeposited burned construction debris (see "Storage and Processing of Goods: Bins and Basin" section, above).

The physical links of the vital features in the house through superimposition and longevity demonstrate not only a desire for continuity of particular practices but also the presence of social order and a control of the interior space. Hodder and Cessford (2004) suggested that the houses at Çatalhöyük provided the basic framework for socialization and that the persistence of the features and their particular spatial configuration must have been a crucial part of this process.

Spatial Patterns within Building 3

Through the organization of the interior features, the occupants of Building 3 seem to have created a spatial pattern that emphasized the importance of centrality, symmetry, pairing, and hierarchy. These patterns were driven not by the structural needs of the house so much as by the need for an ordered and deeply structured house space, which probably reflected the social conditions within the house and the larger community.

The Centrality and Hierarchy of Space

The centrality and hierarchy of space achieved in Building 3 are best illustrated by the role of the Central Floor Zone of the house. Deeply sunken, this area contrasted sharply with the adjacent elevated floors but, at the same time, connected all the other parts of the house and provided access to them. No features were built in this "empty" Central Floor space, with the exception of the burials of three children during the midlife (Phase B3.3) of the building and seven small pits that were cut into the floor in the late phase (B3.4). There is a strong impression that the center of the house was intended to convey to its occupants a sense of openness, accessibility, and neutrality. The deposition of the symbolically charged Cluster 2 in the house center at the building's closure underlines the significance of this house space as the core area. The house center also provided the interface between the clean northern half and the productive and messy southern half of the house. In everyday life, the house center must have been frequented by heavy foot-traffic, since it provided access to all parts of the building. However, its plaster remained clean.

The power of the Central Floor Zone was also emphasized by the location of the two most prominent and centrally positioned platforms in the house—the north-central (F.162) and east-central (F.170) platforms. Both were constructed in the middle of their respective walls; both were flanked with a pair of posts that were painted on multiple occasions with several shades of red pigment; both were bordered by one side-bench each; and both were backed by painted panels on their walls, which were also painted multiple times.

The east-central platform (F.170), which contained no burials, nevertheless was flanked by the two largest posts in the house. The northern post (F.602) may have had a bucranium attached to it, while the southern post (F.168) may have been covered with plaster painted with a double row of red and black triangles. Both post-retrieval pits were packed with large fragments of plaster molding, which most likely were originally attached to the posts themselves. Wendy Matthews (Chapter 7) asserts that one fragment of a white-plastered and soot-coated sculpture from the base of the posthole resembled the snout of a plastered bull from Çatalhöyük that is on display in the Museum of Anatolian Civilizations in Ankara.

The elevated platforms, combined with all their associated features, strongly demonstrated the importance of the house center and convey a feeling of hierarchical structure to these particular parts of a house.

Differential floor maintenance added to this manifestation of a hierarchical segregation of space. For example, the platforms and the central house floor were kept clean and white, not only by being covered with mats and/or animal skins but also by the "clean" practices such as sleeping, sitting, and burying the dead. By contrast, the blackened, unclean, uneven "dirty" floors persisted in the "low status," domestically active areas, even though they were frequently resurfaced with white clean floor plaster.

Symmetry

It also appears that establishing symmetrical relationships of features was a consideration for the occupants of Building 3. This is illustrated most obviously by the location of house posts, whose symmetry could be explained as structurally necessary (for instance, in bearing the roof load). This explanation seems unlikely, however, in view of the fact that in Building 3, as in other buildings on this site, the house walls carried the roof load, and the posts would have played only a minor role in this task. We believe that their symmetrical relationships are related to other considerations. For example, in the case of both the north-central (F.162, F.766, F.773) and east-central (F.170, F.602, F.168) platforms, the posts were aligned with the edges of the platforms and delineated not only the platforms but also the painted plaster panels on their respective walls. A similar symmetrical relationship can be seen in the position of the north (F.156) and south (F.164) pillars of Building 3 and the short partition walls (F.160, F.161) that flanked the centrally located screen wall (F.601) (see Phase B3.4B in Figure 4.3).

Pairing

One way of achieving the effect of symmetry was through pairing features. It is noteworthy that in Building 3, several instances of features and mobile objects occurred in pairs.

Figure 4.8. The two human skulls: F.795 (3529) and F.794 (6692) of Cluster 2 in the center of Building 3 in Phase B3.5A, looking west.

The bins and basins always occurred either in pairs or in groups of three mixed features, unlike other fixed features.

A pair of nicely articulated obsidian points (8570.S6),[2] with the longer and narrower one pointing northward and the shorter and wider one pointing southward, made up the "foundation deposit" set below the floor of the entry area in Building 3 (see "Foundation Deposits and Commemorative Deposits" section, below).

The most striking paired objects in Building 3 were the articulated human skulls discovered in the initial post-abandonment infill (Cluster 2) in the central floor area (F.794, F.795) (see Figure 4.8; see also Figure 5.90 and frontispiece).

In Space 88 (Phase S88.5), an abandonment deposit comprising two scapulae and two antler tines appeared to have been carefully laid out in facing pairs, mirroring the orientation of the horns of a young cattle frontlet (2289) (Figure 4.9). Other representations of paired animals have been known at Çatalhöyük, the most famous being the wall relief that features two facing leopards (Russell and Meece 2005). Rene Gerard (personal communication) asserted that such pairs of facing animals, which could presumably be extended to people facing people and people facing animals, portrayed a deadlock or inability to bring about a resolution.

Ritual Practices

The presence of ritual in the Çatalhöyük houses has been emphasized by Mellaart (1967) and Hodder (2006a), who discuss the possibility that ritual was embedded in most, if not all, the daily activities. The structures in the BACH

[2] Conventions employed in this volume include: special or "X" finds that are expressed with their unit number as 8501.X1 and samples as 8501.S1; finds retrieved after excavation from heavy residue receive a variety of identifiers such as 8501.D1, 8501.H1, 8501.A1.

Figure 4.9. Cluster deposit, including grindstones and scapulae (2266, 2268, 2289), on top of the latest floor of Space 88, Phase S88.5.

Area—as in Çatalhöyük in general—demonstrated a variety of ritual practices linked to the construction and modification of the buildings and features and to the use of the internal space, including the burial of the dead.

Foundation Deposits and Commemorative Deposits

A variety of objects made of bone, stone, or clay were placed in between or inside the walls during their construction, or in the underlying packing of features or in the floors. While deeply meaningful, these commemorative deposits would have been invisible to those inside the house. For example, the ground on which Building 3 and Space 88 were erected was most likely "prepared" for the construction through a feasting ceremony, as indicated by the collection of red deer bones and reed matting at the interface between the underlying midden and their initial floors (Chapter 8).

Similarly, a stone grinder coated with a thick layer of red pigment and a complete, perfectly usable bone point were found in the mortar that connected the east wall of Building 3 and the west wall of the building in Space 41, in the vicinity of the doorway (F.633) that connected the two buildings. An obsidian tool was deliberately buried in the wall of the large basin-like feature (F.775, Phase B3.2), in whose construction or modification it was possibly used.

Large animal bones, especially scapulae, were frequently found in association with a variety of features in Building 3. Examples include a very large long bone shaft fragment of a cow-sized animal that was found in the first row of bricks of the wall/bench feature (F.1000), large fragments of a left and a right cattle scapula in the earliest packing under the entry platform (F.167), a nearly complete red deer scapula placed into the packing between the two walls that separated Spaces 88 and 89, and several scapulae associated with the screen wall (F.601, Phase B3.4B). The special deposit of 13 scapulae (Cluster 1) is discussed below in the section "Ritual House Closure, Abandonment, and Destruction of Building 3" (see also Chapter 8).

The entry area (southeast corner) of Building 3 was made distinct by a foundation deposit (8570.S6) under the initial house floor, comprising two obsidian points (see "Pairing" section, above) that were set in a shallow depression in the midden and surrounded with ash and small animal bones, under the earliest floor (Figure 4.10; see also Figure 5.16; Chapter 19). In this same area on top of the first house

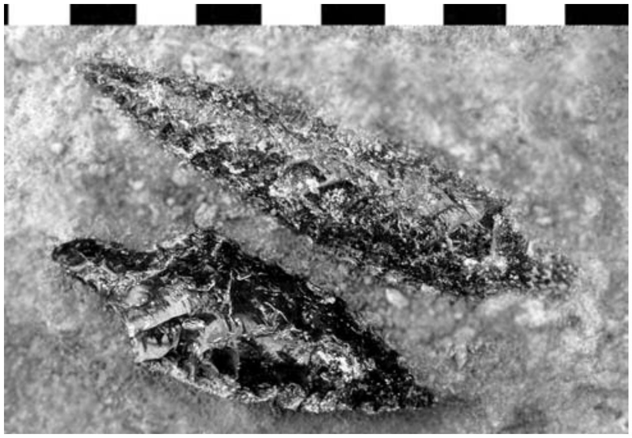


Figure 4.10. Obsidian bifaces interpreted as a foundation deposit found under the floor of the southeast corner of Building 3.

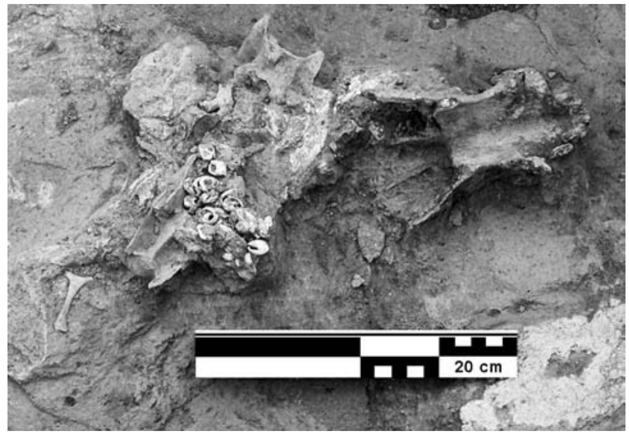


Figure 4.11. A cluster of bones and marine shells interpreted as a "special deposit" associated with bin/basin (F.1003) in Space 88 in Phase S88.2.

floor was discovered a cluster of 29 mini clay balls (Figure 18.7). It is feasible that the Neolithic inhabitants considered the entry area to be a powerful boundary between the house space and the outdoors. Such boundaries are said to imply an inner and an outer realm and to have the capacity to admit or exclude selectively (Lavin 1981). In many societies, the word for "lineage" is derived from the words for "hut entrance" (Carsten and Hugh-Jones 1995).

In the BACH Area, other special deposits, possibly of commemoration, included the assemblage in the packing of the freestanding oven (F.646, B3.2) comprising a nearly complete sheep horn core, articulated boar phalanges, and sheep-sized vertebrae representing body parts not usually brought onto the site (see Chapter 8), along with stone artifacts, including a flint polisher, clay balls, and pottery fragments.

Another special deposit (8505) was found in Space 88 lying on a layer of reeds arranged in a circular pattern, indicating that the deposit was originally placed in a basket that was set on the floor and covered with reeds (Figure 4.11). Inside the basket would have been a necklace of 37 marine shell beads on top of the bones of wild boar and other animals (see Chapter 8), which lay in turn on top of a fragile Spoonbill beak and a Little Bittern wing (Chapter 9). This "special depositional" event has been interpreted as a possible offering, consisting of the remains of a pig roast, in which three pieces of meat were placed together and a necklace on top of them (Chapter 8). Perhaps they were fragments remaining from a ceremony that were incorporated into the house during a remodeling event linked to a life-cycle event.

Ash

The occurrence of ash in association with particular objects and features in the BACH Area may be interpreted as a deliberate and ritual practice. Examples of such deposits include the packing of the bench (F.792), the packing of the entry bench (F.1010), the "foundation deposit" beneath the entry platform (8570.S6), and the fill of the posthole (8572) in the screen wall (F.601).

We may not have a large enough sample to meaningfully discuss the potential ritual significance of ash at Çatalhöyük, but we do know from other contexts that ash as a form of refuse can carry powerful significance (Gonzalez-Ruibal 2006; Moore 1986). Moore (1986:98–114), for example, noted that the Endo never mixed ash with other forms of refuse (such as chaff and dung), because its location marked where the burials of the household members would be. Moreover, only women were allowed to remove ash from the hearth, because of the association between ash and the socially and sexually destructive aspects of womanhood. On the other hand, in other contexts, ash had other connotations among the Endo; for example, during circumcision, it was associated with the hearth/fire, which was the hearth of the clan and resided as a permanent symbol of its fertility.

Ritual House Closure, Abandonment, and Destruction

Çatalhöyük houses were constructed with great skill and patience and were carefully maintained to last for a minimum of one generation. However, they were made of perishable building materials and subject to intensive wear by the activities of their occupants and by environmental forces; thus, they inevitably deteriorated and had to be replaced. It is feasible, however, that some houses in the settlement had to be abandoned for reasons unrelated to their deterioration. For example, the death of a particular individual or a particular accident could have triggered the closure of a Neolithic house (Cessford and Near 2005; Stevanović 1997). Thus, the motivations for the abandonment of houses and their closure would have been both practical and symbolic. Regardless of why they were abandoned, the Çatalhöyük houses, including those in the BACH Area, were taken through a process of "house closure" that was rich in symbolism. This process, as observed in Building 3, comprised a sequence of numerous, varied, and systematic steps leading to the transformation of the livable house into a "house burial." Some valuable house construction elements, such as posts, or some that were more symbolic in nature, such as wall installations, were carried into a new structure, but several functional and symbolic parts of the house were actually left behind and buried under the collapsed house rubble. It seems that there was a particular sequence of house closure activities, which altogether served to make a lasting statement about the departing house and its residents.

Figure 4.12. Cluster 2, comprising a bucranium, two human skulls, and a hearth in the center of Building 3 in Phase B3.5A, looking from above toward the west.

Ritual House Closure, Abandonment, and Destruction of Building 3

The abandonment of Building 3 started by clearing the floors of artifacts and substantial occupation deposits and making their domestic features ineffective. The features were truncated, infilled, blocked with clay or midden soil, or were completely removed. The process continued by placing a variety of objects in particular areas of the house, and collapsing the upper walls and the roof inward.

The superimposition of occupational features and post-residential infill of Building 3 was remarkable. The collapsed remains were dropped in place where they would reiterate the originally set spatial divisions in the buildings. That is, the northern half of the roof of Building 3 was collapsed carefully and directly onto the floor and possibly while the walls were still standing. The extent of the collapsed roof remains—which made Building 3 quite unique at Çatalhöyük—coincided with the "clean" northern house floor, which contained the three platforms with the burials. Large pieces of roof sealed the platforms and were found to be accompanied with sizable and thick chunks of white clay, which might have been a part of molding on the walls, posts, or ceiling.

The southern half of Building 3 was treated very differently: it was partially filled with collapsed upper walls and, presumably, fractured roof material; it was then filled with midden deposits that postdate the house abandonment.

At the southern edge of the collapsed roof, coinciding with the center of Building 3, a special deposit known as Cluster 2 lay on top of the final occupational floor (Figure 4.12; see also Figures 5.89, 5.91, 5.92). It comprised two human crania, lying on their sides and placed with their foreheads lightly touching. A complete cattle skull with horns (bucranium) and a hearth were part of the same cluster, but these had originally stood on the house roof. Several features indicated that the group was deliberately placed inside the house at the time of its closure *after* the roof collapse, and not accidentally brought down by the roof collapse.

Several significant aspects can be teased out of this incredibly and elegantly articulated group. Cluster 2 carried powerful symbolic meaning about the human-to-human relationships and about the ties between humans and animals. Human skulls separated from dead bodies occur in Early Neolithic contexts across Anatolia (Kuijt 2000), but at Çatalhöyük they are rare. Mellaart (1967) reported a skull coated in red ocher with two cowrie shells covering the eyes found in Building VII.10. In the same publication, he reported several instances of skulls found on platforms. In the new excavations, only two additional isolated skulls have been found, a plastered skull from Building 42 (Hodder 2004a:Figure 3) and the cranium of an adult female found in a post-removal pit in Building 17. In the Neolithic Near East, the head was perceived as an important and symbolic part of the individual and was considered to be sufficient for signifying a person. The two skulls in Building 3 (Figures 4.8, 5.90, and frontispiece) may have carried a message and a memory of special individuals or a special event that had to be honored, suggesting that for the people of Çatalhöyük, a head symbolized more than personhood. Their symmetrical positioning and the touching foreheads would signify unity, whereas their probable different sexes and their position of facing each other could be interpreted as opposition. Thus, the skulls may have conveyed a contradictory message of unity and opposition.

Typically, isolated skulls found on the platforms at Çatalhöyük have belonged to adults and have been interpreted as the remains of ancestors whose role was to protect the house by showing continuity of a kin group. The two skulls of Cluster 2, however, do not belong to adults but to youngsters and are associated with the process of house "destruction" rather than the continuity of primary burial (Chapter 13). Thus, an alternative interpretation might be that they were placed in the collapsed remains of the house to act as "guardians" of the process of house closure and abandonment. The bucranium that faces the human crania could convey a story about human–animal relationships. In the very center of Building 3 they lie close to each other (human crania facing east and the bucranium facing west) in what can be interpreted as a peaceful but unbalanced relationship (with the cattle head being disproportionably large compared with the human skulls and acting as either guardian or a threat or both), which, again, is reminiscent of both unity and opposition. The survival of the people of Çatalhöyük (including social and spiritual survival) could have been deeply linked to the exploitation of cattle that were hunted or herded around the settlement. These activities, however, could also have involved the danger of being overpowered by the wild or semi-domesticated cattle. It is feasible that the human–cattle relationship at Çatalhöyük was a steady struggle for power over the other.

In the southern half of Building 3, a large, round, shallow cut was made in the house floor in the area between the house entry and the latest oven (F.779), almost completely removing the latter and a portion of the entry bench. In this cut, a group of sizable animal bones (Cluster 1) was deposited, including one red deer scapula, two scapulae of two sheep, and thirteen complete cattle scapulae representing a minimum of nine individual cattle (Chapter 8). The scapulae were arranged in a line that followed the outline of the cut. Dense layers of phytoliths covered many of the scapulae, suggesting that grasses were used as a form of binding or wrapping material to keep the bones together. None of the bones showed signs of use, which was not surprising since cattle scapulae at Çatalhöyük seemed to hold special symbolic significance and are usually not found with any use-wear (Chapter 8).

Such a large assemblage of scapulae in Building 3 was unusual for Çatalhöyük. Several possible explanations have been suggested (Chapter 8)—for example, that they had been hanging on the wall for storage, smoking, or preservation of the meat and other products and fell in with the room collapse during the house "closure." Although the phytoliths representing binding or sacking might have supported this suggestion, the associated skull and horn core pieces argued against it, since these were not good meat cuts. The linear arrangement of the scapulae alongside the entry platform and the oven argued against an accidental fall of the bones. Moreover, this would have been the only record of the abandonment of edible meat in a collapsed house.

An alternative explanation is that Cluster 1 was the result of communal feasting during the closure ceremonies of Building 3, in which shoulder joints were preferentially consumed and their scapulae deposited immediately after the ceremony under post-abandonment fill. The lack of consumption evidence, such as meat removal marks, as well as the fact that there was no evidence for such strong body-part selection elsewhere in other structures or midden areas, argued against this interpretation. Moreover, the minimum number of individuals represented for cattle alone was five, which would have indicated an unrealistically huge quantity of meat (Chapter 8).

Considering the context and the presence of the other bones, we were also attracted by the interpretation that the scapulae were incorporated somehow into the construction and elaboration of the building itself (analogously to horn cores being set in plaster as bucrania) and that this deposit was the intentional patterned deposition of ritually dismantled installations. The placement of scapulae in association with ovens and hearths has been known from other buildings. The neighboring Building 1 had a scapula scoop lying over the hearth. In Buildings 17 (Mellaart's Level IX) and 23, cattle scapulae were also found associated with hearths (Hodder et al. 2007). In Building 3, multiple scapulae were also found in association with the screen wall, and at least one scapula was incorporated in the construction of the entry platform (F.167).

Finally, Mellaart (1967) also mentioned the use of scapulae as "shovels." Russell (Chapter 8), however, reports that the scapulae in Cluster 1 have been very little modified (only one had its spine removed), and there are no other indications—such as wear or polish—of the scapulae being used as tools (Chapter 16). But we cannot rule out the possibility that Cluster 1 was a cache of raw material. Whatever the explanation, the deliberate and patterned burial of scapulae in the house with other objects and installations at the time of house closure must have carried a very strong symbolic meaning.

Another step in dismantling the house was the retrieval of the large house posts, which most likely were transferred to a new house. After the retrieval of the posts, their holes were carefully "closed" by special infill. Many were packed with plaster chunks, as in the case of F.602, where white clay molding, which presumably had originally been attached to the posts, was included, along with a large fragment of a cattle maxilla that may have been from a dismantled bucranium (Figure 4.13; see also Chapter 8). The filling of F.168 included large, black and red painted fragments of plaster. Russell and Meece (2005:221) interpreted the items in post-retrieval pits as compensation for the removed post.

Figure 4.13. Parts of a plaster relief installation as fill of the post-retrieval pit F.602.

In the closing of Building 3, plaster from the upper section of the walls was detached in strips about 30 cm wide and placed on the house floor. One such plaster strip was found laid at the base of the northern half of the screen wall (F.161) and across the north-central platform (F.162). We know that the plaster came either from the upper walls or the ceiling, because the lower sections of the house walls were preserved intact. In this way, the painted sections of the walls were not subject to removal or other destruction. On the contrary, across the site wherever painted plaster was exposed, it was covered over with a coat of white clay prior to the house closure.

Large pieces of plaster molding, lumps of plaster, and brick-like forms with plaster attached to them were collapsed into the southwest corner of Building 3. Their matrix was a dark soil, rich in organic remains with sizable animal bones and the presence of unusually high quantities of fruits and nuts. We linked this assemblage of finds with possible feasting that might have taken place after the removal of the molding fixtures from the screen wall and/or other walls and their redeposition in the southwest corner.

In addition to Clusters 1 and 2, scattered individual artifacts possibly belonging to different fixtures in the building were found across the house and on the latest house floor. It is feasible that the scattered animal bones represented dismantled installations—for example, two large fragments of cattle long bones with plaster on their articular surfaces that might originally have been set in the walls (Chapter 8). This kind of installation was discussed by Mellaart (1967: 101), who saw them as pegs for holding bucrania. Other likely dismantled installations in Building 3 included cattle horns, sheep horns and frontlets, a boar maxilla, a large piece of antler, large fragments of cattle skull, and a possibly plastered bucranium (horns with connecting skull).

Ritual House Closure, Abandonment, and Destruction of Spaces 87, 88, and 89

These three rooms, though they served different functions, were carried through their closure in a similar fashion to Building 3. As in Building 3, roof remains in Space 87 were associated with the "clean" and/or "sacred" part of house. Chunks of roof that matched the roof from Building 3 and large fragments of wall plaster with moldings were found in the fill of Space 87 covering a platform containing more than 10 burials. By contrast, but also like Building 3, mixed structural deposits were associated in Space 88 with the areas of domestic activities. On the latest floor in Space 88, a group of finds (2266, 2289) comprising large animal bones and grindstones that were covered with a layer of reeds closely resembled Cluster 1 in Building 3 and has also been interpreted as a "closure deposit" (see "Pairing" above; Figure 4.9).

Space 89 was a room with few traces of in situ activity, but with a very rich closure deposit. A grouping of highly burned objects of symbolic nature (2210) was found in the deposits at the top of the room infill. The in situ fire consumed a wooden construction that was made of plastered planks in whose remains were excavated one large, complete but fragmented bucranium, two other parallel large horn cores, and two more burned and fragmented horns lying at right angles to the bucranium. The group of horns might have come from a fallen stack of two or more bucrania installed on a wall post, as is known from other buildings (such as Building 52) (Doru 2005). A visible circular concentration of charcoal possibly represented the remains of the post on which the horns were attached. Close by, a large pressure-flaked flint dagger with a bone handle carved in the shape of a boar's head lay in two pieces (Figure 4.14; see also Figures 5.124, 5.125, 15.10, 19.3, 25.15, and frontispiece). The only other example from Çatalhöyük of such a dagger with a bone handle—shaped, in this case, as two snakes—came from a male burial in Shrine VI.A.29 and was interpreted by Mellaart as a ceremonial flint dagger (Hodder 2006a:Figure 105; Mellaart 1967). Such finds have not been commonly found in the Çatalhöyük houses and were associated by Mellaart with "shrines" (1967).

Caught in the fire was also a human lower jaw; in addition, possible feasting remains were overlain with the burned debris. The remains of the possible "closure" feast would have been carefully placed on the floor below the bucranium and other wall installations, along with a human skull and the dagger. Plant materials would have been piled thickly on top, perhaps along with paraphernalia from the feast/ceremony (mats, bowls, etc.), gathered to serve as fuel. The room was then set on fire, perhaps after knocking the

Figure 4.14. Flint dagger reconstituted with its bone handle in the shape of a wild boar, found in association with the bucranium in the burned deposits of the uppermost infill in Space 89, Phase S89.2.

bucranium and horns off the wall onto the top of the pile. During the fire, the upper walls/roof either collapsed or were pushed onto it. Russell (Chapter 8) also noticed striking similarities between these deposits and those outside the walls of Building 1, including their species composition, in their careful horizontal placement, and in the overlying layer of ash.

An alternative interpretation of this assemblage in Space 89 is that it represented the remains of an elaborate installation that originally belonged to another structure, possibly in Building 3, which were dumped in Space 89 and then set on fire; this was suggested by Russell (Chapter 8), who found the horns to be too large for this small room. Considering the fact that the existence of a floor in this room has not been firmly established, it is possible that these ceremonial remains were found in their secondary position. However, the composition of the finds collection suggested that they belonged to a structured event rather than to an event of redeposition. A further plausible explanation is that the objects were originally installed on the roof of Space 89 and that they were set on fire in situ and then collapsed with the roof and walls of the building. However, no apparent roof remains were encountered in the fill, and the carbonized wood would have appeared as ash in this case.

Whatever the scenario, the installation with its associated objects must have been fired in situ in Space 89, probably as a ceremonial act of house closure.

Burying the Dead in the BACH Area

The burials in the BACH Area were restricted to the area of the "clean" house floors.

Burials of Building 3

The remains of ten Neolithic people found in Building 3 were buried in three distinct interment areas, the north-central platform (F.162), the northeast platform (F.173), and the Central Floor Zone of the house, but none in the southern half of Building 3 (Chapter 13). At Çatalhöyük, occasionally child burials, especially neonates, were placed under the southwest platform or at the edge of the "unclean" area, as in the case of Buildings 6 and 18 and Spaces 109 and 112 (Farid 2007). Eight individuals were found in primary contexts in burial pits, and two skulls were found in the secondary context in Cluster 2 (see "Ritual House Closure, Abandonment, and Destruction of Building 3" section, above).

The earliest burials in Building 3 (Phase B3.3) were those of three perfectly articulated children in the northwest corner of the Central Floor Zone, who were placed in intersecting burial pits, although none of the skeletons was disturbed or damaged by another (Figure 4.15). A baby (8–10 months old) was buried first (F.757) in a basket in the middle of the group (see Figure 5.52), while two children (8–10 and 7–8 years old) were buried a little later—probably as a single event—to its north (F.648) and south (F.756), respectively. There were several indications that the central house floor was regarded as a "clean" area, like the platforms in the Northeast Zone, kept white and covered with mats, and also sealed by the collapsed roof remains. It was no accident that the southernmost edge of the collapsed roof was aligned with the southernmost burial (F.756) in the central floor.

Four skeletons (B3.4) were interred in the north-central platform (F.162) of Building 3 in a minimum of three burial

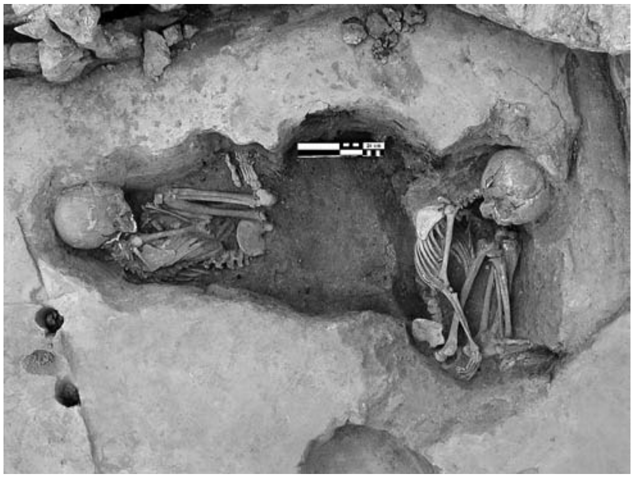


Figure 4.15. Two children buried in the Central Floor Zone of Building 3 (F.648, F.756) during Phase B3.3, looking from above toward the west.

events. Two earlier burials of a young adult female (18–22 years old, F.644) and an adolescent male (14–16 years old, F.647), who died within a short time of each other, were buried in separate pits oriented north–south. The later burial pit of an older female (40–45 years old, F.634), aligned east–west, damaged the earlier two burials (see Figure 5.67; Chapter 13).

The final individual to be buried in a primary context in Building 3 was a young child (3–4 years old, F.617) interred in a basket in a separate pit to the west of the earlier burials in F.162. The single burial in the northeast platform (F.173) was of an adult male (40–45 years old, F.631), whose death occurred just before the child burial (F.617). A largely articulated carcass of a newborn puppy may have been associated with this interment (Chapter 13). It is interesting to note that in the neighboring Building 1, the latest burials were also of male adults and juveniles (Hodder 2005c).

Burials of Space 87

Space 87 contained nine bodies buried in close proximity to one another on a single platform (F.638) that was maintained—like the north-central platform (F.162) of Building 3—with "clean" white clay floors; Hager and Boz (Chapter 13) report that the bodies buried in Space 87 represent nearly all age groups. The two earliest burials in Space 87—a neonate (F.1014) in a lidded basket and an adult (F.1013, 8598)—remain in situ, unexcavated. An older female (44–50 years old, F.1012) and another neonate (F.1013, 8587) were excavated at the level immediately above the in situ burials. Below them were an infant (4–6 months, F.1007, 8494), an adolescent (13–15 years, F.1007, 8490), and a child (8–9 years, F.1005). Another adolescent (F.1002, 8409) was the penultimate individual to be buried in Space 87. The very last individual buried under this platform was an older male (44–50 years, F.1002, 8410).

A level of planning in relation to burying the dead was evident in Space 87. The two earliest burials had been interred in the deepest pit, and enough vertical space was left for the later burials. The closeness of the bones and the pattern of the disturbance of earlier burials by later ones demonstrated the reuse of the same area of the platform for human interment. The restriction of the skeletons to such a small area of platform F.638 in Space 87 was remarkable and deliberately implemented, since it was not required by the platform size. The disturbance of earlier skeletons could have been avoided if some individuals had been buried in a different area of the large platform instead of being crowded into a single area. One possible reason for the concentration of burials in the southern half of the platform may have been that the northern half was considered inappropriate for a burial ground, especially since there was some indication that the northeast corner of the platform served as a point of entry into the room after descending through the roof opening.

Demography and Lifestyle of the BACH Area Population

The demographic picture of the BACH Area shows that adults aged in their 30s are absent from the sample and that most of the burials are of juveniles (Chapter 13). Tentative attempts have been made at Çatalhöyük to establish biological relationships among buried individuals (Chapter 13). Some nonmetric traits on the cranium of individuals in Building 3 may demonstrate a genetic link and kinship of the people buried there, and others point to possible genetic links between the populations of Building 3 and Space 87.

Hager and Boz (Chapter 13) found evidence of accidents manifested in bone injuries, including two episodes of broken ribs that the older female from Building 3 (F.634) survived. They also suggest that most of the trauma found on the bones of these skeletons resulted from physically demanding activities, such as using the back in weight-bearing tasks or repetitive movements involving the knees. Signs of trauma occurred even on adolescents, indicating that they were included in the labor force probably by the age of 10. They may have worked not only in agricultural tasks but perhaps also in jobs like house plastering and roof maintenance. Frequent plastering of house walls, floors, and features must have been laborious work that involved many skilled hands, but also unskilled learning hands and many hours of repetitive work. Construction and maintenance of the Replica House at Çatalhöyük (Chapter 22) demonstrated the large scope of these tasks, involving extensive kneeling, squatting, back-bending, and body-extending, which could have put a strain on the entire body (see also Chapter 26).

Mortuary Rituals

In the new excavations at Çatalhöyük, only neonates and infants have been found buried in baskets (Wendrich 2005). In the BACH Area, three neonates and infants were placed in lidded baskets prior to their interment, two in Building 3 (F.757, F.617), and one in Space 87 (F.1014). Hager and Boz (Chapter 13) found that both the children in baskets in Building 3 had been placed lying on their backs in the baskets, and that they were then turned over onto their stomachs once placed in their graves. The baskets were made of wild grasses and seem to have been made exclusively as containers for the dead (Rosen 2005). However, at least one basket (F.760) was found in the fill of the burial pit of the older female (F.634) buried in Building 3, but it did not contain the body.

Phytoliths found on two individuals from Building 3 indicated pre-interment binding. On the child (F.648) in the northernmost of the early Central Floor Zone burials, phytoliths occurred at the mandible and knees, possibly representing postmortem binding of the body; on the older female (F.634) buried under the north-central platform (F.162), cordage braided into an intricate pattern could be clearly seen on the hipbone; this may have been part of her clothing rather than evidence of binding (Figure 4.16; see also Chapter 13).

Grave goods were rare in the BACH Area burials. The most adorned body was that of the earliest burial in Building 3—the baby (F.757) that was buried in the central floor of Building 3. The baby's skull had traces of red ocher, and strings of two different colored beads were worn on each arm (Chapter 21). Near the baby, fragments of wood were found surrounding some grave goods, suggesting their burial in a wooden box; the grave goods included a mussel shell coated with red ocher and a bone spatula that was embedded in a chunk of powdered malachite pigment, the shape of which suggested that both had been carried in a small pouch.

In Space 112 in the SOUTH Area, an infant burial was similarly accompanied by a small stone mortar with traces of red pigment and a mussel shell containing red ocher beside the face; an adult in the same space had a mussel shell placed below the skull (Hamilton 2005c). Red ocher, some cinnabar, and green and blue pigment have all been found at Çatalhöyük (Farid 2007; Hamilton 2005c; Mellaart 1967), and red, blue, and yellow ocher was frequently found by skeletons in the BACH Area.

The only other unambiguous grave goods in the BACH Area were the belt hook and eye made from a large mammal bone found in Space 87 in the disturbed matrix above the burial of an adolescent (8409) and an older man (8410), suggesting that one individual—probably the adolescent—was buried in his or her clothes (see Figure 15.14; Chapter 13). However, numerous beads have been found in the fill of burial pits, suggesting the possible adornment of the dead (Chapter 21).

Figure 4.16. Phytoliths interpreted as pre-interment binding around the hipbone of the skeleton (8115) of the mature female burial (F.634) under the north-central platform (F.162) of Building 3 in Phase B3.4A.

Burials and Wall Paintings

It has been suggested, on the basis of data from Building 1, that the timing and sequence of wall paintings was a regulated and highly significant process and might have been linked to burial events or ceremonies (Matthews 2005a). Such a link can certainly be made between the burials and painted walls in the BACH Area. First of all, both burials and wall paintings occurred in the same area of Building 3—that is, the Northeast Zone—and during the same phase of house occupation (Phase B3.4).

Moreover, when we look at the heavily plastered east faces of the partitioning constructions (from Phase B3.4) comprising the two interior walls (F.160, F.161) and the "screen wall," only the northern wall (F.160) nearest the burials in platform F.162 was painted. On the east face of F.160, the initial sequence of white plaster coats was followed by three sequences of monochrome red painted plaster, most likely corresponding to the three episodes of interment (F.634, F.644, F.647) in the north-central platform (F.162). For example, the middle sequence executed in a dark red color coincided with the burial of the older female (F.634). At least two white plaster layers overlay the painted coats. The north wall of Building 3, which bordered platform F.162, also featured multiple dark-red painted plaster coats, but their state of preservation did not allow such a detailed examination.

It is interesting to note that the east wall of Building 3, bordering the east-central platform (F.170), was also painted in red ocher, even though this platform did not contain any burials. Another small painted panel, again without burials, was discovered on the north wall of Space 88.

In Space 87, both the east and south walls were painted, and they bordered the platform that contained all the burials in this room. Multiple sequences of red painted plaster coats have been recorded on these walls, but they remain to be explored in detail when excavation of Space 87 continues. It is possible that burials in Space 87 were restricted to the southern half of the platform F.638, as noted in the "Burials of Space 87" section, above, in order to be in the closest possible proximity to both painted walls and to the spiritual power that was believed to emanate from them—such as the power of "protection" (Gell 1998; Mauss 1972).

The distribution of painted walls uncovered in the early (Mellaart 1960s) excavations suggested that at Çatalhöyük, the south and west walls of buildings were not painted. However, judging by the BACH Area, both of these walls could be painted. Possibly, the south and west walls were deemed appropriate for painting where they bordered burials and were not associated with domestic activities, as was the case in Building 3 and Space 87. The difference in the distribution may also be a function of cultural differences between the NORTH/BACH Areas and the SOUTH Area of the East Mound.

Based on the excavations in the BACH Area, it is conceivable that grave goods and wall paintings both related to the burial ceremonies, but they may have played different roles. In Building 3, grave goods and wall paintings occurred independently of each other, whereas in Space 87 they occurred together. The most adorned skeleton in the BACH Area was the baby buried in the center of Building 3. At the time of the baby's interment, there were no painted walls in the immediate vicinity of this burial. However, directly to its east, there was a painted panel on the east wall of the house that formed the eastern border of the east-central platform (F.170). This major platform contained no burials of its own. Nevertheless, the burials in the house center may have been linked to the paintings on the east wall. In the case of a young child (F.617) buried in the north-central platform (F.162), which contained no grave goods, a definite correspondence with the painted wall (F.160) was established. In Space 87, all the burial events may have been associated with wall paintings.

Interestingly, in the BACH Area, three infants/neonates were buried in lidded baskets, but only one of them was accompanied by grave goods. However, the two that did not have grave goods are associated with wall paintings. It is tempting to contemplate whether such different mortuary treatment was caused by the different age of the infants/neonates or by the sequence of their death, or by their social status.

Burials and House Remodeling

It is worth mentioning that some correlations may have existed between the burial events and the renovations of the house interior. The routine activities in the house must have been interrupted or even completely abandoned for the duration of burial events. It is conceivable that the occupants were evacuated from the house for a period of time on the occasion of a burial ceremony. One would expect that the preparations for a burial ceremony required most of the occupants, and especially children, to relocate. Intramural burial included messy work, such as cutting a hole in the platform floor and digging under the house and into the midden. The midden soil had to be brought into the house and piled on the house floor before being redeposited in the burial pit, covering the body of the deceased.

The burials in the BACH Area were closed with plaster lids made of the same clay as the floors but from sources that contained clay of an ultra-white color. The burial lids were topped with a new floor coat of plaster that extended across the entire platform. This sequence of activities in the burial ceremony required some level of house renovation, such as creating a new floor coat. It is possible that, after a burial and before the house occupants returned and assumed their routine activities, the entire house floor would have been replastered for the sake of cleanliness and/or hygiene, for aesthetics, as well as for the symbolic closure of the event. We know that cleanliness of the house was highly valued at Çatalhöyük, as was the symbolic closure at the time of house abandonment.

Autonomy of the House at Çatalhöyük and the Case for Neighborhoods of Houses

Currently, houses at Çatalhöyük have been defined as domestic buildings that change incrementally and vary only insignificantly. Hodder (2006a:115 and personal communication) suggested that the one significant variation was between the domestic houses and the rarely occurring "history houses," which represented shared ancestral places and have been defined by (1) rebuilding a new house several times in the same spot, (2) symbolic elaboration of the buildings in the sequence, and (3) multiple burials.

The domestic house, then, constrained by its walls and only peripherally connected to the surrounding houses, was seen as implicitly proclaiming itself to be a self-sufficient entity, in the sense that each contained the necessary domestic features for the household or social group that inhabited it in order to fully function. Yet, despite the degree of repetition in the shape and size of houses and in the configuration of their internal features, which made them appear invariably fully functional as independent households at Çatalhöyük, we believed that this aspect needed to be investigated in more detail .

In our analysis of the life history of Building 3, we obtained a different view of the domestic house as more fluid, interconnected, and integrated within the larger social space. In the investigation of Building 3, we saw that houses underwent considerable transformations as they moved through their life cycle (see Table 4.1; Figure 4.3); in certain phases (B3.3, B3.4B), in fact, the house was *not* equipped with all the domestic features necessary to be self-sufficient, such that the occupants may have shared domestic facilities with another house. This more fluid interpretation of the life history of Building 3 can be supported by evidence of (1) the interconnection of its construction with neighboring buildings, (2) variation in the presence and absence of certain domestic features throughout the life history, and (3) a possible sharing of burial grounds.

At first glance, each structure in the BACH Area seemed to be an autonomous physical entity (see "The BACH Area Structures" section, above). On closer examination, however, it became clear that all these structures were built at the same time and coexisted, and most likely were inhabited by people who were socially related.

A layer of uniform packing overlying earlier dwellings and underlying the eastern part of Building 3 and Space 89, and extending under the walls of the unexcavated building in Space 41 suggested the possibility that a locale larger than the BACH Area was redeveloped at one time, possibly marking the extent of a neighborhood of houses (see Figure 2.14).

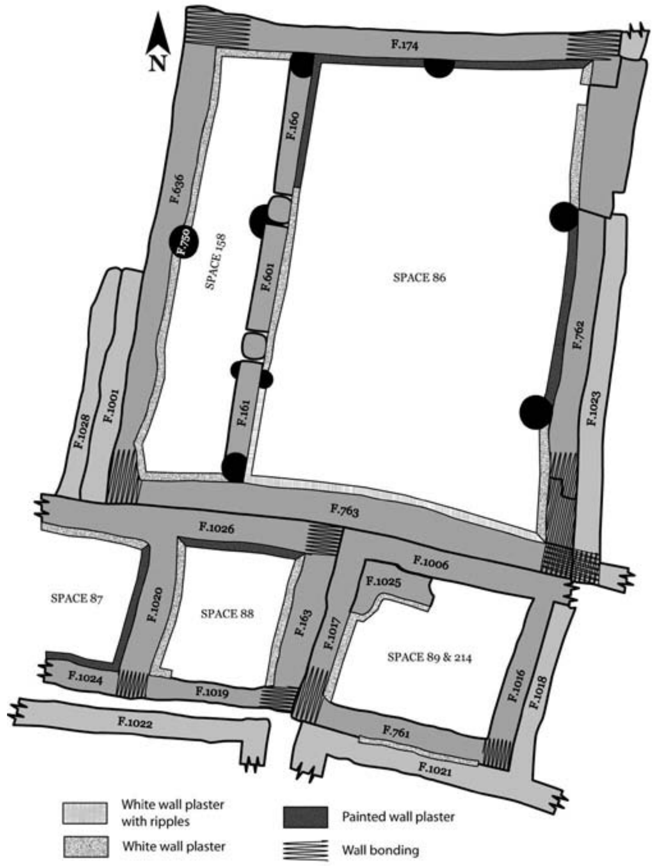


Figure 4.17. Location of the various plaster layers on the building walls and the bonding of perimeter walls in the BACH Area.

Evidence of the bonding of walls of adjacent buildings (Figure 4.17) revealed that the BACH Area structures were erected synchronously. For example, Building 3 and the house in the neighboring Space 41 were physically joined by the bonding of the bottom bricks of their south walls. Moreover, a doorway (F.633) in the wall between Building 3 and Space 41 demonstrated the coexistence of these two structures and the provision of direct access between them. There is a possibility that the two houses constituted "twin buildings," such as Mellaart found in his Level VIB (Mellaart 1964).

Each building would have been accessed through its roof entrance, for which we have evidence in Building 3 and a likely case in Space 87. The other two small rooms (Spaces 88 and 89) showed no surviving traces of a ladder. A group of buildings constructed in this way, at the same time, was conducive to having shared features, such as roof connections, waterspouts, and a common grading of the terrain in preparation for building. In addition, a unified roof design would have been crucially important for the long duration of mud-brick buildings (Chapters 6 and 22). The macroscopic comparison between the roof remains found in Building 3 and those of Space 87 showed major similarities, including elements that suggested they might have belonged to the same roof.

In addition, artifactual and burial evidence pointed to shared domestic life between the various spaces within the BACH Area. For example, potsherds belonging to the same vessel were found in Building 3 (several sherds) and Space 89 (one sherd) (Chapter 16). Russell and McGowan (Chapter 9) found bird bones of the Little Bittern in both Space 88 and the midden of Space 85, crow bones in both Spaces 85 and 89, and Spoonbill fragments in both Space 88 (beaks) and Building 3 (an articulated wing tip). Although there is no way to establish if these bones were from the same bird, Russell and McGowan suggest that the unusually high frequency in all the BACH Area buildings and their midden Space 85 (relative to elsewhere at Çatalhöyük) of certain relatively rare bird species such as the Great Bittern and Hooded Crow indicate that these buildings were associated with each other (Chapter 9).

Furthermore, Hager and Boz (Chapter 13) suggest that the people from Building 3 represent nearly all age groups, possibly several generations of a single family, and that those in Space 87 may also represent related individuals.

The question posed here is, to what extent during the life history of Building 3 did changes in the domestic features demonstrate the full or partial complement of expected features in a self-sustaining domestic unit? This question is addressed in the next section.

The Rate of Introduction of New Features in Building 3

It is apparent that initially (in Phase B3.1A), Building 3 had no storage and basin facilities, nor did they exist in Phases B3.3 or B3.4B. The activities that involved these facilities must have taken place elsewhere. Building 3 and the house in Space 41 shared a doorway during Phase B3.1, and they may have shared domestic features as well. The subsequent blocking of the door in Phase B3.2 may have taken place once Building 3 had completed the construction of its domestic facilities, at which point it could function autonomously. One could imagine such a situation, for instance, if an offspring of the occupants of the house in Space 41 had just completed Building 3 as his or her new house. Whatever the reason for the absence of these storage and domestic features in the two respective subsequent phases (B3.3 and 4B), we must assume that the Building 3 inhabitants used such facilities that were located elsewhere.

It is suggested here that our interpretation of Çatalhöyük houses must take into account not only those periods when they were self-sufficient entities but also those periods when they were not. Spaces 87, 88, and 89 provided evidence that some functions of the Building 3 household were transferred to these and other structures, albeit temporarily—perhaps when an old house was abandoned and a new one constructed and inhabited, or when a house was undergoing major repairs. These were all periods during which the household needed a *transitional* habitable space. This type of residential cooperation could exist only in a situation where houses in a neighborhood made allowances for it.

Continuity of Settlement in the BACH Area

Moreover, the strong emphasis on house closure before its abandonment at Çatalhöyük, as demonstrated in the BACH Area, together with the ritual practices associated with the construction of a new house, indicate a strong belief in continuity and the connections between past, present, and future (Tringham 2000a). This idea of continuity is also symbolically marked by the distribution of certain material objects, including human skeletal parts, that were placed between the old and the new structures or that were carried from the old structure into the new one. Examples of the latter included the transfer of wooden posts and other structural wood from the old to the new house, as well as human bones. It is feasible that the two human crania that were left as the closure deposit (Cluster 2) in Building 3 had their lower jaws taken to the new house to act as the continuation (in fact, replacement) of Building 3. Instances of lower jaws found on platforms in houses at Çatalhöyük have been reported by Mellaart (1967) and Hodder (2006a) and were also found in Space 89 of the BACH Area.

It has been suggested that buildings at Çatalhöyük were constructed in tight clusters or neighborhoods of 20 to 30 buildings, surrounding and/or surrounded by refuse areas (Chapter 26; Hodder 2006a; Matthews 2005a). Limitations of space for expansion and an inability or lack of desire to expand the settlement horizontally have all been cited as explanations for restricting house-building to the footprint of abandoned structures. Open spaces mostly represented abandoned house plots that had been transformed into waste grounds or middens that eventually became redeveloped (Farid 2007). In such a tightly built environment, houses were constructed in close association and mutual interdependence.

Farid (2007:28) interpreted some of Mellaart's Level VII houses in the SOUTH Area as being part of a larger community, like a neighborhood. For example, Spaces 105 and 112 were jointly constructed, suggesting the involvement of a social unit larger than one household. Similarly, Buildings 18 and 23 were placed on a common foundation raft; moreover, they shared a party wall with an opening between them. Perhaps, as Düring and Marciniak proposed (Düring 2005; Düring and Marciniak 2005), the household in the Anatolian Neolithic was not an independent and self-sufficient unit but rather was part of a larger social association that inhabited clustered neighborhoods.

Social and Physical Bonding of Houses

The structures in the BACH Area support the idea that neighborhoods of houses encompassed buildings that were physically connected by shared walls, roofs, doors, and/or crawl holes. The interaction among the residents of the structures that were adjacent to each other—and the majority of them were—must have revolved around sharing the nearby open spaces as well as the construction and maintenance of the common roof spaces, including pedestrian access and rainwater runoff channels.

This is not to say that wall bonding and doors were necessary to the formation of neighborhoods of houses. Groupings of houses could have formed neighborhoods without the buildings being physically connected. It is our view, however, that in cases such as the BACH Area, where wall bonding, roof sharing, and shared doorways did exist, we have powerful evidence for the presence of a neighborhood of houses.

The degree of social integration in these tightly spaced houses must have been high. Their occupants were linked by a variety of socially shared practices that ranged from daily routines of production, exchange, and consumption to communal rituals, such as feasting, that surrounded reproduction, marriage, and burial practices. It is also likely that the occupants of a neighborhood would have depended on one another for support in times of need. Thus, the residents of one house would have been in a position to use other nearby structures fully or partially at certain times, or to share their own facilities with other groups of related people. Such would have been the case for Building 3 and its "twin" house in Space 41 with which it shared a direct door entry. The need to use or share another building might have occurred at the time when burial ceremonies were being performed in Building 3, when the Building 3 inhabitants would likely have had to evacuate the house for a short period while the grave pit was being dug, while the body was being prepared and then buried, and until the grave pit was closed. Their temporary evacuation would have been prolonged if the ceremony also included wall painting, followed by an application of a new floor and possibly some other changes in the interior configuration of the house. It is equally plausible that other events, such as the delivery of a child, the illness of a household member, or group ceremonies such as marriage or its equivalent, would have required the majority of its occupants to temporarily evacuate the house and relocate to a different building.

It is proposed here that these residential groupings or neighborhoods were comprised of several households that included a multiplicity of gender- and age-differentiated individuals. These households could have been unities in kinship or marriage, and/or residential and economic unities. Netting (1982) defined the household as a task-oriented residential unit that also shared production, consumption, and reproduction. Blanton (1994) and Hammel and Laslett (1974) suggested that nuclear households comprised spouses and their offspring, whereas extended households incorporated two or more co-resident married siblings. Wilk and Netting (1984) discussed the possibility of a household extending beyond a single building. The BACH Area residents formed either a nuclear or extended household that was based on either kinship or residence, like those suggested for other Neolithic Near Eastern settlements (as discussed in Kuijt 2000). Whatever its structure, however, this household must have been tied to other household(s), such as the one in the building of Space 41, forming an extensive social network that was necessary for the survival of the community. The ties that bound these households could have been kinship based, but some Çatalhöyük Research Project team members have put forward a convincing argument for the existence of residential/economic household ties at Çatalhöyük (e.g., Asouti 2005a; Baird 2005). Hodder (2005b) argued that in the upper levels of Çatalhöyük, increased specialization of production and fragmentation of strong community-wide rules suggest that household units may have come to act more independently.

Based on the results of regional survey, Baird (2005) suggested that Çatalhöyük could have developed into a particularly large sedentary community by aggregation of people from other smaller, surrounding settlements. He pointed out the distinct growth of Çatalhöyük's population size and the absence of any significant contemporary settlement nearby. A range of favorable factors to such aggregation—the pooling and negotiating of resources, including marriage alliances—have been suggested (Baird 2005). The formation and continued existence of residentially linked communities at Çatalhöyük suggested here may be understood as the outcome of such aggregation of diverse populations and their need to stay socially allied and residentially bound. The palaeobotanical studies have also noted that Çatalhöyük residents may have needed to rely on social alliances at Çatalhöyük during times of stress—for instance, during unpredictable environmental changes, or seasonally, as resources were less available (Fairbairn, Near, and Martinoli 2005). Similarly, the need for reliable social ties may be proposed for other group activities such as hunting, herding, cultivation, and long trips to acquire basic resources. The formation and maintenance of a social alliance, be it biological or social in nature, would have been more easily achieved if negotiated while sharing the residential grounds as the major corporate resource. By extension, the long-lasting aggregation at Çatalhöyük may have been largely dependent on the maintenance of neighborhoods—that is, residential communities of biologically and/or socially allied people.

Chapter 5

Detailed Report of the Excavation of Building 3 and Spaces 87, 88, and 89 (1997–2003)

Mirjana Stevanović

The buildings in the BACH Area were made visible by the surface scraping in 1993–1995 (Matthews 1996a) (see Figure 1.5). The excavation of the infill in Building 3 and in the Spaces 87, 88, and 89 began together in 1997, but proceeded at a different pace. All the structures in the BACH Area had thick and complex infill deposits (Figure 5.1). Across the area, six post-Neolithic burials (see Figure 14.1) were unearthed, and their excavation markedly slowed the uncovering of the Neolithic deposits. The occupation deposits in Building 3 varied considerably, depending on their location in "clean" deposits in the northern half or in "dirty" deposits in the southern half of the house. Ideally, we aimed to excavate the infill stratigraphically, but this was not always possible. In the upper layers of infill, arbitrary spits were used in some locations. As we came down onto less fragmented and eroded infill, we were able to recognize—in the northern part of the building—the thick, solid, striped surfaces, which had not been seen at Çatalhöyük before and later proved to be roof remains, contrasting sharply with the layered, soft midden deposits in the south. Various excavation strategies were applied, including the retention of two baulks (east–west and north–south), which exposed some things (such as the roof strata) but also obscured others (see discussion in Chapter 2). The most prominent feature in the building from the top of the infill comprised the remains of a screen wall, which was among the hardest to define and slowed the excavation. In the infill, the mix of truncated Neolithic building remains, postdepositional midden deposits, and the undisturbed Neolithic deposits at the bottom of the infill were generally difficult and occasionally impossible to separate. Our excavation process became more comfortable as we approached the uppermost Neolithic floors in the building.

Crucial relationships within and between these spaces and Building 3 were not revealed until the very end of the excavation in 2002–2003. Interlinking shared walls demonstrated that Building 3 and Spaces 87, 88, and 89 had been built at the same time and were likely cohabited. Even so, there were crucial differences between them in terms of floor plan, size, internal organization, building materials and methods, and use. There was no other direct evidence, such as access holes in the walls, that would have allowed direct communication from one space to another. As usual at Çatalhöyük, the upper portions of the walls and features had been systematically truncated and were missing, which might have explained the apparent absence of access holes between the structures.

Location and Plan

The BACH Area is located within the densely populated NORTH Area of the East Mound which features numerous buildings and open spaces between them (see Figures 1.5, 1.6). Houses excavated or currently under excavation in the immediate vicinity are Buildings 1 and 5 to the northwest and houses in Area 4040 to the south (see Figure 2.14). Of these, only Building 1 (in addition to Building 3) had been entirely excavated as of 2008. Nevertheless, some temporal and spatial relationships of buildings were revealed based on these partial excavations. The aim of the current and planned larger exposure by excavation is to use these relationships to define possible "neighborhoods" (Hodder 2006a).

Building 3 (see Figure 4.1) was bordered on its west side by an open, "unoccupied" area (Space 85), which also served to delimit the eastern edge of Building 1. This space was filled with midden at least during the occupation of Building 3. To the north of Building 3, there was another open area (Space 40) filled with midden after the occupation of Building 3.

To its east and south, Building 3 was bordered by other structures. On its eastern side (Space 41), there was another

Figure 5.1. Views of the BACH Area during excavation: (a) 1999, looking south; (b) 2001, looking west; (c) 2001, looking west; (d) 2003, looking northeast.

building that formed a double wall with Building 3 and shared an access hole in the wall, indicating communication between them during the early phases of Building 3. Space 41 was surface scraped in 1993–1995 and was partially excavated in 2007 during the foundation trench preparation of the new 4040 Area shelter. These limited excavations revealed what seemed to be the northeast corner of a building with unplastered walls and truncated floors which were consequently filled with orangish construction material (Farid et al. 2007).

Three additional structures—Spaces 87, 88, and 89—were located immediately to the south of Building 3. The larger, roughly rectangular Space 87 was only partially excavated but was probably part of a much larger structure to the west and south of the BACH Area. The walls of Spaces 87, 88, and 89 (F.1023, F.1006, F.1026) formed a double wall with F.763.

Building 3 had a rectangular plan that measured 5.98–7.20 m north–south × 4.91–6.11 m east–west from the external edges of the walls (see Figure 1.7). The interior width of the house from the innermost courses of bricks in both the west and east walls varied from 4.75 to 5.70 m (Figure 5.2). The total floor size of Building 3 was 31.41 m^2. Its truncated walls were preserved to similar heights: north wall to 1.40 m, south wall to 1.20 m, east wall to 1.10 m, and west wall to 1.00 m. Building 3 was excavated as Space 86, Space 158, and Space 201. At the time of its construction, the entire building was used as one open space (Space 201). In the middle of its use-life, two partial north–south walls and a screen wall divided the building in two (Spaces 86 and 158). Space 158 was assigned to the narrow portion along the west wall of the house, whereas Space 86 covered the remaining larger portion of the building.

Building 3 and the three rooms to the south were the final buildings in this particular location, as was Building 1 to its northwest. The southern part of Building 3 was filled in with midden remains that were generated after it ceased to be a residence. The midden in question comprised a combination of rapid infilling with the construction elements of Building 3 and more slowly accumulated deposits

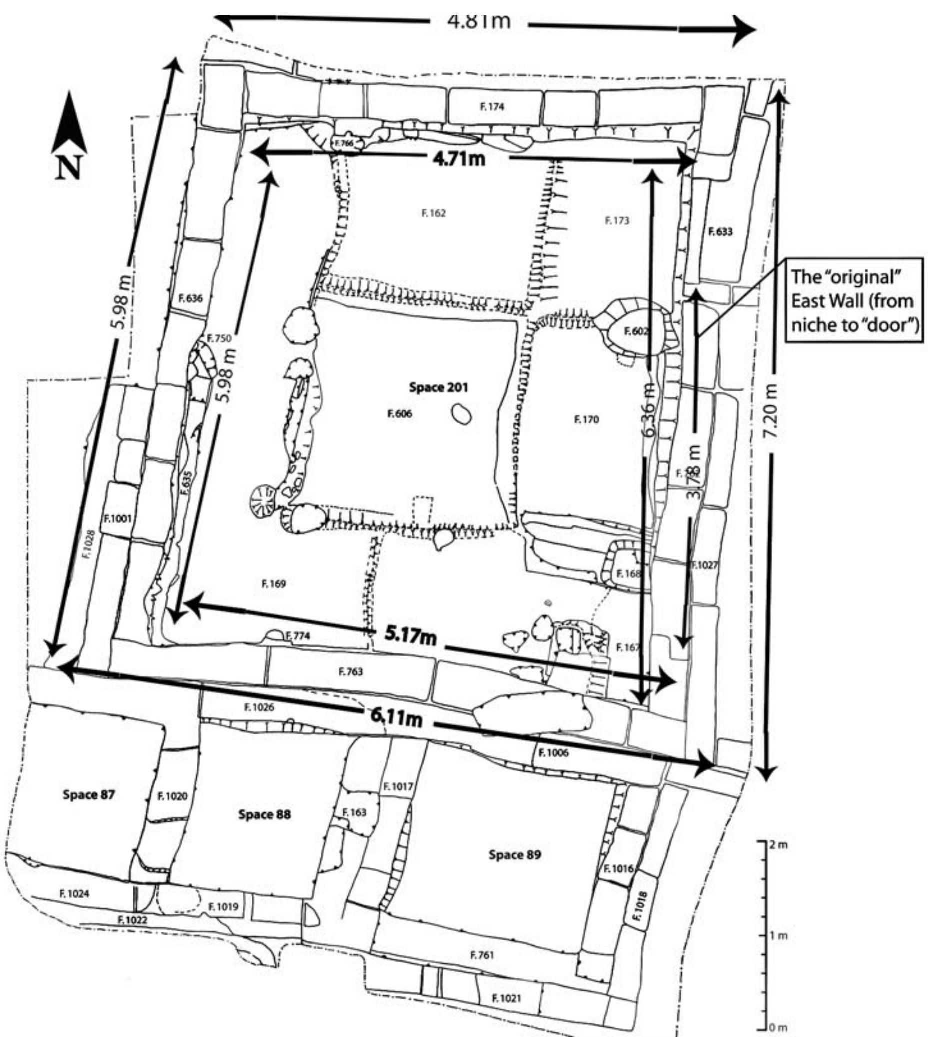


Figure 5.2. Dimensions of Building 3.

of day-to-day living. It was not apparent where the slowly accumulated internal midden deposits originated, just as it was not clear why no houses were built over Building 3 and Building 1. Judging by the midden in Building 3, however, other houses in the neighborhood continued to be occupied after the abandonment of Building 3, including possibly Building 1 itself, and certainly including some buildings recently excavated in the 4040 Area.

Phasing of the Buildings in the BACH Area

The occupation of Building 3 and Spaces 87, 88, and 89 has been set out in a sequence of phases (see Figure 4.3; Tables 4.1, 5.1). Phases are based on the stratigraphy of the deposits and spatial and temporal relationships of the features as seen by the excavators, which arguably could be interpreted as arbitrarily created breaks in a sequence. Farid (2007) and Cessford (2007b) have already stressed the difficulties we encountered in phasing the Neolithic buildings at Çatalhöyük. Some intricacies stemmed from the nature of the data. For example, intensive Neolithic activity would lead to a higher frequency of discontinuities in the preserved deposits, such as small- and large-scale truncation and removal events, making it difficult to talk about a single sequence at any one time. Instead, in most instances, we depended on discrete islands of deposits with relatively few interconnections. Other difficulties resulted from a lack of time to practice the kind of detailed excavation that would be necessary to uncover all the surviving interconnections among the deposits. The aim of the BACH project was to reveal the original breaks in what seemed to be a continuity of use and activity, and our impression is that we have achieved this objective through our detailed excavation methodology (see Chapter 2).

Building 3 was a structure with a complex history, much of which had been preserved through continuous recurrence of structural and occupational deposits. Numerous construction characteristics and floor sequences were considered in defining the phases of its life history. The most apparent construction characteristic was the introduction of partial walls and the replacement of ovens in an existing location or their introduction in a new location. Other criteria were the relocation of hearths and the establishment of new features, which were either of a domestic or a symbolic nature. In Building 3, the introduction of burials in new burial pits also signaled a change of phase. However, interment of a new skeleton in an existing burial pit was not necessarily an indication of a change of phase.

Farid (2007) noted already that phases were difficult to correlate in different rooms of a building, since a threshold step often obscured stratigraphic relationships, and rooms were therefore phased independently. Thus, the open layout of Building 3 for much of its history enabled us to follow particular floor sequences—and, with them, changes in phase—across the entire house for much of its use-life. Floors of both the central area and the platforms tended to separate in *blocks* from the floors underneath. Blocks contained numerous thin horizontal layers of floor plaster and packing, which were periodically disrupted by much thicker floor layers. Thin layers of floor and packing representing probable annual or semiannual renovations were different from the less frequent thick layers of floor and packing material that likely marked a major change. We interpreted the latter as criteria of major construction changes, helping to define a phase change. The major disruption in the floor patterning occurred in the latest phase of the house, when the interior walls and the screen wall were erected, creating a spatial discontinuity between the narrow west room and the rest of the house.

The phasing of Building 3 is based on the sequences constructed for Space 201, Space 158, and Space 86. These spaces have been divided into five phases, three of which are divided into significant subphases, making a total of ten phases in the history of Building 3 (see Table 4.1; Figure 4.3). Phase B3.1 (divided into four subphases) represents the construction of Building 3, followed by a period of prolonged stable and gradual development. Phase B3.2 marks a period of major disturbance and change in the house. After these major changes, there was a return to the original organization of the interior space (Phase B3.3) in which the earliest burials occurred. Phase B3.4 (divided into two subphases) was marked not only by a number of burials but by considerable efforts to physically partition the house. In Phase B3.5A, Building 3 was taken through an elaborate and symbolically intense process of dismantlement, closure, and its partial infilling, followed by a long period during which Building 3 was abandoned as a residence, although it continued to be used for a long time thereafter as a waste disposal location, represented by the buildup of midden and, much later, as the burial ground for a Roman cemetery (Phase B3.5B). Thus, Building 3 is unusual in that it was not closed and immediately filled prior to reconstruction of a subsequent building.

The phases of Spaces, 87, 88, and 89 (Table 5.1) have been defined using different criteria from those of Building 3, since there were no in situ hearths/ovens or other such features to aid in the definition of the phases. Thus, the phasing of these "special purpose" rooms was based on other indicators of change, such as the introduction of new floors and/or other features (platforms, storage-type facilities, burials).

Table 5.1. Phases identified in the history of Spaces 87–89

S.87.1	Floors 3 and 4 (earliest/bottom floors)
S.87.2	Floors 1 and 2 (later/top floors)
S.87.3	Room infill (latest event in the space)
S.88.1	Floor 5 (earliest/bottom floor)
S.88.2	Floor 4
S.88.3	Floors 2 and 3
S.88.4	Floor 1 (later/top floors)
S.88.5	Top floor series (latest event in the space)
S.89.1	Early room infill
S.89.2	Late room infill

The Spatial Divisions of Building 3

Building 3 was spatially conceptualized in three distinct zones: the L-shaped South-and-West, the L-shaped Northeast, and the Central Floor Zones (see Figure 4.2), which differed in the type of features placed in them, the type and degree of symbolic elaboration, and the activities that took place there. The three zones went through major or minor changes throughout the history of the building but remained distinct areas. If anything, with time their differences became reinforced (for more discussion on this topic, see Chapter 6). Demarcations between the zones were articulated through differential floor and feature heights, by benches, and by discrete dividers in the floor, such as ridges, thresholds, curbs, and banks. In the later stages of its use-life, the house acquired more pronounced physical divisions of its internal space by separating the west margin (Space 158) from the rest of the building (Space 86), but the earlier divisions between the north, center, and south zones of the building were retained in both spaces.

In addition to the three zones that we identified, we should note another spatial division. Throughout its history, the central area of Building 3 and the area along the central part of the south wall stayed on one level, whereas the remaining areas of the house were elevated at roughly the same height. Even though the house platforms started off at the same elevations, the north-central platform (F.162) ended as the most elevated in the final phase of the house.

L-Shaped South-and-West Zone

The L-shaped South-and-West Zone comprises the space along the west and south house walls. These areas were predominantly for storage, food preparation, cooking, and house entry. This zone was characterized by both "clean" and "dirty" floors. It included an activity area in the southeast part of the building, which, throughout the excavation, we referred to as a "kitchen" due to its heavy use for the domestic tasks related to cooking; adjacent to it on its eastern side was the ladder entry area. Along the west perimeter wall of Building 3, this zone was dominated by ovens, storage bins, and basins. In the later phases, this area along the west wall (designated Space 158) was entirely separated from the rest of the house.

L-Shaped Northeast Zone

The L-shaped Northeast Zone incorporated the north-central and east-central areas comprising the northeast corner of Building 3. This zone was made up of three distinct platforms (F.162, F.173, F.170) that were attached to the north and east perimeter walls of Building 3. At certain times, the platforms served as a burial ground within the house. Numerous burials were found under the north-central (F.162) and northeast (F.173) platforms. These platforms were distinguished by "clean" white floors, which showed no traces of domestic activities. Judging by the access hole cut in the east wall of Building 3, this area was where communication between Building 3 and the adjacent building (or alley) to its east must have taken place in Phase B3.1.

Central Floor Zone

The Central Floor Zone in the middle of Building 3 was always distinct from the other parts of the house by the low elevation of its floors which, despite their multiple functions and disturbances—burial ground, floor cuts and/or "heating" installations, and heavy foot traffic—remained "clean." We often referred to this central area during the excavation as Feature 606.

The Life History of Building 3

This long section describes and discusses sequentially the life history of Building 3. The chronometric and relative dating for the building suggests that it was occupied for perhaps one to two generations in the middle of the occupation of the East Mound at Çatalhöyük (equivalent to Mellaart's Levels VI–VII) ca. 7000–6500 cal B.C. (see Table 4.2; Figures 4.4–4.6; Chapter 4, "Dating the Structures in the BACH Area"). In the sections that follow, each phase in the history of Building 3 will be described by zone and by the particular features located in them.

Phase B3.1 (with Subphases A–D)

The long-lasting Phase B3.1 with its four subphases was a period of initial house construction and subsequent gradual buildup of the interior that included new features and very little truncation or destruction of existing features. The original spatial configuration of the interior as a tripartite division was respected throughout this phase, comprising a central open space, platforms in the north and east, and a raised floor in the western part of the building. An oven was firmly established in the southwest corner of the house. The floors of the central and the southern areas of the building were at a lower level than the remaining floors, which were all on the same—slightly higher—elevation (Figure 5.3; also Figure 5.4 [on-line]).[1]

During Phase B3.1, the South-and-West Zone was assigned mostly to activities related to food storage, food processing, and cooking. The Northeast and the Central Zones show slight traces of specific use, most likely linked to sitting and sleeping. In addition to outdoor/indoor communication

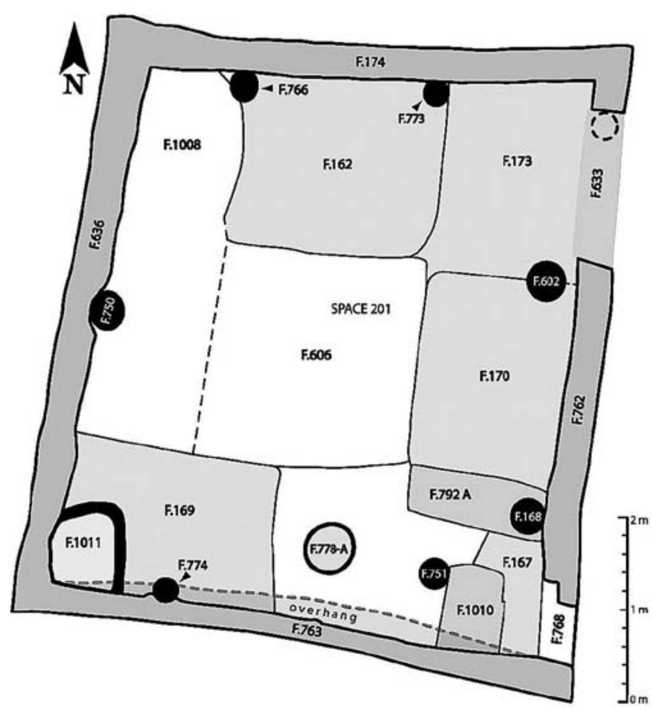


Figure 5.3. Phase B3.1A of Building 3.

[1] Figures, tables, and appendices followed by "[on-line]" are available only in the on-line edition of *Last House on the Hill*. Go to *http://www.codifi.info/projects/last-house-on-the-hill* to access these elements.

through the roof opening, a lateral access to the building (or space) existed to the east through the doorway F.633/F.1027. No burials were interred inside Building 3 in this phase.

Changes in the organization of space were introduced very gradually during Phase B3.1. One example is the separation between northwest and north-central platforms. The north-central platform (F.162) was initially open toward the northwest corner of the building. However, as the second storage bin (F.770) was built in this corner in Phase B3.1D, a bench (F.772) was introduced to separate what became a pronounced storage area (in the northwest corner) from what would become the most prominent platform in the building (F.162). By contrast, the southwest platform (F.169), although elevated in relation to the Central Zone and the southern part of the house, had an open and uninterrupted relationship with the rest of the house throughout Phase B3.1.

As these slow changes were being created in the house interior, problems with the west perimeter wall of Building 3 were occurring, possibly already in Phase 3.1B. Because of this, the Phase 3.1A oven (F.1011) was replaced by one (F.785) slightly to its east, leaving room for the insertion of a new wall/bench (F.635 and F.1000) along the west house wall, possibly for support (Chapter 6).

B3.1 Subphase A: House Construction

Due to the earlier construction activity in this location, there were some limitations within which Building 3 could have been constructed. The ground on which Building 3 was set was covered with uniformly black midden, through which the walls of an earlier building in the north and south could be seen protruding (see Figure 6.1). As a result, the east and west walls of Building 3, parts of the north and south walls, the floors, and some features were constructed on midden (see the implications of this in Chapter 6, "The Foundation Ground for Building"). The south end of the midden was seen immediately below the eastern part of the south perimeter wall (F.1006) (see Figure 4.1). On the west side of Building 3, the midden seemed to blend with another (and probably later) such deposit in Space 85. The eastern edge of the midden was directly below the east wall (F.762), abutting red-clay packing that lay below the double east wall (F.1023). On the northern side of Building 3, we could not establish the limit of the midden.

The underlying midden itself mostly comprised charcoal and ash with large quantities of animal bone and obsidian fragments in a dark brown soil matrix. In some areas, the midden soil served as packing for the earliest features of Building 3, such as the northwest platform (F.1008). A strip of the midden soil (8585, 8586, 8589) measuring 40–50 cm wide and 20–30 cm deep was excavated along the four walls of Building 3 in order to completely expose the footing of the walls. These excavations showed that along the west wall, the midden was unusually rich in bone, stone, and shell remains. In the central part of the north wall, the midden was almost completely sterile, comprising very compact, black soil. The very first floor was placed directly on the midden. The first features built on it were the oven in the southwest corner (F.785), a hearth in the middle of the south area (F.778), and a bench in southeast corner (F.792).

The north and south perimeter walls of Building 3 were constructed partially on earlier walls. The house posts, which supported all walls, were inserted in the midden along the walls. Most likely, a freestanding post in the southeast of Building 3 served as an entry ladder. The large access hole or doorway (F.633) and the small access hole (F.768), both in the east wall, were established as the wall was erected.

The terrain below the house sloped down toward the north. The lowest point of the north wall (at its eastern end) was by far the lowest point of the whole building, excluding the postholes. While the rows of bricks were leveled in the upper portions of the walls, the lower courses of bricks were slumping (see Figures 6.2–6.5). The north wall itself, as well as the bottom course of bricks of the east and west walls, sloped down from their margins toward their midpoint. Unlike the other walls of Building 3, the south wall did not show much slumping (see discussion of slumping in Chapter 6, "Wall Mechanics" section).

Walls of Building 3

The four perimeter walls of Building 3 were built in the following sequence: the double south walls were erected first, followed by the east wall, and finally by the west and north walls (refer to Figure 4.1). The sequence of wall construction correlated with the surrounding structures. That is, the south and east walls, which were built first, were bordering other existing structures. The double south wall was built on earlier walls, as were the walls of Spaces 87, 88, and 89. The north wall was also placed on an earlier wall. Both the north and south walls, however, deviated from the earlier walls by 8–10 cm in a northerly direction. The east and west walls were both placed directly on the black midden beneath.

The east perimeter wall (F.762) measured 7.20 m in exterior length and 6.36 m in interior length (see Figure 6.3). The west wall (F.636) was 5.98 m in exterior length and 5.71 m in interior length (see Figure 6.5). The width of the east and west walls ranged from 0.25 m to 0.50 m, with the majority of bricks being around 0.40 m wide. The north wall (F.174) measured 4.91 m exterior length and 4.75 m interior length (see Figure 6.2). The south wall (F.763) measured 6.11 m in exterior length and 5.70 m in interior length (see Figure 6.4). The width of the short walls ranged from 0.36 m to 0.47 m in the north wall, and 0.33 m to 0.46 m in the south wall.

On the outside of Building 3 abutting the west wall, two incomplete walls (F.1001, F.1028) were discovered. The walls belonged to an earlier structure that was located below and to the west of Building 3. These two earlier walls were made of bricks that had a different clay content and were a different size from those in the Building 3 walls. The bricks and mortar of wall F.1001 were made of gray and orange clays, arranged in alternating colors: orange clay bricks had a mortar of gray clay; gray clay bricks were placed in orange mortar. The bricks of F.1001 were short (up to 60 cm) and thin (up to 3 cm) and of irregular shapes. At the southern end of wall F.1001, the top course of bricks was mixed with rubble. The northern end of the wall was rounded. The west wall surface of F.1001 was smoothed by a rough coat made of brown mortar clay. When first detected, the two walls were interpreted as a part of the shoring for the west wall of Building 3, but this idea was later rejected since they both were covered with the midden (Space 85) during the later history of the building.

Bonding and Wall Foundation Deposits

In all four walls of Building 3, three horizontal sections of different bricks and mortars, called "lifts," were observed, each of three to four courses of bricks (see Figures 6.2–6.5). Bonding occurred in some wall corners in the second course of bricks (see Figure 4.17 and the "Autonomy of the House" section in Chapter 4). Bonding did not occur in every course of bricks but was observed in several courses. In the north wall (F.174), for example, the second course of bricks was bonded with the east wall bricks (F.762) in whose mortar two potsherds were found.

Another type of bonding was found at the meeting point of the south wall of Building 3, which rested on the earlier wall. A longitudinal channel was prepared in the top surface of the earlier wall while Building 3's south wall was placed to fit in the channel.

The south perimeter wall (F.763) was a component of a double wall; its partner wall consisted of two short walls, F.1006 and F.1026, which made up one long wall parallel and just south of wall F.763. This situation was not apparent until the removal of F.763. The two lowest courses of bricks in the long wall bonded with wall F.1023. These three walls were built at the same time, overlying an earlier wall (F.1029), which served as the footing for the double walls (F.763, F.1006, F.1026) in the south of Building 3. The earlier wall (F.1029) had been truncated down to only four courses of bricks, which themselves were placed on even earlier midden deposits. After we removed F.763, it became apparent that Space 89 was bordered on the north side by a wall 2.5 m long (F.1006). Wall F.1026, which measured at least 3.0 m (but more likely had a total length of ca. 6.3 m) enclosed Spaces 88 and 87 on their north. It was not apparent why these contemporaneous walls (F.1006, F.1026) were built as separate features and not as a continuous wall. One possibility is that the Neolithic builders achieved a stability with two shorter walls that was not attainable with a single longer wall. The bricks in the two walls were also somewhat different, whereas the mortars were made of the same midden deposits in both walls.

In the southeast corner of the east perimeter wall (F.762), the first course of the east wall stopped at the beginning of the first course of the south wall, which extended eastward and under bricks that belonged to its pair-wall (F.1023) to its east. The east wall bricks in the second course from the bottom extended under the bricks of the south wall (F.763). All the bricks in this particular area had been very carefully selected and differed from other wall bricks. They were strong, well compacted, and had sharp edges and regular corners. They were of smaller size, ranging from 0.30 to 0.40 m in length.

Artifacts seemed to have been deliberately placed within the east wall, which had an unusually thick layer of mortar between F.762 and its pair-wall, F.1023 (0.12–0.15 m). Within this mortar, we found a 4 × 2.5 cm lump of red pigment in which was embedded a stone tool that had possibly been used in grinding pigments (8670). Twenty centimeters deeper in the same deposit, a bone point was found. In addition, fragmented clay balls were discovered under the bottom bricks at the north and south ends of the east wall, and in the middle of the wall, while coprolites were uncovered at its southern end (8679.S3).

During the excavation, the relationship of the two east pair-walls (F.762, F.1023) remained somewhat unclear, mainly because the building to which F.1023 belonged was unexposed. It was only when F.762 was excavated that wall F.1023 could be seen. F.1023 was equal in length to its pair (F.762) but much narrower—only 0.28–0.30 m wide—making it one of the narrower perimeter walls at Çatalhöyük. The base of wall F.1023 comprised a packing layer (ca. 0.10 m thick) of compacted beige-orangish clay mixed with midden. This wall base was unusual in that all other walls in the area were built directly on top of earlier walls or on midden deposits. The thick packing between the two walls comprised brown-orange soil (8652) and contained the above-mentioned lump of red pigment.

The west wall bonded with south wall F.763 with a peculiar junction. A depression ca. 10 cm deep in the south wall brick allowed it to be keyed with a west wall brick that had a protrusion that fit into the depression. Clay balls were found under the bottom brick course at both ends of the wall, as well as in the middle of the wall.

Chapter 6 provides detailed descriptions of the bricks and mortars used in the construction of the walls, as well as a more detailed analysis of the walls themselves and issues such as construction material procurement and maintenance.

Wall Features

The importance of timber posts at Çatalhöyük and their archaeological manifestations are discussed in Chapter 6 ("Posts" section). Two post-retrieval pits, F.766 and F.773, on the north perimeter wall indicated the location of posts (Table 5.2). Posthole F.766 was aligned with the north–south

Table 5.2. Postholes within Building 3

Feature #	Diam. in m	Diameter of post-retrieval pit in m	Length N–S in m	Length E–W in m	Depth in m	Location	Note
168	0.2				0.8	East wall post	Depth from latest house floor.
602			0.17	0.09	0.85	East wall post	Rectangular w/ rounded corners; end was pointed. Depth from the latest house floor.
608	0.2	0.3			1010.81	Screen wall post	Post-retrieval pit was R-30 cm.
609	0.12				1010.74	Screen wall post	
611	0.1				1010.6	Screen wall post	
614	0.14	0.45 N–S × 0.36 E–W				Southernmost posthole for screen wall	Size of the post-retrieval pit. Post size not visible.
750	0.2					Post in the middle of west wall	
766	0.17				> 0.30	Post along north wall	Indirect measurement of the depth.
767	0.2				1010.91	Screen wall post on west side	
773 (8400)			0.15	0.07		Half-trunk post along north wall	
774 (8152)	0.19				0.30> at 1011.672	Along south wall	
X in F.633			0.20 N–S	0.34 E–W	0.6	Probable post along northern vertical edge of doorway F.633	Depth is visible measurement within F.633.
Screen wall post 4			0.30 N–S	0.12 E–W	1010.68	Plank in the middle of screen wall	
Screen wall post 5	0.12				1010.62	Screen wall post	
Screen wall post 6	0.12				1010.62	Screen wall post	

border between the north-central platform (F.162) and the storage area in the northwest corner of Building 3. The post measured 0.17 m in diameter, and the hole in which it was set had been lined with a 1-cm-thick mortar layer from the bottom up to 30 cm above its bottom on the west, north, and east sides of the pit (8216, 8441). Chunks of white plaster clay found packed in the hole were presumably used as packing around the post. In Phase B3.1, the post was abutting the north wall, but from Phase B3.2 onward, bench F.772 and interior wall F.160 were integrated into this post.

Against the north wall, post-scars indicated the position of another post (F.773) cutting through the floors of the north-central platform (F.162), which combined a smaller posthole within a larger post-retrieval pit. The smaller pit (8400) represented the wooden post in the shape of a split tree-trunk that measured 0.15 m north–south × 0.07 m east–west. Its base, which reached below the earliest house floor, was packed with plaster clay so that a clear impression of the post set in the clay could be seen.

In the south perimeter wall, post-scars indicated the position of a post (F.744) that measured 0.19 m in diameter, with its bottom depth at least 30 cm below the floor surface (8152). A lining of plaster clay evened out the interior surface of the posthole. The upper portion of the posthole was packed with several fist-size balls made of bricky clay; these functioned as packing around the wooden post (8246). This same post was incorporated in the later interior wall F.161 (Phase B3.4A).

Post F.750 was the single post on the west side of the building (Figure 5.5). It was located in the middle of the west wall but was not a permanent feature, existing only from Phase B3.1A to B3.2, after which it was removed and replaced with a storage basket (6642; see Figure 2.21) in Phase B3.3. Plaster scars on the wall were vestiges of a plastered post and corresponded in size to a wood post whose diameter measured 0.10 m at the base of the wall but widened to 0.40 m at 0.35 m from the base. The brown, bricky clay fill of the posthole (F.750) was mixed with large fragments of thick wall plaster, which seemed to have slipped from their original place on the west wall. The fill of F.750 was thus very similar to the fill of the post-retrieval pit F.602 next to the east wall. An additional indication of the presence of post F.750 was the existence of a depression in the midden below Building 3 where the base of the post would have been. In an attempt to make its base harder, the depression was packed with hard, burned construction material. Thus, at the very beginning of the life history of Building 3, F.750 was a plastered post that was elaborated by plaster molding. In the later Phase B3.3, this feature was truncated and leveled off with compacted clay (8305), including deposits called "Neolithic concrete" (8413).

In the east perimeter wall, two large posts, F.602 and F.168, were symmetrically positioned on the east wall flanking the centrally located platform, F.170. The northern post of the pair (F.602) was aligned with the original boundary of the two platforms, F.173 and F.170. The actual posthole inside the post-retrieval pit F.602 measured 0.17 m north–south × 0.09 m east–west; it represents the only example of a post with a pointed base. The depth of the post was ca. 0.30 m below the earliest floor and 0.80 m below the top house floors. Its fill included amorphous lumps of molding plaster that had been jammed in (see Figure 4.13). The post inside the southern post-retrieval pit, F.168, would have been aligned with the original boundary of the two platforms F.170 and F.167. The actual posthole was 0.20 m in diameter, and it reached a similar depth to that of F.602.

Other features in the east perimeter wall included an access hole or doorway (F.633) in its northern corner and a crawl hole (F.768) at its southern end, both of which were created as the wall was constructed.

Figure 5.5. Posthole (Feature 750) abutting the west wall of Building 3.

Wall opening F.633 (Figure 5.6) also provided access between Building 3 and the building to its east (Space 41) during Phase B3.1 and was most likely blocked during the rebuilding of Phase B3.2. It was first recognized as the fill of a large cut with a sharp top break, steeply sloping sides, and a flat base. In 2002, when the plaster from the interior face of the east wall had been removed and all the floors in Space 201 had been excavated, it became clear that this feature was in fact a blocked opening. It measured 1.05 m north–south × 0.25–0.37 m east–west, and was preserved to a height of only 0.42–0.48 m due to the truncation of its top portion during the process of house abandonment. Wall opening F.633 was blocked by brick and mortar of the same kind as that used in the construction of the east wall, indicating that the blocking was introduced fairly early in the history of the house. The crumbly clay that was used in the blocking of F.633, alongside the brick and mortar, contained small-sized animal bones that are typical for redeposited fill, but it also included one complete bone point.

The bottom course of the east perimeter wall was interrupted in the area of the wall opening, F.633 (see Figure 6.3). Directly under the opening, the footing brick was missing and had been replaced with a brick that was interpreted as a threshold or doorsill that was placed directly on the underlying midden, but actually at the height of the second course of east wall bricks (Figure 5.7). This was achieved by placing the doorsill brick on a pile of highly compacted midden deposits (8665). The doorsill brick was covered with white clay, and there was some indication that the entire doorframe had been plastered. Immediately under the earliest floor plaster coat of the doorsill, a layer of packing 0.05 m thick was excavated (8691), which included a 0.06-m-long sandstone slab found at the bottom of the packing. Over time, four additional plaster coats were added (8689), each with a packing layer of sandy clay measuring 0.05–0.01 m thick. On each floor plaster surface, a thick black, greasy layer of deposits had been formed by foot traffic. The middle part of the step—which was the most walked on—had no surviving plaster. Instead, at this point there was a series of gray and black floor layers indicating where the house inhabitants had been stepping as they moved in and out of Building 3.

The plaster that covered the doorframe continued over to the nearby post (F.602) on the inside of Building 3, indicating that the two features had been installed and renovated at the same time. Traces of plaster that must have once covered the entire doorway were preserved along the sides of the horizontal "sill" and along the surviving vertical sides of the opening. The plaster that was preserved in the bottom corners of the doorframe comprised lumpy, greenish, greasy clay, which we find elsewhere on the site used for wall plaster when applied as a single thick layer.

There is the possibility that a horizontal wooden log, which would have been placed at the level of the doorsill, was included in the construction of F.633 (Figure 5.7). The ambiguous evidence of the beam is a short tunnel-like feature across F.633, coinciding with an animal burrow that was filled with reddish brown and gray soil with salts and phytoliths (6277), in which were found an obsidian tool (6277.X1), two bone tools, one of which is a complete point (6277.X2), and a sheep/goat tooth.

Figure 5.6. Opening or doorway (F.633) in the northern part of the east wall of Building 3.

Judging by the shape that was left in the surrounding matrix at the northern end of F.633, a vertical wooden post, measuring 0.20 m north–south × 0.34 m east–west and 0.60 m high, had been erected. The post had a sharp-edged quadrangular cross section and rested vertically on a 0.02-m-thick layer of whitish clay that was part of the earliest floor coat in the feature. Under this layer, the base of the posthole was made of a fine layer of mud brick resting on the midden under Building 3. The post must have been taken out immediately before the access hole was blocked in Phase B3.2, and its hollow was filled in (8633) with sterile, very compact brown-reddish bricky clay.

Two features that were shared by both pair-walls F.762 and F.1023 to the east were an opening (F.1027) in the central part of wall F.1023 and the doorway (F.633) in the north part of wall F.762. The two openings, F.633 and F.1027, were very similar in size and shape. Opening F.1027 measured 0.86 m north–south × 0.28 m east–west and was 0.46 m high (Figure 5.8). The northern edge of F.1027 was aligned with the large plastered post (F.602) on the inside of Building 3. The packing that was used to fill in F.1027 comprised two parts. The northern part (8671) had a basal layer of solid, clean clay (0.25 m thick), which rested on the same midden deposits as Building 3 and was overlain by a compact clay packing with plaster fragments and chunks of mortar. The southern part (8688) of the packing of F.1027 comprised five courses of mud brick and mortar. The mud bricks (0.06–0.08 m thick) were made of yellow-beige sandy clay, while the mortar layers (0.02–0.04 m thick) were made of gray silty clay. At the bottom of the packing, two clay balls were found. The function of F.1027 is uncertain; it may have represented a large niche or an

Figure 5.7. Detail of possible doorsill (F.633) in the northern part of the east wall of Building 3.

Figure 5.8. The doorway and threshold (F.1027) in the northern part of the east wall of Building 3.

earlier access hole that had been blocked before or when F.762 was constructed, in which case those features would have belonged to another, earlier building. Since there was evidence from their bonding that the two walls were constructed at the same time, this scenario is unlikely. Alternatively, it is possible that F.1027 was part of a special construction between the walls, possibly linked to the roof construction, which at some point was abandoned and replaced with packing soil.

Wall opening F.768 was built into the southern end of the east wall (8662, 8335). The opening was square in plan (0.55 × 0.55 m) and was lined with wall plaster that began at the height of the house floor and stretched upward (8664) (Figure 5.9). Several plaster floor coats covered the sides and the base of the opening. Wall F.1023, belonging to the adjacent house to the east, served to block the opening in the later phase of the house. Wall opening F.768 functioned as an access hole between Building 3 and the adjacent house, and it was contemporary with doorway F.633.

Wall Plaster

All four walls and the later interior walls of Building 3 were plastered with multiple layers of white clay (see Chapters 6, 7, and 22; also Figure 4.17). The number of coats varied, as did their state of preservation. The north, east, and south perimeter walls had thicker layers of plaster (Figure 5.10). Those on the north and south walls were better preserved than those on the east wall. The interior faces of Building 3 walls were plastered after their completion with a base coat made of beige clay, followed by a white clay plaster coat and, over time, by numerous other coats in pairs (beige and white). Initially, the plaster was white, but this changed with time when particular walls or their sections were painted with red and black pigment (see Chapter 23). Some plaster coats were covered with black soot, not at the base of the wall but starting at ca. 0.60 m (measured from the earliest floor) on all four walls. For instance, on the north wall, which was most distant from the fire sources in the building, soot occurred along the entire wall in Phase B3.4A, but only prior to the occurrence of painting on the wall. In the southwest corner where multiple ovens were situated, we found the greatest concentration of soot, especially on the south wall, where it was also visible in the post-scar F.774.

Both interior walls F.160 and F.161 contained multiple plaster coats. Wall F.160, located west of the north-central platform F.162, had a sequence of painted plaster layers on its eastern face (Phase B3.4) contemporary with the last burials on platform F.162; this was the best preserved such plaster in the BACH Area. The initial sequence of white clay plaster coats was followed by the sequences of painted plaster; minimally two white plaster layers covered the painted coats. The first sequence of painted plaster comprised three bright red-orange (2.5YR 7/6) layers of sandy loam with organic inclusions. The second sequence was executed in darker red color (10YR 5/6), and the third, which belonged to B3.4B, was of the same red-orange shade as the first one. At least two white plaster coats covered the red painted plaster, the outermost of which was mainly present in the upper parts of the preserved wall as a 3-mm layer of white plaster.

The eastern face of F.161 had horizontal ridges built up over time as irregularities in the plaster (Figure 5.11). It was a common occurrence at Çatalhöyük houses that the surfaces of the wall plaster were (perhaps intentionally) rippled and uneven, even though the plastering was carefully carried out (Hodder 2006a).

The north perimeter wall was plastered over numerous times with white coats, several of which were painted with red pigment (3523). The painted portion of the north wall covered an area 3.4 m long, stretching from interior wall F.160 to the northeast corner of Building 3 (8203, 8590).

Figure 5.9. Crawl hole (F.768) in the southern part of east wall of Building 3, looking southeast.

This span coincided with the north-central platform (F.162) and the northeast corner platform (F.173). However, it was impossible to establish whether the painted panel on the north wall continued onto the east wall, as is known from the "Volcano/City plan" mural in shrine VII.14 (Mellaart 1967:133, Figures 50, 60). The painted layers on this wall matched those on F.160 (see above); two different shades of red pigment were observed on this wall, a lighter red color (3522.S2) and darker red shade (3522.S1). It was not possible to establish with any certainty whether the two shades of red belonged to the same plaster coat or whether they came from two different plaster coats. Long exposure and weathering of the plaster made it too fragile to be excavated in layers, but we were quite certain that painted coats of plaster were applied in a series on this wall. The lower portion of the wall showed better preservation of painted plaster, due to the damper environment and greater thickness of the layers in this area. They were made of greasy gray clay of the same matrix as the plaster layers scraped off the Building 3 walls during the building closure (see Phase B3.5A).

Figure 5.10. Multiple layers of wall plaster in Building 3.

Figure 5.11. The rippled wall plaster applied to the southern partition wall (F.161).

The plaster on the south perimeter wall showed horizontal ridges in the lower portion of the wall, especially in the western half and running across post F.774. The ridges seemed to be associated with a number of clay moldings, whose clearer definition was prevented by their partial truncation. These plaster wall features would have been protruding from the wall plaster, representing fragments of wall features known from other buildings at the site as "wall-hooks" (see Mellaart 1967). All these wall "installations" would have been removed by truncation as the building went through its process of closure (see Phase B3.5A). At least one-third of over 100 plaster coats on this wall were blackened by soot (8593).

The east perimeter wall plaster coats were poorly preserved, being drier and flakier than the plaster on the other walls, especially in the painted section of the wall. It was apparent, however, that the wall had been coated numerous times with white plaster, often with a visible base layer of homogeneous brown packing. Some coats in the wall segment above the central-east platform (F.170) were painted. This painted wall area was enclosed with two large posts (F.602, F.168), which would have been framing the wall painting. Due to poor preservation, it was impossible to describe the wall painting further than to say that traces of geometric and possibly figurative designs were evident. An interesting example of painted plaster from the wall was brought to light from the post-retrieval pit F.168, in which several fragments that measured ca. 25 × 35 cm were found neatly stacked face down. These fragments had been well preserved in the moist atmosphere of the deep pit but deteriorated soon after they were brought out into the dry and hot atmosphere, when the painted surface oxidized and disappeared. A series of triangles measuring 3–4 × 2–2.5 cm were painted black on a buff-color background.

The west perimeter wall of Building 3 was treated in a noticeably different way. It was also plastered with white clay, but these coats were far fewer than on the other walls of Building 3. Moreover, the wall had no painted surfaces or plastered ridges. This could be the consequence of the short exposure of the plastered wall face before it was blocked (at least in its lower portion) by other features that adhered to it (bench/wall F.635 and F.1000). The white clay plastered face of the west wall was preserved in places, especially where it was attached to the earliest house floor.

B3.1 Subphase A: Floor and Features

The general internal layout of Building 3 was constructed during this early phase (Figure 5.3; also Figure 5.4 [online]). This included the following features.

- Construction of six platforms:
  - Northeast corner: F.173

- North-central area: F.162
- Northwest corner: F.1008, which extended southward abutting F.169
- Southwest corner: F.169
- Eastern-central area: F.170
- Entry platform, southeast corner: F.167

■ Construction of oven F.1011 on platform F.169

■ Construction of hearth F.778 on the earliest floor directly on the midden before the first house floor

■ Construction of entry bench F.1010 in the southeast corner directly on the midden before the first house floor

■ Construction of bench F.792 abutting the south edge of F.170 directly on the midden before the first house floor

The initial floor in Building 3 was built as a continuous layer over the entire house, starting on platforms F.162, F.173, and F.170 and flowing southward toward the central house floor. From the house center, the floor climbed up platform F.169 and turned east toward the south end of the house. The floor in the western part of the building was built as a continuous floor from north to south, joining with the other floor plaster in the center and the southwest platform, F.169. In this phase, all the house floors were coated with white clay plaster. However, in the South-and-West Zone, these "clean" (white) plaster floors were transformed into "dirty" floors through use. After the initial floor construction, the floors were recoated at different rates, or so it seemed as we excavated and recognized them (see details in Appendix 5.1 [on-line]).

The platforms at the beginning of the building's life history were only slightly elevated in comparison with the central house floor. Their edges looked more like floor-lips than the platform edges that we know from later phases. The house floor at the ladder entry area was originally constructed as a flat surface, but later remodeling modified it into a two-step and finally three-step platform.

South-and-West Zone

Judging by the features, types of activity, and occupation debris on the house floors, most, if not all, domestic life took place in the South-and-West Zone of Building 3.

The floor in the northwest corner of Building 3 was so much higher in elevation than any other floor area in the house that it was designated as "platform-like" (F.1008), although it did not have any other elements that could qualify it as a platform. Its somewhat irregular shape was emphasized by its long, curved eastern edge, which started at the north wall by post F.776 and continued southward to the middle of the west wall. The midden deposits under F.1008 were higher in elevation than elsewhere, layered in large lenses of brown-orange bricky clay, and highly compacted. There is no apparent reason for building up the floor in the northwest corner of Building 3 beyond the possibility that the midden deposits were deliberately elevated and hardened in preparation for the storage features that were to be built later in this area (see Phase B3.1B). The clay used in the floor manufacture in this same area contained an abundance of tiny obsidian chips, one interpretation of which is that these were meant to prevent rodents from burrowing into an area of floor that was dedicated to food storage.

The western edge of southwest platform F.169 was not well defined but blended with the house floor in the southwest corner. This arrangement continued until Phase B3.4. The packing (8515) of the earliest floor (11) of this platform included redeposited oven fragments that must have come from a feature that was not a part of Building 3. The northern edge of the platform was built as a continuation of the central floor of Building 3. The top surface of platform F.169 was slightly concave in this phase, whereas in later phases it was flattened as more packing and plaster coats were added to the area.

Oven F.1011 (8563, 8554) was the earliest such feature in Building 3. Built directly on midden deposits that were somewhat elevated, the large, oval-shaped oven was attached to the west and south walls of Building 3, slightly cut into the west wall (Figures 5.12, 5.13). It measured 0.70 m north–south × 0.50 m east–west, with its opening on the north side. The oven rim, measuring 0.10–0.12 m thick, was made of light brown, bricky clay, while the scorched oven floor was of well-compacted clay. The oven packing below this floor contained several burned stones 4–5 cm in diameter as well as black and red burned clay balls (8565). These artifacts were incorporated both to reinforce the oven floor and to act as heat enhancers. The evidence for the size and shape of the oven superstructure was fragmentary. Its walls and roof were severely truncated during the subsequent subphase (B3.1B), when a new wall/bench (F.635) and a new oven (F.785 with F.789) were built immediately above. There are minimally two possible reconstructions of the earliest oven. It could have been the same shape as that of F.360 in Building 1 (Cessford 2007b:458, Figure 12.38), in which case its walls would have been 50–60 cm high with no top. The second and more likely reconstruction, based on the thickness of the oven rim, is that it had a domed roof that was flattened at the top, as has been suggested for the later oven in Building 3, F.785 (see Phases B3.1B, B3.1C).

Along the south wall of Building 3 were located the ladder entry and activities centered on hearths and food

Figure 5.12. The earliest oven (F.1011) of Building 3, located in its southwest corner.

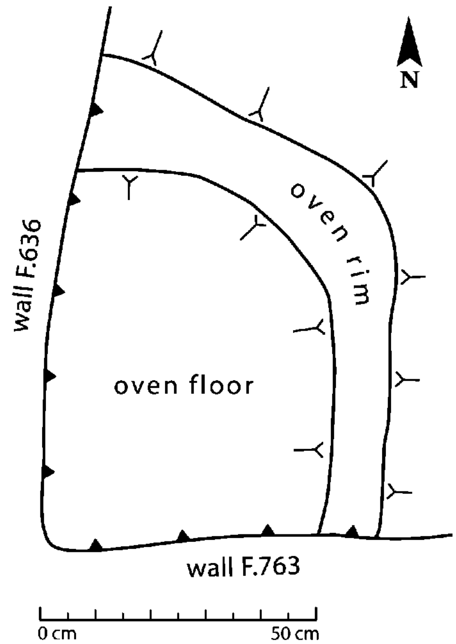


Figure 5.13. Drawing of the earliest oven (F.1011) of Building 3, located in its southwest corner.

preparation. The size and shape of this activity area was always linked to that of the southwest platform (F.169) and the entry bench (F.1010). In the early phase of the building, this area had a squarish plan, extending from southwest platform F.169 on the west side to entry bench F.1010 on the east side, and to bench F.792 in the northeast. It was connected to the Central Floor Zone by a continuous floor; the only partition between these two areas was a shallow floor-lip running in an east–west direction.

This area appeared to have had more numerous floor plaster coats applied than other sections of this zone. Furthermore, the flooring was heavily puddled and reworked, possibly as a result of frequent trampling and from roof water dripping. Reworking was associated with numerous cuts of small diameter, such as F.751, which were interpreted as ladder emplacements (Figure 5.14). The ladder post in the entry area was maintained from this phase onward, with one or two instances of its relocation (e.g., F.755, Phase B3.4A). Feature 751 comprised a circular cut, 0.25 × 0.35 m, through (and/or incorporated into) the west edge of entry platform F.637/167 and entry bench F.1010. The fill of this cut contained fragments of bricky building material, pieces of charcoal at the very bottom, and grains of salt/gypsum (6340, 6684).

The earliest hearth in Building 3, F.778-A, was located in this same activity area at the southern end of the house. Round in plan with a diameter of 0.50 m, it was placed within the earliest floor (15), and was renewed on the next floor (14) (Figure 5.15). The hearth's base and floor comprised loose, sandy soil, which turned red, yellow, and brown from exposure to fire. Its rim, however, preserved traces of the original white clay surface. Inclusions of ash, charcoal,

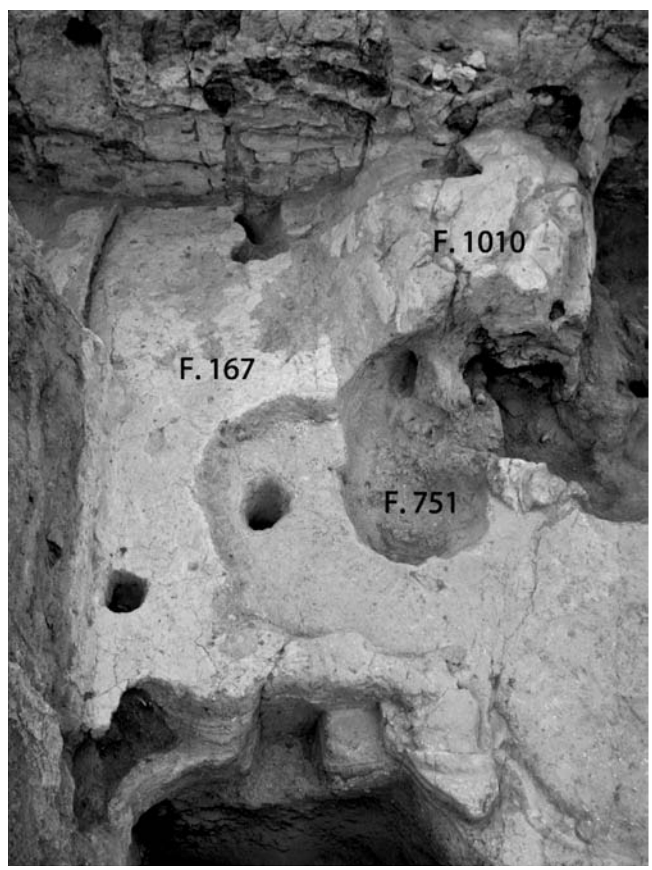


Figure 5.14. A cut (F.751) in the floor of the roof entry area of Building 3.

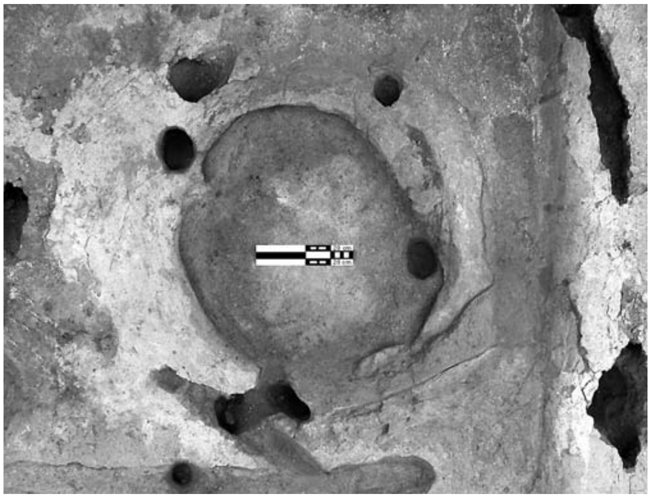


Figure 5.15. Hearth F.778-A at the southern end of Building 3, Phase B3.1A.

scorched clay, obsidian chips, small pebbles, and fragments of bone and shell were detected in the clay. The earliest white plaster rim was constructed as a continuation of the surrounding next floor up (13) (8531). When excavators removed the floor of the hearth (8504) and its rim and base (8539), it was revealed that the feature was constructed directly on the midden beneath the building and that the surrounding floors were connected to its base. A shallow depression was visible in the midden where the hearth base had been located, making it one of the earliest features constructed in the house.

In the thick, brownish packing of the earliest floor in the southeast corner of Building 3, we excavated a group of artifacts neatly arranged in a matrix of ash and charcoal-rich soil. The group consisted of two complete obsidian bifaces (8570.S6), the longer, narrower one pointing northward, and the shorter wider one pointing southward (Figure 5.16; see also Figure 4.10; Chapter 19). The bifaces were mixed with numerous small pig bones. No cut was visible in the floor where the deposit was found. This suggests that it was placed there before the house floor was laid out, and it has thus been interpreted as a foundation deposit (Chapter 4).

Figure 5.16. Studio photograph of obsidian bifaces interpreted as a foundation deposit.

Entry bench F.1010 and entry platform F.167 dominated the southeast corner of Building 3. The massive feature F.1010 (0.70 m north–south × 0.60 m east–west) served as a step-platform for entry into the house from the roof (Figure 5.17). Attached to the south wall of Building 3, from which it extended northward, the entry area was made of numerous layers of clay and packing that were located directly on the midden below Building 3. The construction sequence of the bench was the following: a ca. 10-cm-thick layer of sandy brown clay was set on the midden surface, followed by thick layers of dark brown and light gray packing, which were also used in the ladder emplacement holes. The compact, brown sandy clay packing was found only around and inside bench F.1010, and around the later (B3.1C) nearby obsidian cache (F.799). Layers of white plaster then overlay the packing. The plaster of the earliest house floor was built around the bench and slightly rising up its sides. In the beginning of the BACH excavation, F.1010 was regarded as part of the larger platform F.167. As the excavation progressed, however, it became clear

Figure 5.17. (a) Platform F.167 in the southeast corner of Building 3 interpreted as the entry area from the roof, looking east; (b) bench F.1010 is a continuation of the platform (F.167).

that in the early phases of Building 3, they were two independent but closely related features.

The original shape and size of F.1010 are not known, as its western section had been truncated during the closure of the house. It is likely, however, that the bench extended farther westward for at least ca. 0.20 m. During the closure of Building 3, the truncated portion was replaced by a set of large animal bones—mainly cattle scapulae—which were placed intentionally and with care (see more in discussion of Phase B3.5A, below). Feature 1010 was also very damaged by a north–south crack that ran through the middle of the feature, causing its western edge to slump down. Animals—presumably gophers—bored a hole inside this crack and filled it with black soil consisting almost entirely of charcoal from the upper portions of Space 89, bringing into it a fragmented but very expressive miniature figurine (6260) (see Chapter 17; Figure 17.2).

Entry platform F.167 was constructed between bench F.1010 and the east wall of Building 3. Initially, the entry platform was just an extension of the regular house floor that was bounded by bench F.1010 in the west and the plastered post (F.168) in the north, as well as the south and east walls of Building 3. In later phases, the floor area was changed considerably by the construction of a step platform that incorporated bench F.1010. On its earliest floor (30), we found a cluster of 29 mini clay balls (8468.X1–X4). Twenty-six of them were packed in a small area, while the remaining three were lying some distance away (32 cm and 4 cm southward, 15 cm southeast) (see Chapter 18; Figure 18.7).

Central Floor Zone

Throughout the life history of Building 3, the Central Floor Zone remained unchanged in shape and size. The most noticeable characteristic of this space was its elevation, which was considerably lower than the surrounding platforms (see Figure 4.2). The only other area at the same elevation was the southern end of Building 3. During Phase B3.1A, no features appear in the Central Floor Zone. However, the numerous floor layers that accumulated over this time period, and the wear they suffered, provide evidence of the high level of activity and intensity of use of this area. Immediately on top of the earliest floor (19), a layer of packing 0.05–0.06 m thick included a solid deposit of salt, which may represent the remains of matting that was spread on the earliest house floor (see also Cessford 2007b, for a similar situation in Building 5). Floor 18 was highly damaged just north of southwest platform F.167, indicating that this area had the highest level of activity.

In Phase B3.1A, the floors in the Central Floor Zone were constructed to extend onto a discrete threshold between it and the activity area at the southern end of Building 3. The threshold was constructed from the same floor packing as the Central Floor Zone but was made thicker in this area. The packing was molded into a low threshold and covered by a white plaster coat. Through time, this feature became more clearly defined, and from Phase B3.3 we recognized it as F.645. A broad band of brown packing that belonged to the Central Floor Zone was molded up the edges of the platforms F.162, F.170, and F.169 but stopped before their tops.

Northeast Zone

This zone is dominated by the three large platforms (F.162, F.173, F.170) positioned along the north and east walls of Building 3. Here, as in other parts of the building, the very first floor (11) on all three platforms lay directly on the midden underlying Building 3. Extensive islands of compact salt lay between the packing of the floors and the midden, possibly indicating a layer of organic material such as matting made of reeds or loose reeds, placed in this area prior to establishing the earliest floors. The platforms comprised flat, smooth white plaster surfaces that in Phase B3.1A had no other features on or cut into them.

The north-central platform (F.162) was the most prominent platform in Building 3. Its earliest floor and packing layer dipped down against the north wall. Along the eastern edge of the northeast platform (F.173), coinciding with the size and location of the doorway F.633, the clay packing was mixed with fragmented rock and hardened with brittle clay fragments that had a strength similar to fragmented rock. Apparently, high foot-traffic was anticipated, and the floor was reinforced to withstand its pressure. Some plaster floor layers of platform F.173 (Phase B3.1A–D) continued onto the threshold of doorway F.633—that is, onto its stepping surface—while others stopped at the doorframe.

The southern limit of the Northeast Zone was created by a bench (F.792-A). Rectangular in plan, with sharp, straight vertical edges and a flat top surface, the bench was attached to plastered post F.168, from which it extended for 0.80 m toward the house center; its width measured 0.30–0.50 m. During the excavation of the bench, the coats of plaster and packing peeled off evenly, indicating that exceptional care had been put into its construction. It was built directly on the midden beneath Building 3, and comprised a packing of compact, light brown clay, 0.01–0.02 m thick (8578), covered by a white plaster coat. The packing appeared to be sterile except for a layer of ash that had been placed on the ground before the bench was built.

B3.1 Subphase B

An apparent break between the floors of Phase B3.1A and B3.1B was visible in the introduction of considerably thicker packing during Phase B3.1B, which was most obvious in the center of the house. We assumed that this construction difference represented a more significant change than the regular replastering of the floors within one subphase. Frequently we were able to identify the occupation deposits as a gray layer of organic remains on the floor surfaces. As before, the floors were applied starting on the northeast platforms, whence they were extended into the Central Floor Zone of Building 3 and over the threshold toward the southern end of the building. From there, the floors were spread along the west wall of Building 3. The floors in the activity area at the southern end of the house, however, seem to have been applied independently of other floors in the house.

Phase B3.1B is also characterized by a dramatic increase in the number of new features, constructed (Figure 5.18) predominantly in the South-and-West Zone:

- Construction of an oven (F.785-A) in the southwest corner
- Construction of a hearth (F.778-B) near the south perimeter wall
- Construction of a storage bin (F.786) in the northwest corner
- Construction of a wall/bench (F.635)
- Construction of the basin(s) (F.780)
- Construction of a small screen wall (F.1009) parallel with the east perimeter wall on platform F.170

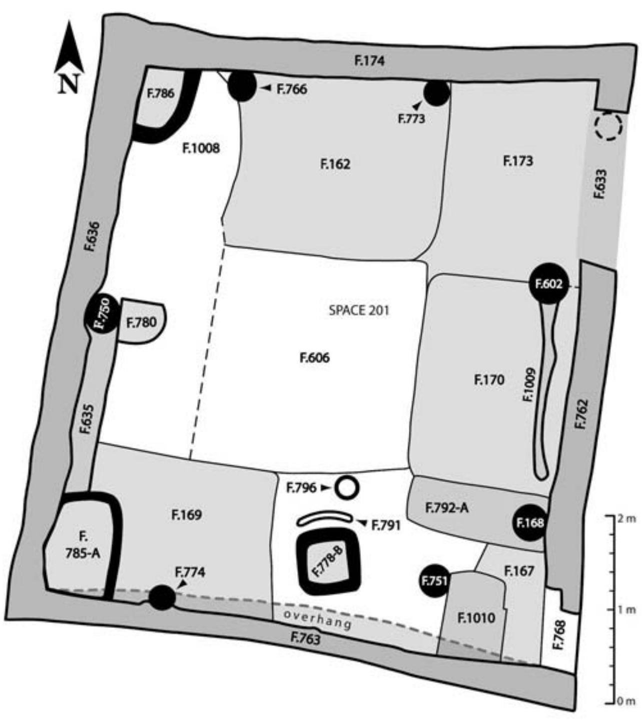


Figure 5.18. Phase B3.1B of Building 3.

A number of preexisting features continued to be used in Phase B3.1B:

- The ladder emplacement and entry platforms (F.1010/F.167/F.751)
- The doorway (F.633) in the northeast corner
- The crawl hole (F.768) in the southeast corner
- The bench (F.792-A)

The new features shifted the locus of domestic activities from the area by the south wall to the west wall, where all the new features in this zone involved the storage and preparation of food, with the exception of the low wall or long bench (F.635).

South-and-West Zone

The first feature introduced in this phase was the wall or bench, F.635 (Figure 5.19a), which stretched for 3.0 m along the west wall of Building 3 from its southwest corner to the midsection of the wall. The northern limit of this wall/bench was the single post that existed on this side of the house (F.750) (see Phase B3.1A). The top bricks of F.635 ranged in width from 0.20 m to 0.25 m, whereas the bottom part of the wall was narrower, creating a wedge shape especially at the feature's northern end (Figure 5.19b). The bench was constructed of mud bricks and mortar placed in five regular rows of orange clay bricks (8103, 8551, 8549), which were narrower than the bricks in the perimeter walls of Building 3. Occasionally, large areas of clay were shaped to fit tight spaces between the bench and the west perimeter wall. The surviving height of the wall measured only ca. 0.29 m; it was unclear if the original height was any different. A coat of white clay was plastered over the outer surfaces of F.635. On its western side, the bench abutted the plastered face of the west perimeter wall (F.636). Its eastern edge also abutted the new oven (F.785) in the southwest corner.

During its excavation, bench F.635 was interpreted as an early version of the shoring wall. The west perimeter wall of Building 3 appeared to have had structural problems from the beginning of its life history, but it was not until the final habitation phase (B3.4B) that the west wall was shored up with full-sized walls (F.600, F.622). According to one interpretation, F.635 represented the earliest attempt to strengthen the west perimeter wall. However, F.635 did not have the necessary requirements for a shoring wall; it was only half the length of the main wall, it was constructed of narrower bricks, and it was not very high.

An alternative interpretation suggested that this feature was a long, narrow bench alongside the west perimeter wall, possibly for decorative as well as functional purposes. Its eastern wall face was heavily plastered, and numerous fragments of plaster lumps found in the surrounding infill of the collapsed wall indicated the possible attachment of wall decorations and/or reliefs to the bench surface. Feature 635 showed a minimum of three individual plaster layers, each consisting of a single, thick layer of white clay. The building materials and the feature's location argued for its interpretation as protection for the southwest corner of Building 3 from water seeping through the west wall into the house at floor level, with a secondary role as a shelf. Further support for this interpretation was provided by the presence of salts and carbonates on the upper surface of the strong, sandy, brownish mortar between the rows of bricks of very greasy, clayey, sticky soil. These salts might indicate that soil for the mortar came from marshy deposits around the settlement, but, considering that the salts occurred mainly on the upper surface of the bricks, it is equally possible that they collected from the rainwater that was seeping into the house.

Oven F.785-A was built overlying the previous oven (F.1011) (see Phase B3.1A) in the southwest corner (Figure 5.20). F.785-A was narrower than F.1011; it was oval in plan and measured 0.92 m north–south × 0.62 m east–west. Even though F.785-A was truncated in a later phase, its base was completely preserved (8533, 8535, 8394). Its western side abutted bench F.635, partially cutting into this feature; its southern end was set in the south wall of Building 3, where traces of the oven superstructure were preserved on the wall itself, allowing for a reconstruction of the oven; the opening of the oven was at its north end.

White clay basin F.780 was built on the floor area coinciding with the center of the west perimeter wall; it was just one of three or possibly four such basins that were constructed during the subphase B3.1B (Figures 5.21, 5.22). The basin was built on the same floor as oven F.785-A and wall/bench F.635, which it abutted. It was oval in plan (0.23–

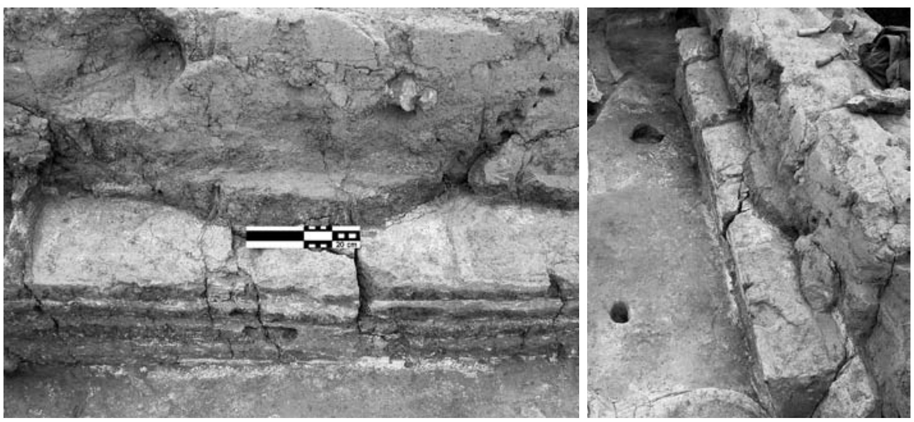


Figure 5.19. (a) Wall or bench (F.635) abutting the west perimeter wall of Building 3, looking west; (b) the wedge-shaped profile of the northern end of F.635, looking south.

Figure 5.20. The oven (F.785-A) constructed during Phase B3.1B in the southwest corner of Building 3, looking southwest.

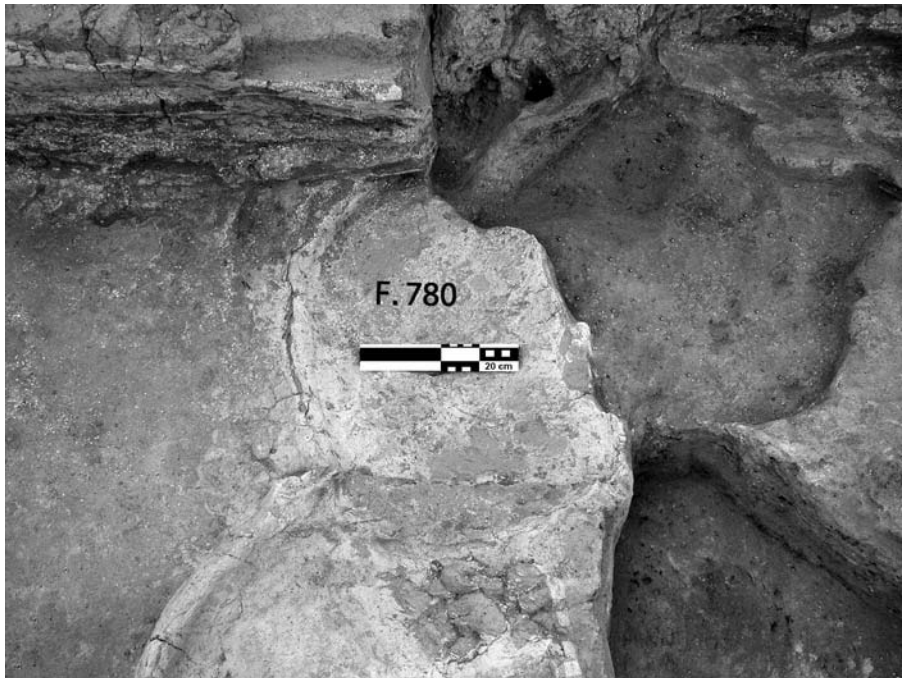


Figure 5.21. The white clay basin (F.780) constructed in Phase B3.1B near the center of the west wall of Building 3.

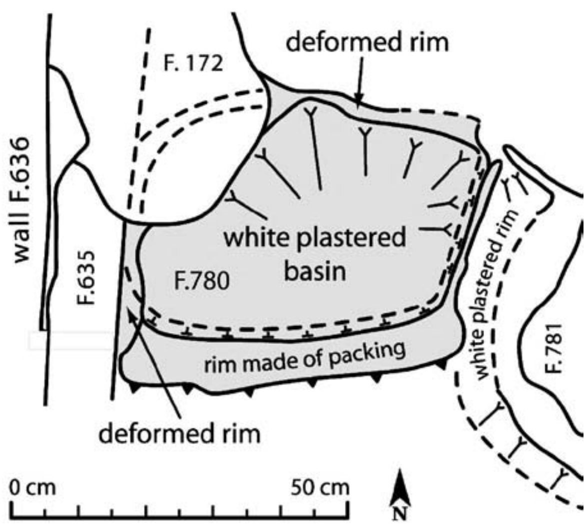


Figure 5.22. Drawing of the white clay basin (F.780) constructed in Phase B3.1B near the center of the west wall of Building 3.

0.44 m north–south × 0.48.5 m east–west) and was constructed of layers of clean, orange, sticky packing clay covered by a white plaster coat. It originally had a rim made of the same red and white clays, but subsequently this was nearly completely truncated. It was thus impossible to assess with certainty how high the original rim was, but the general impression was that it was low, measuring no more than 0.03–0.04 m in height, serving just as a border for the slightly concave floor of the basin. The floor of the basin was renewed five times; of these, the earlier two renewals (8558, 8573) belonged to Phase B3.1B. The very first white plaster floor and its rim were poorly preserved. All the floor and packing coats of the basin were constructed to rise up the adjacent wall/bench (F.635). No traces of use were found on these floors of F.780, so that it was not apparent what function it served.

It is very likely that a pair to basin F.780 was constructed immediately to its north at the same time or soon after the construction of F.780. Unfortunately, we had very little direct evidence of the existence of such a basin. The surviving evidence was a line of white plaster visible in the south section of the wall/bench F.1000 (see Phase B3.1C), exactly where the rim of a pair to basin F.780 would have been located if it had survived. Further—indirect—evidence for its existence was a later cut (F.798; see Phase B3.2) made exactly in this location and with the same size and shape that such a basin would have had. During the excavation, it looked quite convincing that a pair of basins abutted F.635.

The northwest storage bin F.786 was constructed in the northwest corner of Building 3 and continued to be in use without any structural change until the very end of Phase B3.1. The clay wall (8550) of the bin that originally reached a height of at least 0.45 m extended from the north wall of Building 3, curving westward to end in the west wall of the building, thus creating an oval-shaped bin 0.77 m north–south × 0.10–0.47 m east–west (Figures 5.23, 5.24). The north and west perimeter walls acted as the other sidewalls for the bin. The plastered face of the west perimeter wall (F.636) also functioned as the bin face. The 0.10-m-thick base of the bin was made of orange brick and was covered with a very thin layer of patchy white ash that itself was covered with a badly preserved plaster floor.

Figure 5.23. (a) Detail of the storage bin (F.786) in the northwest corner of Building 3, as it appeared in Phase B3.1B, looking northwest; (b) storage bins F.786 and F.770 constructed in the northwest corner of Building 3, as they appeared in Phase B3.1D, looking north.

The base and wall (8427) of the bin were built on a house floor (10), which was made of compacted sandy clay with copious inclusions of salt. The infill of F.786 was a mixture of redeposited fragments of building materials, such as chunks of burned clay and ash in a matrix of brown soil, and, above this, yellowish clay. There was no apparent presence of materials that might have been stored originally inside the bin (8420, 8391). There was a clear intent to conserve this feature and strengthen it throughout Phase B3.1 by partially infilling it with hard sediments, rather than to remove it by truncation, as was the case with numerous other features. It is very likely that this was part of an overall strategy to protect the northwest corner of the building from rodents, since this area was used for storage.

The entry area in the southeast corner of Building 3 was maintained but also redesigned during Phase B3.1B.

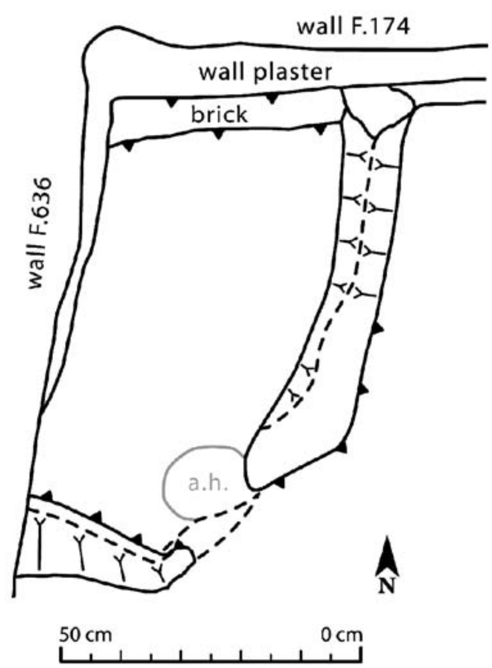


Figure 5.24. Drawing of storage bin F.786 constructed in the northwest corner of Building 3, as it appeared in Phase B3.1D.

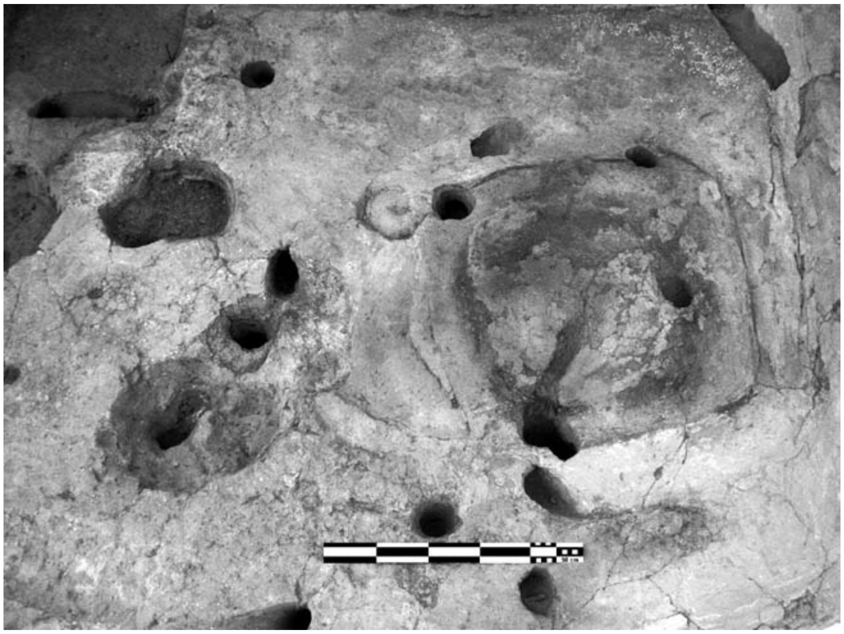


Figure 5.25. Photo of the hearth (F.778-B) constructed in Phase B3.1B at the southern end of Building 3, looking west.

Platform F.167 was set on the house floor and raised in step-like fashion by making the floors thicker and more numerous. The step platform F.167 and entry bench F.1010, which formed its western boundary, together acted as the entry area.

At the southern end of Building 3, overlying the earliest hearth in Building 3 (F.778-A, Phase B3.1A), newly constructed hearth F.778-B was square in plan with rounded corners and measured 0.50 × 0.50 m (Figures 5.25, 5.26). It was aligned with the midpoint of the south wall of Building 3. The hearth floor (8501) comprised baked reddish brown clay and was laid on the Phase B3.1A house floor (11) (8449). The floors that covered the earlier hearth were very damaged due to the vicinity of the fire installations and intensive foot-traffic. The floor in the northern part of this area was more heavily plastered than the southern part, probably because it was an area of high foot-traffic, providing access to hearth F.778-B, which had its opening on the northern side. In the matrix of the Phase B3.1B floor (10) (8466, 8491), seven miniature clay balls were found.

A thin, sickle-shaped cut, F.791 (8476, 8477), was located immediately north of hearth F.778-B. The cut measured 0.20 m east–west × 0.10 m north–south and was 0.04 m deep. It had an irregular base made of compact, moist, red and black clays. Its infill comprised hearth or oven rake-out material of ash, charcoal, soot, burned coarse clay, and phytoliths, which could have come from hearth F.778-B. Although there was no direct evidence, the cut could have been a small obsidian cache that had been completely emptied. Nearby, during the removal of the partially preserved remains of floor 9 in the threshold area, between the

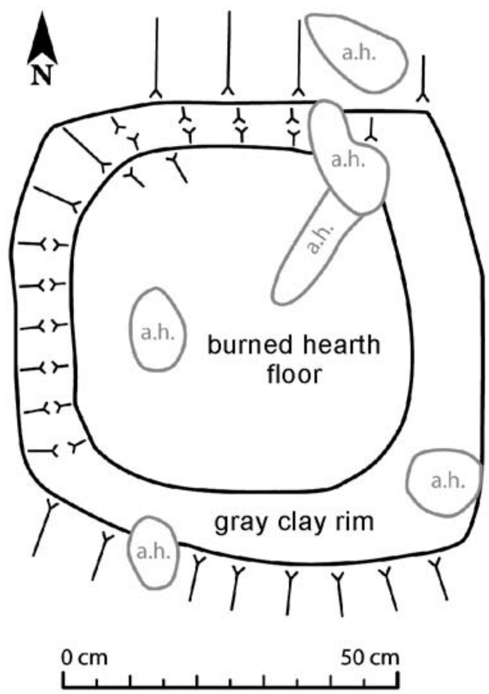


Figure 5.26. Drawing of the hearth (F.778-B) constructed at Phase B3.1B at the southern end of Building 3.

"kitchen" and the Central Floor Zone, another cut was found that was interpreted as a flint cache (F.796). The cut was round in plan (0.22 m diameter and 0.05 m deep) with infill of heterogeneous material reminiscent of rake-out material, including charcoal, baked clay, ash, plant remains, and gypsum. A long flint blade (8393.X1) (see Figures 19.2c, 19.21) was discovered in this matrix at the interface of the side and base of the cut (Figure 5.27). It follows that this cut had once likely held a cache of flint that had been emptied except for this one piece. Near the flint cache, three spots of red paint were found on the floor. More such paint spots were found on the overlying floor.

Central Floor Zone

As in the previous subphase, no specific features were added to the Central Floor Zone in Building 3, but at least two floor renovations (16–15) were undertaken. The earlier white clay floor (16) had a considerably thicker packing than those used in between the floors of Phase B3.1A. Above floor 16, floor 15—where it was preserved—revealed layers of occupation deposits on the floor manifested as a greasy, grayish layer (8439, 8442, 8448, 8451).

Northeast Zone

In the Northeast Zone, the floors of all three platforms were renovated during Phase B3.1B; we excavated these as floors 9 and 10. Floor 10 was preserved differently at different parts of the platforms. The difference in the wear pattern of the floors was probably the result of the difference in use. For instance, the greater compaction of the floors and the greater wear on their surface in the platform centers may have been the result of more intensive use for sleeping, sitting, or other functions.

Floor 9 on the east-central platform (F.170) revealed large areas with intense wear in a pattern of straight lines, which may represent lines from reed matting that had been laid on the floor. A similar wear pattern was observed in the floor contemporary to this one in the Central Floor Zone. It is possible that a continuous reed-mat was used to cover the two surfaces. In addition to this wear pattern on F.170, two round zones of wear, ca. 0.50 m diameter, were visible on the floor. They were interpreted as possible areas where two household members might have sat. Interestingly, these "sitting spots" could have been related to the ridge or screen wall (F.1009) that was located just behind (east of) them.

A single new feature in this zone of Building 3 comprised a thin ridge or screen wall (F.1009) (8512, 8534), which was constructed parallel with, and ca. 0.05 m distant from, the east perimeter wall (F.762) of Building 3. The ridge wall measured 1.8 m north–south and 0.12 m east–west, but its height was unknown. It was constructed on floor 10 on platform F.170, stretching between two large posts that framed F.170. The northern end of wall F.1009 was attached to post F.602, and the same plaster coats covered both features. The southern end of wall F.1009 ended as a rounded, freestanding edge before it reached the other plastered post, F.168. In later phases of the house, after wall F.1009 had been destroyed, a painted panel was applied to the east wall of Building 3 in this same section. Already in the subsequent subphase B3.1C, wall F.1009 was thoroughly truncated and its base covered with a new floor (8).

An edge lip 0.07–0.08 m high separated F.162 from the central floor of Building 3. It comprised a 0.06-m-thick layer of very gritty clay packing, including brick fragments and large (5 mm) salt fragments. The lip that created a border between platforms F.170 and F.173 represents a continuation

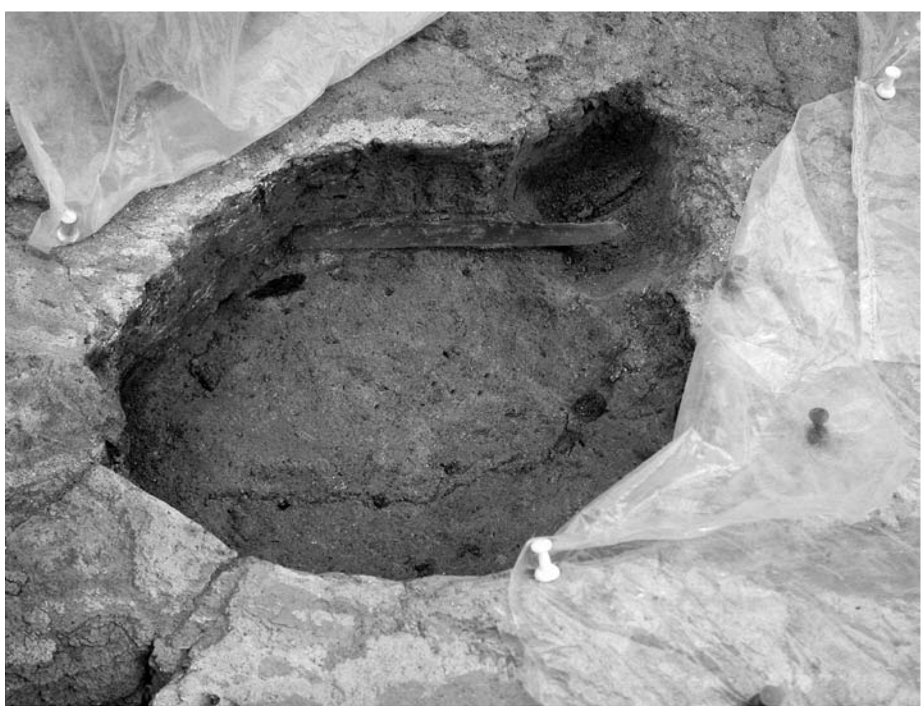


Figure 5.27. Cut F.796 in the floor at the southern edge of the Central Floor Zone of Building 3 dating to Phase B3.1B, interpreted as an emptied cache of flint blades.

of the southern lip of F.162 and is the same size and shape. It provides additional evidence that the B3.1B floors in the Northeast Zone were all applied at the same time.

B3.1 Subphase C

During Phase B3.1C (Figure 5.28), some earlier features were partially or nearly completely dismantled:

- hearth F.778-B in the south;
- ridge wall F.1009 on platform F.170 (which was destroyed so completely that a scar in the floor remained the only evidence of its existence).

Others survived but were remodeled, typically with an addition of a new floor layer that included packing:

- the oven (F.785) in the southwest corner of Building 3;
- the storage bin (F.786) in the northwest corner;
- the basin (F.780) near the center of the west perimeter wall;
- the bench (F.792-A) abutting platform F.170, which was renovated (designated F.792-B) so that it shifted northward to allow more room for the entry area;
- wall/bench (F.635) abutting the west perimeter wall;
- the crawl hole (F.768) in the southeast corner constructed in Phase B3.1A;
- the doorway (F.633) in the northeast corner constructed in Phase B3.1A;

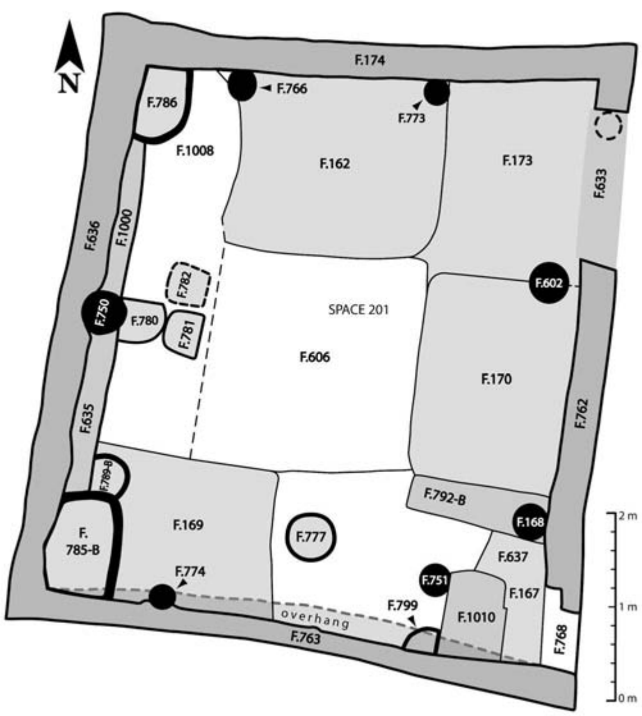


Figure 5.28. Plan of Building 3 in Phase B3.1C.

- the entry bench (F.1010) constructed in Phase B3.1A;
- all six platforms (F.162, F.173, F.170, F.167/F.637, F.169, F.1008) constructed in Phase B3.1A;

Finally, several new features were introduced:

- A new wall/bench (F.1000) was constructed abutting the northern half of the west perimeter wall, matching and extending wall/bench F.635;
- A hearth (F.777) was constructed in the south area of Building 3;
- A bin/basin (F.781) was constructed in the middle of the floor near the west perimeter wall;
- An ash collector (F.789) was constructed in front of the existing oven (F.785);
- In the southern end of Building 3, a new obsidian cache (F.799) was deposited;
- An east–west floor ridge that lined up with the northern edge of platform F.169 was constructed. The floor ridge was fragmentary and indicated a low-level separation between the southwest corner of Building 3 and the area to the north. This separation continued to be maintained through the subsequent phases until the introduction of the interior walls of Building 3, when it was abandoned. The floors south of the ridge were massive, whereas those north of it were within the standard range of thickness.

All the house floors were replastered during this subphase.

South-and-West Zone

A wall or bench (F.1000) was constructed directly on the house floor alongside the northern half of the west wall of Building 3 in Phase B3.1C, extending the wall/bench F.635 (Phase B3.1B) that already existed alongside the south part of the west wall. It was slotted between the storage bin (F.786) in the northwest corner of Building 3 and the post (F.750) in the middle of the west wall (Figure 5.29). Feature 1000 covered an area of 1.63 m north–south × 0.20 m east–west, and had a height of five brick courses. It is likely that the height that is preserved was its actual height in prehistory. It was built with hard, red, crumbly clay bricks that were 0.16 m wide and 0.06 m thick, and most commonly 0.80 m long. The mortar in between the bricks was ca. 0.02 m thick and consisted of beige-gray greasy clay. The same mortar (8398) was applied over the side surface and the top of the wall, indicating that this might have been the original surface. Whereas the face of wall F.635 in the south was plastered with white clay, the surface of F.1000 was not, reflecting perhaps a different use of this part of the house. During the excavation of the lowest row of bricks in the feature, a very large, long bone shaft fragment of a

Figure 5.29. The wall or bench (F.1000) abutting the west wall of Building 3, constructed in Phase B3.1C, looking north.

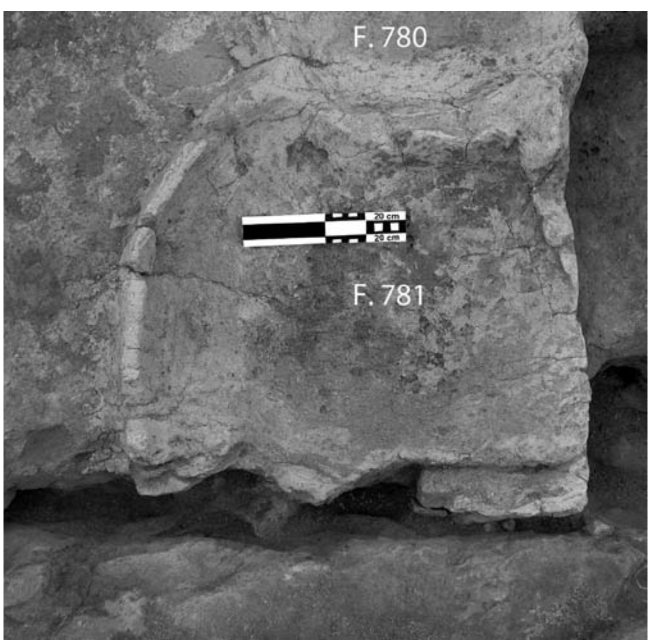


Figure 5.30. The white clay basin (F.781) constructed near the center of the west wall of Building 3 in Phase B3.1C, looking north.

cow-size animal was found embedded in the mortar (8396.X1). The same discussion on the interpretation of F.635 applies also to the interpretation of F.1000. In both walls, the only structural value would be to shore up and/or protect the base of the west perimeter wall (F.636). Furthermore, F.635 was built earlier and survived longer (into Phase B3.2) than F.1000, which was truncated and buried under the floor by the end of Phase B3.1.

Feature 1000 abutted the south wall of storage bin F.786 which was constructed in Phase B3.1B. A brick placed on the inside of bin F.786 (8419) played an important role: to offset the pressure of F.1000 where it abutted the bin wall.

Bin/basin F.781 (Figure 5.30) was constructed to abut and, to a certain extent, block the eastern edge of bin/basin F.780, which was constructed earlier (Phase B3.1B). These two features were of the same kind and nearly identical in shape and size. F.781 measured 0.64 m north–south × 0.53 m east–west. Its well-preserved floor comprised a plaster coating (8557) over a thin layer of packing, whose surface was covered with phytoliths and matting impressions (8456). Its rim, unlike that of F.780, which was completely truncated, was preserved to a height of at least 0.06 m and was neatly flattened in a way that looked like folded fabric. The floor area on which bin/basin F.781 stood was maintained with an eastward slope down toward the center of the house.

Oven F.785 of the previous phase (B3.1B) was renovated and continued to be in use in Phase B3.1C, when it was designated F.785-B. The fill between the oven floors was rich in plant remains and ash (8369, 8392). The outer edges of this later oven had a yellowish beige slip, most likely as a result of the high temperatures reached inside the oven which had not been attained in earlier phases.

An ash collector (F.789-A) was added to the north side of oven F.785-B, abutting its opening (Figure 5.31). It was rounded in plan and measured 0.37 m north–south and 0.52 m east–west. It had flat floors (8389, 8364) constructed on top of a base (8525), around which was built a low rim up to 2.5 cm high. The base of F.789-A was constructed on a packing layer that extended northward, but not southward under oven F.785-B, indicating that F.789-A was built independently of oven F.785-B. In the center of the ash collector, a circular cut (0.12 m diameter and 0.30 m deep) with vertical walls had been dug. Its fill (8363) comprised rake-out deposits of ash and charcoal, burned clay, and rubble fragments, which presumably came from oven F.785-B. Since it was noted by Carter, Conolly, and Spasojević (2005) that obsidian caches have been commonly found in association with ovens and hearths at Çatalhöyük, another interpretation is that the cut represented a completely emptied obsidian cache. The rim of F.789 was interrupted by a shallow circular cut that measured 0.15 m in diameter and was filled with sterile clay.

Figure 5.31. The oven (F.785-B) and ash collector (F.789-A) constructed in the southwest corner of Building 3 during Phase B3.1C, looking southwest.

The height of southwest platform F.169 was considerably elevated during Phase B3.1C. There were indications of different activities on the new platform floor (8). A possible explanation for additional coats of floor plaster in the platform floor immediately east of oven F.785-B, and the use of rake-out deposits in the packing, is that activities involving heating were practiced. Some discoloration of the floor could have resulted from direct contact with fire or scorching of the floor. This explanation would imply that fires were set directly on the platform floor some 0.30 m away from the main oven (F.785-B) in this subphase. Another explanation could be that very hot materials were taken out of the oven and placed to cool on the platform floor.

The packing under the floor (8) coating (8314) in this area contained rubble, a phytolith concentration, ground stone fragments, and traces of in situ burning in the very area in which F.784 would be introduced in the subsequent Phase B3.1D. Farther eastward (8317), the layer of packing (0.02–0.05 m thick) under the floor (8) included rubble with chunks of fired burned red clay on top of a pale yellow floor (9). In this same packing between floors 8 and 9, thin-walled, dark burnished, mineral-tempered ceramic jar fragments (8318.X1, X2) were excavated. These pottery fragments belonged to the same jar as fragments that were discovered outside Building 3 in the nearby Space 89 (see Chapter 16), providing evidence for the synchronicity of the two structures during Phase B3.1.

The lower floor of South-and-West Zone and entry area at the southern end of Building 3 were somewhat altered during Phase B3.1C, especially by remodeling the earlier bench F.792-A (constructed in Phase B3.1A), which defined the northeast boundary of this area. In the remodel defined as bench F.792-B, the length of the bench (0.40 m) remained the same, but its northern edge shifted by adding a strip (0.15–0.18 m wide) of light brown packing soil which included fragments of brick, plaster, scorched clay, small stones, and sand, so that one-half of the bench now rested on the floor of the east-central platform, F.170. At the same time, a strip measuring 0.15–0.18 m in width was truncated along its southern edge, allowing an expansion of the entry area. Thus, even though the bench was subjected to modification, it remained the same width and shape. The new bench was covered with thick layers of white plaster (8553). It is possible that increased foot-traffic in the entry area required the reshaping of this bench.

Thus, the remodeling of the southern end of Building 3 slightly enlarged its area and more clearly defined its northern boundary with the Central Floor Zone. Consequently, the southern floor area was now shaped as a shallow basin. All the floors of this area at the southern end of Building 3 were excavated in sets of two or three packing layers and floor plaster coats, since it was mostly impossible to separate them. When it was possible, they were separated as different samples within one unit. On the whole, more floor layers were recorded in the southern than in the northern part of this particular area. In addition, more frequent floor coats were applied in the western periphery of the area, coinciding with numerous hearths that were repeatedly constructed in this location.

The floor and base of the new hearth (F.777) in the southern lower floor area of the South-and-West Zone were constructed on top of the earlier (Phase B3.1B) hearth F.778-B. Like the other hearths that shared this same location (F.778-A, F.778-B), this one was damaged by the later hearths above it. The base of the partially preserved F.777, measuring 0.50 m diameter on its inner circle and 0.56 m diameter on its outer circle, was heavily burned, as was the packing beneath it (8270). The base was made of coarse, sandy, burned clay of brownish color, while its floor consisted of reddish scorched clay. The rim of the hearth comprised packed yellow and brown sandy clay. The surrounding house floors rose up to the rim of hearth F.777.

The floors of entry platform F.167/F.637 in Phase B3.1C were plastered repeatedly and more frequently than in other areas of the house and consisted of very thin layers of plaster and packing, in contrast to the thicker floors elsewhere in the house in this phase. The more numerous floor coats on the entry platform have been interpreted, as before, as the response to the more intensive foot-traffic that went on at the house entrance. The lower northern end of the entry platform (F.637) comprised two to four layers of packing and plaster, whereas the higher southern end (F.167) comprised six to nine coats of floor with their packing. Entry bench F.1010 continued to be in use with the same intensity as before; however, due to subsequent modification of this feature, we were not able to follow its floors with the precision possible in the entry platform (F.167/F.637).

A shallow cut (F.799), interpreted as an obsidian cache, was discovered close to the south perimeter wall of Building 3 and the entry bench F.1010. The cut measured 0.44 m north–south × 0.30 m east–west and was filled with dry, crumbly, dark brown soil in which one complete and one fragmented bifacial obsidian core, and a couple of large flakes, were found (8446) (see Chapter 19; Figure 19.6). Animal bones and plant remains were also contained in the fill. No clear edge to the cut was visible, which was to be expected since the feature was located in an area where so much activity and damage to the floors had taken place. For the same reason it was not apparent whether the cache was ever properly sealed or was kept open. What was certain, however, was that in a much later phase (Phase B3.4A) of the house, the nearly emptied cache was sealed by the last oven, F.779.

Central Floor Zone

This zone continued to have its floors renovated, but no features were built on them. The floor contained evenly distributed salts and phytoliths, which, as before, might have indicated the remains of matting of some kind.

Northeast Zone

Only a minimal level of remodeling activity was visible in Phase B3.1C in this zone. In the southeast part of platform F.173, a fragmentary but compact block of fine, sandy, silty, beige clay packing with no inclusions was deposited. The block was coated with a layer of white plaster and then covered with a layer of burned rubble 0.05–0.06 m thick. It is possible that this feature acted to block or frame the doorway F.633 (constructed in Phase B3.1A). This block spanned both the perimeter east wall F.762 and the wall F.1023 to its east, acting as the northern boundary of its doorway (F.1027) and highlighting the relationship between the two walls. During the excavation of the floors identified as subphase B3.1C, the existence of doorway F.633 was not apparent, although it had been in use in this phase.

B3.1 Subphase D

During Phase B3.1D (Figure 5.32), some earlier features were partially or nearly completely dismantled:

- the hearth (F.777) in the south;
- the platform (F.1008) constructed in B3.1A, which was eliminated by the construction of F.772.

Others survived but were remodeled:

- the oven in the southwest corner, now designated F.785-C;
- the ash collector in front of F.785 with renovated floors, now designated F.789-B;
- the storage bin (F.786) in the northwest corner;
- the doorway (F.633) in the northeast corner constructed in B3.1A;
- the crawl hole (F.768) in the southeast corner constructed in B3.1A;
- the basin (F.780) near the center of the west perimeter wall constructed in B3.1B;
- the basin (F.781) near the center of the west perimeter wall constructed in B3.1C;
- the bench (F.792-B) abutting platform F.170, which was renovated in B3.1C;
- the wall/bench (F.635) abutting the west perimeter wall constructed in B3.1B;
- the wall/bench (F.1000) abutting the west perimeter wall constructed in B3.1C;
- the entry bench (F.1010) constructed in B3.1A;
- five platforms (F.162, F.173, F.170, F.167/F.637, F.169) constructed in B3.1A.

Finally, several new features were introduced:

- the construction of hearth F.776 in the south over hearth F.777;

- the construction of storage bin F.770 in the northwest corner abutting the earlier bin F.786;
- the construction of a north–south partition wall/bench (F.772) in the northwest of Building 3;
- the construction of an east–west-aligned floor ridge (F.787).

The effect achieved by the introduction of F.772 and F.787 was the visible enclosure of the northwest corner of Building 3 in which two storage bins were located.

The variation in floor elevation between the platforms in the house, the Central Floor Zone, and the lower southern end of the building was still less pronounced than it would be in later phases. By the end of Phase B3.1, however, Building 3 still continued to function as a large open space (Space 201).

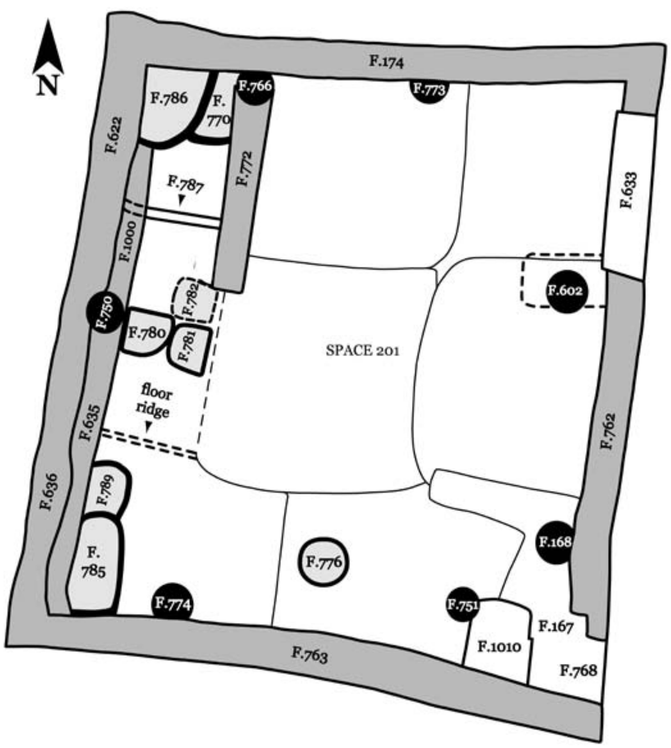


Figure 5.32. Plan of Building 3 in Phase B3.1D.

South-and-West Zone

The South-and-West Zone continued to be the focus of the most intensive remodeling, especially in its northern part in Phase B3.1D, in contrast to previous phases when its southern part had been the location of active construction. Bench F.772 was constructed on floor 10 in the northwest of Building 3, forming what now became the western edge of the north-central platform (F.162), extending north–south from post F.766, abutting the north perimeter wall southward for 1.45 m, with a width of 0.26 m east–west and a preserved height of 0.15 m–0.25 m (8402). Thus, F.772 formed a low demarcation between the northwest corner of Building 3 and its north-central platform, F.162. The southern end of F.772 extended 20 cm beyond the southern edge of platform F.162. The combination of brick and mortar used in F.772, consisting of red crumbly brick and beige concrete-like mortar (8431), was the same as that used to construct the bench (F.1000) along the west perimeter wall. The bricks of the lower part of the bench (8453) were attached to the highly damaged floor (floor 10, Phase B3.1C) with a layer of compact, beige clay mortar that contained an abundance of salt grains. This mortar was incredibly sticky and adhered to the floor plaster to the extent that it pulled up the floor plaster as we excavated it. At the northern end of F.772, its base dipped down so that an extra course of red clay brick had been needed. The upper part of F.772, especially on its western side, comprised soft, crumbly material with thin fragments of brick (Figure 5.33). It was impossible to say how high F.772 was originally, since it was later truncated in Phase B3.4A and used as the base of the later interior wall (F.160). The fact that it was incorporated into this wall suggested that originally F.772 was most likely not a full-height wall.

The plaster coat applied to F.772 varied from a thickness of 0.5–2 cm and adhered to a thin wash of mortar; in some cases it was applied directly onto the brick. It was preserved almost exclusively on the eastern face of the bench (8414, 8212). The western face of F.772 had no plaster coat but a 1-cm-thick layer of mortar whose role was to smooth the wall. This same mortar layer was extended into posthole F.766 (8402.S3), where it acted as a lining.

In the very northern end of the South-and-West Zone, a new storage bin (F.770) was added to the east of bin F.786, which had been constructed in Phase B3.1B (Figure 5.23b). The construction of bench F.772 facilitated the introduction of this new bin by creating an enclosed area between itself and the earlier bin (F.786). The preservation of bin F.770 is fragmentary, since it was heavily damaged by a later cut (6305). Its shape has been reconstructed from the surviving fragment of the bin wall (8427) that was still attached to its pair-bin (F.786), and from the relationship of surrounding features that have survived and frame the shadow of its original position (8550). Bin F.770 covered an area of 0.70 m north–south × 0.40–0.45 m east–west. Its height would have been the same as the pair-bin F.786—that is, at least 0.45 m. Unlike its pair-bin F.786, F.770 had no preserved floor. The infill (8292) of the bin was composed of mixed deposits, including fragments of oven construction material, orange-colored burned plaster fragments, ash, packing clay, and soft white-yellow clay.

The northwest corner was always the highest floor area of Building 3. Possibly as a result of this, the fewest floors

Figure 5.33. The bench or internal wall (F.772) constructed in Phase B3.1D, looking west.

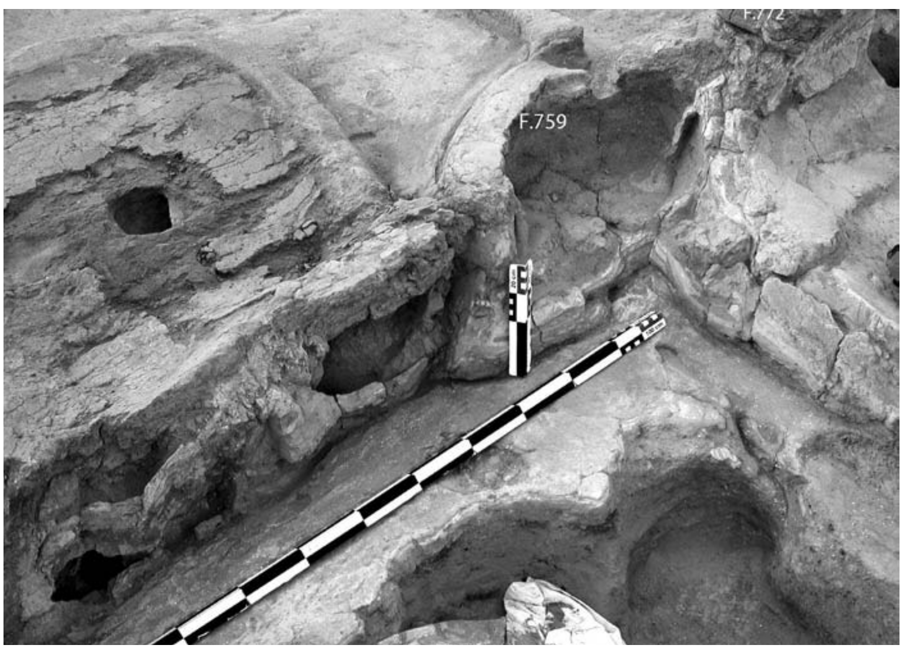


Figure 5.34. Semicircular Feature 759, interpreted as a pedestal, constructed in Phase B3.1D or B3.2 at the truncated southern end of bench F.772, looking northwest.

were applied there, and it was always difficult to correlate them with the rest of the house floors. Associated with the Phase B3.1D floors in this area were relatively thick layers of greasy, very black, organic deposits on top of beige clay. The question is, what was the northwest corner of the house used for in this phase to make these floors so discolored and worn?

The northwest corner was clearly demarcated during Phase B3.1D by the construction of a low ridge/wall (F.787) aligned east–west, stretching 0.85 m long from its western end, which was set inside a V-shaped notch cut into the wall/bench (F.1000), to its eastern end abutting bench F.772. It is possible that even in this phase, its eastern end abutted a semicircular pedestal (F.759) (Figure 5.34). It seems more likely, however, that F.759 was built in Phase B3.2 and truncated the eastern end of the ridge (F.787). The ridge is 0.10 m wide and stands 0.10 m high, functioning as a boundary between the northernmost storage segment and the central part of the South-and-West Zone (Figure 5.35).

At the same time, F.787 acted as the northern boundary of the central part of the South-and-West Zone, whose southern boundary was created by a newly constructed low ridge.

The central area that was thus demarcated contained four white clay basins/bins surrounded with white plaster floors, creating also a strong connection between the Central Floor Zone and the central portion of the South-and-West Zone, with implications of a higher degree of segregation between the north, center, and south areas of Building 3 in B3.1D.

Bin/basin F.780 continued to be used in Phase B3.1D, when its floors were well preserved, although its walls were almost completely truncated. The final floor of the feature was completely covered with a fill of soft, black, ashy soil (8293). This floor had traces of use that were not observed on its previous floors—namely, a thin layer of carbonized seeds that resembled cereals (a full analysis of the sample would be more informative). The fill had been sealed with a white clay coat (8417) (Figure 5.36). This basin was treated differently from its related basins (F.782, F.781), possibly because it was the oldest such feature in the house. Other basins in this location were either emptied and truncated to the floor level or completely removed.

The floor of bin/basin F.781, constructed in Phase B3.1C, was renewed in Phase B3.1D, comprising a layer of massive packing composed of dark brown clay lumps mixed with concentrations of redeposited oven floor fragments, soot, charred wood, and burned pottery (8474), which was overlain with a plaster coat. One additional floor renewal took place during Phase B3.1D, consisting of another white plaster coat that covered a layer of packing 2–3 cm thick (8418); this packing was composed of a red-brownish clay layer superimposed on a 1-cm deposit of an unusual mixture of pea-sized gravel and sand, with inclusions of charcoal and loose plant remains.

The northern edge of bin/basin F.781 abutted the southern edge of the newly constructed bin/basin F.782 (8416, 8415), which survived subsequent truncation, indicating that these were twin basins/bins (Figure 5.37). Feature 782 was built in the same way as the other basins in this area and measured 0.54 m north–south × 0.50 m east–west. Although its floor and rim were only partially preserved, its red clay packing was visible below its white plaster floor, showing a similar sequence to that in F.781.

The basin complex of F.780, F.781, and F.782 comprised three and possibly four nearly identical features, which were constructed in the middle of the west floor area over the duration of three subphases (B3.1B–D). They were largely truncated by later construction in Building 3. Two of the basins (F.780, F.781) were well preserved, whereas the others left only sporadic and ambiguous traces of their existence. It was clear that the earliest and the best-preserved basin (F.780) was introduced in B3.1B, and it was the longest to survive. There were five floors to bin/basin F.780, three floors preserved in F.781, and two preserved floors in F.782. All were located right below massive packing that provided the foundation for the later (Phase B3.2) oven F.646. The whole basin complex sloped from the west down toward the center of the house.

In the very southwest corner of Building 3 on platform F.169, oven F.785 and ash collector F.789 (8363) had their floors renewed once more in Phase B3.1D and were designated F.785-C (8366, 8367-fill) and F.789-B (8363), respectively. Layers of ash and charcoal that included carbonized seeds covered the floor of F.789-B (8363) and were sealed with a coat of clay (8362).

On southwest platform F.169, at least two new floors (6, 7) were applied during Phase B3.1D. They were excavated in 1 × 1 m squares. Even so, floor 6 was hard to follow because of its thin, worn plaster coat. However, the smooth interface between the platform lip (8342, 8351) and the central house floor was easy to follow and excavate as a uniform layer.

The floor in the South-and-West Zone immediately east of the platform edge was applied as a continuation of the platform floor. The packing at the eastern edge of platform

Figure 5.35. The low ridge wall (F.787) partitioning the northern (storage) area of the west zone of Building 3 from the southern area, constructed in Phase B3.1D, looking north.

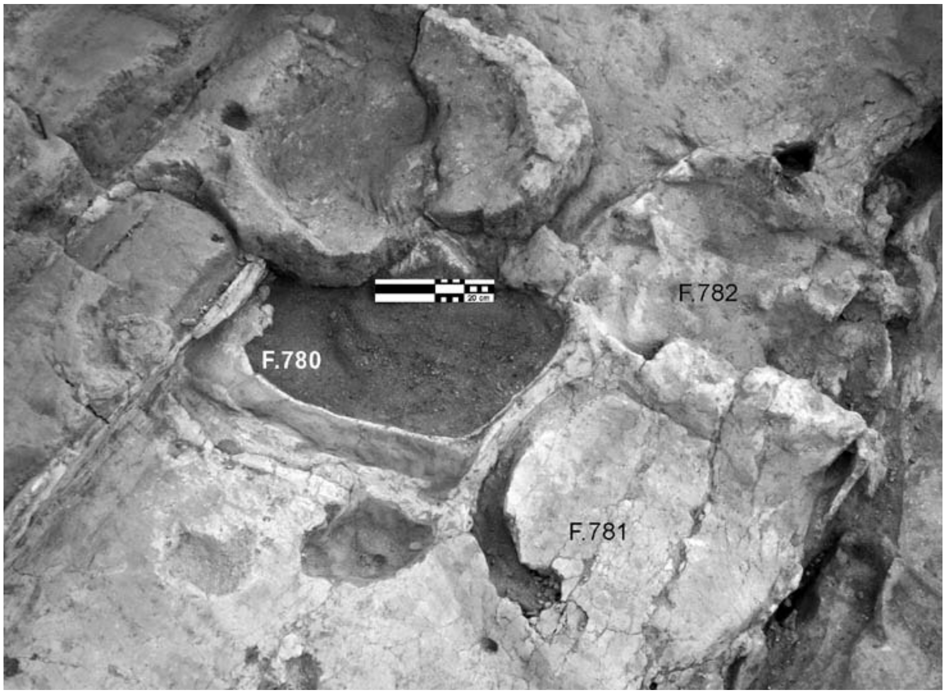


Figure 5.36. White clay basin F.780 with a layer of seeds that were originally sealed, looking northwest.

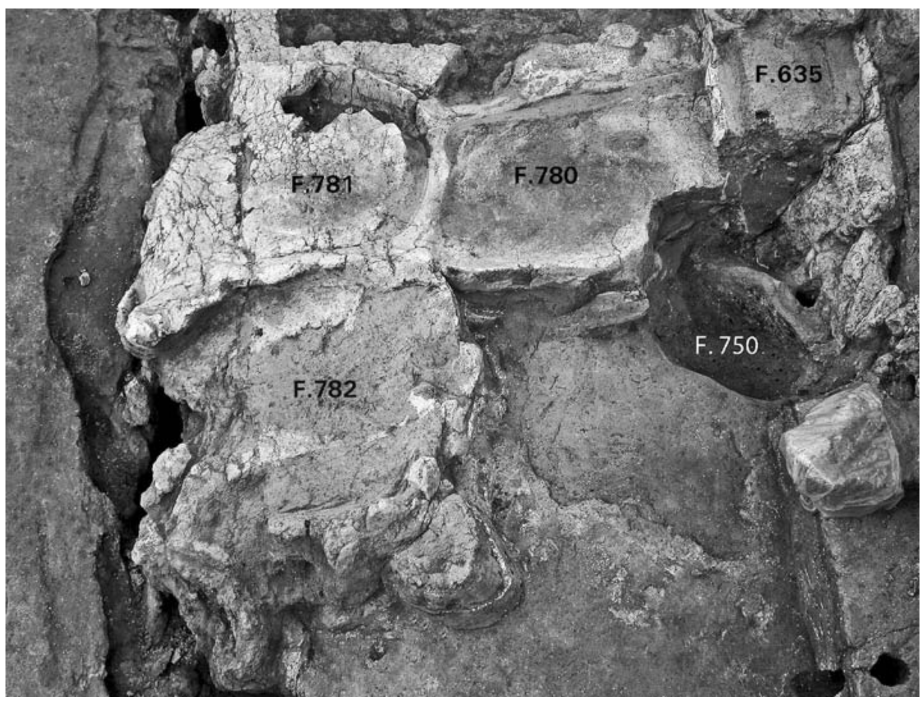


Figure 5.37. Basin F.782 constructed during Phase B3.1D near the center of the west wall of Building 3, looking south.

F.169, comprising compressed sandy clay that resembled brick, was deposited above layers of floors (8543), creating a ridge. It was covered with multiple layers of white plaster.

In the middle of the southern end of Building 3, a new hearth (F.776) was constructed on top of the earlier (Phase B3.1C) hearth (F.777). It was poorly preserved, with a floor that was visible as a thin layer of scorched black, burned clay; its rim, however, was destroyed and its fragments integrated into the surrounding packing and floor (8228), so that it was quite unrecognizable. No clear break between the base of F.776 and the underlying F.777 could be seen. Both installations were damaged by truncation, and it was very difficult to distinguish their individual elements of construction.

Central Floor Zone

As in earlier phases, this zone remained unobstructed by features but continued to have its floors renewed. The west end of the central house floor (8359), in the vicinity of the white clay basins F.780–F.782, contained black organic deposits that may have been linked to the contents of these basins.

Northeast Zone
This zone did not undergo any remodeling during Phase B3.1D except for floor renewal on platforms F.162, F.170, and F.173 where floors 6 and 7 were applied. In addition, bench F.792 at the southern edge of platform F.170 was removed at the end of Phase B3.1, and its location was covered with a new house floor.

It is likely that doorway F.633 was used until the end of Phase B3.1 and was blocked at the transition into Phase B3.2. However, it is possible that it was blocked earlier in Phase B3.1. It is almost certain to have been blocked before burial F.631 was interred under platform F.173 (see Phase B3.4B).

Phase B3.2

Phase B3.2 marks a period of major renovation in Building 3 (Figure 5.38; also Figure 5.39 [on-line]). The floor packing between the floors of Phase B3.1 and those of Phase B3.2 created a significant break, especially in the western half of the building. During Phase B3.2, some earlier features were partially or nearly completely dismantled:

- the short bench/wall (F.1000) abutting the northern part of the west perimeter wall;
- white clay basins (F.780, F.781, F.782) next to the center of the west perimeter wall;

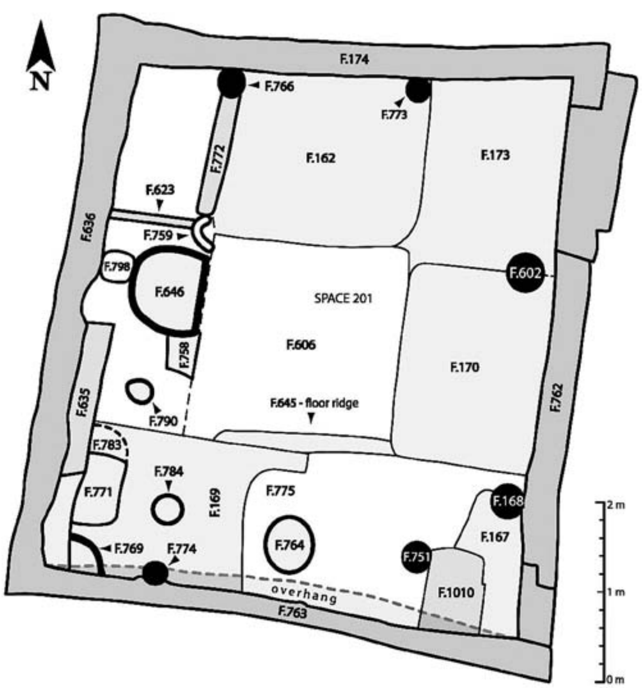


Figure 5.38. Plan of Building 3 in Phase B3.2.

- the storage bins (F.770, F.786) in the northwest corner;
- the post (F.750), constructed in Phase B3.1A, abutting the west perimeter wall;
- the doorway (F.633) in the northeast corner (blocked);
- the crawl hole (F.768) in the southeast corner (blocked);
- the oven (F.785-C) in the southwest corner;
- the ash collector (F.789-B) in front of F.785;
- the bench (F.792-B) abutting platform F.17;
- the hearth (F.776) in the south;
- the east–west floor ridge (F.787) in the northwest of Building 3.

Others survived but were remodeled, typically with an addition of a new floor layer that included packing:

- the wall/bench (F.635) abutting the west perimeter wall constructed in B3.1B;
- the entry bench (F.1010) constructed in B3.1A, which was incorporated into the newly expanded platform F.167/637;
- five platforms (F.162, F.173, F.170, F.169) constructed in B3.1A;
- the north–south partition wall/bench F.772 in the northwest of Building 3.

Finally, several new features were introduced:

- the construction of an oven (F.646) in a much more central location;
- the construction of a clay ball feature (F.758) south of the oven;
- the construction of a pedestal (F.759) (possibly constructed in Phase B3.1D) between the oven and a new partition (F.772);
- the construction of a large basin (F.771) in the southwest corner;
- the construction of a small basin (F.783) in the southwest area;
- the construction of a storage feature (F.769) in the southwest corner;
- the digging of a major cut (F.775) on the eastern side of platform F.169, expanding the floor area of the lower floor in the south;
- the construction of a hearth (F.764) in the south;
- the construction of an east–west floor ridge (F.623) in the northwest of Building 3.

The changes introduced in Phase B3.2 pose some interesting questions. Why was food storage and cooking relocated? Why was the small wall F.1000 put out of use at this time if no other features were built in that part of the building? What were the reasons for the massive floor packing, and where did these large quantities of packing material come from? Finally, did the relocation of the oven away from the southwest of the house require alterations of the roof in order to accommodate smoke ventilation?

South-and-West Zone

Prior to the construction of the new features in the center and south areas by the west perimeter wall and prior to the massive packing of Phase B3.2, a large cut (F.798) was made in the house floor. The irregular-shaped cut (8437) covered an area 0.75 m north–south × 0.80 m east–west (Figure 5.40) and ranged from 0.01 to 0.24 m deep, although at one point it reached a depth of 0.49 m into the B3.1 floors and the midden beneath the building. This cut completely removed an earlier white clay basin (see discussion in Phase B3.1B) along with the floors under it, but only partially truncated its twin basin (F.780, also constructed in Phase B3.1B). A nearby pair of basins (F.782, F.781, from Phase B3.1C) was spared by the cut, but it removed the nearby post (F.750, Phase B3.1A) in the west perimeter wall. Cut F.798 consisted of two chambers: a wider chamber to the east that was filled with large (10–15 cm) plaster chunks and layers of beige clay mixed with some midden material (8436); and a second chamber (8444) to the west filled with hard, sterile clay packing of a beige color. The uppermost surface of the infill in this chamber incorporated dense concentrations of obsidian debitage, similar to the fill of the earlier storage bins located in the northwest corner of Building 3 in Phase B3.1.

On the house floor (6) that sealed cut F.798 was a circular concentration of phytoliths in the vicinity of the former post/pillar F.750. A talcschist/steatite blank for making stone beads was found in the matrix of the same floor, along with several beads (8108) (Chapter 21; Figure 21.3a). The reason for the large size of the cut was not apparent—whether to remove and truncate the basins, and/or to extract the post (F.750). It is perhaps significant that the oven (F.646), the construction of which required the truncation of the upper walls of the earlier bins (F.780–F.782), was built on the floor (6) that sealed the cut.

The new horseshoe-shaped oven (F.646) was strikingly different from the previous ovens in its shape, size, and location (Figure 5.41). The oven covered an area 0.82 m north–south × 0.72 m east–west. In addition to its significant location in the center of the building, this oven was unusual in that it was freestanding, without abutting any wall (see Chapter 4). The base, floor, and rim (8231) of F.646 were constructed to slope down eastward toward the house center, and were made of hard-packed silty clay that acquired a dark brown color through firing. The floors and walls of oven F.646 were largely truncated in the subsequent phase, but the surviving remains showed exposure to lower temperatures than the other ovens in Building 3.

In the earlier phases, this area of Building 3 had been covered with a white plaster floor, whereas in this phase, around F.646, the floor was beige and reddish in color, perhaps discolored by heat and activity around the oven. Oven F.646 rested on a thick layer of packing (8251) that contained a considerable amount of faunal and botanical remains, shell, obsidian debitage, and numerous artifacts, such as worked stone (8251.X2–X4, X6), a flint polisher

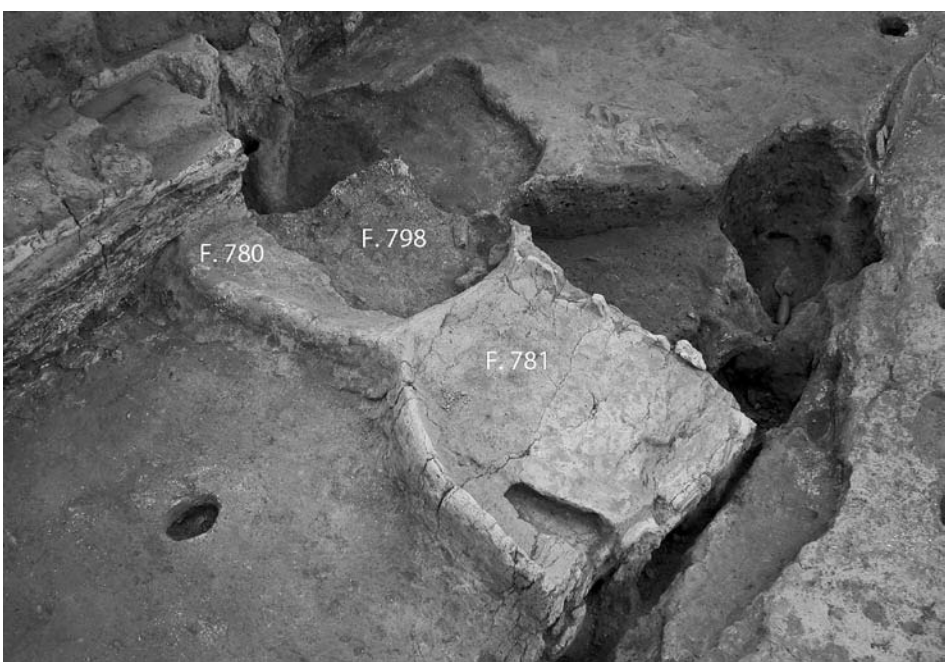


Figure 5.40. A large irregular cut near the center of the west wall of Building 3, looking northwest.

Figure 5.41. The oven (F.646) constructed in Phase B3.2 near the center of the west wall of Building 3, looking west.

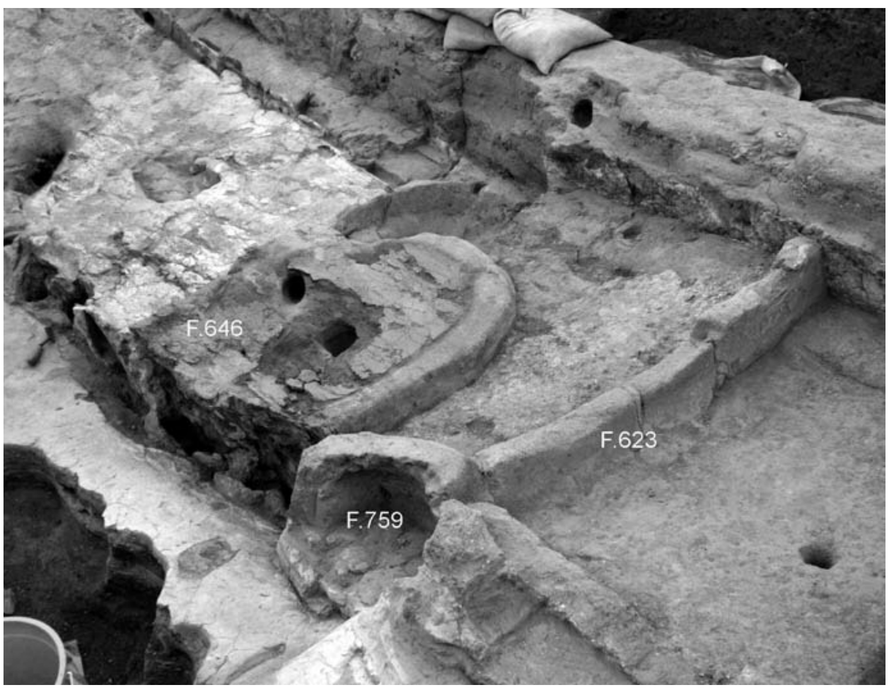


Figure 5.42. The ridge wall (F.623) that partitioned the storage area in the northwest corner of Building 3 from the rest of the Southwest Zone during Phase B3.2, looking southwest.

(8251.V7), clay balls (8251.X1, X5, X8), and pottery. Russell (Chapter 8) has suggested that this collection of objects might comprise a "commemorative" deposit.

During Phase B3.2, north of oven F.646, the southern end of partition F.772 was truncated and a semicircular pedestal (F.759) was inserted in its place. The pedestal may have been constructed earlier in Phase B3.1D. It was constructed of sandy clay bricks (8336) in its southern (curved) half and red clay bricks (8344) on its eastern (straight) side. It measured 0.40 m north–south × 0.07 m east–west, with a preserved height of 0.28 m (Figures 5.34, 5.41). In fact, this feature comprised the early phase of a footing for the later wall F.160 (Phase B3.4A).

To the north of oven F.646, a ridge wall (F.623, 8328) stretched in an east–west direction across the South-and West Zone (Figure 5.42). Manufactured in the coil technique, 0.18–0.22 m high, the ridge was placed directly on an earlier ridge wall of the same kind (F.787, Phase B3.1D).

Attached to the southern edge of oven F.646 was a unique feature (F.758) comprising 785 miniature clay balls arranged on a rectangular white plaster base (8194, 8171, 8198) (dimensions: 0.49 m north–south × 0.34 m east–

west) (Figure 5.43; see also Figures 18.5, 18.6). The collection of clay balls was covered by white plaster similar to that of their base. The feature lipped up the side of the oven, showing that the two were built in close association. The extremely fragile, unfired clay balls were originally set onto the wet plaster base in three superimposed layers. This could be seen from the rounded indentations made by the mini balls in the plaster while it was still wet (Figure 5.44). Some of the balls themselves were still wet when placed in the basin, since they had clearly been deformed to the shape of the balls and basin around them (see Figure 18.6). There were 727 "mini-balls" (2,070 g) in the fill of the basin (8164) and another 58 "mini-balls" (163 g) adhering to the white plaster covering (8100) when the basin was first exposed (see Chapter 18). Although basin F.758 directly abutted the oven (F.646) to its north, it does not seem to have been affected by heat. The slight discoloration of the plaster base of the basin and its edges nearest to the oven did not extend to the miniature balls themselves. In subsequent phases, this feature would be partially cut on its eastern margin by the construction of the screen wall, in the same way as oven F.646 (see Phase B3.4B).

A circular cut (F.790), 0.50 m in diameter, was excavated in the area south of the oven (F.646) and clay ball feature (F.758). Cut F.790 (ca. 0.12–0.14 m in depth) had vertical sides and was filled with fragments of floor and packing (8343) and some remains of organic origin. The basal deposit appeared to be a layer of pure sand. Considering its characteristics, the cut might have been a temporary post emplacement pit linked to constructions on the roof (see Chapter 6).

A white clay basin (F.771) was constructed near the southwest corner of Building 3, bordering the northern edge of southwest platform F.169. The basin differed in size and shape from other known basins in Building 3, and its location above the earliest oven in the building may have been significant. It was rectangular in plan, originally possibly measuring up to ca. 1.0 m north–south × 0.45 m east–west, but it had been damaged by a later cut that truncated nearly half of the feature. The basin was made of thick layers of white clay floors (8199, 8254) 2–3 cm thick that built up on the house floor (8165) and were surrounded by a lip made of light brown clay packing covered with white clay. The west face of basin F.771 abutted bench F.635 (constructed in Phase B3.1B).

To the north of basin F.771, the curving wall (8262) of another very damaged feature (F.783)—probably also a basin—was unearthed. It had been almost completely stripped and replaced with the packing clay of the overlying floor. These two basins (F.771 and F.783) were probably built abutting each other along the west wall, in which case they would have represented another instance of pairing features that seems to have been a recurring theme in Building 3 (see Chapter 4).

In this phase (B3.2), it was nearly impossible to follow specific floors over the whole of southwest platform F.169, since they had been worn down and repaired so many times. We excavated a minimum of two sets of "clean" floors and packing on this platform, which were designated on the unit sheets as Samples 2 and 3. In the very center of platform F.169, there was a circular cut (F.784) that measured 0.33 m north–south × 0.31 m east–west. The cut—

Figure 5.43. A dense deposit of mini clay balls (F.758), looking from above toward the north.

Figure 5.44. The plaster base of the dense deposit of mini clay balls (F.758) after the removal of the balls.

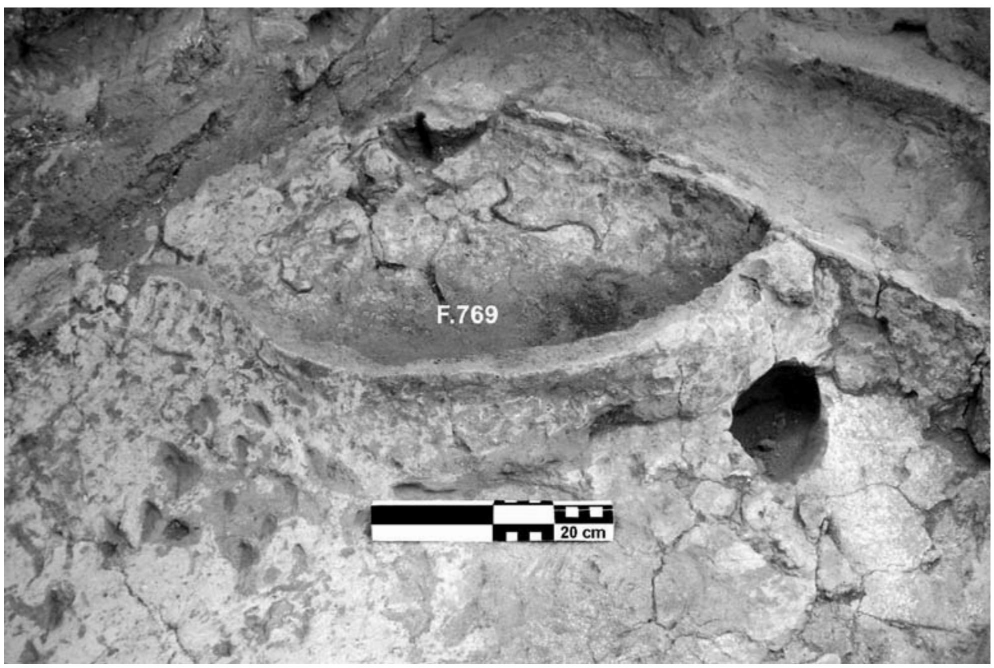


Figure 5.45. Bin/basin F.769 in the southwest corner of Building 3 constructed during Phase B3.2, looking southwest.

which, like cut F.790, had steep, vertical sides—was 0.30–0.35 m deep and ended on the earlier (Phase B3.1D) platform floor (6). The infill of cut F.784 (8188) contained dense, silty clay with discrete pockets and lenses of ash and charcoal, scorched clay, and plaster inclusions that were typical for the platform packing between the floors. During excavation, this feature was interpreted as an emptied cache, since it was located in the vicinity of ovens and hearths. Because of its great depth, completely vertical walls, and sterile infill, this interpretation is now in doubt. Obsidian caches at Çatalhöyük were generally placed in shallow scoops. A more plausible interpretation would be that it had been a temporary post emplacement related to major construction activities. Such a post would have been needed during roof reconstruction (between Phases B3.1D and B3.2), as was surmised for cut F.790 (see Chapter 6). After the post was no longer needed, cut F.784 would have been filled in with dense packing.

In the southwest corner of Building 3, a bin/basin (F.769) was constructed (8176, 8230) abutting the west and south perimeter walls. It was constructed on the floor (8165) above an earlier oven (F.785, Phase B3.1B). The rounded base of the feature (0.43 m in diameter) was made of white clay and completely enclosed the southwest corner of Building 3 (Figure 5.45). The walls of the bin were preserved to a height of 5 cm but originally must have been higher, since they were truncated in a subsequent phase. Feature 769 differed from other bin/basins in Building 3, not just by its shape but also by its construction materials. It was nicely crafted in white clay, in contrast to other bins, which were made of beige-brown or orange clay or soft orange-red clay. At the same time, F.769 differed from other Building 3 basins by its tall walls, in contrast to the shallow walls of the other basins (see Chapter 4). Prior to the interior changes that defined the subsequent phase (B3.3), F.769 was filled in with well-packed sterile soil in order to be preserved. Thus, the feature was blocked with soil before it was abandoned, which is a relatively common occurrence in other areas of Çatalhöyük (Farid 2007) but was very rare in Building 3. The sterile infill did not give any indication as to the purpose of this feature, which remains enigmatic for the reasons explained above, even though its shape resembles a storage bin or basin.

A large "basin" or shallow scalloped cut (F.775), measuring 1.10 m north–south × 0.65 m east–west and 0.12–0.15 m deep, was constructed by digging a rectangular cut (8239) with rounded corners into the eastern side of southwest platform F.169 (Figure 5.46). By this action, a wide strip from the eastern margin of platform F.169 was removed, leaving intact a narrow strip (15–25 cm wide) of the platform running east–west at the northern edge of F.775, and creating a barrier between the "basin" and the central house floor to its north. In this strip was buried a large, overused obsidian tool possibly utilized for the manufacture of the feature. The effects of creating the "basin" or cut F.775 included the westward expansion of the lower floor of the South-and-West Zone (between platforms F.169 and F.167), providing a larger floor surface around the hearth in this area.

A hearth (F.764) was constructed in the middle of the extended south lower floor area (F.775) during this phase (Figure 5.47). The preserved half of the hearth showed that it was an almost exact circle in plan, measuring 0.55 m in diameter (0.49 m diameter at its base), with a 7-cm-high rim (8210) composed of hard sandy clay with plant inclusions preserved as phytoliths (8213, 8120). The intensity of the fire in this hearth had scorched and discolored not just its floors but also those of the entire "basin" (F.775). Only the peripheral zones of the basin remained white after the fires.

During Phase B3.2, the elevated ladder platform area where the roof entry was located was considerably redesigned. Three features dedicated to the house entry were united into one large stepped platform. The previous (Phase B3.1D) entry platform area had been divided in two, with a more elevated platform (F.167) in its southern part, and a lower northern part of the platform (F.637). In Phase B3.2, the third component, which had been a separate entry step/bench (F.1010), was incorporated into the same platform. A very thick layer of packing comprising oven-generated materials was used to reduce but not completely remove the difference in elevation between F.167 and F.1010. The packing was covered with a thick layer of white clay plaster. Consequently, the final feature in the southeast corner of the building—the now considerably elevated ladder

Figure 5.46. Open-sided basin or scalloped cut (F.775) constructed in Phase B3.2 by cutting into platform F.169 at the southern end of Building 3, looking south.

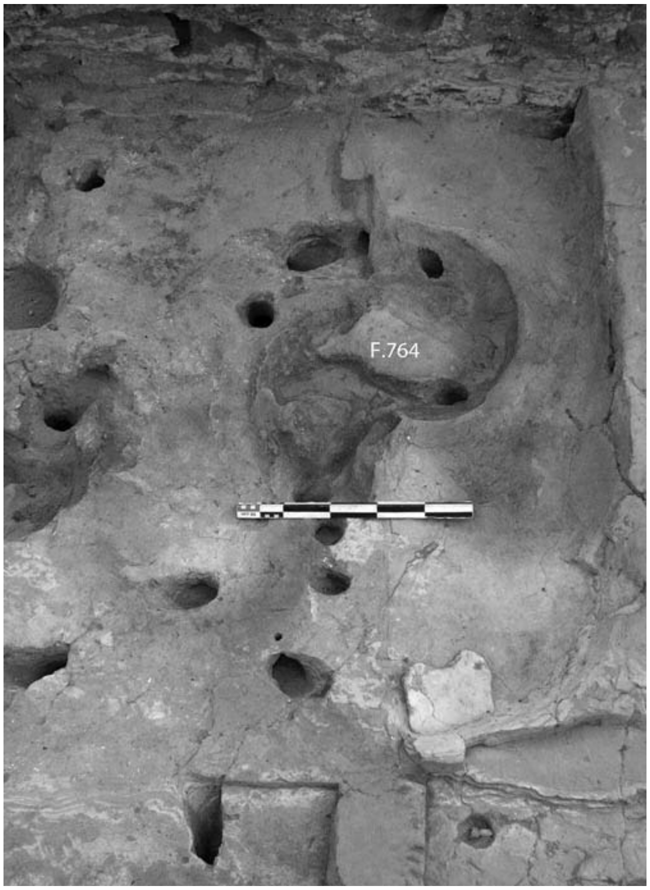


Figure 5.47. Hearth F.764, constructed in Phase B3.2 at the southern end of Building 3, looking south

platform—was a three-step platform, with F.1010 comprising the highest and narrowest step, F.167 as the next one down, and finally F.637 as the lowest step, which extended to the edge of the post F.168.

There is an indication that, toward the end of Phase B3.2, a ladder post (F.751) might have been moved from its previous (Phase B3.1D) location to the middle of the entry platform (F.167/F.637/F.1010), coinciding with the area (0.54 × 0.55 m) of dark, burned compacted packing (8118). After removal of this packing, a small plaster scar where the ladder had leaned against the south wall was clearly defined in the wall.

Central Floor Zone

As in earlier phases, the Central Floor Zone was minimally affected by the construction activity during Phase B3.2. Two layers of floor with packing that belong to this phase were excavated in 1 × 1 m squares as floor 14.

Northeast Zone

In contrast to the heavy construction activity in the South-and-West Zone in Phase B3.2, the Northeast Zone was barely affected. The only obvious major alteration that happened in the Northeast Zone during this period was the blocking of the doorway (F.633) in the east wall. The doorway had served as a means of communication between Building 3 and the neighboring house (or pathway to its east) since Phase B3.1A. Its blocking enabled the northeast platform F.173 to be built up to a height that matched that of the north-central (F.162) and central-east (F.170) platforms. Likewise, the crawl hole (F.768) in the southern end of the east perimeter wall that was also part of the original construction of Building 3 was blocked in Phase B3.2, enabling the elevated entry platform F.167/F.637/F.1010 to be enlarged.

Phase B3.3

This phase is not as clearly defined as the earlier phases (Figure 5.48; also Figure 5.49 [on-line]). It was short-lived, and consequently there are fewer traces of activities remaining. The sequence of features and surrounding activities was more difficult to define; this was partly on account of the increased accumulation of features and new floor layers, and their fragmentation by truncation, but also because the features and activities were less clearly defined than they were earlier. This is especially so compared with the preceding Phase B3.2, which had been so clearly marked by its construction behavior.

During Phase B3.3, many features constructed in Phase B3.2 were partially or completely dismantled:

- the oven (F.646) in the center of the building;
- the clay ball feature (F.758) south of the oven;

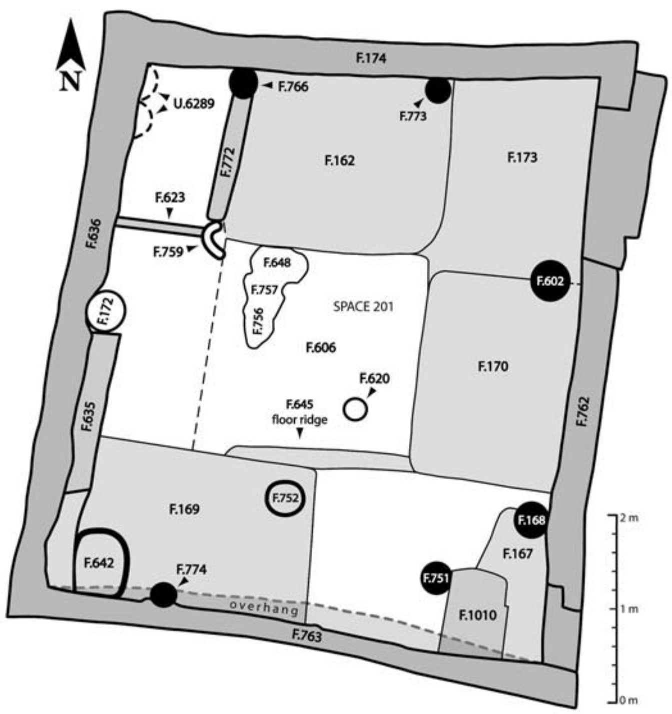


Figure 5.48. Plan of Building 3 in Phase B3.3.

- the large basin (F.771) in the southwest corner;
- the basin (F.783) in the southwest area;
- the storage feature (F.769) in the southwest corner;
- the cut (F.775) on the eastern side of platform (F.169);
- hearth F.764 in the south.

Others survived but were remodeled, typically with an addition of a new floor layer that included packing:

- the wall/bench (F.635) abutting the west perimeter wall constructed in B3.1B;
- the pedestal (F.759) between the oven and the partition F.772 constructed in Phase B3.2;
- five platforms (F.162, F.173, F.170, F.167/F.637/F.1010, F.169) constructed in B3.1A;
- the north–south partition wall/bench (F.772) in the northwest of Building 3;
- the east–west-aligned floor ridge (F.787) in the northwest of Building 3.

Finally, several new features were introduced:

- the construction of oven F.642 in the southwest corner on platform F.169;
- the construction of hearth F.752 on the eastward expansion of platform F.169;
- fragments of what might have been two bins/basins in the northwest corner;
- the earliest burials (three children) of Building 3 in the northern half of the Central Floor Zone; the earliest (F.757) in the central pit, followed by two individuals (F.756, F.648).

South-and-West Zone

In Phase B3.3, the South-and-West Zone of Building 3 was again the center of activities related to food storage and preparation. Activities typical for this zone continued throughout Phase B3.3, but their spatial arrangement changed. The southwest corner of Building 3 became an arena for activities that made the floor "dirty," in contrast to the "clean" floor of this corner in the previous phase (B3.2). The B3.3 "dirty" floor that covered the earlier basin (F.771) and bin/basin (F.769) included a layer of phytoliths overlain with a thick layer of red-brown packing clay. In this matrix, miniature clay balls and fragments of ground stone artifacts were found (8165.X1–X5). Conversely, east of this "dirty floor" in the center of the South-and-West Zone, the floor was transformed in Phase B3.3 from a "dirty" to a "clean" floor.

A major change was the move of oven F.642 back into the southwest corner. Only a large portion of the oven's well-baked floor was preserved, in contrast to the earlier ovens in Building 3, whose base, floor, and rim were still present. Oven F.642 was set in the wall/bench F.635 as deeply as had the earlier oven (F.785) in this corner. It is likely that F.642 originally had a superstructure in the shape of a dome, as was the case with the earlier oven. The preserved oven floor shows that when it was complete, it covered an area of 0.73 m east–west × 0.42 m north–south (6626, 6694). The dark red to brown-black oven floor was baked hard through use, while its foundation layer remained yellowish brown (unit 6324). The floor surface was smooth, as was usual with well-used ovens, and cracked into long, angular shapes, which also indicated intensive baking of the clay. No direct evidence existed to show whether the oven's mouth was facing north or east. The brown baked floor that surrounded it on its eastern side might indirectly point to the mouth having been on the eastern side, which would have been a change from the earlier (Phase B3.1) oven mouth placement on the north side. Compact white clay fragments of a possible feature abutted the west wall north of the oven (F.642). However, the size and nature of this feature were unclear, since there was extensive floor damage in the area.

In the center of the west wall, where the earlier post/pillar structure F.750 (Phase B3.1A) had once stood and was subsequently removed by digging cut F.798 in Phase B3.2, a bin (F.172; originally referred to as F.750.1) was constructed in Phase B3.3 (Figure 5.50). In the construction of bin F.172, two different kinds of very hard packing clay were used. The lower packing comprised a mix of fine, silty soil with abundant inclusions of plaster fragments, ash, charcoal, and orange and brown clays that appeared as flecks regularly dispersed in the matrix and gave the packing a spotty appearance (8413). The upper packing was different and comprised 0.03 m^3-size chunks of bricky clay mixed with orange and brown clays, and some large plaster inclusions (8305). There was also a fragment of white plaster packing (0.10 × 0.20 m) connected to the bin and abutting the nearby west wall (F.635). The bin contained the phytoliths of an incompletely preserved basket and a considerable amount of wall plaster (Figure 5.51; see also Figure 2.21).

The middle section of floor along the west wall comprised white floors that mirrored the position of the burials in the Central Floor Zone to the east. A cut (0.33 m in diameter and 0.25 m deep) removed the southwest portion of the rim of the earlier (Phase B3.2) oven (F.646). A fragmented low curb (F.623, Phase B3.2) separated the floor in the northwest corner of Building 3 from this middle section along the west wall. The white plaster floor in the northwest corner of the house that in prior phases had served for storage bins appeared poorly preserved. On the floor, we excavated very fragmentary remains of a damaged base

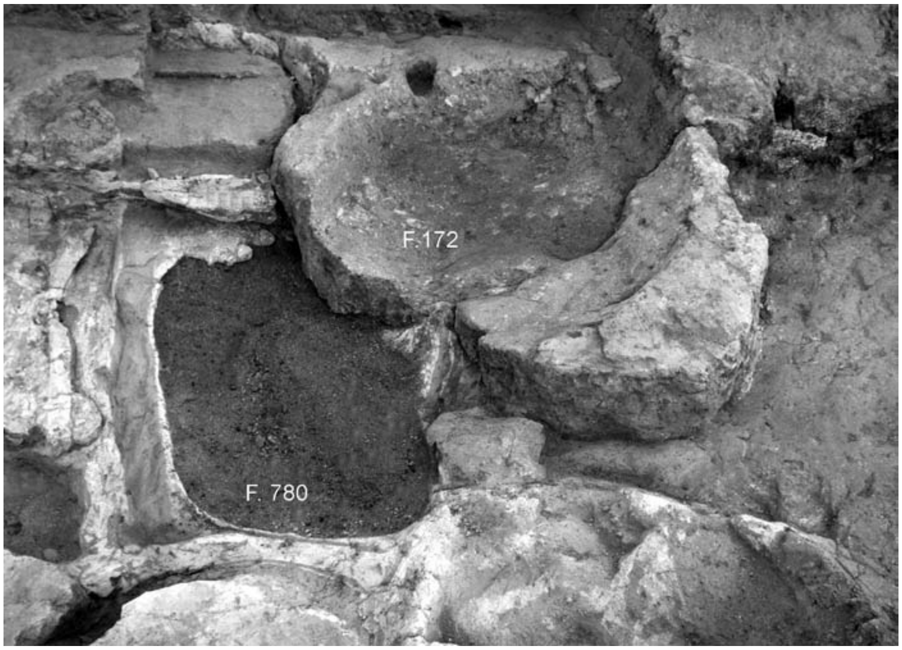


Figure 5.50. Bin F.172, constructed near the center of the west wall of Building 3 in Phase B3.3, looking southwest.

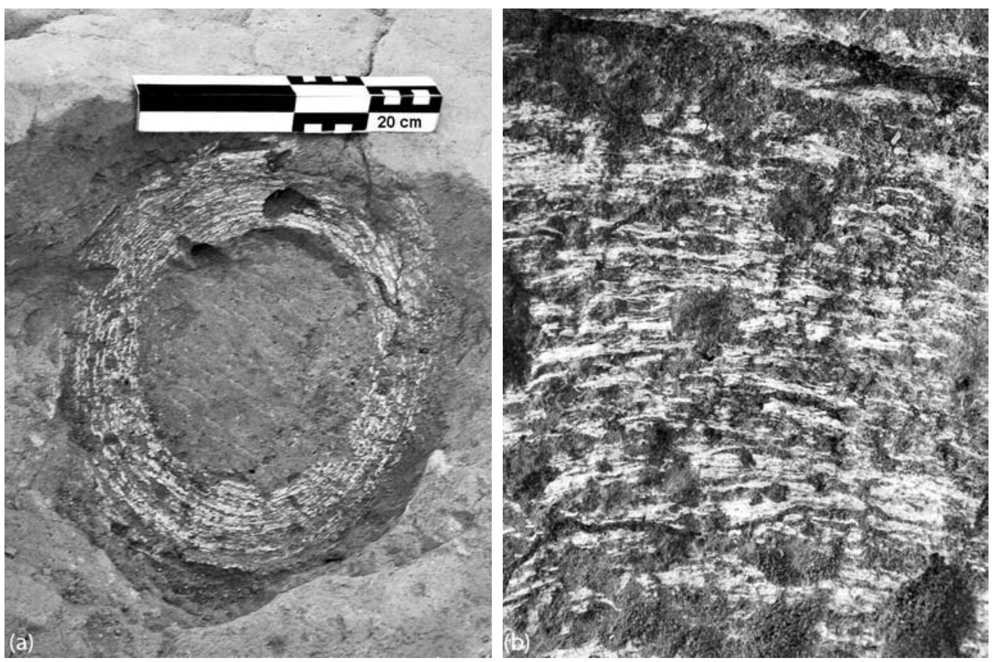


Figure 5.51. (a) Phytoliths representing the basket in the bin (F.172) near the west wall of Building 3 in Phase B3.3; (b) detail of the phytoliths representing the basket in the bin (F.172) near the west wall of Building 3 in Phase B3.3.

(6289) of what could have been a bin/basin feature. It appeared as a smooth but irregular surface of packing (0.27 × 0.82 m) made of light yellowish brown silty clay with a thin brownish orange clay layer below. A flint tool (6293.X1) was found inside the feature, positioned with its curving surface up against the west wall.

Southwest platform F.169 underwent one more major renovation in this phase. The large scalloped cut or "basin" F.775 on the east side of the platform, which had been created in the previous (B3.2) phase, was filled in and the area reincorporated into the platform, extending the platform's width eastward. On this newly formed surface, the roughly rectangular hearth F.752 (0.52 m north–south × 0.45 m east–west) was constructed close to the platform's northern edge. The fill of the hearth comprised very dark, ashy deposits, with visible plant remains. It had a sequence of four floors (8150, 8148, 8141, 8134), all belonging to Phase B3.3. Underneath the lowest of these floors, a depression lined with plaster served as a base for the fire installations above. Whereas the hearth floors were heavily baked from use, their base did not show extensive traces of burning, but only scorching—especially in the central part—due to the proximity of high temperatures from above. This hearth was partially damaged by a later (Phase B3.4) cut F.632.

The floors at the southern end of the South-and-West Zone were renewed, and a threshold ridge (F.645) was introduced. The east–west threshold (8127) (0.20 m north–south × 2.10 m east–west) was constructed at the line of intersection between the "kitchen" and the Central Floor Zone and functioned as a partition between "clean" and "dirty" floors. The western end of threshold F.645 that abutted the southwest platform (F.169) was layered with four white plaster coats, suggesting it also served for "blunting" the northern edge of the platform. The eastern end of the threshold abutting platform F.170 comprised two different layers of packing.

Central Floor Zone

On the Central Floor Zone in Phase B3.3, the floors were much more compacted than the earlier floors in this area on account of foot-traffic and other uses. Because of their density, these floors could not be excavated as individual layers but were lifted as a group of floors (5–10). From this group of floors, pits were cut in order to inter the earliest burials in Building 3. Three children in well-articulated positions were buried in the Central Floor Zone in intersecting graves (see Figures 2.3b, 4.15). There is a striking resemblance between burials F.648 and F.756 in the size and shape of the cuts and in the size and posture of the buried individuals, from which it is surmised that these two children, who were of similar age, were buried at the same time.

The northernmost burial (F.648) pit (6667) (0.60 m east–west × 0.30 m north–south) contained the skeleton of an 8- to 10-year-old child (6681) who lay in a tightly flexed position aligned west to east with its head pointing west (Chapter 13). No grave goods were associated with this individual. However, phytolith fragments by the skeleton may have been the remains of a material that was used to bind the child. The fill (6661) of the burial pit comprised the same midden deposits that originated from underneath Building 3.

Burial pit F.756 (8236) (0.37 m east–west × 0.58 m north–south and ca. 0.22 m deep) was the southernmost of the three (Chapter 13) and contained the tightly flexed skeleton (6682) of a 7- to 8-year-old child oriented north–south with the head to the south. As in F.648, no grave goods were found within this burial. A thick line of salts was found running across the face and the neck of the child, which might have been the residue from plant roots or in some way connected to a material used for binding the body. The burial fill (6625, 8167) comprised midden remains in which one large black basalt disk bead fragment was found (8167) (Chapter 21).

Below and between the two burials F.756 and F.648, the pit (8337) of burial F.757 (0.25 m north–south × 0.28 m east–west), the earliest in Building 3, contained an 8- to 10-month-old baby (8184) in a lidded basket (8373) (Chapter 13). The basket in which the baby was placed, being made of phytoliths, was poorly preserved and was not recoverable. The body was buried in a flexed position oriented in an east–west direction with the head pointing west, lying on its stomach with legs underneath its body. The burial cut (8337) was not disturbed by the cuts of the burials on each side of it, although they both intersected it. The cut was filled (8183) with midden deposits that contained grave goods accompanying the skeleton (Figure 5.52; see also Figure 13.6), which included numerous beads (Figure 5.53)

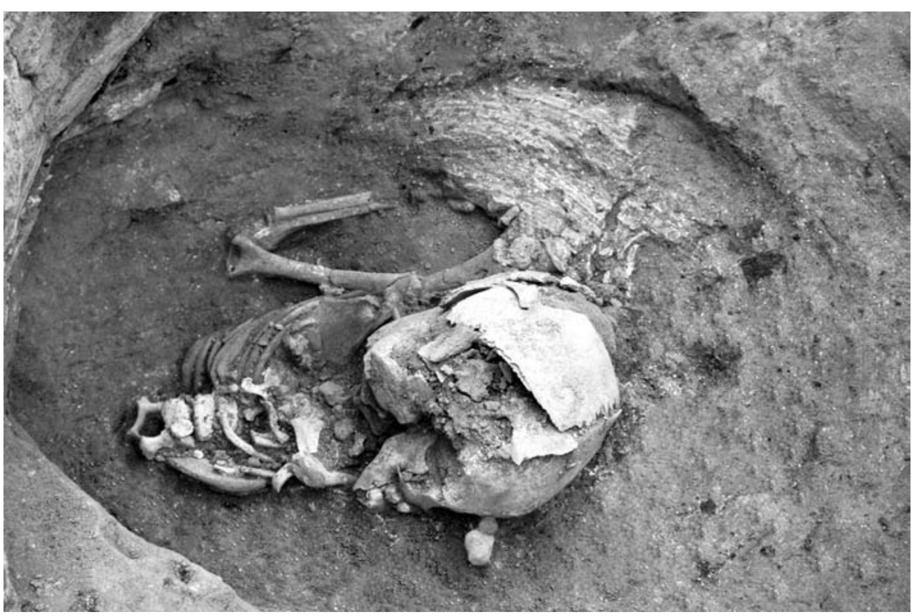


Figure 5.52. Infant burial (F.757) deposited between, and earlier than, the children's burials (F.648, F.756) in the Central Floor Zone of Building 3 during Phase B3.3, looking from above toward the southeast.

from different materials (Chapter 21); a mussel shell covered in red pigment (Figure 5.54), which was associated with a chunk of yellow material; and a bone pin embedded in a chunk of green pigment, possibly malachite (Figure 5.55). Fragments of dried wood with straight outer edges (Figure 13.6a) were found surrounding the bone pin and the pigment, which might indicate that they were put in a wooden box before being placed near the body.

A shallow cut (F.620) with vertical sides and sharp, slightly irregular edges was unearthed in the Central Floor Zone just north of platform F.169. The cut (6221) measured 0.40 m east–west × 0.30 m north–south and was 0.09 m deep. Irregular-shaped white stones were placed around the edge of the cut and sealed with hard packed clay. Below the seal, a dark brown layer of infill (6208) contained a thin layer of ash that was rich in phytoliths, burned clay, and charcoal. The base of the cut was covered with a layer of salts, in which were two white stones of the same kind as the ones close to the surface. Stones of the same material were found in the fill of the nearby later cut, F.615.

Figure 5.53. Detail of the infant burial (F.757) deposited in the Central Floor Zone of Building 3 in Phase B3.3.

Figure 5.54. Shell with traces of red pigment deposited with the infant burial (F.757).

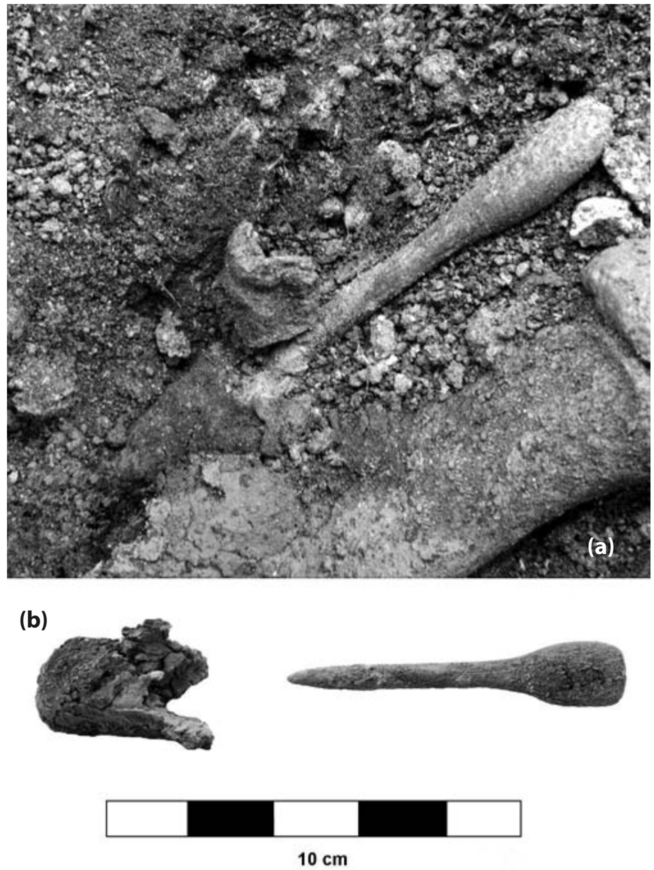


Figure 5.55. Bone artifact and powdered malachite deposited with the infant burial (F.757) in the Central Floor Zone of Building 3 during Phase B3.3: (a) in situ; (b) in the laboratory.

Northeast Zone

The Northeast Zone, as in the earlier phases, was not significantly affected by the changes made on the interior of Building 3 during Phase B3.3.

Subphase B3.4A

Although the same oven was used in both Phase B3.4A and B3.4B, other major construction activities created sufficient changes to justify the division of Phase B3.4 into two subphases (Figure 5.56; also Figure 5.57 [on-line]). During Phase B3.4A, some earlier features were partially or nearly completely dismantled:

- the pedestal (F.759) constructed in Phase B3.2, which was incorporated into wall F.160;
- the north–south partition wall/bench (F.772) in the northwest of Building 3;
- the east–west-aligned floor ridge (F.787) in the northwest of Building 3;
- the oven (F.642) in the southwest corner constructed in Phase B3.3;

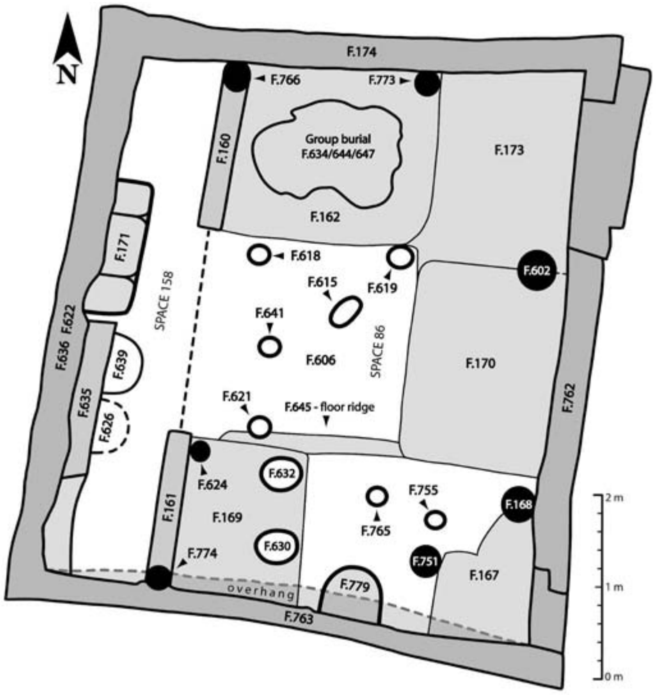


Figure 5.56. Plan of Building 3 during Phase B3.4A.

- the hearth (F.752) on platform F.169 constructed in Phase B3.3;
- the earliest burials in the Central Floor Zone (F.757, F.756, F.648), which were covered over.

Others survived but were remodeled:

- the wall/bench (F.635) abutting the west perimeter wall constructed in B3.1B;
- five platforms (F.162, F.173, F.170, F.167/F.637/F.1010, F.169) constructed in B3.1A, platform F.169 partitioned north–south across its middle, F.162 cut by burial pits.

Finally, several new features were introduced:

- the construction of a short north–south interior wall (F.160) over the former bench F.772;
- the construction of a short north–south interior wall (F.161) on platform F.169;
- the construction of a new oven (F.779) partially inserted in the south perimeter wall;
- a ladder emplacement (F.755) created east of oven F.779;
- a possible bedding for a container fixed in the floor (F.765), which was dug north of oven F.779;
- construction of a hearth (F.630) near the south perimeter wall on platform F.169;
- construction of basins (F.171, F.639, F.639.1) along the west wall;
- multiple burials (F.634, F.644, F.647) interred under platform F.162;
- a series of small shallow cuts (F.615, F.618, F.619, F.621, F.641), which were dug into the Central Floor Zone.

In Phase B3.4A, the open layout of Building 3 was partitioned by the small walls in the northwest (F.160) and southwest (F.161) corners of the building, separating the narrow, already (since Phase B3.1) elevated (by ca. 30 cm) floor along the west perimeter wall (now designated Space 158) from the rest of the house (now designated Space 86). The new interior partitions screened off the north and south margins of the elevated area of Space 158, while leaving in place the existing spatial arrangement of the building by which the large, open Central Floor Zone remained connected to the middle of Space 158 where the basins were located.

South-and-West Zone

The interior wall F.160 ran in a north–south direction and measured 1.3 m north–south × 0.20 m east–west. The construction of the northern wall (F.160) proceeded on top of the existing bench (F.772, Phases B3.1D–B3.3). The latter had to be partially truncated so that the interior wall (F.160) could be constructed on its foundation. A 0.20-m-thick and 0.80-m-long brick made of firm, pale brown, sandy silt clay (8155) was inserted on top of the truncated F.722 to act as the foundation for interior wall F.160. Alternating rows of 0.15-m-wide mud brick (8157) and mortar (8156) made of pale yellow silty-clay loam were then placed on this foundation to construct wall F.160, whose original height is unknown. Wall F.160 abutted and incorporated the existing post (F.766) at the north perimeter wall. A Roman burial (F.153) (Phase B3.5B) was later dug through the middle section of F.160, removing a portion that measured 0.56 × 0.40 m and at least 0.40 m deep.

The most well-preserved painted plasters in Building 3 occurred on the east face of wall F.160 (3522, 8154) and comprised numerous white layers and three sequences of monochrome red painted layers (see "Wall Plaster" section, above, for details). The western face of the wall showed no preserved plaster. It is our suggestion that each of these painted sequences was associated with the burial events in the north-central platform (F.162), continuing into Phase B3.4B. It is interesting that this wall also had horizontal plaster ridges like its southern counterpart (F.161). The coats of red paint, in the case of F.160, covered the plaster ridges.

Interior wall F.161 was constructed directly on the floor of the southwest platform (F.169), running across its center. It stretched from the south perimeter wall of Building 3, where it incorporated existing post F.774, and ran northward for 1.50 m (6679). After its truncation during or after the abandonment of Building 3, the wall stood to a height of 0.80 m. This wall also suffered damage by the later (Phase B3.5B) intrusion of a Roman burial cut (F.150), which removed a section of the wall measuring 0.70 × 0.30 m and at least 0.45 m deep. Like F.160, wall F.161 was built of 0.15-m-wide bricks made of sandy, clayey gray-brown soil, and mortar of a light gray color with charcoal inclusions (6677, 6678, 6679). The bricks and mortar were uniform in color and fabric. A 0.30-m-thick wall foundation made of packed clay mixed with fragments of burned building materials was placed on the platform floor. Both east and west wall faces were plastered with numerous layers of different thickness, none of which were painted. The total thickness of the plaster on the west face was ca. 1.0 cm, whereas the east face plaster accumulated to a thickness of ca. 2.0 cm. On this eastern face, large plaster lumps were adhering to the base of the wall. Incorporated into the wall, they created an irregular wall surface, possibly representing the base of relief plaster installations. Higher up on the wall, there were more regular horizontal ridges of plaster and undulating surfaces (Figure 5.58).

It was not apparent why the interior partitioning walls were introduced in this phase of the house. As a spatial divider they worked only partially, since they left a large open space in the center of the building that was not enclosed by the screen wall until the following subphase (B3.4B). In addition, it is not clear that they were intended to create a separation between the activities and features, since the types of features along the west wall did not change from Phase B3.3. As possible structural supports, the walls seemed to be equally inadequate. They were constructed of narrower bricks and were thicker than the other such features and benches of Building 3. However, it is possible that their width would have been irrelevant for the function of partially bearing the roof weight. Yet, their short length would very likely not have worked well as a support for the roof weight. In all of this reasoning, we should not forget that it is impossible to tell whether or not these small walls rose to the full interior height of Building 3. Currently, it seems to us most plausible that the walls had primarily a symbolic function, such as providing a vertical surface on which to place decorative elements, as evidenced by the red painting on F.160 and the plaster ridges on F.161.

Post F.624 is a small, circular, shallow cut (6162) measuring 0.10 m in diameter dug at the intersection of the northern edge of the southwest platform (F.169) and the base of wall F.161. Its fill (6161) comprised hard, light yellowish brown silty clay packing with a thin layer of ash at the bottom, and in its northern part a layer of sandy clay mixed with burned building material. No artifacts were found in the infill, and the function of the feature was unclear. F.624 was partly damaged by a later cut, the post-retrieval pit for post F.614 (constructed in Phase B3.4B, removed in Phase B3.5A).

A complex set of bin/basins (F.171) that were only partially preserved dominated the northern section of the South-and-West Zone. F.171 consisted of three interconnected receptacles constructed of soft, moist, silty, sandy, red-orange clay and aligned in a north–south direction abutting the west perimeter wall (F.636) of Building 3 (Figure 5.59). The southern edge of F.171 ended at the intersection with a basin (F.172), and its northern edge had originally reached the northwest corner of the house. The total preserved length of the feature measured 1.5 m; its maximum width (the middle receptacle) was 0.6 m. The

Figure 5.58. The plastered eastern face of the north–south partition wall (F.161) at the southern end of Building 3, constructed in Phase B3.4A, looking west.

largest receptacle—the middle one—comprised a shallow basin, whereas the two smaller and partially preserved receptacles on each side of it resembled shallow bins.

The basin in the middle (0.70 m north–south × 0.60 m east–west), rectangular in plan with rounded corners, was bordered by a rim that reached 3 cm above floor height. It had a flat base that sloped down from west to east—that is, from the west margin toward the center of the house (Figure 5.60). It was constructed on a floor surface made of compacted sandy clay but somewhat darker in color than the clay of the basin itself. The basin was made of a sandy clay that contained inclusions of burned earth and plaster fragments, and incorporated a layer of packing, composed of organic residue (6641) that contained three bone points and a mini clay ball (6641.X1–X3, X4). The sandy clay was covered by a layer of gray compacted clay (6634), which was itself overlain with a reddish yellow, silty floor coat with approximately 60 percent of sand, and salts and charcoal inclusions (6180). The basin infill (6177) comprised yellowish brown silty clay with plaster and ash inclusions; a nondiagnostic fragment of a figurine was found there.

The receptacles on each side of the middle one were also each bordered with a rim and had a concave base. The northern receptacle (6606), measuring 0.40 m north–south × 0.15 m east–west, was constructed to slope down southward and westward. It comprised two layers of red clay, showing slight differences in color (7.5YR 6/4–6/3) but both comprising very homogeneous, clean, clayey soil; the upper layer was very thin and the lower layer thicker. The fill (6386) of this receptacle included yellowish brown silty clay with phytolith inclusions. The northern receptacle overlay the fragmentary remains of a possible earlier bin/basin (F.172, Phase B3.3). The southern receptacle (0.40 m north–south × 0.30 m east–west) (6642) comprised a red clay floor and an underlying layer of packing that consisted of coarse construction rubble, made up of burned building material including burned plaster, mixed with loamy clay deposited on a layer of ashy packing and charcoal inclusions.

The function of this series of basins (F.171) was probably for food processing (Figure 5.61) (see the discussion in Chapter 4). In the subsequent phase (B3.4B), the feature was partially covered by the shoring wall (F.600, F.628).

Farther south along the west wall of Building 3, another basin (F.639) was unearthed (Figure 5.62). Like F.171, this basin abutted the west wall (F.635) and opened eastward toward the interior wall (F.161). The passage between the basin and the wall was only ca. 0.30 m wide. The basin's base measured 0.57 m north–south × 0.51 m east–west. Its raised sides were almost completely truncated. The basin was built around a white plaster floor (6610) measuring 0.20–0.30 mm in thickness overlying yellow-brown packing (6627). The floor of the feature protruded into the wall plaster on the eastern face of the west wall of Building 3 (F.635), thus confirming that this wall lasted into B3.4A.

Immediately to the south of basin F.639, we excavated a fragmentary feature, which appears to have been another—but very damaged—white clay basin (F.626; earlier designated F.639.1). Based on other similar features in Building 3, it is likely that F.626 and F.639 were twin basins (Chapter 4). Feature 626 comprised a thick layer of packing (6388) that contained charred materials and also eight fragments of obsidian; it was superimposed by a layer of phytoliths with reed impressions that were themselves covered by a white plaster floor (6387).

Hearth F.630, constructed on the eastern edge of southwest platform F.169 (Figure 5.63), covered an area 0.45 m north–south × 0.35 m east–west and was located next to an earlier hearth (F.752, Phase B3.3), which it partially overlay. This intensively used hearth (F.630) had multiple floor surfaces, although it was first recognized by its fill (6265) comprising bricky material overlying burned infill (6266). Its uppermost fragmentary floor (6273) covered a complete, firm, but friable floor surface (6360). Beneath this floor was a shallow scoop filled with dark, burned, soft soil and a fine layer of ash (6368) deposited on the hearth base (8153).

A depression (F.632) in the floor at the northeast corner of platform F.169 was contemporary with hearth F.630 and itself resembled a hearth, but it was not used as a fire installation (Figure 5.63). Apart from its shape and size, it did not have any other evidence indicating its use as a hearth. The shallow oval depression (0.45 × 0.35 m) was carefully lined with clay. We suggest that it may have been used for holding materials or containers that were linked to the nearby hearth.

The main oven (F.779) in this phase was located on the lower floor of the South-and-West Zone in the southern end of Building 3 and was the last one to be constructed in Building 3 (Figure 5.64). This horseshoe-shaped oven was built on the house floor and inset into a shallow hollow that was cut into the south perimeter wall of Building 3, thus closely resembling oven F.242 in neighboring Building 5. The wall face of the hollow, and above and around it, was packed with massive white-clay plasters. During Phase B3.5A, it was heavily truncated, but in spite of this, it is clear that this oven was originally of substantial size. The preserved base (8330) (0.8 m north–south × 1.0 m east–west) was constructed of a firm, very pale brown, sandy clay with a high component of ash, phytoliths, scorched clay chunks, and numerous stone inclusions. The preserved portion of the solid packing above this in the center of

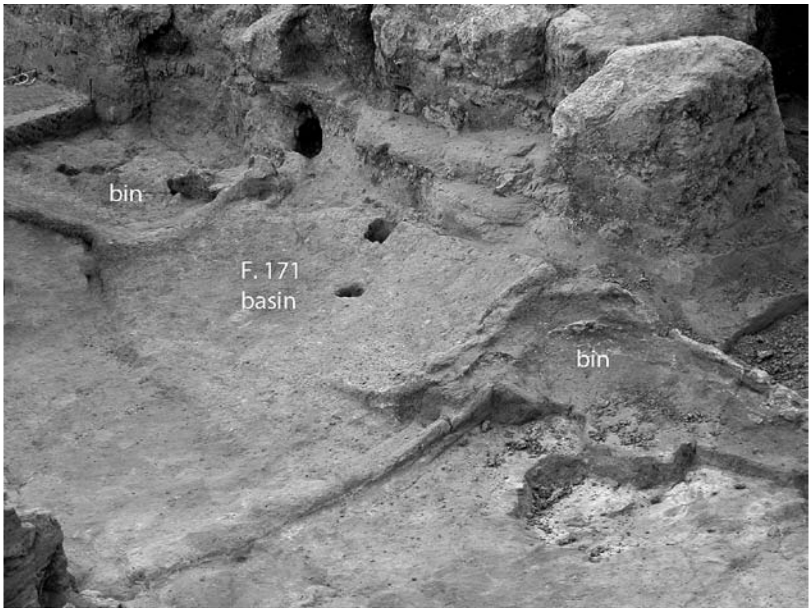


Figure 5.59. A feature comprising an interconnecting set of two side bins and one basin in between them (F.171) constructed in the middle of Space 158 and abutting the west wall of Building 3 in Phase B3.4A, looking southwest.

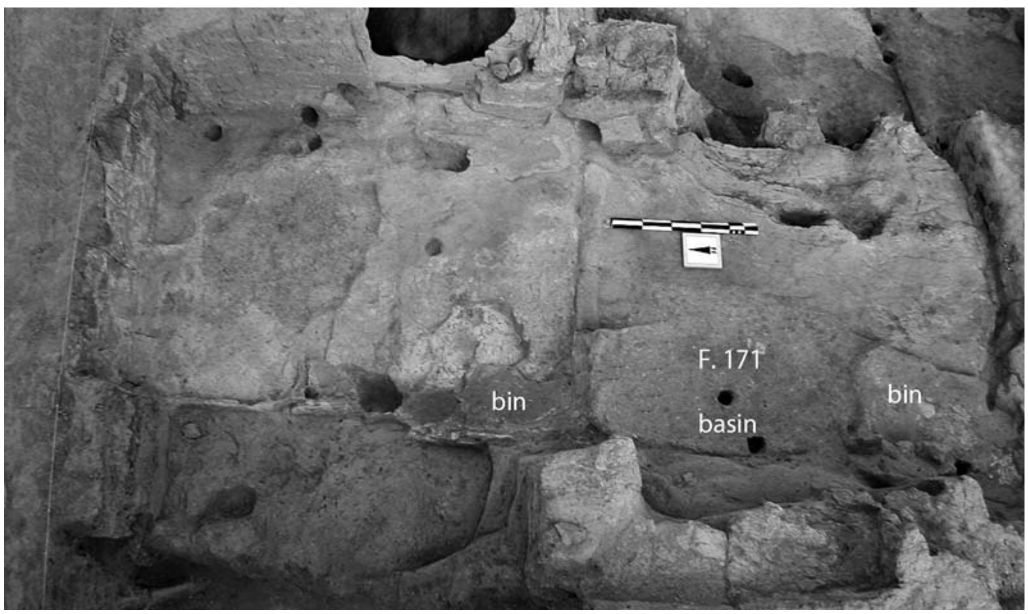


Figure 5.60. Another view of F.171, looking toward the east.

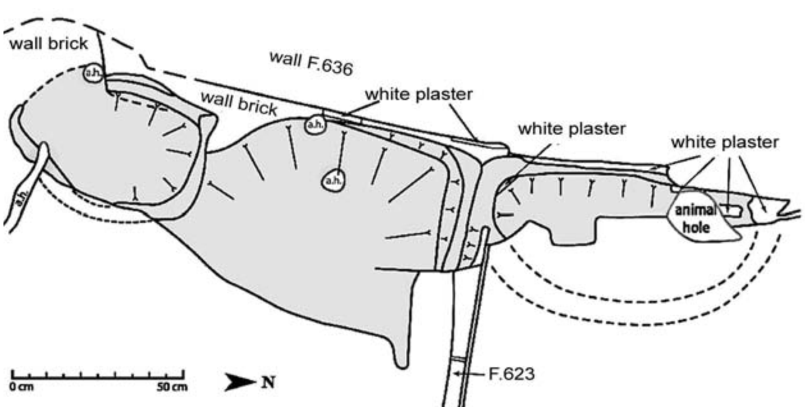


Figure 5.61. Drawing/reconstruction of the interconnecting set of two side bins and a basin between them (F.171).

the oven was made of brown-yellowish clay that included 14 fragmented and 1 complete stone tool, and a round polishing tool with extensive use-wear. Three rubble floors of the oven, which were adhering to the upper surface of this packing, were recognizable only as thin black layers (8303). The western section of the oven rim was partially preserved, while its eastern section was mixed with the remains of another very badly damaged feature. The oven rim that was preserved (8329) comprised a strip of yellow sandy clay (0.43 m north–south × 0.09 m east–west) that rose to a height of 8 cm above the floor, slightly curving inward to create what would originally have been the oven dome.

Placement cut F.765, just north of oven F.779, was circular (0.20 m in diameter, 0.04 m deep), with a very clearly defined shape and sides smoothed with a clay lining (Figure 5.65). Its round, regular base was hardened with compact clay from which a 3-cm-wide hole filled with ash extended more deeply. The cut itself was filled with coarse deposits containing ash, charcoal, phytoliths, and fragments of plaster, traces of which can be seen as thin layers on the sides of the cut. The shape, content, and location of the cut suggest that it could have served as the placement for containers used in connection with the oven.

Immediately northwest of cut F.765, another placement cut (F.755) was introduced. It had vertical sides 0.08 m deep and a flat bottom that measured 0.25 × 0.20 m (8341). Its infill comprised red-brown, packed clay and a frequent presence of charcoal, ash, gypsum, obsidian flakes, and animal

Figure 5.62. A white clay basin (F.639) constructed south of the set of basins/bin (F.171) in Space 158 in Building 3 in Phase B3.4A, looking south.

Figure 5.63. Two hearths (F.630 on the left, F.632 on the right) constructed on the southwest platform (F.169) of Building 3 in Phase B3.4A, looking west.

Figure 5.64. The western rim and floor of the heavily damaged oven (F.779) constructed at the southern end of Building 3, abutting the south wall in Phase B3.4A, looking south.

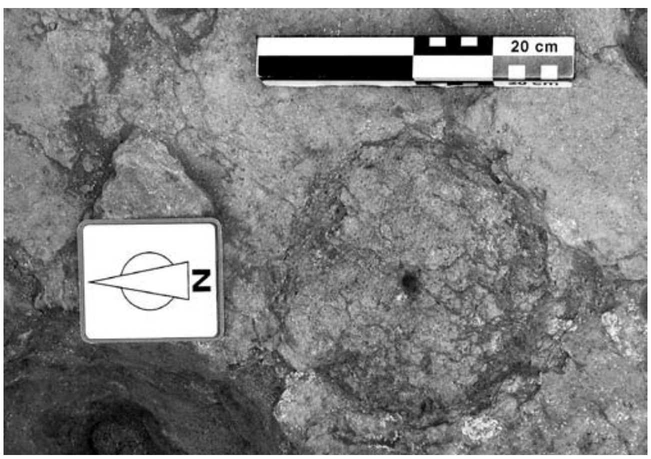


Figure 5.65. Placement cut F.765 in the floor at the southern end of Building 3 in Phase B3.4A.

bone fragments. The bottom of the cut contained a layer of whitish sandy clay with charcoal in which a stone ball fragment was discovered (8337). Based on the location and infill, the feature was interpreted as part of the ladder emplacement.

Central Floor Zone

In the Central Floor Zone of Building 3 in this subphase, numerous small-sized cuts were made into the floor. The cuts (F.615, F.618, F.619, F.621, F.641) were active during Phase B.3.4A but were blocked by the B3.4B floor. Their mostly irregular shapes, as well as their infill, comprising random remains, led us to interpret the features as the result of floor maintenance. We later noticed, however, that their distribution, infill, and shape displayed a nonrandom patterning, prompting an alternative explanation. Except for F.615, they were all shallow cuts with sharp, vertical sides. A common characteristic of the fill in the cuts (except for F.618) was the presence of phytoliths and salts in the clay matrix, which itself contained a varying density of inclusions of fired materials, such as ash, charcoal, and rubble. Another interesting characteristic shared by these cuts was that (except in F.618) a mixed fill was located in the eastern half of the cut, while the western half contained clean clay fill. What this indicates about the nature and ephemeral function of these cuts is not clear, but they may have been associated with heat production. For instance, coals previously heated in a fire could have been placed into the floor depression, causing the surrounding floor to heat up.

That said, these cuts also may have had symbolic significance. Three of the cuts (F.618, F.619, F.621) were placed at the north, west, and south edges of the Central Floor Zone. Feature 618, located at the base of the screen wall and close to the burials, contained charred organic material of a very similar composition to that found in the packing of the nearby burials that had been interred in the previous (B3.3) phase, possibly indicating a link between organic material and burials. Similar cuts have been interpreted in other contexts as ritual burial of perishable materials, such as placenta or an umbilical cord (Hodder 2006a). F.619 and F.621 were packed with clay that contained inclusions of ash. The occurrence of ash outside of ovens and hearths was recorded in Building 3 in the matrix of such special deposits as the foundation and closure deposits, in obsidian caches, and in postholes. It is feasible that these two cuts (F.619, F.621) had contained remains of a symbolic nature that comprised organic materials that did not survive.

Cut F.615 (0.43 m east–west × 0.27 m north–south, 0.07 m deep) was located in the southeast part of the central floor. It comprised a sharp cut (6220) with vertical sides and a slightly irregular oval shape. It was dug in the house floor and was filled on its east side with two circular-shaped stone clusters. Black layers of burned clay with charcoal and ash, along with the presence of phytoliths, were observed in the center of F.615, and clean clay fill (6187) on its west side. Among the stones were a few fragments of sintered rubble. One possible interpretation of this feature is as a device to heat the floor.

Cut F.618 was a small depression in the northwest of the central house floor and immediately in front of the screened wall post (6103). It has an irregular, rounded shape (0.18 m in diameter), with sharp, nearly vertical sides (6224) (Figure 5.66). The fill comprised charred, organic material (6191) that was rich in phytoliths of parenchyma (tuber tissue), perolites from dung, and weed husks (chaff, small tubers, and twigs) (Christine Hastorf, personal communication).

Cut F.619 was located in the northeast corner of the Central Floor Zone, cutting into the edge of the northeast platform (F.173). The shallow, clearly defined ovoid (0.22 × 0.10 m) cut (6219) was filled with sandy, ashy clay, rich in inclusions of red, yellow, and black mud-brick (6212). The cut was lined with a thin layer of plaster.

Cut F.621 (0.32 × 0.24 m) was located in the southwest corner of the central house floor (6213). In its eastern cross section, it was filled (6214) with clean clay with inclusions of plaster. A large stone tool was placed against the feature wall.

Cut F.641 was located north of F.621 in the southwest part of the central house floor. Like F.618 to its north, this cut was positioned immediately in front of the screen wall. The feature was an oval (0.20 × 0.21–0.27 m) cut (6372), lined with a thin coat of plaster and filled (6373) with a mixture of orange clay and white plaster over a packing of dark brown ashy clay with inclusions of charcoal and salt.

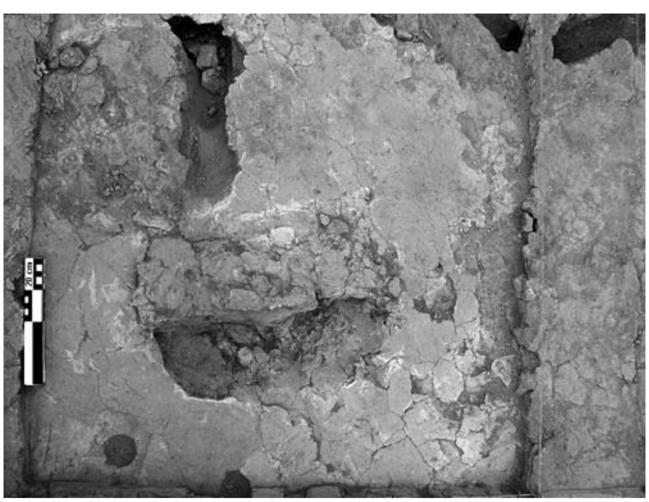


Figure 5.66. Cut and its fill in the central floor of Building 3 (F.618) in Phase B3.4A.

Northeast Zone

Multiple burials in the north-central platform (F.162) were interred during Phase B3.4A (Figure 5.67; see also Figures 2.3a, 13.7). While the floors of the two other platforms (F.170, F.173) of this zone were renewed several times during this subphase, they were undisturbed by any burial activity. The north-central platform, however, contained three skeletons that were interred during Phase B3.4A in a minimum of three burial events. They all cut deeply under the platform floors into the midden deposits beneath Building 3. Consequently, the burial fill of all the graves was a mixed midden deposit. Occasional displacement of human bones was caused by reopening of the pits for new burials, and by animal and plant postdepositional activities.

The two earlier cuts, both oriented north–south, contained a young adult female (burial F.644) and an adolescent male (burial F.647), who died within a short time span but were buried in distinct graves (see Chapter 13; Figure 13.8). The subsequent interment of an older female (burial F.634), aligned east–west, damaged these earlier burials.

Burial F.644, of the young woman, had an oval (1.01 m north–south × 1.43 m east–west) burial cut (6604). No grave goods were found in direct association with the burial. The burial pit fill (6653, 6639, 6603), however, comprised rich midden deposits, especially in the lower levels, which included dark gray-brown soil with inclusions of ash, charcoal, animal bone, obsidian fragments, and plants, and a stone ring bead made of pink limestone and a fragmentary bone finger ring (6603.X1) (see Chapter 21). Like other burials under this platform, this was closed in a distinct way by a cover that we refer to as a "burial lid," comprising numerous layers of floor and packing that matched the size of the cut. The packing layers were of pale brown clay with inclusions of plants and topped with coats of white clay plaster (6602). The layering of packing and floors in the burial lids was carried out in a different sequence from that in the platform floors themselves (see Chapter 6).

The burial pit (6637) of burial F.647 was cut by the pits of F.634 and F.644. It contained the semi-articulated skeleton (8114) of an adolescent, possibly male, aged between 14 and 16 years old, oriented north–south and lying on its right, facing down with the face oriented toward the east. The outline of burial pit F.647 (1.5 m north–south × 1 m east–west) was more clearly defined in its northern and southern edges. No grave goods were associated with

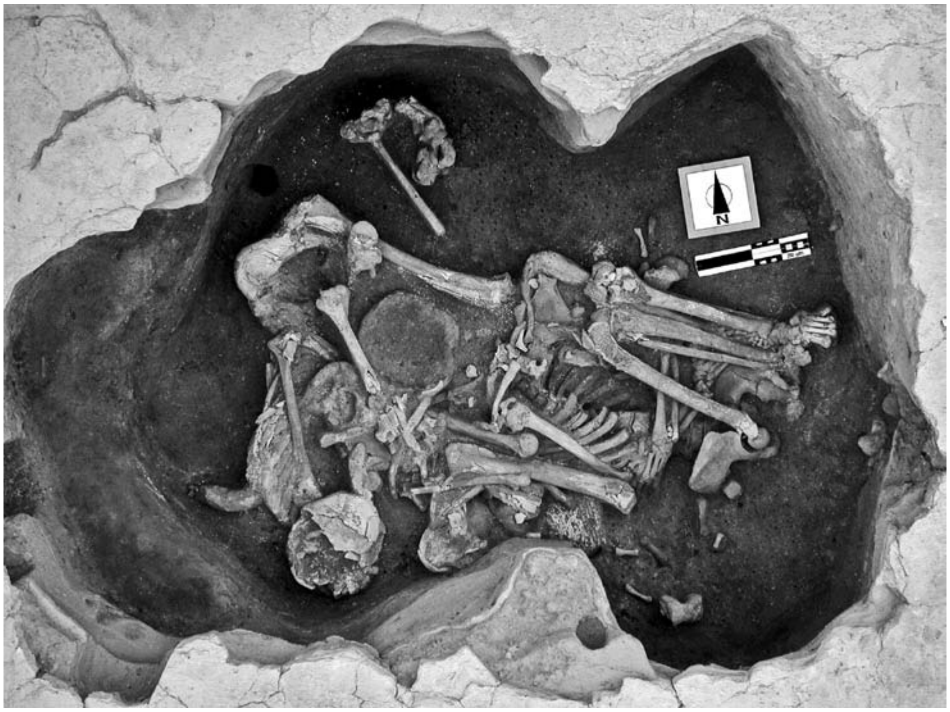


Figure 5.67. A group of three intersecting burials (F.644, F.647, F.634) deposited under the north-central platform (F.162) of Building 3 in B3.4A, looking from above toward the north.

this burial, but the pit fill (6633, 6643, 8147) comprised mixed midden deposits in which were found the fragment of a clay lenticular fusiform bead (6643) and a fragment of a tiny schist ring bead (6633) (see Chapter 21). The "burial lid" of this grave was excavated as units 6617 and 6632.

Burial F.634 was the latest burial interred during Phase B3.4A. As such, its burial cut (6658) was the first of the three in Phase B3.4A to be identified and did some damage to the earlier cuts (F.647, F.644). The western edge of the burial cut of F.634 was not discernible, since it was most likely removed by the digging of the later (Phase B3.4B) grave F.617. The cut (0.49 m north–south × 0.71 m east–west) was oriented east–west and had a clearly defined burial lid (6308, 6309, 6310, 6311). Hager and Boz (Chapter 13) state that the tightly flexed skeleton (8115) represents the articulated remains of a female of 40–45 years, who was lying on her back, leaning slightly to the left (see Figure 13.9). Well-preserved phytoliths on the hipbone revealed a braiding pattern that suggests pre-interment binding (see Figure 4.16). Black residue was found in the thoracic region, yellow organic residues were found in the pelvic area, and phytoliths were found under the humerus, femur, and ribs. The fill comprised mixed midden deposits (6693, 8136, 6323) in which four relatively large beads were found in unit 6323, and nine were found in fill unit 6693 (see Chapter 21).

Although no grave goods were directly associated with burial F.634, two possible baskets were deposited in the fill at a level close to that of the skeleton. A basket (F.760, 8151), in the form of phytoliths in an area 0.52 m north–south × 0.75 m east–west, was excavated on the right side of the skeleton (8115) (Figure 5.68). Blue pigment fragments (possibly malachite) were found within or as part of the basket. The phytoliths of yet another fragmented basket (F.640), spread over an area of 0.35 m north–south × 0.16 m east–west (6323), were also associated with burial F.634. The feature incorporated several basket pieces that were excavated as 6323.X1–X3, including a circle (0.45 m in diameter) made of spiral coils that probably represents the base of the basket, and a large linear fragment of phytoliths with seven or eight strips of fiber that belonged to the basket wall (Figure 5.69). It seems likely that F.760 and F.640, together with other smaller fragments, were part of the same large but very damaged basket.

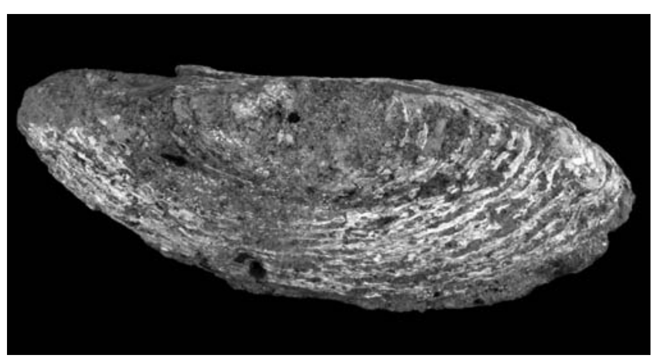
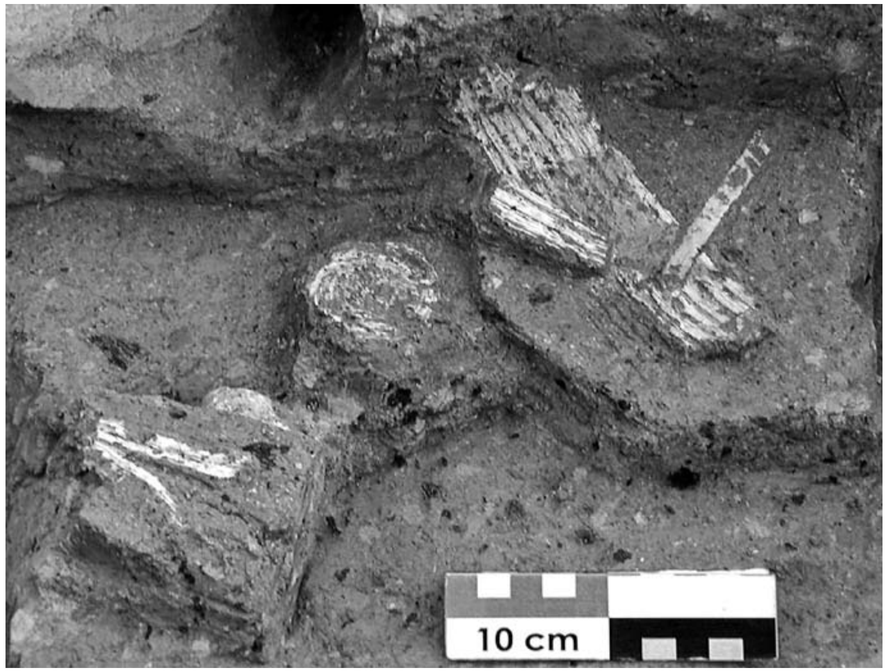


Figure 5.68. Phytoliths interpreted as a basket (F.760) associated with the mature female burial (F.634) under the north-central platform (F.162) of Building 3 in Phase B3.4A.

Figure 5.69. Phytoliths interpreted as the remains of a second basket (F.640) associated with the mature female burial (F.634) under the north-central platform (F.162) of Building 3 in Phase B3.4A.



Subphase B3.4B

During Phase B3.4B (Figure 5.70; also Figure 5.71 [on-line]), renovations removed many of the existing domestic features, which brought a major change to the character of Building 3. The removed features included:

- the ladder emplacement (F.755) east of the oven F.779 dug in Phase B3.4A;
- the bedding for a container (F.765) north of oven F.779 dug in Phase B3.4A;
- the hearth (F.630) near the south perimeter wall on platform F.169 constructed in Phase B3.4A;
- the basins (F.171, F.639, F.639.1) along the west wall constructed in Phase B3.4A;
- the small cuts (F.615, F.618, F.619, F.621, F.641) dug into the central house floor in Phase B3.4A;
- the wall/bench (F.635) abutting the west perimeter wall constructed in B3.1B.

Others survived but were remodeled:

- the oven (F.779) abutting the south perimeter wall, constructed in Phase B3.4A;
- the short north–south interior wall (F.160), which was painted red on its eastern surface;
- the short north–south interior wall (F.161) on platform F.169;
- the entry bench (F.1010) constructed in B3.1A, which was joined to the oven (F.779) and would have achieved an appearance similar to that of the large oven (F.242) in Building 5.

Finally, several new features were introduced:

- The north–south screen wall (F.601) was constructed with two pillars (F.156, F.164) between the two partition walls (F.160 and F.161), completing the separation between the main room (Space 86) and the narrow western room (Space 158). Numerous wooden posts (F.614, F.767, F.608, F.609, F.611) and additional structural elements, such as a clay step (F.793), were incorporated into the screen wall.
- A shoring wall (F.628, F.600, F.622) was constructed, abutting the west perimeter wall.
- A storage niche (F.607) was constructed inside the shoring wall (F.600) in the southwest corner of Building 3.
- Two small placement cuts (F.753, F.754) were dug near oven F.779, possibly for containers.
- A hearth/oven (F.613) was constructed north of oven F.779.
- A hearth (F.604) was constructed on platform F.169 close to the south perimeter wall.
- Two circular cuts (F.603, F.605) were also dug into platform F.169.
- A circular cut (F.616) was dug in the Central Floor Zone.
- A burial (F.617) was interred under north-central platform F.162.
- A burial (F.631) was interred under northeast platform F.173.

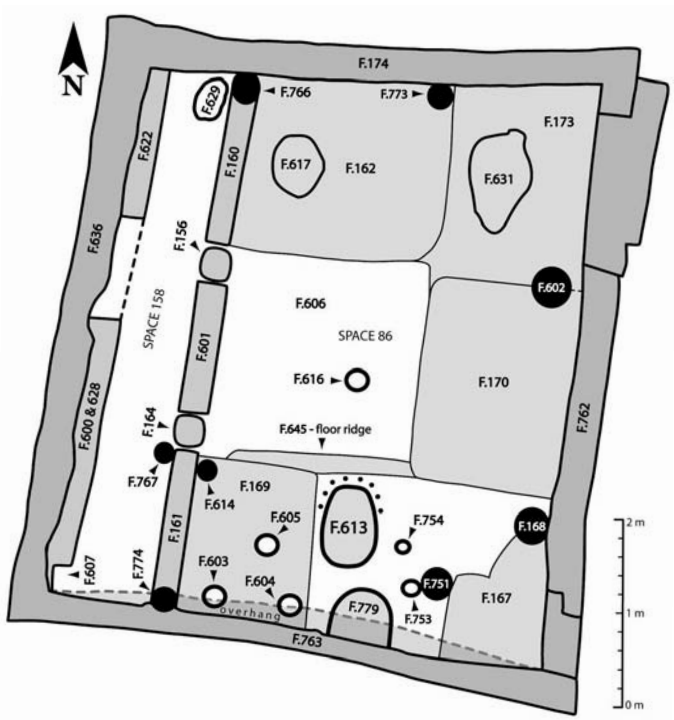


Figure 5.70. Plan of Building 3 during Phase B3.4B.

Considering that the central area of Space 158 was at least partly infilled with construction rubble during Phase B3.4B, it must have been partitioned in some way from the northern and southern ends of Space 158. However, we found no evidence of a blocking or partition that would have run east–west across the narrow width of Space 158. We could see in Space 158 that, while the central area was no longer being used, its ends remained locations for storage features, such as niche F.607, which continued in use until the very end of the building. In addition, with the construction of the screen wall, access to the southwest and northwest corners of the house would have been blocked unless crawl holes existed; no evidence for the latter was found in the preserved partitioning structures.

South-and-West Zone

The shoring wall (F.622, F.600, F.628) represents a major repair at the western margin of the house in Phase B3.4B. It was constructed in response to the slumping of the west perimeter wall toward the interior of Space 158 (see Chapter 6). The northern section of the shoring wall was designated F.622, while the central and southern sections of the same wall were referred to as F.600 and F.628, respectively. The wall measured a total of 6 m north–south × 0.45 m east–west, with a preserved height ranging from 0.65 m to 0.95 m. Constructed from brick and mortar, the shoring wall was built directly on the house floor and in places overlaid the existing domestic features along the original west wall. An exception to this construction method was made at the point where the shoring wall overlay the previous (Phase B3.4A) bin/basin F.171. Prior to construction of the shoring wall, the floor in the central part of Space 158 that coincided on its eastern side with the location of the screen wall was covered with a massive layer of compacted ash (up to 6 cm thick) (6116), the source of which was not apparent, since none of the features in this area of the house showed any traces of burning.

The construction that took place on the west side of Building 3 during this last residential phase gives rise to a number of questions. For instance, the task of the shoring wall remains puzzling, due to its discontinuous nature and its irregular layering of construction materials. It is our view that, since the wall was not an uninterrupted feature, it was not constructed to help the lateral bearing of the west perimeter wall of Building 3. On the other hand, the wall "segments" could have been positioned in the necessary locations to take care of some minor problems of the west wall of Building 3, for which one continuous wall was not needed (see further discussion in Chapter 6).

The northern section of shoring wall F.622 measured 1.5 m north–south × 0.40 m east–west (Figure 5.72). Its bricks (6327, 6363) were made of strong, compact, brown clay with stone inclusions. They were laid in courses that sloped southward and eastward at a 14-degree angle. Toward the bottom of wall F.622, the bricks were less regular or were fragmented. A segment of F.622 that was entirely made up of compacted construction rubble mixed with

Figure 5.72. Shoring wall F.622, constructed abutting the northern part of the west wall of Building 3 in Phase B3.4B, looking west.

midden deposits without any brick and mortar (3544, 6391), referred to as "tumble," was constructed directly on top of the former (Phase B3.4A) bin/basin F.171 and its surrounding floor. A similar use of rubble as the foundation occurred in the construction of pillar F.164. The mortar in the wall (6328) comprised friable but firm, silty brown clay. This material was also used for leveling and filling the gaps on the wall face. The east face of the feature was plastered with two to three coats of white clay (6320), which were separated by thin black plaster layers. These plaster coats provided evidence that the northwest corner of Building 3 was in use after the partitioning of Space 158.

Feature 600—the central section of the shoring wall to the south of F.622—consisted of seven courses of bricks that survived truncation and measured 3 m north–south × 0.40 m east–west. The layering of the bricks and mortar in F.600 was more regular in the upper part of the wall, whereas the lower part of the wall was made of tumbled brick, mortar, and construction rubble. Two types of mud brick were recorded: the majority were of compact, very pale brown clay (3539, 3537); others comprised crumbly, dry, white clay that came from unprocessed lake marl sediment. The latter were only used in the uppermost course of the preserved portion of the wall, except for one brick that occurred in the second course down. It is impossible to know if the truncated courses of wall F.600 contained more white clay bricks or if the white bricks had been used only sporadically in place of regular ones. Bricks made entirely of marl were not found elsewhere in the BACH Area (see Chapter 6). The complete bricks in the wall measured 0.80 m long × 0.40 m wide and 0.10 m thick. The brick rows sloped sharply down (at 14 degrees) toward the north, and slightly less eastward. The bottom row of bricks of F.600 was built on top of a row of orange clay mud-bricks that belonged to an earlier wall, F.635 (Phase B3.1B to B3.4A). The gray-brown silty clay mortar (3540) of F.600 was rich in phytoliths, salts, charcoal, and fragments of bone, stone, and clay balls.

Feature 628 represented the footing of the southern part of the shoring wall (F.600). It incorporated the surviving remains of an earlier wall/bench that had stood in this area (F.635, Phases B3.1B–B3.4A) and was now mostly truncated. The most southern part of the shoring wall contained numerous large fragments of profiled bricks covered in thick plaster layers. These were atypical construction elements for such a wall; it seems likely that they comprised parts of installations that had originally been incorporated into bench F.635 or from elsewhere in the house. Such pieces included unusually shaped plano-convex mud bricks, all of whose surfaces were covered with thick, multiple layers of plaster of the same thickness and consistency (see Figure 6.13).

A 0.50-m-wide trench on the outside of Building 3 (cutting through Space 85), which was filled with red burned construction deposits, was also very likely linked to the maintenance of the west perimeter wall of Building 3.

Niche F.607 (Figure 5.73) was the only feature of domestic character in this phase in the southwest corner of Building 3 in Space 158. The niche was deeply set (between 0.26 m and 0.41 m) into the shoring wall (F.600), ending at the original west perimeter wall (F.636) of Building 3. It was built over the earlier oven (F.642, Phase B3.3), taking advantage of the flatness and firmness of the oven floor. The niche ranged in width from 0.23 m to 0.29 m, with a dome-like roof (0.60 m high in its central part). The cut of the niche was first lined with light brown, bricky, homogeneous, clean clay that abutted the matrix of light brown mud-bricks of the shoring and west perimeter walls (6258, 6307, 6281, 6370). The inner surface of the niche was lined and smoothed with clay plaster. A yellow-brown clay ridge (6274) measuring 0.20–0.25 m marked the northern edge of the niche that extended out from the shoring wall onto the house floor. The base of the niche was lined with yellowish orange clay and sloped down toward the east, where it could not clearly be distinguished from the house floor (6129). The infill of the niche comprised black midden infill like the rest of the area, but it also contained a dark gray ashy deposit with an abundance of carbonized tubers, seeds, and nuts. Other finds included sheep-size bones, large mammal bones, a few obsidian fragments, a miniature clay horn, a bone awl, and a stone artifact (3533, 6371, 6261, 6261, 6148).

The screen wall (F.601) was built to span the gap between the two earlier interior walls (F.160, F.161) (Figure 5.74). The screen wall incorporated a number of features which, together with the interior walls (F.160, F.161), created

Figure 5.73. Niche F.607, constructed in the southwest corner of Building 3 in Phase B3.4B, looking southwest.

a continuous barrier between Space 86 and Space 158. Between the screen wall and the southern partition wall (F.161) stood pillar F.164; between the screen wall and the northern partition wall (F.160) stood a second pillar, F.156.

The screen wall itself was constructed in a sequence of steps. First, a shallow north–south trench (F.797) was cut into the house floor at the point of the intersection between the central floor area and Space 158 (Figure 5.75). A row of seven posts, both large (F.614, F.608) and small (F.609, F.611, F.615, F.616), was aligned in the space between the pillars and inserted in the trench (F.797). Several upright planks were slotted into the spaces between the posts, including a wide one in the center of the screen wall. The planks were woven together and daubed with clay in a technique reminiscent of wattle-and-daub, evidenced by numerous small fragments of clay that contained wood impressions. The surviving house floor in the area of the cut appeared to be sloping, cracking, and sagging from west to east along the line of the cut.

The shallow (0.25–0.40 m deep) oval trench or cut (F.797*)* that was dug for the screen wall removed an area 1.85 m north–south × 0.15 m–0.30 m east–west from the house floors of Building 3 at the same time as it provided bedding for the wooden posts that held the screen wall. The cut sloped down from east to west; its northern part was filled with charred black, ashy, organic deposits (8401) that were also found on the central floor of Building 3 in this phase and on the earlier floor (Phase B3.3) in the area between the screen wall and the central floor burials (F.757, F.648, F.756). The fill of the southern part of the cut (F.797)

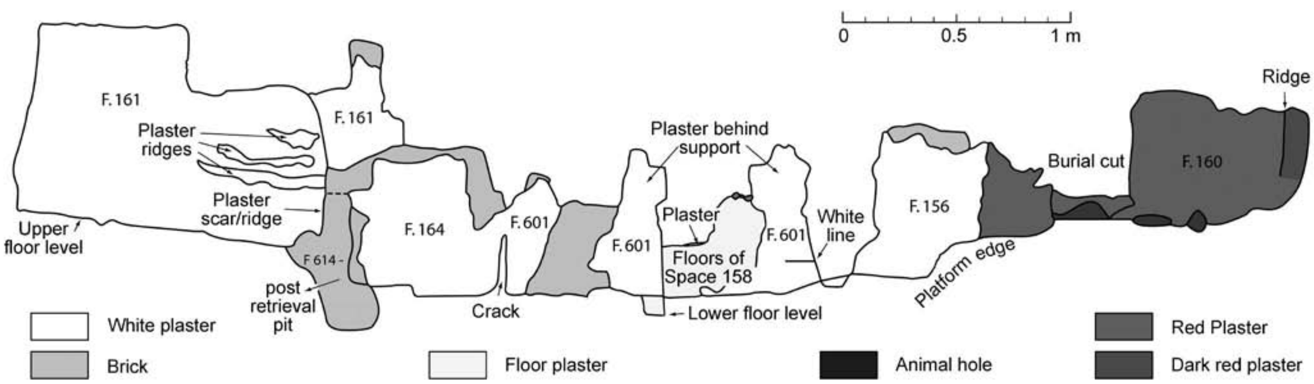


Figure 5.74. Drawing of the eastern face of the north–south screen wall (F.601), constructed to complete the partitioning of Space 158 from Space 86 of Building 3 in Phase B3.4B (color image in the on-line edition of this book).

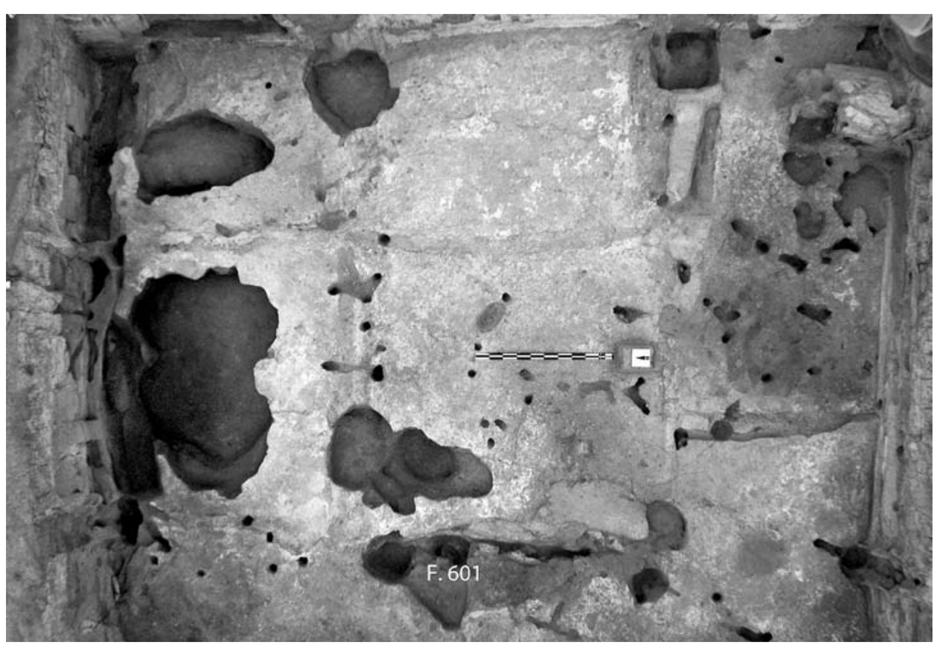


Figure 5.75. Aerial view of Building 3 in 2002, showing the trench and postholes of the screen wall (F.601) constructed in Phase B3.4B, cutting through the earliest house floor (Phase B3.1A); looking from above toward the west.

contained orange clayey fragments of rubble (8397). Its southernmost part was filled with extremely compacted packing (8399), along with white plaster and brown packing.

The seven postholes that were embedded in cut F.797 on a north–south alignment were packed with fine-particle clay (Figure 5.76). This well-preserved clay bedding indicated that the posts were slanting eastward, possibly owing to the movement of the screen wall during the building's occupation or to the extraction of the posts at the time the building was abandoned. The two posts at the northern (F.608) and southern (F.614) ends of the screen wall were of larger diameter (Appendix 5.1 [on-line]) than those placed in between them. The average depth of the postholes for these seven posts measured 0.50–0.55 m beneath the building floor. We were unable to define all seven postholes during the excavation; as a result, only four posts were given feature numbers (F.614, F.608, F.609, F.611), whereas three were numbered post-excavation as screen wall postholes 4, 5, and 6 (Figure 5.75).

The northernmost post of the screen wall (F.608), positioned next to the northern pillar (F.156), measured 0.20 m in diameter, although its post-retrieval pit measured 0.30 m in diameter. It was filled with soft and crumbly soil (6103) that contained a large amount of charcoal fragments and black, ashy, organic sediments, which were also present in the fill of the screen wall trench (F.797). South of post F.608, the smaller screen wall posts 4, 5, 6 each measured 0.12 m

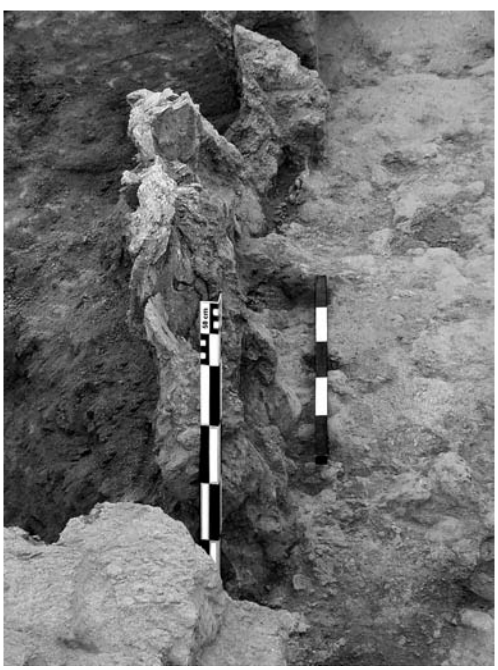


Figure 5.76. Detail of the plaster of the north–south screen wall (F.601) in Building 3, constructed in Phase B3.4B, showing the impressions of the original wooden framework, looking south.

in diameter. Screen wall post 4 stood in the very middle of the screen wall and had a rectangular (plank) shape that measured 0.12 m east–west × 0.30 m north–south. North of post 4, the two postholes (5 and 6) both had a 0.12-m diameter. South of this group was post F.611 (6155), with a diameter of 0.10 m. South of post F.611 was post F.609 (6104), with a diameter of 0.12 m and filled with fragments of building material mixed with charcoal and ashy soil.

The southernmost screen wall post (F.614) on the same alignment coincided with the northern edge of the southwest platform (F.169) abutting the eastern side of pillar F.164, which it may have helped to brace (along with post F.767). Its post-retrieval pit (6173) measured 0.45 m north–south × 0.36 m east–west and was filled (6170) with rubble that was also found under and around the base of the southern pillar, providing evidence that they were built at the same time. Posthole F.767, which may also have helped to brace pillar F.164 on its western side, measured 0.20 m in diameter, with infill (8112) that comprised blackish, organic, wood-derived deposits with some preserved wood fragments and large quantities of phytoliths and lumps of rubble.

At the southern end of the screen wall bedding cut (F.797), a fragmentary triangular feature made of sandy gray and red clays was interpreted as the remains of a possible step/bench or threshold (F.793) (8399) that existed between the Central Floor Zone and the middle of the elevated floor of the South-and-West Zone (Space 158) *before* the construction of the screen wall. The original length of the step is uncertain, because two cuts associated with the screen wall destroyed most of it. It is likely, however, that the step extended along the intersection between Spaces 158 and 86, matching the length of the screen wall itself. Feature 793 was constructed of greasy, sticky clay mixed with very hard, crushed sediments. In this mixture, the clay particles were of uniform size, layered horizontally. Such particle distribution was typical for horizontal clay coatings and for surfaces that were subject to repetitious pressure, such as walking or stepping. Such clays were rarely used otherwise in house construction, and only in features where the greatest hardness and durability was required—for example, in the entry platform bench (F.1010) (see Chapter 6).

The screen wall plaster (F.155), whose thickness varied from 0.01 to 0.04 m, extended from pillar F.164 to pillar F.156 and covered a north–south strip 1.7 m wide (Figure 5.76). It consisted of multiple coats of plaster, some of which included a fine layer of black soot, but none with any traces of paint. The thickest section was in the central part of the screen wall (3525, 6130, 6321, 6665) (Figure 5.77). The surviving screen wall plaster was in very good condition, and at places stood between 0.12 m and 0.34 m high, despite being no longer supported by the original wooden planks and wattle-and-daub framework. The line

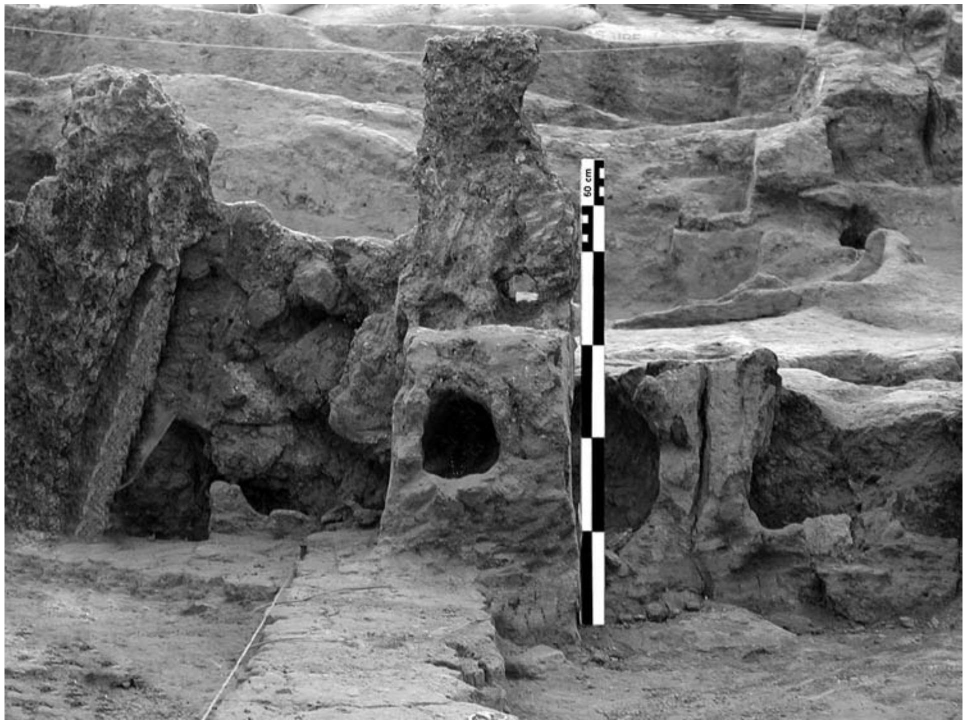


Figure 5.77. Detail of the central and the thickest section of the north–south screen wall (F.601) in Building 3, constructed in Phase B3.4B.

of the freestanding plaster leaned eastward, which called for very careful excavation and required us to leave vertical buttresses of the surrounding unexcavated matrix of room fill for support.

Some of the plaster layers in the screen wall were very fine, appearing as a series of light gray washes (10YR 7/2), while others were of light brownish gray color (10YR 6/2). The truncated and collapsed fragments of plaster had fallen on both the west and east sides of the screen wall. The top layer that accumulated on the east side comprised a collection of fragments of a collapsed relief sculpture, which would originally have been attached to the eastern face of the screen wall (Figure 5.78). The original presence of a relief sculpture was evidenced by numerous large (ca. 0.20–0.30 m) fragments of shaped plaster created by multiple, smooth, 3.5- to 11-cm-thick layers of white and light gray plaster (10YR 8/1–7/2). In the upper region of the collapse, a thick layer of plaster was discovered that, on one face, had impressions of the construction wood (6380) and, on the other, was smooth. The cross section through one of the fragments—a plaster disk—showed that its vertical dimension was 0.25 m and its thickness ranged from 0.18 m to 0.28 m. Several large fragments were pipe-shaped, suggesting that they had originally surrounded thin posts. All fragments appear to have collapsed eastward onto their outer face.

Two scapulae (2233.X1, X4) were found buried on the west side of the collapsed screen wall plaster (F.155). In the lower part of this same unit, on the west side of the feature, a group of three fragments of large clay balls (X5) was found. To their south was a fragment of a ground stone tool (X6). On the east side, at the base of the screen wall, another stone tool (6100.X2) and a clay figurine fragment (X1) were unearthed. At the intersection of the screen wall and the house floor, we recovered an unusual bone point made on a split distal tibia, which Russell (Chapter 15) found to be carefully and relatively elaborately made (8110.X1). The east face of the screen wall contained substantial quantities of small charcoal fragments that came from fired wooden branches, which were mixed with the house infill. It was not apparent how and why those deposits happened to surround the screen wall, nor how the charcoal became glued to its plastered surface. No fired or scorched surfaces were found to be associated with these deposits.

A pillar (F.156) was set between the screen wall and the northern interior wall (F.160) and was constructed on top of the earlier (Phases B3.2–B3.3) pedestal F.759. The pillar was square in plan with rounded corners, measuring 0.70 m north–south × 0.40 m east–west. It was constructed with courses of reddish brown silty clay bricks and gray mortar (6366); the bricks measured a maximum of 0.38 × 0.44 m (6367). Fragments of rubble were inserted in the base of this feature. Its original plastered surfaces were preserved on its eastern face but were incomplete on its western face; the plaster was modeled to extend the line of the abutting interior wall (F.160). The pillar and the interior wall were coated with plaster and painted at the same time (8102) in two shades of red; the pillar was a lighter red

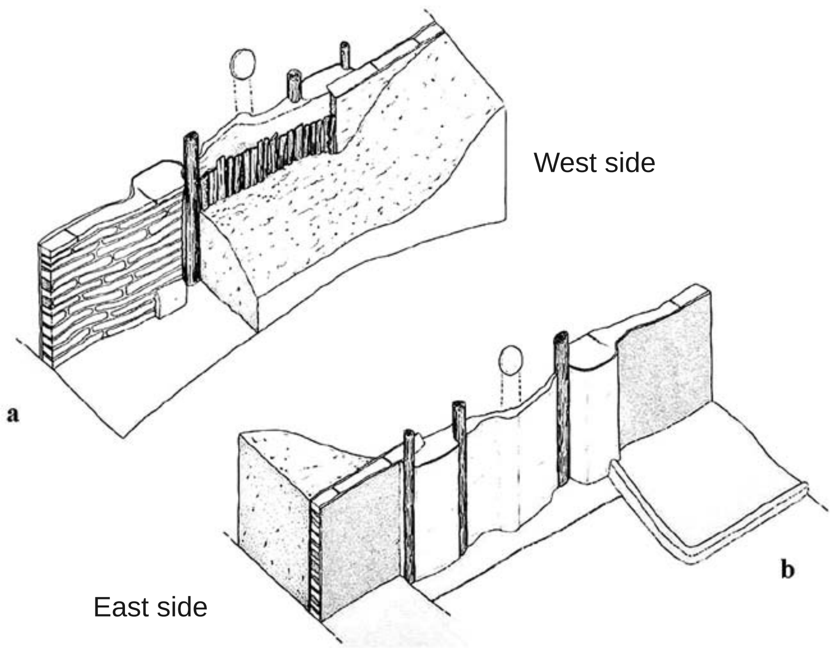


Figure 5.78. Artist's reconstruction of the north–south screen wall (F.601) in Building 3, constructed in Phase B3.4B, by John Swogger: (a) looking from above toward its west face; (b) looking from above toward its east face.

over the central surface, with dark red at the corners. Lumps of red painted plaster were found inside its mortar.

The southern pillar (F.164), built between the southern interior wall (F.161) and the screen wall, was also square in plan with rounded corners. Like the northern pillar, F.164 was plastered with a coat that extended over the eastern face of the abutting interior wall (F.161), with no traces of paint on either face. Also like the northern pillar, the southern pillar was constructed of red clay bricks of irregular shape, and gray clay mortar (6680). The pillar was structurally strengthened by bracing it with posts (F.614, F.767), and at some point the pillar was also reinforced on its western side with fired clay rubble fragments.

In the northwest corner of the building, a single deep cut (F.629) (6621) completely removed traces of the earlier (Phase B3.1D) storage bin F.770 as well as other features that were superimposed on it. It penetrated through the house floors down to the midden beneath Building 3. The cut measured 0.74 m north–south × 0.6 m east–west, and it reached a depth of 0.15 m below the house. Its fill of light brown soil (6305, 6638, 6651) contained a sizable amount of burned plaster fragments, concentrated in the west side by the large plastered brick block. This fill, comprising a deliberate and systematic deposition of architectural remains, resembled other similar features in Building 3 (e.g., F.602, F.168 in later Phase B3.5A), which abutted house walls and were associated with posts. It is possible that all the post-retrieval cuts/pits in the northern half of the building represented the removal of wall installations and the ritual deposition of their surrounding plaster in these cuts/pits. At the outset of the excavation of cut F.629, it seemed that it might be a burial cut, but this proved not to be the case.

In Phase B3.4B, a new smallish hearth (F.604) was located on the southwest platform (F.169) very close to the south perimeter wall of Building 3. This was the southernmost of four hearths discovered in the eastern extension of platform F.169 (see Phase B3.4A) and poorly preserved compared with other such features (F.630, F.632). Hearth F.604 was oval, measured 0.40 m north–south × 0.25 m east–west (3598), and comprised a baked clay floor with dark crumbly soil infill (3591) that contained traces of burning.

Cut F.603 was one of two cuts on platform F.169 in Phase B3.4B; it comprised two circular, intersecting shallow depressions each 0.10 m in diameter that were filled with blackish, organically rich deposits mixed with ash and large chunks of charcoal (3590). The base of the cuts (3597) was very well defined. One single platform flake core of obsidian (X1) was found in the southeast portion of the cut, while a hemispherical, polished stone object was in its southwest corner (see Chapter 19).

A second cut (F.605), roughly circular in plan and measuring 0.27 m × 0.21 m and 0.07 m deep (3599), was dug toward the northern edge of platform F.169. Lenses of clay and fragments of charcoal filled the cut (3592), and its base was made of silty, crusted clay.

In the lower floor of the South-and-West Zone, a new circular hearth (F.613) was constructed as the last of at least seven hearths constructed in this part of Building 3. Its dark brown-reddish base measured 0.50 × 0.45 m, and on its western side it was bordered by a light gray clay rim (6375, 6383) (Figure 5.79). Two superimposed red-burned floors of the hearth (6215, 6369) were distinguished from the surrounding matrix by a brown line of burned soil. This typical hearth in Building 3 was rendered unique by

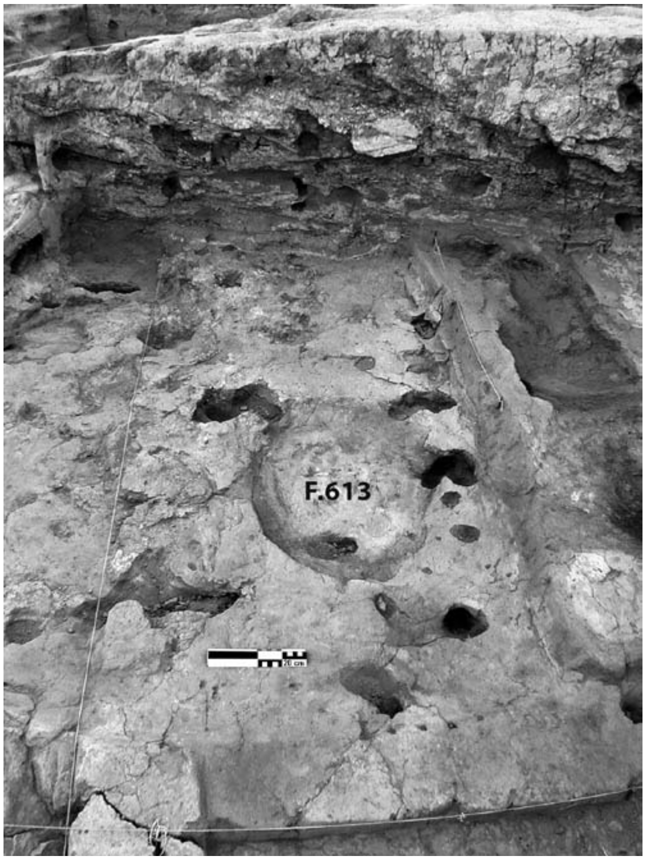


Figure 5.79. The base of hearth F.613, constructed at the southern end of Building 3 in Phase B3.4B, showing the small stake holes in the foreground, looking south.

Figure 5.80. Hearth F.613, constructed at the southern end of Building 3 in Phase B3.4B, showing the small stake holes that surrounded the hearth, looking south.

the addition of 18 circular stake holes surrounding it (Figure 5.80). The holes (ca. 0.01 m in diameter) were set into the house floor at a depth of 0.01–0.03 m and arranged to form an oval shape. The stake holes on the northern side of the feature were generally 3.5–4.5 cm distant from the edge of the hearth, with only a few positioned closer to its edge. The infill of the stake holes comprised pure ash (6160). It was clear that the hearth and the stake holes belonged to the same feature, possibly representing the remains of a domed oven, where the stake holes would have been the remains of the superstructure. Oven superstructures constructed of interwoven stakes and covered with a layer of clay are a standard feature in the Neolithic houses in northwest Turkey—for instance, at Ilipinar (M. Özdoğan 1999)—but had not been seen at Çatalhöyük before this example (see Chapter 4).

Another consideration was that, if F.613 were indeed an oven, it would have been used simultaneously with the larger oven (F.779) immediately to its south, which was constructed in Phase B3.4A and renovated during this phase, B3.4B. In the area around the main oven (F.779), two placement cuts were introduced during Phase B3.4B. Placement cut F.753 was dug with concave sides and a somewhat irregular shape. It was filled with a matrix that is typical for such cuts, comprising blackened soil mixed with ashy deposits with visible traces of burning (6657, 6686, 6685). The second, somewhat irregular, roundish placement cut (F.754, 8125) to the northeast of oven F.779 was also dug with concave sides (0.36 m in diameter, 0.12–0.15 m in depth) and was filled (8120) with coarse, brown sediments with ash, charcoal, and fragments of plaster.

The entry bench (F.1010) constructed in Phase B3.1A and incorporated into the larger entry platform (F.167) was joined to the oven (F.779), creating a similar appearance to that of the large oven (F.242) in Building 5.

Central Floor Zone

By Phase B3.4B, the small cuts that had been dug in the central floor in Phase 3.4A had fallen out of use, but one new small, shallow cut (F.616, 6223) was dug in the southwest of the Central Floor Zone, recognized as a circle of scorched floor, 0.3 m wide × 1 cm deep (3582). The infill comprised a 5-mm-thick layer of ash, which contained a few fragments of rubble on the east side of the feature (6202, 6222) and phytoliths from reeds and sedges, including *Setaria* husks, similar to those that occurred in oven/

hearth F.613 and oven (F.758) contexts (see Chapter 11). Of all the cut features in the central house floor that occurred in Phase B3.4B, cut F.616 most resembled a fire installation, in its roundish shape, traces of intensive scorching on the floor, and the phytolith remains. However, the Central Floor Zone was a highly unusual area for a hearth. An alternative interpretation is that F.616 could have served as a place where heating coals were kept for warming the central area of the house.

Northeast Zone

The Northeast Zone was characterized by an absence of any construction activity, apart from the renewal of platform floors. The two final burials within Building 3 were interred in this zone in Phase B3.4B. At the end of Phase B3.4B, the burials as well as the entire floor surface of the Northeast Zone were covered with one final, thick, "dirty" floor coat (3514, 6161, 6115, 6119), which was remarkably different from the previous ones in its materials, color, and thickness. No other floors were constructed over this one. On the contrary, at the end of its use-life, the Building 3 walls and features were truncated and collapsed onto this floor (Phase B3.5A).

Burial F.617, under the north-central platform F.162, was the last interment in this platform (Figure 5.81; see also Figures 13.7, 13.12). The southeast–northwest-oriented skeleton (6237) of a 3- to 4-year-old child placed in a basket was poorly preserved, as was the basket that contained it (Figure 5.82; see also Chapter 13). The oval cut (0.62 × 0.51 m) was made through the thick white layers of the platform floors and was sealed with a burial "lid" (6206) comprising a series of 7- to 10-mm-thick layers of very fine clay. The bell-shaped burial pit was filled (6252, 6211) with softly packed, dark gray, ashy earth, which contained numerous finds of worked bone (Chapter 15), obsidian blades and cores (Chapter 19), beads (Chapter 21), and a fragmented clay figurine (Chapter 17). After burial F.617 was filled and closed under the north-central platform, the interior wall was painted one more time, and at least one more series of white plaster floors on the north-central platform (F.162) was applied.

Burial F.631, the very last burial in Building 3, was placed in the center of the northeast platform (F.173), and it rested on an earlier mud-brick wall below the building (Figure 5.83; see also Figure 13.10). Following the slope of the mud-brick structure, the burial sloped southward, with the head and hands of the deceased at the lowest points. The complete skeleton (6303) of a probable male, 40–45 years old, was aligned north–south in a flexed position, lying on its right side, facing east (see Chapter 13; Figure 13.11). Fragments of a carbonized wooden plank were recorded over the feet of the skeleton. The skeleton was placed in an oval cut (6280) that measured 1.05 m north–south × 0.50 m east–west. Its burial lid (6272) incorporated numerous thin coats of plaster (Figure 5.84). The dark gray, ashy burial fill (6279, 6288) contained fragments of animal bone (mainly sheep/goat size), obsidian flakes, clay balls, items of worked bone, including a ring fragment (6279.X1–X3; 6288.X1) (see Chapter 14) and four beads (Chapter 21), none of which were associated with the skeleton as grave goods.

In the northeast corner of the platform F.173, not far from burial F.631, a bone cluster comprising a relatively complete skeleton of a neonate dog with its head missing was excavated (3553) under the construction rubble (3547). The puppy skeleton may have been partially dismembered

Figure 5.81. Grave cut of the burial of a child (F.617) before its excavation, deposited in the middle of the north-central platform (F.162) of Building 3 in Phase B3.4B, looking northwest.

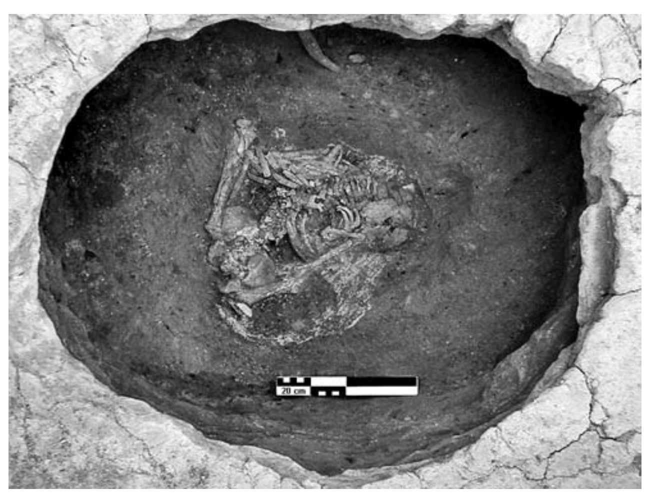


Figure 5.82. The skeleton of a child (F.617) buried under the north-central platform (F.162) of Building 3 in Phase B3.4B.

Figure 5.83. An adult burial (F.631) under the northeast platform (F.173) of Building 3, deposited in Phase B3.4B, looking north.

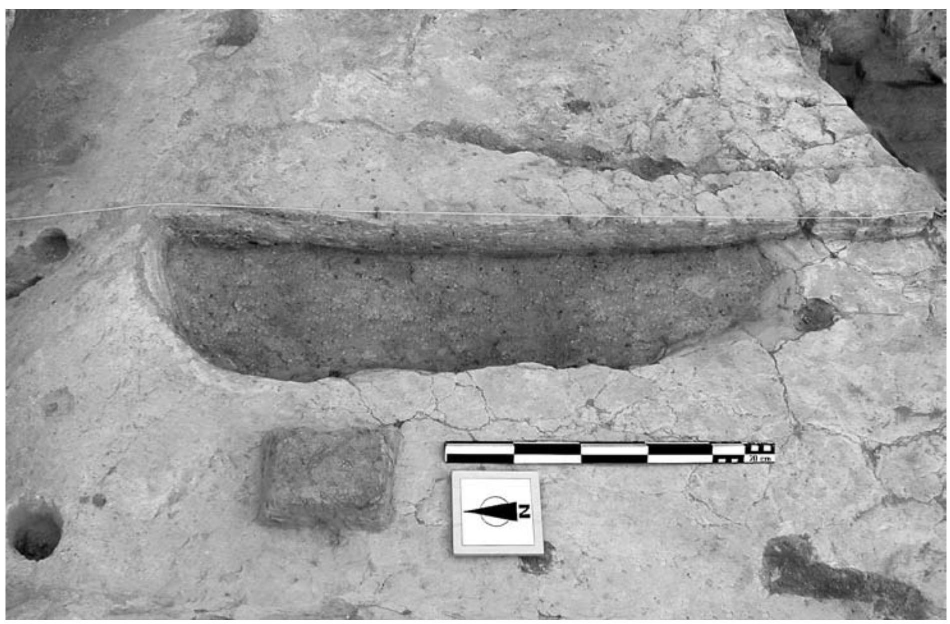


Figure 5.84. Cross section through the lid of the adult burial (F.631) deposited under the northeast platform (F.173) of Building 3 in Phase B3.4B, looking east.

before being placed on the platform, but it was certainly not eaten before deposition (Chapter 8).

Subphase B3.5A

Phase B3.5 represents the long, gradual abandonment of the house and its process of being used for purposes other than residence and then, finally, its fall into oblivion. We have divided this process into two subphases. Subphase B3.5A represents the closure of Building 3 undertaken by the Neolithic inhabitants (Figure 5.85; also Figure 5.86 [on-line]). Subphase B3.5B comprises the long-term post-residential use of the area, starting with the accumulation of the internal midden in the southern half of Building 3. Hence, the closure was not an act of immediate and definitive termination, but a continuous process. The abandonment of the house as a residence was undertaken in a sequence of steps, which in practice made the place uninhabitable. The domestic features were made ineffective, the upper sections of walls were stripped of their plaster and truncated, the northern half of the roof was brought down onto the floor, and the house posts were removed and taken away. Thus, the initial house closure was carried out by infilling the interior with collapsed debris that belonged to the building itself (see Chapters 4, 6). These actions were associated with the deliberate deposition of a number of individual artifacts and artifact clusters across the house floor. These special deposits, such as Cluster 1 (a group of large animal bones dominated by cattle scapulae) and Cluster 2 (a group comprised of two human skulls, a bucranium, and a hearth), were found in the layer of initial deposition immediately above the house floor.

One of the most striking features of the Building 3 collapse, and presently a unique occurrence in Çatalhöyük, was the remains of its collapsed roof, which covered much of the central and northern portion of the building (Figure 5.85, see also Figure 2.2). The southern part of the abandoned building was transformed into a midden area. Consequently, the floor in the northern half of the building underlying the collapsed roof remained "clean," with its features almost intact but inaccessible for further use. Conversely, the southern half of the building was damaged by a variety of cuts; moreover, this area continued to be used as a midden ground after the abandonment of the building, contributing to its characterization as a "dirty" area.

Apart from the roof and midden remains, the building infill comprised a mix of small and medium-size truncated bricks, mortars, and plaster. At the very top there was a layer of compacted, eroded construction materials. The fill in Building 3, consisting of coarse fragments of construction, was far less sorted and graded than in neighboring Building 5. In Building 5, the infill had been "processed," so that the debris of the roof and walls of the razed upper section of the building was broken down and mixed in an even particle deposit (Cessford 2007b). By contrast, in Building 3—for example, in Space 158—the area between the west wall and the screen wall contained large, brick-like chunks of unprocessed marl. Moreover, in the southwest corner of Building 3, large pieces of plaster molding,

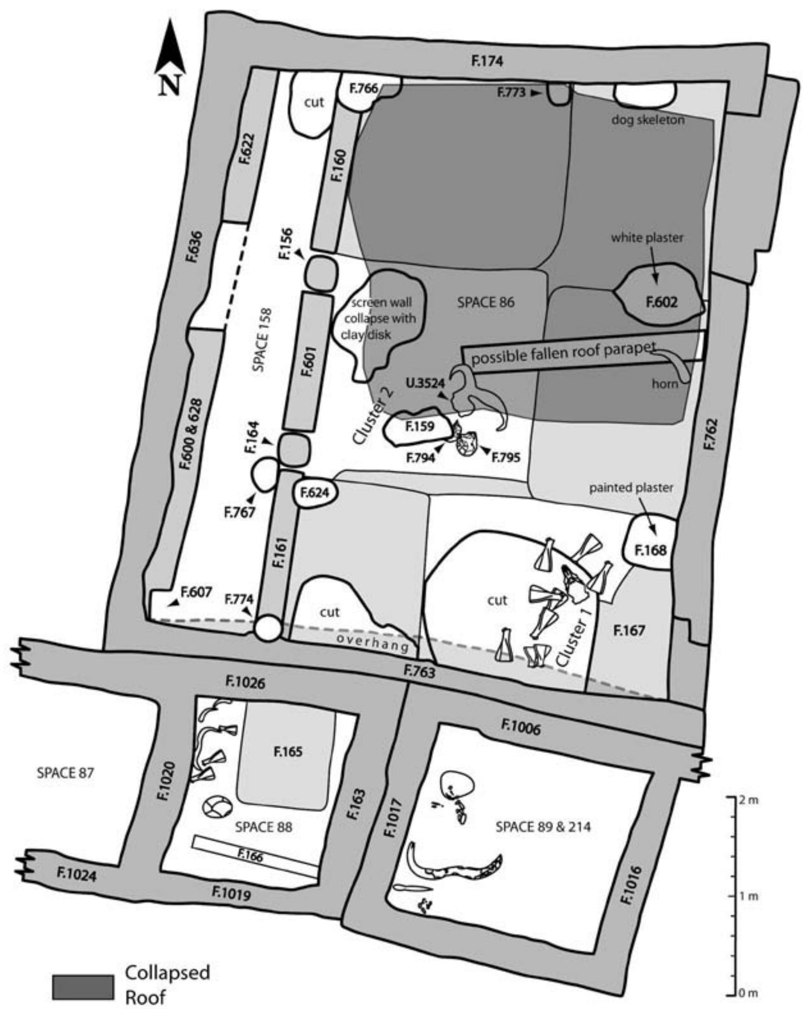


Figure 5.85. Plan of Building 3 in Phase B3.5A.

plaster lumps, and brick-like fragments were found in the matrix of a dark soil rich in organic remains; these were associated with sizable animal bones and unusually high quantities of fruits and nuts. This collection of finds has been interpreted as a possible feasting deposit from the time of the removal and redeposition of the molding fixtures that would have adorned this corner of the building.

Overall, the fill of Building 3 comprised a brownish reddish soil with islands of whitish clay, and with inclusions of charcoal flecks and small amounts of organic material. The western part of the infill was a solid gray, soft soil representing the extension of the midden in Space 85. The upper levels of the infill were excavated in arbitrary layers, while the deposits on the floors were excavated in natural layers. The thin deposits in the northern half of the house infill were layered flat under the roof.

The presence of clear and compact horizons in the midden area in the southeast of Building 3 (2229) indicated a slow deposition, clearly sloping down at a steep angle from the south wall toward the center of Building 3 where the midden deposits abutted the collapsed roof remains.

Burned building material was observed only in the infill on top of the western half of Building 3, mainly around the screen wall. However, burning was not recorded in situ on any of the walls, not even on the west wall or on the screen wall. It was not clear where the burned infill in this part of the house came from. One possibility was that the burned material came from the roof inside the western half of the house. Alternatively, it was possibly a part of the extensive burning that occurred in the neighboring and presumably contemporary Space 89. Other remains of fire, such as large and medium-size chunks of charcoal and ash, were found in association with the infill on both sides of the screen wall, but no scorching of the wall itself was observed.

Also of special interest in the building infill was the presence of individual human bones, which were found scattered across the southern part of the building and mixed with the building debris that was part of the larger midden deposit (2281). The infill on top of the southwest platform (F.169) contained a fragmented baby skull found in the middle of the platform, with no other bones or associated artifacts. The fragmented skull was thrown in, along with the sterile bricky fill that surrounded it. Near the southern wall of Building 3 and on either side of the fragmented baby skull, two fragmented human pelvic bones were found in the matrix of bricky fill. Several fragmented human long bones were discovered in the same area. In addition, individual long bones were discovered near Cluster 2. The group of bones found in the northern part of the house correlated with the burials in the north-central and northeast platforms. Also, three bones found in the northern half of the central floor might have been related to the three-child burial. The human bones found in the post-Building 3 refuse located in the southern part of the house did not have any correlation with the Building 3 burials. They seem to have been disposed of with the general waste or with the construction infill.

The steps taken in the process of the building closure were numerous, varied, and systematic. Each of these steps is described below in the sequence in which we believe they were performed. That is, the floor cuts and the feature truncation were the very first acts of demolition; this was followed by stripping and redepositing the wall plaster and placing "special deposits" and other artifacts; then roof destruction, and post extraction; and finally, the midden accumulated.

Cuts and Truncations Made in the House Floor

Hodder (2007) suggested that one of the first actions taken in the abandonment process was cleaning of the house floors. In Building 3, the remains of domestic activities were removed from the final floor. Along the south wall of Building 3, four large, shallow cuts were made in the latest floor of the southwest platform (F.169) and in the lower floor to its east. Such actions nearly entirely truncated hearth F.613 and the latest oven (F.779), so that only fragments of the latter's floor and rim survived. By contrast, the latest ovens in Buildings 1 and 4 were carefully filled so that their domes survived the house "closure" (Cessford 2007b; Farid 2007). Another cut removed the western part of entry bench F.1010, and another partially truncated the latest floor on entry platform F.167 and the surrounding house floor. None of these cuts penetrated the floor immediately below the latest house floor. One cut was filled with a "special deposit" illustrated by Cluster 1 (described below). It was not apparent why the cuts were made, since their infill, with the exception of Cluster 1, seemed to have no obvious significance.

Stripping the Wall Plasters, Truncation of Walls, and the Roof Collapse

Strips of wall plaster—0.30 m wide and 2.5 mm thick—were excavated on the latest house floor of the north-central platform and at the foot of the screen wall (Figure 5.87). They were neatly positioned, starting from the north wall and continuing southward along the base of the interior walls and the screen wall (F.160, F.156, F.601). The plaster had been stripped from the upper portions of the house walls, which were destined to be demolished, and deposited in particular places in the house.

In addition, blocks of compact white plaster (2259, 2204, 2269), nearly half a meter wide, were found on top of the platforms in the northern half of the house, mainly on platforms F.162 and F.173. These plaster blocks became visible under the mixed, eroded top fill of the house, and comprised grayish layers with white inclusions. We suggest that they had been deliberately placed or collapsed into these areas from the walls, since they did not occur elsewhere in the house.

Both plaster strips and blocks were made of layers of greenish moist clay, some of which were coated with soot. Such moist, greasy, greenish plasters were never found on the in situ walls of Building 3. On the contrary, the latter plasters were white, dry, and flaky. The difference in moisture between the two could be due to different postdepositional conditions of preservation; the plaster buried under the infill preserved its original moisture, whereas the plaster that stayed on the vertical walls was more exposed to weathering, thus becoming dry and flaky. On the other hand, the moist, greenish plaster may have been made of a different source material, used only on, for example, the screen wall, even though such clay has not been found among the surviving in situ remains of the screen wall. Other explanations for the moist, greenish clay plaster include its possible origin on the ceiling of Building 3 or in an entirely different structure, such as Space 87 or Space 89.

The truncation of the upper sections of the walls produced the so-called tumble—that is, a matrix of brick, mortar, and plaster fragmented to a fine fraction (up to 0.05 m chunks). This "tumble" matrix was excavated in the northern and central areas of Building 3, where it was superimposed and mixed with the remains of its collapsed roof. It is within and below this tumble covering the Central Floor Zone, at the southern edge of the roof collapse, that Cluster 2 (described below) was unearthed.

The wall tumble also extended farther southward into the northern part of the "kitchen" area (in the lower South-and-West Zone). Thus, the southern part of Building 3, in those parts not overlain by later midden layers, was characterized by rapidly deposited building debris from the walls of this building, and may have included later debris from other buildings, such as Spaces 87, 88, and 89.

Figure 5.87. Strips of wall plaster lying on the latest floor of the north-central platform (F.162) and the adjacent central floor area of Building 3 in Phase B3.5A, looking west.

Two layers of collapsed building material in front of the east face of the screen wall were found. At the bottom, immediately above the latest occupation phase, were large fragments of beige bricks and islands of gray, ashy soil containing small fragments of charcoal. Above this was deposited a mix of the same bricky material but more fragmented and mixed with looser soil. Although the screen wall was truncated, its lower portion was not removed. It was preserved by the bricky debris, described above, which was piled up against its east side before its upper portion was truncated.

Placement of Artifacts

Associated with the abandonment of Building 3 was the deliberate placement of artifacts in particular areas of the house. Numerous "floating" artifacts have also been unearthed in the lowest levels of the house infill and close to, but not on, the house floor.

On platform F.170, a fragmented cattle horn core (3527.X1) was found attached to slumped wall plaster. Also in this matrix, scattered human bones of a small size were found, which could be intrusive from a Roman grave (see Chapter 8). However, no such burials were found in this particular area of Building 3.

Three horn core fragments and frontlets were unearthed on northeast platform F.173 (3532) (see Chapter 8). Two large long bone fragments from cattle had plaster on their articulate surfaces, suggesting that they may have comprised parts of dismantled installations. Other likely dismantled installations included cattle horns (2215, 2250, 2296, 3532), a boar maxilla (2296), large pieces of antler (fallow deer: 3542; large cervid: 3555), large fragments of cattle skull (2296, 2296, 3555), and a possibly plastered bucranium (2276). A large fragment of cattle maxilla (3589) from post-retrieval pit F.602 may be part of the scatter of dismantled installations, or may have been deposited separately. Post-retrieval pits often contained items that seemed to be offerings in compensation for the removed post (Russell and Meece 2005:221).

In the room fill that covered the north-central platform (F.162), numerous artifacts were discovered, such as fragments of grinding stones, stone tools, potsherds, and clay balls (2269.X1–X6). These artifacts were described in the excavation as deliberately deposited among the fallen wall debris.

In the northwest corner of Building 3, two clay balls and a polished stone tool surrounded with fragments of painted plaster (2261) were unearthed. Three fragmented figurines, a clay ball, and a flint blade were excavated in the lowest house infill in this same part of the building (2207.X2–X6), along with another figurine (3502.X1).

In the central area of Building 3 at the foot of the screen wall, a burned but otherwise complete stone tool was deposited alongside large chunks of plaster, which were also set on the house floor.

It is interesting to note how many "floating" horn cores were found in the fill of Building 3 and in Spaces 87, 88, and 89. In other buildings at Çatalhöyük, the same practice was observed. Cessford (2007b) discussed the evidence in Buildings 1 and 5 for deliberate deposition of a wide range of artifacts. To what extent these "floating" artifacts were deliberately placed for "ritual" reasons, rather than being accidental and related to loss, is unclear at this point. We should note that in Building 3, horn cores were found near the walls where they would be expected to have been part of a wall installation and to have fallen during their destruction. However, the two large clusters in Building 3 (Clusters 1 and 2), which included human and animal bones and artifacts, were certainly deliberately placed during the house abandonment.

Cluster 1

Cluster 1 represented a particular kind of deposit, which took place immediately after the damage to the floor and truncation of the features along the south perimeter wall. Cluster 1 represented the "primary midden deposit," which seems to have been carried out in a ritualized context and was later overlain by the gradually accumulating midden. It consisted of numerous large animal bones, especially cattle scapulae, deposited in a pattern and in association with high concentrations of plant materials, preserved as phytoliths. For this reason, during the excavation and in the unit sheets we referred to the cluster as the "Scapularium."

Cluster 1 was located in the southern end of Building 3 between the entry platform (F.167) and the latest oven (F.779) (Figure 5.88). This is the area that suffered heavy damage to its floor surface from cuts and truncation of features. In the exact area of these cuts, the bones comprising Cluster 1 were deposited. Eight nearly complete large cattle scapulae were placed in one curving line, following the outline of the cut running along the west edge of the entry platform (F.167) and along the eastern edge of the truncated oven (F.779) and ending in the south wall of Building 3. In addition, two large cattle scapulae were leaning upright against the south wall of the house, at the point where the oven superstructure (F.779) had originally stood. Accompanying the scapulae were a partial cattle skull that was chopped in a transverse manner, a wild boar maxilla that had been cut in the middle, two fragments of cattle horn core, and another large fragment of a cattle skull. Most of the scapulae lay flat with dorsal side up, and some overlay each other (for example, the distal end of 2296.X6 overlay the proximal end of 2296.X17, and 2296.X9 overlay 2296.X18 and 2296.X19, so that they were almost crushed together). Five scapulae were from the right side of the animals, and three were from the left. The scapulae showed no traces of use, though some had had their spine removed (see more details in Chapter 8).

Black and yellow layers of bricky material, presumably from the truncated features, were deposited first and the large animal bones were laid on this material. Several of the scapulae were surrounded with a thick layer of phytoliths. Phytoliths were found between the yellow and black bricky layers and on top of the bones. For example, 2294.X6 and 2294.X17 were lying along the western edge of the entry

Figure 5.88. The "scapularium" (Cluster 1), with all the scapulae visible lying on the latest floor in the southern end of Building 3 in Phase B3.5A, looking south.

platform (F.167) and directly on the brick remains that were part of the platform base. Between the bricks and the bones were massive deposits of phytoliths. During excavation, several specialists hypothesized that the bones could have been tied with plant fibers (see Chapter 11). They also suggested that a layer of reeds might have been used in the deposition of the bones. A similar deposit was found in Building 2.

Surrounding the bones was a mixed matrix of bricky material and blackish, ashy soil with charcoal and smaller fragments of crumbly plaster (3517, 3554). The split boar skull (2294.X20), whose surviving half was placed in the cluster, was positioned directly on this black, greasy deposit. We tentatively interpreted this deposit as the remains of what originally was an animal skin, because it was so evenly and densely present. On the boar skull and under it, there was a layer of phytoliths. The matrix of black ash and charcoal-rich soil (2296) also contained associated artifacts, such as a bone tool (2296.X1) with a broken point, and a spheroid piece (2296.X2), made of very thin skull bone or eggshell, with phytolith prints, some of which were visible in situ, beneath it. Numerous species, such as equid, dog, and sheep/goat were represented by additional bones in this area (Chapter 8).

Cluster 1 and its matrix extended westward, where they mixed with the fine moist, reddish brown, bricky building fill (2281). White plaster concentrated in largish patches overlay the Cluster 1 deposits. In this area, numerous other animal bones and scattered human bones (mentioned above) were found, such as two fragmented animal skulls (2281.X1, X24), a fragmented human pelvis (2281.X14), a clay ball fragment (2281.X15), two ground stones (2281.X5, X16), a human tibia (2281.X22), a human ulna (2281.X23), a fragmented human skull (2281.X25), and a fragmented human bone (2281.X26).

Several possible explanations for Cluster 1 have been suggested: it may have been the remains of a communal feast at a ceremony of "closure" of Building 3, or a cache of bone raw material, or a deposit of an elaborate dismantled wall and other installations (for more details, see Chapter 4). Whatever the explanation, the deliberate and patterned deposition of the objects in the house at the time of its closure must have carried a very strong symbolic meaning.

Cluster 2 in the House Center

Cluster 2, located in the very center of Building 3 and close to the interface between the collapsed roof and the northern limit of the later midden deposit, was another "special deposit" (see Figure 4.12). It comprised a large cattle skull with horns (bucranium) (3524), lying face down. Immediately to the west of the bucranium and facing it were two human skulls (3529, 6618) placed deliberately so that they faced each other. One skull (6618) was positioned directly under a large but fragmented redeposited hearth (F.159), while the other was under mixed infill. In the matrix (3542) of bricky fragments and stripy roof remains (3530) that surrounded Cluster 2, other animal and human bones were found: vertebrae and horns, associated with an obsidian blade, a green stone ax, and some burned fragmented stones. The building fill in this area was different from that farther south in the building. The latter comprised ash and charcoal deposits mixed with bones of a smaller animal covered by mixed deposits (2262). The elements of Cluster 2 were all found lying on a thin (0.02–0.05 m) layer of bricky fill, possibly representing the remains of upper walls or the roof, which overlay the latest floor of Building 3. Since the Cluster 2 elements were found in a layer of roof tumble and not on the house floor, we interpreted this cluster as being originally associated with the roof rather than the house interior. Their eventual and deliberate placement in the house interior would have taken place only in the process of the house "closure."

The bucranium or cattle skull with complete horns (3524.X1) of Cluster 2 was not found directly on the floor but somewhat above the floor and within the remains of bricky fill (3541, 3555). It was lying relatively flat, with frontals facing upward, and had both horn cores present; the left, which was curled, was more complete than the right, but both had tips missing. The snout of the skull had been truncated, to leave a symmetrical shape for its installation on or in front of a wall. The skull appears to have been male, and morphologically a wild animal, an adult, but not old (Chapter 8). The horn cores were very weathered. Any signs of plastering and color either on the skull or horn cores were ambiguous and inconclusive. The skull of the bucranium was covered by a large chunk of collapsed, compacted clay building material, which likely belonged to the roof of Building 3 (Figure 5.89). The weight of the clay compressed and flattened the bones of the skull. The bucranium was treated by the conservators on the project to keep it intact, but it did not survive being lifted from the ground and disintegrated during this process.

The placement of the bucranium in the bricky fill at the edge of the collapsed roof made it likely that it was originally a part of an installation that stood on the roof. This can be supported by the condition of the bones, which were very weathered from exposure. The entire bucranium appeared more weathered and fragile than typically is the case for such objects at the site (Chapter 8). Interestingly, when compared with numerous other cattle horns found in the BACH Area, this bucranium was the only one with large but curled horns and, incidentally, might have been part of an installation on the roof. Although it was fragile and very weathered, the bucranium was complete, without any fractures, suggesting that it was placed in the house

Figure 5.89. The bucranium (3524) of Cluster 2 covered by a large fragment of compacted clay, lying in the center of Building 3 in Phase B3.5A, looking south.

interior after the roof collapse and did not fall during its collapse; moreover, it appeared to have been deliberately positioned to face the human skulls.

The two human skulls, F.794 (3529.X1, 3529) and F.795 (3529.X2, 6618),[2] found in secondary context, had been placed in a straight line to the southwest of the bucranium in the bricky fill that overlay the Central Floor Zone of Building 3 (see Figure 4.8 and frontispiece). The lower jaws and skeletons that belonged to these crania were never located. The articulation of the skulls, which were lightly touching at their upper foreheads, their faces forming a 90-degree angle, was striking (Figure 5.90). Skull F.794 (3529.X1) belonged to a 12- to 14-year-old adolescent. It was placed on its left side and faced north. A young adult female skull (3529.X2 or 6618), F.795, was placed directly opposite and lay on its right side facing east (Chapter 13). In the same bricky matrix and 3 cm to the west of F.794, a damaged green stone ax was found. Both the skull and the stone artifact lay below the fragmented hearth (F.159) that belonged to the same cluster.

Several characteristics of the heads suggest that they were deliberately placed as a part of Cluster 2. The light contact at the foreheads of the crania and their proximity to each other as well as to the bucranium indicate very careful placement and symbolic significance (discussed further in Chapter 4).

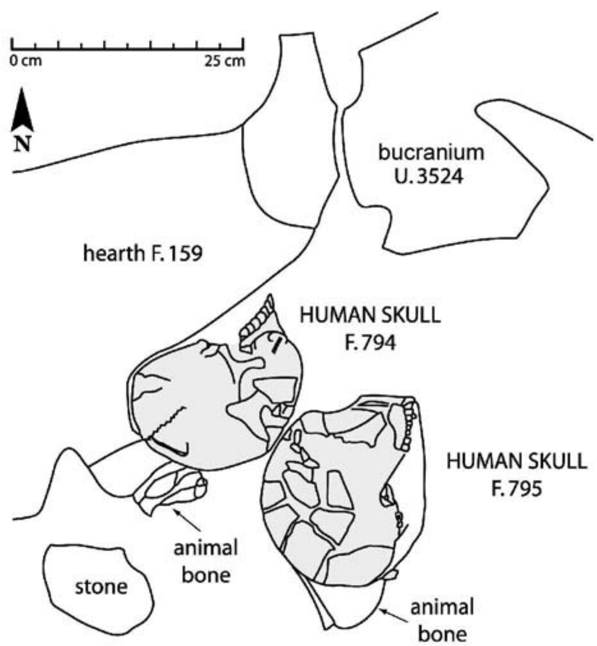


Figure 5.90. The two human skulls (F.794 [3529] and F.795 [6618]) of Cluster 2, in the center of Building 3 in Phase B3.5A.

The redeposited oven/hearth F.159 was fragmentary (current dimensions 0.80 × 0.34 m) but had originally been a very large feature. It had an unusually thick, concave base, unlike the hearths from the interior of Building 3 (Figure 5.91; see also Chapters 4 and 7, and Figure 7.2). A cross section through the hearth uncovered three compact, superimposed layers which suggested that the hearth/oven was originally located on the roof of Building 3. Its upper-

[2] During excavation in 1999, the skulls were recorded as "X" or "special" finds of unit 3529. In 2001, they were each given their own unit number (as well as feature number). Skull 3529.X1 was designated unit 3529 (F.794); skull 3529.X2 was designated unit 6618 (F.795).

Figure 5.91. Cluster 2, comprising a hearth (F.159), two skulls, and a bucranium in the center of Building 3 in Phase B3.5A, looking north.

most layer was made of a 0.01-m-thick layer of oven floor adhering to burned roof layers (0.03 m thick), under which were compacted roof remains 0.055 m in thickness (3528). The oven/hearth was associated with four burned stone fragments, two of which were andesite grinding slab fragments. Such artifacts have been seen in association with other fire features (Baysal and Wright 2005). The southeast end of this hearth overlay the female skull (6618).

Roof Collapse F.157

The northeast infill of Space 86 was dominated by the series of superimposed layers of plaster and building clay that we interpreted as the collapsed roof of Building 3 (Figure 5.92). The clay layers were strikingly varied in color, ranging from red-burned, and black-charred to yellow-brown soils (see Figures 6.18, 7.1). These layers were quite distinct from floors and walls in their composition and in their thickness. On the west side (3530), the roof remains were bounded by the screen wall, and on the north by the collapsed roof edge abutting the truncated north wall of Building 3. Toward the east, it ended at a point above platform F.170, and on the south side the roof deposits ran to a massive bench-like clay feature (3543) which could have been the roof parapet or the very edge of the roof (Figure 5.93; see also Chapters 6 and 7). This feature (3543) was very straight and comprised a "clean" clay core covered and abutted by numerous layers of red, orange, gray, or black clay. The layers appeared quite similar to other stripy roof remains. After the layers of fallen roof had been removed, the floors of the building were revealed, indicating that the roof had collapsed directly onto the house floor (see Figure 6.19).

The central part of the roof was removed as three blocks, two of which were destined for micro-excavation; the third was be exhibited in the Interpretive Center at the site of Çatalhöyük (see Figures 2.18–2.20).

The roof remains comprised long, flat, continuous, well-compacted, and multicolored layers of clay of even thickness, which in some cases reached 1.63 × 0.49 m blocks of uninterrupted layering. Portions of the roof comprising distinct, abrupt, layered deposits inclined at different angles. Large portions of these layered, stripy deposits were sloping at about 80 degrees in a west/southwest direction (Figure 5.94). Other roof fragments with parallel dark gray lines

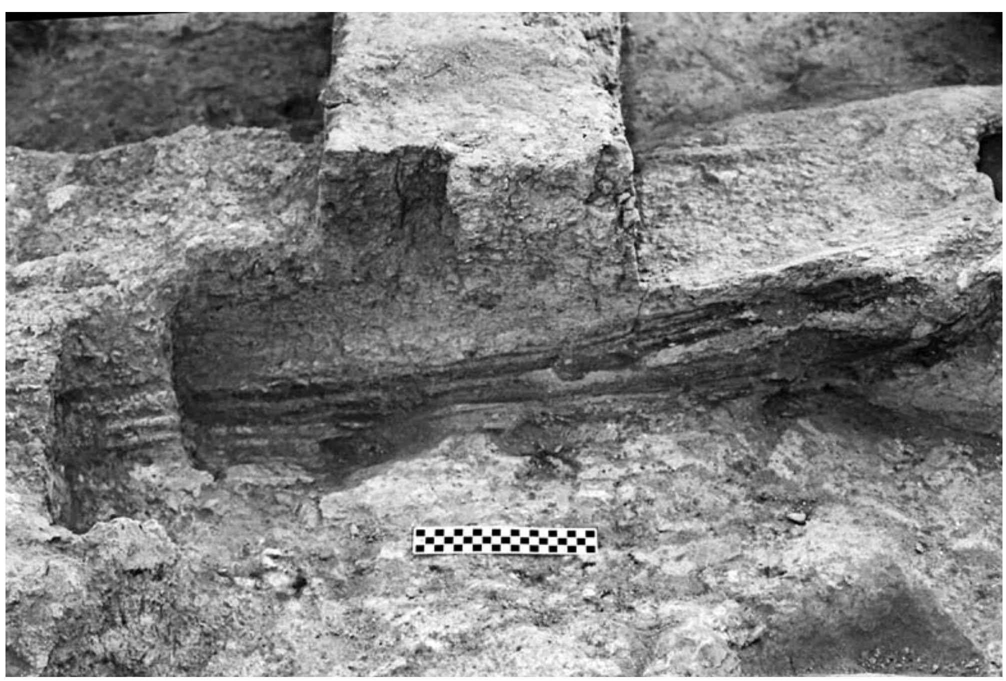


Figure 5.92. Cross section through the remains of the roof collapse (F.157) in the northern part of Building 3 in Phase B3.5A, looking south.

Figure 5.93. Possible parapet of the roof (F.157) in the northern part of Building 3 in Phase B3.5A.

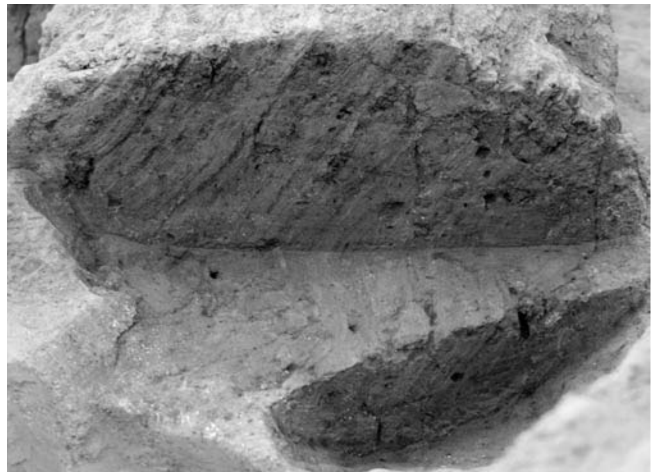


Figure 5.94. Cross section through the sloping roof deposits (F.157) in the northern part of Building 3 in Phase B3.5A.

oriented in an east–west direction sloped steeply down at 80 degrees toward the north. Some layers were sloping down to the southeast and others to the south. Other roof parts consisted of flat and nearly horizontal sections.

The collapsed eastern part of the roof was excavated layer by layer in groups of five to eight layers. Each layer was about 1 cm thick and represented the resurfacing of the roof, so that its different colors and bedding represented the effects of different factors, such as activities that were performed on it (smudging, burning, and the like) (Figure 5.95).

The southern part of the roof was characterized by layers of similar thickness to those just described but whose color varied through tones of yellow, beige, and gray, and which dipped at a steeper angle (70–90 degrees). Because of their lack of evidence of smudging and burning, they were referred to as "clean" roof (2271, 2273), but in fact they seem to have had more plant and microfaunal remains than the burned "dirty" roof (2238) (see Chapter 7).

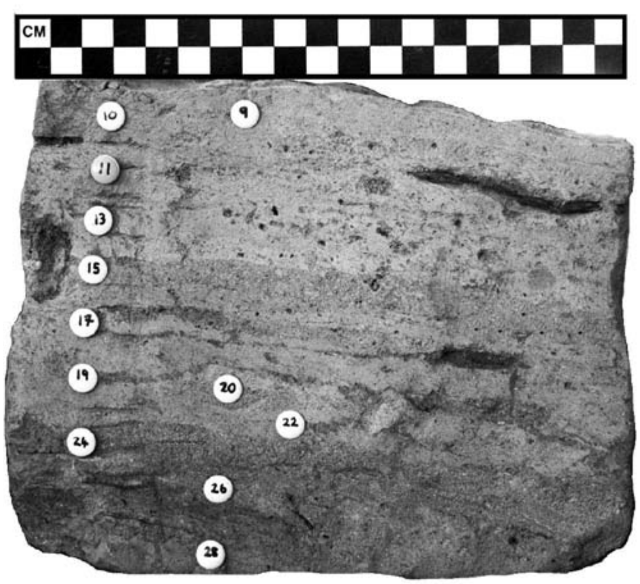


Figure 5.95. Cross section through the possible roof parapet or "clean" roof (F.157) in the northern part of Building 3 in Phase B3.5A.

The lowest roof deposits that lay directly on the floor included whole bricks with mortar upturned (2254) (7.5YR 5/8 wet; 10YR 5/4 dry), which accompanied the lower tumble of the roof. Some of these remains were massive fragments, and some were layered. These black and red roof layers were very loose, but the beige clay bricky material among them was firm. The firmness of the beige clay came from its composition of half clay and half sand.

The red layers of the roof contained remains of burned clay, whereas the black layers contained ash and charcoal. The beige layers contained neither. Artifacts—a potsherd, bead, and ground stone—were also found in these deposits (2238. X1–X5). An interesting number of beads appeared in the roof collapse, including four stone beads and seven clay beads, all spherical in shape (2238) (see Chapter 21). Some fragments of the roof (2271) whose top surface was preserved comprised very distinct, stripy layers and were not crumbly (as was some of the surrounding material), but were fine clay lenses with charcoal and ashy layers.

The collapsed roof in Building 3 indicates that it had a flat upper surface, which confirmed Mellaart's hypothesis of flat roofs at Çatalhöyük. Even more significant is the fact that the indications of smudging, burning, and discoloration of the roof surfaces suggested that the roof was possibly used as the main arena of domestic activities. The microstratigraphic sequences of collapsed roof in Building 3 indicate that some areas of the roof were seasonally used for cooking (see Chapter 7; Figure 7.2). Matthews suggests that other open spaces on the roof were plastered more frequently and would have provided places for sitting, drying foods, and grinding. Russell (Chapter 8) adds that faunal data show that some bone probably does derive from roof activities. The microfauna were almost entirely amphibian (Chapter 10). This is intriguingly similar to the situation on the internal floors of this house. Like the internal amphibian remains, some of those on the roof were burned and thus not intrusive and possibly deliberately acquired (Chapter 10). The cattle skull and fire installation in the central part of the building, described above as part of Cluster 2, may have originally been located on the rooftop.

An important aspect of the collapsed roof feature (F.157) was its location, covering the platforms in the northern half of the house along with the northern half of the central house floor (Figure 5.96). This location coincided with the area of the house in which burials were interred. The clay edge, or parapet, of the roof marked the most southern edge of the collapsed roof on the house floor and the extent of the preserved collapsed roof at its interface with the midden. We believe that this relationship between the very different northern and southern infill of Building 3 was not accidental but the result of a well-controlled process of truncation and collapse.

Post Retrieval

The posts against the north (F.773, F.766) and south perimeter walls (F.774) of Building 3, and by the screen wall (F.608, F.609, F.611, F.614), were removed in the process of house closure. After the walls were reduced in height by truncation and the postholes widened, the posts may have been pulled out and the emptied post-retrieval pits filled in with the same general bricky infill of Building 3. However, the large posts on the east wall (F.602, F.168) were treated in a different way. They were removed by digging large post-retrieval pits around them (3596 in F.602; 3510 in F.168), which were filled with wall plasters and possible wall installation debris. Post F.750 had been treated in a similar way when it was removed in Phase B3.2, before being replaced with another feature. Its post-retrieval pit was packed with large plaster chunks. Incidentally, these three features represented the only large posts in Building 3 (Figure 5.5).

The oval cut for post-retrieval pit F.602 (0.7 m north–south × 1.05 m east–west) was dug through two platforms (F.170, F.173) and filled (3596, 3589) with large chunks of multilayered wall plaster made of greenish, moist clay (see Figure 4.13). The same type of plaster occurred in the plaster sheets that were, as mentioned above, placed on platform F.162 and at the base of the screen wall. In addition, large amorphous lumps of molding plaster (6231) were also

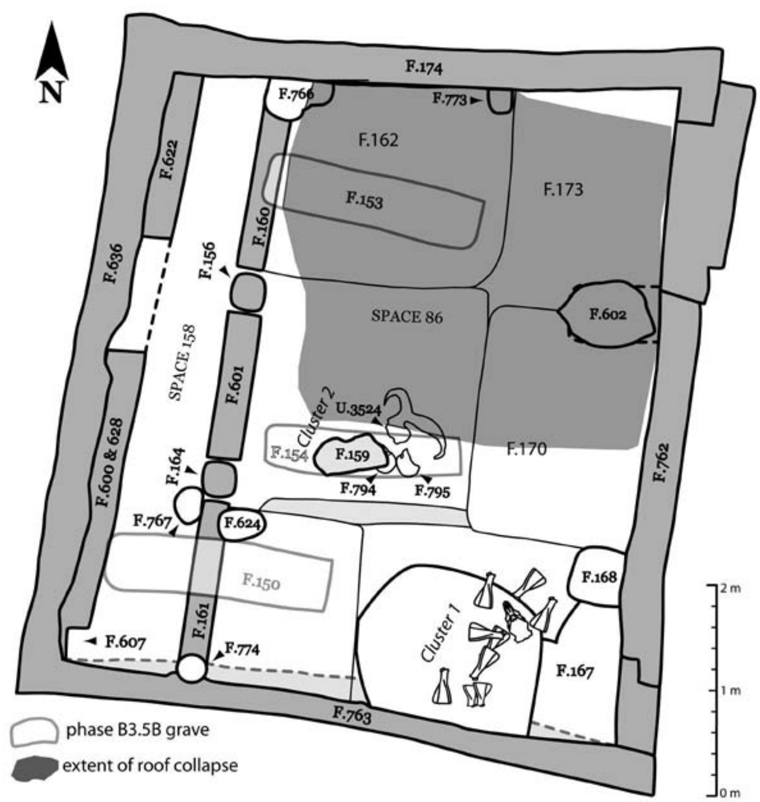


Figure 5.96. Location of the roof deposits within Building 3 in Phase B3.5A, noting Phase B3.5B burials cutting through them.

jammed into pit F.602. These were interpreted as the remains of plaster that was molded around the post and were deposited inside the post-retrieval pit after the post was removed. At the top of the infill of F.602, a cattle jaw fragment (3589.X8) was found squashed under a large plaster chunk along with a stone ax (3589.X1), obsidian tools (3589.X2, X4), a clay ball (3589.X6), and a half horn core. Other fragmented horn cores were excavated in the house infill in the same area, suggesting that all of these cattle parts could have been from the same skull installed on the post. Near the bottom of the post-retrieval pit, at a depth of 0.55 m from its surface, the pit narrowed considerably to a smaller, more rectangular shape representing the actual posthole (0.17 m north–south × 0.09 east–west) as it extended down for another 0.30 m.

Post-retrieval pit F.168, which covered an area of 0.60 × 0.55 m, originally held a post measuring 0.20 m in diameter and reached a similar depth to that in pit F.602. The post-retrieval pit was filled with more diverse sediments, comprising a soft soil matrix containing larger chunks of wall plaster. One plaster fragment measuring 0.15 × 0.20 m (3510.X3) had its surface painted with a geometric design of alternating black and red triangles, similar to those found by Mellaart in E.VII/21. Unfortunately, soon after the painted plaster fragment was taken out of its original moist matrix inside the pit and was exposed to light, the painted surface oxidized and faded out. Thus, apart from the description in the unit sheet, no record of this painted fragment is available. The plaster face of the east wall showed that, at times, the wall had carried a painted panel above the central-east platform (F.170). It is very likely that the posts F.602 and F.168, which were flanking the platform, also had painted plaster surfaces. The black and red painted plaster fragment most likely was a part of this wall complex.

Midden Deposits inside Building 3

The midden in Building 3 was a result of both shorter- and longer-term accumulation of discarded materials. It shows evidence of the careful planning and organization of the disposal activities. It is known from other such deposits at Çatalhöyük that the accumulation of middens took place over time but in a relatively rapid succession of episodes, evidenced by the lack of heavily eroded surfaces (Farid 2007). The post-residential midden deposits of Building 3 took up much of the southeastern part of Space 86 and comprised layers of soft and hard debris of varying thicknesses.

The north–south cross section through the infill of Building 3 (Figure 5.97) clearly shows the solid, horizontal collapsed roof deposits in the northern half and the layered nature of the midden deposits in the southern half of the building. The midden deposits accumulated on the base of a hard layer of building debris (referred to as "bricky midden"). The bricky midden comprised the primary midden deposits composed of the demolished bricks and mortar (2270, 2281, 2255) of the building and also formed the matrix for the large animal bones that were deposited rapidly during the house "closure" (Cluster 1). The bricky midden was deposited directly on the platforms and the floor in the south of Building 3, sloping down somewhat from south to north but following the configuration of the surfaces on which they were deposited.

On top of the bricky midden, numerous layers of fine deposits of ash and charcoal with lenses and particles of clay and organic components were deposited as the thick "black midden" (2229). In some cases, however, the so-called black midden lay directly on the house floor. The black midden—a 20- to 30-cm-thick layer of compacted but soft, dark, richly organic soil with thin layers of ash, burned earth, and charcoal, mixed with faunal and botanical remains—represented the remains of food consumption, fire making, and floor sweeping. This material produced an interesting array of plant remains, including tuber fragments, pistachio, and wood and reed fragments. Their deposition may have taken place over an extended period, during which the layers either gradually accumulated or grew from numerous incidents of "dumping" over a relatively short time. The latter is supported by the state of preservation of the plasters of the south wall. These were in relatively good condition. There was little sign of dehydration of the plaster—which would have caused the plasters to collapse—suggesting that they were exposed only for a relatively short time and that the south wall was covered by midden soon after it was truncated.

On top of the black midden, in the southern half of Building 3 was deposited another layer of building debris called "yellow midden." This was a layer of compacted, hardened building debris (2228, 2254, 2214, 2227) that was deposited in a layer 0.10–0.30 m thick. There were areas in which the yellow midden was mixed with black midden deposits (2239).

All the midden deposits sloped steeply down from the south wall of Building 3 toward the north and west—that is, toward the center of the building (Figure 5.98). All three layers of the deposits were thinnest next to the south wall and were the thickest in the center of the house. In the center, the sloping midden layers abutted horizontal layers made of collapsed roof, which covered the northern half of Building 3.

Plaster fragments were found throughout all the midden deposits. For instance, in unit 2255, while removing the bricky fill that comprised three large fragmented bricks deposited in the southwest part of Building 3, we found several pieces of red painted (10YR 4/8 and 10YR 5/8)

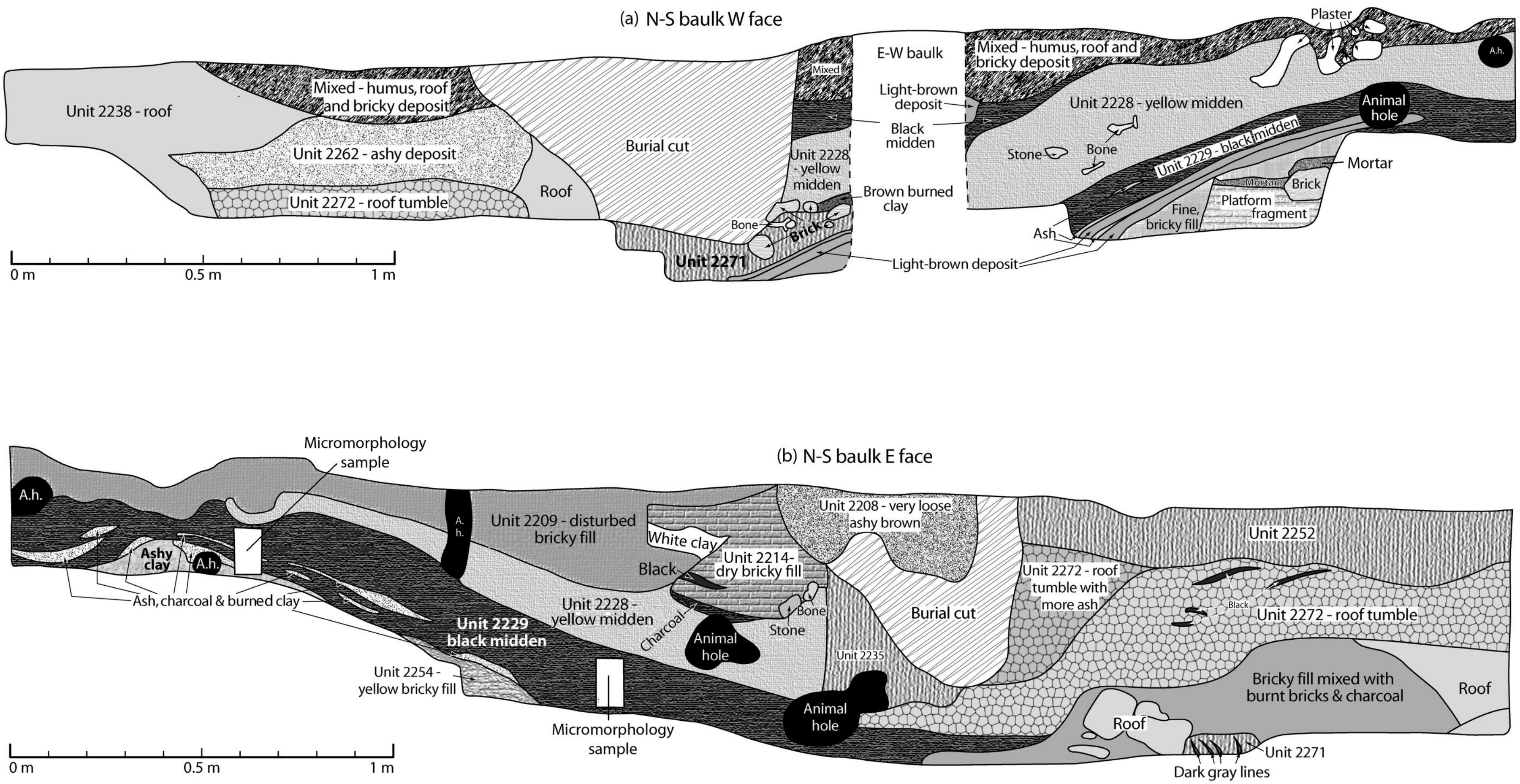


Figure 5.97. North–south cross section through the post-occupational infill of Building 3: (a) looking east; (b) looking west.

plaster. Presumably, the bricks had belonged to one of the three painted walls in Building 3, none of which was close to the location of the unit. Northward in the same unit, more of the white plaster fragments were found.

A rich array of finds was unearthed in the midden debris. Unit 2255, in the center of Building 3, contained two finished stone beads, grinding stone fragments and unworked stone, along with cattle horn cores, individual human bones, and fish and bird bones (see Chapter 8). A number of stone, clay, and shell beads were found in association with the infill overlying entry platform F.167 (2214, 6110, 6192) (see Chapter 21). Unit 2228 contained a nearly complete equid pelvis, along with numerous cattle bones and horn cores, as well as three bone tools (Chapter 15) and a bead on a red deer canine (Chapter 21).

The alternation of the hard and soft midden deposits resulted from the need to dispose of the garbage in an organized fashion—as was the case throughout the settlement, especially in its later phases—and, at the same time, to stabilize the terrain for future buildings in the area. We surmise that the midden deposits originated from the constructional debris of the demolition of Building 3 and from the subsequent domestic waste of the neighboring houses. The excavation of the midden deposits was carried out as a continuation of excavating Building 3 infill. That is, it was done in arbitrary levels but respecting the layering of the midden as much as possible.

Subphase B3.5B

Subphase B3.5B represents the later use of the area by post-Neolithic populations (Figure 5.96; see also Figure 14.1). On the East Mound at Çatalhöyük, the later occupations by the Roman and Byzantine period populations have been a part of the regular archaeological record in the post-1993 excavations (Hodder et al. 2007). Remains of settlements and cemeteries have been excavated on top of, and cut into, the Neolithic structures across the site. The BACH Area, in which six Roman burials were discovered, was no exception (see detailed descriptions in Chapter 14).

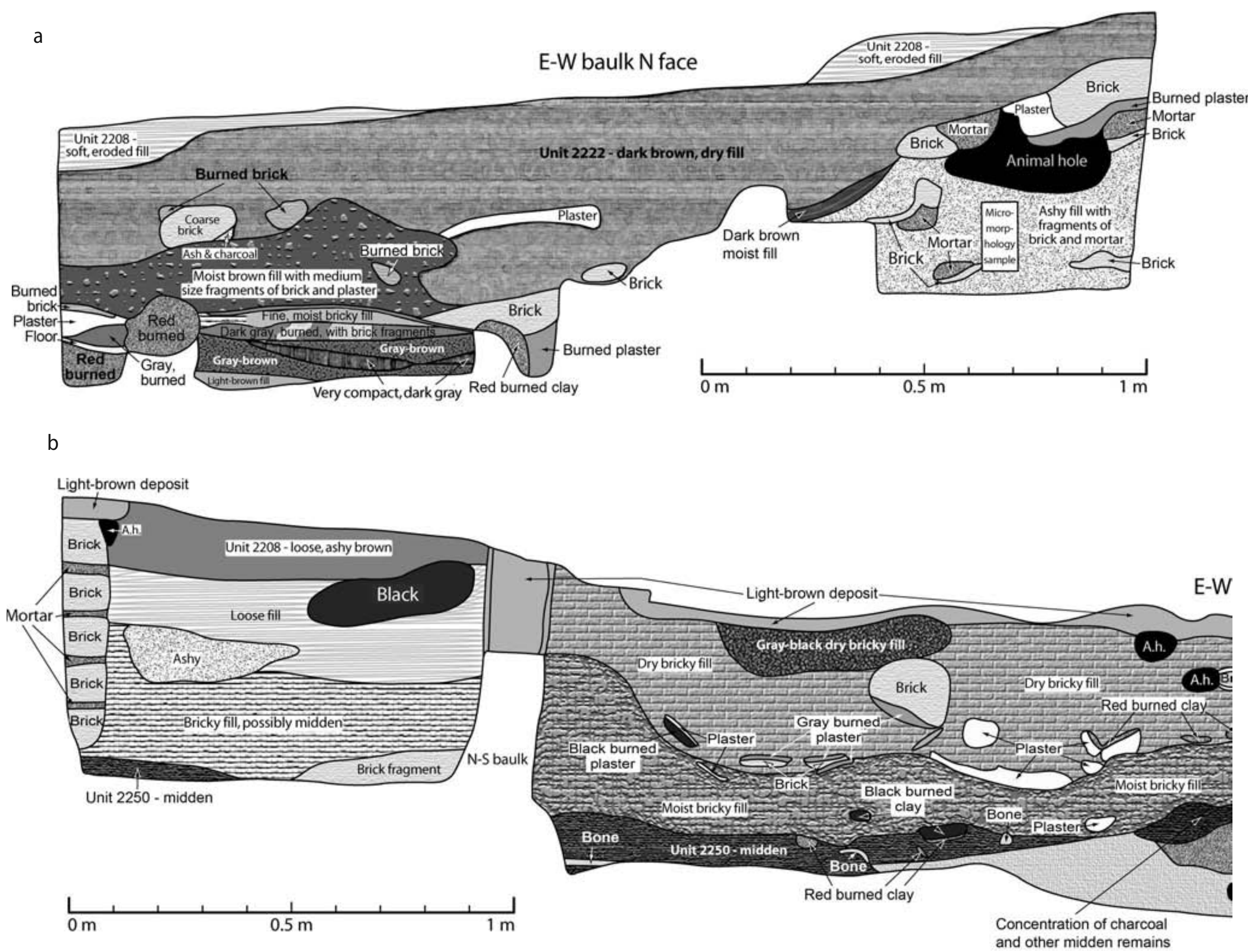


Figure 5.98. East–west cross section through the post-occupational infill of Building 3: (a) looking south; (b) *facing pages:* looking north.

Roman Burials within Building 3 and the BACH Area

On the surface, after scraping in preparation for excavation in the BACH Area, three rectangular pits, which we understood to be probable post-Neolithic burials cutting into the Neolithic room fill of Spaces 86 and 88, were clearly visible. This is indeed what they turned out to contain (F.150, F.151, F.152). After the excavation of the first arbitrary level of room fill in Space 86, two further grave pits were defined (F.153, F.154). Much of our effort in the first season (1997) of the BACH project was taken up with the excavation of the post-Neolithic burials (Figure 5.99).

The burials were all supine, extended skeletons deposited in regular cube-shaped grave pits, oriented east–west. Four of the skeletons were adults, one was adolescent, and one was a child (Chapter 14). Five of the skeletons were buried with grave goods that enabled us to ascertain dates to the first–second/early third century A.D. (Chapter 14). Traces of additional and likely Roman burials were observed at the southern edge of the BACH Area (Space 95) but were not excavated.

It is not surprising that we have found graves of this period on top of the East Mound, considering that there was a large settlement of the period not far away. Moreover, we can imagine the significance that the Neolithic mound may have had as part of the cultural landscape of the occupants of that settlement. It would be an interesting research inquiry to use the positioning of the graves as a means to understand how much was known about the Neolithic architecture by the diggers of the Roman graves, how much was visible to them, and in what way the Neolithic traces were meaningful to them. It was very clear that when the grave pits were excavated, some of the Neolithic walls were visible and avoided. It was also clear, from the relatively shallow depth of these graves, that at least 50

Figure 5.99. View of the BACH Area looking northwest during the excavation of post-Neolithic burials in 1997.

E-W baulk S face

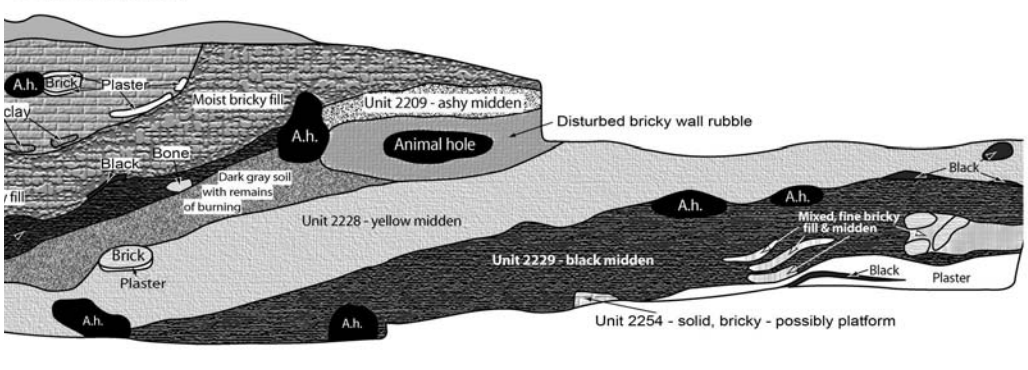


Figure 5.98 (b) *(continued).*

cm of overlying soil has been eroded from the surface of the BACH Area since the Roman period.

The Roman burials included the following features that are relevant to this chapter:

Feature 150: The skeleton of a mature male, almost 2 m tall, oriented east–west, lay on its back with the skull on the west side and legs and arms that extended alongside the body to the east (2219) (see Figures 14.2, 14.3). The grave pit was excavated from the surface to a depth of 0.20 m (2205). Poorly preserved because of exposure to soil perturbation, the skeleton lay on a smooth, flat surface of mud resulting from water that had seeped into the coffin and collected under the skeleton. The line of the coffin, studded with iron nails, was visible in the soil. The only possibly deliberate grave good was a disk of stone (2206) measuring 1.5 cm in diameter. The west end of the grave cut abutted the west perimeter wall of Building 3 and cut through the small partition wall F.161.

Feature 151: An adult female skeleton (2231) (see Figures 14.4, 14.5) was deposited in a rectangular grave pit (2211), whose west end cut into the west wall F.1020 of Space 88. The grave pit was excavated from the surface to a depth of 0.30 m. A large rock (2212.X4) ca. 0.30 × 0.30 m was placed at the foot of the grave. Grave goods included a small glass vial (2212.X1) and a stone disk (2212.X3) 2 cm in diameter (see Figures 14.6, 14.7). A bone ring fragment found in the burial fill (2212.X2) was brought in by animal activity. A compacted mud layer, possibly from water seepage into the coffin, lay below the skeleton. Iron nails around the periphery indicated the presence of a coffin. In the nearby unit in S.88 (2251), phalange bones were found, transported from burial F.151 by animal activity.

Feature 152: A juvenile skeleton (2232) (see Figures 14.8, 14.9) was deposited in a curving rectangular pit (2225) dug entirely within the south perimeter wall (F.763) of Building 3 and the north wall (F.1006) of Space 89. The grave was excavated from the surface to a depth of 0.35 m, and its fill (2226) contained numerous grave goods, including a small glass vial (unguentarium) (2226.X1) identical in shape, size, and material to that placed in F.151, two copper beads (2226.X2), and two long sections of broken bone needles (2226.X3) (see Figures 14.6, 14.7). A compacted mud layer, possibly from water seepage into the coffin, lay below the skeleton. The traces of the coffin were iron nails, which surrounded the skeleton; some of them represented top nails and some bottom ones.

Feature 153: An adolescent female skeleton (2245) was deposited in a rectangular pit (2236) in the northern part of Space 86, where its west end cut the small internal wall F.160 (see Figures 14.10, 14.11). The grave was slightly east/northeast–west/northwest of the true east–west orientation of the other graves. It was excavated from ca. 5 cm below the scraped surface to a depth of 0.40 m. This grave also cut through the remains of the collapsed Neolithic roof, which could be seen clearly in its south profile (Figure 5.92). The grave contained a terracotta unguentarium measuring ca. 0.25 m in height (2237.X1), and a small ceramic lamp (2237.X2) (see Figures 14.12, 14.13).

Feature 154: An adult male skeleton (2244) (see Figures 14.15, 14.16) was deposited in a deep rectangular grave pit (2234) that was cut through the center of Space 86, abutting the collapsed remains of the screen wall at its west end. No grave goods were deposited with the skeleton lying deep at the base of the grave pit, which showed signs of postdepositional disturbances and displacement. It had subsided below the base of the cut which, for that reason, was not flat bottomed. The burial pit was deeper than the other graves and filled with a compact matrix (2235) that did not seem characteristic of burial fill. That being the case, during its excavation there was a nagging question of whether it was a grave at all—until the skeleton was found.

Feature 158: This was an extended burial of a mature adult male (2265) buried very close to the surface and thus exposed to considerable weathering. It was located at the eastern end of Space 89, close to its east wall (F.1016) (see Figures 14.17, 14.18). Its grave pit was dug (2264) in a north–south direction—that is, at exactly right angles to the other Late Roman burials excavated in the BACH Area, possibly reflecting the pre- (or non-) Christian nature of this grave. The rich, well-preserved collection of grave goods of F.158—including a ceramic flagon (2263.X1), a red terracotta bowl of terra sigillata style (2263.X4), a clay lamp (2263.X2), and a small dark brown cup (2263.X3)—were also unusually placed, at the back of the head (see Figure 14.13, 14.19).

Spaces 87, 88, and 89

The three rooms of Spaces 87, 88, and 89 were constructed in association with Building 3 and were at least partially contemporary with one another and with Building 3 (see Figure 4.1). The rooms would also have been contemporaneous with the unexcavated building (Spaces 95 and 99) located to their south. These relationships are based on the construction of their walls (Figure 5.100) and other direct evidence (discussed in Chapters 4, 6).

At the onset of the BACH excavation, Spaces 87, 88, and 89 seemed to be more similar than they actually proved to be. They were similar in size, except that Space 87 was longer than the other two, but in function they differed considerably. Space 87 turned out to be a small room that housed the inventory of a large house; the room extended outside the BACH excavation area southward and westward. Its walls were intensely plastered, and painted. Of all three spaces, it had the most massive platform, which covered

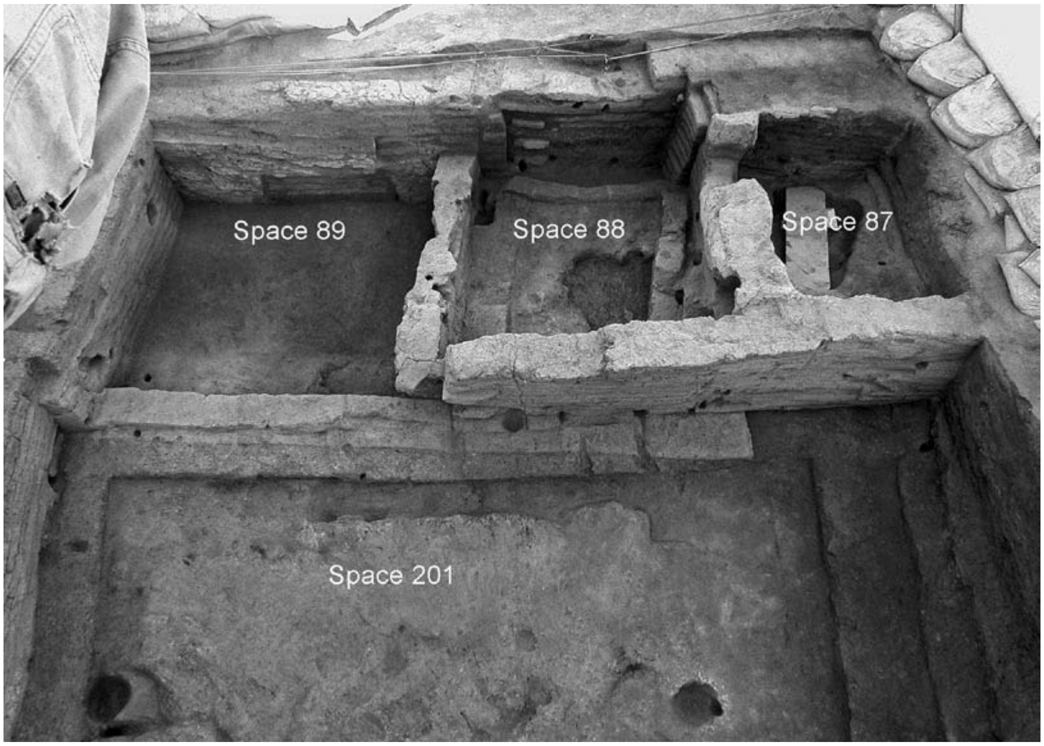


Figure 5.100. Walls of Spaces 87, 88, and 89 and the south wall of Building 3, looking south.

nearly the whole area of the room and contained numerous burials. Space 88, by contrast, was utilized as a production area; numerous grinding tools were unearthed there. Space 89 differed from both in featuring neither production nor residential activities. It contained instead a massive infill that provided the matrix of several redeposited and damaged installations of decorative and symbolic character.

It was impossible to demonstrate any direct communication between the three rooms, since no access hole was recovered.

The Walls of Spaces 87, 88, and 89

Spaces 87, 88, and 89 were defined by the following perimeter walls (see Figure 4.1): the double wall (F.1026/ F.1006) between Building 3 and Spaces 87, 88, and 89; the double walls (F.1024/ F.1019/ F.761 and F.1022/ F.1021) to the south; the partition wall (F.1020) between Spaces 87 and 88; the double walls (F.163 and F.1017) between Spaces 88 and 89; and the eastern double wall of Space 89 (F.1016 and F.1018).

All four walls of Space 88 were bonded together, as were the west, south, and east walls of Space 89 (see Figure 4.17). The gap between the abutting walls of Building 3 to the north and Spaces 87, 88, and 89 to the south was 0.2 m wide. The fill within the gap had been compacted at the time of construction; it was not filled by a gradual accumulation of debris through time, as has often been seen in narrow gaps between abutting buildings at Çatalhöyük. The double walls to the south of Spaces 87, 88, and 89 were also separated by a wide layer of midden-derived mortar, ranging in thickness from 0.15 to 0.25 m. Walls F.1021 and F.1022—the south double wall—were built in continuation with (and possibly contemporary with) wall F.1018. They were not excavated and thus will not be included here.

The phasing of Spaces 87, 88, and 89 has been defined differently from that of Building 3 (Table 5.1; Figure 5.101 [on-line]). There were no in situ ovens or hearths in any of the three rooms that could have been used to define the phases, as was the case with Building 3. Because these were "specialized use" rooms, it was necessary to find other means for phasing their contents. For instance, the introduction of new floors, especially if accompanied by contemporary features, was adopted as an indicator of change into a new phase. This method was used in Space 87, where the introduction of new floors was accompanied by new burials. In the case of Space 88, where new floors were difficult to distinguish, it was rather the features that indicated the difference between phases. In Space 89, no phasing was undertaken, since all but the very top layer comprised redeposited construction material and a few damaged features that had been thrown in.

Space 87

The somewhat irregular rectangular-shaped Space 87 was only partially excavated, since the limits and foundations of the shelter that protected the excavation area prevented its complete excavation. The entire Space 87 measured 1.70 m north–south × ca. 4.0 m east–west (a total of ca.7.16 m^2). Nearly one-half of the room was excavated by the BACH project, and this portion measured 1.68 m north–south × 1.40 m east–west. Because of its incomplete excavation, the walls of Space 87 were not examined in detail, unlike those of Spaces 88 and 89. The wall plaster was left in situ, and consequently the bricks and mortar that were used in the walls remain unexamined. In addition, we did not reach the earliest floors in the excavated portion of Space 87.

Toward Building 3, Space 87 was bounded by a double north wall (F.1026 and F.763), and toward Space 88 by a single east wall (F.1020). The double south wall (F.1024 and F.1022) separated it from an unexcavated building in Space 95. Based on surface scraping, Space 87 was bounded by a single west wall, probably a partition wall. The party or shared wall between Space 87 and Space 88 (F.1020) contained a niche (F.627) that was accessed from Space 88. There is a strong possibility, however, that an opening in the single wall F.1020 existed between Spaces 87 and 88, but no evidence of it was preserved in this wall, which was both heavily truncated and later damaged by a late Roman burial.

The exposed north, south, and east walls were heavily plastered with multiple white clay coats. The thickest and best preserved—though heavily dehydrated—plaster was found in the northeast corner (Figure 5.102), where its thickness measured 0.05–0.06 m, representing the thickest wall plasters of all the buildings of the BACH Area. The moist south wall plaster preserved less well. The dampness of the south wall may have marked the original position of the roof edge. The east and south walls both contained panels with more than one red painted plaster sequence. As in Building 3, the latest wall plaster coat was not painted. The painted wall portions started very low on the wall, just above the room floor. The red pigment used in the painting was of the same red color (10YR 5/6) as was used in wall F.160 in Building 3. It is interesting to note that in Space 87, it was the east and south walls that were painted, whereas in Building 3 it was the north and east walls; moreover, the occurrence of painting on the south wall was atypical for Çatalhöyük. The paintings seem to have been monochrome red ocher wall panels or even one continuous panel, which started on the east wall and extended across the south wall. The most heavily painted plasters seem to have been in the southeast corner of the room, which could be an indication of the existence of one long panel running from the east wall onto the south wall. Such examples were known from shrine VII.14 (Mellaart 1967).

Figure 5.102. Photograph showing the thickness of the combined layers of wall plaster in the northeast corner of Space 87.

Scattered human bones were excavated throughout the room infill but mostly in the central and southern areas. In the 2002 season, the first burials were encountered in Space 87. Nine complete skeletons were revealed by the BACH excavation of Space 87 in at least five burial events (see Figures 13.14, 13.15). Seven of these were excavated, and two partly exposed skeletons were left in situ. We removed a minimum of five floor levels in Space 87, which were not always apparent during the excavation. Some of the floors were made of thin plaster coats that were difficult to identify in time to record them completely. Other floors were massive and made of thick packing and plaster layers. These were the floors that contained the burial cuts described in this report. It is quite likely that the thin plaster floors were those applied after the burials were interred, and as such they would have served the function of the burial lids, known from Building 3.

Room Infill (Phase S87.3)

The top infill in Space 87 was a mixed deposit that comprised dry, crumbly, and light colored fragments of building materials (3549), and a slightly deeper, dark yellow-brown deposit with inclusions of burned clay, charcoal, and plaster fragments (3560). These were mixed remains of building materials from the collapsed upper portion of the room that were excavated in several arbitrary 0.05-m-thick spits (6145, 6178, 6172). A continuous line of burned debris constantly occurred in the southern part of the infill, especially along the south wall of Space 87. As we excavated deeper, the burned remains increased in quantity and became richer in charcoal and burned fragments of plaster, as well as bone, stone (Figure 20.2c), and obsidian (3560.X1–X18). There was a clear separation across Space 87 along an east–west axis between dry and moist deposits, which possibly represented the line of roof collapse.

A large cut was made through the southwest part of the room fill of Space 87. Inside the cut, remains of a redeposited, fragmented fire installation (6217, 6234) (Figure 5.103) were found, along with two human bones that had been heavily affected by fire action. These latter included a mandible that was partially pushed inside the south wall (F.1024), and a long bone (3560.X2, X4). In addition, a small lump of red ocher was excavated in the cut near the bones.

Animal disturbances were evident across the entire Space 87 but were most prominent along its eastern wall, especially in the northeast corner. Abundant artifacts were unearthed in the infill of Space 87: a bone point, a flint blade, a pottery fragment, and a bead, along with burned bone and stone, and a human tooth (3549); a nearly complete bone point, a carved bone tool, a bone polisher for ceramics, polished stones, a clay ball, an obsidian tool, and sheep/goat and cattle horn cores (3560); numerous animal bones, including a gray heron bone and fragmented scapula (6145); human bones and a wolf bone (6178); and sheep/goat bones and part of a crow's wing (6172) (Chapter 8). The fill contained fragments of brick with plaster attached that must have come from the upper parts of the walls, as well as a chunk of roof, 0.45 × 0.30 m in size (3556) (Figure 5.104). When the roof pieces from Space 87 and Building 3 were compared, the thickness of the stripy roof layers and their colors showed that these fragments could have belonged to the same roof.

The room infill that was mixed with firmly packed occupation debris on the uppermost (latest) floor of Space 87 was excavated in a series of units. Along the western margin of the floor, a raised lip running in a north–south direction separated the higher floor on the eastern side from the lower floor that extended to the west. Given that the western half of Space 87 has not yet been excavated, it seems reasonable to interpret the lip as a platform edge. The platform (F.638) started at the east wall of Space 87 and extended to its north and south walls, and westward to the lip, covering an area of 1.7 m north–south × 1.3 m east–west (a total of 2.21 m^2). The floor of the platform that covered almost the entire excavated area of Space 87 was fairly level, although the underlying floor sloped from a high point in the north to its lowest point in the south.

Figure 5.103. Redeposited fire installation inside a cut within the infill of Space 87.

Figure 5.104. Fragments of roof remains found in the infill of Space 87.

It was frequently difficult to separate the mixed fill deposits from the floor surface below. The former comprised fragments of bricks, burned oven material, and fragments of animal and human bone, as well as a considerable amount of phytoliths (6241) (see Chapter 8). Large clumps of burned mud brick, two small areas with red ocher fragments, and further sizable quantities of phytoliths and shell were lying on the latest room floor itself (6243, 6249) (see Chapter 11). The same deposit (6247) contained two human bones—a long bone (6247.X2) and mandible (6247.X1)—associated with burned mud brick that lay directly against the bone (see Chapter 13). The scattered human bones in the mixed fill were encountered mostly in the central area of Space 87, and they came from a secondary burial cut that disturbed deeper, earlier burials.

Space 87: Floors 1 and 2 (from the Top) (Phase S87.2)

The two floors were excavated as one before it became apparent that floor 1 represented a thin plaster coat applied over floor 2; it was from the latter that the latest burial cuts were dug. We first reached the plaster coat of floor 2 (8467) in the northeast corner of Space 87, where it was the highest in elevation, and from where it sloped steeply down toward the south. Its packing layer was used to level the ground for the plaster coat.

The top floor surface (floor 1) in the very northeast corner of Space 87, which coincided with several animal holes, was lightly scorched. The blackish, scorched floor plaster contrasted sharply with the surrounding clean, white plaster and was unusual, considering that there were no traces of any in situ fire installation in Space 87. The scorching of the floor surface could have been accomplished by intensely heated objects being applied to or placed on the floor, rather than by an open fire. Because only burials were present in this part of the room, it is possible that the heating, as well as the floor scorching, was associated with the burial ceremony.

In floor 2, we excavated three burial cuts (F.1002, F.1005, F.1007), which partly overlapped (see Figure 13.14). They all belonged to the same floor level and presumably the same phase, which made the later cut's disturbance of the burials unusual. Unlike in Building 3, no burial lids accompanied these cuts. All the skeletons were buried in a flexed position. The latest one (F.1002), located in the center of the platform, had the highest positioned skeleton; skeleton F.1005 was placed to its east, and F.1007 to its west (see Figure 13.15). The deepest of the three burial cuts, F.1007 was clearly defined in the underlying floor, which it had disturbed. Burial F.1007 was disturbed by the later burial cut of F.1005 and perhaps by the southern edge of the latest cut of F.1002.

The large burial cut (8383) for F.1002, which measured 0.80 m east–west × 0.88 m north–south, was sealed with redeposited building material, including brick, burned oven remains, and a large quantity of charcoal. It contained two carefully articulated individuals (8409, 8410), but they were not buried at the same time. During the burying process of the second individual (8410), they pushed the skeleton of the first one (8409) to the side. The earlier skeleton (8409) was of a young individual (13–15 years old) (Figure 5.105). The later skeleton (8410) was an adult male (44–50 years) (see more detailed description in Chapter 13).

In the fill (8385) immediately above the burial cut in which these two skeletons (8409, 8410) were interred, an elaborate, highly polished bone belt hook and its eye or loop (8385.X1) were unearthed (Figure 15.14). Given that the adolescent (8409) had been disturbed, it is likely that the bone artifacts that were also in a disturbed position originally belonged to this individual rather than to the individual (8410) who had just been buried (Chapter 13). The two bone tools were used together as a belt hook (Chapter 15). In addition, the fill (8385) revealed two unbroken stone beads, a small, complete, white marble ring bead, and a complete ring bead made of schist. These, too, perhaps related to the adolescent. Placement of such items in the fill instead of on the body may have been deliberate (Chapter 21).

Once the fill of this burial had been emptied, we were able to partially define a structural element (8403), whose nature will remain unclear until the overlying platform (F.638) can be revealed by future excavations. In the small window available to us, it appeared as a white plaster ledge, 0.15 m wide × ca. 0.14 m high, with very sharp edges running in a straight line in an east–west direction. It resembled the edge of a platform, but it would have been perpendicular to the edge of platform F.638, which seems unusual.

A smaller burial cut (F.1005) near the south wall of Space 87 covered an area 0.61 m east–west × 0.42 m north–south (see Figure 13.15d). In the brown soil fill (8421), a juvenile skeleton aged between 8 and 9 years old (8423) and a skull (8425) belonging to the disturbed skeleton (8490; see below) were excavated (Chapter 13). The burial fill was also rich in bird bones and artifacts, including a fragmented pink limestone ring bead and a bird bone bead (Chapter 21).

Feature 1007 was a burial cut earlier than both F.1005 and F.1002 (Figure 13.15c). Its fill (8480) covered the skeletons of an infant (4–6 months of age) (8494) and an adolescent (13–15 years old) (8490) of indeterminate sex (see Figures 13.19, 13.20). No grave goods were found in this burial. A cranium was also located within this burial fill; at first we thought it belonged to a new individual and so

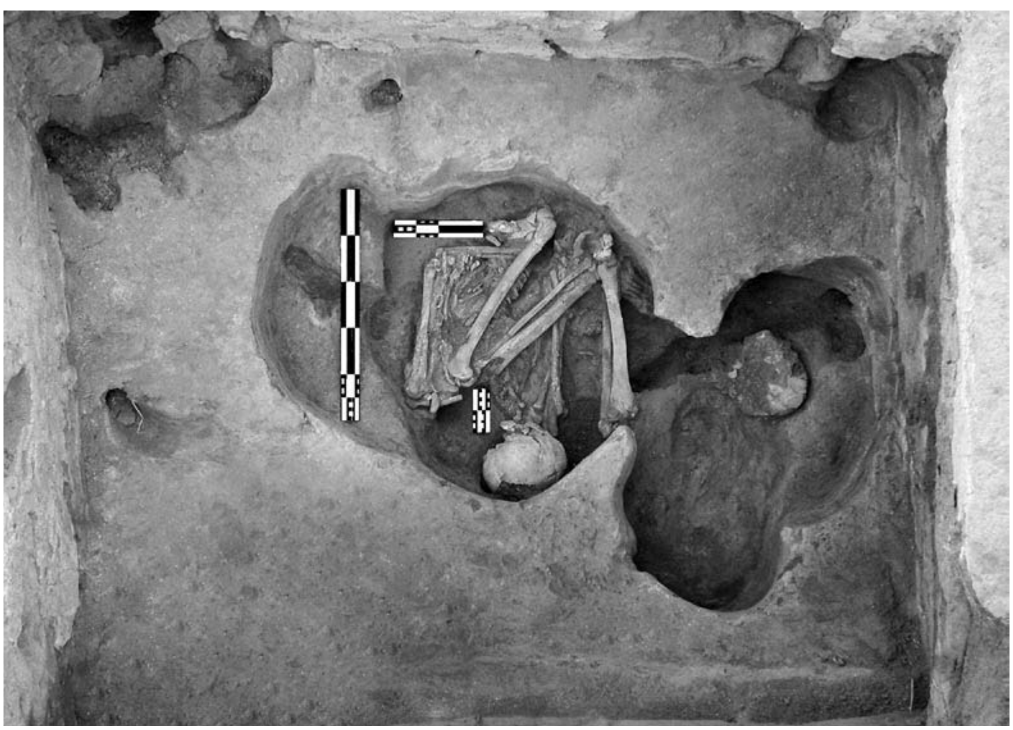


Figure 5.105. Burial (F.1002, units 8409, 8410) of an adolescent and an adult male in Space 87 in Phase S87.2, looking west.

we gave it the number 8503. As the excavation proceeded, however, it became apparent that skull 8503 belonged to the postcranial remains of skeleton 8494 (see below, and Chapter 13). Phytolith analyses show that in F.1007, both bark and dicot leaves were abundant, as were reeds and sedges (Chapter 11).

It is important to note that all of these skeletons were buried close together vertically, with evidence indicating a short time period of interment in between the individual burials. The sequence of burial activities has been constructed in detail by Hager and Boz (Chapter 13).

Floors 3 and 4 (Phase S87.1)

Floor 3 (8556) on platform F.638 comprised a thin plaster coat overlying floor 4 (8566), which was made of massive, greasy, white-grayish clay. Three more burial cuts (F.1012, F.1013, F.1014), which partly overlapped with the previously described burials, were cut from this floor.

Feature 1012 was located in the southeast quadrant of Space 87 (see Figures 13.14b, 13.18). The burial cut (8576) was clearly evident in the floor plaster (8575). In the burial infill (8577), a tightly flexed skeleton of a 44- to 50-year-old female (8584) was placed in a north–south direction lying on its back (Chapter 13).

Slightly deeper and located in the southwest quadrant of Space 87, F.1013 was a burial cut (8588) of triangular shape and evident as a thin break in the plaster floor (see Figures 13.14b, 13.17). The scattered bones of the skeleton (8587) of a neonate were found under the later adolescent skeleton (F.1007, 8490) and at the same level as the skeleton (8584) in F.1012 to its east (Chapter 13). No grave goods were found, but yellow ocher was associated with the neonate cranium.

Feature 1014 was the deepest of the three sets of burials (see Figure 13.14a). Its skeleton (8598) was directly overlain by the earlier skeleton 8584 (F.1012), and it appeared to be within the burial cut of F.1013. However, burial F.1014 most likely belongs to the next floor down, which would be, in our sequence, floor number 5. The skeleton of a neonate/infant (8596) was found in a lidded basket (Figure 5.106; see also Figure 13.16). The bones were lying above and within the basket, which was present in the form of phytoliths. The basket (8597) was in relatively good condition, although it was poorly preserved in its northern portion where the majority of the infant bones were. Both of these burials (8598, 8596) were found at approximately the same level and represented the earliest burial so far found in Space 87; neither was disturbed by the later burials in Space 87. Both of them were only partially investigated and remained in situ. The basket and the infant bones (8596) were stabilized, and the area was filled with soft soil, awaiting future excavation of this building.

Figure 5.106. Phytoliths interpreted as the remains of a basket (8596) containing baby bones within burial set F.1014 in Space 87, Phase S87.1.

Space 88

Smaller than the two bordering rooms, Space 88 (1.79–1.81 m north–south × 1.49–1.57 m east–west, or 2.8 m^2) was bounded by a double wall (F.1026) to the north, a double wall (F.163) to the east, another double wall (F.1019) in the south, and a single west wall F.1020 (see Figure 4.1). The room was constructed on the walls of an earlier building (Figure 5.107) whose infill we partially excavated (8638, 8643, 8632, 8628, 8620) in order to define the walls of Space 88.

Interlaced (bonded) bricks of walls F.163, F.1026, F.1019, and F.1024 indicated that these were built and used at the same time. It is also plausible that Space 88 and Space 87 may have been one room for a period of time, before they were partitioned. The south walls of Spaces 88 and 87 (F.1019, F.1024) comprised a single continuous wall, evidenced by the bricks and mortar that ran uninterrupted inside the walls. The two north walls, which demarcated Space 88 and Space 87, also comprised a single continuous wall, F.1026. Neither F.1024 nor F.1026 has yet been lifted, due to the incomplete excavation of Space 87. The east, south, and west walls of Space 88 rested partially or completely on the much narrower walls of an earlier structure (Figure 5.107). The bricks in the earlier walls were constructed of black clay and were quite different from the bricks in the walls of Space 88.

All the walls of Space 88 were plastered. Multiple red-painted coats were found on the north wall, but in a bad state of preservation. The plaster on the south wall was preserved only in a small portion in the southwest corner of the building.

The uppermost infill in Space 88 comprised fragments of brick that were considerably eroded from lengthy exposure and the effect of the Roman burial cut (F.151) that was made across the entire room (see Phase B3.5B). The mixed room infill (ca. 0.30 m thick) that was deposited on

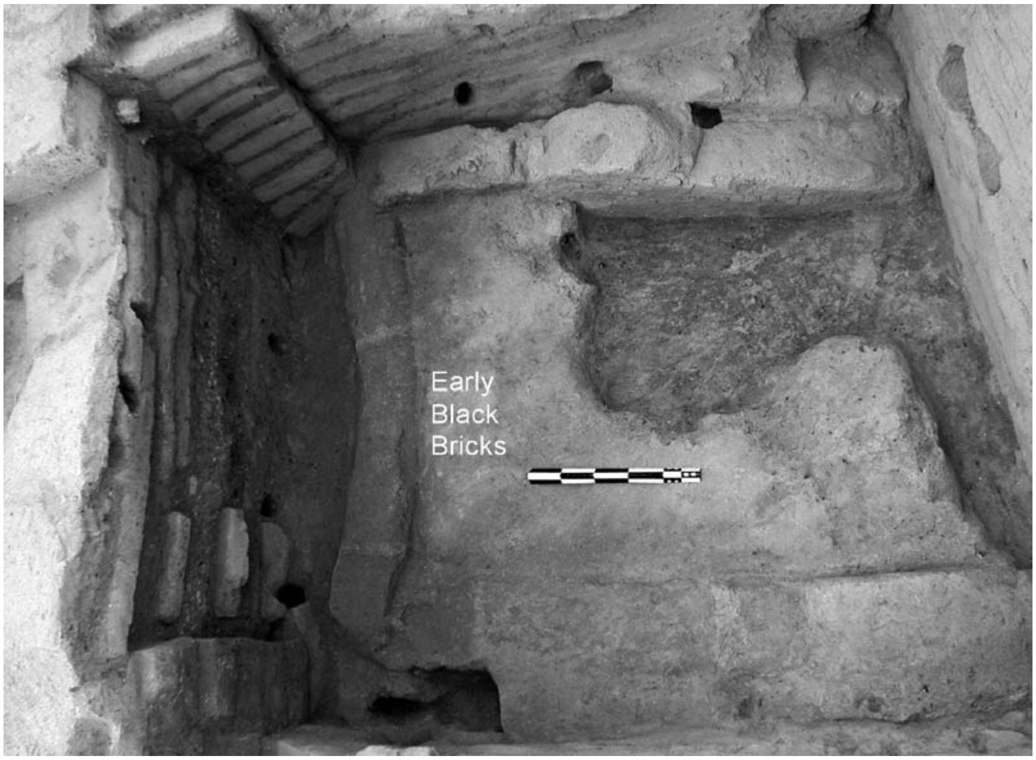


Figure 5.107. Older walls made of black clay bricks at the bottom of Space 88.

the latest room floor comprised a very rich deposit of stone artifacts and large animal bone, interpreted here as a "closure deposit." In 1998, we reached the top floor at ca. 0.50 m below the surface (Figure 5.108 [on-line]). The latest floors that appeared first in the northwest part of Space 88 were thin and fragile. Further excavations revealed numerous floor coats under the top floor, consisting of unplastered clay overlain by thin black layers of occupation debris. All the floors comprised orange-brown, soft and greasy soil that was characteristic for this room. They gave an impression of heavily used floors, which had to be renewed frequently.

The earliest floor in Space 88 was located at a depth of ca. 0.60 m. Another special deposit that included animal skulls, 37 shell beads, and other artifacts was uncovered on the earliest floor of the room. The features of this room were constructed of the same soft, orange clay, and they included storage facilities (bins and niches) and production surfaces (working platform, grinding kit). Space 88 appeared to have been the main locus of intensive production activities in the BACH Area.

The Walls of Space 88

The east wall F.163 (the western of the double walls between Spaces 88 and 89) was made of 10 rows of brown sandy clay brick and mortar in a slight southward slope (Figure 5.109). The wall, measuring 2.15 m long and 0.28–0.30 m wide, was built on top of an earlier wall whose bricks were narrower and made of black clay. The east wall's regular courses of bricks and mortar were damaged by the Roman burial F.151 (Phase B3.5B). The bricks, ranging in length from 0.83 to 0.86 m and measuring 0.36 m wide and 0.07 m thick, resembled those in the north and south walls of Space 88 (2279, 3581). In the southern portion of F.163, the bricks, having been exposed to moisture, appeared orangish in color, softer, darker, and greasier, and with abundant salt inclusions. The color of the bricks in the northern (drier) half of the wall was light brown, nearly beige. The mortar comprised midden deposits with inclusions of charcoal, gypsum, salt, animal bones, stones, and burned clay. The color of the mortar also varied according to moisture content: in the northern part of the wall, it was light gray, whereas it was black in the southern half. The wall bricks of the top three rows in the northernmost portion of the wall were wider, measuring 0.50 m. The bottom row of bricks in F.163 comprised two elongated bricks overlying the earlier black bricks. A thin layer of packing was encountered between the double walls F.163 and F.1017, which is described under the discussion of Space 89.

The west wall (F.1020), a party/shared wall between Space 88 and Space 87 was exposed but remains largely unexcavated. Its plastered eastern face (in Space 88) was

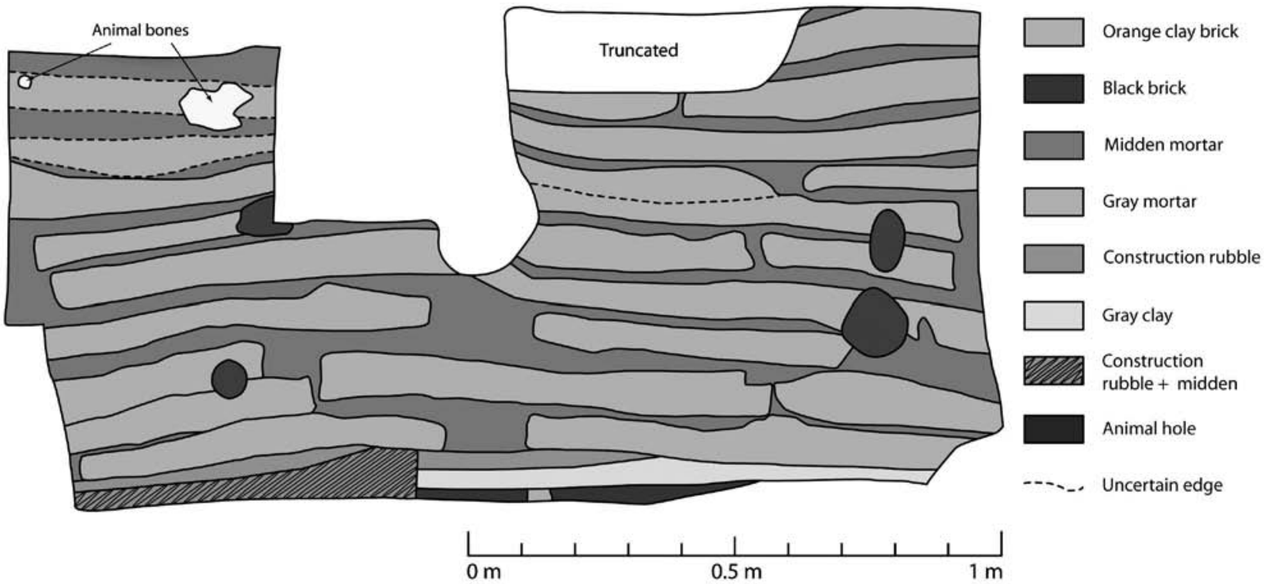


Figure 5.109. Drawing of the east wall (F.163) of Space 88.

Figure 5.110. Photograph of the west wall (F.1020) between Spaces 88 and 87.

not painted, in contrast to its western painted face (in Space 87) (Figure 5.110).

The top course of bricks and mortar in the north wall (F.1026, shared with Space 89) was considerably eroded (8657). The bricks were made of sandy clay of light brown color, with mortar of the same color. The mortar was distinguishable only because it contained inclusions of charcoal, ash, and salts.

The south wall of Space 88 (F.1019) measured 1.56 m east west × 0.30 m north–south, and stood to a height of 0.91 m, with 10 rows of bricks and mortar (Figure 5.111). The bricks were made of reddish to light brown, sandy clay. They were manufactured to an average length of 0.85 m, with a thickness from 0.04 m to 0.08 m. The mortar was made of sticky soil from midden deposits, like all the other walls in Space 88. The south wall was an exception

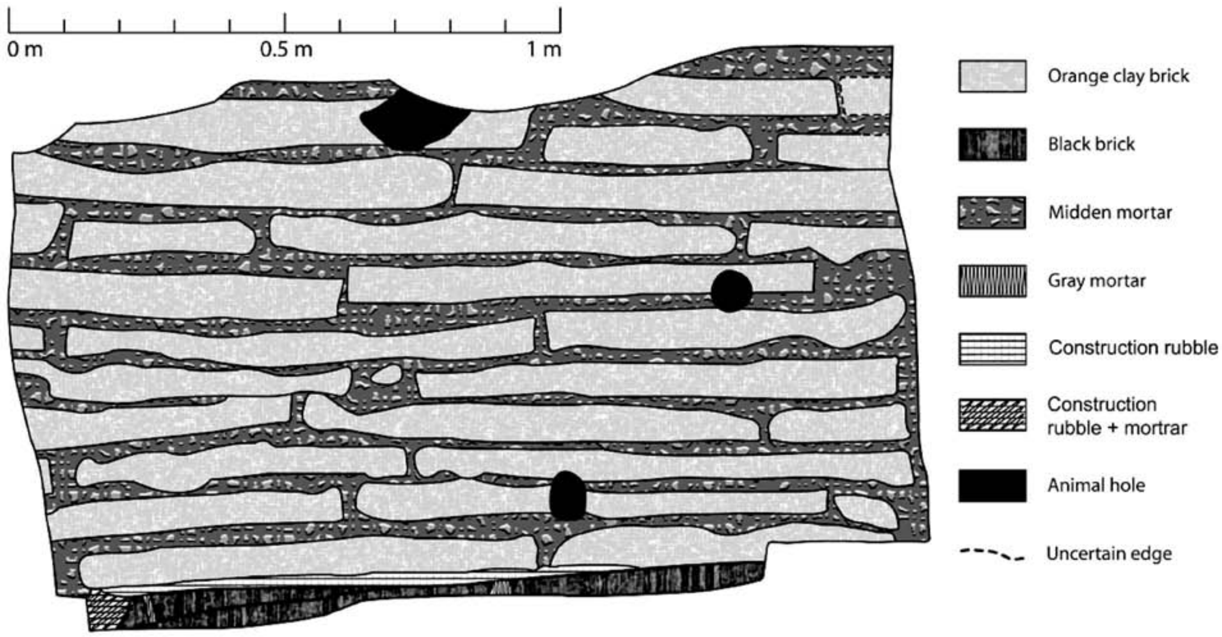


Figure 5.111. Drawing of the south wall (F.1019) of Space 88.

in showing more bricks with signs of moisture in their greasy texture and dark color. As mentioned above, the south wall was contemporary with walls F.163 and F.1020; and it was constructed as a continuous wall with F.1024 (the south wall of Space 87). It rested on an earlier wall (8643) made of black bricks that had a very different texture from those of wall F.1019 (Figure 5.107). Between walls F.1019 and F.1022 to its south, a gap 8–15 cm wide was packed with brown, sticky clay mixed with a large amount of the remains of interior building materials that had been crushed to less than 10 cm^3, together with numerous fragments of thick, multilayered wall plaster (some with red paint on them), large quantities of animal bone, and ash and charcoal.

The north wall face was plastered, but its traces and a patch of red painted plaster (2268) were preserved only above and to the west of platform F.165. It was apparent that the red paint had been applied in layers and that a minimum of three such layers existed. The east wall preserved even less of the plastered face, and the south wall showed no trace of plaster.

Phase S88.5: Room Infill

Above the latest floor, which gently sloped southward, the room infill of Space 88 comprised large patches of different colored soils mixed with wall plaster and other construction material. The soils were all within similar color ranges (light brown-gray, pale brown, light yellow-brown, and yellow-brown, ranging from 10YR 5/4, 6/2, 6/4, 7/2, to 7/3). The uppermost fill incorporated ca. 0.15 m of ashy deposit, which possibly represented an ash disposal area that was used for a time after the abandonment of the room. A fragment of human skull and a finger bone were found in the southeast corner of Space 88, which was close to where more human bones were discovered in Space 89. It is feasible that the human bones in Space 88 were brought in from Space 89 by animal activity. A fragment of non-Neolithic pottery (2266.X10) close to the surface was probably connected to the post-Neolithic burial (F.151) that cut through Space 88.

A cluster of artifacts that we refer to as a "special deposit" or "closure deposit" was unearthed in the room infill, resting on the latest floor of Space 88 (see Chapter 4). Concentrated in the western half of the room, the deposit stretched along the west wall of Space 88 and was delimited on its eastern side by the earlier platform F.165. This means that the deposit was slotted into the area between the platform and the niche that was inset in the west wall of Space 88, the area that coincided with an earlier bin/basin (F.1003). It is likely that bin/basin F.1003 had been in use during the latest phase of the room but that it had been truncated before the "closure deposit" was set down at the time of the abandonment ritual. The deposit comprised complete and fragmented grindstones (2266.X1–X9, X11–X14, X16, X19) that were partially burned, and pottery fragments (2266. X10, X15, X17, X18), all of which were surrounded with an ashy matrix that included large patches of plaster and large charcoal fragments (Figure 5.112; see also Figure 4.9). These artifacts were overlying a

Figure 5.112. Cluster deposit (2266, 2268, 2289) in Space 88.

bricky infill mixed with layers of ash (2268), numerous fragments of heavily burned bricks, and more grindstones. Unit 2268 itself overlay large fragments of collapsed wall plaster (2288) spread across Space 88 but concentrated in its northwest quadrant. These plaster "sheets" were very thick and contained many coats of application. Underneath the plaster sheets, we came across the bricky fill (2289, 2290, 2292), which partly surrounded another bone cluster, underneath which the latest floor in Space 88 was discovered.

In the middle of the impressive collection of objects that were left on the latest room floor was a grindstone surrounded with numerous handstones (2289.X10). Next to the west edge of the grindstone there was an antler (2289.X2), and immediately to its west were a cattle skull (2289.X3) and a large scapula (2289.X5). Aligned with the cattle skull to its north, there was another scapula (2289.X9), and in the northwest corner a fragmented animal skull (2289.X8). Yet another antler (2289.X6) was placed on an alignment with the antler (2289.X2) to its northeast (see Figure 4.9). The distribution of these bones seemed to be closely associated with a layer of phytoliths (above and around the bone cluster) that belonged to giant reeds (Christine Hastorf, personal communication).

This deposit on the latest floor of Space 88 had many similarities with Cluster 1 in Building 3, which was located immediately on the other (north) side of the double wall (F.1026/763) that separated the two structures. The Space 88 deposit differed from Cluster 1 in containing also a large series of stone tools. As with Cluster 1, we have interpreted the finds in Space 88 and their specific matrix as a "closure deposit."

Phase S88.4 (the Top Floors)

Phase 4 in Space 88 was represented by the latest series of floors (lifted as floor 1). A working platform, F.165 (6244), was constructed on the floor in the central area of the north wall. It appears that the western edge of the platform was built flush with the eastern wall of an earlier bin/basin (F.1003). It is likely that these two features, which were constructed in different phases, continued to be in use alongside each other until the abandonment of Space 88. The platform comprised a plaster floor and a layer of packing (0.07–0.15 m thick) made of loose, light brown soil in which lenses of salt indicated a possible presence of organic materials (Figure 5.113). It had undergone a minimum of two major phases of reconstruction. Its initial size was only half of its later size, which measured 0.70 m east–west × 0.80 m north–south (6244). In its later phase, the north–south-aligned platform attached to the north and east walls was expanded southward. In the platform packing of its earlier phase (6250), a distinct group of finds was located, including antler and bone tools (Chapter 15), an obsidian tool (6250.X3), and several chunks of ocher (6250.S3–S5).

Phase S88.3

The next floor series (floors 2 and 3) belonged to Phase S88.3. A grinding fixture (F.610) consisted of a large grindstone set into an oval depression that was cut through a 10-cm-thick floor deposit and was fixed to it by clay mortar (Figure 5.114; see also Figure 20.1; Chapter 20). The oval cut (6154) made in the room floors measured 0.43 m in radius and was coated with yellowish packing clay (6153)

Figure 5.113. Late platform F.165 in Space 88, Phase S88.4.

that functioned as mortar to keep the stone in place. It is significant that this grinding fixture (F.610) was overlain by a later redeposited grindstone (2289.X10), which was mentioned above. On the same floor with the grindstone were plant remains, probably nuts (3506), more handstones (3506.X2–X5), and a chunk of pigment near a bone spatula (3506.X1). None of the red ocher found in Space 88 could be directly associated with the grinding kit.

Due to the softness of the construction clay and the wear and tear of the floors in Space 88, it was hard to be certain about the phasing of the features. However, it seems that the grinding set F.610 might have been in use until the abandonment of the room, alongside platform F.165 and bin/basin F.1003.

Also in this phase, a niche (F.627) (6225) was constructed in the northwest corner of wall F.1020 (Figure 5.115). The niche, which measured 0.38 × 0.45 × 0.45 m, was first recognized when the room floor (6199) was removed. Inside the niche, a bricky floor-like surface was revealed; it had a beige plaster coat, and the smooth ceiling of the niche was visible.

The southern half of Space 88 contained a number of storage bins, preserved as truncated fragments. The curb F.166 (6245) was recognized as a possible truncated bin, although it was not connected to any of the surrounding room walls. This interpretation was strengthened by the orangish, soft and moist clay from which it was constructed, which was very typical for bins in the BACH Area. Feature 166 extended along the south wall of Space 88 for a distance of 0.25 m, at ca. 0.20–0.30 m from the west and east walls. The infill between F.166 and the south wall comprised charcoal, plaster lumps, and burned fragmented grind-

Figure 5.114. Grinding stone F.610, set into an oval depression in the Phase S88.3 floor of Space 88.

Figure 5.115. Niche F.627 constructed at the northern end of the west wall of Space 88 in Phase S88.3.

stones, and was quite different from the infill to its north on top of platform F.165, which comprised bricky fill over black organic material.

Phase S88.2

The next floor down (floor 4) belonged to Phase S88.2. On this floor, a red pigment fragment and several potsherds (X2–X7) were found in the northeast corner. These floors showed several working surfaces that had been mended by frequent application of packing material, which created a patchy floor that we could not separate from its packing below; for this reason, they were excavated together.

In the northwest corner of the floor, a bin/basin (F.1003) (Figure 5.116) was located immediately to the west of platform F.165. Like certain features in Building 3 (F.780, F.171), Feature 1003's interpretation was uncertain, owing to its combination of construction materials as well as its shape. Its oval shape (in plan) and the indication of tall sidewalls pointed toward its interpretation as a bin, whereas the fact that it was plastered all over with white clay suggested a basin. It consisted of a brown clay rim (6240) surrounding a whitish plastered floor (8499). Underneath the rim, the white wall of a basin was visible surrounding an earlier white clay floor (8527). In its center, a layer of burned reddish soil and lenses of ashy deposits were found. Within the bricky soil on top of the basin wall, a micro-mammal skeleton was found (6240.X1). The packing below the earlier bin floor also contained micro-mammal bones, and phytoliths were clearly visible on the surface on which the bin/basin was constructed.

On the eastern side of bin/basin F.1003, in a small depression lined with hard packing (8505), a cluster of bones—interpreted as a "special deposit"—was placed (Chapter 4; see Figure 4.11). This group comprised the bones of a female pig (lower jaw), sheep neck and back remains, and a sheep/goat hyoid (Chapter 8). On top of them, a "necklace" made of 37 marine snails was located. Underneath the necklace was a beak (8505.X9) of a Spoonbill. Some of the bones had been cracked to obtain marrow, while a pattern of burning on other bones pointed to roasting. The pattern of burning made by roasting and the signs of cracking for marrow extraction were exactly the same as on the lower jaw of a female pig found in Space 89 (see Chapter 8). Sheep remains were represented by three articulated neck vertebrae, and two back vertebrae with ribs on top of them. Although the neck vertebrae were in a row, they were not anatomically connected. The two back vertebrae were connected, and the ribs (two left ribs, and two right) were connected to them. There are cut marks on the ribs indicating butchering for meat. The wing of a Little Bittern (8505.X8) was found articulated on the edge of the deposit, right up against the north wall of Space 88 and somewhat separated from the other pile of bones. It was very delicate and must have been deliberately placed, as it would not have survived so well nor remained articulated if it had been deposited in the fill. A few fragments of fish and microfauna were found in the sediment adhering to the bones (Chapter 10). The animal bones were lying on a bed of reeds, as indicated by a layer of phytoliths (8505.S3). As noted above, 37 perforated marine shell beads (8505.X1) were adhering together as though they had been strung together as a necklace; they were placed on top of the bones (Figure 5.117). Under the shells was a red grooved bead perforated through the middle (Chapter 21). Four grindstones (8505.X2–X6), another macrocrystalline stone, and an obsidian flake (8505.X0) were also part of this deposit.

A circular pattern of partially preserved phytoliths indicated that the deposit was initially placed in a basket

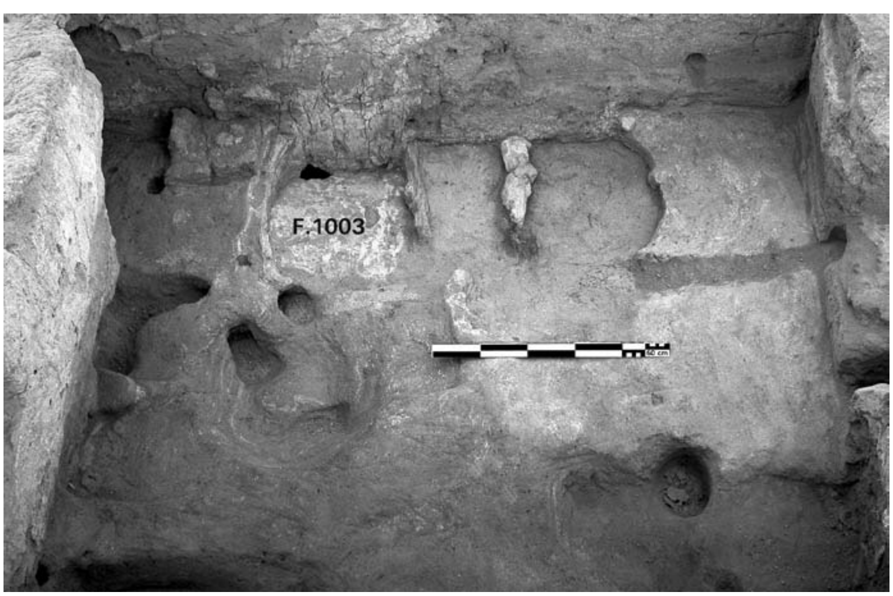


Figure 5.116. Bin/basin F.1003, constructed in the northwest corner of Space 88 in Phase S88.2, showing the depression in the floor made by the later grindstone placement (F.610).

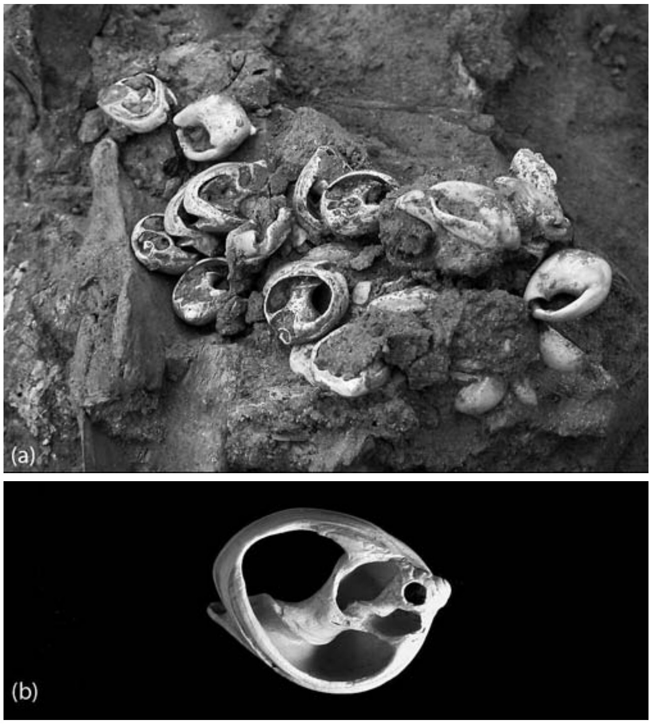


Figure 5.117. (a) Marine shells in the "special deposit" (F.1003) in Space 88; (b) detail of one shell.

before it was set on the reed-covered floor. The deposit was sealed by the layer of packing of the floor (8459) that also overlay a layer of burning with traces of wood (8463) and bits of charcoal in the southern part of Space 88. Several freshwater shells found in this area were probably placed immediately on top of this burned layer, as they were also covered with the packing of the flooring above. The edge of this deposit was clearly visible and differed from the floor (8506) surrounding it.

Phase S88.1 (Lowest/Earliest Floor)

An orange clay bin (F.1015) was constructed on the earliest set of floors (floor 5) in the southwest corner of Space 88, where the room floor sloped sharply southward. The bin, which measured 0.84 m east–west × 0.68 m north–south (8614), was heavily truncated and damaged. Its rectangular base, made of orange, greasy, silty clay, was placed on black midden soil belonging to the structure underneath Space 88. In the middle of Space 88, we noticed traces of pigment on the floor.

The earliest floor packing in Space 88 (8620, 8632) incorporated construction rubble with chunks of scorched clay, bricks, and fragments of plaster and oven floor mixed with midden deposits. The rubble was used for leveling the surface under the earliest floor. In this fill, a flint end scraper, an obsidian arrowhead, two fragmented rings (8632), and a fragmented figurine (8628) were uncovered.

Space 89

The easternmost room of the three small spaces in the BACH Area, Space 89 measured 1.85 m north–south × 2.15 m east–west (a total of 4 m^2) (see Figure 4.1). On its eastern side, it bordered walls F.1016 and F.1018. Beyond that in Space 41, the 1993 scraping plans showed no traces of structures. To its south, Space 89 was delimited by an unexcavated structure in Space 99. In the north and west, it shared walls with Building 3 and Space 88.

Space 89 differed from other spaces in the BACH Area by containing deposits that were neither of a domestic nature (like those in Building 3) nor the result of production (like those in Space 88). The fill of Space 89 was deposited as two separate episodes that were very different from each other and might have been separated by quite a long time. The later thin layer of structured deposits (Phase S89.2) occurred at the very top of the infill (Figure 5.118 [online]). A matrix of burned timber contained a dense concentration of finds comprising a probable wall installation that was highly symbolic in nature and is usually linked to ceremonial behavior. The Late Roman (Phase B3.5B) burial F.158 was located close to the surface within this late infill. It contained four exquisite pottery vessels (see Chapter 14).

This upper room fill contrasted remarkably with the much thicker, lower, and earlier infill (Phase S89.1), which comprised unburned, massive, and often amorphous deposits of building materials and features that had been dumped in. The excavation of the room fill was stopped when we encountered deposits belonging to a structure beneath Space 89 (Space 214). Thus, no room floor of the kind known from other structures was detected in Space 89. Some fragmentary surfaces (3548, 3580), which may possibly have represented a heavily damaged floor, appeared immediately below the remains of the burned timber and associated artifacts.

The Walls of Space 89

The walls F.1006 and F.1026 comprised one continuous, long wall demarcating Spaces 87, 88, and 89 from Building 3. An unusual element of wall F.1006 was its irregularity at its meeting point with wall F.1026 in the center of the northern perimeter of Space 89. At this point, the wall was constructed with loosely packed bricks of variable size, which did not overlap properly (Figure 5.119), lying over packing (0.7 × 0.6 m) that consisted of hardened midden deposits in the shape of a hump. The basal brick courses of each wall stopped at the pile of midden or partially overlay it, in which case they became slightly bowed. The hump resembled the infill of a void created by the removal of a fire installation that had been set in the wall and would have been accessible from both rooms (Spaces 88 and 89).

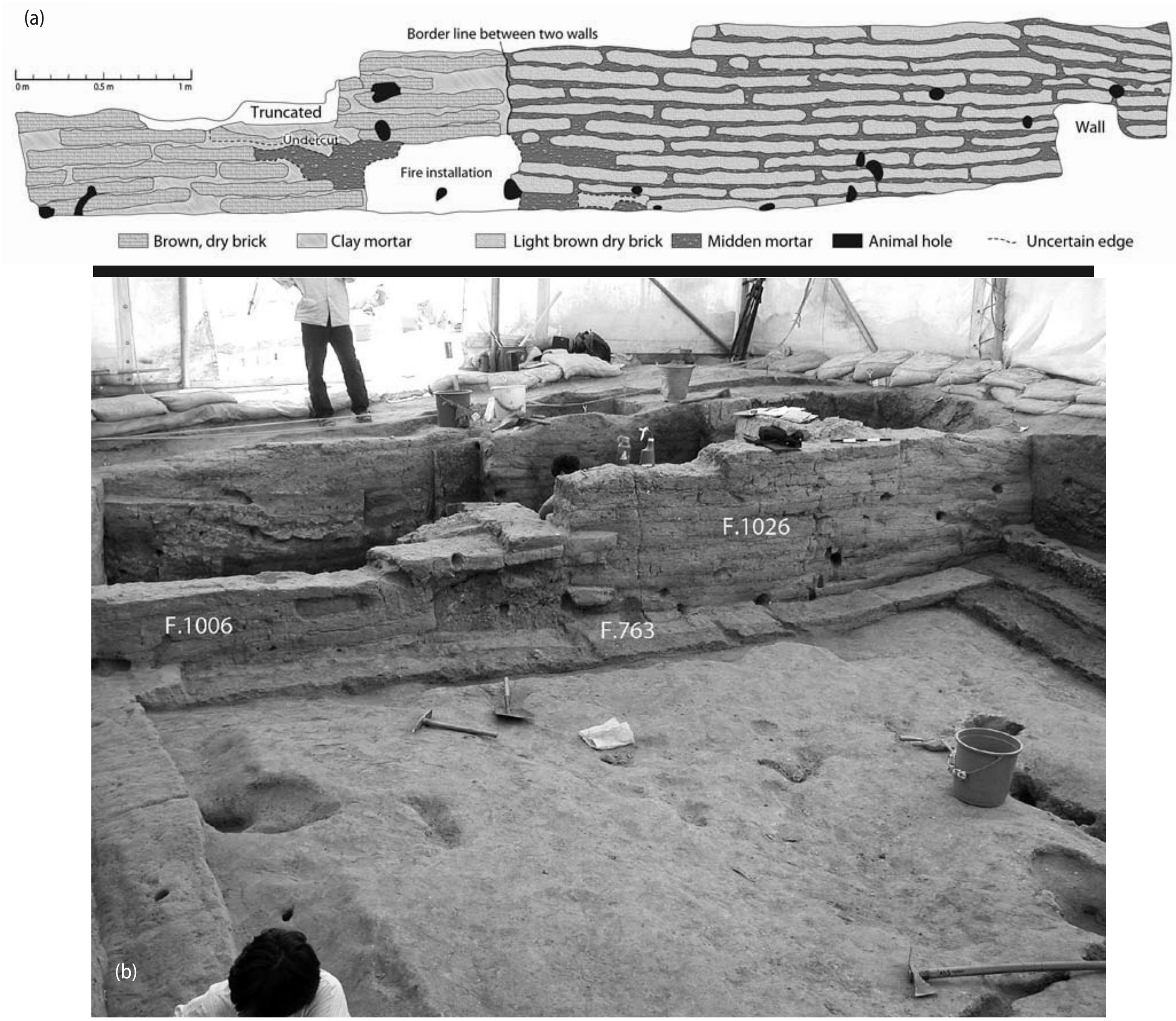


Figure 5.119. The double south wall (F.1006, F.1026) of Building 3: (a) drawing (digiplan); (b) photo, looking south.

Other instances of such ovens that were built in the base of a wall and were accessible from two sides occurred in other buildings (for instance, Building 4, Feature 252). The oven would have belonged to the dwelling that had stood earlier in the location of Space 89 and had since been destroyed; the remains of its oven would have been thoroughly removed and the void filled with midden deposits.

The bricks of the other walls (F.1016, F.761, F.1017) in Space 89 bonded in many places, indicating that the walls were all built at the same time. The west wall (F.1017) was constructed in two phases and consisted of five courses of brick and mortar measuring 2.16 m in length × 0.35 m in width, and stood up to 0.50 m in height (Figure 5.120). The light brown to beige bricks of this wall were made of the same silty, sandy clay as other walls in Space 89. The sticky clay mortar was composed of midden deposits with fragments of charred wood, animal bones, and obsidian chips; the mortar appeared moist at its southern end. Wall F.1017 was positioned on an earlier truncated wall made of orange-red bricks and especially strong, lumpy mortar of a yellowish-white color. Wall F.1017 was the only wall in Space 89 that was plastered.

The south wall (F.761) of Space 89 (2.20 m long × 0.32 m wide, preserved to a height of 1.30 m) had 12 surviving rows of four types of bricks (Figure 5.121). The bottom rows were made of yellowish brown, compact, sandy bricks with inclusions of charcoal and lime. The middle rows of the wall comprised yellow, compact bricks; the upper rows were made of either brown, ashy, soft clay bricks or light gray, sandy bricks. The mortar in every case comprised midden soil. The wall overlaid a thick layer of packing of heterogeneous, gray clay, with inclusions of burned rubble,

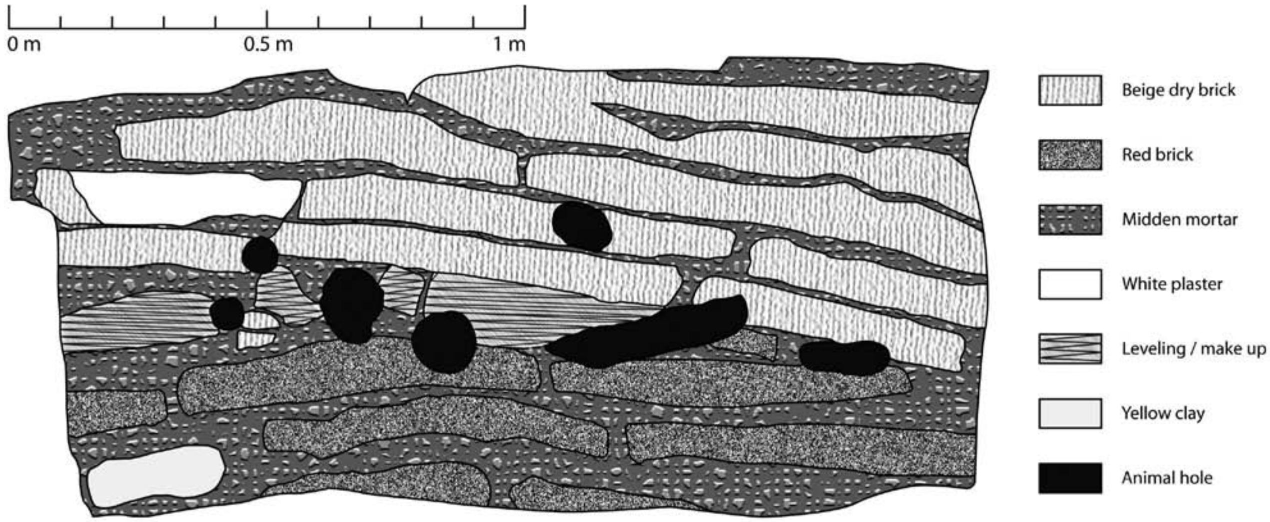


Figure 5.120. Drawing of the west wall (F.1017) of Space 89.

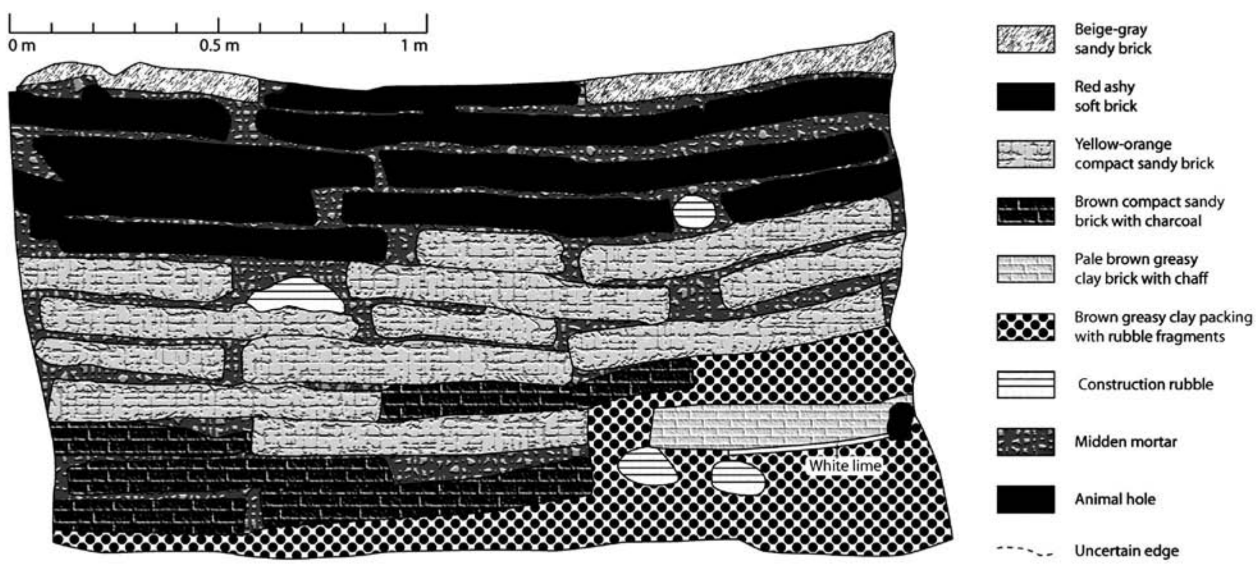


Figure 5.121. Drawing of the south wall (F.761) of Space 89.

which resembled the packing under wall F.1023 (the eastern of the double east wall of Building 3) to its north and east. The western end of wall F.761 contained bricks that—like those of F.1006—were placed over a hump of midden soil. The 4-cm-long fragment of copper wire (malachite), mentioned above, was excavated in these deposits.

Wall F.1021, immediately to the south of wall F.761, was plastered with a single but thick coat of greenish, greasy, coarse marl clay. This kind of wall plaster has been noticed elsewhere in side rooms at Çatalhöyük. This wall may have been part of another structure before it was incorporated into Space 89.

The east wall (F.1016) comprised 11 rows of very firm bricks made of sandy, reddish brown clay (8658). The mortar used in this wall contained loose, gray-brown soil. The length of the bricks ranged from 0.65 m to 0.82 m, their thickness 0.07 to 0.10 m. The wall sloped down from north to south. In several places, its bricks were bonded with those of the south wall of Space 89 (F.761). Wall F.1016 was separated from another wall immediately to its east and running north–south (F.1018) by a layer of packing.

A badly truncated wall (F.1025) was unearthed as part of the Space 89 fill.

Late Room Infill (Phase S89.2)

The burned infill that made up three-quarters of the top infill (2210, 2224, 2275, 3545) of Space 89 was located in its central and southern part (Figure 5.122). The cross section through the 20-cm-thick black deposits showed that indeed it comprised collapsed and burned timber (Figure 5.123). At least three parallel planks oriented northeast–southwest were burned in situ. The planks were preserved as carbonized wood 1.1–1.4 m in length, 0.07–0.09 m in width, and up to 0.05 m in thickness. The majority of the surrounding soil matrix as well as the wood were carbonized and blackened. This indicates that the burning of the wood occurred with little or no oxygen present, which further suggests that the planks were covered by fallen roof or wall material before they were consumed by the fire. However, the compact but soft, ashy, clean, red, black, and yellowish burned deposits that continued below the layer of burned timber contradict this. Their color suggests the presence of plenty of air in their combustion, and the probable absence of any covering of collapsed deposits.

In the mixed matrix of burned wood and the underlying soft, ashy deposits, we discovered a group of finds that included one large, complete, but fragmented bucranium (2210.X13) that had been visible on the surface in the center of the burned wood remains since the surface scraping of 1993 (Figure 5.122). Two other fragments of large horn cores (2210.X10, X11) were placed parallel to it and to its north. There were two more burned and fragmented horns (2210.X4, X5) lying crisscross to the north of the bucranium, all within the zone of burning. Yet another highly burned horn core was found immediately to the north.

Figure 5.122. The burned uppermost layer of infill in Space 89, Phase S89.2.

The cattle horns were found at the southwest end of the wooden construction, indicating that they might originally have been attached to it. The tips of the horns were less burned than the bones and skull of the bucranium, suggesting that the flames ran up the wall where they might have all been attached (see Chapter 8). The group of horns may have comprised a fallen stack of two or more bucrania that had been installed on a wall post, as we have witnessed in the 4040 Area in nearby Building 52. In the area of the concentration of horns, the majority of the black burned deposits represented carbonized wood in the shape of logs or beams. One such circular concentration of charcoal may have been the remains of a post on which the bucrania had been fixed.

A layer (ca. 0.05 m thick) of intensely black, very soft and moist deposits was located immediately under the bucranium. This might indicate a specific type of wood or a large concentration of plant materials associated with the cattle horns. A complete bone awl (2210.X14) along with two other burned bone fragments occurred in this deposit.

To the west of the bucranium and near the south wall of Space 89, a large pressure-flaked flint dagger (2210.X7–X9) in a carved bone handle was unearthed (Figure 5.124). Upon its reconstruction, the handle appeared to be carved in the shape of a boar's head (see Figures 4.14, 15.10, and cover photo; Chapter 15). A very similar dagger with a handle in the shape of two snakes, found by James Mellaart in a male burial in shrine VI.A.29, was described by him as a ceremonial flint dagger (Hodder 2006a:Figure 105; Mellaart

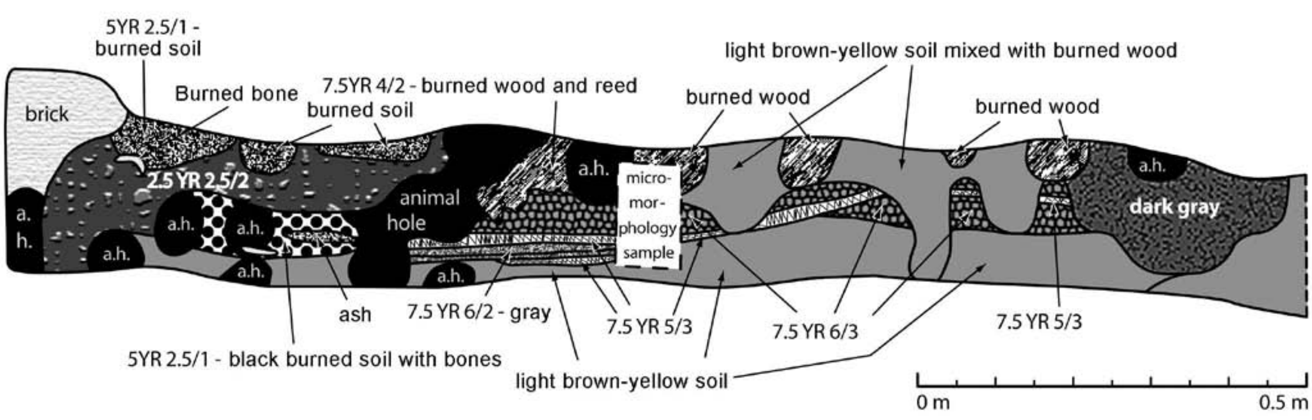


Figure 5.123. Drawing of the cross section through the burned deposits of the uppermost infill in Space 89, Phase S89.2.

1967) and is currently displayed in the Museum of Anatolian Civilizations (Ankara). The dagger blade in Space 89 was found lying at the southwest end of the deposit, in the matrix of burned and collapsed wall bricks, which apparently had fallen onto it and crushed it into two pieces (Figure 5.125). The bone handle had also been crushed into several fairly large fragments by the impact of the same bricks. The soil matrix immediately surrounding the dagger blade and its bone handle included moist, greasy, soft deposits mixed with the clay matrix. It is possible that these represent the remains of a sheath for the dagger. The surrounding burned deposits incorporated burned plants, such as reeds, weeds, and wood fragments (W. Matthews, personal communication). Their location suggested that the dagger might have been part of the same installation as the horns and other associated objects, possibly located either at the top or the bottom of the installation. Four beads (2210, 2224) and a polished stone tool (2210.X15) emerged from a burned area of fill around the bucranium. To its south we found a highly burned and fragmented human skull (2210.X6), which appears to have been burned in situ.

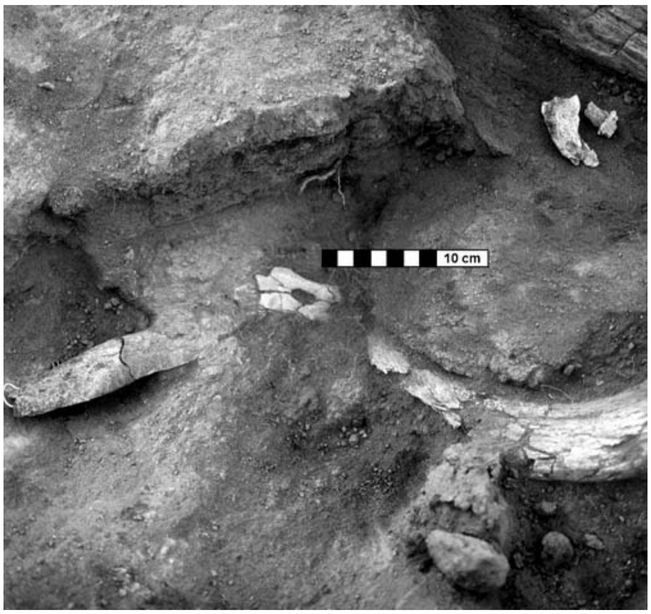


Figure 5.124. The flint dagger with bone handle found in association with the bucranium in the burned deposits of the uppermost infill in Space 89, Phase S89.2.

Figure 5.125. Detail of the flint dagger found in association with the bucranium in the burned deposits of the uppermost infill in Space 89, Phase S89.2.

At a depth of 0.50 m below the surface, a thin, horizontal, fragile layer (3580)—possibly a floor—appeared along the west and south walls of Space 89. Presumably, if indeed these were remains of a floor, the intense conflagration would have destroyed the floor to the extent that only its edges remained intact. The fire could have affected the walls in Space 89 in a similar way. No plastered face was recorded on the surviving upper sections of the walls, which would have been the sections that surrounded the burned room. This is very likely to have been the result of the destruction of the plaster by the fire. Nowhere else in the BACH Area have the wall bricks deteriorated as much as in Space 89, where it was very difficult to identify the line of the wall bricks with respect to the room infill.

On this thin—possible floor—surface, a large group of bones was burned (3545, 3548) at a sustained low temperature in the presence of little or no oxygen. There were many large fragments of animal bone and some complete ones. Cattle, equids, and sheep/goat bones were represented in roughly equal amounts in this group, and the same body parts were repeated across taxa (Chapter 8). Russell suggests that these might be the remains of a single, ceremonial event, such as the "closing" of the house, which included feasting (Chapter 8). In Building 52 to the south of the BACH Area in the 4040 Area, very similar burned deposits were encountered, although these were more extensive (Doru 2005; Twiss et al. 2008). In Building 52, the compact, soft, red, black, and yellow, burned, ashy deposits overlay a heavily burned platform. Associated with this infill was an installation that included numerous bucrania as well as stone and bone artifacts.

Early Room Infill (Phase S89.1)

Phase 1 of Space 89 was represented by the earlier deposition of room infill below the top infill (Phase S89.2) (3584, 3587, 3588, 6147, 6216). This fill comprised mostly very hard construction materials, fragments of bricks, mortar, and plaster, and occasional heavily fragmented plaster features that were thrown in. There were small, isolated, softer layered midden deposits but always in association with harder construction debris. The compacted infill was difficult to excavate. The central part of Space 89 was filled by the remains of several partially preserved features that were brought from another location and redeposited here. For example, there was a large (1.30 × 1.0 m) heap of roundish clay fragments of similar size (F.612), with a distinct consistency of very dense clay with even-sized particles and dark gray color, a rough surface, and a peculiar pattern of breakage into sharp, pointed (triangular or pyramidal) forms (6120); such a fracture pattern was similar to that seen in clay balls. Two horn cores were associated with F.612. A series of very large bricks and a fragmented redeposited basin (F.625) was located under F.612. The basin had preserved part of a shallow rim, several very fragile floors, and a 0.03-m-long spout.

Deeper in the fill of Space 89 was a redeposited hearth (F.1004) in the west-central corner. The hearth was rectangular in plan with rounded corners and measured ca.0.46 × 0.32 m; it had a partially preserved rim 3–4 cm thick and 7–8 cm high. The inner surface of the hearth was poorly fired, black in color, and cracked.

The lower infill included a variety of bone remains but few diagnostic pieces. Among them were a bone ring fragment (3587) and a bone point fragment (6147).

This lower or earlier room infill may be interpreted as layers of mixed midden whose function was to structurally reinforce the southeast corner of the "compound" (that is, Building 3 and Spaces 87, 88, and 89).

Space 85

Space 85, to the west of Building 3, originally must have been an open area—or "courtyard," in Mellaart's terms—which over time was filled with midden deposits. The soft, dark gray and black deposits of the midden were at least partially contemporary, especially in their uppermost levels, with the occupation of the BACH Area structures. Considering the proximity of these areas, it is highly possible that the midden deposits concentrated near the west wall of Building 3 comprised the waste ground for the Building 3 occupants, who could have, for example, dumped materials off its roof, as suggested by the concentrations of bird bones found in the midden (Chapter 9).

Space 85 was beyond the limits of our excavation area, but in season 2000 we opened a meter-wide strip of the midden, next to the west wall of Building 3, running in a north–south direction (along the grid line 1051) (see Phase B3.2). It was necessary to remove this segment of the midden in order to expose the west walls of Building 3. The excavation was carried out in arbitrary 10-cm-thick layers or, where possible, following breaks in the originally layered midden deposits (Figure 5.126 [on-line]). The deposits were rich in organic remains, especially animal bones and bone tools, and mostly fragmentary, such as points, needles, and rings. The deposits accumulated in distinct layers that could be observed in the cross section of the midden (Figure 5.127).

A shaft segment of a goose radius (8629) was found with cut-and-break marks at one end, indicating that simple tubular beads had been removed from it (Chapter 9). In addition, there was a concentration of six specimens of such bone beads, five of them from this unit, which may represent a small-scale specialization in ring manufacture (Chapter 21). A similar suggestion has been made with the beads in Building 18 in the SOUTH Area (Chapter 9).

A possible feasting deposit has been suggested, based on the distribution of sheep/goat and bird bones in units 6334 and 6350 (Chapter 9). The concentration in these units of minimally processed bones (which included at least two hooded crows) has been interpreted as the remains of a ceremonial meal (Chapter 9). Also, a comparatively large number of obsidian cores and debitage were unearthed in Space 85 (Chapter 19).

Figure 5.127. Cross section through the midden in Space 85.

Chapter 6

Building and Caring for the House at Çatalhöyük

Mirjana Stevanović

This chapter contributes to our understanding of the process of building production at Çatalhöyük and enhances our understanding of the society that created such a rich and complex architectural environment. The architectural evidence assessed comes largely from the BACH Area but references other houses in the settlement. Details of the buildings in the BACH Area have already been discussed in Chapter 5 of this volume.

Prehistoric houses at Çatalhöyük are numerous and well preserved, and they physically comprise a large data set which has been the subject of many investigations. Mellaart's analysis of architecture focused on distinguishing "shrines" from "domestic houses" (Mellaart 1967). Düring (2001) and Ritchey (1996) examined the size and organization of houses and their elaboration, testing the idea and defining the constituent parts of house diversity. Cutting (2005) looked at spatial relations within the house in a search of their variability. Identification of building materials, their sourcing, procurement, and possible patterns of utilization have been investigated by several authors (Matthews 2005a, 2005b; Matthews and Farid 1996) and are currently addressed through the analyses of bricks, mortars, and plasters (Love 2006; Tung 2005, 2008). House construction has also been approached through experimental study, and a Neolithic replica house has been built. The experiment contributed to our understanding of the performance of the raw materials, their workability, and constraints, and helped us recognize the options that the Neolithic builders faced and the choices they made in the process of their house construction (see Chapter 22; also Stevanović 2003).

Houses at Çatalhöyük were rectangular mud-brick structures internally divided by permanently installed features, such as platforms and benches, or by interior walls, screen walls, and a number of floor partitions that acted as subtle space dividers. They were equipped with a set of domestic features, including ovens, hearths, storage bins, and clay basins. Houses were also locales for symbolic and ritual expression, which was reflected in a variety of ways but most notably in decorated house walls. Places of lifelong socialization (Hodder and Cessford 2004), houses served as repositories of social memory, as expressed in burying the dead intramurally and in keeping the skulls of particular ancestors in a prominent place inside the house. Mud brick and mortar served as the main building materials, which on the interiors were plaster coated and, at times, painted. The walls were on average 0.4 m thick and 2.5 to 3.0 m high, often built directly on the partly dismantled walls of earlier buildings. Excavated structures in the NORTH Area (which includes the BACH Area) have surviving walls measuring 1.50 m high, which is considerably lower than those excavated in the 1960s. No evidence of windows has been found, and entrance was usually through a roof opening set into the south end of the house above the oven of the main room. Mellaart found that the doors were absent in the earlier levels (VIII–V), but they appeared at ground level in the later levels (I–IV) (Mellaart 1962).

Although we have a sizable record of formal building characteristics, much about the process of construction is not fully understood, and more research on the technology of house production is needed. The fundamental steps in the process of house production—such as identifying and procuring raw materials, methods of brick and mortar manufacture, the role of wood in construction, methods of roof construction, and many others—have yet to be completely explored. There are some obvious differences between houses: some have double walls, some have doorways between two buildings, some are rebuilt on the very same spot for many generations, and some are burned in large house fires. This variability could reflect particular social practices of those households that required such technical solutions, but it also shows that these specific buildings had technical capabilities or needs for such solutions.

Brick manufacture, the construction of walls and roofs, and the maintenance of buildings are all technical acts that depend on availability of resources, including raw materials, labor, and knowledge, but they also depend on the accessibility of space in the settlement and on the will of the larger community, such as the neighborhood, of which the house was a part. Thus, the production of buildings can be a starting point in the analyses of the social relations in this agglomerated settlement. House building actively engaged the Çatalhöyük people in transforming natural substances into a built environment, which was then inhabited. This engagement must have involved cooperation, sharing, and possibly appropriation and control of the basic resources for house building (soil, wood, vegetal materials, water, labor) and of specialist knowledge (techniques of manufacture). Technologies are social products (Childe 1956; Dobres 2000; Ingold 1990; Lemonnier 1986), and the production of houses includes more than house construction. Hughes (1979) considers technology to be a web of social and material dynamics that adds to both the production and reproduction of society.

Like most tell settlements, Çatalhöyük was a highly structured built environment that was created by numerous generations of people erecting their houses in close proximity. This agglomerated settlement comprised tightly packed dwellings of varied sizes whose walls abutted one another or were shared. Individual buildings or groups of buildings were eventually abandoned as residences but were continuously used for refuse depositions. New buildings were erected over these spaces. This was a long, gradual, and involved process where each new building was constructed in reference to the other building(s) that underlay or surrounded it. The physical contact of the houses reflected and was simultaneously determined by the social relations of their inhabitants, including their technical capabilities and the determination for engagement. It means furthermore that groups of people who had the desire and incentive to share such close living spaces were ideally integrated in neighborhoods. Their entanglement in social and material codependency at Çatalhöyük (Hodder 2006a) was expressed in daily practices within the house but also must have been embedded in the very house production and its maintenance.

The social relations that surrounded house construction must have also incorporated sharing or controlling knowledge of the landscape and its resources. Hundreds of houses were built during the 1,400 years of the settlement's occupation and thereby utilized massive quantities of clay, which had to be procured from the vicinity of the settlement. It has been suggested that the enigmatic location of the site in this seasonal wetland could be partly explained by an intention to maximize access to clays used in brick and plaster manufacture (Hodder 2006a). It is feasible that at some point in time, these natural resources were shrinking or even became depleted, and that some kind of controlled access was established. Changes in the use of building materials, such as construction timber, particular types of clay (marl), and pigments could be an indication of such developments, as has been pointed out for the period after Mellaart's Level VIII. Moreover, the shortage of particular building materials could have given rise to new technical solutions.

In this chapter, technical aspects of house construction are carefully considered, starting with preparation of the building site, followed by brick manufacture and wall and roof construction. The importance of good maintenance of the mud-brick structures is especially emphasized and informed by the experience of historic mud-brick architecture from various parts of the world, but especially from the American Southwest. Finally, the process of house production is considered.

THE FOUNDATION GROUND FOR BUILDING

At Çatalhöyük, the space available for building was increasingly limited over time as more buildings were constructed and the settlement grew. In such an environment, preparation of the ground for new houses would have been of crucial importance and a continuous activity in the settlement. There were indications that the Neolithic occupants understood the significance of stability of the subsoils for their houses and invested particular attention in the preparation of the building site.

In Çatalhöyük, new houses were established either on the walls of previous houses or on middens. An important principle of construction is that the soil on which the house foundation is erected needs to be uniform throughout the entire area underlying the house and to remain as stable as possible. Buildings constructed on different soils, as in the case of Building 3 in the BACH Area (midden and old wall stubs), can cause subsequent problems of house stability, especially if some of those soils are weak (O'Connor 1973).

Midden is definitely in the latter category, being composed of soft soil, of low bearing capacity and high compressibility (Costa and Baker 1981).[1] Middens were formed

[1] Building on high clay-content subsoil, however, has its own problems during the rainy season. Clay-rich subsoil can cause a seasonal subsidence of the ground from expansive types of clay (Costa and Baker 1981). For instance, more than normal amounts of moisture from roof drains, streams, or landscape watering may cause heaving in certain sections of the structure. It is recommended that where this condition exists, a footing should be designed and drainage incorporated so that the ground soil can remain stable (McHenry 1984).

either in the open spaces between buildings, which were used as communal waste ground, or within the older houses whose interiors were transformed into the waste ground.[2] Construction on a Neolithic midden equates to building on landfill nowadays. Landfill deposits have to be prepared by compaction before construction is undertaken. The same simple principle may have been applied to the prehistoric midden deposits. The observed compaction of midden deposits at Çatalhöyük could have been accomplished by natural processes or by organized efforts to physically compress otherwise soft midden layers. We have found no evidence yet for either case, but the recent excavations (since 1995) have focused on buildings constructed on former house walls rather than middens.

There might have been some general compaction of middens as a result of frequent movement. However, it has been assumed that routine movement at Çatalhöyük was across roofs (Hodder 2007), while middens would have been mainly accessed by ladders and not often used for passage or outdoor activities. Nevertheless, the midden under Building 3 was a compact building foundation by the time we found it in the course of our excavation. The midden comprised variable quantities of demolished building material, animal bone, clay ball and pottery fragments, and obsidian and other stone fragments that were mixed with a black, ashy, gritty, sandy soil that was full of soft, charred plant remains. The grittiness of the soil came from burned construction clay that was pulverized into small particles before its deposition, but also from a large presence of sand across the entire midden surface. It is feasible that river sand had been systematically added during midden formation in order to increase the compression of the soft layers rich in organic remains. This is the practice currently used in preparation of the ground for construction where subsoils have high clay content (Costa and Baker 1981).[3] It is also possible that compaction occurred after the construction of Building 3 as a result of the weight of clay floors and walls.

In Building 3, four courses of footing bricks of the longer east and west walls were placed directly on the compressed midden surface below the house (Figure 6.1). By contrast, the north and south walls were erected directly on the walls of earlier buildings, although the structures were on slightly different alignments. One-half of each north and south wall was resting on the earlier walls, while the other half was resting on the midden. We could think of several reasons for placing the walls on such different foundations. For instance, the alignment of the surrounding buildings could have required the discrepancy in the position of Building 3 walls. This could have applied to the south wall but not the north wall, which did not border any structures. Alternatively, the Neolithic builders might have relied more on the midden to successfully bear the weight of Building 3 than on the strength of the earlier walls. This suggests that they may have deliberately prepared the midden to make it more structurally sound.

Construction of Walls and Other Wall-Like Partitions

The Çatalhöyük houses included main or outside walls, partition or interior walls, screen or curtain walls, and other ridge-like spatial dividers. The main and the interior walls were made of layers of bricks and mortar, coated on the interior side with numerous layers of white clay plaster. The exterior wall surfaces that were exposed and were not adjacent to another house wall were most likely plastered as well, although only one instance of wall plaster on the outside wall surface has so far been recorded (Hodder 2007) (see Figure 22.25). Most buildings were constructed with four single walls, but double walls occurred frequently. Double walls resulted from the close proximity of two independent buildings and possibly indicate contemporaneity

Figure 6.1. The BACH Area after the removal of the walls of Building 3 in 2003, showing underlying midden and older wall stubs.

[2] Mellaart (1964) described "courtyards" as "condemned" buildings subsequently used as rubbish areas. Current excavations have confirmed that middens were often established over abandoned buildings, and that the earliest structure at Level XII in the SOUTH Area was founded on middens (Farid 2007).

[3] Sand is added in order to increase the particle size and break the clay apart.

of houses whose roofs were connected. Double walls were nearly always separated with a gap of 15–25 cm, which was filled with a mortar mixture or more diverse debris that included fragments of building materials. The gap between the abutting walls of Building 3 and Spaces 87, 88, 89 was 20 cm wide (see Figure 4.1). Matthews and Farid (1996) have suggested that the use of double walls may have been employed for insulation, fire hazard, and noise. McHenry suggested that one simple way to increase the insulation values of earthen walls is to construct double walls with an air space within the cavity (McHenry 1984). It is also possible that the gaps between double walls provided space for movement of walls over time (see below).

The height of the walls is one of the less certain features of houses at Çatalhöyük, primarily because of the practice of wall truncation at the end of a house's use-life. A single well-preserved full-height exterior wall excavated by Mellaart stood to a height of 3.3 m (Mellaart 1963:70, Figure 14; 1967:63). It has been suggested, based on the heights of the buildings excavated in the 1960s, that the wall height ranged between 2.5 and 3 m (Hodder 2007). It has been assumed that all internal walls originally existed to roof height, but this is untestable. In Buildings 3 and 5, the interior walls did not appear to have been capable of bearing substantial loads (such as the main body of the roof), but they did restrict visibility and access and may have played some role with regard to the roof load (Cessford 2007b; see Chapter 5).

The width of the walls at Çatalhöyük is their best understood feature. Since mud-brick construction, as discussed below, was load-bearing but with low structural strength, the walls tended to be massive. The width of the walls depended also on their structural role. The interior or partition walls were always built of bricks that were narrower than those in the outside walls. Ethnographic sources show mud-brick house walls of various widths, but these rarely stood over two stories. It is considered that 23- to 26-cm-wide mud-brick walls can support a one-story building, while walls of 30–35 cm width—the width of the BACH Area structures—are capable of supporting two-story buildings (Agarwal 1981). "In fact, the maximum height of adobe mission churches in the American Southwest was approximately 35 feet, and they often had buttresses bracing their exterior walls for added stability" (Tiller and Look 1978).

Wall Foundations

It is known from examination of historic mud-brick structures that the choice of foundation design is based on technical knowledge, the projected life of the building, and available resources. It is also suspected that earth walls have a certain resilience, unlike most modern conventional building materials, and so the foundations may be of less importance (McHenry 1984). "Most often, the foundations of adobe buildings were constructed of bricks, fieldstones, or cavity walls (double) infilled with rubble" (Tiller and Look 1978). Foundations for major walls at Çatalhöyük included trenches in the form of linear cuts known from Spaces 105, 108, and 160 in the SOUTH Area, or took the form of a basal course of bricks that appeared as a continuous "belt" without butt ends (Farid 2007). In Building 24, the basal course of bricks at the interface of the underlying wall was consistently longer than upper courses, with an average length of 1.4 m (Farid 2007). Many buildings were constructed directly on top of the surviving wall stubs of earlier buildings, which served as the foundation and on average survived to a height of 1.25–2.15 m (Matthews and Farid 1996).

In Building 3 (Figures 6.2–6.5), there was an aboveground foundation footing comprising four courses of a particular type of mud brick, instead of a foundation trench. These bricks were regularly shaped with sharp edges. They were manufactured of very sandy, silty, sticky soil, free from inclusions (except for sand), and were joined with mortar comprised of midden soil. The 0.40-m-wide mud bricks of the footing were somewhat wider than the bricks in the following courses. Their thickness ranged between 6 and 9 cm with few exceptions, and the length of the majority stayed between 0.70 and 0.90 m.

The use of regular bricks and mortar and their placement on well-prepared ground demonstrates that much attention was focused on the wall foundation. Moreover, the head joints in the bottom rows of brick were close together, and the thickness of the mortar between them varied little, unlike the upper rows where they varied considerably. All this indicates that the Neolithic people had an understanding of the mechanical characteristics of bricks and of their significance in wall stability and endurance. That special attention was invested in the wall foundation was apparent in the utilization of the most suitable type of bricks, which differed from those used in the higher parts of walls. The bottom sections of walls in Building 3 were constructed carefully and thoughtfully to satisfy multiple requirements. Primarily, the foundation or footing of the walls had to be strong enough for load bearing; its bedding had to be leveled for stability; and it had to offer maximum insulation from the moist ground surface at the wall bottom. The bricks of Building 3 in the lower courses were moister than in upper courses, with the bottom row of bricks being the most moist. Mud bricks are especially susceptible to moisture, and sand-tempered bricks in Building 3's footing were the best choice to fight against it.

The fourth, or top, row of the footing bricks was topped with unusually hard mortar made of lumpy clay. In the course of the excavation, we named this "special mortar" (Figure 6.6).

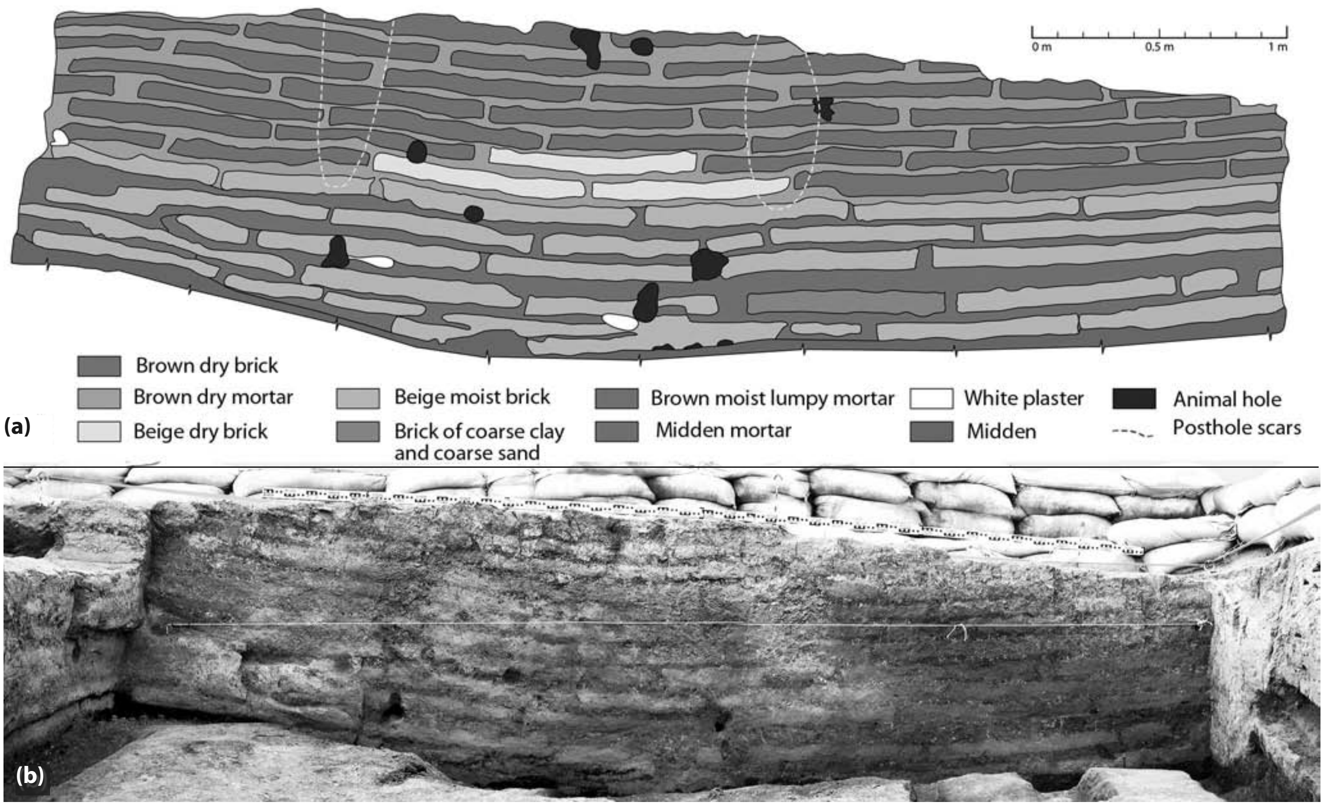


Figure 6.2. The north perimeter wall of Building 3.

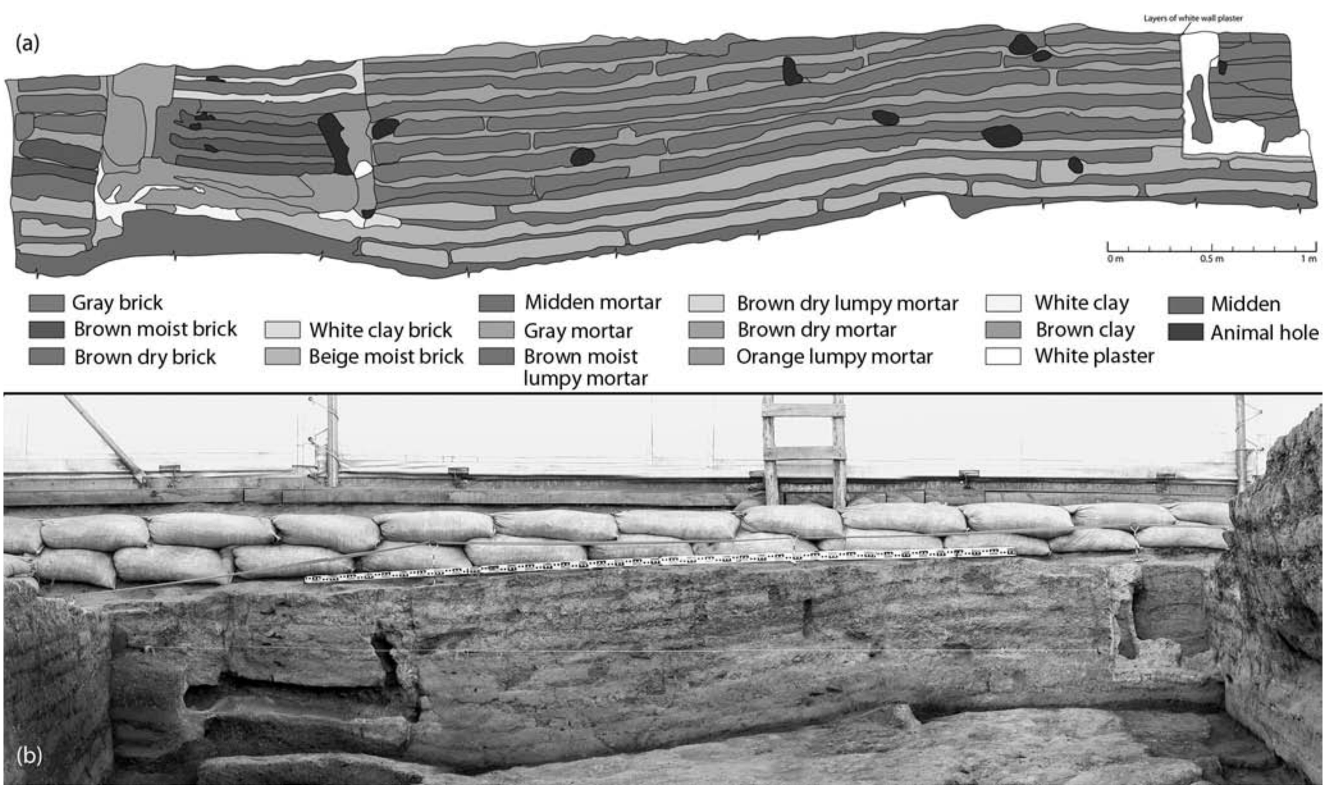


Figure 6.3. The east perimeter wall of Building 3.

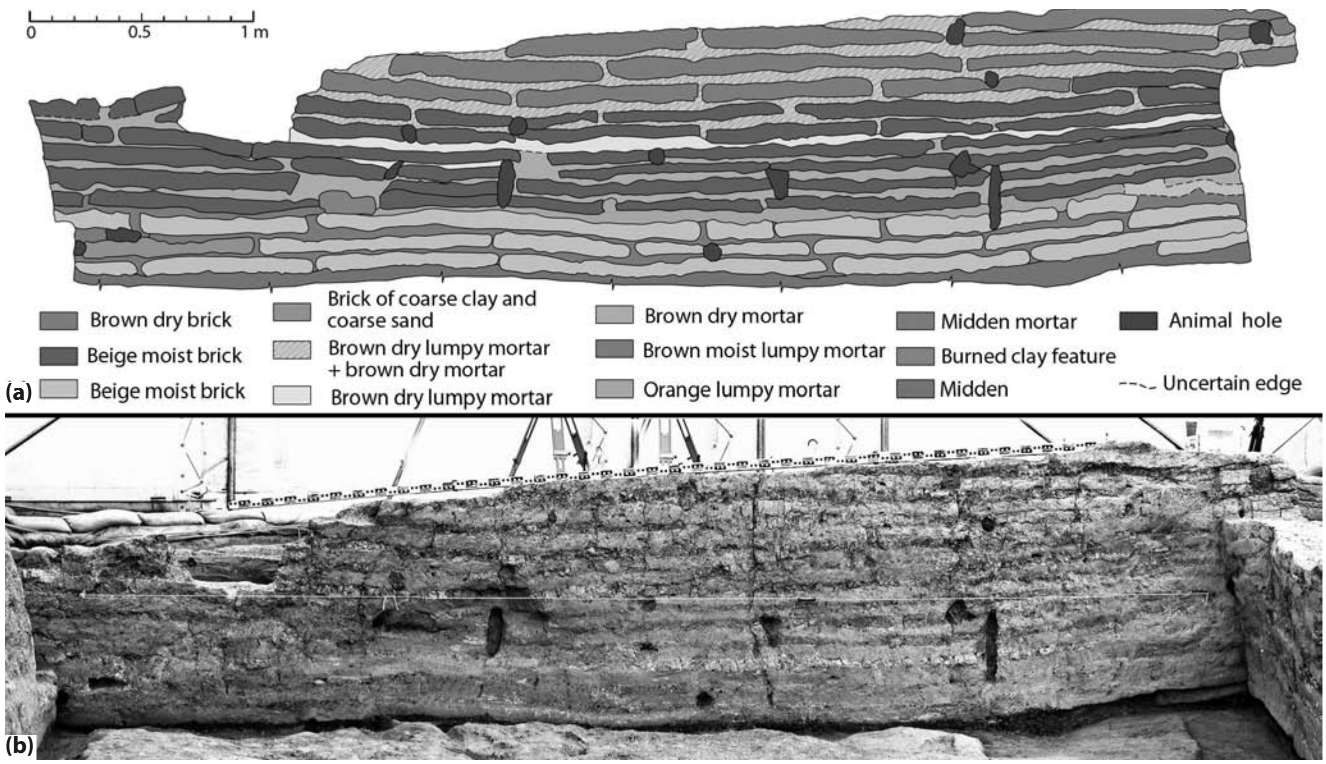


Figure 6.4. The south perimeter wall of Building 3.

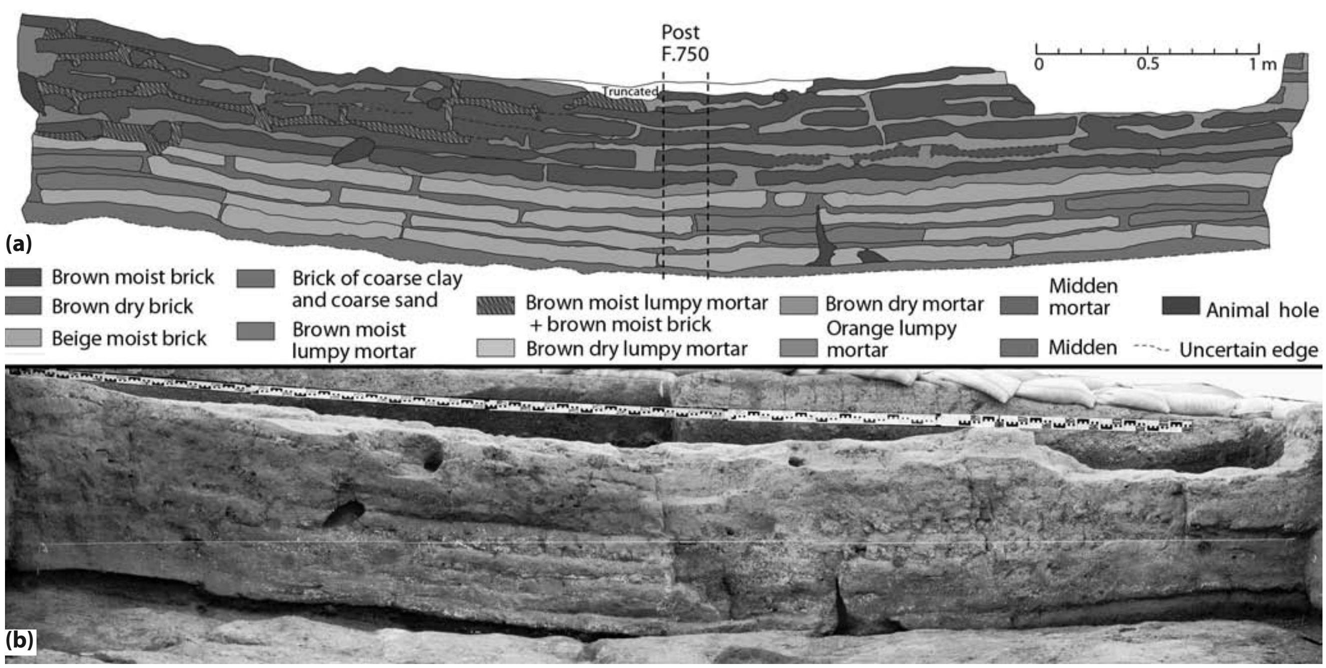


Figure 6.5. The west perimeter wall of Building 3.

Wall Bonding

Wall bonding was practiced at Çatalhöyük, and it occurred in the BACH Area structures but not in all courses of bricks. In the BACH Area, no bonding occurred in the bottom course, but in the second course of bricks some wall corners were bonded. Different types of bonding were detected in bricks of Building 3 (see Chapters 4, 5; Figure 4.17). Most common, and present in all the walls of the building, was the lengthwise crossing of the bricks from two walls. Two bricks in the south and west walls at the southwest corner had a unique diagonal junction.

Figure 6.6. Example of lumpy mortar.

Wall Mechanics

The mud-brick buildings are stable structures, but they are nevertheless subject to deterioration and movement and can be analyzed with respect to their *wall mechanics.* Much wall movement has been seen in the surviving remains of houses at Çatalhöyük, along with some of the inferred solutions that were applied by the Neolithic builders to correct for movement. Walls have often been found leaning and some have had severe overhangs. Farid (2007) suggested that these leans could have been deliberate—that is, as new buildings in the heart of the settlement were built into the available spaces, their shape reflected their constriction. She also asserted that askew walls were the result of post-construction subsidence, and "bulges" the result of post-burial compaction. A trend toward a westward slump was noted in almost all north–south walls of the SOUTH Area buildings through most levels. In Building 4, the western wall was constructed to be 0.54 m wide, greater than the standard 0.4 m, possibly as an attempt to minimize the westward slump (Farid 2007).

The wall movement in Building 3 could be seen in the subsidence of the wall bases in all four main walls (Figures 6.2–6.5). Additionally, the west wall was supported on the interior and exterior sides by the shoring walls (see Figure 5.72). Contrary to what Farid (2007) suggested for the SOUTH Area, the wall subsidence in Building 3 could not have been subject to post-burial compaction, since there was no record of any subsequent additional weight. The four main walls of Building 3 stood vertically, with no leaning. However, while the south wall (F.763) showed almost no sagging, the two long walls on the north–south alignment (F.636, F.762) and the north wall (F.174) on the east–west alignment exhibited considerable sagging in the middle. That is, the footing bricks and their mortars in these walls were sagging, producing pronounced curves at the base of the north, east, and west walls. The curve in the east wall was steeper in the northern part of the wall, which happened to coincide with the doorway (F.633), and its deepest point coincided with the big post (F.602) where it dipped down for 0.31 m. The sagging of the west wall was steeper in the south half of the wall; its deepest point was in the middle of the wall, where it dipped down 0.35 m. The north wall slumping curve was steepest in the west half of the wall, where its deepest point, dipping down 0.34 cm, coincided with the wall section between the posts (F.776, F.773). This was the same point where the most prominent north-central platform was located. The south wall slumped a little (0.04 cm) in its most western part.

Mud-brick walls react to stress and tension over long periods, and to subsidence and movement of the terrain on which the building is erected (McHenry 1984). It is known that mud brick has high compressive strength (the measure of weight that a brick in a wall can support before breaking apart), but very low tensile strength (it can be easily pulled apart) and, as a result, a moderate shear strength (McHenry 1984). Additionally, these structures depend on gravity for stability, and their bricks are not really bonded together by mortar but rely on their mass and gravity for stability (Battle 1983).

It is no surprise, therefore, that the Building 3 walls sank and yet the structure stayed stable and durable. "Sagging or bulging walls may be the result of a problem called 'rising damp' and/or excessive roof loads" (Tiller and Look 1978:52). In Building 3, there was no indication that "rising damp" could have been the reason for wall sagging, but an overall reason for the movement of the wall footings in all walls might have been the weight of the roof. The Building 3 roof must have been massive and of considerable weight. If its thickness were around 0.30 m, as the preserved fragments indicated, the entire roof would have weighed 12 tons, standing on dense wood beams, which rested on the wall tops.

Walls carry most weight in their middle, which is also where the roof load is the heaviest. While one-quarter of the roof weight would have been spread over wall portions close to the corners of the building and would thus have been dispersed on two walls, the middle portion of the roof had to be carried by the mid portion of each wall. It is very likely that the beams of Building 3, which were transferring the large roof load to the north and west walls, caused them to sag. The situation would have been different in the case of the double south walls, where the weight could have been spread on both walls. Moreover, the south wall of Building 3 was built on top of the stubs of an earlier wall, which would have additionally strengthened its footing and contributed to preventing the wall sagging. On the other hand, the east wall of Building 3, despite being juxtaposed by another wall (F.1027), showed considerable sagging in its bottom bricks, which may have been caused by the two openings (F.633, F.768) incorporated in the wall. It is known that the compressive strength of unconsolidated walls is not high, and care must be taken when changes in use and loads are introduced that were never meant to be carried by the original structural system (Caperton 1983).

Several vertical, full-length cracks observed in the double south walls were absent from other walls, indicating vertical pressure and/or lateral extension on these walls. Cracks and bulges in mud-brick walls are considered (among architects using adobe material) as cause for the greatest concern, especially if cracks are active. Some cracking is normal, such as the short hairline cracks that are caused as the adobe shrinks while it dries. More extensive cracking, however, usually indicates serious structural problems.[4] Sources of cracks and bulges can be external loading, internal wall moisture (from above or below), increased compressive loading, or earth movement (Crosby 1983).

It is clear that the cracks in the double south wall (F.763, F.1026) of Building 3 occurred in very similar (if not the exact same) places on both walls, meaning that they both were under a vertical pressure on the same north–south alignment. There were at least three such cracks, all in the west half of the south walls, with one in line with the post (F.744). They could indicate the location of those horizontal beams that carried most roof weight, suggesting that they were continuous over Building 3 and Spaces 88 and 89, and possibly Space 87. One conclusion that we could draw from our observations of the walls of Building 3 is that under vertical pressure, some walls (such as the east, north, and west walls) sagged and did not crack, while others (such as the south walls) which were double and erected on an earlier wall, did not sag but cracked. Moreover, the transfer of roof load onto double walls would not have prevented their movement if they were structurally unsound.

It is very likely that the west wall (F.636) of Building 3 suffered wall displacement in its upper part. The wall damage, which occurred in the late phase of the house, was corrected by construction of an interior shoring wall (F.600, F.602) (more details can be found in Chapter 5). Causes of upper wall displacement in adobe architecture are known to be wall moisture (from above or below), external loading, and earth movement (Crosby 1983). Upper wall moisture can be the result of a leaking roof or leaking gutter, which easily could have been the case in the Neolithic. For instance, "if the adobe becomes so wet that the clay reaches its plastic limit, or if the adobe is exposed to a freeze-thaw action, . . . under the weight of the roof, the wet adobe may deform or bulge" (Tiller and Look 1978).

It is quite possible that the west wall (F.636) of Building 3 initially exhibited signs of bulging, which were contained by introducing small "pseudo-walls" (Phase B3.1B: F.635; Phase B3.1C: F.1000) built of narrower bricks and adjacent to the original west wall. Over time, leaks in the roof may have damaged the upper west wall to a point that required construction of the full-height shoring wall (Phase B3.4B: F.600, F.622) (Chapter 5; see Figure 5.72). There are other examples of similar walls at Çatalhöyük, such as a new wall built in front of a previously burned wall in the western half of the Mellaart's Level VIB shrine 61. Matthews and Farid (1996) suggested that new walls were introduced in front of the old ones to provide a new wall surface for plastering, since the original wall plaster was very thick and irregular and thus unsuitable for further elaboration. It is therefore suggested that Neolithic builders may have anticipated deterioration and deformation of house walls under the pressure of the roof and introduced the solution of shoring walls to reduce it.

Their wall construction strategies incorporated other measures to control and reduce possible damage. In the case of Building 3, such measures included the reinforcement of walls with sturdy, sandy bricks in the wall footing; the placement of posts along the walls in critical locations regarding the roof load bearing; and, finally, the support of the double walls where the pressure was the most critical. The sandy bricks applied in the footing of the Building 3 walls proved to be an adequate choice. They were strong but were elastic, so that they curved and sagged but did not

[4] According to Crosby (1983), cracks can be vertical, horizontal, or diagonal, and the two portions of the wall on each side of the crack may be moving apart (a tension crack), together (a compression crack), or sliding against each other (a shear crack).

break under the roof pressure. Simultaneously, they may well have been the best choice for protection from ground moisture. Morgenstein and Redmount (1998) suggest that in order for earthen architecture to preserve its strength and structural integrity, it must maintain good contact with the ground to permit the transfer of capillary moisture into the brick. This allows the brick to "breathe" and maintain full clay expansion and good grain-to-grain bonding. They also suggest that partial dry-out conditions may be compensated for by utilizing a variety of different bricks in a single structure (Morgenstein and Redmount 1998:143).

Wattle-and-Daub

Other types of wall (such as screen walls), which were built using different techniques, were reported in several houses from Mellaart's excavation and were also identified in Building 3. The screen wall (Phase B3.4B: F.601) of Building 3 was inserted between the two short partition walls that ended with two pillars (F.160, F.156) (see Figures 5.74–5.76, 5.78). A series of posts and planks were positioned in a narrow trench dug through the house floors. These were woven together by saplings and branches in the wattle-and-daub technique, indicated by fragments of daub found in the area of the collapsed screen wall that have retained the impressions of the wood components. The face of the screen wall that overlooked the middle of the house was plastered (F.155) and, it is believed, held a disk-shaped relief.

In the BACH Area, the only other feature constructed in the wattle-and-daub technique was the dome of the late (Phase B3.4B) hearth/oven (F.613) (see Chapter 5; Figure 5.80). At Çatalhöyük, small fragments of fired building materials with impressions of saplings were often found, but their secondary context and small size prevented us from reconstructing their original environment. The outstanding example of the wattle-and-daub method of construction at the site came from the collapsed fired remains of Building 52. Here, the preserved fragments were large, and some feature impressions of sizable logs and planks, which were used in the construction of the house roof (Figure 6.7) (Stevanović 2005).

Another building technique at Çatalhöyük used in construction of low-height barriers was the coil technique. In the BACH Area, ridges of different thickness and height built in the coil technique were attached to floor surfaces and, depending on the type of clay used, could be glued to the floor or just lightly adhering to it.

Wall Openings

At Çatalhöyük, the features that occurred within walls were doorways or access holes of varied sizes between two abutting buildings, as well as wall niches. These wall openings were obviously planned and incorporated into the walls. There was no evidence that major house walls were ever cut all the way through for windows. In the ethnographic record of mud-brick architecture, there has been mention of windows created within the thickness of the brick wall (Fathy 1973), which would not necessarily have been preserved in the archaeological record. It seems probable, however, that in the majority of the buildings, the only outdoor access would have been the roof entry. This is not unheard of; among the conservative pueblos in New Mexico—such as Taos, for example—doors and windows have been used only since about 1900 (Nabokov 1981).

In Building 3, the doorway (F.633) and the wall niche (F.768) were both built into the east wall in the initial construction phase (B3.1A) (Figure 6.3; see also Figure 5.6). For this type of architecture, it is recommended that openings in the wall should not be closer to the corners than 60 cm, that the distance between openings in a 30-cm-wide wall be at least 1 m, and that the total area of openings be less then 20 percent of the total wall area (10–15 percent at optimum) (Doat et al. 1983). The doorway in Building 3 (F.633) was 0.70 m away from the beginning of the wall, whereas the niche (F.768) was built in the same wall right at its end. If Building 3 walls were at least 2.20 m high, the total area of the openings would have been below 10 percent of the total wall area. According to these measurements, they should not have weakened the wall structure.

Wall Maintenance

Dendrochronological and ^{14}C analyses suggested that houses at Çatalhöyük spanned from 50 to 80 years (Newton and Kuniholm 1999). The number of plaster coats on the walls of Building 5 corroborated this suggested house duration (Matthews 2005a), and the ethnoarchaeology of the

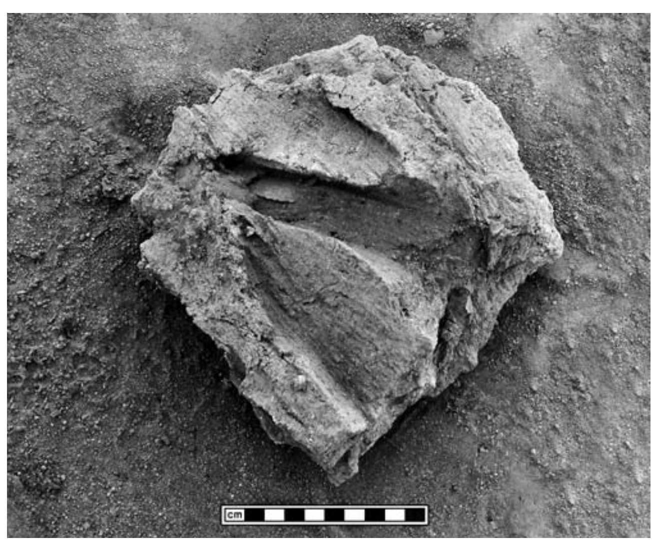


Figure 6.7. A fragment of burned roof from Building 52, showing wood impressions.

area reports that mud-brick buildings can last from 50 to 100 years (Horne 1994). Considering the perishable nature of the building materials, the bricks could retain durability only if well maintained. Although evidence is scarce, it is conceivable that the Çatalhöyük residents had to battle the problems of building maintenance on a seasonal, if not daily, basis. We have occasionally encountered in the archaeological record complete or partial fallen walls, but until now they have been interpreted as having been deliberately collapsed in the course of house demolition.

Mud brick is a soft, pliable material, which is subject to erosion by wind, rain, and even to human touch. It is recognized from historic adobe buildings that maintenance and repair on a cyclical basis is exceptionally important in mud-brick architecture. Mud brick is a relatively inert material, and it does not, for the most part, react chemically with any other substance. Caperton (1983) reported that most processes of deterioration are physical, including erosion, moisture penetrating the surface, and exfoliation due to soluble salts (which is a chemical action but has a physical effect). He cautioned that the mud-brick walls that suffer the effects of water and weather will lose material off their corners first. The eroding material falls to the wall base and forms soft debris, which retains moisture and causes basal erosion, further weakening the wall. Thus, a wall may only lose 6 inches (15 cm) from the unprotected top before it falls over.

In the maintenance and rehabilitation of historic adobe, when a massive amount of basal erosion occurs, the eroded area is cleared and the basal bricks and mortars replaced with new ones. A more effective technique utilizes more stable adobe taken from demolished buildings.

Deterioration is most likely to occur at the interface of two dissimilar materials—for instance, at the boundary between roof and wall, at floor level, and at the juncture of wall, floor, and ground surface. Permeability or porosity of soils (defined as the rate at which water passes through the material) is important in mud-brick architecture, since it affects both mud brick and mortar and requires the materials to be compatible. Considering that the same source materials were used for bricks and mortars in the majority of excavated Çatalhöyük houses, it is plausible to assume that the Neolithic people must have known how important their compatibility was.

In this type of house, the importance of drainage patterns around the mud-brick walls is often stressed. The natural ground moisture will infiltrate the wall and can reduce the compressive strength of the brick. According to McHenry (1984), the surface of the building site has to be flat and compacted so that the water runs across it quickly and in the desired direction. Despite our lack of evidence regarding drainage patterns, it is not hard to imagine that this was an important issue for the house occupants at Çatalhöyük, especially with regard to adjacent houses. Drainage of rainwater from both the roof and from the ground around the house must have been of crucial importance.

Building 3 was bordered on the north and west sides by open spaces (middens/courtyards), which also served as disposal areas. The midden deposits that accumulated against the house walls caused an increase in the amount of moisture in direct contact with the walls. Limited research undertaken by the conservation team on the moisture content of walls at Çatalhöyük showed that it was generally the same for all the tested walls of one building. It was the highest at the wall base and lowest at the top, and increased with depth into the walls (Matero and Moss 2004). Furthermore, the base of the north and west walls in houses at the site had the highest moisture content. For the west wall of Building 3, two potential sources of the problem have been suggested: leaking of water through multiple openings in the roof, and possible seepage of rainwater through the wall base from the midden.

The generally warmer and moister climate during the early Holocene meant that rainfall was higher than it is now, and springs and running water sources were more active (Kuzucuoğlu 2002; Rosen 2005), which, if in close proximity to the settlement, would have been detrimental to the mud brick.

MUD BRICKS

Although a common building material in many parts of the world, mud bricks are generally understudied as artifacts. Those who have studied mud bricks have considered them to be good candidates for analysis because, in suitable climates, they can survive over long time periods; moreover, the preservation of the organic materials, whether deliberately or accidentally captured within the bricks, can be very good. In other words, mud bricks can serve as "packets" of data concerning the environmental conditions or state of agriculture extant when and where they were made (Oates 1990; Willcox and Tengberg 1995). Rosen (1986) also found mud bricks to be a source of information on the changing landscape in which the raw materials were extracted. She adds that mud-brick research is especially interesting at tell sites such as Çatalhöyük, where changes in brick quality and source material through time, as well as within particular levels, can be monitored. It is possible that at Çatalhöyük, mud-brick manufacture was closely connected to local resources of clay and local vegetation, and that the bricks can thus be a rich source of data on the environment. At the same time, bricks, mortar, and plaster are the products of the deliberate mixture of clay, water, and a variety of inclusions and thus a result of human manipulation. Their composition and technique of manufacture provide information on the level of technological knowledge and individual and group choices that were made in the process.

In the early excavations at Çatalhöyük, Mellaart researched the formal characteristics of bricks and concluded that there was much variability but also some regularity in brick sizes, and that more than one brick type was in use in each level of the settlement history (Mellaart 1967). He further concluded that mud bricks at Çatalhöyük decreased in length through the levels, which has not yet been confirmed in the new program of excavation. He recorded that bricks showed most variability in their lengths, with the shortest bricks at 32 cm and the longest at 95 cm, and the least variation in the brick thickness, which typically measured 8–10 cm (Mellaart 1967:55). He reported that the width of bricks was kept uniform within one building, with the exception of the interior partition walls which were usually thinner, but they could vary between buildings; width measurements of 12, 16, 22, 24, 31, and 37 cm were found in the various buildings at Çatalhöyük.

Formal Characteristics of Mud Bricks

Until now, the current excavation has studied fewer houses than in Mellaart's excavation, but we have documented more systematically the size and composition of bricks from the excavated walls (Table 6.1). Consequently, a larger pool of data and a somewhat richer picture of mud-brick variability is available. For the SOUTH Area houses, Farid (2007) summarized that the bricks and mortar were generally consistent in color and composition within a building, although changes did occur. The length of bricks varied within one construction, although the thickness was generally the same and the width was always the same.

Length and Thickness of Bricks

Cessford (2007b) stated that in Building 1, due to poor preservation, it was often impossible to identify the exact dimensions of individual bricks, except for those that were extremely long or short. With this in mind, the standard brick lengths in this building varied between 0.25 and 0.44 m, with large examples that measured 0.73–1.17 m (Cessford 2007b:Table 3.11). Matthews (2005b) reported mud-brick lengths from 76 to 125 cm, widths of 22–40 cm, and thicknesses of 5–15 cm, separated by 5- to 15-cm-thick layers of mortar.

The walls of Building 3 in the BACH Area have been analyzed in detail for patterning of their bricks and mortars. Bricks were grouped by size in two categories so that they could be compared and statistically analyzed (Table 6.2). The most variable characteristic—the brick length—has been divided into "standard" bricks, which can vary but not exceed 1 m, and "oversized" bricks, which also vary but do exceed 1 m.

North Wall of Building 3 (F.174)

The north wall (Figure 6.2; also Table 6.3 [on-line])[5] contained 12 courses, with a total of 70 bricks preserved (here row 1 is the bottom course of bricks). The length of the bricks ranged from the smallest at 20–30 cm to the longest at 103–136 cm; the latter appear, with the exception of one such brick in row 12, from the first to the fourth row. The large majority of bricks in this wall were of standard length, 70–85 cm. Their thickness was generally 5.5–9 cm, with a couple of exceptions at 4.5 and 12.7 cm.

East Wall of Building 3 (F.762)

The east wall (Figure 6.3; Table 6.3 [on-line]) had 11 courses, with a total of 48 bricks preserved. The brick lengths were much less variable, with one-half being from 30 to 60 cm and the other half in the range of 70 to 90 cm. In each course, there was at least one oversized brick (total 11 such bricks) ranging from 137 to 386 cm; these were concentrated in the middle portion of the wall. Their thickness was generally 5–9 cm, with some bricks reaching 14.5 cm.

West Wall of Building 3 (F.636)

The west wall (Figure 6.5; Table 6.3 [on-line]) had eight courses, with a total of 51 bricks preserved. Standard bricks measured in length from 14 to 93 cm, with one-half being under 50 cm and the other half in the range of 60–90 cm. All but two courses contained at minimum one oversized brick, with lengths from 115 to 250 cm, while four courses contained two such bricks (11 total). The thickness of the bricks ranged from 5 to 9 cm.

South Wall of Building 3 (F.763)

The south wall (Figure 6.4; Table 6.3 [on-line]) had 13 courses of bricks, with a total of 68 bricks preserved. The brick lengths ranged from 10 to 99 cm, with the majority of standard bricks below 55 cm, but a fair number measuring 60–95 cm. There were 22 oversized bricks, of 104–171 cm in length, distributed one per course in seven courses, including the four bottom ones; two per course in five courses; and one course (7) even contained three oversized bricks. Their thickness spanned 4.8–16 cm, with a majority at 5–10 cm. The exposed part of the double south wall (F.1006/1026) included a total of 80 bricks preserved in 10 courses in F.1006, and 13 courses in F.1026 (see Figure 5.119). These bricks varied in length from 11 to 53 cm, with the majority measuring 60–86 cm. At the long extreme, a couple of bricks measured close to 1 m, and one came in at 116 cm. A large number of bricks as short as 10–35 cm

[5] Figures, tables, and appendices marked with [on-line] are available only in the on-line edition of *Last House on the Hill*. Go to *http://www.codifi.info/projects/last-house-on-the-hill* to access.

Table 6.1. Summarized brick sizes by excavation area and by building

Area	Level	Bldg.	Space	1960s designation	Feature	BRICK length in cm	BRICK width in cm	BRICK thickness in cm	MORTAR thickness in cm
Mell.	II					65/67	37	8	
						95	37	8	
Mell.	III					42	25	8	
Mell.	IV								
Mell.	V					62	16	8–10	
						92	16	10	
Mell.	VIA					32	16	8	
						32	22	9	
						38	12	8	
Mell.	VIB					32	16	8	
						40	24	10	
						44–50	31	10	
North		1				35–97	38	4–10	
North		3	86		174	70–95 (20, 136)*	30–40	5–9	
					762	60–90 (30, 386)*	30–40	5–9	
		–			763	60–90 (25, 171)*	30–40	6–9	
		–			636	70–90 (50, 250)*	30–40	6–9	
		5				0	0	0	0
South	VIB	–	160	House E.VIB.11		66–80	40	8–10	6–8
South	VII	–	109	House E.VII.19		50–74	40	8–10	2–5.5
South		–	112	Shrine E.VII.9	267	50–100	40 (24)*	8–10	2–4
					85	20–95	30	5–10	0.3–25
South		–	113	House E.VII.7		0	0	0	0
South		–	105	Court E.VII.15	56	60–160	40	5–16	0.2–4
					78				0.2–4

* Numbers in parenthesis represent the extremes on either side of the size norms.

Table 6.1 *(continued)*. Summarized brick sizes by excavation area and by building

Area	Level	Bldg.	Space	1960s designation	Feature	BRICK length in cm	BRICK width in cm	BRICK thickness in cm	MORTAR thickness in cm
South		–	106	House E.VII.16					Unavailable
South		40	107	House E.VII.2		86–160 (200)*	40	8–10	1.5–2
South		40	108	House E.VII.12		Same	Same	Same	
South		–	168	House E.VII.6		40–70	40	10	1–2
South		–	169	House E.VII.5		70	40	10	Unavailable
South		8	165	Shrine E.VII.1					
South		20	175	Shrine E.VII.8		70	40	10–1	
South		24	159/180	Shrine E.VII.10		34–70	40	8	2–4
South	VIII	–	161	–		0	0	0	0
South		–	162	–		0	0	0	0
South		4	150/151	–		n/a	40–54	n/a	0
South		–	115	–		67		8	
South		21	174	Shrine E.VIII.1		0	0	0	0
South		7	176	Shrine E.VIII.8		0	0	0	0
South		6	173/163	Shrine E.VIII.10		50–110	40	6–10	?
South	IX	22	177	Shrine E.IX.1		?			
South		16	164	Shrine E.IX.8		?			
South		17	182/170	–		?			
South		2	117/116	–		45–75	10–4	7	
South	X	23	179/ 178/200	Shrine E.X.1		?			
South		18	172/171	Shrine E.X.8		?			
South		9	166/167	–		?			
South	XI–XII	–		Deep sounding		?			

* Numbers in parenthesis represent the extremes on either side of the size norms.

Table 6.2. Standard-sized and oversized bricks of Building 3

Wall feature	Standard-sized bricks length in cm	Undersized bricks length in cm	Oversized bricks length in cm	Brick thickness in cm	Total number of bricks
174	70–85	20–30	103–136	5.5–9	70
636	60–90	14–50	115–250 (11) *	5–9	51
763	< 55, or 60–95	10–25	104–171 (22) *	4.8–16	68
762	70–90	30–60	137–386 (11) *	5–14.5	48
1006/1026	81–86	10–53	116	2–11	80

* Numbers in parenthesis represent the extremes on either side of the size norms.

were also present. The brick thickness varied from 2 to 11 cm, with the majority being 5.5–8.5 cm.

Summary of Brick Dimensions in the BACH Area

As shown in Figure 6.8, no significant correlation between brick length and thickness existed. Although longer bricks tended to be thicker, shorter bricks did not tend to be thinner. Generally, not much patterning could be observed in the dimensions of bricks. However, we can say that in the BACH Area, bricks tended to be concentrated at the longer end of the range, but shorter bricks were nevertheless numerous. The correlation between a brick's length and its place in the south wall shows that bricks below 1.5 m occurred in all the surviving rows (Figure 6.9), while those longer than 1.5 m were concentrated in the middle rows of the surviving portion of the wall, and the three longest were located between the third and fifth rows of the wall. The oversized bricks were present throughout the wall, but they seem to have been more numerous in the side portions of walls rather than in the center. As presented in the histogram of Figure 6.10, the most frequent bricks were those shorter than 1 m long; those in the range of 80–90 cm constituted the large majority of the BACH sample.

The histogram in Figure 6.11 shows that the thickness of the bricks ranged from 5 to 10 cm, with a small number of outliers, but with the large majority 7–8 cm thick. The correlation between the thickness of bricks and their position in the wall (Figure 6.12) shows no distinctive patterning.

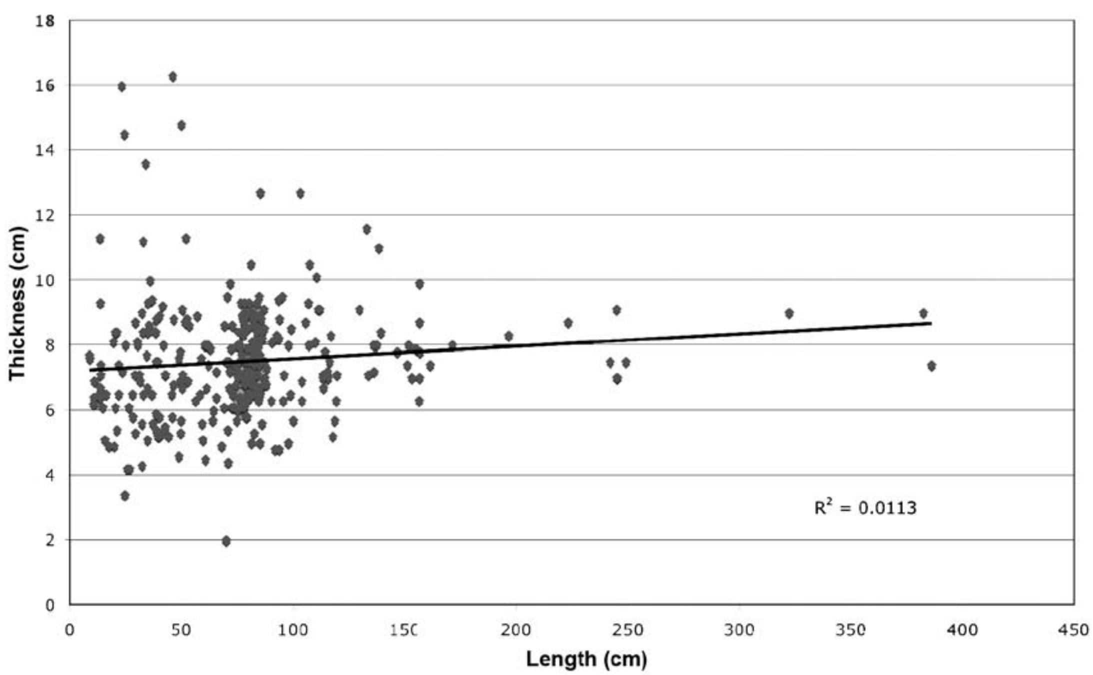


Figure 6.8. Correlation between brick length and thickness.

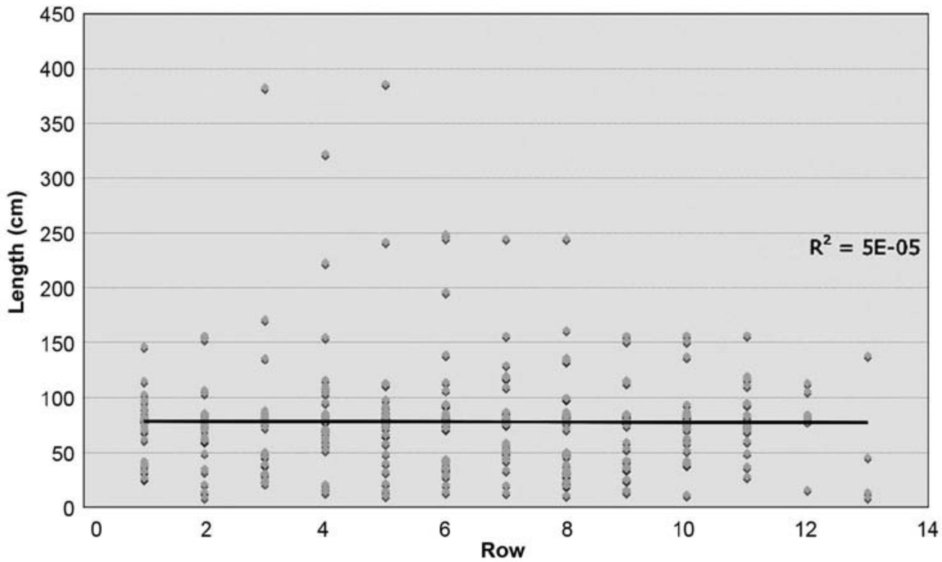


Figure 6.9. Correlation between brick length and its position in the wall.

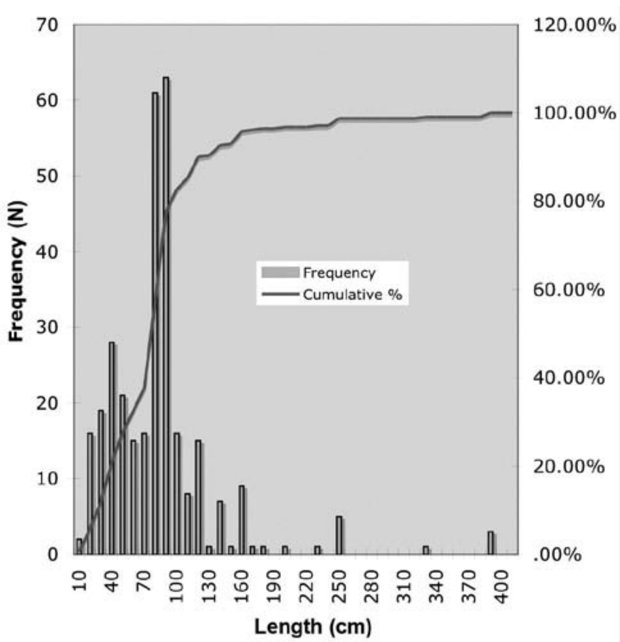


Figure 6.10. Length and frequency of Building 3 wall bricks.

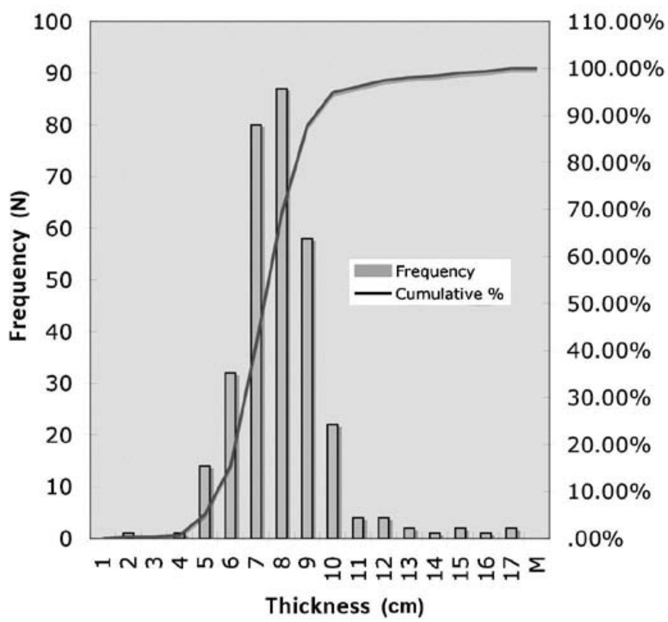


Figure 6.11. Thickness and frequency of Building 3 wall bricks.

The strong presence of oversized bricks in the south wall of Building 3 is important, since it forms a double wall with Feature 1006/Feature 1026. As noted above (see "Construction of Walls and Other Wall-like Partitions"), this wall developed three long vertical cracks. It is conceivable that this wall had to bear the heaviest load, leading to the large number of oversized bricks. It was noticeable that the wall footing was made of bricks of more regular size and shape. Generally, any variation in the width of bricks could be explained by variation in the thickness needs of house walls, or sometimes by the position of bricks in the walls. For instance, the bricks in a footing appeared somewhat wider.

Brick Color

Bricks varied also in their shape, color, fabric, and composition. These diverse attributes allow us to talk about several types of bricks that were in use at Çatalhöyük, and brick color was the most common denominator of the variability. The great range of brick color comes primarily from the diverse raw materials, but also from other agents incorporated in it. Soils used in mud brick at Çatalhöyük

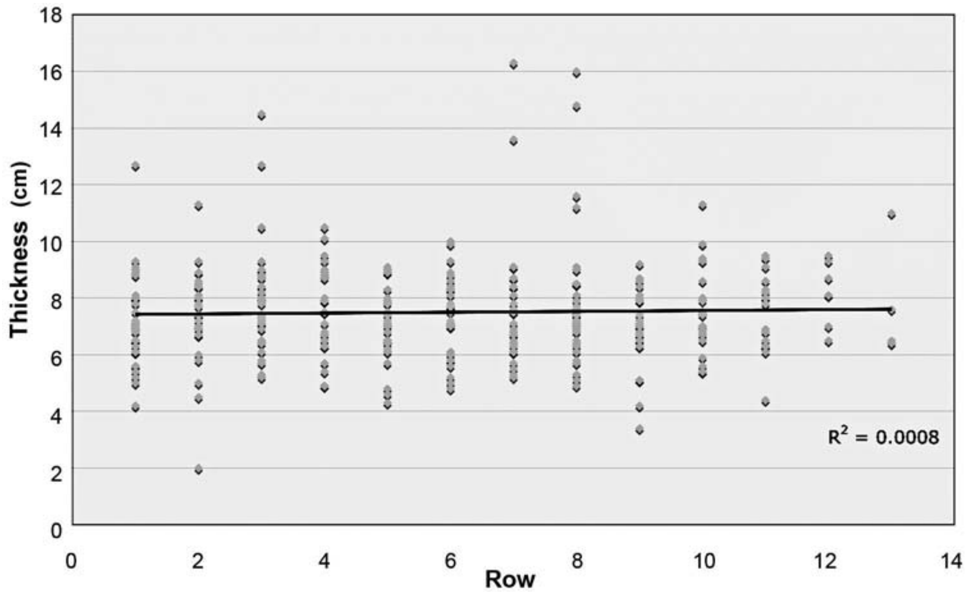


Figure 6.12. Correlation between brick thickness and location in the wall.

Figure 6.13. Example of a plano-convex brick in soft orange clay.

varied in color from black to light browns, reds, yellows, and white.

In Building 3, we categorized the bricks by color into beige, red-orange, light brown, dark brown, and, very rarely, white bricks. The majority of the wall bricks in Building 3 were made of the light and dark brown soil bricks. The beige-colored sandy clay bricks were present in the footing of the main walls, where exceptionally hard bricks were needed. The same mix was used in house features—for example, in storage bin F.786 (see Chapter 5, subsection "B3.1 Subphase C")—that had the same structural needs.

Red and orange bricks made of soft clay were used in the construction of storage features, combined bin and basin features, benches, and some walls (e.g., F.628 and F.636; Figure 6.13) (see Chapter 5). In Building 3, white bricks made of unprocessed marl may have been associated with the screen wall (Phase B3.4B: F.601). Three such bricks were found in the top course of the truncated wall (F.600), which provided shoring for the west house wall (F.636); the bricks covered the same distance that corresponded to that of the nearby screen wall (Chapter 5).

Brick Shapes

Brick shapes were predominantly rectangular prisms, with the rare occurrence of small and cuboid ones (Figure 6.14). However, other shapes were also found, such as plano-convex bricks (Figure 6.13). The term "brick" might be inappropriate in this case, since these objects were molded in shapes unlike other bricks and probably used for decorative installations. Plano-convex bricks with rounded upper surfaces were also reported by Mellaart (1970) and are known from the Neolithic site of Höyüçek (Duru 1999).

Brick Fabric: Raw Materials

Brick fabric in the BACH Area, as elsewhere at the site, varied depending on its composition, manufacture, and level of preservation. Brick composition varied considerably, due to the nature of the building material (composed of natural sediments from around the Neolithic settlement) and also the variety of inclusions that were incorporated during their manufacture. Bricks with more inclusions of grasses or containing artifacts in larger quantities had coarser surfaces, as did the bricks that were exposed to weathering for longer periods. Conversely, bricks largely composed of silt with fine sand inclusions tended to have smoother surfaces, like those that remained unexposed and were kept in moist conditions.

At Çatalhöyük, the sediment used in raw building material included silty clay, clay loam, sandy clay, fine sandy

Figure 6.14. Closeup of the western end of the north wall of Building 3, showing typical beige, rectangular prismatic bricks.

loam, and sandy loam (Matthews and Farid 1996). A major shift from the predominant grayish silty-clay mud bricks used in Mellaart's Levels XII–VIII to orange or brown silt-clay loam, sandy silty loam, and even sandy loam mud bricks in later levels has been suggested. Micromorphological analyses and analyses of the particle size showed that soils used in mud bricks came from different flows of alluvial deposits, lake-derived sediments, and floodplain deposits (Matthews 2005a; Tung 2005).

The geomorphological and geoarchaeological studies of the surrounding area showed that Çatalhöyük was located at the southern edge of an extensive marsh or shallow lake during the terminal Pleistocene. The basic natural sedimentary sequence around the site consisted of lake marl covered by about 3 m of alluvium deposited since the early Holocene, with "Lower Alluvium" covered by "Upper Alluvium" (Roberts et al. 1996). The KOPAL survey and excavation, as well as the deep sounding, reached the earliest habitation of the site and found clear evidence of quarrying into and through the soil deposits surrounding the site for such building materials as marl and backswamp clay (Boyer 1999; Boyer et al. 2006; Roberts et al. 2007). The latter comprises heavy, dark grayish brown clay (2.5Y 3/2) (all color measurements were taken with Munsell color measurement system), which presently lies buried under a thick layer of upper alluvium. Some of the pits were excavated into underlying deltaic sand, suggesting that this material was also utilized for some purpose (Boyer 1999; Roberts et al. 2007).

Mud bricks require a balance of clay, silt, and sand particles. Sufficient quantity of clay and silt form a matrix that binds the sand particles together (Niebla 1983). The clay in mud brick is an essential component and is needed in larger quantities here than in other types of earth-construction, such as rammed earth (Rapp 1975). Higher clay content makes a denser brick, increasing the resistance of bricks to water erosion and prolonging the life of the building (Rapp 1975). However, if the clay content in mud bricks is excessive, they will shrink and crack while drying, and may cause walls to shrink too much. This traditionally has been offset by the addition of vegetal materials (Fathy 1973), which physically bind and chemically strengthen the clay by adding humic acids (Rosen 1986).

The exact proportion of clay needed to make good bricks can vary. Schwalen (1935) showed that it is possible to make good bricks from a presence of clay between 9 and 28 percent, but the Modern Uniform Building Code (Boudreau 1971) requires 25–45 percent. The downside of the heavy clay content mud bricks is the increased time and effort needed for their sediment extraction and manufacture (Rosen 1986). The clay in soils of high plasticity is considered to have outstanding mechanical characteristics, and with adequate presence of sand, these soils form exceptionally good raw materials.

Brick Fabric: Organic and Other Inclusions

The marls and other natural sediments around Çatalhöyük are not as rich in organic matter as the mud bricks that were manufactured from them. This supports the impression gained from observations that vegetal inclusions were added to the sediments in the course of brick manufacture. All of the soils utilized for building materials integrated a variety of inclusions that ranged from those that occurred in the environment, such as sand, rock, and grasses, to anthropogenic materials, such as redeposited fired soils, ash, charcoal, and discarded artifacts. As Matthews (2005a) reported, these inclusions were often observed as little lumps in the fabric, ranging from 1 cm to over 20 cm in length, rather than evenly dispersed fragments. It is widely believed that their role was to contribute to the cohesiveness of soils, but the builders may have had other reasons for adding them into the clay.

If the soil has a balanced proportion of clay, silt, and sand, it is not necessary to add vegetal inclusions. If there is an imbalance in these components, then straw is typically added to the soil (O'Connor 1973). Straw and other vegetal inclusions also beneficially increase the drying speed of bricks, but they can problematically generate a favorable environment for pests of various sizes (McHenry 1973). According to Ford (1837), earth mixed with straw is easier to build with, since it has a plastic quality, which allows it to be molded and packed down without a tamper. However, he remarks that such bricks do not last as long as those made from earth alone that were tempered down dry. The straw increases cohesion and enables one person to build a house alone; but it has moisture-bearing properties, which render the wall more susceptible to damage from rain or excessive humidity. Fathy (1973) and Khalili (1986) describe lightweight bricks manufactured with a large quantity of straw as being more flexible, and used in the walls and roofs of houses with vaults.

Large amounts of organic materials have been detected in bricks at Çatalhöyük. The archaeobotanical evidence (Fairbairn, Near, and Martinoli 2005) showed that chaff was found on-site, but an overall absence of straw remains was also noted in the phytoliths (Rosen 2005). The absence of chaff and straw in most contexts at the site might be linked to their utilization almost exclusively in house construction. It was apparent that large quantities of chaff and straw were incorporated into clays for building. Micromorphological samples of bricks contained up to 10 percent of plant materials, which were present as charred and siliceous remains and as impressions in clay (Matthews 2005b:379, Figure 19.17).

It is possible, however, that the bricks of the upper demolished sections of walls, which were not detectable in the archaeological record, contained larger quantities of vegetal matter than the bricks in the lower wall sections. Such a distribution of organic inclusions would have created stronger and heavier lower wall bricks, while lighter and more manageable straw-tempered bricks would have been located in the upper wall sections.

Micromorphological analysis also indicated that floor plasters incorporated up to 20 percent and bin plasters up to 30 percent of vegetal material, showing that the quantity of their inclusion could vary considerably depending on the needs of construction. The construction of the Replica House provided an opportunity to test different quantities of straw and chaff in the brick clays, resulting in the final manufacture of experimental bricks with 10–15 percent of vegetal inclusions (see Figure 22.2). In the ethnographic record, the presence of up to 30 percent of plant inclusions in bricks has been mentioned (Cytryn 1957). Based on the calculated 21 m^3 of soil volume that was used in the construction of the Building 3 walls, the volume of vegetal inclusions must have been between 2.1 m^3 and 3.1 m^3.

As Rosen (1986) reports, sand and pebbles in mud brick play the same role as temper in pottery: they create a skeleton to which the fine-grained, plastic sediments cling, and they limit the amount of shrinkage and cracking in drying bricks. Too much sand may prevent a brick from cohering well and cause it to erode faster (Bunting 1975). The intentional addition of sand to clayey deposits was a common practice in brick manufacture in ancient Mesopotamia and Egypt (Torraca et al. 1972). The particle size analyses of the limited number of brick samples from Çatalhöyük showed that, on average, they contained 23 percent sand and/or coarse aggregate, 30 percent sand and/or fine sand, 32 percent silt, and 15 percent clay (Tung 2005).

The walls of Building 3 demonstrated that its occupants were able to recognize different properties of mud bricks manufactured with particular combinations of ingredients. The beige sand bricks used in the wall footing were manufactured from soil that included well-balanced proportions of clay, silt, and sand, so that no vegetal inclusions were needed. It was also apparent that this type of brick was used sparingly and only in the wall footing and not throughout the walls of Building 3. It is possible that the raw material was in limited supply and that it was used selectively for those bricks in the wall that were most susceptible to moisture. The majority of bricks in the surviving upper parts of the walls were made of soils that included sand, chaff/straw, and other grasses.

The composition of mud bricks at Çatalhöyük often varied from building to building, which suggested the use of diverse sources of raw material, even to the exhaustion of particular resources. Moreover, it has been suggested that mud-brick production and resource exploitation was household-based (Matthews 2005a). As mentioned in the section "Brick Fabric: Raw Materials" (above), there was a major shift in later levels (Mellaart's Levels VII–V) to the selection of oxidized orange or brown silty-clay loam, sandy silt loam, and even sandy loam sediments for bricks (Matthews 2005b).

Brick Manufacture

The clays used in the manufacture of mud bricks at Çatalhöyük showed that they were thoroughly mixed, with the majority containing non-lumpy clays. Soils with high clay content would tend to become lumpy and would resist efforts to make a smooth mix. The best way to overcome this is by soaking clays in plenty of water and in a pit, if possible (see Figure 22.1) (McHenry 1973). It is conceivable that this could have been the way the clays used as building materials were treated at Çatalhöyük. The surrounding marshy environment and proximity of the Çarsamba Çay River would have created such conditions for curing clays. By contrast, the presence of lumpy, clayey mortar indicated that these soils were not cured in water. The mortars made of such clays would show excessive cracking as the result of the high clay content, but would have remained very hard despite the large pressure to which they were subjected.

An ongoing debate at Çatalhöyük concerns the method of brick manufacture. Considering that a large portion of bricks are over 1 m and up to 2 m long, the question is whether or not they were made in molds. The manufacture of bricks in molds implies pre-made bricks, which would further suggest that they were cured, dried, and completely stabilized before being incorporated into a building.

Some attributes of the mud brick imply the use of a mold or a frame. The evidence provided by the bricks from Building 52 (Levels VI–V) showed that a four-sided frame in brick manufacture was used at Çatalhöyük (Stevanović 2005). In this house, several large, loose bricks were discovered that had been framed in molds with very straight sides and 90-degree square corners. The majority of wall bricks in this building, however, did not have such regular and smooth sides and corners, and were not manufactured in such four-sided molds.

Pre-Made Bricks

The term "mold" is used here loosely to include a variety of frames for pre-made bricks. The square shape, straight edges, and 90-degree angles in the majority of bricks in the BACH Area and the majority of bricks excavated across the site have argued for the use of some kind of frame to make pre-made bricks. The mud bricks showed regularity, but not in all their dimensions. For example, we have seen that the mud bricks in the BACH Area demonstrated regular width, semi-regular thickness, but variable lengths, indicating most probably an open-ended (three-sided) frame of a kind that controlled the width but allowed for different brick lengths. Such a technique would allow for a speedy house construction and would create bricks of more manageable size and standardized shape, with a clear line of boundary with mortar (see Figures 22.3–22.12).

Bricks Made on the Wall: The Pisé Technique

The alternative to pre-made bricks is bricks that are formed on the wall. They have to dry on the wall itself, which makes them less stable and predictable and slows down the construction process. The Pueblo Indians used the *pisé*, or "rammed earth," technique in their house construction, in which they first made the frames from interwoven sticks and then pounded mud into these. The frames would be removed as the filling began to set (Nabokov 1981). Another pre-Spanish adobe-working technique practiced by cliff dwellers of the American Southwest for the walls was the *jacal* method—upright sticks with adobe mud crammed between them. This was a version of the pisé method in which mud was premixed with debris from the community dump, thus incorporating fragments of pottery, bones, and ashes. After it was "puddled" onto the walls, a day of hot sun was sufficient for a single course to harden so another could be settled on top of it (Nabokov 1981).

Both of these methods for brick manufacture, had they been practiced at Çatalhöyük, would have left traces of the sticks on the dried mud brick. However, no such impressions have been found on the sides of in situ bricks at Çatalhöyük. Moreover, the sides of the oversized bricks in the BACH Area appeared the same as those that were pre-made. The bricks created by the pisé technique are typically long, if not oversized, and often of irregular thickness. They are either too thin or do not hold their shape along their entire length and appear to have been squashed by overlying weight.

Location for Brick Manufacture

We do not know exactly where at Çatalhöyük the brick and mortar were manufactured. Contemporary brick makers situate their brickyards outside the area scheduled for building, so that it does not have to be moved when building occurs and so that it can be made permanent and reusable by the village, which will always be building and repairing houses. Ideally, the brickyard should be situated between the water and soil supplies. However, a permanent brickyard is not common when the building area is restricted (Fathy 1973).

At Çatalhöyük, the only unrestricted space would have been outside the settlement, with the exception of the very early period of the site when only a few houses existed. When a brickyard is located on the settlement outskirts, more labor is required to carry the bricks across longer distances. We demonstrated in building the Replica House that 1.20 m and longer bricks could be made at a distance and successfully carried to a building site (see Figure 22.7). When a brickyard is near the building site, water needs to be carried to it over varying distances. When all this is taken into consideration, it may very well be that there were no permanent brickyards at Çatalhöyük, but rather temporary ones set up as needed depending on the availability of open space between buildings.

Considering the large presence of midden fragments in bricks and especially in mortars, these could have been manufactured in the courtyards, which were also areas for refuse disposal. On the other hand, at Çatalhöyük, water and the soil for bricks had to be obtained from areas outside the site, implying that brick manufacture may have taken place outside the village(s), in locales where these resources were plentiful and space was unconstrained. In marshy environments, traditionally mud bricks are made from clay extracted from its original water pool. This clay is sieved and transferred to another monitored water pool, from which it is then extracted as needed. It is conceivable that at Çatalhöyük, a similar method for basic mud-brick soil would have been utilized, considering the marsh that surrounded the village.

Among the Pueblo Indians, blocks known as *terrones* were sometimes sliced from river bog sod and used instead of manufactured adobe bricks; these would outlast an adobe because of the natural packing of the deposits (Nabokov 1981). The beige sandy clay bricks, which in Building 3 occurred in the footing of the walls, may have come from the "clean" silty deposits—that is, from clays that sat in water for a long time, similar to *terrones*.

Mortar

The mortars in buildings at Çatalhöyük could be as variable as bricks, but they could also be composed of the same raw materials as bricks. Matthews and Farid (1996) assert that, when compared with bricks, mortar sediment sources in all levels were more variable, less worked, and included whitish lake marl deposits (Figure 6.6). The most common mortar seems to have been made of grayish brown or dark brown backswamp silty clay; anthropogenic, midden-rich sediments, oxidized orange sediments, and brownish orange sediments were also common. Sometimes mortars were made of natural sediments only, but more frequently other materials were included. Burned aggregates, charred plants, charcoal, and small fragments of bone, stone, obsidian, and clay balls were found in mortars (Matthews and Farid 1996). This debris most likely came from the areas of the settlement in which the mortars were prepared. Heavy-residue analysis of different brick courses from different walls of Building 1 revealed that all the mortars had higher densities of faunal and chipped stone than the bricks, but there was considerable variation between and even within individual courses (Cessford 2007b).

It is not apparent why mortars were often composed of purely midden soils, which contained charcoal, ash, burned soil, and a variety of artifacts. Matero and Moss (2004) suggested that surprisingly high charcoal content in mortars could have been the result of controlled processes. Their report discussed what was probably intentional use by Romans of wood ash in lime mortars and plasters in hot, dry places like Israel; this acted as an effective water-retention agent to help control shrinkage and cracking.

In the BACH Area, the two bottom brick courses in the main walls were joined with mortar made of midden deposits. The upper brick courses of Building 3 were joined with mortar that contained brown and yellow soils. One material for mortar was applied over the whole length of a wall in one brick course. This strategy shows that the Neolithic occupants probably understood the performance of their building materials. Different materials react differently to moisture, heat, and pressure, and mixing mortars in the same row of bricks could cause the bricks in the same course to move at different rates and, as a result, to bend and crack. Traditional adobe architecture, moreover, shows that mortars are best if made from the same material as the bricks to be used in a wall, since they behave equivalently when drying and in exposure to moisture (Garrison and Ruffner 1983).

At Çatalhöyük, mortars could be of considerable thickness, often as thick as the bricks themselves, and occasionally even exceeding the thickness of brick. In Building 3, mortar thickness ranged from 2.0 to16 cm, which was considerably thicker than is allowed by contemporary adobe builders (1.5–2.5 cm).

Excavators of Building 3 identified two types of distinctive mortar, which they termed "special mortar." The first of these was made of unusually compact beige, sticky clay (8639) and was used in attaching the bricks of the bench (F.772) to the floor. The bricks in question adhered to the floor plaster to such a degree that the two could not be separated. The second "special mortar," in F.793, was described by the excavators as clay that is as "hard as concrete" (Figure 6.6). This material was a mixture of the sticky clay and very hard crushed rock sediments, which were evenly dispersed in the sticky clay matrix. This mixture resembled a modern terrazzo in appearance. Considering that this prehistoric terrazzo was discovered also in the PPNB archaeological record at the site of Çayönü (Clemens Lichter 2007), it is conceivable that the occupants of Building 3 knew the specific qualities of this material and produced their own version of it. The Çayönü terrazzo was made with a quick lime matrix, whereas the terrazzo in Building 3 had a clay matrix.

Plasters

Plasters can normally occur on both outside and inside wall surfaces, but at Çatalhöyük only a single occurrence of outside wall plaster was found. It is to be expected, however, that the walls that were exposed to the elements would have been plastered for protection, but this remains to be seen in future excavations. Also, it is quite possible that plaster on the outside of houses would have been made of the same clays that were used in brick manufacture, rather than from the white marl clays used on the house interiors.

Inside Çatalhöyük houses, most if not all the surfaces had plaster finish. House walls, floors, and features such as ovens, hearths, basins, and benches were coated with layers of white clay that was derived from mud, gypsum, and lime. Use of lime in construction occurred in Çatalhöyük's earliest levels, but mud plaster was used in the subsequent levels (Matthews 2005b). Çatalhöyük's inhabitants must have had a stable source of white clay for plastering, as it was used lavishly throughout the mound, and there was no indication that they ever used a substitute material. The mud plaster was made of soft, unconsolidated lime sediments. According to micromorphological analyses (Matthews et al. 1996) and the Çatalhöyük conservation team's research (Matero and Moss 2004; Turton 1998), the Neolithic houses were plastered with white, unfired, highly calcareous silty clays made from fine, unconsolidated soft lime sediments with silty-clay particle size. They were identified as montmorillonite, a type of smectite, which is a predominant clay type in the region (Tung 2005). Lime-rich marl clays occurred in abundance around the site and could have been quarried during the Neolithic from below the thin alluvial deposits of the surface soil (Boyer 1999; Roberts et al. 1996). Driessen and de Meester (1969) suggested these clay sediments resembled modern samples of soft lime deposits, which comprise up to 95 percent pure carbonates of calcium and magnesium. These deposits are currently used by villagers in the region for plastering the floors and walls of their houses (Matthews and Ergenekon 1998).

All the plastering was done in very thin (24–720 μm) and usually multiple layers (Matthews et al. 1996); in Mellaart's (1967) interpretation, the new layers were applied annually (see Figure 5.10). The micromorphological analyses at Çatalhöyük, including those from the BACH Area buildings (Chapter 7; Matthews 2005b; Matthews and Farid 1996:Figures 15.3–15.4) and from the study conducted by the conservation team (Matero and Moss 2004), revealed the nature and frequency of wall plasters, as well as the lenses of soot and paint on them.

The coats of wall plaster were applied directly to the mud brick, first in a 1- to 3-mm-thick single preparatory layer, followed by a two-part sequence of base and finishing layers, which were repeatedly added. The preparatory and base layers were made of tan-colored clay, while the finishing layer was of white clay. Both base and finishing layers were predominantly calcium carbonate (52–60 percent) and smectite clays (40–48 percent). They were most likely extracted from the purest beds of the deposits in the area. The preparatory and base layers also included up to 2 percent fine and coarse sands of quartz and feldspar, and also revealed plant fiber voids. Presumably, the plants were organic additives for reducing shrinkage and increasing the tensile strength of clays. Bioclasts of shell, which were also visible in the plaster clay, suggested a non-calcinated source for the lime. The preparatory and base plaster layers, when applied to mudbrick walls, were sometimes very thick and uneven, such that the finishing coats were meant to fill in and even out these surfaces for the subsequent and much thinner plaster coats. The finishing coats were thin, smooth in texture, compacted, and often included black, smoothed plaster layers (Matthews 2005a). Matero and Moss (2004:217) add that the finishing layers were consistently thinner and denser, with fewer inclusions, than the ground layers, averaging 0.025–0.1 mm and 0.1–0.4 mm, respectively.

At Çatalhöyük, the large, elaborate rooms were plastered more frequently than side rooms, and the walls had more plaster than floors (Matthews 2005a). For instance, more than 60 layers of plaster from accumulated occupation residues were found on one house floor, and over 450 layers of plaster and soot were found on its walls (Matthews 2005b). The north, east, and south walls of Building 3 contained sequences of wall plaster coats between 2 and 5 cm thick, and the west wall had considerably fewer layers (see Figures 4.17, 5.10, 22.27). Space 87, in which over 10 burials were found, had in its northeast corner the thickest sequence (6 cm) of wall plaster found in the entire BACH Area.

The coats of plaster clay applied to newly built walls and floors undoubtedly had a number of functions: to seal the rows of bricks and mortar, to improve the insulation from the cold and heat, and/or to prevent moisture and pests from entering the house through the pockets of air formed in the bricks and mortar. They also made the finished wall and floor surfaces smooth, which facilitated the cleaning of those surfaces.

The ethnohistorical record (O'Connor 1973) links the application of wall plaster to the level of dryness of the walls. In new adobe houses, it is necessary to wait several months after the walls are completed before they can be plastered. With time, the adobe bricks are cured and settle under the weight of the walls. The time can be reduced if the bricks are pre-made, adequately stabilized, and cured before being incorporated in walls.

Thus, we suggest that, in a new building at Çatalhöyük, the first set of plaster coats was necessary for the protection of the structure. Their occasional refreshing would have been beneficial for the general maintenance of the house. However, the presence of hundreds of such layers of clay cannot be explained as a construction requirement, and additional explanations must be considered. Undoubtedly, the white, smooth plaster coats enhanced the interiors, and the whiteness of the clay emphasized the cleanliness of the interior space. After examination of different floor coats in Building 3, we concluded that the new floor coating was prompted not by wear and tear of the floor itself, but by aesthetic considerations.

Moreover, the white clay used in plasters may very well have served a symbolic role. In many societies, minerals, including clays, have been seen as incredibly powerful cultural symbols (Boivin and Owuc 2004). Earth has been understood as a sacred and animated entity, and attributed with qualities and properties that are also given to humans, plants, animals, or gods (Barley 1994; Boivin 2004a; Gosselain 1999; Stevanović 1996). The creative powers of earth can be so sacred that transgression of the earth demands ritual recourse (Burton 1984; Sillar 1996). Some symbolic associations of clays tie it to human body parts, such as in case of the Batammaliba of Togo, where the clay used in the construction of houses is compared to flesh and the clay-based plaster is referred to as "skin" (Blier 1987).

At Çatalhöyük, similar links between plaster coats and human flesh and skin can be drawn. Painting the walls red may evoke such links (Chapter 4). In Building 3, portions of the north and east walls and the east face of the interior wall (F.160) were painted with red pigment on multiple occasions. Multiple layers of red painted wall plaster occurred in Space 87 on the east and south walls, and in Space 88 on the north wall. Another example of such symbolism was found in the case of a human skull in Building 42 whose face was covered with layers of painted plaster (Hodder 2004a:Figure 3). The treatment of wall plaster during the process of house abandonment may have expressed the same type of symbolism. The stripping of wall plaster as skin, which is seen in Building 3, and its deposition in the symbolically charged areas of the house has also been known from other buildings at Çatalhöyük (see Figure 5.87) (Chapters 4, 22; Farid 2007).

The technology of plaster preparation and application has been a part of experimental research at Çatalhöyük (see Figures 22.28–22.35), which demonstrated that these tasks required skill and labor. In an attempt to give our Replica House the smooth, even surface qualities found in the Neolithic originals, we utilized a variety of tools—cloth, brush and broom, lather, and stone—for applying the white clay onto the house walls and floors. In our efforts, using stone tools to burnish the plaster produced surfaces that were the most similar to the plaster on Çatalhöyük's walls, which led us to conclude that perhaps that might have been the method used in the Neolithic. However, the labor involved in the burnishing process proved more than we expected, suggesting that maybe numerous individuals were engaged in this task.

Fragmented, abraded sandstone hand tools of cuboid shape recovered in the infill of Building 3 could have been used for plaster burnishing. Russell (Chapter 15) suggests that cattle scapulae could also have been used as tools for plastering. It is feasible that scapulae were employed in the burnishing of plaster alongside stone, which was sparsely present in this environment. Russell (Chapter 15) also notes that some bone points were shaped by burnishing, and she suggests that this was done on plaster, which would indicate some interdependence between plastering and tool manufacture.

Posts

Timber had an important structural role in the buildings at Çatalhöyük. Mellaart (1963:60) reported a framework of four large wooden posts of juniper or oak set into postholes, which were symmetrically arranged around the walls of the larger room, suggesting that the roof of the main room may have been higher or more substantial. Mellaart (1967) noted the presence of vertical posts throughout all his levels at Çatalhöyük; however, whereas the use of posts was widespread in the earliest buildings (Levels XII–XI), his later Level II showed very little evidence of structural timber. The buildings from Mellaart's Level VI that were destroyed by fire offered the best record so far for the wood used in house construction. They showed the existence of wooden frames composed of vertical and horizontal timbers, primarily oak and juniper, with occasional elm (Mellaart 1967).

The new excavation has unearthed remains of vertical posts in buildings and confirmed the use of the same three species of wood for timber (Asouti 2005b). Horizontal timber was evidenced only in the doorway (F.633) of Building 3, recognized from an imprint in the surrounding clay (Chapter 5), and in Building 2, preserved as a phytolith of a lintel.

It is often assumed that the role of structural timber in mud-brick architecture is mainly to aid roof support. However, posts are not always necessary as roof support, since the walls can often carry the load themselves (see "Wall Mechanics," above). In Building 3, for example, posts were arranged along the main walls (see Figures 4.1, 5.3; Table 5.2). Two large posts (F.602, F.168) set 1.9 m apart abutted the east wall. By contrast, on the west wall, only one large post (F.750) (see Figure 5.5) was placed abutting its middle, and even this was replaced with a storage bin in the later part of the house occupation (Chapter 5). The north wall was abutted by two medium-size posts (F.766, F.773) set 1.3 m apart. The south wall, on the other hand, was abutted by only one medium-size post (F.774), on the same alignment as post F.766 on the north wall.

The glaring absence of posts on the west wall, which would have been aligned with those on the east wall, has called into question the role of the posts as roof support in

Building 3. Furthermore, the two sets of symmetrically aligned posts in a north–south direction were 5.7 m apart, which would have required a very large span for roof beams. These posts should have stood closer to the house center, where they would have supported the roof load much more effectively. Their positioning along the walls indicated that roof bearing was not their primary function, if a function at all. Figure 6.15 shows a possible arrangement of the main roof beams in Building 3, delineating how the structure would have rested on the posts as well as on the walls.

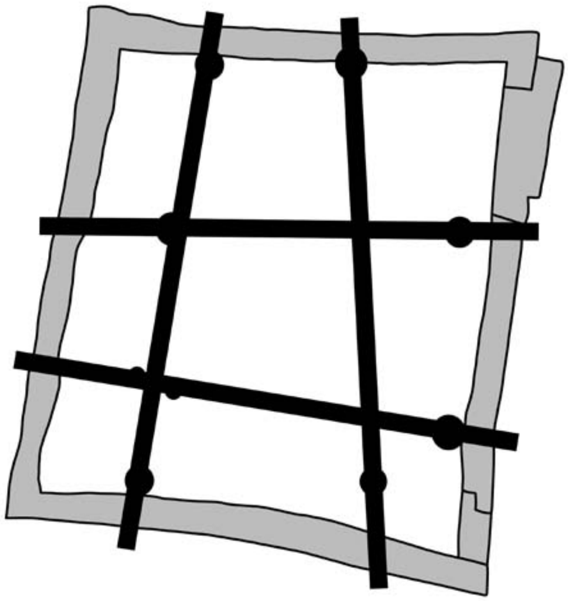


Figure 6.15. A possible arrangement of the roof beams in Building 3.

In the later phases of Building 3, more posts were introduced within the building interior. Two internal walls (F.160, F.161) on the north–south alignment—which also incorporated the two posts (F.766 and F.774)—were introduced in the building in Phase B3.4A. A little later (Phase B3.4B), five new posts were added for the screen wall (F.601) on the same alignment and could have taken on some of the roof load, which, with the increasing age of the house, became thicker and heavier.

Considering that for most of its use-life Building 3 did not have any interior walls, the roof beams had to carry the load. This further implies that the east–west beams would have been resting directly on the walls and/or on a horizontal bearing plate. In some Pueblo buildings, "it was common to place a long wooden timber in the last courses of adobe bricks. This timber provided a long horizontal bearing plate for the roof, thereby distributing the weight of the roof along the wall" (Tiller and Look 1978:50). It is feasible that the Building 3 occupants used the same type of construction. The heavy roof weight would have required a very good system for load bearing, in which the bearing plates would have distributed the weight onto the walls (Figure 6.16). It is not surprising that no traces of horizontal bearing plates

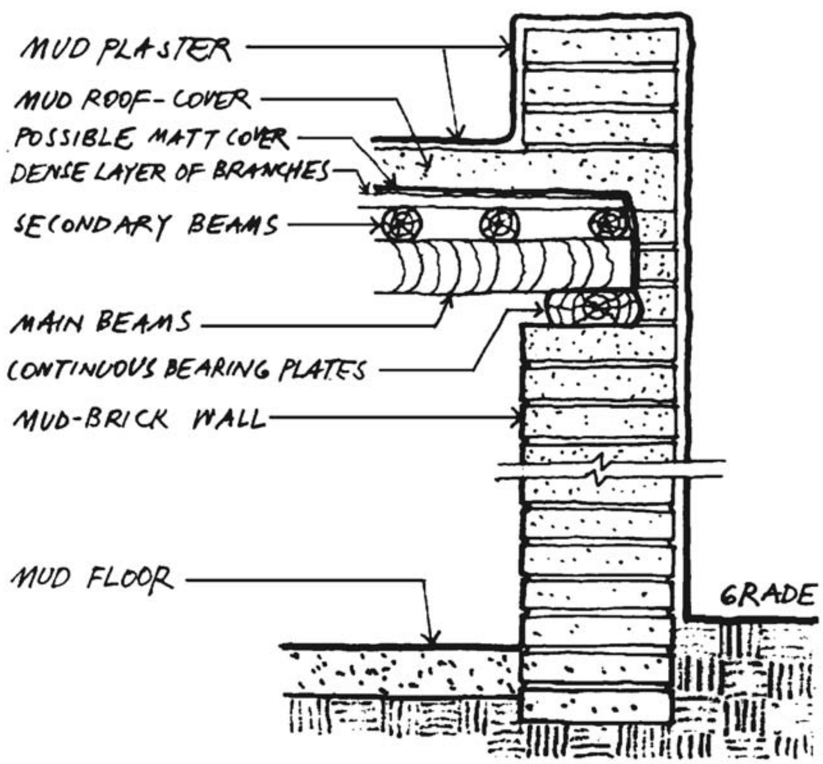


Figure 6.16. Cross section through Building 3 showing possible roof construction.

have been preserved in the archaeological record at Çatalhöyük, since they would have been removed at the time of house closure and then reused in a new house.

Other functions for the posts have been suggested. In some instances, such as in Building 17, the posts were set in from the walls rather than abutting it, perhaps to divide space (Hodder 2007). In some houses, large wooden post frames in combination with partition walls may have been used to prevent slumping walls from collapsing (Hodder 2007). The posts also helped to create divisions of wall surfaces into, for example, decorated and undecorated segments, as we believe to have been the case with the east wall in Building 3, whose painted center was flanked with two posts (see Chapters 4, 5).

Table 5.2 shows that the diameter of the posts used in Building 3 range from 10 to 34 cm. The majority of the posts had a preserved diameter range from 12 to 20 cm. An exceptionally thick post measuring 34 × 20 cm was incorporated in the doorway (F.633), but it is unclear what its role would have been or how high it stood. The depth of posts below the floor varied. From a construction point of view, it was not apparent why the posts abutting the east wall had to be the deepest and the largest in the house. The east wall did not exhibit as much sagging as other walls in Building 3. The two wall-features (doorway F.633 and crawl hole F.768) could have weakened it structurally, but since both features were positioned at two ends of the wall while the posts were closer to the middle, we are uncertain if they would have made up for the weakening of the wall (but see discussion above, under "Wall Mechanics"). Another purpose for these posts could have been to frame the east-central house platform and enable an installation to be fixed on the east wall. Judging by the infill of the post-retrieval pits of the two posts, they could have been spectacular.

The shape of the posts was occasionally visible in the imprint they made in the ground surface. In Building 3, one post (F.602; see Figure 4.13) was rectangular in plan, with rounded corners and a pointed tip. This was an additional indication that the primary purpose of the post was not to carry the roof load, since a pointed tip would not have been as good for transmitting the roof load to the ground as a flat-bottomed post. Post F.773 was a half tree trunk and not structurally very strong, whereas post F.766 was a complete tree trunk. In the neighboring Building 1, the best evidence (F.371, F.372) shows that posts were a "rectangular/plank-like" shape that measured ca. 2–25 cm × 1–15 cm (Cessford 2007b).

Several cuts in the southern floor of Building 3 were interpreted as temporary or semipermanent post emplacements, possibly associated with activities on the roof, including making or repairing an opening in the roof above an oven. A temporary post support might also have been necessary during regular maintenance when a new coat of clay was applied to the roof, which, while wet would have been very heavy.

It is interesting to note that there was no direct evidence of postholes in Space 87 (not surprisingly, since most of this space is taken up with a platform), nor in Spaces 88 or 89, except for one found in the top infill of Space 89, which appears to have been a part of the bucranium installation rather than from room construction.

Floor and Subfloor Packing

In earthen buildings, the floor plays an important part in the control of moisture and insect migration from the ground below to the earth walls and finally to the house interior (McHenry 1984). It is important that the floors be constructed of well-compacted soils with higher clay content, and laid in several thin layers rather than in one massive layer. As it dries, the clay content may cause cracks from shrinkage, which would be larger in thicker layers, but more manageable if the layers were thin and multiple (McHenry 1984).

At Çatalhöyük, sandy, silty, reddish brown soils were used for subfloor packing, while white marl was used as the floor plaster coat. Micromorphology research showed that all of the post-Level XI floor plasters were made from "mud" sediments mixed with water and less than 2–10 percent vegetal stabilizers. These sediments ranged in color and texture, from white silty clay to gray silt loam and orange-brown, slightly sandy loam (Matthews 2005a).

In the BACH Area, we found different types of floor (see Appendix 5.1 [on-line]). Building 3 and Space 87 floors were made as described of reddish brown packing soil and white clay marl plaster that ranged in color from bright white to gray and yellow nuances of white (Figure 6.17). In Space 88, however, the floors consisted of moist, greasy, orange clay and did not feature white plasters. In Building 3, the same soft, greasy, orange floors as occurred in Space 88 were found only in those areas where storage and food processing took place (e.g., F.171, F.786).

The majority of floors in Building 3 had visible inclusions of straw, chaff, and other grasses added to the matrix of clay packing. The subfloor packing varied depending on the type of feature under which it lay. The packing used in the construction and renovation of the four platforms in Building 3 and one platform in Space 87 was all made of the same clean sediment of soft, orange-brown, sandy silt loam. In construction of all the ovens and hearths, similar sediments were used.

The very thick subfloor packing below the Phase B3.2 floor in the western half of Building 3 was unusual, as it comprised a massive layer (0.25–0.30 m thick) of large fragments of burned building material originating from

Figure 6.17. Packing soil and white clay plaster in floors of Building 3.

truncated ovens and hearths. The oven/hearth fragments included some that had not come from any features found in situ in Building 3, such as the 2-cm-thick red- and black-burned oven wall fragments, the 3-cm-thick fragments of black-burned oven base with angular breaks, and red-fired fragments of oven floor coatings. The variety of oven floor types found in the packing appear to have originated in several different features. A single oven typically does not have such distinctly variable floor fragments as were present in this packing. In this respect, the oven wall fragments also seem to have originated from multiple sources, although oven walls typically exhibited a larger variability in thickness, color, and shape in a single feature than did oven floors. We concluded that some of the redeposited fragments might have come from ovens and hearths within Building 3, but others originated from ovens and hearths outside of the building—for instance, those that were on its roof or elsewhere in the settlement, including the courtyards. The single example of a roof hearth from Building 3 (F.153) exhibited a thick floor, brown-black in color, of the same type that occurred in this massive packing.

It is conceivable that the Çatalhöyük inhabitants timed the replacement of ovens and hearths on the roof to coincide with the renovation of the roof. Considering the compact layering of the roof discovered in Building 3, it is very likely that all the features built on it had to be completely truncated before the roof could be relayered. Moreover, they could have timed the major reconstructions of the house interior to coincide with renovations of the roof (see discussion below, under "Roof Construction").

Specially prepared subfloor packing was found in the northwest part of Building 3 designated for food storage facilities (see Chapters 4, 5). Another example of specially prepared floors can be found in association with burials. The floor surfaces that sealed burial pits functioned as burial lids, and they were made of raw materials significantly different from those of regular floors. These exceptionally regular sequences of well-compacted and clearly defined coats of packing and plaster contained small-size vegetal inclusions. The clay used for the topcoat of the burial lids was ultra-white in color, indicating that possibly there was a particular source of marl used only in the manufacture of burial lids. It is also interesting that the burial lids, despite being constructed of several layers of packing and plaster—which would have required some time to settle and dry—must have been assembled in a relatively short time after an interment.

In Building 3 and in Space 87, the floors were often resurfaced with a new layer of packing and plaster, but not as frequently as the house walls. In some houses, the number of wall plaster coats was consistent with the number of lenses of accumulated occupation residues on floors, whereas in other houses these numbers were at odds (Matthews 2005a). In Building 3, it was also apparent that in some parts of the house, the floor layers were thinner, finer, and more numerous at the edges but thicker in the center of a platform or an open house floor.

In the excavation of Building 3, we were able to follow the process in which the floors coats were applied. It appears that a new floor coat was applied in a sweeping action, starting from the northern part of the house and gradually spreading southward, covering the platforms and the lower floor areas, with the ridges and thresholds on them. These clay layers, which resurfaced the entire house, were substantial in thickness and could be described as major house floors. Minor floor renovations that were restricted to smaller house areas were thin and spatially limited to the areas around ovens or hearths and were much more difficult to follow in the excavation. Although we were unable to excavate all the major floor layers, we were able to distinguish 29 floor coats on the entry platform, 19 coats in the center of the house, up to 12 coats on other platforms, and 15 coats in the southern, domestic zone of the house (Appendix 5.1 [on-line]).

The buildings at Çatalhöyük were kept remarkably clean, but traces of activities in the form of floor use-wear or, more frequently, occupation deposits could be detected. Charred and siliceous remains of mats were uncovered on floors during excavations in the 1960s (Mellaart 1967:120) and in the new excavations in Building 1 (Cessford 2007b), and possibly in Building 3. For instance, in the central floor zone of Building 3 between floors 18 and 19, there was a uniform, 1-mm-thick layer of salts, probably representing remains of a mat on the floor. Matthews (Chapter 7) recorded in micromorphology samples that matting occurred on the north-central platform and on the roof of Building 3.

Use-wear or contact traces on the floor plaster coats have been observed to indicate specific activities. A striking example of this was seen on floor 10 of the east-central platform (F.170) in the form of two round surfaces, which have been interpreted as "sitting" places, which were set ca. 50 cm apart and appear to have completely worn-out plasters in association with possible indentations from reed matting. It is curious, though possibly unrelated, that the ground-penetrating radar survey also detected the two spots as different from the surrounding platform floor (Stevanović and Tringham 2001; see also Chapter 2). The central house floor in the vicinity of the southwest platform was damaged from foot-traffic or similar activities, which was not the case near the other platforms.

Roofing

At Çatalhöyük, the evidence for roof construction, appearance, and use has been limited. Based on the excavated data and ethnographic parallels, Mellaart (1967) proposed that Çatalhöyük roofs were flat, constructed on roof beams of juniper, covered with bundles of reeds, and sealed with a layer of mud (see Figure 4.7). He recorded that the roof of shrine VI.10 appeared to have been ca. 0.3 m thick, flat, and made of layers of mud and reeds laid on small beams (Mellaart 1963:70, Figure 14).

In the current excavations, the best evidence for roofs comes from the collapsed roof remains in Building 3. Blocks of stratified sediment found in the north and central parts of Building 3 represented nearly half of the house roof (F.157) (see Figure 5.85). They comprised deposits layered 0.20–0.30 m thick (Figure 6.18; see also Figures 5.92–5.95, 7.1; also Chapters 5, 7). The cross section through the layers revealed a sequence of 6- to 10-mm-thick, horizontal, tightly packed coats of clay. It is believed that the layers represented the resurfacings of the roof, the different colors and bedding exposing the effect of diverse activities that were performed there. Micromorphological analysis uncovered an assortment of activities that took place on the roof (see Chapter 7; Figures 7.1–7.17); for example, at least one and possibly two hearth/ovens existed on the roof and were used for seasonal food preparation during the dry months. The raked-out deposits showed the presence of different plants as fuel in the hearth, but it is also possible that drying of plants and foods took place on the roof. Matthews (Chapter 7) suggests that the patterning in water-laid crusts indicated that the roof was partially covered by a second-story room and was partially exposed and subject to periodic flooding from rain or snowmelt (Chapter 4).

Roof Construction

It was noteworthy that the collapsed roof remains yielded no traces of roof construction. We might have expected, for instance, that the initial mud plaster layer applied directly to the roof beams would be preserved in the archaeological record. Several reasons might explain its absence: the tradition of recycling construction wood at Çatalhöyük, or the poor preservation of uncharred (i.e., uncarbonized) organic remains such as wood. Perhaps the fragments of bricks with mortar upturned associated with the lower roof tumble on the house floor of Building 3 represented the remains of mud bricks that were part of the roof construction. These bricks would have been set on the roof beams as initial cover and then overlain by multiple layers of clay. In nearby Building 52, such bricks caught in a house fire retained the impressions of roof construction wood (Figure 6.7) (see also Stevanović 2005).

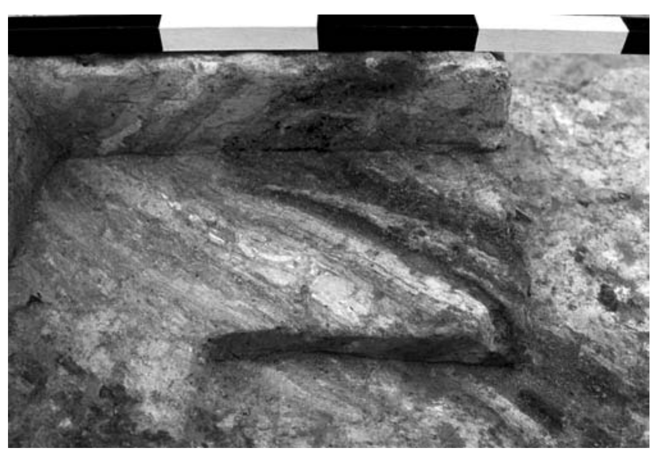


Figure 6.18. Detail of the remains of the roof collapse (F.157) in the northern part of Building 3 in Phase B3.5A, looking northwest.

Nearly half of the roof of Building 3 did not survive the collapse, which suggests that either the two halves were made differently or that one half of the roof was completely processed after the collapse. In the absence of evidence for either, we can only entertain different possibilities.

One scenario suggests that the roof was composed of two segments (northern and southern) made of different materials with dissimilar survival capabilities. Within Building 3, there was an apparent division between the northern and southern halves of the house that could have been reflected also in the construction of the roof. The southern half of the house was where numerous ovens were located, all of which probably had smoke vents in the roof. Thus, this part of the house might well have had a lighter but still waterproof roof that could have been more easily modified for smoke vents when an oven was moved within the house interior. Such alterations of the roof would have contributed to its faster wear and damage. By contrast, the northern half of the roof, which did not require any interventions, could have been made of a harder, thicker cover that preserved well in the collapse. The downside of having a roof with portions made of different materials is in its maintenance. As we have emphasized throughout this chapter, waterproofing of buildings at Çatalhöyük must have been essential for their survival. Not only are flat roofs very susceptible to water damage, but it would have been harder to maintain a waterproof roof that was composed of dissimilar segments than it would a uniformly made house roof.

Another scenario follows indications from other houses on the site—namely, that after roofs were collapsed, they were further broken down into small fragments, thus becoming unrecognizable in the archaeological record. The same breakdown could have destroyed the southern half of Building 3's roof.

Some ideas for roof construction can be gained from traditional adobe architecture. Houses with flat roofs made of a foot or more of well-packed earth are known from many parts of the world where mud-brick architecture is practiced (Cytryn 1957), but the closest resemblance to the Building 3 roof seems to be Pueblo architecture of the Southwest United States. Pueblo roofs were "flat with low parapet walls"(Tiller and Look 1978). Nabokov (1981) recorded that the Pueblo roofs were constructed to include a layer of wood beams laid across the upper walls whose ends often protruded beyond the wall. The second layer was made of evenly spaced horizontal cross poles that supported a tightly packed row of willow sticks. Brush matting, cedar saplings, grass, and even fabric were pressed over the wood. Two final layers of earth (15 cm or more in thickness) were applied over it: an adobe mix similar to the one used for the brick, and—after it dried—a layer of dry earth that was gently graded to direct rain runoff to seal the roof. At the drainage points, stone or wood spouts prevented the wall from being washed away, and on the ground a splash rock protected the wall base. The Zuni roofs included several small openings lined with flat stone, and a tall chimney (Nabokov 1981). According to McHenry, the thickness of these roofs makes it virtually impossible for rainwater to penetrate (McHenry 1984).

This type of roof relies heavily on strong beams, internal walls, and internal posts for support of the massive clay cover. The Building 3 roof, which had a 30-cm-thick clay cover, must have also needed the combined support of house walls and beams to carry such weight. But we still do not know the size, or the arrangement, of the roof skeleton's wood pieces. Some principles of adobe roof construction can be informative for us. For instance, the compressive strength of mud brick is limited, so that a concentrated weight, such as that from a central roof beam, if transferred to one point in a wall, may compress the adobe wall down, leading to various problems (McHenry 1984). It is recommended that any concentration of weight should instead be spread over a large area through the use of long horizontal bearing plates or beams.

It is feasible that in Building 3 the walls carried the roof load and that horizontal bearing plates would have been crucial for spreading the load equally. The beams needed for the horizontal bearing plates would have been placed on the top course of mud bricks of each wall. The roof beams would then have been positioned on the bearing plates (Figure 6.16). Given the volume and weight of clay roof cover of Building 3, the distribution of the main beams, the secondary beams, and the smaller saplings and branches must have been dense.

According to structural calculations (Vladimir Ilić, personal communication), a minimum of 7 primary beams, each 0.25 m thick and 6.5 m long (total length 45.5 m), would have to be positioned at 1-m intervals east–west across the building, and 12 secondary, north–south beams, at least 10 cm thick, had to be placed at 0.5-m intervals, making a total length of 83 m of thick wood. A third layer of poles would have been made of shorter, thinner (3–5 cm thick) branches, comprising up to ca. 400 m of wood in total length. The total length of the construction wood in Building 3 would have thus amounted to 560 m, which, compared with the estimate of ca. 19 m of timber for Building 1 (Cessford 2007b), was a much larger investment in building material and labor. Other timbers were also used for upright posts, and in Building 3, this would have amounted to 7 pieces at 2.2 m each, resulting in 15.4 m of additional timber, which again would have been a larger investment compared with 8 m of timber for posts in Building 1.

Taking all these functions into consideration, the Çatalhöyük roofs had to be constructed with sizable amounts of timber. As Asouti (2005b) reports, the higher-quality large oak and juniper timbers that were preferred in house construction to the locally available willows, poplars, and elms had to have come from remote regions. Both species generate massive, tough timber that is suitable for withstanding mechanical pressures in the long term and is much more resistant to fungal attacks (especially juniper) than the majority of riverine species (Asouti 2005b). Use of oak as a construction wood in the Neolithic has been recorded in other regions, such as Southeast Europe and Central Europe (Bakels 1978). Among recent and contemporary populations, oak as construction wood is recorded in the Kurdish villages of northern Iraq and in Anatolia, where deciduous oak trunks are commonly used as pillars and/or rafters in houses (Asouti 2005b). The layer of poles could have been made from locally available timber—long enough to cover one section. We assume that wood resources were scarce, so that small pieces would have been utilized. From the ethnographic record, we learn that traditionally, care is taken to use as many poles as possible in order to enhance the longevity of the whole structure and thus reduce the necessity for future repairs (Asouti 2005b).

The difference in the amount of wood needed for Buildings 1 and 3 raises the question of whether some households had better access to wood than others. Better access could have come either from Building 3's occupants having accumulated a larger cache of construction wood over time, or from their investing more labor and time in exploiting the resources before the house was built. In either case, construction wood might have been a very valuable currency in this society for which it was such an essential but distant natural resource.

As in the Pueblo roof construction described above, the wood construction of the roof was the foundation for a thick layer of compacted soil that was then applied in multiple, thin layers (see Figures 22.14, 22.15, 22.17, 22.18). It is possible that a new roof consisted of fewer such layers of mud than the roof of an aging house. This is based on the assumption that a roof was regularly maintained by the addition of new clay layers in order to make it waterproof. This maintenance would have included stripping off some of the damaged older layers, as is the case nowadays in this region of Anatolia. The excavated remains of the roof in Building 3 ranged in thickness from 0.20 to 0.30 m. The total surface area of the Building 3 roof was 40.95 m^2; with a thickness of 0.3 m, it probably weighed 12.3 kg.[6]

It is known from the ethnographic record (McHenry 1973) that this kind of roof depends primarily on its own weight to anchor it to the top of the wall. Frequently such roof structures in the Pueblo area have earthen parapet walls that provide additional weight anchorage and control the flow of collected rainwater (see Figures 22.17–22.19). They are more commonly built without an overhang, as these need additional anchorage (in windy areas) against the increasing wind-uplift force. A large portion of what appeared to be the roof edge or parapet was unearthed in Building 3 (Figure 6.19). It was composed of straight layers of compressed soil like other parts of the roof.

Roof Maintenance

It is known from historical and contemporary adobe architecture that regular maintenance is critical (Tiller and Look 1978). Mud-brick houses must be protected from moisture, rain, and groundwater that may seep into the wall, either from flooding or heavy downpours, and also from the roof runoff during rains. If a wall becomes wet all the way through, the large weight above it will squeeze the lower wet courses out. The erosive action of rainwater and the subsequent drying out of roofs, parapet walls, and wall surfaces can cause furrows, cracks, deep fissures, and pitted surfaces. Rain-saturated adobe loses its cohesive strength and sloughs off, forming rounded corners and parapets. If left unattended, rainwater damage can eventually destroy roofs and walls, causing their continued deterioration and ultimate collapse. Standing snow or rainwater that accumulates on roofs has to be removed promptly before it makes puddles in the mud and continues dissolving the roof layers.

Mud-roof maintenance carries its own danger for the stability of a house, and preparatory construction steps have to be included to insure against roof repair problems (Tiller and Look 1978). When an existing roof is restored

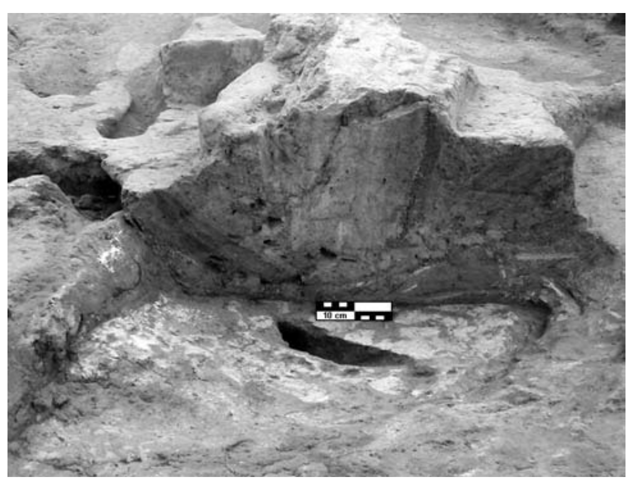


Figure 6.19. Cross section through the possible parapet of the roof (F.157) in the northern part of Building 3 in Phase B3.5A.

[6] Weight of 1 m^3 of soil = 1,000 kg.

with a fresh layer of adobe mud over an existing mud layer, it has to be temporarily supported during the work, since mud is heavier when wet than after it has cured. If unsupported, the roof may collapse from the added weight of the wet mud, or it can bend. If the wooden roof supports are allowed to sag during such work, the wood may permanently deflect, resulting in inadequate drainage and/or "ponding" at its low points. Ponding is especially damaging to adobe roofs, since standing water will eventually soak through the mud and cause the wooden roof members to rot. Furthermore, the construction of a new roof that is heavier than the roof it is replacing is not advisable. If the walls below have uncorrected moisture problems, the added weight of a new roof may cause the walls to bulge (a deformation caused while the adobe mud is in a plastic state). If the walls are dry but severely deteriorated, the added weight may cause the walls to crack or crumble from compression failure.

Presently, no evidence exists that would show how the occupants of Building 3 would have coped with the effects of rain and snow on their roof. In some Anatolian villages, heavy stone rollers are used for squeezing the water out of roof soil. In Building 3, we found some possible indications of maintenance-related activities. Several cuts that resembled postholes but occurred away from the house walls and were in use only for a short time might have served as the emplacements for temporary posts installed during roof maintenance and reconstruction. It is feasible that the western edge of the roof of Building 3 needed maintenance in Phase B3.4, as the shoring of the west wall indicates. The west wall suffered from structural problems, which might have originated at the roof. Five house ovens out of a total of seven were located along the west wall, and the opening and closing of their smoke holes over the years could have created water-related problems in the roof that also jeopardized the west wall.

The Process of House Production

In the agglomerated settlement of Çatalhöyük, the daily lives of people were framed within the clusters of rooms and inside the wider and very structured settlement. House location, and its shared walls and roofs, created a web of codependent buildings whose construction, maintenance, final destruction, and replacement with a new house must have generated and dictated dynamic social processes of a complex nature. Little direct evidence for the construction process is available presently, but it is conceivable that tending such a structured settlement entangled the residents in practices that demanded specialized knowledge, large labor inputs, and inclusiveness of the larger community.

Insuring that each of many buildings stood firmly on the stumps of the walls of previous houses was a task that involved specialized knowledge about the performance of building materials. Most buildings at Çatalhöyük, including those in the BACH Area, were erected on such previous structures. A series of well-executed technical acts in construction and maintenance of houses kept this tightly built and interconnected settlement alive for over a thousand years. Exchanging and passing this knowledge from generation to generation—how and where to find the raw materials and how and where to construct new buildings—must have been essential at Çatalhöyük and embedded with values that were nurtured within the larger social unit. As Mauss (1979) asserts, technical acts are reaffirmed through routine physical gestures and are underlined with the body of collective knowledge.

During the course of house construction, massive quantities and a variety of building materials (mud brick, mortars and plasters clays, timber, water, and a range of anthropogenic inclusions) had to be procured (see Chapter 22). This implies knowledge, organization, and control of the surrounding environment from which the raw materials were gathered. Considering the quantities required, it is feasible that group or communal effort was needed in the extraction of clays and timber. It is also possible that these resources were communal, but limited to a social group, such as a household, kin group, or neighborhood (Matthews and Farid 1996; Tung 2005). It is remarkable that the sources of the highly valued white clay/marl that was lavishly used for plastering the interior surfaces appear to have been unrestrictedly shared by the occupants of Çatalhöyük. If restrictions on the extraction of clay for construction had existed, we would have expected them to be primarily visible in the extraction of white clay—especially if, as the KOPAL investigation suggested, the sources of marl around the site were limited (Roberts et al. 1996).

Resources such as wood and pigments were procured over longer distances and probably fell within the wide trade and exchange routine of the Çatalhöyük people. Pigments used for painting inside houses were not locally available, and their closest occurrence was postulated to be in the mountains surrounding the Konya Plain. If this was the case, pigments may have been the subject of regional trade, along with obsidian and other stone. No storage for large quantities of pigments has been discovered in the area excavated so far, which questions how this material was procured, stored, and possibly shared.

Asouti (2005b) proposed, based on the reconstruction of woodland catchments, that timber used in construction had to be transported to the settlement from some distance upstream. She suggested that special woodcutting trips would have been arranged at the beginning of spring, when river discharge would have been particularly strong. The quantity of high-quality wood necessary for the construction of a house such as Building 3 and the distance of it from the settlement demonstrate that wood for construction was a very valuable and carefully tended resource. We know from the archaeological record at Çatalhöyük, as well as from ethnoarchaeological research in northeastern Anatolia, that timber elements retrieved from roofs, doors, posts, lintels, and windows were always removed from dismantled houses upon their abandonment, in order to be reused either immediately or at some later date.

Some of the raw materials used in construction required intense preparation. If house construction were efficient and well organized, it would have included several steps of preparation before the actual construction. These would have included soaking clays in water over a long period of time; molding bricks; debarking and drying construction wood; and gathering, cleaning, and sorting large quantities of vegetal materials for inclusion in the mud bricks and plasters. Amassing the vegetal materials (mostly chaff and straw but possibly wild grasses also) would have depended on the annual crop, and could have necessitated collecting this seasonal resource over longer time periods, as long as several years. In such a case, storage of these vegetal materials would have become an issue.

The labor involved in house production is great, and the timing of the steps can be crucial. The procurement and preparation of the sizable quantities of timber and clays needed in building, followed by mud-brick manufacture, roof construction, and plastering, required a serious investment in labor and time. Although nearly all of the steps in house construction at Çatalhöyük could have been accomplished by an individual or a small group of people, it is likely that many tasks were communally organized activities involving several households. For instance, as already mentioned, procuring hundreds of pieces of wood for roof construction, some of which were massive tree trunks, would have required the engagement of a large group of people. The weight of large wood beams, which must have been used for posts and for the roof, could have reached several hundred kilograms. A group effort would have been necessary to move them from place to place and to lift them during construction. Oversized bricks (if pre-made) had to be carried to a building site and mounted on the walls by several people. In the process of re-creating a Neolithic Çatalhöyük house (Chapter 22), it became apparent that plastering the interior wall and floor surfaces was a task that required a group effort or an unreasonably long time if done by an individual. Also, individuals or very small groups would have taken considerably longer to construct a house, which must be taken into consideration when building in unfavorable climatic conditions. Therefore, we suggest that, depending on the size of a household, house building would have been an undertaking for the house occupants or for a larger group that could have included several households.

The initiation and timing of construction probably varied from building to building throughout the occupation of the mound. Some buildings were constructed simultaneously, such as Building 3 and the three spaces 87, 88, and 89. Also, Buildings 16 and 22 (Mellaart's Level IX) shared party walls and used the same bricks, but applied different and distinctive mortars (Farid 2007). In other cases, some buildings were rebuilt while others remained standing (Matthews and Farid 1996:298, Figure 14.6). The timing of house construction, therefore, probably depended on the size of the project and at least partially on the weather conditions.

In her examination of seasonal cycles at Çatalhöyük, Matthews (2005b) suggested that houses may have been built between May and September. The ethnographic literature (Kramer 1982) shows that traditionally, new buildings are constructed after the harvest, when labor is available and weather is warm, with less rain, which is suitable for brick and mortar manufacture and for drying thick layers of plaster. The seasonal and cyclical house maintenance is evidenced at Çatalhöyük in the wall plasters, which showed that thicker layers were applied annually, while thinner layers of plaster and soot represented monthly or seasonal replastering (Matthews 2005a). Similarly, Asouti (2005b) suggested that wood procurement took place in the early spring so that the construction or repair activities could be scheduled during the oncoming dry season. This interpretation has been supported by the dendrochronological examination of wooden posts from buildings of Mellaart's Level VI, and the clustering of felling dates observed among the surviving timbers of certain buildings (Newton 1996).

It follows that house construction at Çatalhöyük ideally took place during the dry summer months, but it is possible that this may not always have been the case for smaller or very large construction tasks. Interior remodeling of a house or wall, or roof repair, could have happened during any season. Larger projects, including building several structures (as was the case in the BACH Area), probably required more time than one summer season. For instance, brick manufacture or timber acquisition, gathering vegetal inclusions, and procuring marl clay likely had to be carried out over many months before construction, which itself could have been finished during the summer months.

Houses are recursive places embedded with meaning, experience, and memory (Hodder 2006a). House construction in traditional societies is accompanied with rituals that help determine the best orientation and location of a future house, secure its harmony with the landscape (Alexander 1979, 1985), and bring prosperity to the house and its occupants.[7] For instance, among the Hopi, at the time of building a house, offerings are set under the main roof beams; "prayer sticks" help to make the walls "take good roof hold" and "stand firm and secure" (Nabokov 1981:21). In many traditional societies, "house" is conceptualized as a human body and is prone to the same maladies as humans (Blier 1987). Among the Bertha people, a house can fall ill under the influence of an ancestral evil spirit. Roof replacement is considered a dangerous moment for the health of a house and needs to be balanced out by rituals (Gonzalez-Ruibal 2006). Similarly, in some societies, building materials, such as clays, wood, or stone, can have non-utilitarian properties and powers (Boivin and Owuc 2004), which determine their location within the building.

At Çatalhöyük, house construction, whether major or minor, also often involved ritual acts (Hodder 2007). In the BACH Area, several deposits of animal bones, obsidian, and clay balls found in association with house walls or features were interpreted as indicators of ritual linked to the house construction (see details in Chapter 4, under "Ritual Practices"). Clay balls were found at the bottom bricks of all four house walls. In the mortar between the double east walls, a bone point and a stone tool for grinding pigment had been inserted (Chapter 15). A very large bone shaft was embedded in the first mortar of wall F.1000. Several other animal bones were found in the mortars between the walls of the structures in the BACH Area (Chapter 8).

In such a tightly connected society, in which the buildings are estimated to have lasted from 50 to 80 years (Kuniholm and Newton 1996), each individual would have experienced building a house more than once in his or her lifetime. It is conceivable, however, that each person had a limited number of opportunities, perhaps only a single one, to build one's own house. The unique prospect of creating one's own living space could have had a powerful impact on people and could have contributed to the formation of individual and group identities.

Conclusions

An examination of house production in the BACH Area has contributed to our knowledge of Çatalhöyük architecture in many respects. Most noticeably, the collapsed roof inside Building 3 gave us the first glimpse into the construction of a vital part of the house. It also demonstrated the use of the roof for domestic and ritual practices carried out during the dry season.

The variability in and manufacture of bricks found in the BACH Area buildings indicated some important patterning. Bricks made of raw materials with certain qualities were found in the most vulnerable parts of walls. Their placement was presumably intended to prevent moisture from penetrating the wall and thus damaging it. Bricks were most likely manufactured in open-ended frames and properly cured before they were set on the walls.

House walls were built to withstand the load of the heavy roof, while house posts were not required to bear the weight of the roof. The construction method of the roof hypothesized in this chapter calls for massive use of construction wood, which introduced complexities of acquisition and maintenance of this distant and very valuable resource.

Building the floors, and then plastering them and the walls, appears to have been an essential part of house-making. The meticulous maintenance of these surfaces proves to have had a technical, as well as symbolic and aesthetic, rationale.

Çatalhöyük's houses were made of simple materials but were complex entities, both in the details of their construction and in the choice and treatment of the materials used in this process. Mud-brick soils are accessible, adaptable, and easy to use in construction—and durable. Changes of plan could have been accommodated easily by cutting and shaping the bricks. Seemingly little expertise would have been required for such simple structures. However, as the houses were constructed to last up to 80 years, much specialized knowledge and skill in construction and maintenance would have been needed. The maintenance of mud-brick walls and mud roofs was of vital importance, and water and snow management had to be successfully and skillfully executed. Often buildings were constructed in close proximity to one another, and sometimes they shared roofs, as was the case in the BACH Area. Such large surfaces must have had a system for regulating water flow away from the roof and walls. More than a millennium of constant rebuilding at Çatalhöyük created a web of agglomerated coexisting houses. They were erected on the foundations of earlier houses, and each would itself become the foundation for a new house in time. The Neolithic builders understood the properties of the materials they were managing, and their houses suffered from some mechanical problems, but no case of an unintentionally collapsed house has yet been recorded.

The process of house construction demonstrates that house-building and tending had to be at the core of social relations in this settlement. The limited space had to be carefully managed, and the solutions in constructing new buildings, as well as in maintaining the existing houses, had to be negotiated communally. It could be said that the construction of buildings was an activity that permeated all aspects of life in the settlement and determined other activities to some extent.

[7] *http://pem.org/yinyutang/* (accessed 2 November 2011).

The assessment of technical acts and technologies developed and utilized in house production at Çatalhöyük could contribute to understanding the social processes involved in the formation of this settlement. Technologies applied in creating and sustaining such a complex, built environment carry great potential for understanding how communities sustain themselves.

Acknowledgments

I would like to thank Eugene Hammel for his help in producing the charts and histograms of the BACH bricks. Also, Ruth Tringham and Lori Hager provided a great help in clarifying some of the issues in this chapter and in editing the text.

Chapter 7

Household Life Histories and Boundaries: Microstratigraphy and Micromorphology of Architectural Surfaces in Building 3 (BACH)

Wendy Matthews

This study examines the microstratigraphy of surfaces and occupation deposits in Building 3 in order to study both short- and longer-term household rhythms and life histories and to investigate the extent to which practices are habitual and shared within individual households across the Neolithic community of Çatalhöyük, Turkey. Although many archaeological questions seek resolution of daily, seasonal, and life-cycle time scales, these have rarely been explored and present challenging methodological problems (Foxhall 2000:491). Many archaeological time scales are based on interpretation of the constructs of building phases and levels, but the time scales reproduced by these are often "longer-term and less finely tuned than the timescales of the social processes which created the data in the first place" (Foxhall 2000:496). Ethnographic studies of traditional architecture suggest that archaeologists could readily identify activity areas (Kramer 1979) and explore the creation of social settings (Asatekin 2005; Stevanović 1997) and ritual performance (Boivin 2000) throughout the life histories of buildings and settlements through greater attention to the study of microstratigraphic sequences of architectural surfaces and traces of activities (Matthews 2001, 2005a, 2005b; Matthews and Ergenekon 1998).

Building 3 is comparatively large (see Figure 4.3), with a main room of ca. 6–7.20 m north–south × 4.81–6.11 m east–west (ca. 36 m^2), and three adjacent (possibly) storerooms, ca. 2 × 2 m (see also Figure 4.1). Building 3 provides an exceptional opportunity to examine collapsed surfaces from its roof/upper story, which are rarely preserved within the buildings excavated to date at Çatalhöyük. At Çatalhöyük, as at many sites where only ground-level floor plans are preserved, a range of questions relating to household structure, size, organization, and economy remain partially open, pending evidence of activities that may not be represented because they would have been conducted on the roof or upper story.

Methodology

In this research, surface materials and accumulated residues on floors, walls, and collapsed rooftops were recorded in plan during excavation, and in microstratigraphic section profiles in strategic baulks or plinths, or at the edges of pits and excavation trenches (see Figure 2.6) (Matthews 2005b). Section profiles were cleaned with an artist's palette knife, photographed, drawn at 1:5 or 1:1, and recorded (Matthews 2005b:Figures 1, 2). From these section profiles, blocks of sediments were collected at 1- to 2-m intervals within the buildings discussed in this paper, for microscopic analysis of surfaces and residues in large resin-impregnated thin-sections, 13.5 × 6.5 cm and 25–30 μm thick, at magnifications of ×25–400 (Matthews 2005b).

In thin-section, component materials, morphology, and depositional processes were analyzed and recorded using an internationally standardized methodology adapted for archaeology (Bullock et al. 1985; Courty et al. 1990; Matthews 1995, 2001; Stoops 2003), with reference to a wide range of geological, soil, and biological atlases and comparative material-science, landscape, ethnoarchaeological, and experimental case studies (Matthews 2005b).[1] Components were quantified as a percentage by area in thin-section of each depositional unit, with error ranges of less than ca. 2–10 percent. That micromorphological samples are generally representative of the contexts from which they were extracted is supported by the strong correlations between micromorphological and wet-screening and flotation data sets

[1] Details and a complete list of the thin-section samples, along with their high-resolution images, are provided as Appendix 7.1 in the on-line edition of *Last House on the Hill*.

in the concentrations and degrees of fragmentation of charred plant remains, bone, and microartifactual remains, at a range of sites (Matthews 2001). In addition, many characteristics of specific deposit types frequently recur within single thin-section sequences and provide a considerable degree of replication and verification of observation, as illustrated in many figures in this chapter.

Microstratigraphic and micromorphological analyses enable examination of four independent lines of inquiry in the study of the life histories of buildings:

- the origin, manufacture, and properties/affordances of building materials and surfaces on floors, platforms, walls, and, potentially, ceilings in upstanding buildings;
- the impact of activities and natural agencies on these surfaces, including impressions of mats and floor coverings;
- the multiple biographies of the mineral, biological, and artifactual micro-residues on surfaces through in situ micro-contextual study of traces of the pre-depositional and depositional histories of each component, including source material, abrasion, fragmentation, and burning;
- ongoing postdepositional histories.

The principal characteristics of Çatalhöyük's sediments, its bioarchaeological and microartifactual remains, and its architectural materials are discussed elsewhere (Matthews et al. 1996; Matthews 2005b). As Building 3 was eroding at the surface of the mound, infill deposits, including some roof collapse, and midden deposits in particular, have been affected by bioturbation and precipitation of gypsum salts.

The Roof and Upper Story

During field excavations, large slabs of stratified sediment in the north of Space 86 in Building 3 were interpreted as collapsed roofing. This interpretation was based on (1) the large intact size (up to ca.1 m^2) and immovable weight of some blocks (heavier than several people could lift); (2) the intact preservation of microstratigraphic sequences up to ca. 20 cm thick in many slabs; and (3) the orientation and distribution of the blocks, which suggest they have fallen from a roof/upper story. These slabs resemble ethnographic examples of sediments on flat roofs in Turkey and archaeological examples of collapsed roofs in pueblo settlements (Henry Wright, personal communication).

Variation almost from one slab to another in the field—in the type, thickness, and frequency of surfaces and occupation deposits in each microstratigraphic sequence—suggests that a range of different spatial boundaries and activity areas had been delineated on the roof (Figures 7.1, 7.2; see also Figures 4.12, 5.85, 5.92–5.95, 6.18). The repetition of sequences and surfaces and deposits within many of these slabs suggests that these different activity areas and boundaries had generally been maintained throughout the life history of the building.

The aim in this micromorphological research was, first, to examine the nature of these apparent differences in sur-

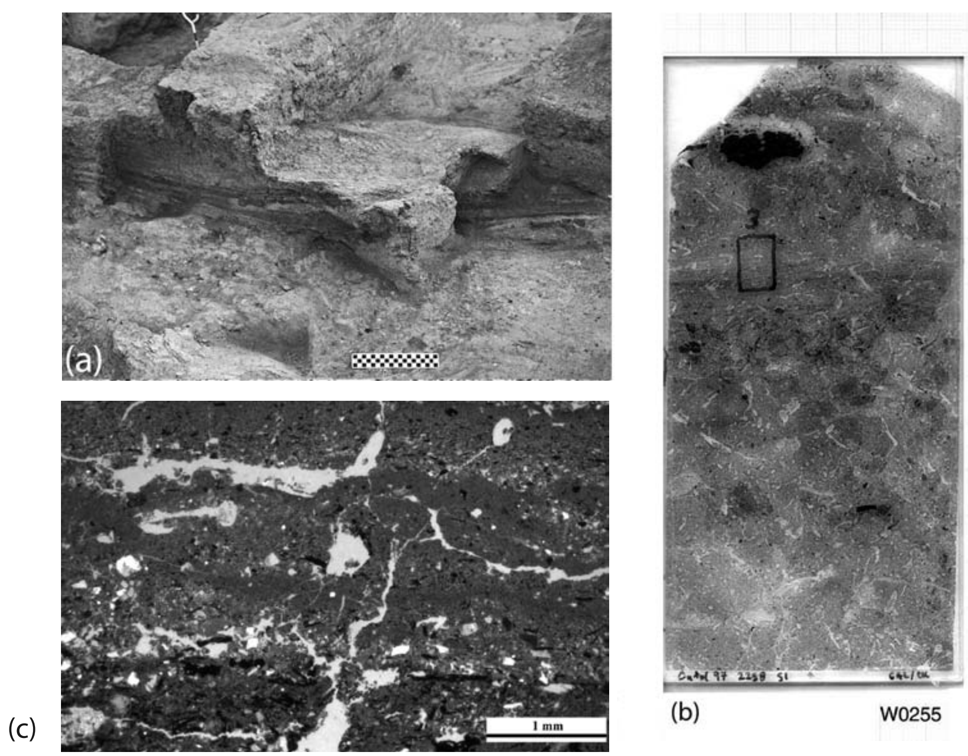


Figure 7.1. Micromorphology: (a) BACH collapsed roof, location of W255; (b) BACH collapsed roof, large thin-section, W255; (c) BACH collapsed roof, photomicrograph showing alternating layers of oven rake-out and three successive water-laid crusts. W255, ×25 PPL.

Figure 7.2. Cluster 2, Phase B3.5A. Oven base on collapsed roof fragment, W260, and sequence of collapsed plaster floors from possible internal room on upper story, W266.

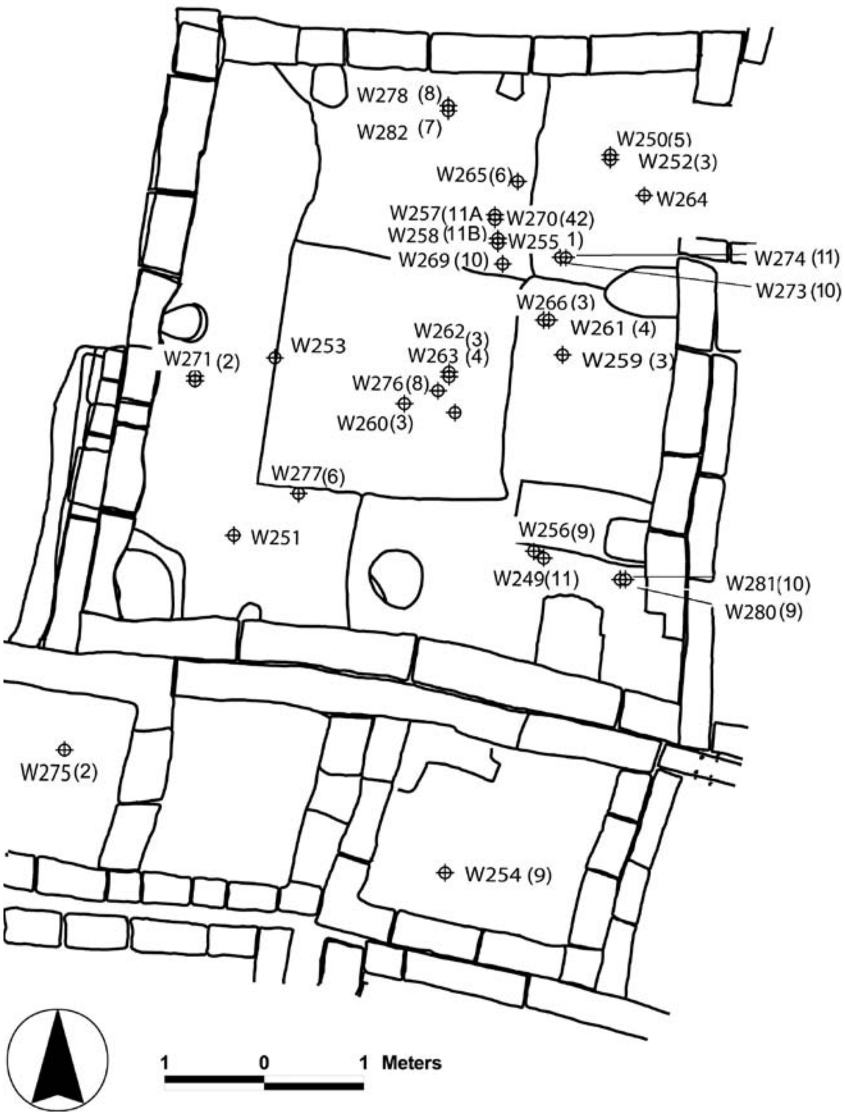


Figure 7.3. Location of micromorphological thin-section samples in the BACH Area.

faces and accumulated deposits across the collapsed roof, in order to identify the types of areas created on the roof and the traces of activities associated with these. The second aim was to examine the periodicity and sequence of surfaces and deposits in these different areas of the roof in order to study both short- and longer-term household rhythms and life history.

Fourteen thin-section samples were analyzed from the collapsed roof blocks in Building 3 (Figure 7.3). Microstratigraphic columns extracted from scans of these thin-sections are illustrated in Figure 7.4. It is immediately evident, from macroscopic analysis of thin-sections (Figures 7.1b and 7.4), and from microscopic analysis, that depositional sequences on the roof/upper story varied markedly, ranging from areas in which few surfaces were laid and layers of gray ash were deposited (e.g., W255 and W259), to areas in which surfaces were frequently plastered and virtually no dust or sediments were allowed to accumulate, with 99 percent of the sequence comprising laid plasters (W266).

Within this spectrum of depositional sequences, from multiple layers of ash to multiple layers of plaster, there is marked differentiation under the microscope between the majority of sequences (eight) that include recurrent accumulations of water-laid crusts and two which do not. The water-laid crusts in eight of the sequences sampled resemble surface crusts from rainwater/snowmelt (see section below, "Cycles of Outdoor and Indoor Activities?"). The presence of these water-laid crusts suggests, first, that these areas of the roof were open places, or perhaps in some cases covered only with an awning, and periodically flooded. Second, it suggests that there were periods in which these areas of the roof were not intensively used. The two sequences without water-laid crusts, W261 and W266, are those where multiple layers of plaster were laid, and few or no occupation deposits had accumulated. It is argued below that these plastered floors had been laid in an upper-story room that was itself roofed.

The original spatial arrangement of these different areas on the roof and upper story is uncertain (see "Roofing" section in Chapter 6 and Figures 5.85, 5.95). Ethnographic observations of natural roof collapse illustrate that it is often the central timbers and supports that give way first. In these cases, deposits on the roof may then slide in and collapse randomly from the surrounding areas. For almost all of the micromorphological thin-sections, it has been possible to reconstruct the original orientation of the surfaces in each slab through either (a) study of the sequence of graded bedding in water-laid crusts, which naturally accumulate from coarse to fine sediments, as heavier sediments precipitate first, or (b) analysis of the nature and sequence of the surfaces of plasters and finishing coats and the impact of surface smoothing and mat impressions.

Sequences with Water-Laid Crusts and Oven Rake-Out

Oven Bases

That at least one oven was constructed on the flat roof of Building 3 is attested by the discovery of a large fragment of an oven base, in situ in a block of collapsed roof surfaces (W260) (Figures 7.2, 7.4, 7.5). The oven base, 4 cm thick, was made from a pale brown, fine sandy silt loam of alluvial origin, with the original alluvial water-laid bedding still preserved intact in some unworked aggregates. The base had been heavily tempered with 15 percent plant stabilizers, probably to reduce cracking during heating and cooling. Heating during use of the oven had rubified the base to a depth of more than 2 cm and charred some plant stabilizers in situ.

The oven was constructed on top of a thick layer of burned aggregates and charred plant remains, perhaps from

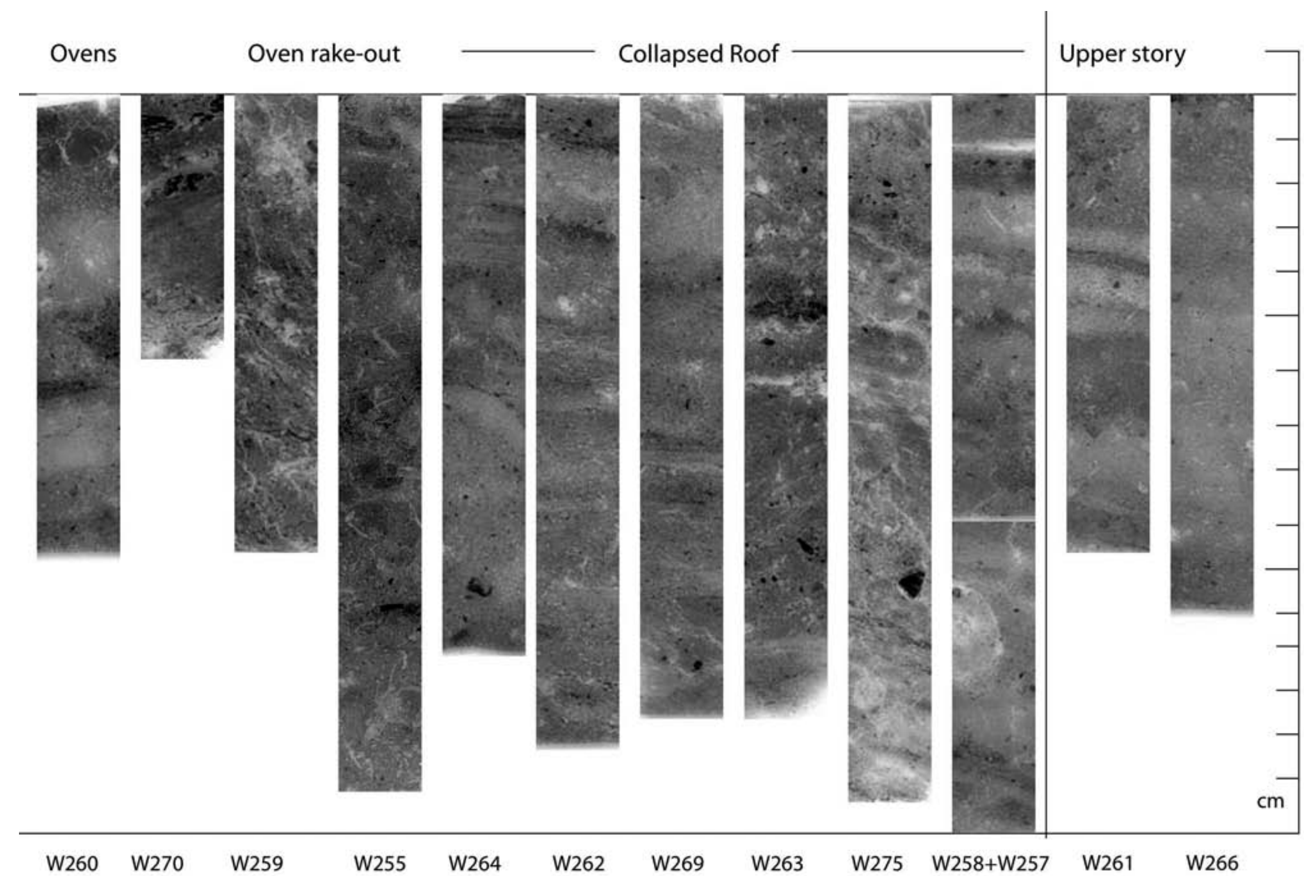


Figure 7.4. Selected columns of microstratigraphic sequences through collapsed roof and upper story of Building 3, from scanned thin-sections.

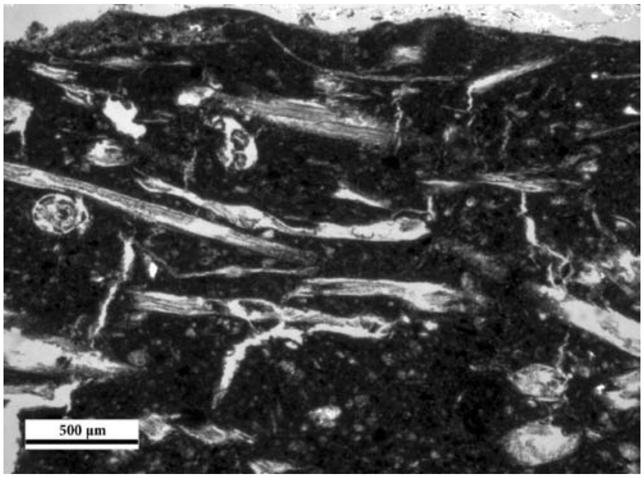


Figure 7.5. Collapsed roof: intact oven base. Photomicrograph of thin-section W260. ×40 PPL (plane polarized light).

leveling of an earlier adjacent oven that had been subsequently covered by a sequence of plaster floors.

A second, less well-preserved oven base with in situ fuel was sampled in thin-section (W270). This base was heavily disturbed by bioturbation from root action due its proximity to the surface of the mound. This base was made from a coarser sandy silt loam with fewer, ca. 5 percent, plant stabilizers burned in situ and had been subject to greater sub-horizontal cracking, probably from heating and cooling. This base and all aggregates were uniformly burned and rubified by heating, indicating that this was an intact sequence of in situ burning in an oven on the roof.

The in situ burned fuel in this second oven (W270) included remarkably well-preserved, fragile, charred and phytolith plant remains that had not been disturbed and remained articulated. The three layers of in situ fuel sampled were similar, principally comprising a mixture of reeds and grasses, perhaps burned as tinder, and charred deciduous woods, including oak (Figure 7.6). The well-preserved articulation of these plant remains and the absence of calcareous spherulites suggest that dung was not burned as fuel on these occasions. The burned plant remains included a cluster of articulated awn phytoliths (Figure 7.7) from cereal grain heads. Awns have rarely been found on-site but have been identified in KOPAL deposits close to the edge of the settlement (Rosen and Roberts 2005). Rosen and Roberts (2005) argue that cereals may have been grown as far as 12 km from the site on drier fields away from the flood zone, and that cereal processing was more commonly carried out off-site. More speculatively, the awns in this oven may have been brought to the site as intact cereal plants/heads symbolic of harvest, as commonly observed in many cultures today. Burned fuel was rarely left in situ in ovens and hearths at Çatalhöyük. Hearths and ovens were generally cleaned out prior to rebuilding or abandonment. That the fuel was left in this oven/hearth on the roof is itself significant. Explanations

Figure 7.6. Thin-section of collapsed roof with burned fuel in situ in an oven/hearth (W270). The fuel comprised charred oak wood and charred and phytolith remains of Gramineae, as well as burned aggregates. ×40 PPL.

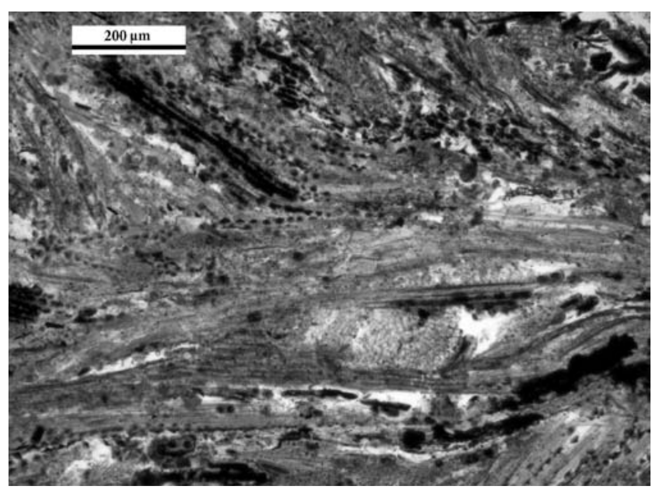


Figure 7.7. Thin-section of collapsed roof with burned fuel in situ in an oven/hearth (W270), comprising awn phytoliths. ×100 PPL.

may range from contingencies associated with abandonment of activities on the roof, to the perceived properties of the fuel. One example analyzed in thin-section of fuel left in situ in Mellaart's shrine VIII.25 had been sealed by a layer with plaster fragments and red ocher (Matthews et al. 1996), although no red ocher was identified in the sample from Building 3.

Cycles of Outdoor and Indoor Activities? Alternating Sequences of Oven Rake-Out and Water-Laid Surface Crusts

A significant proportion of accumulated occupation deposits in all eight of the sequences across the roof with water-laid crusts comes from oven/hearth rake-out. This suggests that cooking was a major activity on the roof of Building 3, conducted throughout the life history of the household. The alternating cycle between layers of oven/ hearth rake-out and lenses of undisturbed water-laid crusts, however, suggests that there were short-term, perhaps seasonal cycles in cooking on the roof.

Many of these lenses and layers with oven/hearth rake-out included fragments of charred cereal and burned bone, suggesting that activities here were related at least in part to cooking. Amorphous, yellow organic aggregates, which look similar to the human coprolites identified by micromorphology and gas chromatography/mass spectrometry (GC/MS) in the SOUTH Area at Çatalhöyük, were also present in occupation deposits in sequences across the roof (Figure 7.8) (Bull et al. 2005). Some accumulated layers included flakes of obsidian (Figure 7.9). A number of layers included natural silty-clay aggregates with striated clays that have been introduced from off-site (Figure 7.10).

The thickest and most well-preserved layers of oven rake-out were in W259, up to 4 cm thick. These burned

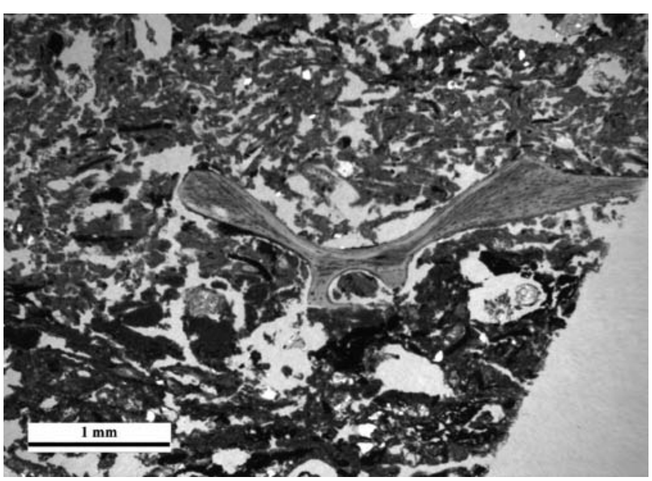


Figure 7.8. Thin-section of collapsed roof with amorphous organic material and a small bone, directly on top of water-laid crust, and a layer of mixed aggregates and fuel rake-out (W269). ×25 PPL.

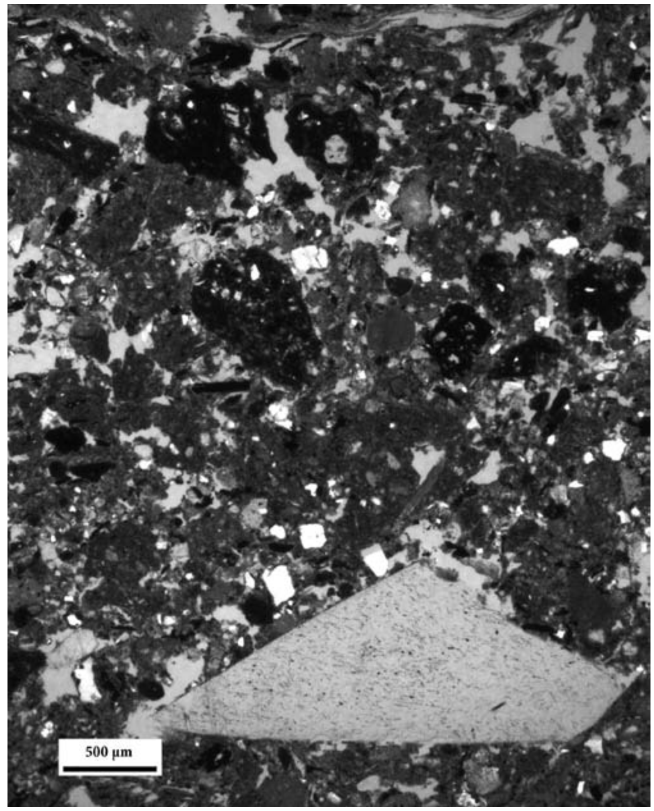


Figure 7.9. Thin-section of collapsed roof with obsidian flake in a layer of swept aggregates, some of which are burned (W264). ×25 PPL.

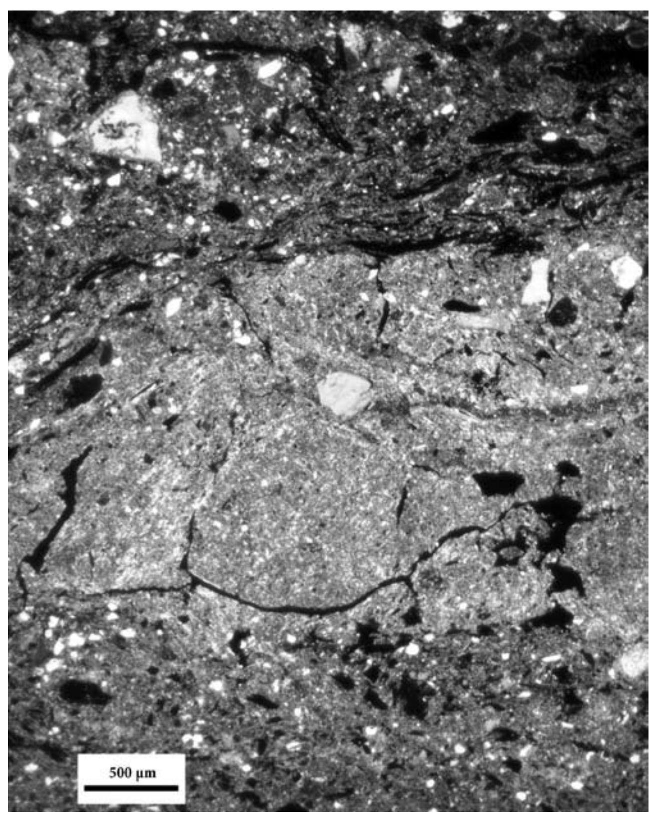


Figure 7.10. Thin-section of collapsed roof with aggregates of natural silty clays (W264). ×25 XPL (cross-polarized light).

plant remains were similar to those in the in situ fuel in W270, comprising charred and phytolith remains of reeds and grasses, and charred deciduous wood and occasional cereal grains. These plant remains were not compacted and were mixed with both burned and unburned aggregates, suggesting that, in this area, these deposits represent a midden-like dump with deposits and sweepings of different predepositional pathways and histories. Similar minimally compacted lenses of oven rake-out and burned and non-burned aggregates accumulated in thinner layers, less than 1–3 cm thick, on the roof in W255 (Figure 7.1).

Much thinner lenses of oven rake-out, 1–3 mm thick, accumulated in the remaining six sequences analyzed. There appears to have been an increase in successive accumulations of thin lenses of rake-out late in the extant sequences analyzed in W264 (Figure 7.11) and W269, perhaps suggesting a devolution in the maintenance of these areas (David and Kramer 2001).

The presence of water-laid crusts in nine thin-sections analyzed from across the roof suggests that a significant area of the roof either was not covered or was only partially covered, perhaps with awnings, and subject to periodic flooding from rain or snowmelt. Although some crusts were unoriented and disturbed by subsequent activities or trampling, many crusts were formed in situ and represent a period in which these areas of the roof were not intensively used. These crusts are characterized by well-sorted graded bedding from silt loam to silty clay with occasional clay surfaces (Figures 7.11, 7.12). Graded crusts from single depositional events are less than 1.25 mm thick.

These water-laid crusts occurred either singly or in successive sequences of one to three episodes. The thickest accumulation was in W258, where there were more than four in situ crusts and some evidence of curling from periodic drying (Bresson and Boiffin 1990). Some sequences included lenses of fine sand, which may have been windblown (W262 and W264; Figures 7.11, 7.13). Many of these crusts were difficult to identify in the field, due to their thinness and the microscopic scale of the graded bedding. Some thicker lenses of pale brown crusts, particularly where they had been subject to bioturbation, appeared initially in the field to represent plaster layers, but in thin-section, they proved to be successive lenses of water-laid crusts (e.g., W255; Figure 7.1).

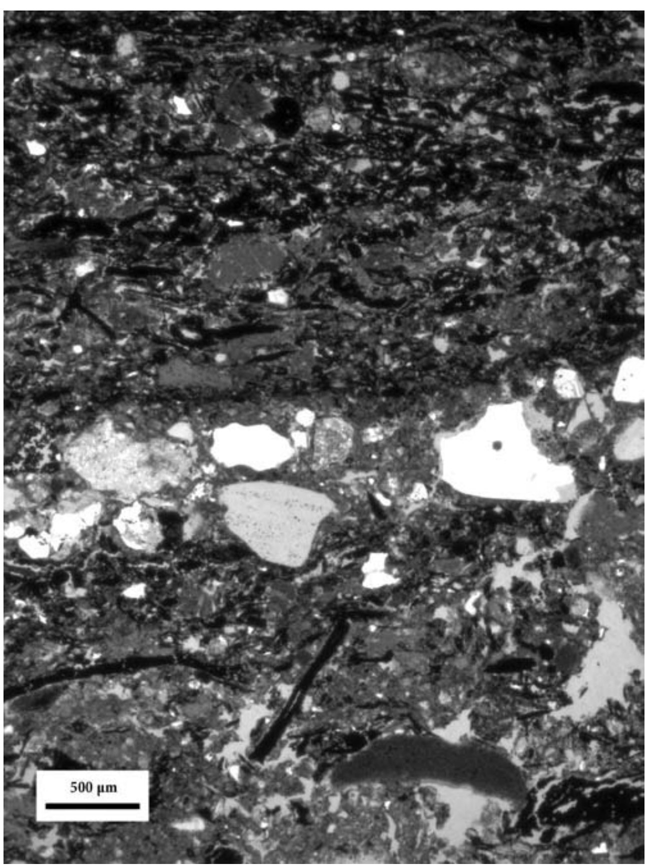


Figure 7.11. Thin-section of collapsed roof with alternating lenses of oven rake-out, rock fragments, water-laid crusts, and aggregates (W264). ×25 PPL.

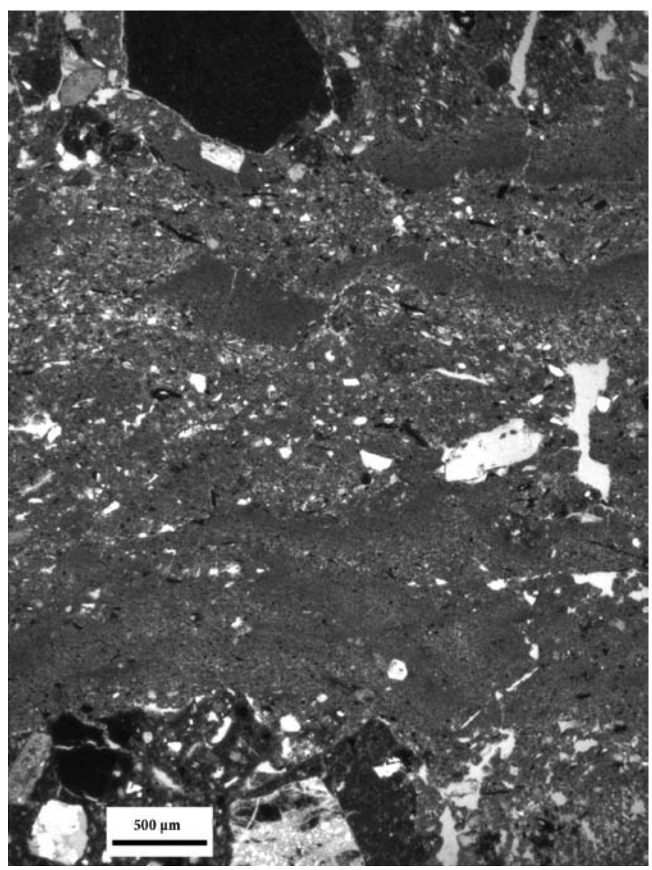


Figure 7.12. Thin-section of collapsed roof with multiple lenses of water-laid crusts, some curled from alternating wetting and drying and fragmented and unoriented from disturbance or trampling (W258). ×25 PPL.

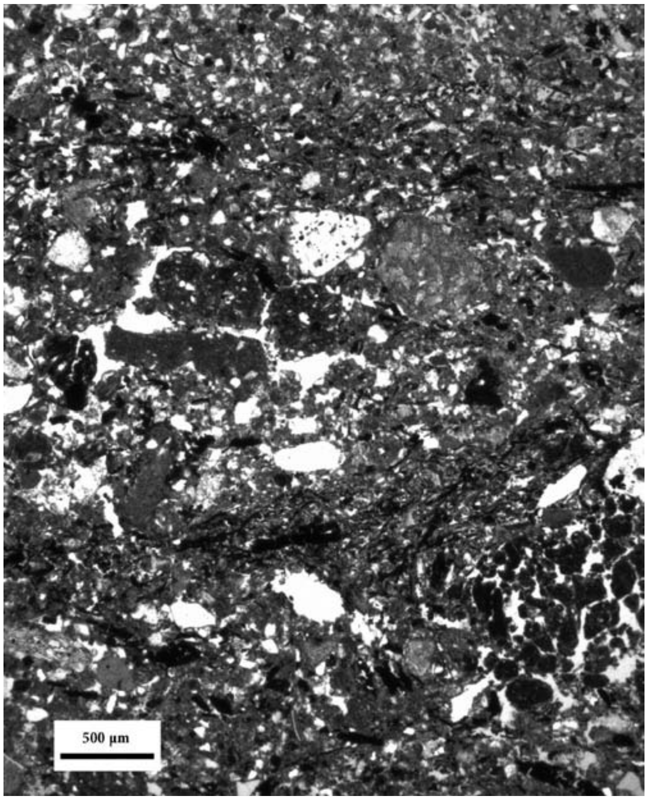


Figure 7.13. Thin-section of collapsed roof with lens of fine sand, possibly windblown (W262). ×25 XPL.

Sequences of Plastered Surfaces and Water-laid Crusts

Some places on the roof, such as W262 and W269, had very few intact plaster renders. Most of the sequence in W269 comprised irregular, alternating lenses, often less than 0.5–0.7 mm thick, of oven rake-out, diverse burned and non-burned aggregates, amorphous, yellowish aggregates—probably coprolites—and water-laid crusts. More plasters were laid and preserved in the area of W275, including a thick (2–4 cm), orange-brown, slightly sandy silt loam plaster with 2–5 percent plant stabilizers (Figure 7.14). Later plasters in this area were thinner, 0.5–1 cm thick and of coarse, pale brown sandy silt loam with 5 percent plant stabilizers. Accumulated deposits were similar to those from W262 and W269, but included slightly more burned, amorphous, yellow organic material.

The most frequently plastered unroofed area or area subject to flooding was that of W257–258. Here the plasters ranged from pale brown silt loam to orange-brown, slightly sandy silt loam, 5–10 mm thick, with 2–5 percent charred flecks and 2–5 percent plant stabilizers. These plasters were thicker than many of the plasters in ground-floor rooms, probably to prevent cracking and abrasion from both trampling and weathering. These dual-purpose layers not only provided a surface for passage and activities but also offered vital protection and shelter from precipitation, wind, and temperature fluctuations (Houben and Guillaud 1989; Norton 1986). Episodic accumulation of two to four water-laid crusts were deposited periodically throughout the sequence, suggesting that there were periods of little or no activity on the roof. The calcitic plant ash in the oven/hearth rake-out was itself hydrophobic and water-repellent.

One layer of floor packing in this well-plastered area included large aggregates of burned oven plaster, up to 2 cm in size, perhaps from leveling an oven on the roof (W257). These burned aggregates were reused as hardcore foundation for a well-prepared pale brown, sandy silt loam plaster with 10–15 percent plant stabilizers. This surface, late in the history of this sequence, was trampled and covered with occupation deposits of burned amorphous, organic material containing (possible) digested fish bone, rock fragments (perhaps from grinding), oven rake-out, and water-laid crusts. A similar sequence of pale brown plaster and occupation debris with water-laid crusts was repeated, with more aggregates of burned oven plasters, and sealed with a further plaster layer. Although these areas were more frequently plastered, they had also been periodically subject to flooding or were unroofed.

Sample W274, not illustrated, includes unoriented, mixed, smaller fragments of roof, with characteristics similar to those discussed above.

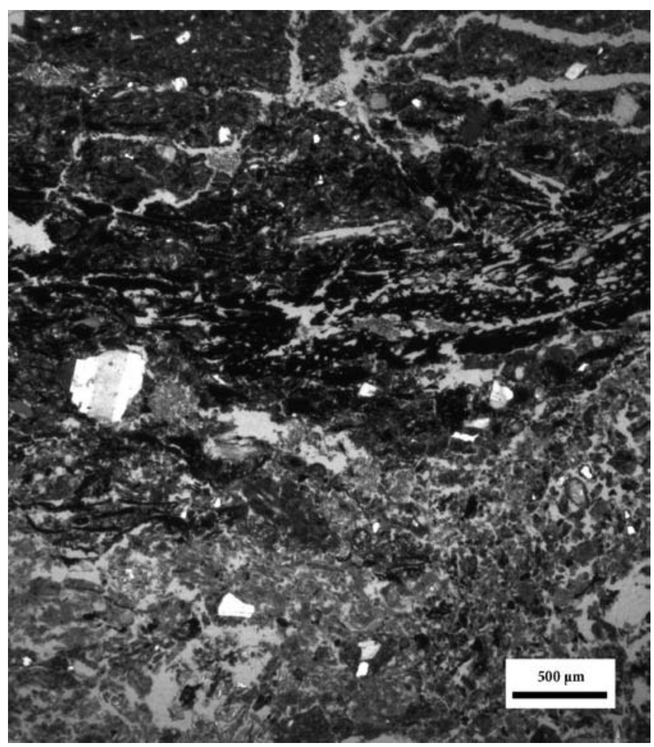


Figure 7.14. Thin-section of collapsed roof with lenses of amorphous organic material and oven rake-out, sealed by silt loam plaster floor (W275). ×25 PPL.

Plastered Surfaces without Water-Laid Crusts

Sample W266 is from a slab that had fallen and landed on end, with surfaces perpendicular to their original orientation. This slab was at least 0.7 × 0.4 m and comprised multiple layers of pale brown sediment, ca. 20 cm thick. In the field, this slab did not resemble many others (see Figure 7.2).

In thin-section W266 (Figure 7.15), no water-laid crusts accumulated in this sequence, suggesting this area may have been roofed. Ninety-nine percent of the deposits in this area sequence comprised plaster floors (at least 11), ca. 0.5–2 cm thick, made from pale brown to pale orange brown silty clay to sandy silt loam, of alluvial origin. Unworked aggregates of oxidized water-laid silty clay were still present in most plasters. These plasters, like those in W258 and W257, were generally thicker than the plastered renders laid in ground-floor rooms. All plasters were stabilized with plant material, attested by pseudomorphic plant impressions (Figure 7.15). The finer silty-clay plasters were stabilized with ca. 5–15 percent plant remains, the sandier plasters with only ca. 5 percent, suggesting the manufacturers had a good empirical knowledge of the amount of plant stabilizers required for different sediment types (see Houben and Guillaud 1989; Norton 1986). All plasters included charred plant remains (Figure 7.16), incorporated either in the source area or during manufacture close to the settlement. As 99 percent of this sequence was from plaster floors, virtually all bioarchaeological and microartifactual remains were in a secondary context—that is, brought in building material sources—as suspected by Hodder and Cessford (2004) for many floor sequences within buildings. Virtually none of the charred plant remains greater than 1 mm in size were from accumulated occupation deposits and therefore do not indicate in situ activities in this area. Some plasters include fish bone, probably deposited naturally in alluvium.

Some plasters in this area have undulating boundaries that resemble woven mat/textile impressions (Figure 7.13), suggesting they were covered with soft furnishings. This is supported by the absence even of dust on some plasters, further supporting the suggestion here that these surfaces were from a roofed upper-story room.

The thickest lens of accumulated deposits was less than 1–2 mm thick, and occurred early in the sequence of floors sampled. This lens included rounded aggregates of dark gray silty clay with fine micro-charred plant remains, from sweeping, windblown sediments, sand grains (some of which were dislodged from the underlying plaster), and a fragment of charred (possibly) cereal grain.

In summary, therefore, the absence of water-laid crusts suggests this area (W266) was probably roofed. This space was rendered with thick plasters that were almost certainly covered with mats or soft furnishings, as attested by surface impressions. The absence of accumulated dust on many surfaces suggests this place was scrupulously maintained,

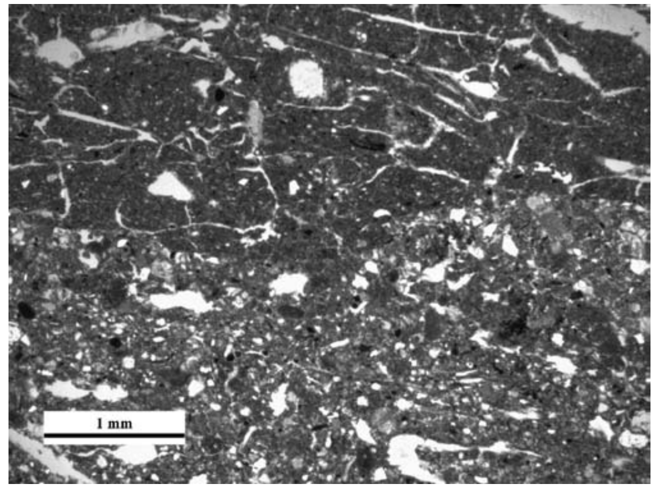


Figure 7.15. Thin-section of diverse plaster floors, with undulating clean boundaries, from possible impressions of mats (W266, unit 2286). ×25 PPL.

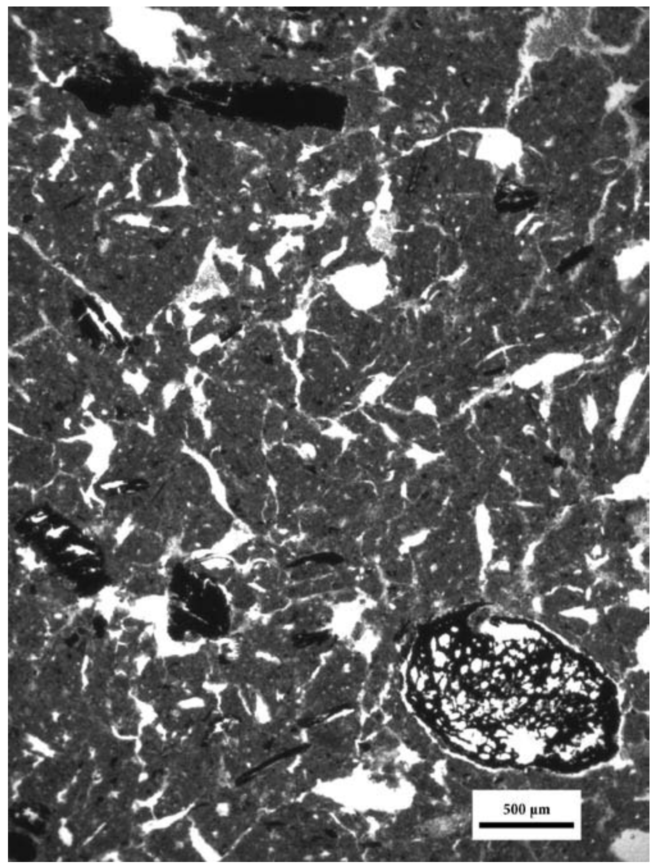


Figure 7.16. Thin-section of collapsed roof with fine plaster floor of pale brown silty clay to silt loam, with up to 10–15 percent plant stabilizer impressions, and charred plant remains within fabric of plaster (W266). ×25 PPL.

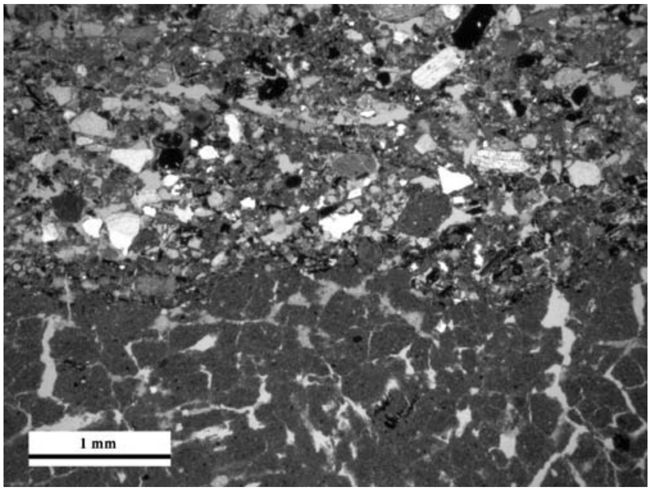


Figure 7.17. Thin-section of collapsed roof with silty-clay plaster floor showing possible mat impressions and oven rake-outs, fine aggregates, and minerals (W261). ×25 PPL.

and supports the suggestion that this was a roofed upper-story room.

Another sequence with no water-laid crusts was also from an area that was repeatedly rendered with thick plasters, which often had traces of possible mat impressions (Figure 7.17). The sample from this area (W261) included a more diverse range of plasters. In addition to similar pale brown to pale orange-brown silty clay to sandy silt loam plasters, this sequence included at least four very pale brown sandy silt loam to sandy loam plasters. Here, the surface boundaries were more irregular and disturbed, perhaps by more intense activities and trampling/traffic. There were also more frequent and slightly thicker accumulations of occupation deposits, 1–3 mm thick. These included charred remains from Gramineae and burned aggregates from oven/hearth rake-out.

Although there is greater variation and apparent randomness in the types of sediments selected for surface renders in this probable upper-story room than were found in many ground-floor contexts at Çatalhöyük, two patterns were evident. First, fine white silty-clay plasters and finishing coats had not been used on any of the upper-story floors examined. White silty-clay plasters had been used in ground-floor main rooms on the internal walls and usually for northern and eastern sitting, sleeping, and burial platforms. This avoidance of the use of white silty clay for surface renders on any of the roof or probable upper-story floor surfaces may have been related to the perceived properties and materiality of white silty clays, which are easily abraded and transfer onto clothing, especially if they have not been burnished. However, it may also have been related to contextual associations of these materials and their properties with particular places and events within buildings. Although many of these white silty-clay plasters were made from marl, which geographically surrounded and underlay the settlement, they were used principally for internal walls and northern and eastern sitting, sleeping, and burial platforms in the ground-floor social areas in the main room. Some of the finer white plasters were made from soft lime, which outcrops ca. 5–6 km from the mound (Driessen and de Meester 1969; Matthews et al. forthcoming).

A second pattern was temporal clustering in the particle size of the types of sediments selected for resurfacing. The two unusually coarse sandy loams in W261 were laid successively, early in the sequence, and finer silty clays selected later, perhaps suggesting shifts in associations with the source areas of these sediments and/or perceptions and use of this area and of the architectural surface properties selected.

Summary Discussion of Roof and Probable Upper Story

Ethnographically in this region, open places and spaces on roofs are used seasonally for storing logs in the winter, drying clothes and furnishings, sleeping in the hotter months, and drying and preserving fruits and foodstuffs in the autumn. At Çatalhöyük, where there were few or no streets, rooftops also provided thoroughfares and, thereby, important places for social interaction. The large open areas between clusters of buildings at Çatalhöyük were used largely for refuse disposal, with few surfaces or signs of trampling.

The microstratigraphic sequences of collapsed roof in Building 3 indicate that some areas of the roof were used for cooking, probably seasonally. Other open spaces on the roof were plastered more frequently and would have provided places for sitting, drying foods, and grinding. The sparsity of obsidian or any microdebitage suggests that even in these rooftop areas, any sharp residues from knapping or modification of tools were carefully managed and disposed of elsewhere. What is somewhat surprising is the low-level distribution across areas of the roof of amorphous organic remains that resemble omnivore coprolites, which have been identified elsewhere at Çatalhöyük as of human origin (Bull et al. 2005). In these samples, many of these organic traces have been burned, probably deliberately so that they were not noisome, and incorporated into ash and rake-out.

The frequently plastered floors covered with soft furnishings in a probable roofed upper-story room may have been located above the ladder entrance to the ground-floor room and have provided a scrupulously maintained boundary between outside and inside places.

Ground Floor

Ten large thin-sections were prepared and analyzed from the ground floor of Building 3 (Figure 7.18).

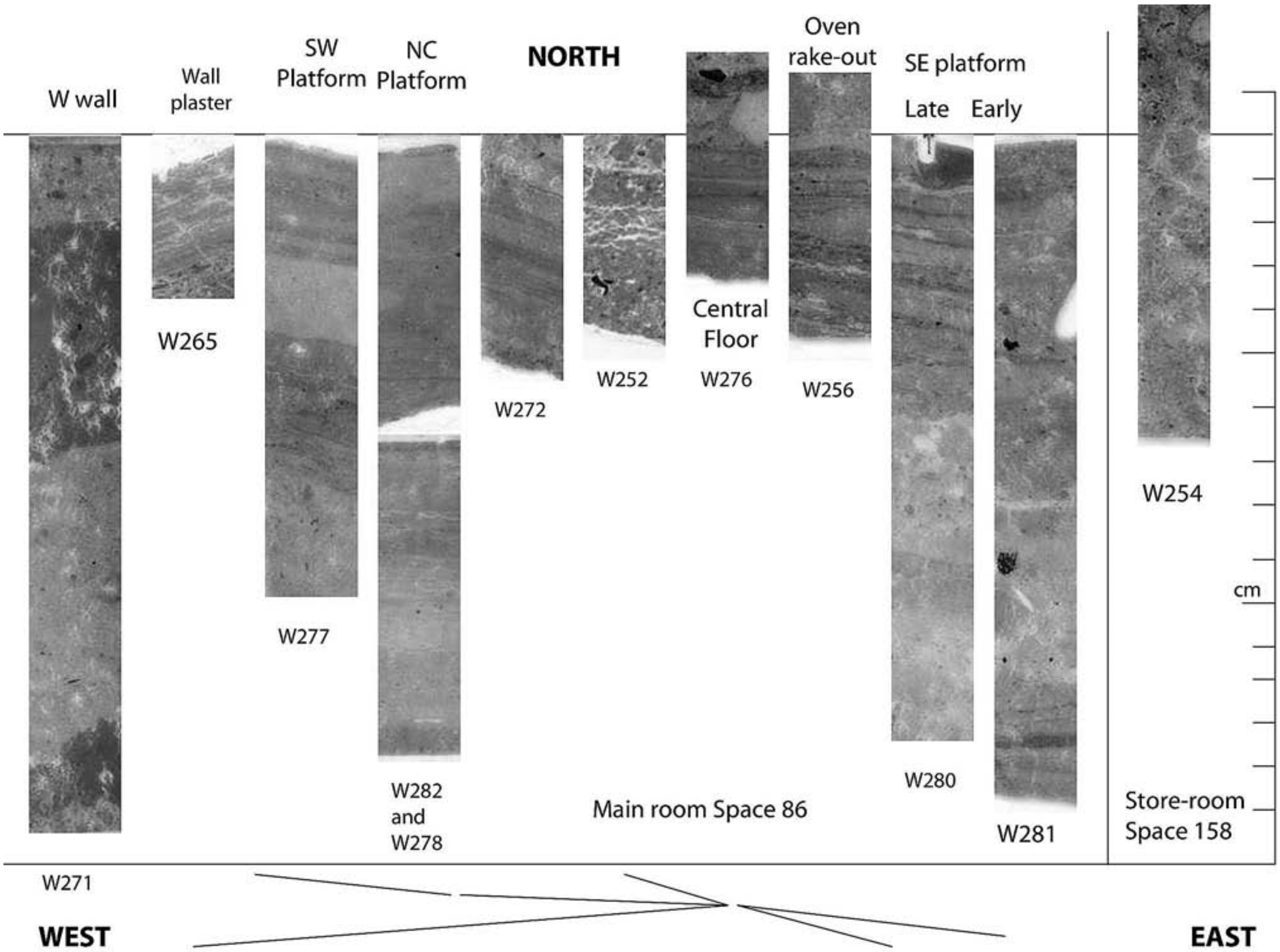


Figure 7.18. Selected columns of microstratigraphic sequences from Building 3, ground floor, from scanned thin-sections.

Discussion

The type, thickness, and frequency of surface renders and occupation deposits on the ground floor of Building 3 reproduced spatial boundaries and traces of activity areas similar to those in many of the buildings excavated to date at Çatalhöyük. Three general settlement-wide spatial and social conventions appear to have been maintained. The first was the rendering of the north-central platform (F.162) with multiple layers of white silty-clay plasters and finishing coats, which were scrupulously maintained and covered with soft furnishings and virtually no traces of accumulated dust (W282). Second was the whitewashing of walls in the main room, with white and ultra-white silty clay (W265). Third was the rendering of areas around ovens with orange-brown mud plasters, and the accumulation of lenses of fuel rake-out and sweepings (W256). Sequences in other areas of the ground floor were more variable, as in many other buildings. The occasional use of white plasters and washes on other platforms and floor surfaces, as well as the periodic more widespread distribution of oven rake-out, suggest that the use of these other areas for activities associated with reception and food production waxed and waned according to different rhythms of the household. The entry platform (F.167), in particular, was a place of changing activities and settings (W281 and W280). Central areas were often lower and appear to have been covered in mats.

Short- and longer-term variations in these rhythms and in the life history of the building, however, were also evident. Internal wall plasters attested to sequences of approximately annual replastering and to intra-annual whitewashes and accumulations of soot, discussed below in the section "Wall Plasters." The rendering of the north-central platform (F.162) with white silty clays was maintained throughout the first half of the life of the building (W282). There was, however, a major break with this and settlement-wide conventions in the second half, when it was rendered repeatedly with orange-brown plasters (W278). There appears to have been a corresponding reverse shift in the nature of surfaces and residues on the southwest platform (F.169) (W277). Early in the history of the building, the southwest platform was rendered with irregular orange-brown plasters and was periodically the site of accumulations of oven rake-out and floor sweepings. Late in its history, however, the southwest platform, in contrast to the north-central platform, was periodically coated in white silty-clay plaster (Figure 7.18). These rhythms need to be further interpreted in the light of other evidence, including the location and sequences of hearths and burials. The penultimate plaster render on the north-central and southwest platforms and in the central area included reworked aggregates of white silty clay and plaster materials, from the dismantling of elements of this or other buildings.

Oven/Hearth Rake-Out

The sequence of nine plaster floors and dark lenses of burned plant remains in W256 closely resembled those near ovens in Building 5 and Building 49. In Building 3, these comprised multiple layers of orange-brown, slightly sandy silt loam, 1–10 mm thick, with 2–5 percent plant stabilizers and charred flecks. Some plasters also included fragments of burned bone. The earliest sampled plaster in this sequence was of a finer and more orange silt loam plaster, with 5–10 percent plant stabilizers. One plaster, the third in this sequence, included reworked aggregates of white building material, similar to the plasters in the north-central platform. Significantly, in the sequence analyzed, no white plasters were laid in this area.

The floor sweepings, 1–5 mm thick, that accumulated in between each of these replasterings were similar to those associated with oven rake-out on the roof, with organic aggregates, charred wood, and charred and phytolith remains of reeds and grasses, and some dung fragments with few or no spherulites (Figures 7.19, 7.20). Within the building, however, these lenses of fuel rake-out included more floor sweepings that had not been burned, including aggregates of white silty-clay plaster (see "North-Central Platform" section below), and did not include water-laid crusts.

Southeast (Entry) Platform (F167)

The upper sequence, W280, of the southeast platform (F.167) had thinner lenses and more finely comminuted remains of oven/hearth rake-out than those in W270, but more than the other areas analyzed. The plaster floors laid on top of a thick layer of packing in the final phase of the building were made from a paler material than those in W270 (roof) and were often much thinner, at less than 0.5–5 mm thick. At least five of these plasters were made from pale brown, sandy silt loam. Some plasters (three) were made from white silty clay with charred flecks (Figure 7.21), one of which was a finishing coat. Three very thin

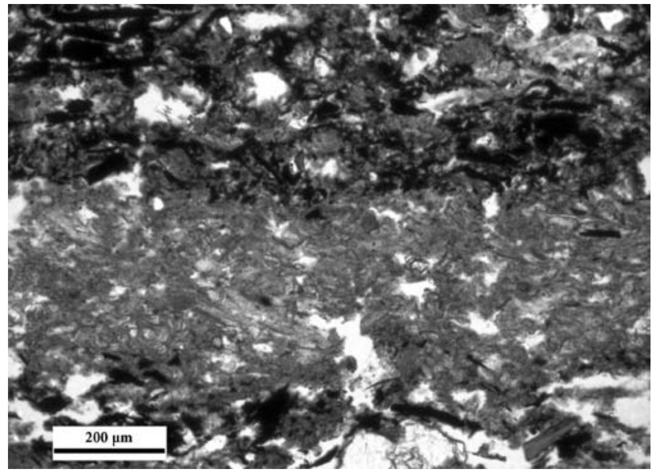


Figure 7.19. Thin-section of ground floor oven fuel rake-out with charred Gramineae and a herbivore dung fragment that contains ingested bulliform reed phytoliths (*Phragmites*) (W256). ×100 PPL.

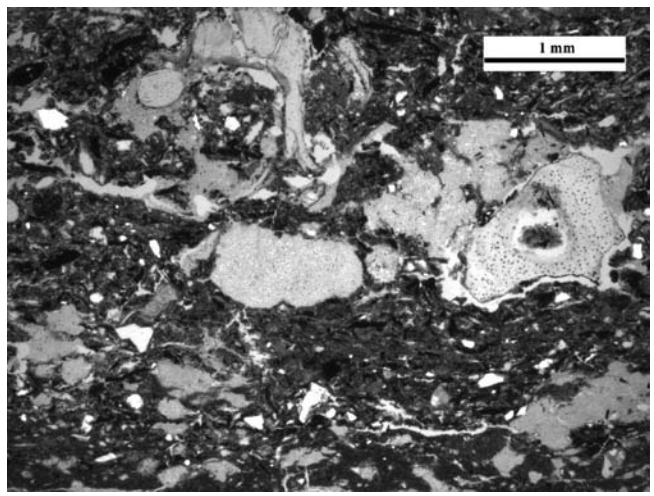


Figure 7.20. Thin-section of ground floor oven rake-out and unburned bone and floor sweepings on orange-brown silt loam plaster (W256, unit 3517). ×25 PPL.

plasters, less than 0.5 mm, were made from orange-brown, sandy silt loam similar to those in W270, and may have been used as renders at the same time. The thin lenses of accumulated occupation deposits were similar to those close to the oven/hearth area but included more burned bone and articulated phytoliths. The strong parallel orientation and linear distribution of components in these lenses, together with peaked boundaries on some fine plasters, suggested that this area may have been covered in mats, at least periodically.

The earliest plasters sampled were made from similar diverse plasters, W281, but were separated more frequently by layers of packing, 2–3 cm thick, and occasionally had no lenses of accumulated deposits. One lens of bright orange silty-clay sediments was only partially reworked and

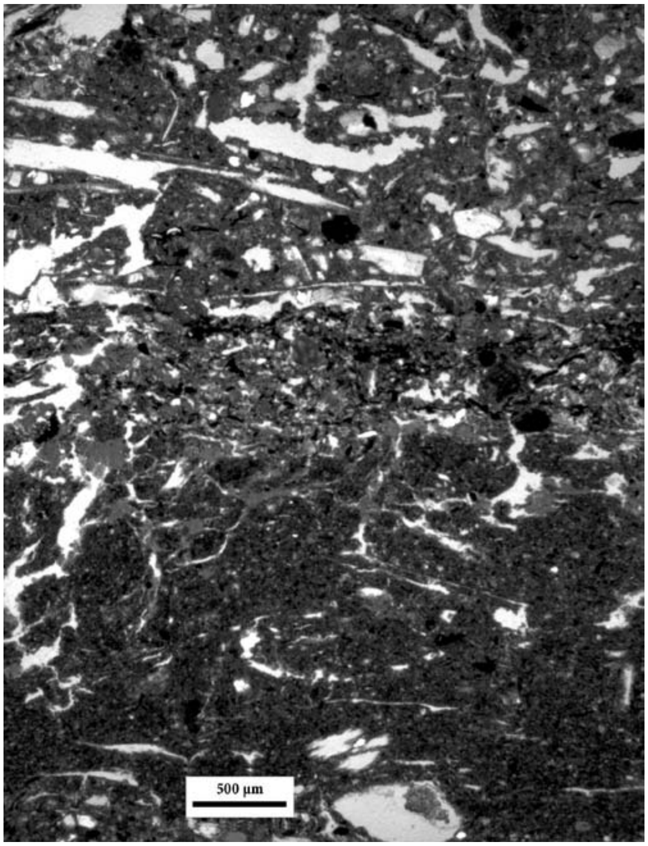


Figure 7.21. Thin-section of southeast platform (F.167) with diverse alternating plasters: orange-brown silt loam, a thin lens of oven rake-out with an obsidian fragment, and white silty-clay plaster floor, with charred flecks in fabric (W281). ×25 PPL.

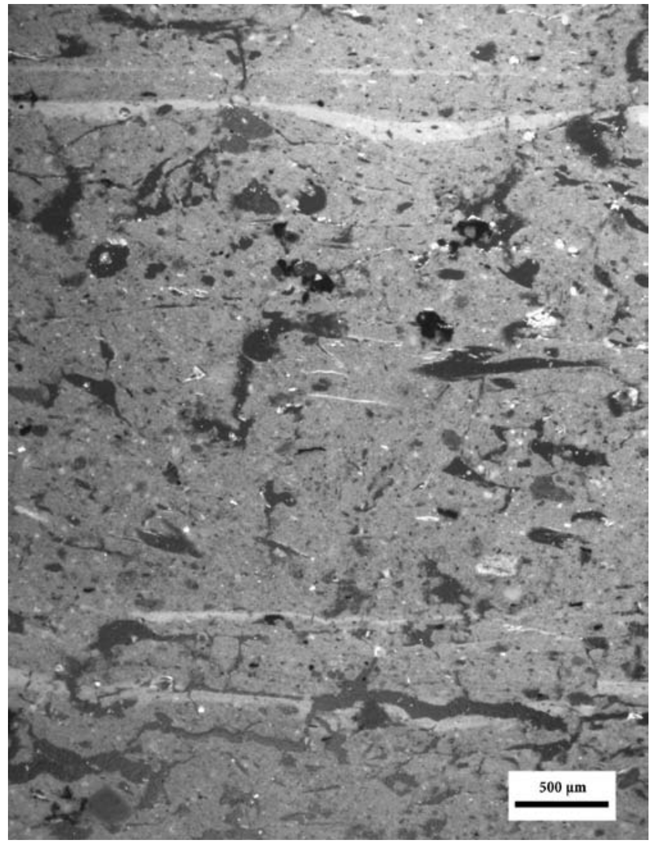


Figure 7.22. Thin-section of north-central platform (F.162), early phase, showing multiple layers of white silty-clay plaster, with ultra-white finishing coats and possible mat impressions; no dust/occupation deposits are present between plasters (W282). ×25 OIL.

was laid as a discontinuous render early in the sequence. At least two layers of packing included reworked aggregates of white silty-clay building materials.

North-Central Platform (F.162)

The earliest surfaces on the north-central platform (W282) were rendered exclusively in white silty clay, with ca. 10–15 percent plant stabilizers and charred flecks, as well as, periodically, very thin, ultra-white finishing coats, less than 0.04–0.06 mm (40–60 microns) thick (Figure 7.22). At least 12 major layers of white silty clay, with intervening layers of finishing coats, were laid on this platform during this phase of the building.

The complete absence of any traces of dust or accumulated sediments or occupation debris on any of these plasters was in marked contrast to almost all of the other microstratigraphic sequences on the ground floor. This, together with the sharp, smooth boundaries, suggested that the north-central platform was covered in fine mats, soft furnishings, or even animal skins.

The latest surfaces (W278), in marked contrast, were only plastered with white plaster on three occasions, and had micro-accumulations of dust and charred flecks between each plaster, suggesting that the area was not as well maintained and, more speculatively, that perhaps less fine furnishings were used. At least 17 plaster renders were applied to this area during this phase of the building.

Of the three white plasters, the first was laid close to the beginning of this late sequence; the second was a finishing coat, laid halfway through the sequence. The latest white silty-clay plaster toward the end of the sequence was made from reworked building material aggregates, in particular wall plaster fragments. Speculatively, these may have come from the dismantling of elements of this building, close to the end of its life, or perhaps from another building.

The last two plasters, like the other plasters in this phase, were made from pale brown to slightly orange-brown, slightly sandy silt loam (Figure 7.23). Some plasters included up to 25 percent reworked aggregates of white silty clay, less than 1–2 mm in size, but were not pure white like the earlier plasters in W282. This reuse of available building materials may have been one way of trying to re-create the traditional whiteness of these areas, perhaps in response to difficulties

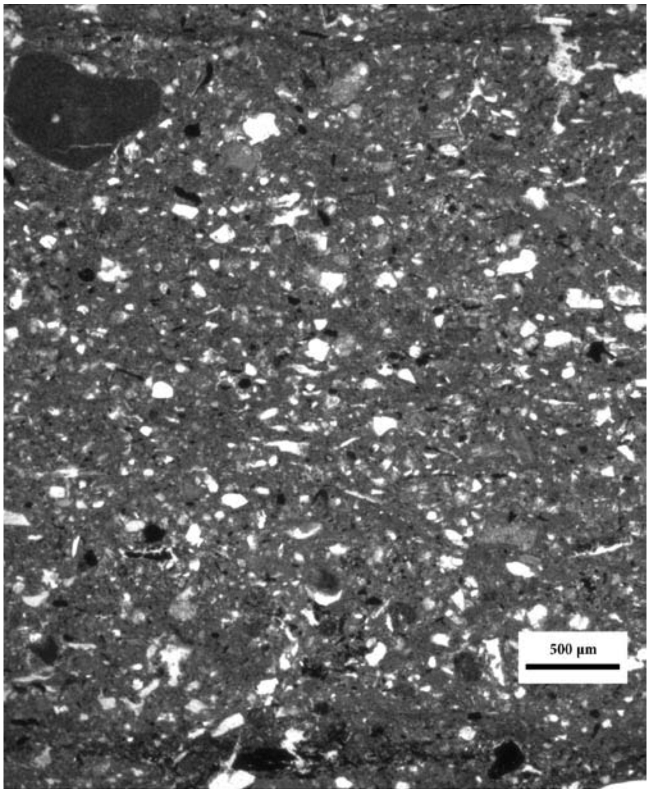


Figure 7.23. Thin-section of north-central platform (F.162), later floors, with orange-brown silty loam to sandy silt loam plasters and thin accumulations of charred flecks (W278). ×25 PPL.

in getting to or obtaining off-site source areas, possibly relating to disability and/or change in land associations.

In the latest sequence, a hole was dug through the white plaster and sealed with a thick orange-brown plaster-like material.

In Front of the North-Central Platform

There were at least 17 renders present in thin-section W272. Of these, there were four white silty-clay plasters, less than 5 mm thick, and four thin white finishing coats on pale brown to orange, slightly sandy silt loam plasters. There were no pure white silty-clay plasters in the last eight plasters, just three layers of white finishing coat. The penultimate layer of pale brown plaster included reworked aggregates of white silty-clay plaster, similar to that on the north-central platform, discussed above.

All plasters were covered in a thin lens of compacted micro-charcoal and dust accumulation, and wavy boundaries that suggested floors were covered in mats.

Southwest Platform (F.169)

The sequence of surfaces and residues on the southwest platform, W277, suggested there was a change in space here, from more frequent thin accumulations of ash and charred flecks to a more scrupulously maintained area. Of the 14 or more earliest renders before a thick white layer, only one of these plasters was of pure white silty clay. At least two others included white aggregates. However, of the 13 renders after this layer, two thick and three finishing coats were of white silty clay, including the last, which contained 2–5 percent charred plant remains. The remainder varied from orange silty clay to pale brown, slightly sandy silt loam, some of which also included reworked wall plaster aggregates. The latest plasters, in particular, had few residues and probably had been covered in mats/soft furnishings (Figure 7.24). These floors were generally very thin, only 2–3 mm thick.

Central Area (F.606)

Of the 13 renders in the central area, in W276, only three were of white silty clay. Several, including the penultimate render, included aggregates of white silty clay and plaster, as in front of the north-central platform and on the southwest platform. The boundaries were comparatively smooth and did not appear to have been heavily trampled (Figure 7.25). Like other areas, they appeared to have been covered with fine mats. Micro-residues in occupation layers were less than 0.1 mm thick.

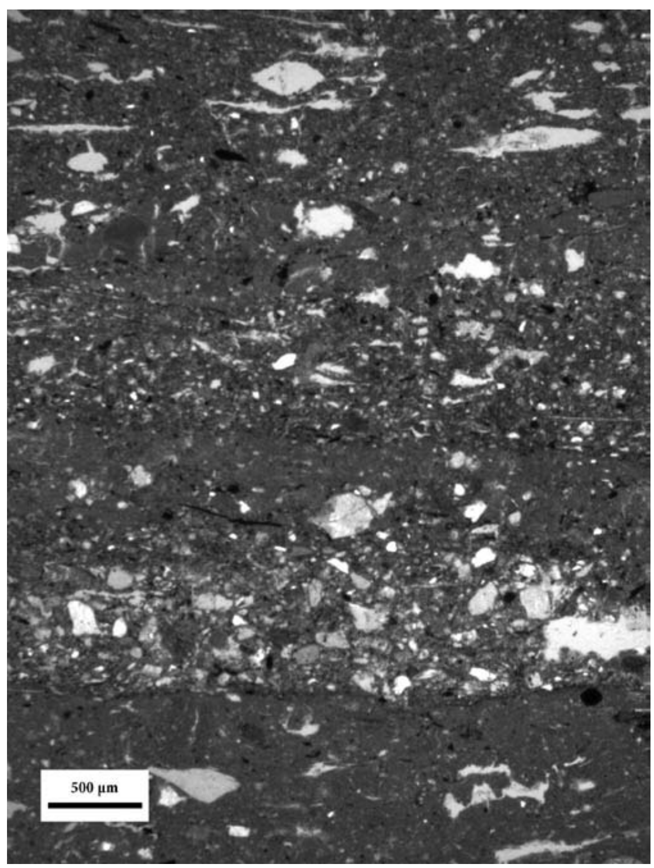


Figure 7.24. Thin-section of southwest platform (F.169), late phase, showing multiple layers of orange-brown and white plasters, with possible mat impressions (W277). ×25 PPL.

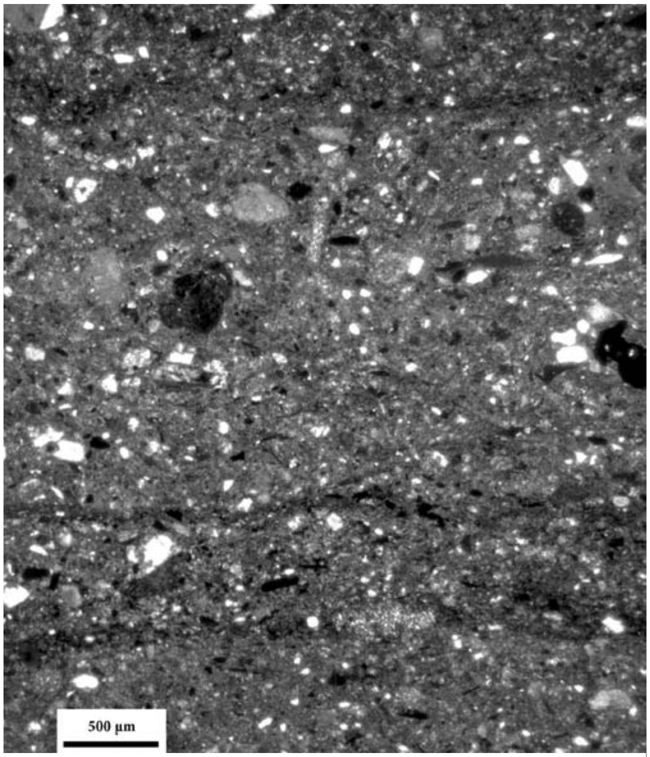


Figure 7.25. Thin-section of orange-brown plaster floors (W276) from the ground floor, central area (F.606). ×25 XPL.

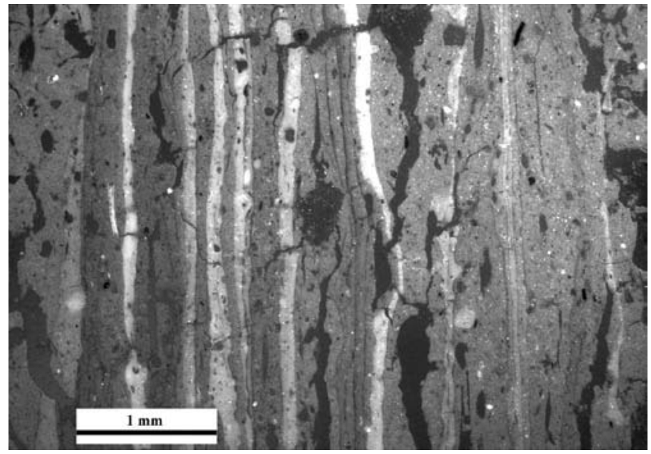


Figure 7.26. Thin-section of collapsed wall plaster (W265, unit 2273). ×25 OIL.

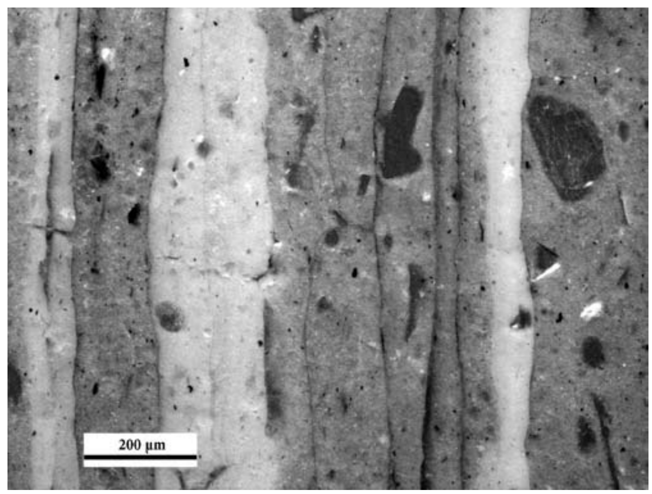


Figure 7.27. Thin-section of collapsed wall plaster (W265, unit 2273). ×100 OIL.

Wall Plasters

The composition and periodicity of the wall plasters are currently being studied in detail as part of joint chemistry-archaeology Ph.D. research at Reading using micro-analysis and micro-mapping (Wiles 2009; Matthews et al. forthcoming; and Emma Anderson in progress). Internal wall plasters attest to a sequence of approximately annual replastering and to intra-annual whitewashes and accumulations of soot (W265) (Figures 7.26, 7.27).

Two large fragments of white wall plaster in a thin-section sample of room collapse may have come from the interior of the room (W258). One fragment comprised at least 38 major (probably annual) replasterings with ultra-white finishing coats, marking the beginning of each sequence, as in Building 5 (Matthews 2005b). A number of sequences included up to six layers of soot and additional whitewash, within each (likely) annual sequence.

Mud Brick and Mortar in Rebuild of West Wall

The mud brick and mortar of a rebuild of the west wall were sampled for comparative analysis of the properties and bulk availability of materials selected for plasters. The mortar was made from an orange-brown alluvial silty clay with 5–15 percent plant stabilizers and 2 percent charred flecks, similar to some of the darker plasters used on the ground floor—for example, in front of the north-central platform (W272) and in the central area (W276). The mud bricks were made from a pale brown sandy loam to sandy silt loam, similar to some of the plasters used on the roof, such as W257–258 and W261 and W266.

Storeroom Space 158

Like storerooms in other buildings, including Building 1, the floor of this storeroom was made from thick sandy loam packing, more than 7 cm thick, probably in an attempt to inhibit insect and rodent activity (W254).

End-Life of a Building

The penultimate plaster render on the north-central and southwest platforms and in the central area included reworked aggregates of white silty clay and plaster materials, perhaps from dismantling elements of this or other buildings (Figure 7.28).

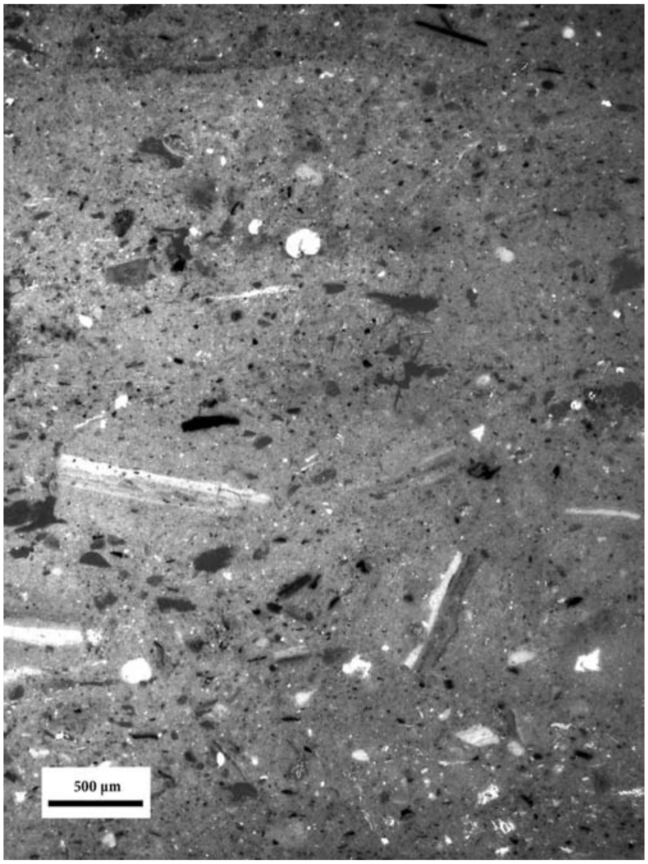


Figure 7.28. Thin-section of ground floor, north-central platform (F.162), showing the penultimate plaster with aggregates of reworked wall plaster (W278). ×25 OIL.

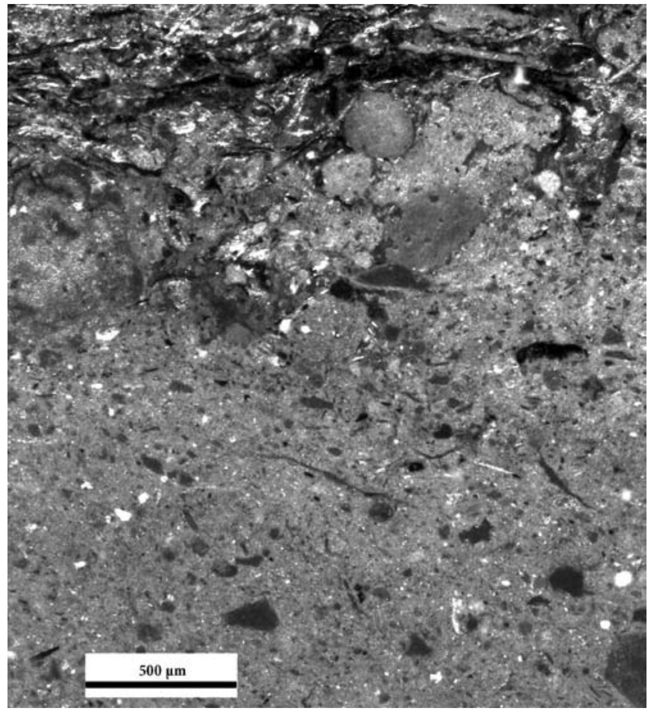


Figure 7.29. Thin-section of north-central platform (F.162), showing red ocher in the latest deposits (W278). ×40 OIL.

On the north-central platform (W278), the last layer of occupation debris in this area was rich in ash and included the only flecks of red ocher identified in the thin-sections from Building 3 (Figure 7.29). The infill and/or latest-occupation material on this platform comprised 2–3 mm of aggregates, covered with burned debris, similar to rake-out close to the oven on the roof, with well-articulated charred plant remains and phytoliths from grasses and reeds.

In front of the north-central platform (W272), the last orange-brown, slightly sandy silt loam plaster also had a thin lens of occupation deposits on the surface, which was then covered with diverse building material aggregates. One of these had accumulations of water-laid silty-clay lenses, and may be from the roof.

In the central area (W276), on the latest floor, there were accumulations of dumped white and other building materials, including burned oven plaster mixed with sparse charred plant remains. The remarkably well-articulated charred grasses and reeds and fairly uniformly burned aggregates on top of the first centimeter of collapse could possibly have been burned in situ, as they graded from low-temperature charring to more oxidized ashes and phytoliths, some of which were melted (Canti and Linford 2000), although there was no evidence of more widespread burning.

One fragment of white-plastered and soot-coated sculpture in the base of a posthole (F.602) resembled the snout of a plastered bull from Çatalhöyük on display in the Museum of Anatolian Civilizations in Ankara. The multiple layers of whitewash and soot on the sculptural fragment in Building 3 resembled the sequences of whitewash on walls of Buildings 3 and 5 but were not sampled for thin-section analysis.

Midden

Part of the infill of Building 3 comprised midden deposits. In W249, these included well-preserved charred and phytolith plant remains from fuel rake-out, including oak wood, reeds, and Gramineae (Figure 7.30), mixed with burned and non-burned building material aggregates. The burned fuel deposits also included more calcareous spherulites from dung (Figure 7.31) than fuel rake-out during the occupation of Building 3. Midden deposits in W251 were similar to those in W249 but included more building material aggregates, including wall plaster fragments.

The fill of storeroom Space 158 (W254) principally comprised uniformly burned plant remains, including reeds and Chenopodiaceae, burned bone, and burned building material aggregates, including wall plaster.

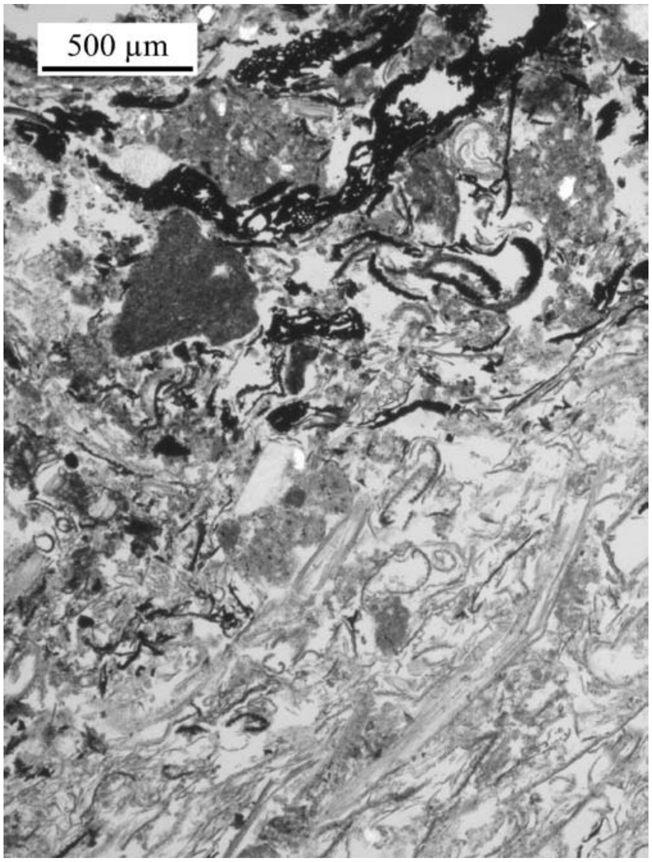


Figure 7.30. Thin-section from midden (W249) showing well-preserved charred and phytolith remains of Gramineae, calcitic plant ashes, and burned aggregates (2229). ×40 PPL.

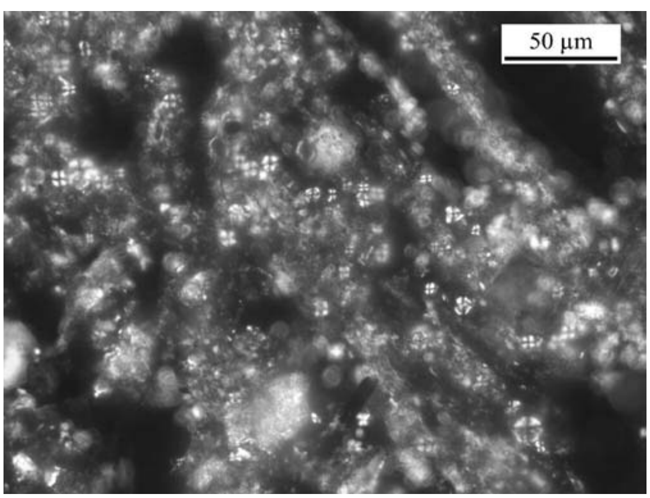


Figure 7.31. Thin-section from midden (2229), showing calcareous spherulites from animal dung burned as fuel in midden deposits (W249). ×400 XPL.

Roof Collapse

The collapse/demolition of the roof and a possible upper-story room in Building 3 is discussed above.

Conclusions

Source Materials

Although a wide range of potential sediment sources and properties were available for manufacture of architectural materials and surfaces in the Neolithic environs of Çatalhöyük, as attested by palaeoecological coring, test trenches (Boyer et al. 2006; Roberts et al. 1996), and soil mapping (Driessen and de Meester 1969), these were not randomly selected as surface renders but were generally applied to very specific contexts at specific frequencies. From our analysis, it appears that orange-brown alluvial silty clay and pale brown sandy silt-loam and sandy loam were widely used in mud bricks and mortars in Building 3 and for many plasters. Likewise, a fine orange-brown silty clay of a comparable particle size was commonly used for some plasters and mortars. Thus, it seems likely that the builders' choice of material—for example, white silty clay for certain areas such as the north-central platform, walls, and periodically other areas— probably related to what they perceived as different, specific properties. These properties likely included whiteness, brightness, and light reflectivity, as well as perhaps antiseptic qualities due to high calcium carbonate content. More speculatively, the fine white silty-clay plasters used in areas of sitting, sleeping, and burial may also have been selected for symbolic properties frequently associated with the color white, which cross-culturally can signify purity and transcendence (Bachelard 1994; Taçon 2004). The actual sources of orange-brown alluvial silty clay and pale brown sandy silt loam and sandy loam used in the construction of most buildings from Mellaart's Level VII onward have yet to be identified by palaeoecological coring and excavation.

Selection of fuel is linked to a range of ecological sociocultural considerations (Asouti 2005b). Sources of fuel in Building 3 included oak wood and reeds and grasses, with some traces of dung, as observed in earlier buildings (Matthews 2005b). Although analysis of dietary isotopes for sheep and goat suggest that these animals were grazed more widely and perhaps farther from the settlement Richards and Pearson 2005; Richards et al. 2003), the use of dung as fuel suggests some animals remained relatively proximate to the settlement at Çatalhöyük, and that people associated with Building 3 had access to it.

Boundaries

Processes of boundary creation and maintenance are intimately bound up with socialization, politicization, and ritualization (Bradley 2005) and can potentially play a major role in creating and embodying identities and difference (Barth 2000). The rare preservation of collapsed roofing has enabled us to establish for the first time that there were clearly delineated activity areas on the upper story, in addition to those already known from study of ground floors. Upper-story areas included a well-plastered internal room, and areas that were probably unroofed, as they were coated periodically in water-laid lenses. Some of these areas were used for cooking and had preserved oven bases and thick accumulations of rake-out deposits, with few laid plasters. Other areas were kept cleaner and may have been used for a range of outdoor activities such as processing food, including perhaps the cereal awns burned in an oven, as well as communication. The probable upper-story roofed room, with plastered floors and soft furnishings, likely provided a marked boundary between outside and inside spaces and places.

As noted above, the type, thickness, and frequency of surface renders and occupation deposits on the ground floor of Building 3 corroborate spatial boundaries and traces of activity areas corresponding to general settlement-wide spatial and social conventions. Architectural surfaces were used to create boundaries and oppositions between the raised, white northern platforms used for sitting, sleeping, and burial, and the lower, orange-brown plastered oven areas with lenses of rake-out.

Multiple Temporalities

Bourdieu (1977), Giddens (1979), Moore (1986), Tringham (1994, 1995), and Parker Pearson and Richards (1994) have demonstrated that architecture is responsive to human life histories and is actively used to structure behavior and enable socialization into the wider community. The periodic expansion and contraction of white silty clay surfaces and fuel rake-out residues in other areas of the main room almost certainly correspond with major changes in the emphasis on these places and activities and on the rhythms of the household. Giddens, following Heidegger, suggests that all forms of social action involve at least three intersecting "planes of temporality": the rhythms of daily routine, the biography or life cycle of the individual, and the inheritance, or *long durée*, of social institutions, which are constantly in tension (Giddens 1979; Lane 1994:198). Space is not deterministic. "Rather than making people what they are, places can be made, or re-made, to serve particular purposes" (Day 2006:186). The annual and intra-annual whitening and lightening of molded sculptures and places may have revitalized and transformed them, as suggested by Bachelard (1994:67–69), weaving "ties that unite a very ancient past to a new epoch . . . recovering its origin." This repeated plastering is also likely to have honored the building and social group(s) in ways similar to the ongoing carving of ancestral wooden posts in Malagasy (Bloch 1995). This intensity of intra-annual and annual replastering is currently unparalleled, to my knowledge, in the archaeological record and attests to an intense focus on the house.

Distinct cycles of residues from outdoor cooking and social interaction on the roof, probably during the summer months, were followed by periods of undisturbed water-laid sediments from rainstorms and perhaps snowmelt, when cooking and many other activities must have been conducted indoors, probably during the winter (Figure 7.1a–c) (Matthews 2005b). This seasonal variation in social interaction is supported by evidence from inside buildings, including Building 3 (Figure 7.30). The increase in soot within some probably intra-annual cycles, as in Building 5 (Matthews 2005b), supports this suggestion of cycles in the nature and intensity of indoor and outdoor use of fires and activities, and of interactions within households, as suggested by corresponding cycles in oven rake-out and water-laid crusts.

Longer-term changes in activity areas and the nature of places within ground-floor areas have been identified, particularly in the use of the southwest platform, from irregular orange-brown floors and oven rake-out to white, well-maintained plasters. The deposits, in which the two human skulls were placed, included aggregates from the dismantling of posts, and burned residues as well as traces of ocher on the latest floors. These rhythms need to be further interpreted in the light of other evidence, including the location and sequences of hearths and burials in particular. As noted earlier, the composition and periodicity of wall plasters are currently being studied in joint chemistry and archaeology Ph.D. research at the University of Reading, submitted in September 2008 (Wiles 2009; Matthews et al. forthcoming).

Acknowledgments

I am very grateful to the General Directorate of Monuments and Museums, Turkey, for permission to export these samples for scientific analysis, and to Julie Boreham, Cambridge, for the manufacture of the micromorphological thin-sections.

Part 3

Human–Environment Relations in the BACH Area

In this part of *Last House on the Hill*, we have merged two sections of Volume 4 (*Inhabiting Çatalhöyük)* of the CRP 1995–1999 excavation report (Part A: Site–Environment Relations, and Part B: Human Lifeways). In *Last House on the Hill*, this section brings together human relations to plant and animal resources, as well as the life histories of humans during the life history of the buildings in the BACH Area.

Both the faunal and floral reports contain essential discussion—as do all the Çatalhöyük reports on these materials—on the degree to which the plants and animals used in the Neolithic settlement conform to our notions of "domesticated" species and the implications of the ambiguity of their classification under this evolutionary scheme. In this volume, two aspects of faunal analysis are covered: Chapter 8, The Mammals, authored by Nerissa Russell, and Chapter 9, The Birds, authored by Nerissa Russell in collaboration with her colleague at Cornell University, Kevin McGowan. These two chapters are modeled after chapters by the same authors in Part A of Volume 4 (*Inhabiting Çatalhöyük)* of the CRP 1995–99 excavation report. Of special interest to the research aims of the BACH project —because of the significant deposition of large animal bones at the close of occupation of Building 3—are questions of the social meanings of animal use, such as feasting and disposal of bones. Nerissa Russell broadens the traditional parameters of faunal analysis and interpretation to include the symbolic significance of the visual representation of animals and the deposition of their remains in clay bricks and mortar of walls, as, for example, in the screen wall in Building 3.

Emma Jenkins also builds on her report in the CRP 1995–99 volume 4 to author the report of the BACH microfauna in Chapter 10.

In Volume 4 of the CRP 1995–1999 excavation report, Christine Hastorf wrote a chapter on the method of collecting macrobotanical remains, although the actual macrobotanical analysis and report was written by the team of Andrew Fairbairn, Julie Near, and Danièle Martinoli. The final detailed analysis and publication of the macrobotanical remains of the BACH Area, however, was carried out by Christine Hastorf and a group of researchers at the University of California, Berkeley, who built their investigation on the analyses already carried out in the field by Kathryn Killackey and Aylan Erkal. Their report, nevertheless, is modeled on that of Fairbairn and colleagues and similarly focuses on the different uses of both wild and domesticated plants in the daily life of the Building 3 inhabitants, comparing them with other areas of Neolithic Çatalhöyük and relating them to Neolithic foodways in Anatolia in general. Through the issue of food preparation, this chapter may be linked significantly to that of Sonya Atalay on clay balls (Chapter 18).

The excavation, analysis, and interpretation of the human remains in the BACH Area were carried out by Lori Hager and Başak Boz, who have provided a jointly authored report for this volume (Chapter 13) covering both Neolithic and post-Neolithic burials. Başak Boz had been part of the Çatalhöyük Research Project team publishing the burials from Building 1, focusing on dental health, in volume 4 of the CRP 1995–99 report. Lori Hager did not join the CRP team until 2000. The earliest burial in Building 3 is also the youngest in age, and the only one with a significant cluster of grave goods. The general lack of grave goods in the BACH Area, and other parts of Çatalhöyük in this time period, lends a rather different set of themes to the human remains analysis from many other Neolithic sites in the Near East. The report on the BACH Neolithic human remains follows the same interest demonstrated by the authors of CRP 1995–1999 volume 4 (*Inhabiting Çatalhöyük,* Part B) in focusing the interpretation of human remains as representing human life histories, investigating issues of health, nutrition, injury, and the effect of the daily round of tasks on their bodies. Much of the investigation of the BACH burials focused also on linking the details of burial events to the detailed sequence of the life history of buildings.

The post-Neolithic burials have been brought together in a separate chapter (Chapter 14), since the aims of the investigation as well as the methodology involved in their study is rather different from that employed in the study of the Neolithic burials (Chapter 13). For their analysis and publication of the post-Neolithic burials, Hager and Boz were joined by Daniela Cottica, a specialist in material culture of East Mediterranean Roman and Byzantine periods from the University of Venice, Italy, and a participant in Douglas Baird's survey team of the area surrounding Çatalhöyük. Through her analysis of the ceramics and other substantial grave goods, the burials were dated to the Roman period, first to third century A.D.

Chapter 8

Mammals from the BACH Area

Nerissa Russell

I report here on the macro-mammalian fauna from the BACH Area at Çatalhöyük. Part of this material was included in some of the general tallies in an earlier report focusing on the NORTH, SOUTH, and KOPAL Areas (Russell and Martin 2005). However, they were not discussed in detail. Since then, more has been excavated and considerably more recorded, so that this report includes much additional data. Also, while the previous report focused on issues of domestication and temporal variability, here I take advantage of the relatively complete coverage of a single building and its immediate environs to pursue contextual analysis more fully. Of the 980 units with faunal remains from the BACH Area, 411 have been fully recorded, and 433 have received a Phase 1 assessment. Of those unstudied, 7 are from mixed contexts, and the remaining 114 are small assemblages present only as heavy residue from flotation derived from fill and construction material. In total, 155,389 specimens have been recorded, of which 148,077 derive from macro-mammalian fauna and form the basis of this report. Approximately half of these (72,638) are "flot frags" (Russell and Martin 2005)—that is, scrap material from flotation heavy residue recorded only by count and weight. This leaves 75,439 fully recorded macro-mammalian bones. Of these, 8388 (11 percent) have been identified to taxon (at least to family level, usually to species).

Methods follow those detailed in the previous analysis (Russell and Martin 2005), with the addition of the Phase 1 assessment procedure. Assessment was instituted after the previous analysis in response to several problems that became apparent. First, a decision was made to use a labor-intensive and data-rich recording system, in view of the good preservation and excellent contextual information available. This has meant, however, that only a fraction of the excavated bone has been recorded. While the Çatalhöyük zooarchaeology team still believes this was the best strategy for the site, it created problems when excavators or other analysts wished to know about the faunal remains from unrecorded units. Phase 1 assessment aims to provide a general sense of the faunal remains in all units. Second, the Çatalhöyük Research Project's practice of negotiating priority units for study among the various excavators and analysts worked well in many ways, but left some units of considerable faunal importance unstudied. Assessment is meant to catch these units of high faunal priority and direct them into full recording. It also permits us to target labor-intensive recording on those units that provide the most useful data: primary and secondary deposits that can be linked reasonably securely to a period of occupation. Third, the animal bone bags often contained substantial amounts of other materials, which did not receive study if the zoo-archaeology team failed to study the unit. The same was true of the bone tools and bird bones, whose analysts aimed to study the entire assemblage. Assessment provides an opportunity to pull these materials for study.

The Phase 1 assessment procedure involves a rough sort of the unit, followed by a thorough qualitative description. Rough quantification of taxa is provided with a diagnostic zone count, and measurable specimens, worked bone, and bird bone are recorded. Human bone is also pulled for further study by the human remains team, but first recorded if the assemblage is not from a burial unit. Microfauna, fish, and other materials, such as obsidian and pottery, are also pulled for study. The unit is then assigned a priority for full recording. In principle, all units should be assessed. In practice, the zooarchaeology laboratory has never had sufficient labor to do this, but near-total assessment was achieved for the BACH Area.

Taxa Present

The macro-mammalian specimens identified to taxon are summarized in Table 8.1, quantified by number of identified specimens (NISP) and Watson's (1979) diagnostic zones (DZ) as modified by Bogucki (1982) and presented roughly in order of size, from largest to smallest. The pattern of distribution of taxa is generally similar to that found in the earlier analysis, covering the earlier levels of the sites through roughly Level VI. However, there are fewer cattle in the BACH Area (9 percent based on diagnostic zones vs. 15 percent in the previous analysis) and more sheep/goat (81 vs. 64 percent). The adjacent and roughly contemporary NORTH Area shows a similar pattern, with cattle forming 12 percent of the identified taxa, and sheep/goat 79 percent by diagnostic zones. The trend to fewer cattle and more sheep/goat seen in the levels later than Level VI (Russell et al. in press) may start here.

Table 8.1. Taxa identified in the BACH Area (corrected for articulating specimens)

Taxon	NISP	NISP %	DZ	DZ %
Bos primigenius	1,738	21.7	89.5	9.0
Equus sp.	43	0.5	5	0.5
Large equid	18	0.2	3	0.3
Small–medium equid	80	1.0	18	1.8
Large cervid	248	3.1	1	0.1
Cervus elaphus	59	0.7	20.5	2.1
Dama dama	3	0.04	0	0
Capreolus capreolus	4	0.05	2	0.2
Small cervid	1	0.01	0	0
Sus scrofa	92	1.1	14.5	1.5
Ovis/Capra	5,060	63.1	549.5	55.0
Ovis	429	5.3	214.5	21.5
Capra	113	1.4	45.5	4.6
Medium carnivore	9	0.1	0	0
Small carnivore	14	0.2	1.8	0.2
Canis sp.	4	0.05	1	0.1
Canis lupus	1	0.01	0	0
Canis familiaris	54	0.7	11.8	1.2
Vulpes vulpes	31	0.4	10.4	1.0
Mustelid	4	0.05	1	0.1
Meles meles	4	0.05	4	0.4
Mustela nivalis	1	0.01	1	0.1
Felis silvestris	1	0.01	0	0
Lepus europaeus	6	0.1	2.2	0.2
Erinaceus europaeus	3	0.04	2	0.2
Total	8,020		998.2	

Cattle (*Bos primigenius*)

Previous work has shown that the Çatalhöyük cattle are wild through ca. Level VI (Russell and Martin 2005). The cattle from the BACH Area fall metrically in the same range as the larger assemblage from the previous study (measurements are recorded in the on-line edition)—that is, in the wild size range. While subsequent work (Russell et al. in press) has revealed the presence of domestic cattle in the later periods at Çatalhöyük, the BACH cattle resemble the wild cattle from the earlier levels, both in the range and the distribution of measurements. Figure 8.1 graphs the body-part distribution based on the number of diagnostic zones expected in the nine bodies represented by the most numerous element (scapulae). Cattle scapulae are even more overrepresented in the BACH Area than in the previously studied assemblage (Russell and Martin 2005: Figure 2.6). This is no doubt related to a special deposit (to be discussed below). Otherwise, the distribution is generally similar and mainly reflects density-mediated attrition of the softer parts. However, feet below the carpals/tarsals are less common. Possibly this means that, in contrast to the site as a whole, some feet are being left behind at the kill site. Did the Building 3 inhabitants have to hunt cattle farther from the site than most? Or were they simply less willing to carry non-meaty parts?

Cattle sex and age distributions result from culling decisions. Two horn cores are morphologically sexed as male, and two pelves as female. Otherwise, we must rely on measurements to detect sexual dimorphism. As argued previously (Russell and Martin 2005:51), the Çatalhöyük cattle separate into males and females at roughly the zero point on the standard animal difference of logarithms scale, using the Ullerslev cow (Degerbøl and Fredskild 1970) as a standard. By this criterion, 12 of the specimens with measurements suitable for standard animal analysis are likely females and 15 males.

In the previous analysis, males constituted about half of the sexed specimens in daily consumption contexts, but two-thirds in special and feasting contexts. As in the previous analysis, I have assigned units to a feasting consumption context if they contain what appear to be feasting remains: clusters of minimally processed meaty bones. Contexts containing the usual, more heavily processed bone that has been fractured for both marrow and bone grease have been assigned to a daily consumption context. Units containing unusual animal remains not from daily consumption but not obviously from feasting, and showing signs of deliberate placement, have been assigned to a special consumption

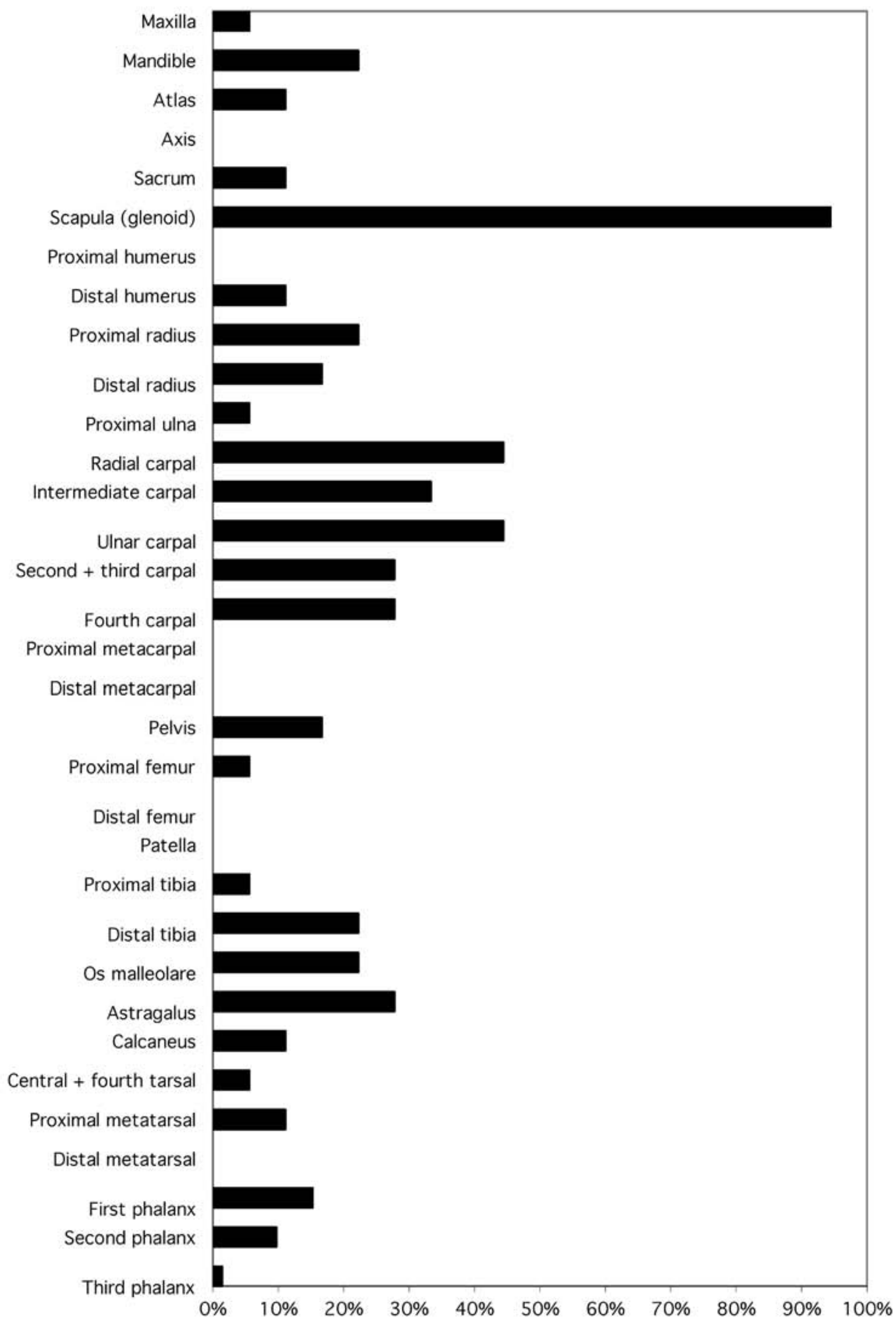


Figure 8.1. Cattle body parts as percentage of expected intact carcasses based on diagnostic zones.

context. Since feasting and special deposits often occur as pockets in midden or fill units and are not always separated from them, this is a crude distinction, as most of the bone in many feasting and special units is from daily consumption. However, in the BACH Area, excavators made considerable efforts to separate feasting and special contexts, so these designations should more accurately, although not perfectly, reflect the contents. In the BACH Area, 38 percent of the sexed specimens from daily contexts are male (N = 16), 67 percent are male from feasting contexts (N = 3), and 80 percent are male from special contexts (N = 13). While the sample sizes are small, this comparison shows even more clearly than in the previous analysis that bulls were selected for feasts and special use (many of the special deposits may come from animals consumed in feasts).

While ideally age distributions would be based on tooth eruption and wear, there are only five mandibles with teeth suitable for aging, and most of them do not have full tooth rows. Therefore, I use an age stage system (infantile/juvenile/subadult/adult) that combines cranial and post-

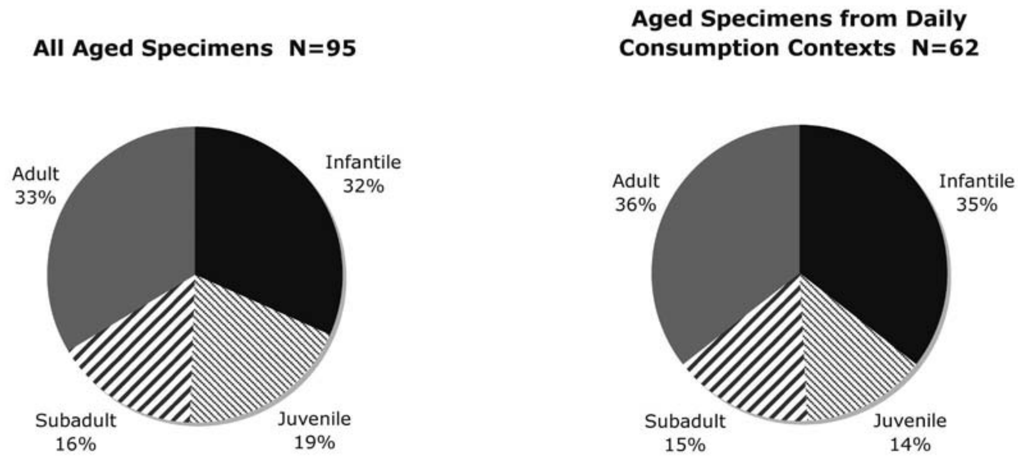


Figure 8.2. Cattle age stages based on combined dentition and postcranial data, for all aged specimens and those from daily consumption contexts only.

cranial material. As seen in Figure 8.2, subadult and adult animals make up half of the aged bones, with more infantile than juvenile in the other half. This is generally similar to the age distributions in the earlier analysis, and supports the view that cattle were hunted rather than herded. Interestingly, when only material from daily consumption contexts is included, juveniles become less common, while both adults and infants increase somewhat.

Thus, the Çatalhöyük hunters targeted full-size animals but also took some younger ones, and may have specifically targeted juveniles for some purposes. Males and females were hunted in nearly equal proportions, but males were strongly favored for feasts, and their body parts were more likely to become part of special deposits. In the previous analysis, we noted an increase in both subadults and females in our Phase 3, which roughly equates to Level VI with a small amount of later and slightly earlier levels, and includes the partial assemblage from the BACH Area (Russell and Martin 2005:52). The fuller BACH data support the elevated number of subadults and of female cattle in daily contexts, but they are lower in ceremonial contexts. In the previous analysis, we suggested that these changes could be due to a different hunting strategy or to demographic change in the cattle population in response to hunting pressure. If the latter, we suggested that cattle numbers might drop in the later periods, which had received little study at that time. We now know that the proportion of cattle is somewhat lower in the BACH Area than in earlier periods, and analysis of material from the later levels (Russell et al. in press) indicates that cattle remain at ca. 10 percent by diagnostic zones. However, this appears to be the result of a sharp increase in the numbers of sheep and goats, rather than a decrease in cattle. Art and special deposits demonstrate that the symbolic value of cattle does not lessen in the later periods (Russell and Meece 2005).

Five cattle specimens plus three large mammal specimens that are very likely cattle show alterations from pathologies (see Table 8.2). This is 0.7 percent of the cattle specimens, which is somewhat higher than observed in the previous analysis but still a basically healthy population. Most of the pathologies in the cattle are related to infections, probably ultimately the result of injuries. One and perhaps both of the remaining cases seem to be largely a result of advanced age.

In sum, the cattle from the BACH Area generally conform to the patterns observed previously. This is still clearly a wild population hunted, not herded, by the Çatalhöyük inhabitants. Therefore, the increase in caprine herding slightly precedes the adoption of domestic cattle (Russell et al. in press).

Equids (*Equus hemionus, E. ferus*)

We had previously suggested the presence of three species of equids at Çatalhöyük (Martin and Russell 2006): wild horse (*Equus ferus*), onager (*E. hemionus*), and European wild ass (*E. hydruntinus*). The two small equids do not separate metrically, however, and recent palaeogenetic work (Geigl and Grange 2012) indicates that hydruntines are simply a regional grouping of *E. hemionus*, rendering the distinction meaningless. Therefore, we can regard the small-to-medium equids as most likely *E. hemionus*, and the large equids as *E. ferus*. The proportion of equids in general in the BACH Area is about the same as that in the previously analyzed assemblage. There is a higher percentage of large equids in the BACH Area, although the sample size is small, so this may not be very meaningful.

The sample size is too small for meaningful body-part analysis, but clearly all body zones, both meaty and otherwise, are represented. Thus, the BACH Area conforms to the pattern seen elsewhere in which the whole animal is

Table 8.2. Cattle pathologies

Specimen	Body part	Age stage	Description
2200.F6	Ulna	Mature	Massive exostoses, distortion, and some eburnation of the articular area, most likely resulting from an infection caused by an injury
2229.F866	Mandible	Senile	Second premolar lost in life, some periodontal loss around the third premolar
2289.X5	Scapula	Young	Abscess has eroded away the lateral border of the glenoid fossa
3587.F220–F221	Metatarsal and lower range of tarsals	Adult	All are fused together with spavin-like exostoses; may have resulted from an injury or general stress on the joint
8432.F225	Humerus	Senile	Distal humerus with a little spongy exostoses on the medial border of the trochlea, while the posterior and especially anterior edges of the trochlea are slightly eroded; perhaps a nutritional or systemic problem
8432.F175 and 8432.F224	Ribs	Mature	Swollen, distorted, with extensive spongy exostoses on the outer surface, possibly broken through a drainage hole; osteomyelitis resulting from hunting injury or goring by another aurochs; could be same animal as 8432.F225 and the cause of its systemic problem; one rib has a cut mark, so the meat was eaten
8432.F227	Indeterminate	Mature	Large mammal, most likely cattle; irregular and pitted, seems infected and perhaps broken through drainage hole; may be from same animal as the other specimens from unit 8432

brought back to the site, suggesting they are hunted individually and relatively close to the site.

The age stage distribution of the equids is generally in line with the earlier analysis (Figure 8.3). There are somewhat more infants than seen previously, but with a relatively small sample size this may not be meaningful. More significantly, the pattern of an overwhelming preponderance of adults persists. More than 20 percent of these adults are very old. Thus, adults specifically seem to be targeted.

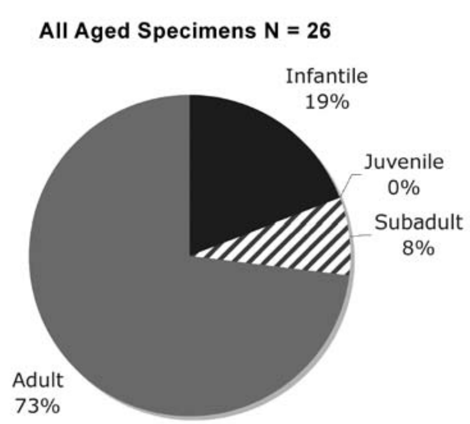


Figure 8.3. Equid age stages based on combined dentition and post-cranial data.

Cervids (*Cervus elaphus, Dama dama, Capreolus capreolus*)

Cervids are slightly more common in the BACH Area than in the areas previously analyzed, but the numbers remain low. Red deer still predominate among the cervids. In the previous analysis, all body parts of deer came to the site in the earliest periods, but after Level pre-XII.B, little other than cranial parts (mostly antler) and feet were found (Russell and Martin 2005). However, this pattern does not hold in the BACH Area (Figure 8.4). While antler is still over-represented, there is a substantial representation of meaty parts as well as other body zones. Either the inhabitants of Building 3 and its vicinity were exploiting zones other than those used by most of the site's occupants—perhaps the foothills—or the taboo on consuming deer or bringing them to the site did not apply to them.

Boar (*Sus scrofa*)

Boar occur in the low numbers typical of most site areas. The body-part distribution (Figure 8.5) is also fairly typical for all but the earliest levels of the site. Heads, in particular, and lower limbs are overrepresented, and the meaty axial and upper limb areas are scarce. Whether because local boars were hunted out and most came from a distance, or because of a taboo, boar were not usually eaten on-site. However, heads and perhaps skins were brought back.

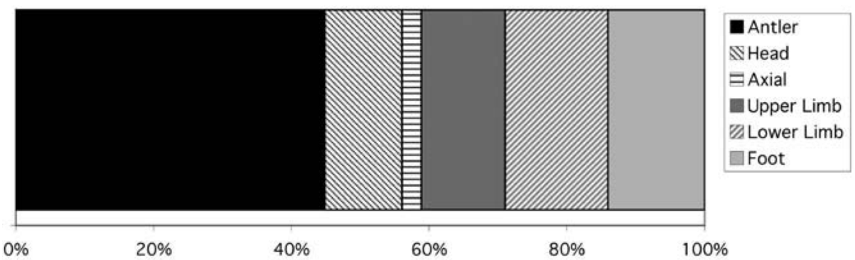


Figure 8.4. Proportions of cervid body parts, based on number of elements. Body zones are antler; head (other cranial); axial (atlas, axis, sacrum, pelvis); upper limb (scapula, humerus, radius, ulna, femur, patella, tibia, malleolus); lower limb (carpals, tarsals, metapodials); and feet (phalanges).

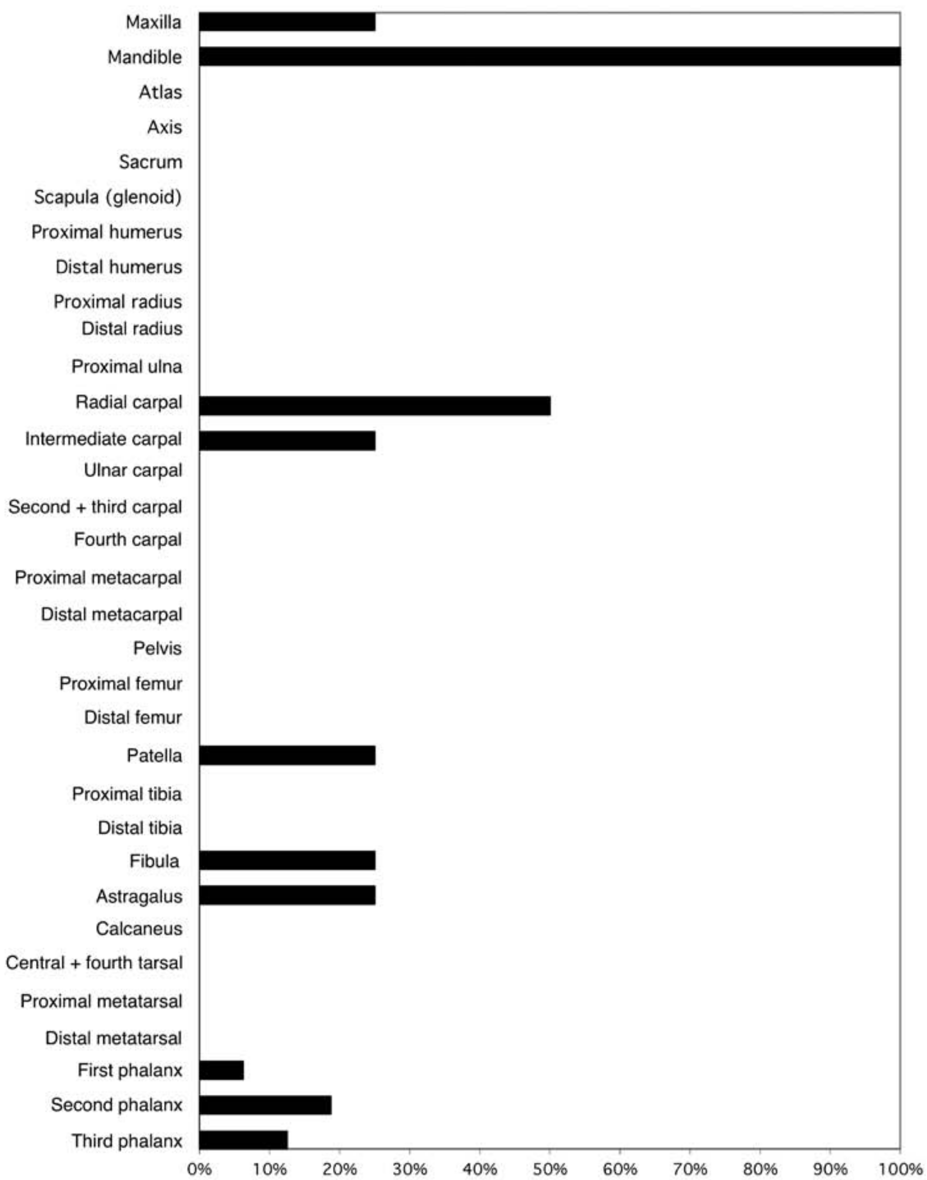


Figure 8.5. Boar body parts as percentage of expected intact carcasses based on diagnostic zones.

As in the previous analysis, the age distribution (Figure 8.6) is what would be expected for random hunting of a wild population (Jezierski and Myrcha 1975). The sample size is too small for real metrical analysis, but the measurable specimens all fall within the wild range, based on the previous analysis and comparison with modern and archaeological wild boar in Turkey (Russell and Martin 2005).

Sheep (*Ovis aries, O. orientalis*) and Goat (*Capra hircus, C. aegagrus*)

Sheep and goats are the only domestic herd animals at Çatalhöyük through ca. Level VI. As elsewhere at Çatalhöyük, these are by far the most abundant taxa in the BACH Area. As noted above, sheep/goat begin to increase proportionally in the fauna at about this point. The sheep:goat ratio fluctuates somewhat through the occupation of the site, averaging 7:1. The BACH Area ratio of 5:1 is at the low end of the range, perhaps reflecting the household herding strategy of Building 3's residents.

As elsewhere at the site, the sheep/goat body-part distribution mainly reflects the effects of density-mediated attrition (Figure 8.7). The main agents of attrition appear to be gnawing by dogs and bone grease processing by humans.

Sheep is the only species frequent enough in the BACH Area for metrical analysis. In Figure 8.8, I plot the difference of logs between the BACH Area sheep measurements and a standard animal, a modern female mouflon from western Iran in the Field Museum, Chicago, collection number 57951 (Uerpmann 1979: 175). The size range is essentially

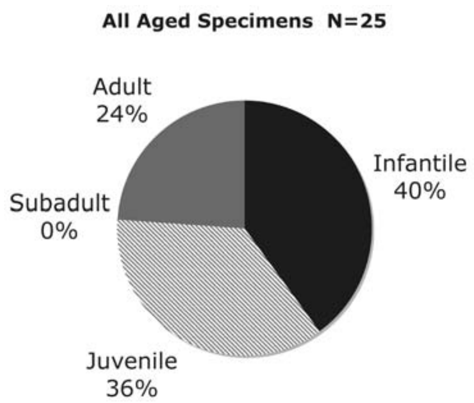


Figure 8.6. Boar age stages based on combined dentition and postcranial data.

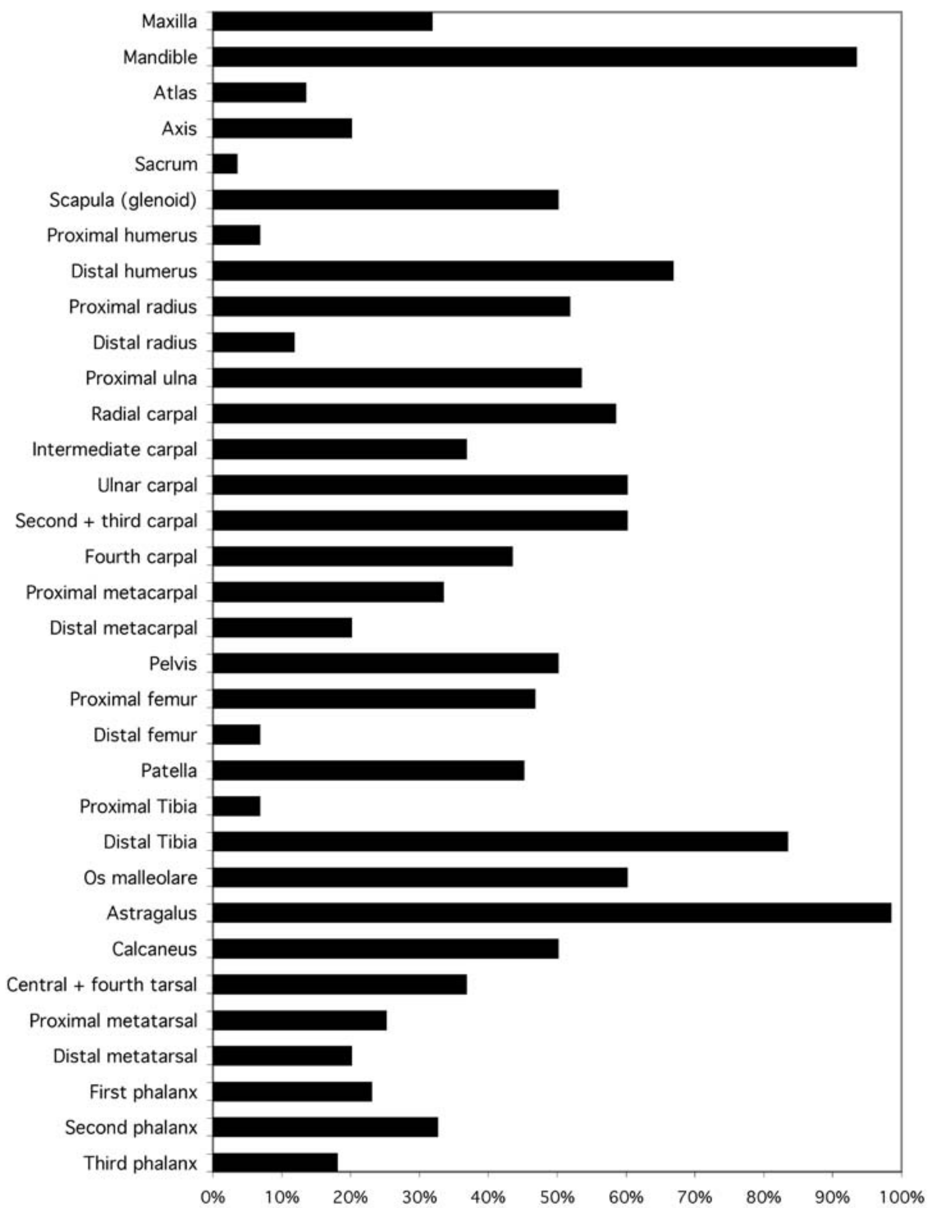


Figure 8.7. Sheep/goat body parts as percentage of expected intact carcasses based on diagnostic zones.

the same as that of the previously analyzed assemblage, although there may be a slight size reduction at the lower end. Both the mean and median are –.07, versus –.03 in the previously analyzed assemblage, showing an overall tendency to smaller animals. This is likely to mean a larger proportion of mature females, since the upper limit has not changed except that the very large (and probably wild) specimens seen in small numbers in the previous analysis do not occur in the BACH Area, except perhaps for the one outlier at the high end of the graph.

As with the material analyzed previously from elsewhere at Çatalhöyük, the sheep horn cores complete enough to identify from the BACH Area are mostly wild or probably wild and, where determined, are all male (see Table 8.3). It may be that wild horn cores are more likely to be preserved relatively intact due to being more robust and, perhaps more importantly, because they may be part of special deposits. In addition, there is one hornless female frontlet. While ordinarily this would be interpreted as a domestic animal, the local population of present-day mouflons on Bozdağ has hornless females (Kaya and Aksoylar 1992), so its domestication status is uncertain. In contrast, none of the four relatively complete goat horn cores appear to be wild, although one female horn core is of uncertain domestication status (see Table 8.4). Moreover, all three that can be sexed are female or possibly female. The morphologically wild male goat horn cores, often part of special deposits elsewhere on the site, do not appear in the BACH Area.

The sample of sheep and goats is large enough to examine age distributions through mandibular tooth wear. Twenty-nine sheep mandibles can be assigned to Payne's (1973) mandible wear stages. Only five goat mandibles can be so assigned (one each for stages B, C, D, G, and H). Thirty-nine mandibles can be assigned to mandible wear stages but identified only to sheep/goat.

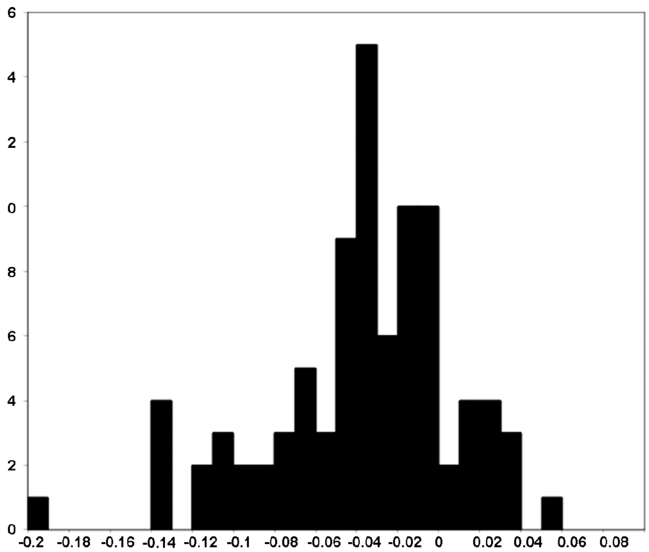


Figure 8.8. Sheep standard animal values.

Table 8.3. Sheep horn cores identified as wild (?) or domestic (?)

Unit/GID	Horn core type	Number of horn cores	Comment
3542.X3	*O. orientalis*	1	Wild?
3560.X12	*O. orientalis*	1	Wild?
6243.F1	*O. orientalis*	1	Wild? Male, slightly young
8388.F1	*O. orientalis*	1	Wild male
3532.F16–17	*O. aries*	2	Domestic male frontlet

Table 8.4. Goat horn cores identified as wild (?) or domestic (?)

Unit/GID	Horn core type	Number of horn cores	Comment
8178	*C. hircus*	1	Female
8643.F3	*C. hircus*	1	Domestic, probably female
8649.F121	*C. hircus*	1	Domestic?
8685.F3	*C. hircus*	1	Domestic, with slight twist; probably female

Allowing for differences in sample size, the goat age distribution does not seem notably different from that of the sheep. However, the sheep/goat mandibles (which are surely mostly sheep, given the overall sheep:goat proportions in the assemblage) tend to be somewhat older than those identified as sheep. This is probably due to the difficulties of identifying more heavily worn teeth to species. Therefore, I have pooled the sheep, goat, and sheep/goat mandibles for analysis (Figure 8.10), although I also graph the sheep mandibles separately (Figure 8.9). In addition to the Payne wear stage graphs, which are directly comparable to those in the earlier report (Russell and Martin 2005), Figure 8.11 presents a similar graph using Zeder's (2006) revised mandible wear stages, also based on Payne's tooth wear system. Zeder's revision provides somewhat more resolution. The tooth wear analysis shows a peak at 12–18 months, with most animals slaughtered in this juvenile age range, and a lesser peak at ca. 3–5 years of age.

While mandibular tooth eruption and wear are generally considered the most reliable material for aging, it is also useful to compare data from the postcranial material. This relies on epiphyseal fusion, which happens at various ages in different body parts. However, these can be grouped into sets that occur roughly simultaneously (Figure 8.12). Here I use Zeder's (2006) fusion groups: A (proximal radius), B (distal humerus, pelvis, scapula), C (first and second phalanges), D (distal tibia, distal metapodials), E (calcaneus, proximal and distal femur, proximal ulna, distal radius, proximal tibia), and F (proximal humerus). Fused specimens represent animals that survived beyond the age at which that group fuses. This analysis is based on diagnostic zones with fusion information. Because it can be more difficult to distinguish sheep and goat in younger specimens, they are grouped for this analysis. As was true in the previous analysis, the epiphyseal fusion results do

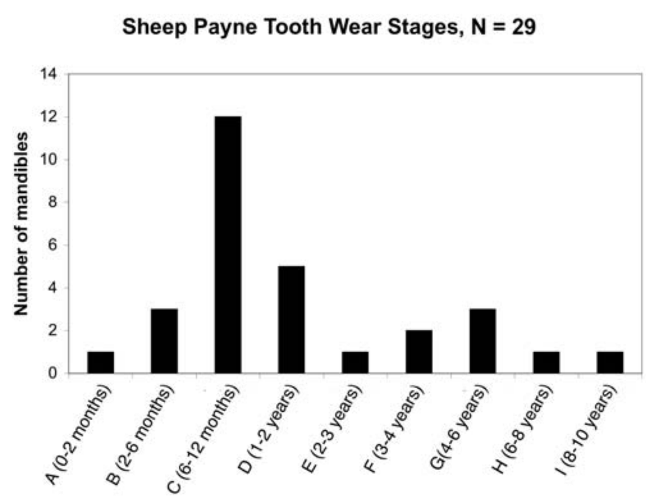


Figure 8.9. Sheep mandible wear stages (Payne).

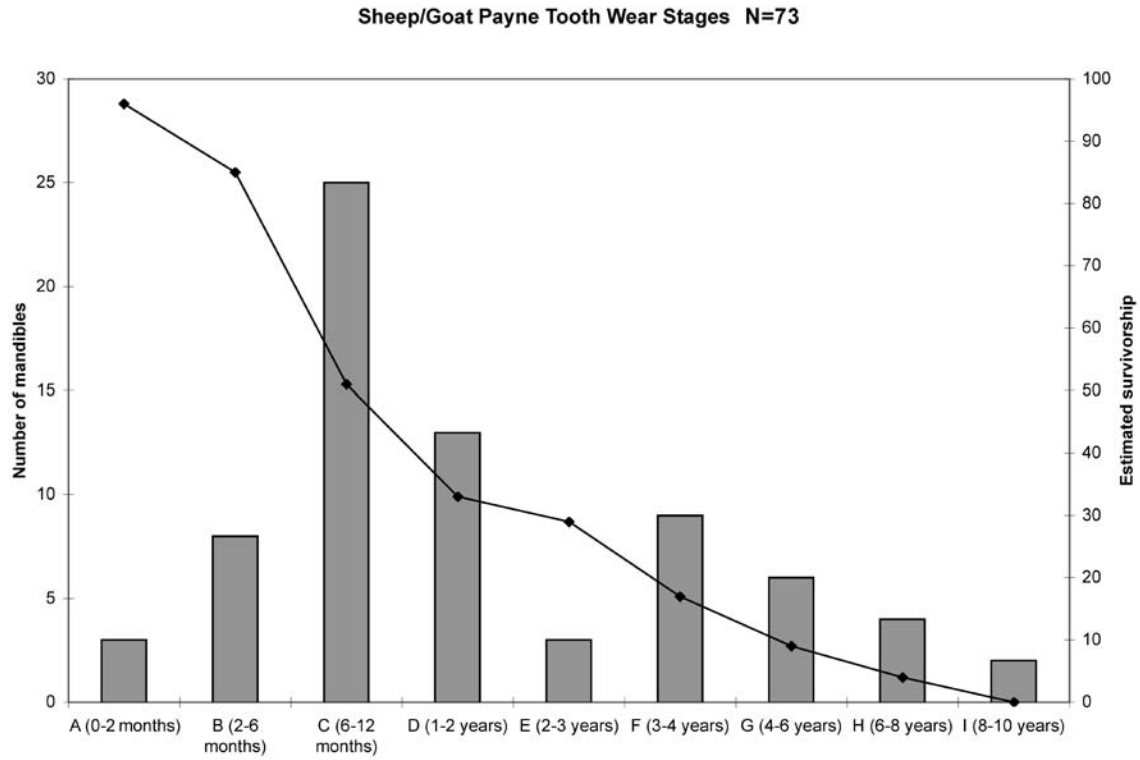


Figure 8.10. Combined sheep and goat wear stages (Payne).

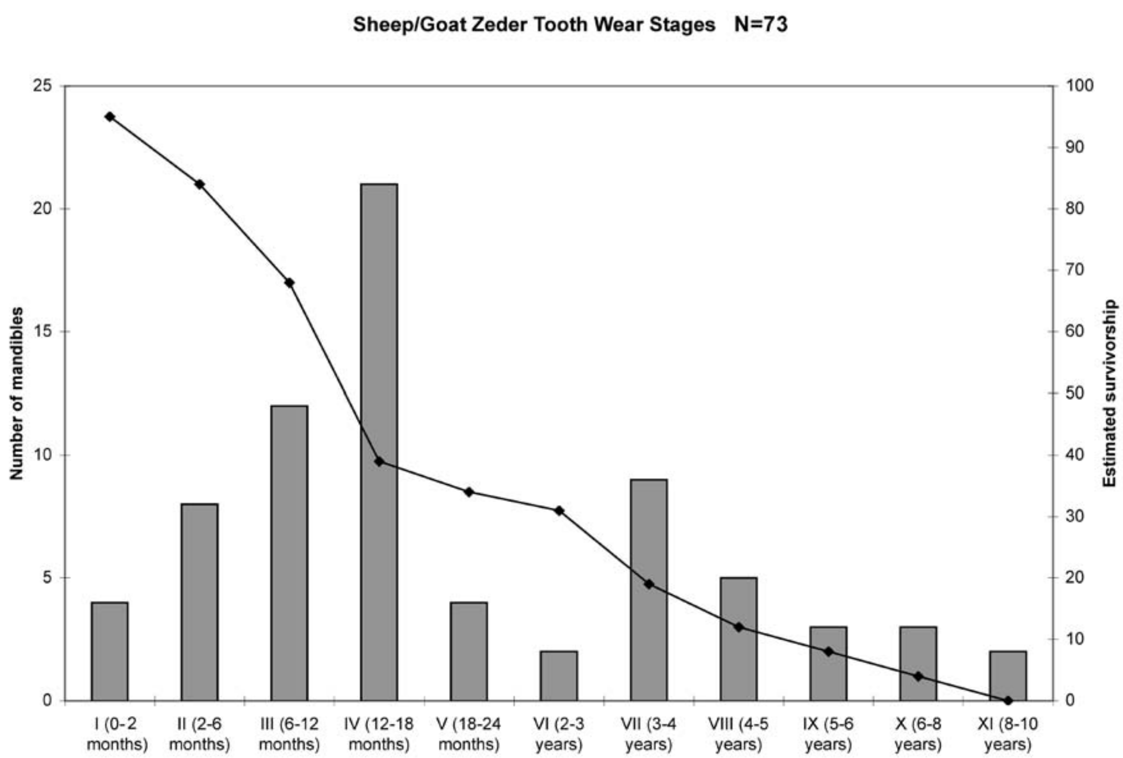


Figure 8.11. Combined sheep and goat wear stages (Zeder).

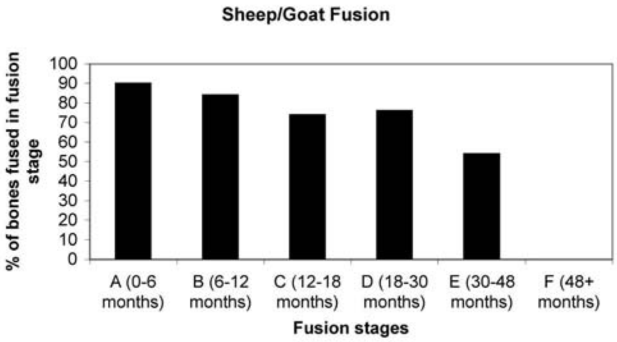


Figure 8.12. Combined sheep and goat epiphyseal fusion.

not match very well with the dental aging. The tooth wear suggests there should be a drop-off after ca. 12–18 months, but this is not seen until after 30 months. No animals represented in the fusion data survived beyond four years, although some are seen in the dental data. It is likely that unfused specimens are suffering differential attrition to a greater extent than the young mandibles.

Forty-six sheep and goat specimens can be sexed based on morphological traits. Most are pelves, but they also include horn cores, atlases, axes, and astragali. Of the 26 specimens identified as sheep, 38 percent are male. Of the 4 goat specimens, 25 percent are male. Of the pooled sheep, goat, and sheep/goat specimens, 46 percent are male. For some of the body parts, there may be an identification bias toward males, as a highly developed atlas or axis is likely to be labeled male, whereas a less developed one may not be assigned to a sex. Limiting the analysis to the pelves, where every effort was made to sex all possible, 40 percent of the 30 sexed specimens are male. Since normally only mature specimens can be sexed, this suggests an adult sex ratio biased toward females, as is supported by the metrical data. All in all, the age and sex data are generally in line with that seen elsewhere at the site, and suggest a herding strategy oriented toward meat production (Payne 1973). Animals, especially males, are most often killed as juveniles before their growth slows.

Fifteen sheep and goat specimens show pathologies (see Table 8.5). This rate of 0.3 percent of sheep/goat specimens precisely matches that from the previous analysis. The pattern is generally similar, with a few age-related pathologies and more that probably resulted ultimately from some type of trauma. This includes two cases of injury to the elbow region, perhaps a result of penning. There are also some problems that are likely to result from episodes of poor nutrition, notably the "thumbprint" marks on one horn core. It is also interesting to note an additional case of a congenitally missing lower second premolar, seen also in a sheep from the SOUTH Area (specimen 1629.F133) (Russell and Martin 2005:76).

In sum, the sheep and goats from the BACH Area were almost entirely domestic animals, herded primarily for their meat and fat. Probable wild animals show up mainly as horn cores, as well as two astragali and a humerus. Of these, only one of the astragali (2207.F7) appears on the standard animal graph, where it forms the data point at the upper end. Comparison with Figure 2.22 in the earlier report (Russell and Martin 2005:68) suggests that this specimen comes from a wild animal, with a greatest lateral length of 35.6 mm. The other specimens are not included in the standard animal graph because they are young, unmeasurable, or horn cores. The juvenile humerus (2268.F51) appears to be already in the wild size range. All of these wild-size specimens are sheep, except for one sheep/goat astragalus. Thus, a few mouflon were hunted and their remains brought to the BACH Area, but there is no sign of wild goat here. There are proportionally more sheep and goat in the BACH Area than in the mostly earlier periods analyzed previously, but otherwise the herding practices resemble those seen earlier.

Wolf (*Canis lupus*) and Dog (*Canis familiaris*)

A single wolf specimen (6178.F17) was recovered from the BACH Area. It is the unfused epiphysis of a distal humerus, from the fill on the floor of Space 87. The remaining *Canis* specimens are probably all dogs. While dogs are relatively common at Çatalhöyük in general, they vary in abundance temporally and spatially. The BACH Area has one of the lowest proportions at the site, with just over 1 percent, based on diagnostic zones (corrected for articulations).

In the previous analysis, while all dog body parts were represented, heads were overrepresented. That is not the case within the BACH Area, where the body-part distribution is fairly even through the body, much of it coming from a single puppy skeleton (Figure 8.13). The bias to heads elsewhere was attributed to their occasional placement in special deposits, something that does not occur within the BACH Area.

The number of aged specimens is too small to construct a mortality profile for dogs. However, only two of the eight specimens (corrected for articulations) are in the subadult–adult range; the rest are infantile–juvenile, with some definitely infantile. This is in line with the infant-dominated pattern seen elsewhere at the site, reflecting the population structure of an animal that gives birth to litters, but perhaps also high infant mortality and a greater tendency to dispose of puppies on-site. The intact neonatal puppy skeleton placed on the northeast platform at or after abandonment is an example of this practice. This puppy was clearly not eaten. The other dog remains from the BACH Area are disarticulated but show no clear signs of butchery, so it is unclear whether they come from meals or disturbed carcasses.

Table 8.5. Sheep/goat pathologies

Specimen	Taxon	Body part	Age stage	Description
6126.F24	*Ovis*	Radius		Pitted bone growth on surface in contact with ulna on posterior proximal; possibly inflamed as a result of injury
3587.F145	*Ovis/ Capra*	Central + fourth tarsal		Exostosis on posterior surface; age-related or spavin?
8178.F131	*Ovis*	Proximal ulna		New bone growth on lateral side of shaft next to articulation, result of injury or possibly healed fracture; penning elbow?
2229.F627	*Capra*	Lower third molar	Subadult/adult	Anomalous wear: first cusp much less worn, suggesting loss of upper second molar
2209.F39	*Capra*	Lower third molar	Adult	Anomalous wear, sloping from anterior to posterior
8585.F51	*Capra*	Mandible	Subadult/adult	Anomalous wear on posterior cusp of P4 and anterior especially of M1; probably result of loss in life of upper first molar
8354.F69	*Ovis/ Capra*	Mandible		Abscess near third molar
8648.F42	*Ovis/ Capra*	Mandible	Subadult/adult	Slight abscess between fourth premolar and first molar
8178.F169	*Ovis*	Lower fourth premolar	Subadult/adult	Posterior worn much more than anterior, likely result of loss of upper tooth
8432.F109	*Ovis/ Capra*	Mandible	Infantile	Lesion on articular surface of condyle, with pitting and erosion and some extension of the articular surface
2214.F125	*Ovis*	Tibia		Healed, unset fracture
6166.F100	*Capra*	Horn core		Two "thumbprint" depressions (malnutrition) high on horn core; low on the anterior is a much deeper, steep-sided hole with smooth surfaces, looking like a well-healed lesion
8589.F587	*Ovis/ Capra*	Metacarpal		Proximal articular surface eroded with large lesion in the center, a cleft through the lateral facet, and extra bony growth extending and distorting the articular surface; probably infection, possibly result of injury
8638.F31	*Ovis*	Humerus		Probably a well-healed infection, leaving an eroded lesion on the lateral surface of the trochlea, and extra bone deposited in the vicinity, as well as a bit on the medial surface; probably result of injury
8589.F885	*Ovis/ Capra*	Mandible	Adult	Congenital anomaly: no second premolar

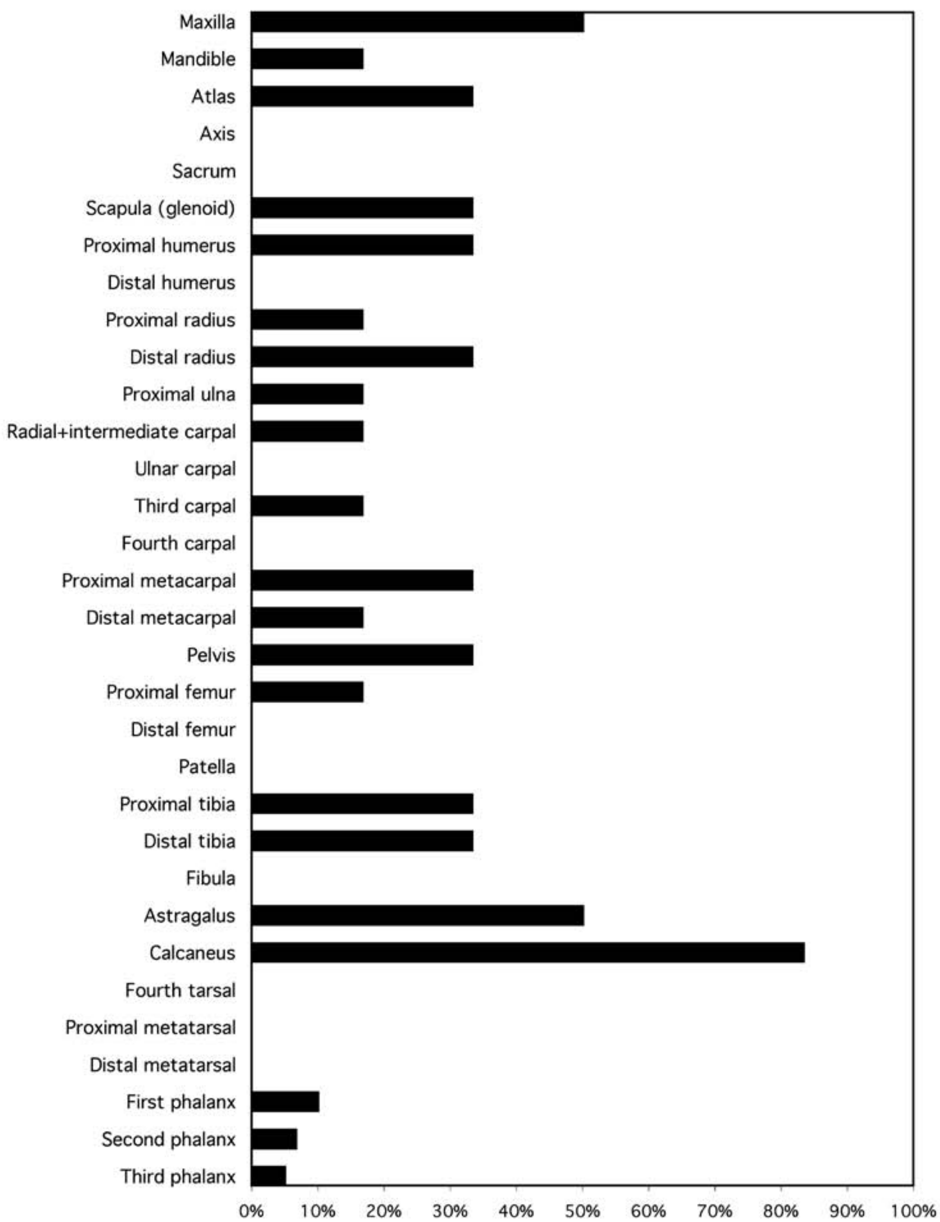


Figure 8.13. Dog body parts as percentage of expected intact carcasses based on diagnostic zones.

Fox (*Vulpes vulpes*)

As elsewhere on the site, foxes are the most abundant of the wild carnivores, and in the BACH Area they are almost as frequent as dogs. The BACH Area foxes also maintain the pattern of a bias toward heads, especially mandibles, in body-part distribution (Figure 8.14). A variety of ages are represented. A mandible with signs of roasting (burning only on the front teeth; 8388.F2) indicates that foxes were eaten, while the overrepresentation of heads may indicate use of pelts.

Badger (*Meles meles*) and Other Mustelids

The five badger specimens from the BACH Area consist of three upper limb specimens and two articulated and possibly intrusive metacarpals. This pattern suggests use for food rather than only fur in this area.

Two additional metapodials are probably also badger. One mandible fragment belongs to a weasel; light in color, it may be intrusive. A phalanx derives from a slightly larger mustelid, perhaps in the polecat range. These head and foot remains suggest limited use of smaller mustelids for their fur.

Wild Cat (*Felis silvestris*)

The single wild cat specimen, a metapodial (3526.F71), fits with the overall pattern at Çatalhöyük of a body-part distribution limited to heads and feet, hence probably entering the site as pelts.

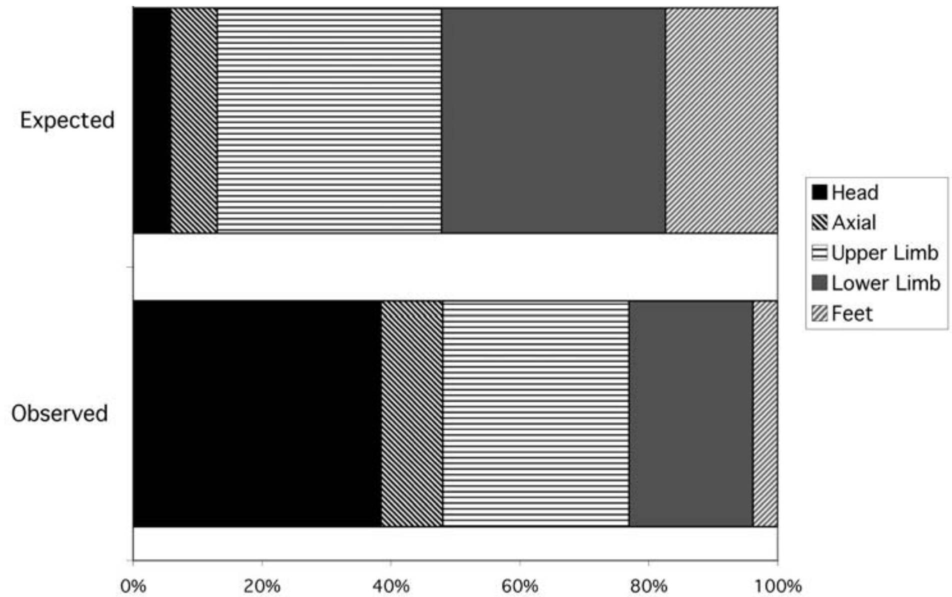


Figure 8.14. Fox body parts based on diagnostic zones, compared with the distribution in intact carcasses.

Hare (*Lepus europaeus*)

While in the previous analysis hare specimens were biased toward the meaty upper limbs, in the BACH Area seven of eight specimens are from the lower limb and foot, with only a single femur fragment. This suggests that hare arrived in the BACH Area mainly in the form of pelts.

Hedgehog (*Erinaceus concolor*)

All four hedgehog specimens from the BACH Area are mandibles, as is typical elsewhere at the site. It may be that most of the postcranial remains are included with the microfauna.

Contextual Analysis

A high proportion of the faunal remains from the BACH Area were recorded fully, and almost all the units received at least a Phase 1 assessment (a scan and qualitative description of their contents). The vast majority of the units not studied derive from construction material, in which the animal bone is in tertiary context, redeposited from unknown other areas on the site. Therefore, the BACH Area offers a particularly good opportunity for contextual analysis.

In Table 8.6, I examine the distribution of the main taxa among the major context types. Midden deposits are found in outdoor areas and sometimes in abandoned houses (including Building 3). They contain chiefly secondarily deposited remains of a wide range of activities dumped from nearby houses. Most of the material in the middens is temporally closely associated with the deposits themselves. The middens in Space 85, immediately to the west of Building 3, may contain refuse from the building's occupation, while middens beneath the floors predate the house and those within the walls will be derived from slightly later occupation nearby. I have separated the packing deposits from other construction material because they often contain some very fresh bone that was probably lying on the floors as waste from recent activities when the floors were relaid. This fresh material is accompanied by tertiarily deposited material from elsewhere that was part of the packing. The other construction material (bricks, mortar, plaster, and so on) lacks the fresh component and has only tertiary material derived from unknown areas earlier than Building 3. Likewise, the fill consists either of dismantled construction material from the house itself or deposits brought in from elsewhere, so, like the construction material, its contents have little relation to activities in Building 3. However, pit fills (including fills of burials and post-retrieval pits) and fill deposits lying directly on the floor may include a primary component of deposits placed on the floor or in the pits, so these are separated for analysis. Hearth contents may be relatively primary remains of activities during occupation and are separated as far as possible from hearth construction material and the general fill. Special deposits are items or clusters that appear to have been deliberately placed, often at abandonment, probably by the occupants. However, since context types are assigned at the level of the unit, they may well include some extraneous material from the surrounding fill.

Differing amounts of the various context types have been excavated and studied, so to compare the amount of bone, Table 8.6 gives the density of identified macro-mammalian bone in diagnostic zones per liter and the overall

Table 8.6. Diagnostic zones (corrected for articulations) of major taxa by context type for fully studied units

Context Type	Cattle	Equids	Cervids	Boar	Sheep/ goat	Dog	Other carnivore	Total	DZ per liter	Count per liter
Midden	15 4%	8 2%	12.5 3%	2.5 1%	357 87%	1.2 0.3%	12.4 3%	408.6	.0758	13.268
Packing	1 5%	0 0%	1.5 8%	.5 3%	16 83%	0.2 1%	0 0%	19.2	.0109	1.552
Construction material	8 7%	3 3%	4.5 4%	1 1%	97.5 85%	1 1%	0.2 0.2%	115.2	.0147	2.406
Fill	38.5 13%	2 1%	1 0.3%	8.5 3%	247 80%	8.2 3%	2.6 1%	307.8	.0172	2.779
Pit fill	3 6%	1 2%	0 0%	0 0%	48 91%	1 2%	0 0%	53	.0239	9.606
Fill on floor	0 0%	0 0%	0 0%	0 0%	21 95%	1 5%	0 0%	22	.0335	6.809
Hearth	1 33%	0 0%	0 0%	0 0%	2 67%	0 0%	0 0%	3	.0169	4.051
Special deposit	15.5 39%	1 2%	0 0%	1 2%	21.5 53%	1.2 3%	0 0%	40.2	.0553	6.078

density of bone by count per liter. Not surprisingly, middens have the highest density of bone, and construction materials the least. Sheep and goat predominate in all context types but are considerably less common in special deposits; by contrast, cattle are more frequent in special deposits than elsewhere. This pattern is even more striking when we examine the taxa according to primary, secondary, and tertiary contexts (classified at the level of the unit; see Figure 8.15). The proportions of taxa are similar in secondary and tertiary deposits, but cattle are much more common and sheep/goat much less so in the primary deposits (chiefly special deposits). This no doubt reflects the general tendency to use cattle in feasts and ceremonies.

Within the BACH Area, we may divide the excavation into Building 3 itself (Spaces 86, 158, 201); the three small rooms to the south (Spaces 87, 88, 89); and the partially excavated open area to the west (Space 85) (see Figure 4.1). Figure 8.16 compares the major taxa for Building 3 proper and the four spaces around it. As noted above, the deposits in Space 85 may be the most directly related to the occupation of Building 3, while those in the other areas contain a mixture of special deposits made during occupation, abandonment deposits, and materials dumped in after abandonment, as well as a small amount of the underlying deposits. Therefore, the overwhelming predominance of sheep and goat seen in Space 85 may be the best indication of the average diet of Building 3 inhabitants. However, the excavations in this space included part of a concentration of meaty, minimally processed sheep and goat bones that are probably feasting remains, so not only the daily diet is represented there. Wild animals, especially cattle, are considerably more common in the indoor spaces, notably in Space 88 and Building 3 itself, where special deposits account for much of this. The low frequency of equids in the Space 85 deposits, taken together with the low representation of bustard (see Chapter 9), may indicate that the inhabitants of Building 3 made little use of the steppe zone. Individual households perhaps specialized in specific portions of the landscape.

Special Deposits

Along with the secondarily and tertiarily deposited discard in and around Building 3, several deposits of animal bone appear to be deliberately placed and consist of the remains of ceremonies associated with various points in the life cycle of the house. The first of these is incompletely known, as the level below the house was not fully excavated but only partly dug to free the bases of the walls that were set into it. However, under Space 88 and the southwest and

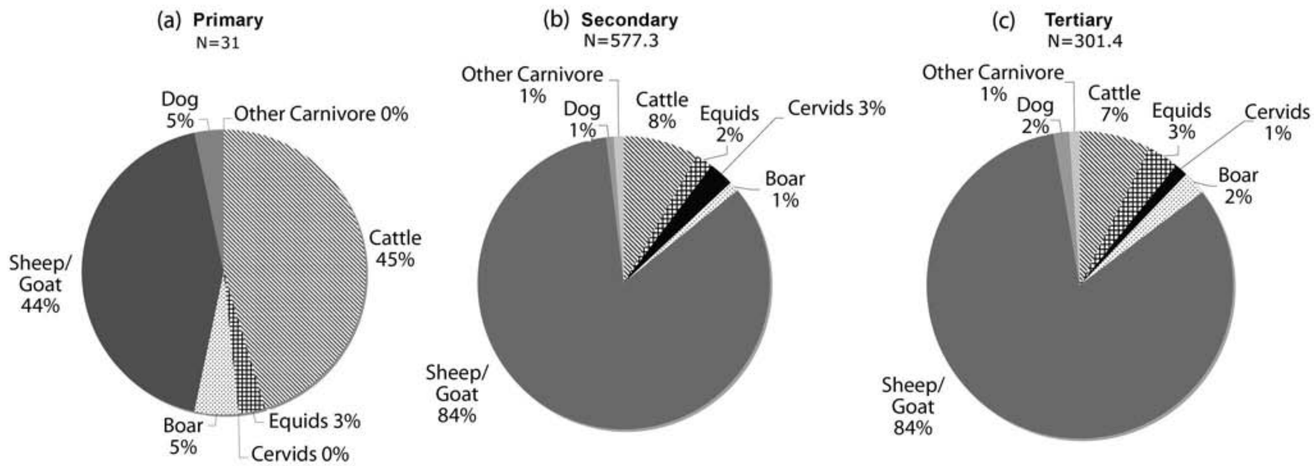


Figure 8.15. Major taxa in (a) primary, (b) secondary, and (c) tertiary deposits by diagnostic zones for fully studied units.

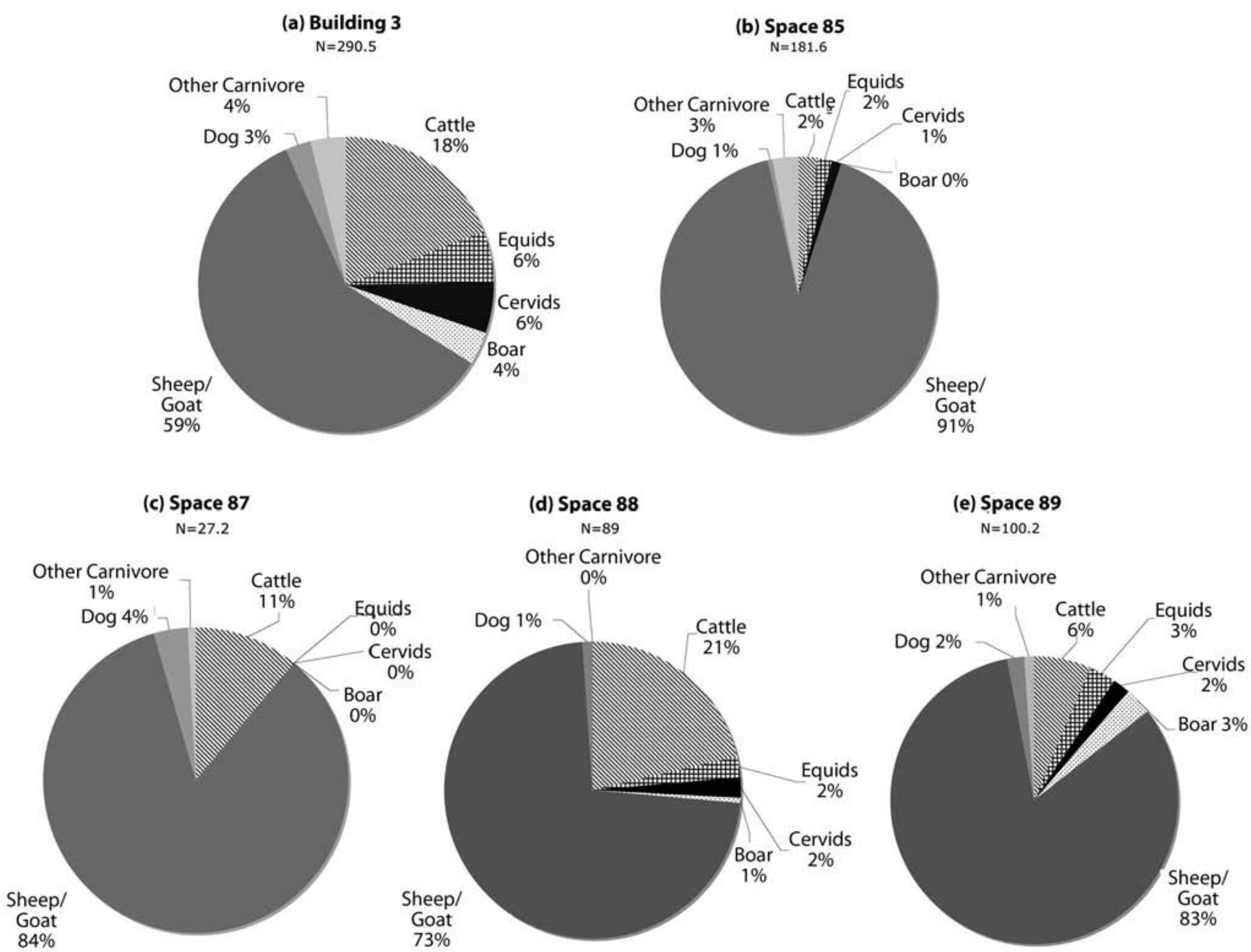


Figure 8.16. Major taxa by location, quantified by diagnostic zones: (a) Building 3; (b) Space 85; (c) Space 87; (d) Space 88; (e) Space 89.

central areas of Space 86, but not elsewhere below Building 3, numerous specimens of the generally rare red deer have been recovered. Most come from unit 8589, but they also show up in units 8377, 8515, 8559, 8567, 8572, 8590, 8632, and 8638. Units 8589, 8632, and 8638 are midden deposits below the house; the remaining units in this list are floors and packing on top of these middens. If these specimens all result from the same event, it suggests a spread of red deer remains at the interface of the midden and initial construction layers. This is supported by the greater weathering exhibited by some of these red deer bones in comparison with most of the bone in unit 8589, indicating they may have lain exposed for some period. These red deer bones represent at least two animals, both probably female, and are distributed through the body, including meaty areas. Indeed, this deposit and two scapulae from special deposits account largely, although not entirely, for the body-part distribution for red deer in the BACH Area being less skewed to heads and feet than elsewhere on the site (see discussion of deer above). Like the rest of the bone in the unit, the red deer remains are moderately processed: broken for marrow, with some further breakage in processing or postdepositionally, but not pounded up for bone grease. Thus, only the concentration of red deer remains, and their apparent location in a layer on top of the midden, marks them as the possible remains of a single event. This event would have included a substantial feast, as two red deer provide a lot of meat. The placement suggests that this feast may have been linked to the beginning of house construction. During construction, a large (39-cm) piece of burned red deer antler was built into the wall that separated Spaces 88 and 89. Both this antler and the spread of red deer bones below the house would have been invisible during occupation. Perhaps they provided protection to the house and its inhabitants, or perhaps they simply were linked to it by ritual and belonged with it.

The BACH Area holds traces of rituals that occurred during the occupation of Building 3. In Space 85 to the west of the building, the midden contains a feasting deposit located against the outer wall of Building 3 at its northwest corner. It was found at the north end of the excavated portion of Space 85 and extended beyond the edge of the excavation, so it has only been partially recovered. Moreover, as a pocket in the midden, the borders of the concentration were not clear, so it has been imperfectly separated from the surrounding deposits, which were taken down in spits. It was, however, clearly a discrete concentration of densely packed, minimally processed sheep and goat remains, mostly meaty long bones. Some of it was separated as sample 3 of unit 6382. In this sample, at least two sheep and one goat are present. While feasting at Çatalhöyük typically involved the consumption of cattle and other large, wild animals (Russell and Martin 2005), this is a case where a large amount of mutton and goat meat was eaten, an intensified version of the daily meal.

Most or all houses at Çatalhöyük contain what I have termed commemorative deposits (Russell et al. 2009): small collections of items, usually including animal parts, buried in small pits in the house floors or built into platforms, generally on the south and west. The clearest commemorative deposit in the BACH Area is unit 8505 in Space 88, which is on the southern end of Building 3 (see Figure 4.11). This deposit was placed in a small depression in the packing of the northern platform in the room, next to a basin that predates the platform. It contained the anterior portion of a set of female wild boar mandibles, showing signs of roasting and breakage for marrow; three segments of a probable female sheep neck and spine with articulated rib heads, with evidence of roasting and carving; a sheep/goat hyoid, from a younger animal than the other sheep bones; a necklace of marine shells with a large stone bead; a Spoonbill beak; and a Little Bittern wing (see Chapter 9). This collection indicates a selection of mementos from a ceremony, items that include costumes and paraphernalia (necklace, bird remains) and bits from the accompanying feast (boar and two sheep). The vertebrae and rib heads are precisely the part of the carcass most often left off-site (Russell and Martin 2005:88–90) and thus perhaps indicate that the ceremony occurred on the plain near the tell. In this case, we can imagine a ritual, tied to the household of Building 3 (or at least Space 88), that included a dance or other performance as well as a large meal for many households.

Two possible commemorative deposits occur inside Building 3 proper. The Phase B3.1A packing of platform F.167 in the southeast corner contained large fragments of a left and a right cattle scapula in close association. This pairing of left and right cattle elements has been seen in commemorative deposits elsewhere on the site. The other deposit is placed in the packing (8251) below an oven (F.646) that was added in a new position in Phase B3.2 (Chapter 5). In addition to worked stone and clay balls, this packing contains a nearly complete sheep horn core, two articulated boar phalanges, and an articulated set of sheep-size vertebrae with articulated rib heads. The articulated items, which were in place in the ground, show that the material does not simply derive from redeposited midden. Possibly this is another case of debris on the floor incorporated into packing instead of being taken outside and dumped. However, it is somewhat more than is usually found in these circumstances, and the vertebrae with rib heads are reminiscent of the 8505 commemorative deposit and, again, represent body parts not usually brought on-site.

Either during the occupation of Building 3 or as part of the preparation for rebuilding above it, a gap in the wall separating Spaces 88 and 89 was blocked. A nearly complete red deer scapula (8498.X1) was built into this blocking. Like the red deer antler built into the same wall earlier, it would have been invisible to those in the room. Cattle scapulae have been similarly built into walls in the SOUTH Area (Russell and Meece 2005:220).

A number of special deposits occurred as part of closing the house at abandonment, or in some cases perhaps preparatory to rebuilding. A newborn puppy carcass was placed on the northeast platform (F.173; units 3553, 2270, 2274, 2280). It was largely articulated, although part of one forelimb was displaced 20 cm from anatomical position. As there was no sign of a rodent burrow in this spot, the body may have been exposed long enough for some decomposition to occur, although certainly it has not been extensively disturbed or weathered. Whether this is to be read as a sacrifice or simply as dumping a dead animal in an empty house is not clear. This platform did contain a human burial (adult male), so it is possible that the puppy was an offering to this ancestor.

In addition to the puppy, a number of animal parts were spread across the floor of Building 3 after abandonment. Some are probably dismantled installations, while others may be items that were stored in the house. While some buildings at Çatalhöyük have feasting remains as abandonment deposits, we do not see this in Building 3 proper. The only items that bear a resemblance to feasting remains among the abandonment deposits are two large cattle long bone fragments, a distal radius and tibia. However, these have plaster on their articular surfaces, suggesting a longer use-life. It is possible that this is a similar phenomenon to the plastered bones at nearby Pınarbaşı and at Tell Sabi Abyad in Syria (Baird et al. 2011; Cavallo 1997), preserving portable mementos of feasts or sacrifices. Given the more restricted application of plaster, however (at least what has survived), these may be parts of dismantled installations: bones once set in walls, which Mellaart (1967:101) saw as pegs for holding bucrania or other objects.

Other likely dismantled installations include cattle horns (2215.X1, 2250.F110–111, 2296.X18–19, 3532.F18), sheep horns and frontlets (3532.F16–17, 3542.X3), a boar maxilla (2296.X20), large pieces of antler (fallow deer: 3542.X7; large cervid: 3555.F37), large fragments of cattle skull (2296.X3, 2296.X13, 3555.F48–49), and a bucranium (horns with connecting skull, possibly plastered, 2276.X1). The bucranium was crushed under a section of fallen roof, showing that at least some of these abandonment deposits were placed while the roof was still in place. A large chunk of cattle maxilla (3589.F21) from post-retrieval pit F.602 may be part of the scatter of dismantled installations, or may have been deposited separately (see Figure 4.13). Post-retrieval pits often contain items that seem to be offerings in compensation for the removed post (Russell and Meece 2005:222).

The most striking component of the abandonment deposit in Building 3 is the large collection of complete or virtually complete scapulae in Cluster 1 at the south end of Building 3 (see Figure 5.88). From units 2233, 2250, 2296, 3526, 6113, and 6201 come 13 cattle, 1 red deer, and 2 sheep scapulae. There are both right and left scapulae, representing at least nine cattle (seven mature and two young), one red deer, and two sheep (one mature, one young). Two cattle scapulae were leaning upright against the south wall, while most lay flat on a layer just above the floor. Many were lying on layers of phytoliths, hence plant material (reeds?). None show signs of use as tools, although some have had their spines knocked off with repeated blows. Scapulae, especially cattle scapulae, seem to hold special symbolic significance at Çatalhöyük and elsewhere in the Near Eastern Neolithic (Russell et al. 2009). I have argued that cattle scapulae, especially when worked, are particularly associated with house construction at Çatalhöyük (Russell 2001). In any case, the scapula, like the skull, probably represents the animal, or its hunting, sacrifice, or consumption. Scapulae, both worked and unworked, are found as abandonment deposits in many Çatalhöyük houses, but usually only one or two. If scapulae (sometimes) stand for animals killed or feasts hosted, it is puzzling why this house has so many more than others, especially since cattle bones in general are less common here than in earlier levels, particularly in the Space 85 deposits likely to be most closely linked to the occupation of the house (Figure 8.16). Alternatively, perhaps this is another case of a store of raw material for tool manufacture that was dumped in the house at abandonment rather than taken for later use. Other such cases have involved sheep/goat metapodials and perhaps equid phalanges and astragali of various taxa (Russell et al. in press). The sheep and young cattle (infantile in one case) scapulae seem somewhat unlikely as raw material, however. At the least, this scapula collection held some value and, like the dismantled installations, needed to stay with the house when it was closed.

The small rooms to the south of Building 3 (Spaces 87, 89) cannot be directly linked to its sequence, but they also contain abandonment deposits that are very likely part of the Building 3 closing. Scapulae figure in these deposits as well. Spaces 87 and 89 have redeposited hearth material with large pieces of cattle scapulae (Space 89: unit 8408; Space 87: unit 3560). In Space 87, the hearth material is also accompanied by large pieces of cattle bones and cattle and sheep horn core; perhaps these are dismantled installations or feasting remains, dumped along with the dismantled hearth from Building 3 proper.

In Space 88, an abandonment deposit lying on a black layer over the floor seems to include both dismantled installations and probable feasting remains (units 2266, 2268, 2289, 2290, 3500, 3501, 3503) (see Figure 5.112). Along with several pieces of ground stone and a plaster cast of a horn tip, there are three cattle scapulae; a young cattle frontlet; large pieces of cattle ribs, vertebrae, skull, horn core, and long bones, including a complete tibia with articulated ankle; a boar mandible; large antler fragments; and a nearly complete goat tibia. Two of the scapulae and two antler tines appear carefully laid out in facing pairs, mirroring the orientation of the horns of the young cattle frontlet.

In Space 89, the lower fill is overlain by a large burned deposit containing apparent feasting remains, topped with dismantled installations and other items (units 2210, 2275, 3545, 3548). The matrix of this deposit consists largely of burned plant materials, and the bone is virtually all burned. There are many large pieces of bone, including a whole sheep/goat radius and large sections of rib. While only a few bones articulate, much could come from a few animals. There are roughly equal proportions of cattle, equid, and sheep/goat bones, including at least two sheep/goat individuals, although most of the sheep/goat bone probably comes from one sheep (chiefly forelimbs). The deposit contains chiefly meaty bones, with minimal processing (mostly broken for marrow). There is a certain repetition of body parts across taxa (radius of sheep and cattle, scapula of sheep and cattle, pelvis and distal tibia of cattle and equid). These are not meat offerings, because they were deposited in an already processed state. There is a little gnawing on a few of the bones, but it is clearly not a deposit that has been worked over by dogs in any extensive fashion. Rather, it appears to represent a single event: the remains of a meal were gathered up and placed together, rescuing some bits from the dogs. If these are indeed the remains of a single meal, it would be a feast, as there is far too much meat for a single household. It is interesting that, like the feasting deposit in Space 85, sheep and goat play a major role in this feast.

A stack of large chunks of at least three cattle horn cores and a large male cattle frontlet (both horns with connecting skull) were placed on top of the feasting remains, along with a fragmentary human skull and a large flint dagger with a carved bone handle (see Figure 5.122). The horns are probably from dismantled installations. It is unlikely that the horns were installed in this small room, so they were probably dumped from elsewhere, most likely Building 3. Thus, the feasting and plant remains (perhaps mats, bowls, and so on from the feast) are most likely derived from the Building 3 closing ceremonies.

Conclusion

The focused study of the animal bone from the BACH Area has helped to clarify temporal trends at Çatalhöyük. It now appears that the increase in sheep and goats at the expense of cattle and equids starts in Level VI and continues through the later levels. This equates to a still greater reliance on herding. It is interesting that the symbolic deployment of cattle in fact seems to peak at around this time (Russell and Meece 2005), suggesting a continued role for hunting in the public sphere. The relative increase in herding does not seem to be related to a change in herding practices, at least as reflected in mortality profiles.

The BACH Area also illuminates the degree of household variability in diet. While in general deer do not seem to be consumed on-site after the earliest levels (Russell and Martin 2005), they clearly were eaten in the BACH Area, if not in large quantities, and their remains receive some of the same ritual treatment as those of cattle (abandonment deposits of antler along with cattle horns; inclusion in a collection of scapulae; and concealing antler and a scapula in walls, as cattle horns and scapulae are elsewhere at Çatalhöyük). Also, in combination with the bird remains, there are hints that the Building 3 inhabitants made less use than most of the steppe zone, suggesting household variability in which parts of the landscape were targeted.

Contextual analysis confirms that cattle were used mainly in feasting or ceremonial contexts, with sheep/goat overwhelmingly predominant in contexts more closely associated with daily consumption. Nevertheless, we also see signs of feasts and ceremonies that included sheep and goats: a feasting deposit in Space 85, a commemorative deposit in Space 88, the abandonment deposit in Space 89, and the scapula collection in Building 3. Perhaps this was substitution when cattle were unavailable.

The BACH Area adds to the evidence of types of special deposits found elsewhere on-site: feasting remains, commemorative deposits, items built invisibly into walls, and abandonment deposits that include dismantled installations and complete or partially articulated dogs. In addition, the frequent practice of placing a cattle scapula or two in a house at abandonment is taken to extremes here, with a remarkable collection of cattle, red deer, and sheep scapulae.

Acknowledgments

This analysis depended on the hard work of many members of the zooarchaeology team who contributed to the recording of the material from the BACH Area: Levent Atıcı, Dušan Borić, Chris Hills, Louise Martin, Stephanie Meece, Kamilla Pawłowska, Robert Symmons, Katheryn Twiss, and especially Banu Aydınoğluğıl, Vesna Dimitrijević, Sheelagh Frame, and Lisa Yeomans. I am also grateful to both my zooarchaeology lab and my BACH team colleagues for many discussions and insights through the years and in the final two study seasons.

Chapter 9

Bird Remains from the BACH Area

Nerissa Russell and Kevin J. McGowan

This analysis is based on the 242 specimens of bird bone recovered from the BACH Area excavations (see Figure 4.1). This assemblage should closely approximate the total bird remains recovered from this excavation area, as virtually all units that were not fully studied received a Phase 1 assessment in which bird bones were pulled for study. The density of bird bone in the BACH Area (0.004 per liter) is about average for Çatalhöyük and the same as that in neighboring Building 1 in the NORTH Area, which is at least roughly the same in age and broadly similar in terms of the range of contexts excavated (Russell and McGowan 2005). The bird bones were identified with the help of reference collections at the Cornell University Museum of Vertebrates and the Smithsonian Institution (National Museum of Natural History), and published criteria as noted in the discussions of individual taxa.

Taxa

The range and distribution of taxa (Table 9.1; Figure 9.1) are generally similar to those seen in the material from the NORTH, SOUTH, and KOPAL Areas that has been analyzed previously (Russell and McGowan 2005). In both cases, tallies have been adjusted so that articulated sets are counted only once. Waterfowl make up 70 percent of the assemblage, but there are some differences from other areas in the composition of the waterbirds. While geese and ducks remain the most common groups, ducks outnumber geese, whereas in the previously analyzed assemblage as a whole, geese were more frequent. However, in some levels of the NORTH and SOUTH Areas, ducks were also more common than geese, including in Building 1 of the NORTH Area. More strikingly, waterbirds other than ducks and geese form a larger part of the assemblage in the BACH Area. In particular, herons here account for 15 percent of identified birds, vs. 6 percent in the previously analyzed assemblage. Grebes and coots also occur more frequently in the BACH assemblage. Raptors are less frequent in the BACH Area, and less varied, with no owls. Galliforms and gulls, neither of them very common in the previously analyzed assemblage, are totally absent here. More surprisingly, Great Bustard, the most common single species in the previously analyzed assemblage, is represented by a single specimen. Corvids, mostly Rooks and Hooded Crows but with one Eurasian Magpie specimen, are particularly common here, as they are in Level VIII in the SOUTH Area.

Grebes

All the grebes identified from the BACH Area are Great Crested Grebes (*Podiceps cristatus*), on the basis of measurements and characters in Bocheński (1994). These grebes would probably have been present throughout the year in the Konya Plain. Three of the four specimens are tibiotarsi, the remaining a mandible fragment. The tibiotarsus is a moderately meaty area, suggesting food use. Moreover, one of them (8622.F5) shows classic signs of roasting in the form of a tiny patch of low-temperature burning on one of the distal condyles.

Cormorants

The BACH Area yielded one specimen each of Great Cormorant (*Phalacrocorax carbo*) and Pygmy Cormorant (*P. pygmeus*). The Pygmy Cormorant would be resident year-round, while the Great Cormorant more likely winters on the coast and thus would have been taken in spring or summer. Both specimens are wing bones (ulna for the Great Cormorant, humerus for the Pygmy Cormorant).

Herons

As noted above, herons are particularly abundant in the BACH Area. In addition to one ulna fragment from an

Table 9.1. Bird taxa

Taxon	Common Name	Count*	%	Habitat
Podiceps cristatus	Great Crested Grebe	4	4	Wetland
Phalacrocorax carbo	Great Cormorant	1	1	Wetland
Phalacrocorax pygmeus	Pygmy Cormorant	1	1	Wetland
	Heron	2	2	Wetland
Ixobrychus minutus	Little Bittern	2	2	Wetland
Egretta garzetta	Little Egret	5	6	Wetland
Ardea cinerea	Grey Heron	4	4	Wetland
Ciconia sp.	Stork	1	1	Wetland
Platalea leucorodia	Eurasian Spoonbill	3	3	Wetland
Cygnus sp.	Swan	1	1	Wetland
	Goose	1	1	Wetland
	Large Goose	6	7	Wetland
	Small Goose	4	4	Wetland
Branta ruficollis	Red-Breasted Goose	2	2	Wetland
	Duck	1	1	Wetland
Anas sp.	Dabbling Duck	3	3	Wetland
Anas crecca	Green-Winged Teal	3	3	Wetland
Anas platyrhynchos	Mallard	1	1	Wetland
Aythya sp.	Diving Duck	4	4	Wetland
Aythya ferina	Common Pochard	3	3	Wetland
Aythya fuligula	Tufted Duck	1	1	Wetland
Gyps fulvus	Eurasian Griffon Vulture	3	3	Mountains
Circus aeruginosus	Marsh Harrier	1	1	Wetland
Buteo sp.	Buzzard	1	1	Forest/Open
Aquila sp.	Eagle	1	1	
Fulica atra	Eurasian Coot	6	7	Wetland
Grus grus	Common Crane	2	2	Wetland
Otis tarda	Great Bustard	1	1	Steppe
	Shorebird	1	1	Wetland
	Small Passerine	7	8	

Table 9.1 (*continued*). Bird taxa

Taxon	Common Name	Count*	%	Habitat
Pica pica	Eurasian Magpie	1	1	Edge
Corvus frugilegus	Rook	4	4	Edge
Corvus corone	Hooded Crow	8	9	Edge
Total identified		89		
	Small Bird	15		
	Medium Bird	49		
	Large Bird	57		
	Bird	6		
Total indeterminate		127		
Total Birds		216		

* Corrected for articulations.

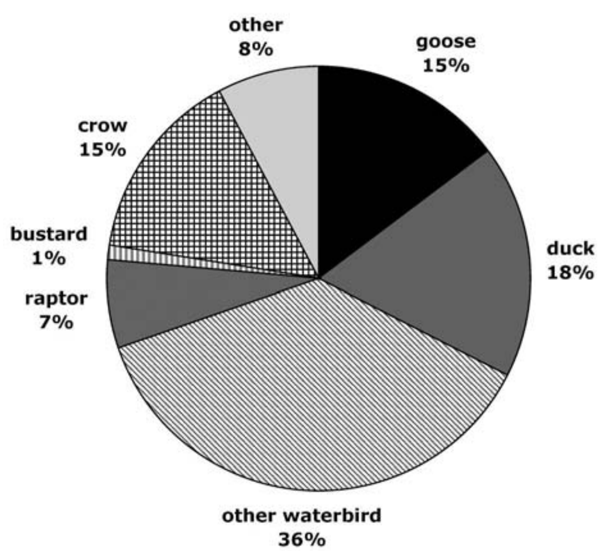


Figure 9.1. Bird types in the BACH Area (NISP).

indeterminate small heron and a phalanx fragment of a medium heron, multiple specimens are present from the Little Bittern (*Ixobrychus minutus*), Little Egret (*Egretta garzetta*), and Grey Heron (*Ardea cinerea*). The Little Bittern winters in Africa, so would be unavailable during that part of the year. A tarsometatarsus comes from the midden in Space 85 to the west of Building 3, while an articulated wing (from the distal humerus down; the part with feathers but virtually no flesh) forms part of a special deposit in Space 88.

The Little Egret was probably also absent in the winter. In contrast to those analyzed previously, which consisted entirely of non-meaty wing bones, in the BACH Area all the egret remains are from meaty areas (two coracoids, scapula, furcula, humerus), suggesting food use. Grey Herons were probably present throughout the year. The specimens (humerus, carpometacarpus, tibiotarsus, and tarsometatarsus) come from the leg and wing. The humerus and tibiotarsus would have a little meat.

Storks

A cervical vertebra is most likely from a stork. White Storks (*Ciconia ciconia*) currently breed in the area and pass through in large flocks during migration but are absent in the winter.

Spoonbill

Eurasian Spoonbill (*Platalea leucorodia*) seems to have served as food elsewhere at Çatalhöyük (Russell and McGowan 2005), but in the BACH Area it appears to be the beak and feathers that were of interest. An articulated wing tip (carpometacarpus and phalanges) was placed in the fill near the floor of Building 3, while the upper and lower beaks were part of a special deposit in Space 88. Spoonbills would be available locally from February to September.

Swans

Swans are represented by a single coracoid, a meaty region of the body. The specimen comes from a bird larger than a

Tundra Swan (*Cygnus columbianus*) and thus would be from either the Mute Swan (*C. olor*) or the Whooper Swan (*C. cygnus*). The Whooper Swan does not breed in Anatolia, but the Mute Swan may have been present year-round in the Konya Plain.

Geese

Geese are less common here than in some other areas of the site but still account for 13 percent of the identified bird bones. Two specimens are fairly certainly from the Red-Breasted Goose (*Branta ruficollis*) based on measurements and characters in Bacher (1967), while the rest cannot be attributed to species. Most of those in the smaller group are too big to be Red-Breasted Goose, but too small to be Greylag Goose (*Anser anser*); hence, they must be either Greater White-Fronted Goose (*A. albifrons*) or Lesser White-Fronted Goose (*A. erythropus*). The specimens in the larger group are bigger than the Lesser White-Fronted Goose, and would thus be Greylag or Greater White-Fronted Goose. Only the Greylag Goose would be present year-round in the Konya Plain, while the others would winter there. Many of the geese were therefore probably taken in winter.

There are no goose leg bones in this assemblage. Seven of 13 specimens are from meaty parts of the breast or wing; six are from the wing (mostly non-meaty areas). Therefore, the pattern seen elsewhere at Çatalhöyük is maintained: geese seem to have been eaten, but there is probably also an additional selection for wings, probably for their feathers. The only bone not from the breast or wing is a cervical vertebra burned at one end, suggesting that a whole, beheaded bird may have been roasted over a fire.

Ducks

The ducks are the most common bird group in the BACH assemblage and are evenly divided between dabbling (*Anas* spp.) and diving (*Aythya* spp.) ducks. Measurements and characters in Woelfle (1967) permit some specimens to be identified to species. Among the dabbling ducks, three can be attributed to Green-Winged Teal and one to Mallard. The three *Anas* spp. specimens all fall in the middle of the size range for the genus; hence, they are probably *A. acuta*, *A. penelope, A. strepera*, or *A. clypeata*. All of these would have been at least potentially present year-round in the Konya Plain. The dabbling duck body-part distribution resembles that of the geese: all specimens are from the wing and breast, with four of seven from meaty areas.

One of the diving ducks is surely a Tufted Duck (*Aythya fuligula*), based on size and morphology. Three are probably Common Pochards (*A. ferina*) but might just possibly be large Tufted Ducks. The diving duck specimens not identifiable to species are all larger than the Ferruginous Duck (*A. nyroca*) and thus are probably Common Pochard, Tufted Duck, or Greater Scaup (*A. marila*), although two are too small to be Greater Scaup. The Greater Scaup would only be present in winter, but the others would be available year-round. The diving duck body-part distribution is somewhat different from the dabbling ducks. There is one tibiotarsus (lower leg) and two coracoids (breast), and the rest are wing bones, mostly from the non-meaty portion.

Raptors

Raptors are considerably less frequent in the BACH Area than in the previously analyzed assemblage (Russell and McGowan 2005). The harriers that predominated in other areas are absent here, save one Marsh Harrier (*Circus aeruginosus*) talon. Instead, we have a femur fragment from a mid-size *Aquila* eagle, a buzzard (*Buteo* sp.) ulna, a virtually complete tarsometatarsus of a Eurasian Griffon Vulture (*Gyps fulvus*), and two skull fragments that are probably also Eurasian Griffon Vulture. All of these, save some species of buzzard that would be present only in winter, would be available year-round.

Rails

The rail family is represented in the BACH Area solely by the Eurasian Coot (*Fulica atra*), which is even more common here than elsewhere at the site (7 percent of the identified birds). The Eurasian Coot specimens are spread through the body, with even numbers from breast, wing, and leg. This suggests that, as elsewhere, they were used for food.

Cranes

The Common Crane (*Grus grus*) is represented by a phalanx from the wing and a worked tarsometatarsus (8178.F55; see Chapter 15). This fits the pattern elsewhere at the site, suggesting that food may not have been the primary use of cranes.

Bustards

With a single specimen (tibiotarsus) of Great Bustard (*Otis tarda*), this species is far less common in the BACH Area than in the previously analyzed assemblage. Since this is the main representative of the steppe habitat in the bird assemblage, perhaps the inhabitants of this house were less inclined to exploit this zone than were some others at the site.

Crows

The only identified passerines from the BACH Area are corvids: the Eurasian Magpie (*Pica pica*), Rook (*Corvus frugilegus*), and Hooded Crow (*C. corone*) as identified by traits and measurements in Tomek and Bocheński (2000). The corvids are strikingly abundant in the BACH Area, with the Hooded Crow the most frequent single taxon, and corvids as a group nearly as abundant as geese. In part this is due to a concentration in Space 85, but crows are common overall.

The Eurasian Magpie is represented by a carpometacarpus, a non-meaty wing bone. The Rook specimens include slightly more wing than leg bones, with two tibiotarsi the only (slightly) meaty bones. One set of wing and one set of leg bones are articulated. On the whole, this body-part distribution does not suggest food use, but an articulated tibiotarsus and tarsometatarsus show slight burning and possible marrow fractures that might suggest consumption. Many of the Hooded Crow remains derive from a concentration of bones from at least two birds in a concentration in Space 85. These are spread throughout the body, including even the delicate cranial areas, but seem to have been only semi-articulated in the ground. Elsewhere, body parts are limited to non-meaty portions of the wing (mostly) and leg. Interestingly, some bones from both inside Building 3 and the Space 85 concentration show burning patterns that might result from roasting, just as with the Rooks. Thus, it is likely that crows were at least sometimes eaten, although there may also be some selection for wings and feet.

Butchery, Cooking, and Body Parts

In the previously analyzed assemblage (Russell and McGowan 2005), we found no cut marks except those related to tool manufacture, and no burning resulting from cooking on the bird bones. While such butchery and cooking traces remain rare, they do occur in the BACH bird bone assemblage. A fragment of a duck-size humerus (2228.F232) bears a transverse cut on the posterior shaft just below the deltoid tuberosity that probably results from meat removal during consumption, unless it is a poorly aimed dismemberment cut. As mentioned in the taxon descriptions, burning that may result from roasting occurs on specimens of grebe, goose, and crow. Perhaps the Building 3 inhabitants tended to cook their birds differently from people elsewhere on the site. Or perhaps they simply cooked more of their birds. The consolidated body-part distribution for all identified elements (Table 9.2) shows a greater proportion of meaty body parts than the previously analyzed assemblage, although the feathery portion of the wings still seems somewhat overrepresented. While in the previously analyzed assemblage only bustards and coots showed a body-part distribution suggesting use primarily as food, in the BACH Area such patterning is seen for the grebes, egrets, swan, coots, and to some extent, geese, dabbling ducks, and crows.

Birds in Context

Since nearly all the units in the BACH Area were examined for bird bone, we have a greater opportunity than in other site areas to consider contextual variation. Table 9.3 presents the distribution of bird taxa among context types; once again, articulated sets of bones are tallied only once. Both taxa and contexts have been grouped in order to reveal patterning.

Midden deposits include the remains of many activities, mainly in secondary context—that is, gathered up and dumped after use. Their contents are therefore reasonably fairly closely associated in time with the deposits, and, since midden areas occur frequently across the site, are likely to be spatially associated with nearby houses. Some of these middens occurred outside of Building 3, mainly to the west, and may contain waste from the building's occupants, while others were formed inside the walls after abandonment, and hence relate to slightly later occupation nearby.

Table 9.2. Bird body-part distribution

Body zone	Element	Number of specimens
Head	Skull	4
	Mandible	4
Neck	Vertebrae	7
Breast/body	Rib	2
	Coracoid	15
	Furcula	1
	Scapula	1
	Sternum	15
	Synsacrum	5
Wing	Humerus	18
	Radius	10
	Ulna	20
	Carpals	1
	Carpometacarpus	16
	First phalanx, major digit	6
	Minor phalanges	4
Leg	Femur	4
	Tibiotarsus	13
	Tarsometatarsus	8
Foot	Phalanges	8

Note: Shaded elements indicate meaty parts.

Table 9.3. Bird taxa by context type

Context Type	Indet. bird	Anatid	Heron	Raptor	Crane	Water-bird	Bustard	Corvid	Total	Total identified	Count per liter
Midden	19	12 38%	7 22%	3 9%	1 3%	2 6%		7 22%	51	32	.0069
Packing	4	2 25%	3 38%	1 13%		2 25%			12	8	.0040
Construction material	31	5 42%			1 8%	2 17%		4 33%	43	12	.0018
Fill	67	9 41%	4 18%			7 32%	1 5%	1 5%	89	22	.0041
Pit fill	19	3 50%	3 50%						25	6	.0092
Fill on floor	7					1 100%			8	1	.0093
Hearth		1 50%		1 50%					2	2	.0106
Special deposit	9		1 33%			1 33%		1 33%	12	3	.0165

Packing deposits under floors and other features vary in nature but often seem to include some very fresh bone (and bird bone is often among these fresh bits), suggesting that when floors were relaid, bits of debris lying about on them were incorporated into the packing. Thus, the contents of packing deposits include both relatively primary material and tertiarily deposited material brought in with the packing material from elsewhere, with little relation to the occupation of Building 3. For this reason, we have separated packing from the other construction materials (bricks, mortar, plaster, etc.), which appear to consist entirely of material brought from elsewhere and thus are probably earlier and of unknown relation to Building 3.

Fill is material from elsewhere dumped into the house after abandonment, also often containing a considerable amount of construction material from the house itself. Like the construction material, therefore, the contents of fill deposits have little relation to the occupation of Building 3. We have separated pit fills (including the fill of post-retrieval pits and burials) and fills and other deposits lying directly on floors, since these may contain primary deposits placed there in addition to the contents of the fill. The contents of hearths are likely to be fairly primary remains of domestic activities, and special deposits have been deliberately placed, presumably by the building's inhabitants.

The bird taxa have been grouped according to their significance here and elsewhere on the site. Thus, while most are fairly general groupings, we have separated out cranes, bustards, and corvids, since cranes occur in the art and in special deposits on the site, and bustards and corvids are notable for their frequency in the general site assemblage. The waterbird category includes storks, shorebirds, and aquatic birds such as grebes, coots, and cormorants that fall outside the anatid and heron categories.

Since the excavated quantities of different deposit types vary, we need to examine densities (given here as counts per liter of all bird specimens, corrected for articulations) to compare the occurrence of bird bone among the deposit types. To some degree, the densities of bird bone reflect the overall faunal densities in these context types, but there are some areas of divergence. Bird bones are relatively much less common in midden deposits, which are richest in animal bone in general. Bird bone is particularly scarce in the Phase 0 middens that lie under the floors of Building 3. On the other hand, hearths (with a very small sample size), special deposits, and to some extent packing have relatively higher bird bone densities. The elevated bird densities in the special deposits reflect the important role that bird remains play in these deposits in the BACH Area. The higher levels in hearth deposits and packing, and perhaps the slightly higher levels in fill on floor deposits, vs. the reduced frequency in the middens, may mean that bird bone was more likely to stay in the house rather than being dumped on middens. It might also reflect taphonomic factors, with bird bone more likely to suffer from attritional forces in the midden deposits. However, the BACH middens are not particularly heavily worked over by dogs, and, while bird bone is fragile, its cortex is dense in many of the bones (Broughton et al. 2007; Dirrigl 2001; Higgins 1999). In the previously analyzed assemblage, density-mediated attrition did not seem to be a major factor in bird bone body-part distributions. Rather, the small size of bird bones and their sparse occurrence may have given them a low hindrance value (Hayden and Cannon 1983) in comparison with macro-mammalian bones, so there was less incentive to remove them.

Figure 9.2 compares the proportions of the taxon categories for the context types that have at least five identified specimens. Given that sample sizes are small, these proportions should be interpreted with caution. It is interesting to note, though, that while anatids (ducks, geese, and swans) occur in similar proportions in the three context types with the largest sample sizes (midden, fill, and construction material), heron proportions are similar in midden and fill but totally lacking in construction material. If the relatively high proportion of herons is indeed a peculiarity of Building 3 or its neighborhood, this might suggest that fill is coming from relatively nearby, while construction material is derived from deposits with a more distant relationship to the building. The single specimen of bustard from the BACH Area occurs in fill. While the heron proportions might argue for much of the fill being derived from more or less associated deposits, nevertheless this is not a context firmly associated with the use of Building 3. It therefore raises the possibility that this household or neighborhood did not eat bustard, whether because of a taboo or because they did not target the steppe zone of the landscape. As noted above, corvids are particularly common in the BACH Area. Their distribution among context types is uneven and hard to interpret. They are totally absent from some context types, although this may be chiefly an effect of sample size. They occur in greatest numbers in the middens but in highest proportion in the construction material. Therefore, they would seem to derive both from the activities of the inhabitants in the Building 3 vicinity and from farther away. The high proportion of indeterminate

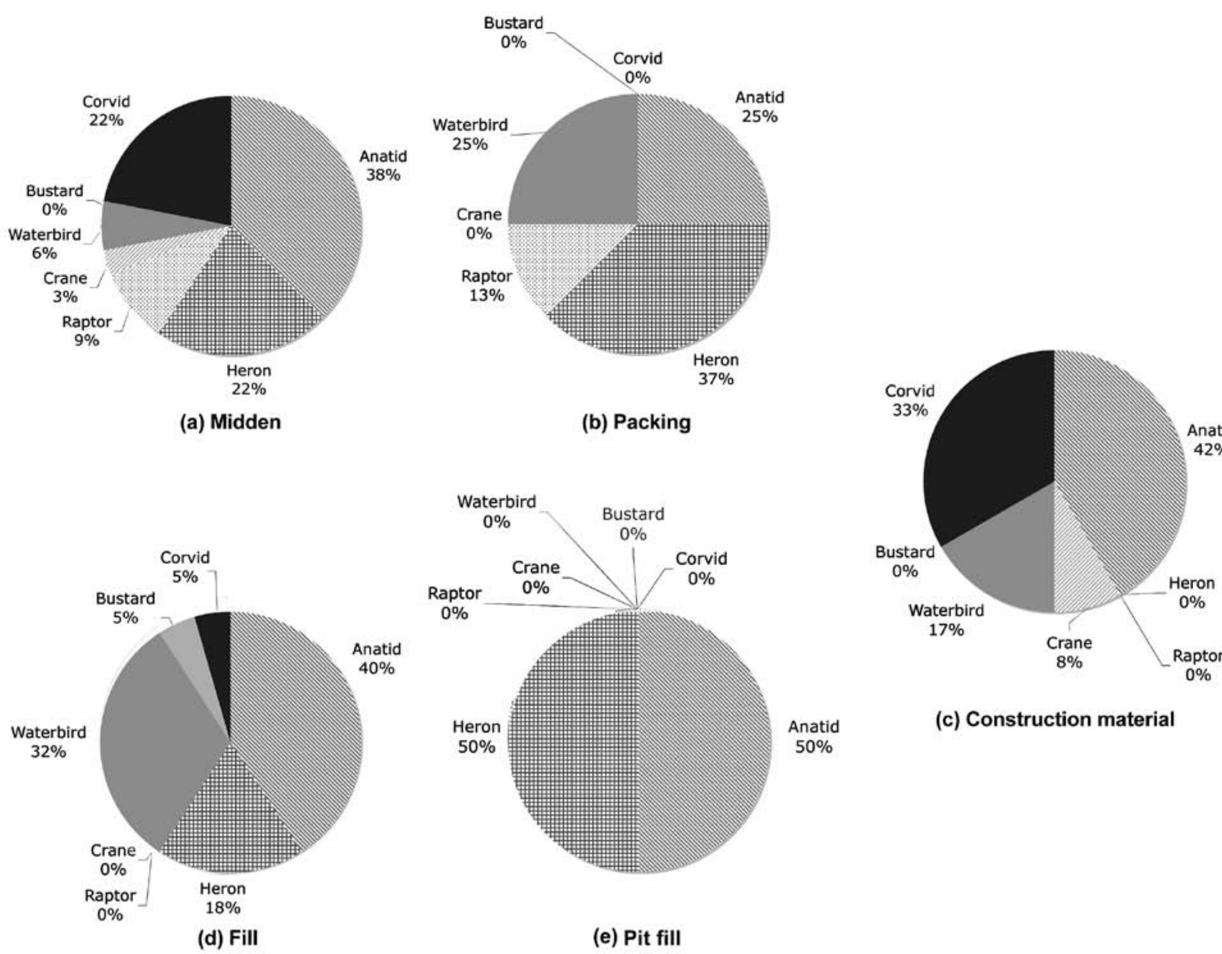


Figure 9.2. BACH bird types by context type: (a) midden; (b) packing; (c) construction material; (d) fill; (e) pit fill.

bird bone in construction material and fill, including pit fill and fill on floor, is no doubt the result of these deposits being reworked, which has led to the loss of the more delicate and diagnostic articular areas, leaving the denser long bone shafts.

Figure 9.3 presents the taxon categories according to their occurrence in primary, secondary, or tertiary contexts, individually assessed. While the sample size is limited, it is striking that the anatids are totally absent from the primary contexts. Since these contexts are mainly special deposits, it suggests that the anatids tended to play utilitarian rather than ritual roles. In the secondary (mostly midden) and tertiary (mostly fill and construction material) contexts, anatids are common. Herons and corvids are frequent in all three context types, but more so in the primary and secondary contexts that are more closely tied to the inhabitants of Building 3.

As there were almost no primary deposits of faunal material in Building 3 itself, the bird bones from Building 3 proper (Spaces 86, 158, and 201) will mainly relate to periods prior to its occupation (construction material, underlying middens, and some fill) or subsequent to its abandonment (middens and some fills inside the house). The same is true of the small rooms to the south, Spaces 87, 88, and 89. The midden in Space 85 to the west of the house, however, is at least potentially contemporary with Building 3's occupation. Since only the strip along the outer wall of Building 3 was excavated, it is quite likely that much of this material was tipped into it off the roof by the inhabitants of Building 3. Figure 9.4 compares the bird taxa from Building 3 proper to those from Space 85; Spaces 87, 88, and 89 have sample sizes too small for meaningful comparison. Of course, there are contextual issues in the comparison, since the Space 85 deposits are all middens, while those from Building 3 include a variety of deposit types. Still, if we take the Space 85 deposits as representative of activities in Building 3, we note higher levels of corvid (much of this from a single event), somewhat higher anatid, somewhat lower heron, and substantially less of the other waterbirds. This suggests a balance of culinary waste and the remains of other activities such as bead making and featherwork. It also indicates perhaps less exploitation of wetlands than the palimpsest of other periods and households represented by the Building 3 assemblage, with wetland bird acquisition more specifically targeted to anatids (possibly meaning that such hunting or trapping was largely restricted to fall migration).

Some of the bird remains may suggest tentative links between the spaces in the BACH Area. Eurasian Spoonbill is quite rare at Çatalhöyük, and most of it is from the BACH Area. Spoonbill beaks (upper and lower) were found in a special deposit in Space 88, while an articulated wing tip (from the carpometacarpus down) with a very fresh surface condition was found in the fill just above the floor in Space 158. There is no way to know if these are from the same bird, but if so, it suggests the special deposit in Space 88 is contemporary with the abandonment of Building 3, or else the wing tip was curated for some time and placed in the house at abandonment. It is likely that the wing retained its white feathers when deposited.

Similarly, the Little Bittern has so far been found only in the BACH Area: an articulated wing in the same special deposit in Space 88, and a tarsometatarsus in the unit 6672 midden in Space 85. Possibly this links unit 6672 to the time of Building 3's abandonment, which would mean that the several midden layers above it postdate the occupation of the house. Since these pieces do not directly articulate, however, these links can only be viewed as possibilities to be explored with other materials.

While the crow remains are too numerous to make a similar argument linking specific deposits, both Rook and Hooded Crow occur at generally higher levels in the BACH Area than elsewhere. As noted above, they are most common in primary and secondary deposits that are relatively

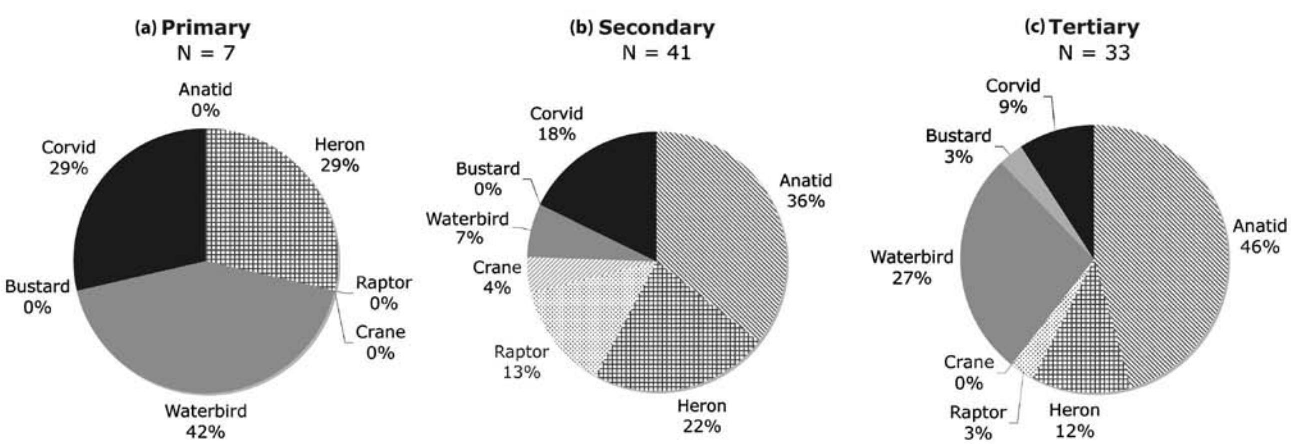


Figure 9.3. BACH bird types by (a) primary, (b) secondary, and (c) tertiary contexts.

Building 3 (inner circle) and Space 85 (outer circle)

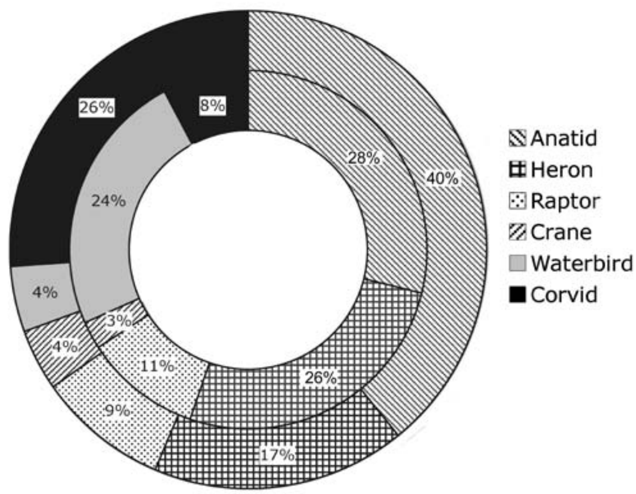


Figure 9.4. Bird types in Building 3 and Space 85.

closely linked to the occupation of Building 3. Therefore, their occurrence in primary and secondary deposits in Spaces 85, 87, 88, and 89 as well as Building 3 proper may suggest that all these spaces received waste from the inhabitants of Building 3. Most of the crow bones are found in midden and packing deposits and have a fresh surface condition, suggesting they were directly deposited rather than coming in with the construction material.

Much of the bird bone occurs in small concentrations (often of more than one species), while most units, even midden units, lack bird remains. These occasional pockets of bird remains give the impression of seasonal or perhaps just sporadic use of birds. Most likely they are taken incidentally on trips made to wetlands for other purposes.

Three bird bone deposits are worthy of special discussion. Interestingly, all of them occur outside Building 3 proper. First, in the Space 85 midden deposits, many bones from at least two Hooded Crows were found spread across units 6334 and 6350. Most body zones are represented, including skull, mandible, coracoid, synsacrum, all major wing bones, and tibiotarsus. These do not seem to have been articulated in the ground, as many of the bones have old breaks and the ulna is burned along one side. This suggests that they may be food remains, but it is unusual to find them discarded in such a concentrated manner, and with delicate cranial bones. The crow bones were found slightly south of a feasting deposit composed of a rich concentration of minimally processed sheep/goat limb bones. It may be, then, that the crow remains derive from the same occasion, and perhaps the crows were part of a ceremonial meal.

Second, in Space 89, two more Hooded Crow wing bones, a right ulna and left carpometacarpus, were found in unit 2210. The distal articulation of the ulna has burning that might result from roasting. This unit contained a special deposit that included a large set of cattle horns with connecting skull, a pile of several other cattle horns, a flint dagger with a carved bone handle, a human skull, and a large deposit of bones that are probably another feasting deposit, along with much burned plant material. It is not impossible that these are remains of the same feast and the same crows found in Space 85. At any rate, it supports the association of crows with feasts and ceremonies in the BACH Area.

Finally, bird remains form an important part of a special deposit (8505) in Space 88. Next to a plaster basin, a small depression under a platform in the northern end of the room contained a Spoonbill mandible lying on a layer of phytoliths (reeds), and over it the front of a female wild boar mandible, some segments of a sheep spine with articulated rib heads (Chapter 8), some obsidian and ground stone objects, and on top of all these, a necklace of marine shells and one large stone bead. Nearby, against the wall in this same packing layer but not in the depression, was an articulated Little Bittern wing. A small fragment of Spoonbill upper beak was found in a midden layer lower down in this same space. It may also be associated with this deposit, carried down in an animal burrow. Such collections of objects, usually including faunal remains, have been found in many platforms and sometimes elsewhere under the floor, and seem to commemorate ceremonies. Perhaps the Eurasian Spoonbill and Little Bittern remains were part of costumes or paraphernalia at this ceremony. If the Little Bittern was a male, the wing would have had a striking pattern of black with a whitish patch. Since neither the Spoonbill nor the Little Bittern winters in Anatolia, if they were procured specifically for this ceremony it would have taken place in spring or summer.

Conclusion

Focusing on the bird remains from in and around a single house, Building 3, has provided further insight into the use of birds at Çatalhöyük. While general patterns, such as the dominance of waterbirds and selection of wings, seem to hold broadly throughout all areas analyzed, the examination of the BACH Area reveals localized variation within the site. Contextual analysis indicates that much of this variation is specific to the inhabitants of Building 3, or at least to them and their immediate neighbors. One aspect of this variation is an elevated use of herons and crows. There are indications that crows may have formed part of ceremonial meals for the inhabitants of the building. The herons, for the most part, seem to have been used in more mundane contexts, although the Little Bittern is found in a ceremonial context. The Little Bittern and the Eurasian Spoonbill do not appear as food remains but rather as ceremonial paraphernalia.

They can be added to the list of birds that seem to carry symbolic significance at Çatalhöyük, although it is not clear whether they have specific symbolism or just visually striking body parts.

The body-part distribution suggests that the BACH Area residents ate a wider range of bird taxa than we have seen elsewhere on the site, although bird bone occurs here in about the same densities as elsewhere. Such variation, along with the differences in the balance of taxa, likely results from a combination of differing tastes, differential targeting of parts of the landscape by individual households, and possibly selective taboos that affect certain groups on-site.

ACKNOWLEDGMENTS

We identified these bird bones with the aid of the reference collections of the Cornell University Museum of Vertebrates and the Division of Birds at the Smithsonian Institution. We are grateful to James Dean for providing access to the latter, and to our colleagues on the BACH team for numerous discussions through the years that have illuminated the context of these finds.

Chapter 10

The Microfauna of the BACH Area

Emma Jenkins

Introduction

Microfauna are a useful tool for the archaeologist; they can provide information about past environments, reflecting environmental change through fluctuations in species composition and diversity (Avery 1982). A taxonomic analysis, however, should be accompanied by a taphonomic one, which allows all processes leading to changes in species composition to be understood (Andrews 1990). Dense concentrations of microfaunal elements are often the result of predation, and changes in microfaunal assemblages may be attributable to a change in predator rather than environmental oscillations. In addition to being important environmental proxies, microfauna can help us gain an understanding of the use of space and to identify periods of abandonment in urban contexts.

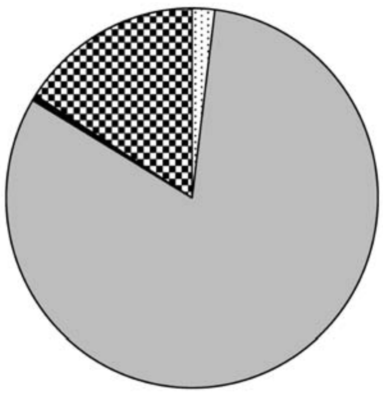
Materials and Methods

The microfaunal assemblage from the BACH Area is derived from the main building (Building 3) and three side spaces, Spaces 87, 88, 89 (see Figure 4.1). A total of 2,286 identifiable microfaunal elements were analyzed from the 136 prioritized BACH units (Chapter 2) (prioritized units are listed in Appendix 2.1 in the on-line edition of *Last House on the Hill*). These were recovered in heavy residue as part of the flotation process and were passed through 4-mm, 2-mm, and 1-mm meshes (see Figure 2.5). Elements were analyzed using a Cooke, Troughton and Simms light microscope. More detailed analysis was undertaken using an FEI Quanta 600F scanning electron microscope (SEM) in low vacuum mode at the Centre for Advanced Microscopy, University of Reading. Results are presented by NISP (number of identifiable specimens), and the term "specimen" has been used to describe both complete and fragments of elements. The NISP per liter of sediment is shown in addition to the actual NISP. This is because different quantities of sediment were sampled per excavation unit, and the NISP per liter allows the density in the different excavation units to be compared.

Species identification was largely restricted to cranial elements, and identifications were made using the comparative collections of the Harrison Institute, Kent. Specimens of the species *Mus musculus* (house mouse) were identified following the methodology of Harrison and Bates (1991), which compares the relative width of the malar process with the zygomatic arch. In *Mus musculus*, the malar process is narrower than the zygomatic arch, while in *M. macedonicus* (Macedonian mouse), the other species of *Mus* presently occurring in the study area, the malar process is wider than the zygomatic arch. Incisors were usually identified as "rodent," except for *Mus* sp. upper incisors, which have a distinctive notch, allowing them to be identified to genus. The methodology for taphonomy followed that of Andrews (1990), while the methodology for identifying incisor and microtine molar digestion followed that of Fernandez-Jalvo and Andrews (1992). New categories were created for murid molars, which can be found in Jenkins (2009:103).

Species Composition

First the species composition for the whole assemblage will be discussed to give a general overview of the taxa found in the prioritized BACH units. The presentation of the results are complicated by the fact that only the micromammalian cranial elements were identified to genus or species, while the post-crania was usually identified only as micro-mammal or rodent. Figure 10.1 shows the breakdown of the elements by taxon and demonstrates that micromammals are the dominant taxa in this assemblage. Amphibians and reptiles comprise 16 percent of the total



	Taxon	NISP
░	Microfauna	45
▒	Micromammal	1866
■	Hare-sized	11
▦	Amphibian/Reptile	364

Figure 10.1. Composition of the BACH assemblage by taxon.

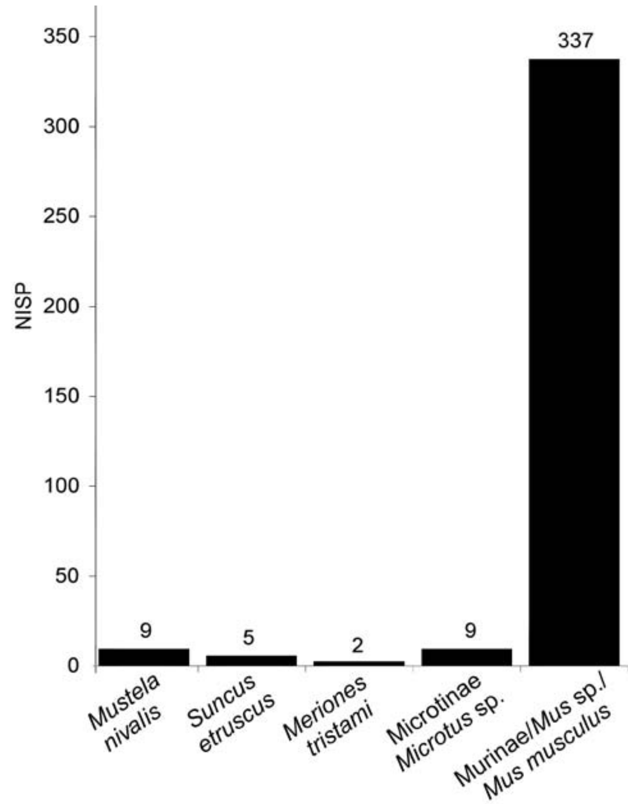


Figure 10.2. Taxa for the cranial elements.

assemblage, suggesting that there must have been wet or marshy areas around the site during the period of occupation of BACH Area buildings.

Figure 10.2 shows the NISP for the cranial elements identified to genus or species. Microtinae (subfamily of rodents, including voles, lemmings, and muskrats) and *Microtus* sp. (voles) have been put in the same category, as have Murinae (subfamily of rodents including rats and mice), *Mus* sp. (mouse), and *M. musculus* (house mouse). The majority of the elements that can be identified to genus level are *Mus* sp., and all of the maxilla that retain the zygomatic arch have been identified as *M. musculus* (house mouse). It is probable that all of the elements that were identified as Murinae and *Mus* sp. are also *M. musculus.* There are two variants of *M. musculus*: *M. m. domesticus* and *M. m. musculus*; no attempt is made to distinguish between them here. *M. m. domesticus* is the long-tailed subspecies, which occupies Western Europe, North Africa, and the Near East. *M. m. musculus* is the shorter-tailed version, which occupies the north and east of Europe and the northern part of Asia (Auffray et al. 1991:7–8). Both *M. m. domesticus* and *M. m. musculus* have commensal and wild populations, unlike *M. macedonicus* (Macedonian mouse), which is wild. Research indicates that while *M. macedonicus* has occupied the Near East since at least 120,000 B.P., the earliest record of house mouse (*M. m. domesticus)* was discovered in the Epipalaeolithic levels of Hayonim B, which were dated to around 10,000 B.C. (Auffray et al. 1998:517). Therefore, the routine discovery of house mice at Çatalhöyük is of great biogeographic interest (see Jenkins 2003, 2005).

House mouse remains in the Çatalhöyük assemblages have demonstrated that this commensal species was attracted by the scavenging opportunities offered from food storage and food scraps from processing and cooking. The walls and roofs of the buildings would have made good refuges for house mice and provided some protection from predation. House mouse remains were found in low densities throughout the units at Çatalhöyük, suggesting that they had a low-level presence throughout the site. However, this is complicated by the discovery of a few dense assemblages, rich in mice remains, which contradicts this assumption and suggests that a large number of house mice may have been present in or around the site (Brothwell 1981; Jenkins 2003, 2005). This could indicate that while house mice were attracted to the site, the inhabitants of Çatalhöyük took measures to keep their numbers to a minimum.

Many of the maxilla found in the BACH assemblage could not be identified beyond *Mus* sp. (generic mouse) because they were missing the diagnostic zygomatic arch. However, it is probable that all of the elements identified as *Mus* sp. are *M. musculus* rather than *M. macedonicus* because the latter has not been found at Çatalhöyük and it is unusual for the two species to occur in sympatry. Indeed, it is believed that competition between *M. musculus* and other species of *Mus* led *M. musculus* to adapt to commensalism (Auffray et al. 1990).

MICROFAUNA BY UNIT CATEGORY

Room Fill

Analysis of the microfauna by unit category demonstrates that room fills had the highest density of microfauna (Figure 10.3). Four units from room fills, all of them from the post-occupational deposits of Building 3, Space 87, and Space 89 were analyzed, and the taxa found in this category are shown in Table 10.1. The high density of microfauna in room fills is biased by unit 2268, which has a high NISP. The breakdown of the elements by taxon for unit 2268 is shown in Table 10.2.

Bin/basin

Six bin/basin units were analyzed, none of which had dense concentrations of microfauna. This category refers to small storage features that were usually made of clay and built into or abutting the walls of the houses at Çatalhöyük. The breakdown of taxa found in this unit category, illustrated in Table 10.1, shows that the array of fauna found is similar to that from the room fill units, except that weasel was absent and none of the *Mus* sp. remains could be identified to species level. Three of the bin/basin units had higher NISPs than the other three units (8527, F.1003, Phase 88.3; 6246, F.625, Phase 89.1; and 8391, F.786, Phase B3.1B–D). Although these are not large accumulations, this does suggest that the inhabitants of Çatalhöyük may have had some problems with micromammals scavenging in food storage containers.

Artifact/Feature

This category refers to any collection of material that appeared significant during excavation and covers a wide variety of archaeological material. Only two units were analyzed from this unit category: unit 8100, which was a clay ball feature (F.758, Phase B3.2), and unit 6116, which was a layer of ash behind the screen wall (Phase B3.4B) believed to be the remains of a mat. Only 15 specimens were found in these two units, none of which could be identified beyond micromammal or amphibian and reptile. The paucity of microfaunal remains in these two units is to be expected, due to their specific artifactual natures.

Fill

Sixteen fill units were analyzed, all of which had low NISPs, with the exception of unit 8292, which was the fill of storage bin F.770 (Phase B3.1D). The taxa found in this category did not differ greatly from those found in the previous categories discussed, although two mandibles of Pygmy White-Toothed Shrew (*Suncus etruscus)* were found, one mandible in unit 6388, a packing layer under a bin (F.626, Phase B34A), and the other in unit 8446, a cut in the "kitchen" area in the southern end of Building 3. The Pygmy White-Toothed Shrew is one of the smallest terrestrial mammals, with its head and body length ranging between 35 and 52 mm. It is most active at night and prefers open terrain, grassland, scrub, gardens, and deciduous woodland (MacDonald and Barrett 1993; Walker 1983). This species has been found in other areas of Çatalhöyük (Jenkins 2003, 2005).

Building/Construction

Four units were analyzed from this category; two were defined as internal walls (6380, F.155, screen wall in Phase B3.4B; and 8157, F.160, internal wall in Phase B3.4A), one was a crawl hole (6225, F.627, Phase S88.3), and the final unit (6148, F.607, Phase B3.4B) was a niche. Unsurprisingly, units 6380 and 8157 had low NISPs. Unit 6148, the niche,

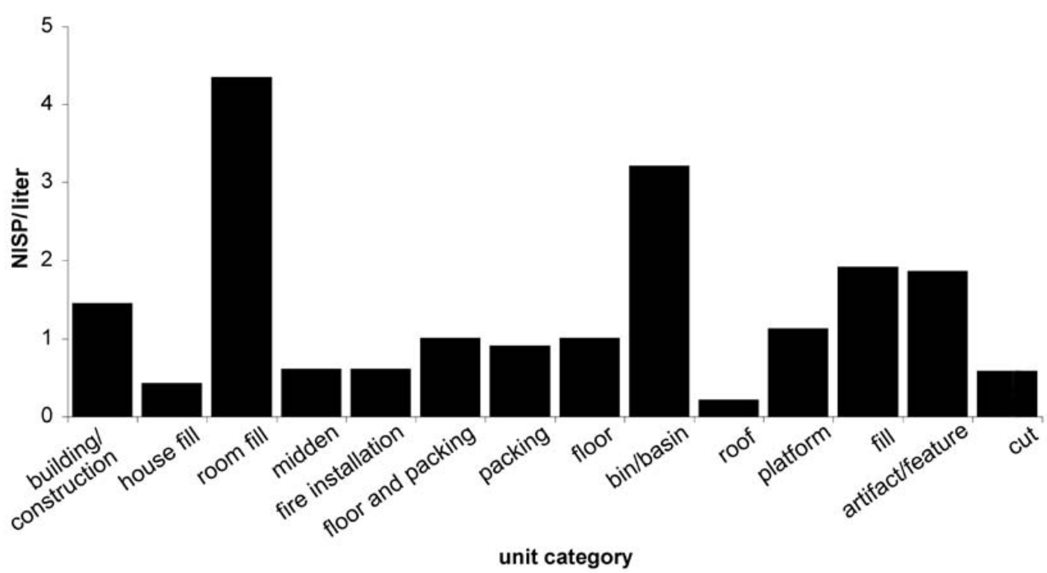


Figure 10.3. NISP per liter by unit category.

Table 10.1. Breakdown of microfauna NISP by unit category and taxon

Taxon	Room fill	Bin/ basin	Artifact/ feature	Building construction	Fill	Packing	Plat- form	Fire Installation	Floor	Floor & packing	Cut	House fill	Roof	Midden	Total
Amphibian/ reptile	16	10	9	11	40	10	61	108	35	33	1	15	8	7	364
Hare-sized	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
Mustela nivalis	7	0	0	0	0	0	0	0	1	0	0	0	0	1	9
Microfauna	1		1	1	5	2	6	7	6	8	1	0	1	1	40
Micro-mammal	199	101	5	145	157	125	69	84	172	92	0	27	3	11	1190
Suncus etruscus	0	0	0	1	2	2	0	0	0	0	0	0	0	0	5
Rodent	141	4	0	0	49	42	10	8	34	18	0	5	3	9	323
Meriones tristrami	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Microtinae	2	0	0	0	0	0	0	2	0	0	0	0	0	1	5
Microtus sp.	0	1	0	0	0	0	0	1	1	0	0	0	1	0	4
Murinae	1	1	0	0	3	8	0	1	4	2	0	0	0	0	20
Mus sp.	103	8	0	0	45	47	5	7	54	35	0	3	1	3	11
Mus musculus	2	0	0	0	3	1	0	0	0	0	0	0	0	0	6
Total	472	124	15	158	304	237	151	218	309	190	2	50	17	33	2281

had a more significant assemblage, with a NISP of 41. The largest unit in this category was the crawl hole in Space 88 (6225), which had a NISP of 114.

Platform

On average, platform units had low NISPs, with none of the six units having a NISP over 60. This is an expected result, as presumably the platforms were regularly cleaned.

Packing

Ten packing units were analyzed. Most had low NISPs, with the exception of 8251 (packing under oven F.646, Phase B3.2), which is one of the denser units in the BACH assemblage. None of the teeth showed any sign of digestion, and it is likely that these elements became incorporated into the packing from surrounding material.

Floor and Packing

Twenty-six units categorized as "floor/packing" were analyzed. Most had a low NISP, with unit 8288 (floor of platform F.169) having the most elements, with a NISP of 91. However, in addition to the usual array of taxa, Tristram's Jird (*Meriones tristrami*) and elements identified as belonging to a hare-sized mammal were also found (Table 10.1). A jird is a rather robust, rat-like gerbil, and Tristram's Jird is a small jird with a yellowish brown upper body and white underparts. It is nocturnal and crepuscular and eats grains, seeds, green leaves, and plant stems. It prefers lowland steppe environments but is sometimes found in more open habitats at higher altitudes (Harrison and Bates 1991).

Table 10.2. NISP of unit 2268

Unit 2268	NISP
Amphibian/reptile	5
Mustela nivalis	7
Microfauna	2
Micromammal	162
Rodent	137
Murine	2
Mus sp.	102
Mus musculus	2
Microtine	1
Total	420

Floor

Thirty-four floor units were analyzed. Probably as a result of this larger sample size, a slightly more diverse array of taxa was found in this category (see Table 10.1). None of the units analyzed had dense concentrations of microfauna or a large NISP. This result is probably a reflection of the practices of the Neolithic inhabitants of Çatalhöyük, who may have endeavored to keep the floors clean.

Fire Installation

Ten fire installation units were analyzed, the majority of which had low NISPs. There was one unit with a higher NISP (2238, a possible fire installation among the remains of the collapsed roof), although the density was not greater than in many of the other units. In this category, approximately half of the elements were amphibian and reptile. The remaining micromammalian taxa were the usual array found at Çatalhöyük.

Cut

Only one cut unit was analyzed (6673, the fill of small placement cut F.753 associated with oven F.613, Phase B3.4B). As this category is representative of a past action of digging out rather than a deposit, it is not surprising that this unit produced very little microfauna, with a NISP of only 2.

House Fill

Three units were analyzed from this category, all of which were poor in microfauna, particularly unit 6322 (the removal of fill around the screen wall F.155, Phase B3.4B). The majority of the elements were probably house mice. All of the micromammalian cranial elements were identified as *Mus* sp., but "micromammal" was the most abundant taxon because of the inability to identify postcranial elements more specifically.

Roof

Two roof units were analyzed. Both of these had low densities of microfauna, and approximately half of the specimens were amphibian and reptile, while half were micromammal, with both *Mus* sp. and *Microtus* sp. present. One would imagine that the roofs of the Çatalhöyük structures would have made an ideal living environment for small mammals. It is believed that they would have been created out of some kind of thatch. Phytolith evidence from roof samples shows that some roof deposits had a high preponderance of reeds (personal observation). However, as the two samples taken from the roofs represent roof activity occurring within a very specific time period, the low density of microfaunal remains is, perhaps, not surprising.

Predation of the Microfaunal Assemblage

Taphonomic analysis of the BACH assemblage showed findings similar to the rest of the Çatalhöyük assemblage (Jenkins 2003, 2005). A low level of digestion was found on the cranial elements and, based on the results of Andrews (1990), is in keeping with the level one would expect of an owl. However, these results were complicated by the additional presence of carnivore puncture and gnaw marks on some of the elements (Table 10.3). The puncture marks were small and corresponded with puncture marks measured from previously analyzed microfaunal assemblages from Çatalhöyük. SEM micrographs displaying elements with puncture marks are shown in Figure 10.4.

Tables 10.4 and 10.5 show the percent and level of digestion for both incisors and molars; the molar digestion table (Table 10.5) has an additional column showing the taxa. Results from Williams (2001) have demonstrated that differences in morphology lead microtine molars to be more susceptible to digestion than murid molars when digested by the same predator. In total, 25 of the units analyzed from the BACH Area display signs either of digestion or gnawing. The accumulations of microfauna found at Çatalhöyük are much smaller than those associated with caves and rock-shelters, and if the elements from Çatalhöyük were not digested and gnawed, it could be concluded that these individuals died from natural causes. These smaller accumulations, however, represent only a relatively short time period, whereas those found in caves and rock-shelters often build up over many hundreds of years.

Taphonomic analysis of the post-abandonment room fill unit (2268, Phase B3.5A) shows that while the level of tooth digestion was low, 6 percent of the elements (all identified as rodent or *Mus* sp.) had puncture marks or signs of gnawing. Twenty puncture marks were measured using a Graticule fitted into the microscope eyepiece, and the average width is 0.48 mm (Table 10.3). This result is typical of the microfaunal assemblages found at Çatalhöyük and is perplexing because the puncture marks would suggest that these assemblages were accumulated by a small carnivore, although the level of digestion is much lower than one would expect of carnivores (Andrews 1990; Andrews and Nesbit Evans 1983; Jenkins 2003, 2005). The interpretation that this could be a predator-accumulated assemblage is supported by the archaeological evidence, which suggests that this room was infilled over a period of time and may have been used as a midden area at some point in its life history. If this were the case, it could have been used as a latrinal area by a small carnivore, many of whom will use a favored spot for a prolonged period of time (MacDonald and Barrett 1993).

It was impossible to identify which small carnivore was responsible for these accumulations. The size of the puncture

Table 10.3. Elements with puncture marks in the BACH assemblage

Unit	Element	Taxon	Width of puncture mark
2268	Maxilla	*Mus* sp.	0.58
2268	Maxilla	Rodent	0.35
2268	Maxilla	Rodent	0.40
2268	Mandible	*Mus* sp.	0.38
2268	Mandible	*Mus* sp.	0.33
2268	Mandible	*Mus* sp.	0.46
2268	Mandible	*Mus* sp.	0.40
2268	Mandible	*Mus* sp.	0.80
2268	Mandible	*Mus* sp.	0.90
2268	Mandible	*Mus* sp.	0.75
2268	Skull fragment	Microfauna	0.45
2268	Skull fragment	Microfauna	0.30
2268	Upper incisor	Rodent	0.22
2268	Lower incisor	Rodent	0.40
2268	Lower incisor	Rodent	0.38
2268	Lower incisor	Rodent	0.50
2268	Mandible	*Mus* sp.	0.22
2268	Mandible	*Mus* sp.	0.32
2268	Mandible	*Mus* sp.	1.00
2268	Mandible	*Mus* sp.	0.38
6103	Pelvis	Micromammal	0.40
6103	Pelvis	Micromammal	0.40
8253	Mandible	*Mus* sp.	0.75
8254	Mandible	*Mus* sp.	0.30
8254	Mandible	*Mus* sp.	0.40
8288	Mandible	*Mus* sp.	0.50
Average width			0.50

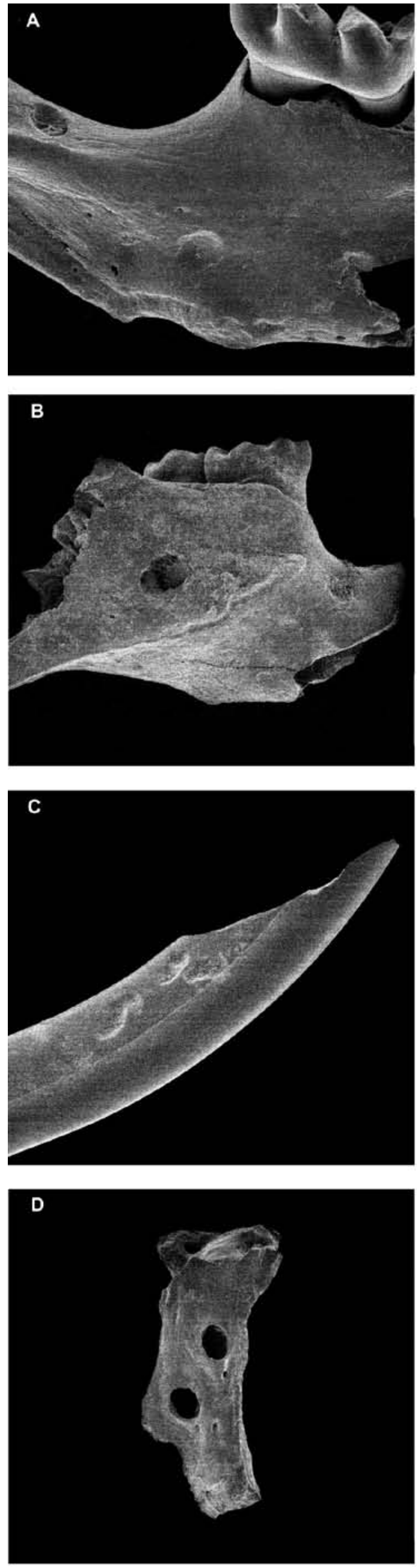


Figure 10.4. SEM micrographs showing puncture marks and gnawing: (a) *Mus* sp. mandible (2268); (b) *Mus* sp. mandible (2268); (c) lower rodent incisor (2268); (d) micromammal pelvis (6103).

Table 10.4. Microfauna incisor digestion

Unit	Light	Moderate	Heavy	Extreme	Total digested incisors	Total no. incisors in unit	% Digested
2210	0	1	0	0	1	4	25
2238	0	0	1	0	1	5	20
2250	2	0	0	0	2	8	25
2268	3	1	1	0	5	152	3
6147	0	0	1	0	1	1	100
6181	1	0	0	0	1	1	100
6246	1	0	0	0	1	1	100
6346	0	1	0	0	1	6	17
6386	1	0	0	0	1	4	25
8251	0	0	1	0	1	35	3
8254	1	0	0	0	1	13	8
8305	1	0	0	0	1	4	25
8391	0	1	0	0	1	2	50
Total	10	4	4	0	18	236	8*

* Average total % of incisors digested across all units.

Table 10.5. Microfauna molar digestion

Unit	Light	Moderate	Heavy	Extreme	Taxa digested	Total digested molars	Total no. molars in unit	% Digested
2250	1	0	0	0	*Mus* sp.	1	4	25
6648	1	0	0	0	*Mus* sp.	1	4	25
8168	2	0	0	0	*Mus* sp.	2	3	67
8339	1	0	0	0	*Mus* sp.	1	1	100
Total	5	0	0	0		5	12	42*

* Average % of digested molars across all units.

marks was small, though it is possible for a larger carnivore to make small puncture marks by using only the tips of the teeth. However, in a sample of 252 measured elements, none of the puncture marks exceeded 1.34 mm in width. In a sample of this size, one would expect to come across some larger marks if the predator were one of the larger species of small carnivores. Badgers, weasels, polecats, felids, and canids have all been found at Çatalhöyük, though the felids appear to have entered the site as skins (Russell and Martin 2005). The base of eight lower and two upper canines from different weasels from the comparative collection in the Grahame Clark Laboratory, University of Cambridge, were measured. The average width for lower canines was 2 mm, and for upper canines 1.85 mm. Weasels were the smallest carnivore found at the site, and the fact that the base of modern weasel canines exceeded the size of any of the puncture marks found on the microfaunal bones from Çatalhöyük makes them the most likely predator. The absence of puncture marks, gnaw marks, or digestion on many of the elements found here is not atypical of predator assemblages. This is because sometimes elements are swallowed whole and, as digestion does not affect all elements equally, some being more prone to digestion, depending on the amount of time spent in the stomach of the predator (see Andrews 1990), digestion can also be absent. It is also probable, however, that some of the elements were from animals that died of natural causes and that, as a whole, the Çatalhöyük assemblage was mixed in nature.

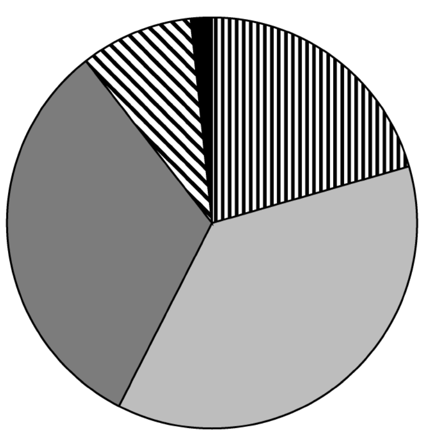
Burning

Twenty-five units contained burned elements. These were from a mixture of unit categories and consisted of both micromammal and amphibian and reptile elements. Three of the units were fire installation units (Figure 10.5), and so some degree of burning is unsurprising. It is unlikely that any of these burned elements were the result of cooking. The burned micromammals found in the BACH assemblage were small and would not have produced much meat; and while some of the amphibians were quite large, none of the elements analyzed showed signs of butchery. Instead, it is more probable that these elements were accidentally rather than deliberately burned.

Conclusion

The results from the BACH Area showed that house mice dominated the Building 3 assemblage, while Pygmy White-Toothed Shrews, weasels, Tristram's Jirds, and voles were also found. The ubiquity of house mice at Çatalhöyük demonstrates that the adaptation of this species to commensalism had already occurred by this time and is one of the earliest examples of house mouse commensalism in the region. The presence of house mice in and around the site of Çatalhöyük would have been a problem for its inhabitants, as rodents, especially mice, have the ability to decimate food stores. Evidence of mouse infestation has been found in storage bins excavated in Building 52, which was a burned building found in the 4040 Area. Not all units from Building 52 were analyzed, but those that were produced a total NISP of 472 for the microfauna (for details, see Jenkins and Yeomans in press). The majority of elements were rodents, although some weasel, shrew, and amphibian remains were also found. Interestingly, burned rodent coprolites were also found, and these deposits highlight the problems associated with mice infesting and ruining food storage deposits.

Many of the elements in the BACH assemblage were eaten by small carnivores (probably weasels), as was evident from the digestion and puncture marks seen on many of the elements. Analysis of the NISP per liter by unit categories demonstrated that the room fill and bin/basin units had the highest density of microfauna, while middens had a surprisingly low density. It is possible that the human inhabitants of Çatalhöyük encouraged predators to enter the site because their presence was preferable to rodents. Large concentrations of microfauna (predominantly mice) have been found in human burials at Çatalhöyük (Jenkins 2009); these are believed to derive from carnivore scat assemblages. It is unclear at present how these became incorporated into the burials, but what is clear is that mice were present in large enough numbers, either at Çatalhöyük or in its environs, to become a mainstay of the carnivores' diet.



Taxon	no
Microfauna	25
Amphibian/reptile	45
Micromammal	39
Rodent	11
Mus sp.	2

Figure 10.5. Burned elements by taxon.

Acknowledgments

I would like to thank Rhian Mayon-White for her help with sorting and analyzing many of the elements included in this paper. My sincerest thanks go to Sarah Jones for her patience, tolerance, and excellent computing skills. I am grateful to Mirjana Stevanović for entrusting me with her microfauna and providing contextual information. The SEM micrographs were produced with the help of Stuart Black and Sam Smith, Department of Archaeology, University of Reading, and Chris Stain, Centre for Advanced Microscopy, University of Reading. Species identifications were made using the comparative collections at the Harrison Institute, Sevenoaks, and I am grateful to David Harrison, Paul Bates, Malcolm Pearch, and Maisy Bates, who make working there such an enjoyable experience. As always, I thank Peter Andrews, who taught me about microfaunal taphonomy, and John Stewart for checking many of the "problematic" elements and for proofreading this paper.

Chapter 11

The Phytoliths of the BACH Area

Emma Jenkins

Phytoliths are microscopic bodies of opaline silica that are formed in and around plant cells. They are extremely durable and are insoluble in pH values of 8 or less. The silica bodies form precise replicas of the cells in which they are formed and can be found both in isolation as single-cells and conjoined as multi-cells. Single-cells frequently provide information about which parts of the plants are represented and are therefore used as evidence for crop processing and seasonality (Rosen 1999; Fuller and Harvey 2005). As well as being informative about plant parts, multi-cells can sometimes be identified to genus level, providing valuable taxonomic information.

In addition to the single-cell/multi-cell division, there is also a clear morphological distinction between phytoliths formed in monocotyledons (monocots) and those formed in dicotyledons (dicots). Monocotyledons are a group of plants, which includes grasses, whose seed has the embryo of one flowering leaf, whereas dicotyledons (typically consisting of "woody" types such as shrubs and trees) have the embryos of two flowering leaves. Phytoliths can be further classified into a range of morphological categories for both monocots and dicots. Most phytolith research has been focused on monocotyledon phytoliths, and, as a result, it is these forms that are most frequently identified to genus level (see Piperno 2006 for details of phytolith research in archaeology). However, there has been an increase in the study of the less distinctive dicotyledon forms, and much progress has been made into their taxonomic identification (Albert and Weiner 2001; Albert et al. 2003).

Due to their durability and the fact that different parts of the plant can be preserved, phytoliths provide much valuable information that is not available through analysis of the macrobotanical remains in isolation. The aims of this study were to determine which plants were being utilized by the inhabitants of Building 3; to see if there were differences in the types and densities of phytoliths in the various unit categories; and to explore what implications this may have had for the uses of various spaces and features.

Materials and Method

Twenty-three of the total 30 analyzed samples were from the main area of Building 3; three were from Space 87, three from Space 88, and one from Space 89 (Table 11.1; see also Figure 4.1). The sediments used for analysis were taken as phytolith samples by the excavators (see Figure 2.20).

Phytolith extraction was conducted at the Institute of Archaeology, University College London. The samples were initially screened through a 0.5-mm mesh to remove any coarse-sized particles. Then approximately 1 g of each sample was taken using a Sartorius LE2250 analytical balance. Seventeen of the 30 samples were analyzed by Mayu Otsaku, who was an undergraduate student at the Institute of Archaeology, UCL, and 13 by Emma Jenkins, a postdoctoral research fellow also at the Institute of Archaeology, UCL.

The calcium carbonate was removed from the samples by adding a solution of 10 percent hydrochloric acid. They were then washed in distilled water three times, with the suspense being poured off between each wash after centrifugation. The clay was removed from the samples using sodium hexametaphosphate (brand name *Calgon*). Distilled water was added to the beakers up to a height of 8 cm; the samples were left for 1 hour and 15 minutes and the suspense poured off. Distilled water was again added to the sample and the suspense poured off at hourly intervals until it was clear. The samples were then transferred into crucibles using pipettes and left to dry at a temperature of less than 50 °C. After drying, the samples were placed in a muffle furnace for 2 hours at 500 °C to remove any organic matter present in the samples.

Table 11.1. List of units analyzed for phytoliths along with space and unit category

Unit no.	Lab no.	Space	Category
2296	BA-05-05	86, Building 3	Scapularium
3595	BA-05-08	86, Building 3	Make-up/packing
6160	BA-05-09	86, Building 3	Fire installation
6163	BA-05-10	158, Building 3	Floor
6195	BA-05-03	89	Make-up/packing
6208	BA-05-07	86, Building 3	Fire installation
8185	BA-05-02	86, Building 3	Platform
8191	BA-05-01	86, Building 3	Make-up/packing
8375	CH-02-04	87	Floor
8377	CH-02-03	201, Building 3	Make-up/packing
8392	CH-02-05	201, Building 3	Fire installation
8411	CH-02-11	201, Building 3	Floor
8420	BC-05-01	201, Building 3	Bin/basin fill
8440	CH-02-12	201, Building 3	Floor and packing
8450	CH-02-06	201, Building 3	Platform floor & packing
8463	CH-02-02	88	House Floor
8467	CH-02-10	87	Floor and packing
8474	BC-05-02	201, Building 3	Bin/basin
8480	CH-02-07	87	Burial fill
8504	CH-02-13	201, Building 3	Fire installation
8505	BA-05-04	88	Make-up/packing
8527	BA-05-06	88	Bin/basin
8529	CH-02-15	201, Building 3	Platform floor & packing
8530	CH-02-16	201, Building 3	Platform floor & packing
8533	CH-02-09	201, Building 3	Fire installation
8537	CH-02-17	201, Building 3	Platform floor
8540	CH-02-08	201, Building 3	Floor
8550	CH-02-01	201, Building 3	Bin/basin
8554	BC-05-03	201, Building 3	Fire installation
8559	CH-02-18	201, Building 3	House floor

The phytoliths were separated from the remaining material using a heavy density solution (sodium polytungstate), calibrated at 2.3 specific gravity. The samples were centrifuged, and the phytoliths were transferred to clean centrifuge tubes and washed three times in distilled water. They were then placed in small Pyrex beakers and left to dry in the drying cupboard. Once dry, 2 mg of phytoliths per sample were weighed out using the analytical balance and were mounted onto microscope slides using the mounting agent *Entellan*.

The slides analyzed by Otsaku were counted on an Olympus microscope and those by Jenkins on a Zeiss microscope at 400× magnification. The results were calculated using the absolute count method developed by Albert and Weiner (2001). The aim of this method was to show the absolute counts of phytoliths per gram based on the original weight of the total sediment subsampled. Identifications were made using the phytolith reference collection of Arlene Rosen.

PHYTOLITHS BY UNIT CATEGORY

Bins/Basins

Figure 11.1 shows the weight percentage of phytoliths for each of the unit categories, and from this it is clear that bins/basins are not abundant in phytoliths. However, despite these low concentrations, phytoliths can still provide information about the possible uses of bins and basins. This is because, as discussed above, it is possible to determine which parts of the plant are present from the phytoliths. If the bins and basins are being used to store grain, one would expect to find a higher proportion of phytoliths from the flowering part of the plant than from other parts. Figure 11.2 shows the number per gram of long smooth cells, which are formed in the leaves and stems of the plants, compared with long dendritic cells, which are formed in the husks. As is evident from this histogram, smooth and dendritic long cells are found in almost equal proportions in the majority of the units, with the exception of unit 8474 (F.781, Phase B3.1C), which contains only long smooth cells. This suggests that whole plants were being stored rather than just the inflorescences.

Analysis demonstrates that unit 8550 (F.786, Phase B3.1C), which was excavated from the wall of a bin (see Figure 5.23), has the greatest abundance of husk multi-cells, illustrated in Figure 11.3. The remaining three units that are associated with bins/basins have a paucity of husks. In addition to being the most abundant in multi-celled husks, unit 8550 (F.786, Phase B3.1C) is also rich in reed multi-cells, which suggests that F.786 was used to store cereals and may have been lined with reed matting as a form of protection. This correlates with results from previous phytolith analysis from the site. In one bin in Building 5 (F.235), phytoliths formed in sedges (*Scirpus* sp.) were found that seem to have derived from rush matting that would have lined the walls of the bin (cf. F.172 in Building 3; see Figure 5.51). In addition, a high concentration of bilobes (a phytolith formed in panicoid grasses) was found

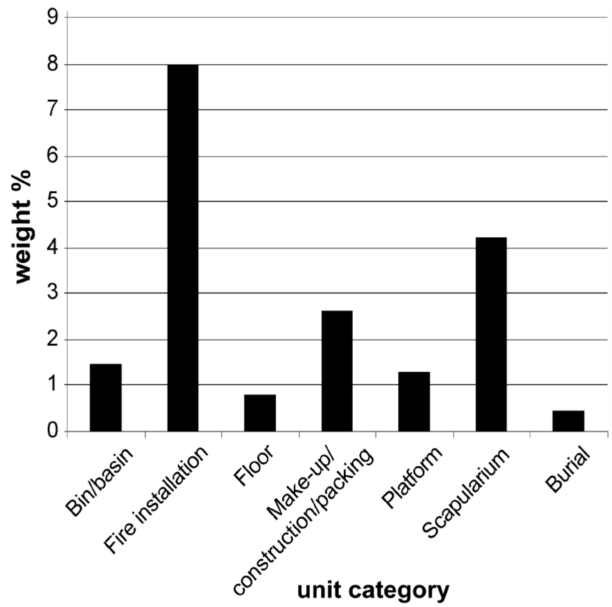


Figure 11.1. Weight percent of phytoliths by unit category.

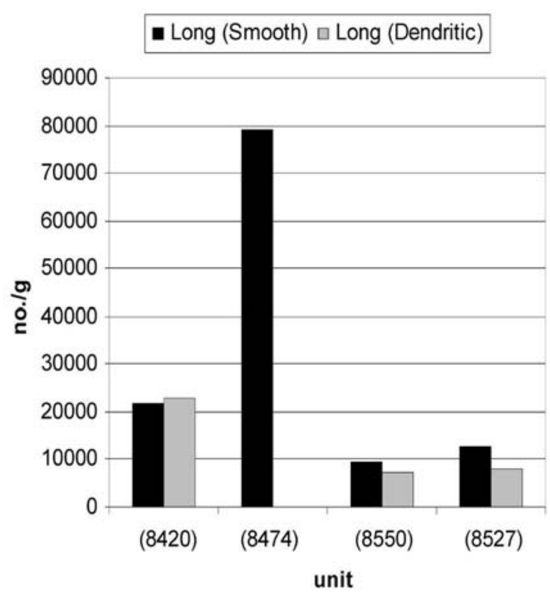


Figure 11.2. Comparison of the number per gram of long smooth and long dendritic phytolith forms by unit category.

in two units in Building 1 (1291, 1359), where high concentrations of wheat husks were also found. This led to the conclusion that the bilobes represented the remains of baskets used to cook or store wheat (Rosen 2005).

Fire Installations

Fire installation units had the densest concentrations of phytoliths of all the unit categories. This is probably as a result of the fuel sources used within them. Spherulites, spheres of radially crystallized calcium carbonate surrounded by an organic coating found in the dung of herbivores, were not found in the samples from fire installations (Canti 1997). This finding is significant because it indicates that in these fire installations dung was not used as a source of fuel. A comparison of the total number of monocot and dicot forms shows that although dicots are not as abundant as monocots, dicots are more abundant in fire installations than in any of the other unit categories, presumably as a result of burning wood as a fuel source. Reeds can also be used as a source of fuel, and it is apparent from Figure 11.4 that fire installations have a higher number per gram of reed phytoliths than the other unit categories. Figure 11.5 shows the number per gram of reed and sedge phytoliths for the fire installation units. Although sedges are not as abundant as reeds, it is interesting to note that they are found in similar proportions in units 6160 (oven F.613, Phase B3.4B), 6208 (hearth F.620, Phase B3.3), and 8533 (oven F.785, Phase B3.1B). Figure 11.6 shows a multi-celled reed stem phytolith.

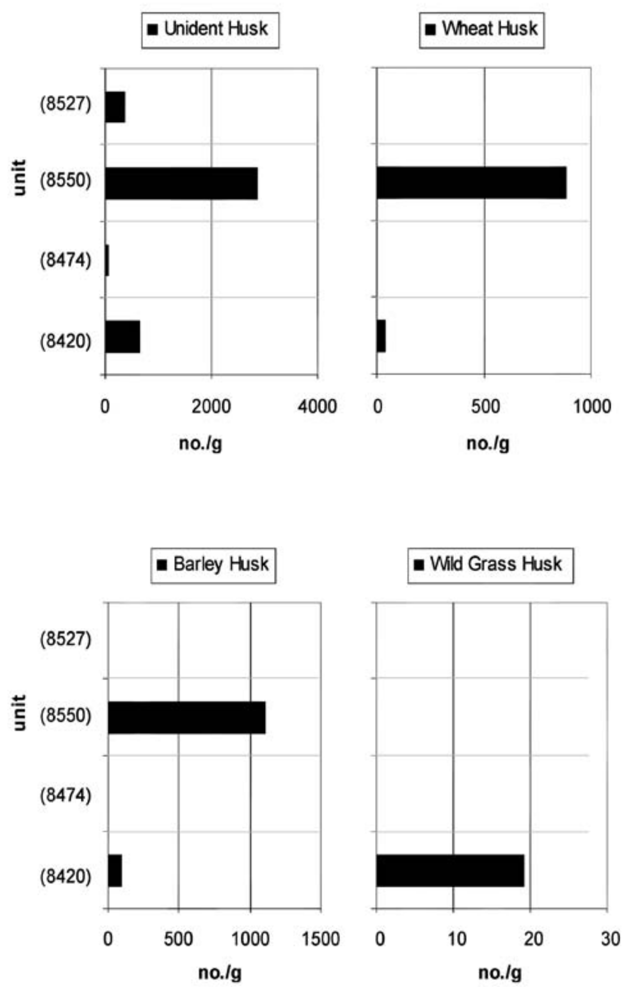


Figure 11.3. Comparison of the number per gram of sediment of different husk types by unit category.

The correlation coefficient of dendritic and long smooth cells in all of the fire installation units is 0.81, demonstrating that, as was evident from the samples analyzed from the bins/basin category, grasses were entering the site as whole plants rather than being processed off-site. Figure 11.7 shows the number per gram of the various different taxa of grass husks found in the fire installation units. It is apparent from this that unit 8533 (oven F.785, Phase B3.1B) is abundant in wheat, barley, and unidentifiable husks, while unit 6208 (hearth F.620, Phase B3.3) is abundant in *Setaria* sp. husks, demonstrating that a variety of taxa were found in the fire installation units.

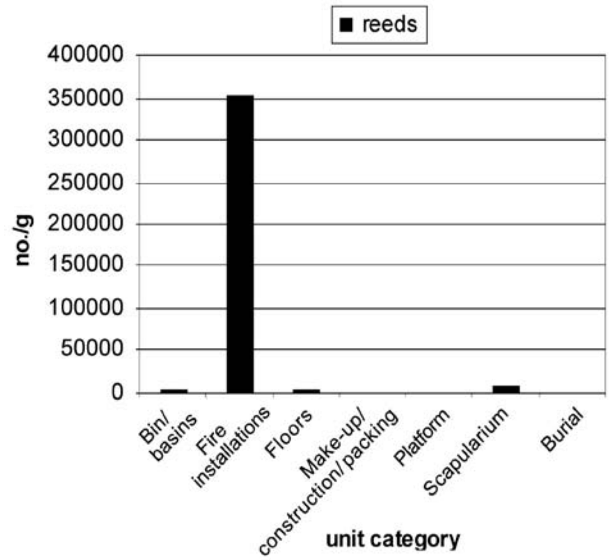


Figure 11.4. Number per gram of reed phytoliths found in the different unit categories.

Floors

In total, seven units were analyzed from the floors, and on average these units have a low weight percentage of phytoliths. This indicates that effort must have been made to keep the floors clean or that activities involving phytolith-producing plants were not common on the floor units analyzed. As with the fire installation units, the ratios of reeds and sedges seem to correlate. This is apparent in Figure 11.8, which illustrates the number of multi-celled reed and sedge phytoliths. Unit 8463 (Space 88) is particularly abundant in both reeds and sedges. This is interesting, as micromorphological analysis suggests that mats may have been placed on floors in Buildings 1 and 5, and it is possible that these may have been made of reeds and sedges (Matthews

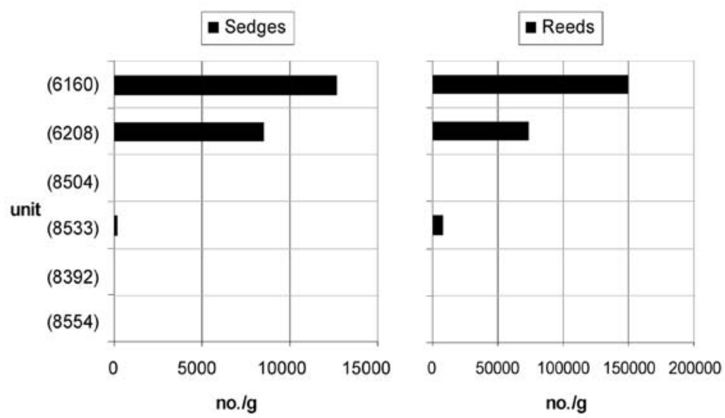


Figure 11.5. Number per gram of reed and sedge phytoliths for the fire installation units.

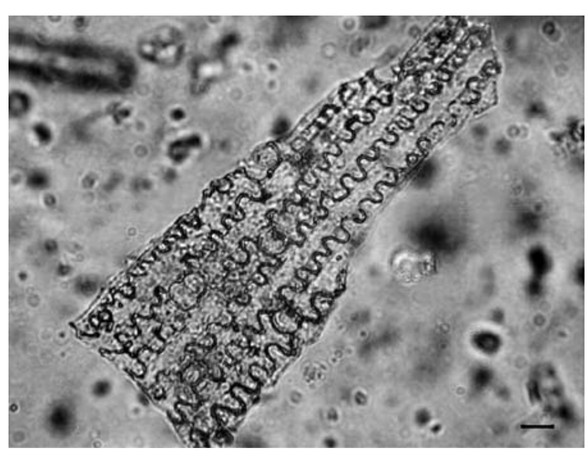


Figure 11.6. Example of a multi-celled reed stem phytolith (scale 10 µm).

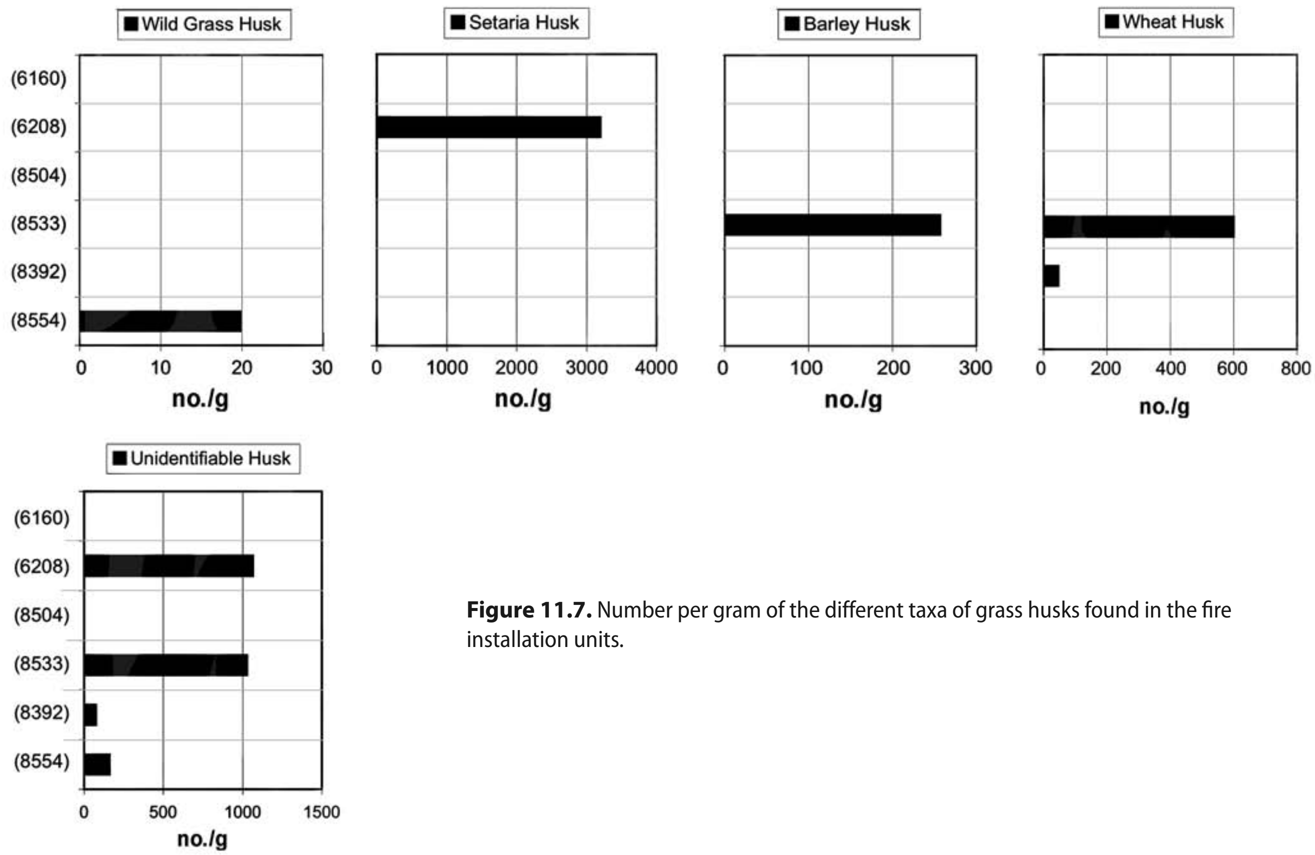


Figure 11.7. Number per gram of the different taxa of grass husks found in the fire installation units.

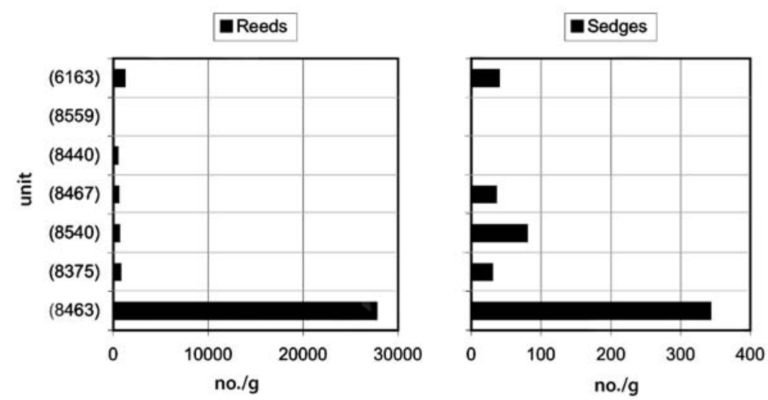


Figure 11.8. Number of multi-celled reed and sedge phytoliths found in the floor units.

2005b). Previous phytolith analysis found a high density of sedge phytoliths on platforms, which were interpreted as being from the remains of rush mats (Rosen 2005). Analysis of the proportion of smooth long cells to dendritic long cells shows that smooth long cells outnumber dendritic long cells in all of the floor units.

One of the plaster floor coats on the east-central platform (F.170) revealed large areas with intense wear in straight lines. These lines may represent the edges of a reed mat that was laid on the floor. Similar wear patterns were observed on the contemporary floor of the Central Floor Zone. It is possible that a continuous reed mat was used to cover both surfaces. According to Rosen (2005), some mats were made from sedges (*Scirpus* sp.) derived from the surrounding marshes. These plants have soft leaves and stems and would have been very suitable for floor covering or as bedding material. Rosen (2005) remarked that the same matting material was used as temper in floor packing.

Make-up/Construction/Packing

An analysis of the make-up/construction/packing units demonstrates that units 3595 (F.173) and 8377 (Space 158) are rich in reed and sedge phytoliths. In addition, unit 8377 was abundant in silica aggregates (often found in the bark of trees), whereas unit 3595 was rich in plateys (a phytolith type formed in dicot leaves) (Albert and Weiner 2001; Albert et al. 2003). In the majority of the units, leaves/stems outnumber husks, again demonstrating that it was not only the floral parts of the grasses that were brought into the site. The exceptions to this are unit 8377 (Space 158), which has 4,990 husks per gram compared with 3,702 leaves/stems, and unit 6195 which has an equal number per gram of leaves/stems to husks.

Scapularium (Cluster 1)

Unit 2296 (Phase B3.5A) was the only unit with phytolith samples analyzed from the scapularium (see Figure 5.88). Notably, dendritic long cells are three times more abundant than long smooth cells, though leaf/stem multi-cells are more abundant than husks, perhaps suggesting that taphonomic processes were breaking down the conjoined husk phytoliths. The only husks that can be identified to taxa are *Setaria* sp., although there are a large number of unidentifiable husks. The phytoliths in this feature were apparent during excavation, and it is possible that grasses were used as a form of binding material to keep the bones together. There is evidence to suggest that this may have been done with other faunal material at Çatalhöyük. One such example is a boar skull that was found during the 2004 season. This had a dense concentration of phytoliths packed into the back of the skull; it has been suggested that these may represent the remains of binding (Twiss 2006).

Burials

Only one unit was analyzed from a burial—unit 8480 (F.1007, Phase S87.2). It is interesting that this unit has no single dendritics (a phytolith formed in husks) but is rich in conjoined dendritics from wheat and barley. The presence of intact conjoined husk phytoliths suggests that the material from which these phytoliths derived was relatively undisturbed over time. There were 1,452 unidentifiable husks per gram as well as 430 wheat husks and 161 barley husks. This is not a dense concentration of husks but may represent some kind of deliberate plant use. Previous research on phytoliths from Çatalhöyük found that the matting used in adult burials was made from sedges, while baskets were made of a variety of material, most frequently a panicoid grass, as indicated by bilobe phytoliths (a form found only in panicoid grasses) (cf. F.760/F.640 in Building 3; see Figures 5.68, 5.69). One basket was found that was made of cereal straw (Rosen 2005). In this instance, it could have been that the whole of the plant was used to weave the basket rather than the floral parts being removed. Phytoliths from both bark and dicot leaves were abundant in this sample, and reeds and sedges were both present. However, the number per gram of sedge phytoliths is not great enough to suggest that these derive from matting.

Phytoliths by Building/Space

The weight percentage of phytoliths has been calculated for Spaces 87, 88, and 89 and for Building 3. The results of the analysis of the weight percentage is shown in Figure 11.9. From this it is apparent that Space 89 had the greatest density of phytoliths, followed by the units from Building 3. A comparison of the average number per gram of husks per unit for each of the areas analyzed shows that Building 3 had the greatest number per gram of husks, while Space 88 had a low density of husk phytoliths (Figure 11.10).

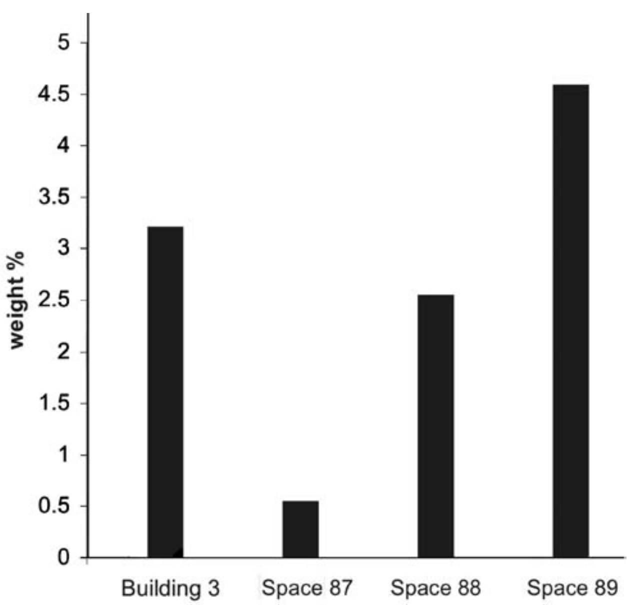


Figure 11.9. Comparison of the weight percent of phytoliths by area.

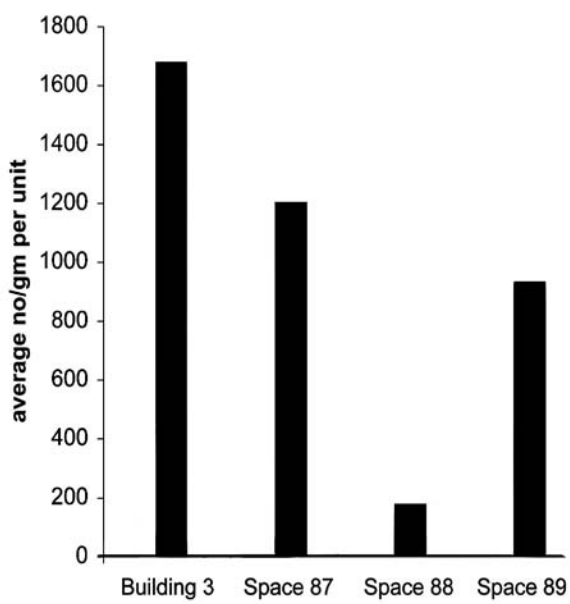


Figure 11.10. Comparison of the number per gram of multi-celled husk phytoliths by area.

This suggests that these small side rooms were not so frequently used for food processing, a suggestion supported by other materials in Space 88 (Chapter 5).

Environmental Evidence from Phytoliths

While any paleoenvironmental evidence produced by phytoliths is inevitably skewed by human plant selection it does provide some indication of what plants were available in the environs of the site. Figure 11.11 shows a comparison of the number per gram of bilobes, rondels, and saddles in the BACH samples, from which it is apparent that rondels are far more abundant than bilobes and saddles. Rondels are formed in pooid grasses, which are C3 grasses found in cool or temperate, moist environments and at high elevations. Bilobes are formed in panicoid grasses that are abundant in warm seasons, and thrive in high available soil moisture, while saddles are formed in chloridoid grasses that generally favor warm, dry conditions, and also, in contrast, in the common reed (*Phragmites* sp.) (Barboni et al. 1999; Ollendorf 1987). This result broadly suggests that the environment was probably temperate with wetland areas. This is supported by the abundance of reeds and sedges, which are also found in moist areas.

Conclusion

The results of the phytolith analysis demonstrate that phytoliths can provide information about the possible uses of certain features and how they may have been constructed. Clear differences are apparent in the density of phytoliths in the different areas excavated by the BACH team. Building 3 seems to have been an area in which plants were more intensively used, while considerably fewer phytoliths were found in the units excavated from Spaces 87 and 88, suggesting that these were kept cleaner than the main building. The environmental evidence provided by the phytoliths accords with other environmental evidence and suggests that the environment around the site would have been moister than at present (Rosen and Roberts 2005).

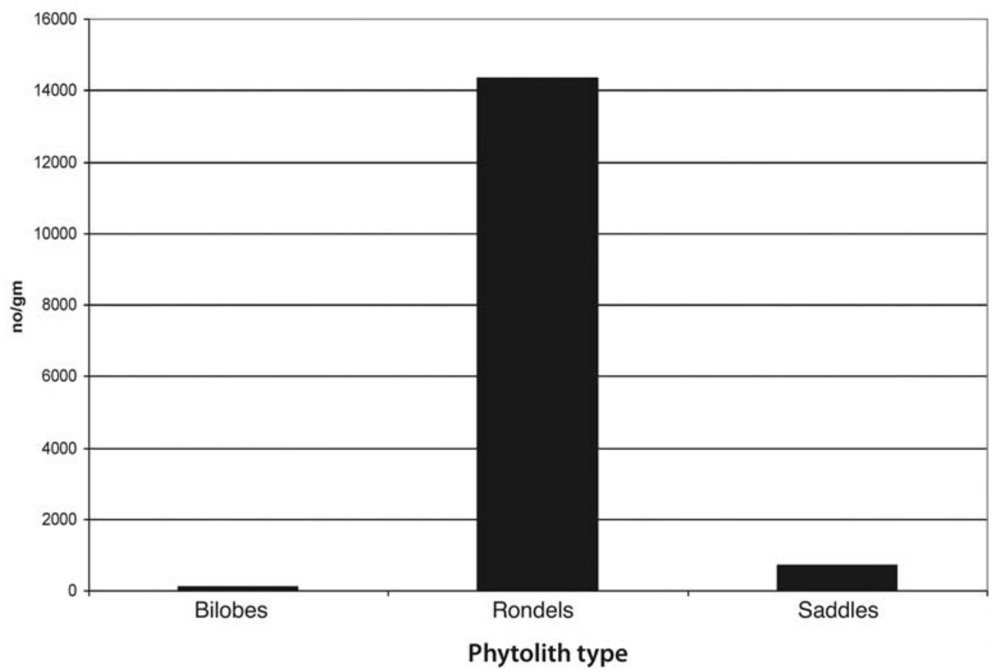


Figure 11.11. Comparison of the number per gram per unit of bilobes, rondels, and saddles in the BACH samples.

Chapter 12

The Life of Building 3 through Plant Use: The Macrobotanical Evidence of Neolithic Dwelling from the BACH Excavations, 1997–2003

Rachel M. Cane, Rob Q. Cuthrell, Matthew P. Sayre,
K. Elizabeth Soluri, and Christine A. Hastorf

Purpose and Goals

This chapter is a detailed report on the macro-botanical analysis that is part of the research of Building 3 at Çatalhöyük. The botanical remains we present were collected between 1997 and 2003 during the excavations directed by Ruth Tringham and Mirjana Stevanović. The plant assemblage is dominated by wood, wheat, barley, pulses, along with a range of wild plants, including edible hackberry and *Bolboschoenus maritimus,* a local marsh plant. The samples were collected using the same methodology as the larger Çatalhöyük research project, reported on in Hastorf (2005). These methods included extensive and, in some cases, intensive sampling of all excavated deposits, followed by flotation and residue sorting, in the site laboratory and also in the archaeobotany laboratory of the University of California, Berkeley. The overall site sample set is very large and continues to grow every year (more than 7,000 samples), collected to provide a systematic set of plant remains, spanning every building space and context. Building 3 had 1,025 flotation samples collected and floated, with 201 partially analyzed for macro-botanical remains. For this report, we focus on 134 of these samples. Because the Berkeley Archaeology at Çatalhöyük (BACH) project was part of the larger Çatalhöyük Research Project directed by Ian Hodder, we expressly wanted to present synthesized data that would be comparable to the rest of the project (Hodder 2005a, 2005b, 2005c, 2007). Because of this desire for coordination and comparison, we have constructed many of our questions and data analyses in parallel with the 2005 report of the 1995–1999 excavations, which outlined the analyzed macrobotanical results from the contemporaneous excavations on the East Mound.

As this volume presents, Building 3 is in Mellaart's Levels VIb–VII of his internal East Mound sequence, making it contemporary with the final occupation of Building 5 and the early days of Building 1, reported on in the recent Çatalhöyük volumes (Hodder 2005c). This was a moment when ceramics were becoming more common and cooking technologies were changing.

Being a companion piece to Chapter 8 in the fourth Çatalhöyük volume, *Inhabiting Çatalhöyük*, this chapter does not discuss many of the technical details nor explain terminology, since they have already been reported. Furthermore, since this is also part of the final report on Building 3, we do not detail the architectural contexts of the BACH Area that are published earlier in this volume (Chapter 5). Throughout this chapter, we present the botanical data according to the building-history phases of Building 3 that have been defined in Chapter 5.

As in Fairbairn, Near, and Martinoli's analysis (2005), we concentrate here on detailing the archaeobotanical results of the Phase 2 analyses (plant category level of identification). The categories that we deal with are wood, cereal grain, cereal chaff, pulse, seeds, nut, hackberry (*Celtis* sp.), underground storage tissue, herbaceous material, dung, unidentified plant material, and fruit. These categories are used for every pie chart figure in this chapter and are identified in Figure 12.1. Unlike in Fairbairn's report, there is no comparative Phase 3 discussion at the species level of analysis here. This is not a problem, however, as Fairbairn and colleagues (2005) note that most of the plant taxa reflect background plant noise, most likely from dung entering the houses as fuel, with only a few rare primary deposit locales being usable for detailed interpretation (Miller and Smart 1984). While we present all of our analyzed data also in an appendix (Appendix 12.1 [available in the online edition only]), in order to track the depositional history of Building 3 we highlight here appropriate selected samples

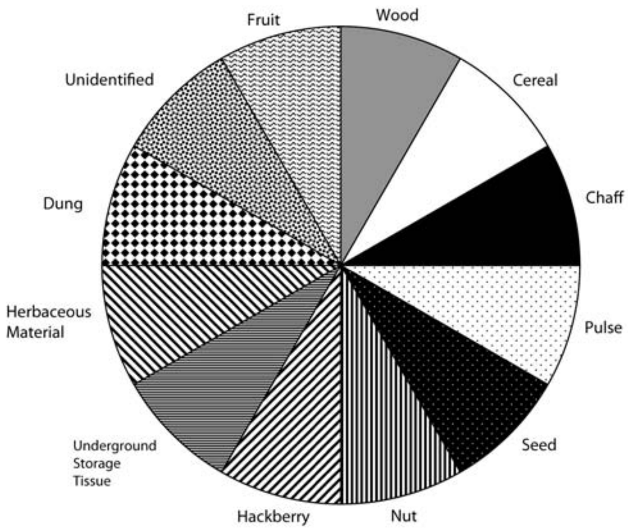


Figure 12.1. Key to pie charts plotted on Building 3 floor plans by phase.

and contexts to elucidate the building's history of activities reflected by the plant deposits. There is a section in Chapter 8 of *Inhabiting Çatalhöyük: Reports from the 1995–99 Seasons* (*Catalhöyük Vol. 4*) that outlines this history of botanical work, so we do not repeat it but refer the reader to that earlier work (Fairbairn, Near, and Martinoli 2005:138–140). What is important to note from their historical discussion and from their results is that the taxa and the quantities we have uncovered in Building 3 are very similar to what has been found elsewhere on the later phases of the East Mound. That is, the taxa are composed primarily of tertiary plant deposits, uninterpretable except in the very largest view. These taxa, listed by Hans Helbaek (1964:Table 8.1) and by the more recent Çatalhöyük research (Fairbairn, Near, and Martinoli 2005:Table 8.2), are generally unexceptional. Furthermore, since that same chapter discusses each major food taxon in turn, we do not revisit this plant detail.

Building 3 probably has the same potential origins for plant taxa that existed for the other house buildings at the site: farmed fields, valley grasslands, gathered marshes, and hunted mountains. The common taxa are listed by Fairbairn, Near, and Martinoli (2005:Table 8.3). Their associated environmental zones include the alluvial zone, sand ridges, steppe, damp steppe, woodland, park woodland, eusegetal, ruderal, and various mountain zones (Fairbairn, Near, and Martinoli (2005:146). What we are pursuing in this chapter is how the plant patterning can unveil the use-life of both the house's internal rooms and also, unique to Building 3, the use of the roof.

Research Questions

This chapter follows some of the same themes covered by Fairbairn, Near, and Martinoli (2005), to make our data presentation as comparable as possible. That chapter outlines 14 general questions that all archaeobotanists wanted addressed with the Çatalhöyük macrobotanical plants. These research questions are:

1. How did the plant remains come to be preserved, and how does that affect interpretation of plant-based activities?
2. What range of domesticated crops was used; how and where were they used?
3. What range of wild plants was used; how and where were they used?
4. Is there any evidence for local development of crops?
5. With what techniques, and where and when, were the crops grown in the Konya basin?
6. How does the burned dung inform us about practices of animal husbandry, especially fodder provision?
7. What evidence is there for plant storage?
8. What does the plant record tell us about the use of the Konya basin as a source of plant products? Is there evidence for long-distance trade and exchange in plant products?
9. What was the relative importance of domesticated and nondomesticated plant resources as sources of food?
10. Was the site an agricultural producer or consumer settlement?
11. Is there any evidence for specific symbolic associations with plant use?
12. What was the seasonal round of plant-based activities?
13. Is there material evidence of changes in plant use over time?
14. How does the macrobotanical record inform us of changes in the broader environment over the period of occupation at Çatalhöyük? Is there evidence for human impact on the surrounding landscape or regional climatic and environmental change in the material?

The Hodder project has a much larger data set to work with, with multiple phases and buildings across the East Mound and material to address each of these questions. Because our data are only from a single building with one life history and no rebuilding episodes, we will not visit many common issues. We are not addressing, for example, the general use of the local resources across the Konya Plain, nor long-term change over time. We know that throughout, people at the settlement did produce crops as well as gather wild plants.

This chapter addresses how the plants can inform us about the contextual life history of the building. We focus on the range of crops and wild plants used in the building, the impact of dung as fuel on the assemblage, and any evidence for the symbolic use of plants (Questions 1, 9, and 11, above). Our recent macrobotanical work at Çatalhöyük owes a great debt to previous work completed at the site by Hans Helbaek (1964), as well as by the other scholars working at the site this past decade and in the surrounding region, who have laid the groundwork for our knowledge about Neolithic plant use in central Anatolia (Colledge 2001; Ertuğ-Yaraş 1997, 2000; Jones 1984; van Zeist and de Roller 1995; Gordon Hillman, personal communication, 1984; Mark Nesbitt, personal communication).

Sample Selection and Context Categorization

From the beginning of the Çatalhöyük Research Project, palaeoethnobotany has aided in the interpretation of the site, in part by developing a methodology for collecting and processing the site's plant materials (Matthews et al. 2000). The palaeoethnobotanical team oversaw blanket sampling. Each of these samples was cleaned in water in one of two mechanized flotation machines (see Figure 2.4) (Hastorf and Near 1997; Watson 1979). Because the macrobotanical flotation samples were analyzed while the excavations were ongoing, there was an analytical emphasis on the upper, post-occupation layers sampled in Building 3 (Killackey 2001). While all flotation samples were processed in the field, only some were sorted. The specific samples that have received analytical attention were selected based on contextual evidence, excavator preferences, and research questions. We removed the samples that were not part of the occupation layers, although Phase B3.5A, the final closure midden deposit, was included as a comparison with the occupational phases of the building.

The selection process began with the excavation directors making a priority list of the more crucial proveniences within the buildings (see Appendix 2.1 [on-line]). Killackey pared this list down to 134 samples in order to complete the laboratory analysis in the amount of time allotted and to balance the coverage by context and building-history phase. Coverage of the contexts was maintained in this subsampling by an explicit focus on primary and secondary deposits. Most construction contexts (such as walls and plaster) were removed from the data set, as were some of the burial fills, since the excavators informed us that the samples' origin was from a midden below Building 3. Systematic coverage of the features was stressed, including the roof collapse and niches, all ovens, hearths, bins, and floors.

The Çatalhöyük project follows the classification system laid out by Davis in *The Flora of Turkey and the East Aegean Islands* (1965–1988) and by van Zeist (1984, 1985). As in the other parts of the archaeobotanical project at the site, Killackey checked seed taxa against the seed collection of the University College London. Since we are not presenting the specific taxon work in this chapter, we refer the reader again to Fairbairn, Near, and Martinoli (2005) to learn about specific cereal species presence at Çatalhöyük.

To make our data comparable, we plotted pie charts of the same taxon categories by building phase. This is seen in plots of phases of Building 3 in its nine phases, as outlined by the excavators (Chapter 4). The rest of our data analysis is multivariate, completed in JMP v5.1 (SAS Institute 1989–2005). The analyses we found most helpful in our search for patterning in this complexly deposited population include correspondence analysis, principal components analysis, discriminant analysis, outlier analysis, and ubiquity. These allowed us to make our results comparable to other Neolithic studies, for instance, Bogard (2004) and Colledge (1998). In many cases, data used for multivariate analysis and linear regression were transformed using exponential or logarithmic operations, correcting for non-normal distributions.

The volumes of the 134 samples range from 0.063 to 60 liters (median 9 liters, with an interquartile of 3.0 to 18.5 liters). Based on Killackey's (2002) work on adequate botanical sample sizes to be collected at the site (30 liters), the BACH Area deposits often were inadequate, not producing sufficient volume to be analytically meaningful. The small volumes resulted from a lack of matrix available in the contexts due to detailed excavation categories. Because of our count requirements, we excluded samples less than one liter in volume from the multivariate analysis. However, these small samples are included in the discussions of general taxon presence and in the pie chart presentations.

The data reflect a complex depositional history, allowing us to identify only general trends in these plots. Table 8.6 in Fairbairn, Near, and Martinoli (2005:150) presents a thorough list of models for plant entry into the settlement. Out of these models, Fairbairn, Near, and Martinoli (2005) derived 11 contextualized activities. These middle-range models list the primary and secondary entry paths and assign codes to each one. We also used these categories but found that, due to the idiosyncratic nature of Building 3, some of the contexts were not relevant. Therefore, here we present the contexts that are appropriate to the life history of Building 3 (Table 12.1). We had to add some new cultural contexts for the unique evidence that Building 3 offers. Thus, in our study we use Fairbairn et al.'s contexts 1, 2, 2e, 3, 4, 4b, 6, 8, 10, to which we have added contexts 11b, scapularium (Cluster 1, special deposit), 12 (basin), and 13 (roof fall).

We have also compressed several of the Fairbairn, Near, and Martinoli (2005) contexts to help streamline our analysis.

1. Their Group 1 is construction. We use Context 1 only for the wall contexts that are in our sample.

2. Context 2 is floors (occupation surface). Fairbairn, Near, and Martinoli (2005) broke this context into different types of floors, with a separate number for packing (5). We compressed all floors and packing (2a–d and 5) into Context 2. We had to create a Context 2e for our entry floor sample—the one by the entrance ladder—as that is unique, and Tringham noted its intriguing potential (Tringham, personal communication, January 2007; and see Chapter 4).
3. Context 3 from Fairbairn, Near, and Martinoli (2005) is rake-out, as well as their Context 8 that includes hearths and ovens combined. We redefined Context 3 to include in situ burning contexts, hearths, and fire installations but not ovens or oven rake-outs. Our Context 8 then became ovens and rake-outs (these often were merged by the excavators into one context in Building 3).
4. Context 4, fill, was divided by Fairbairn, Near, and Martinoli (2005) into an array of different types of fill, defined as Contexts 4a–h. We retained Context 4b for burial fill, but combined all other fill types into Context 4. We did this because we did not have many fill samples within our subsample and certainly not the distinctions that the larger sample had.
5. Context 6 is the midden context. Again, Fairbairn, Near, and Martinoli (2005) broke that category into external and internal midden, but we merged all midden into one category.
6. Context 10 is storage, in which we include both bins and caches.
7. Context 11 is labeled "clusters" by Fairbairn, Near, and Martinoli (2005). The Building 3 samples did not have clusters, but we created Context 11b as a special cluster for the very specific Phase B3.5A scapularium, defined as an end-of-building closure deposit with a density of cattle scapulae.
8. Context 12 is a new category, defined by us for a basin.
9. Context 13 is also unique to Building 3, comprising the remains of a collapsed roof.

Taphonomic Situation at Çatalhöyük

Like the rest of the deposits of the East Mound, the plants of Building 3 have been preserved either by charring or by a low level of siliceous preservation. Each building was rebuilt upon previous architecture, and so there was much reuse of the clay matrix as well as of the organic fractions that were within the earlier bricks and infill, in addition to the new clay brought in to construct the building. Through this constant reuse and infilling, much curation, as well as fragmentation of plant remains, took place. The plants were broken into small fragments and sometimes drifted far from their original context, creating a general background noise of local vegetation, fields, and wood use. This is why we have been conservative in our interpretation of the plants from specific contexts and have not taken their presence at face value.

Table 12.1. Building 3 context codes*

Code	Description	Contexts
1	Wall	Mud brick, wall, wall plasters, blocks of wall plaster
2	Occupation surface	Floors, platforms, "central space," packing
2e	Entry	Entry platform, door
3	In situ burning	Hearth, fire installation
4	Fill	Fill, floor debris
4b	Burial	Burial, burial fill
6	Midden	Midden
8	Oven	Oven, ash recipient, mislabeled fire installations, rake-outs
10	Storage	Bin, cache
11b	Scapularium	Scapularium cluster
12	Basin	Basin
13	Roof fall	Roof tumble, roof collapse

* Based on Fairbairn, Near, and Martinoli 2005:Table 8.5, p. 149.

We begin our data presentation by describing the plant remains in the life-history phases of Building 3 through time. This section includes pie charts of plant presence by subphases. We look at the major architectural features, focusing on the occupation surfaces, ovens, middens, burials, bins, and the roof, to see how plant use is reflected there. We then look at the use of specific types of plants within the building to see what they can tell us about the people who lived there. What can we learn about the food taxa, what evidence for fuel is there, and what is the relationship between wild and domestic plants? Finally, we explore what the plants can tell us about the deposition history of the building: Are any of the contexts good enough to unveil anything about deposition categories, for example, fills vs. activity areas vs. burning locales?

Building 3 Phases: Plant Use through Time

While similar to many other excavated East Mound structures at Çatalhöyük, Building 3 does have a unique depositional history, including the preservation of its roof, the surface of which was clearly intensively used during the life of the house.

What is the evidence for change in the use of the structure over the eight phases of occupation and the two post-occupational phases? Our 134 Building 3 samples come from each of the phases. That said, owing to the circuitous history of choosing which samples to analyze as the analysis of the deposits developed, the phases and contexts of our flotation samples cannot always be systematically compared. This situation makes it hard to discuss any significant shifts through the lifetime of the house. Further, Building 3 was occupied for only perhaps a maximum of 60 years, or three generations, so any shifts will be subtle.

We begin with the first occupation phase, B3.1, proceed through the structure's rebuilding phases, and end with the post-occupation roof collapse in Phase B3.5A (see Figure 4.3 and details in Chapters 4, 5).

Phase B3.1

Phase B3.1 of Building 3 has been divided into four subphases (Phases B3.1A–D) based on the determinations of the excavators, who recorded major changes in the use and organization of the structure's spaces (Chapter 4). Phase B3.1A is the earliest subphase, Phase B3.1D the latest.

In the first phases, B3.1A and B3.1B (Figure 12.2a, b), while fire installations (such as F.778 on the south side of the building) and storage features (such as F.786) are limited to the west and south sides of the building, they are not densely concentrated in these areas, nor are they strongly architecturally delineated from other activity areas in the building at this time.

In contrast, the later remodeling seen in Phases B3.1C and B3.1D reflects a more organized, segmented use of the building, involving a "kitchen-like" area in the south and west areas of the structure (Figure 12.2c, d). This kitchen area is distinguished from other areas in the building by the high density of fire installations (such as hearths and ovens), storage features (such as bins), and basins, suggesting that food preparation was a discrete activity in the house at this time (see Figure 26.5). All of these features are associated with various stages of food processing and storage and thus act as indicators for a distinct "kitchen-like" area in the building. During Phase B3.1D, some of the storage features (F.786, F.770) are actually architecturally separated from the nearby platform (F.162) by a wall (F.772), lending even greater support to the distinct use of the west side of the building for food-related activities.

Some of these cooking features continue through several remodeling phases, suggesting only slight remodeling of such intensively used spaces within the generations. Phase B3.1A shares features in common with Phase B3.1B, such as the hearth (F.778) in the south area of the building. Phases B3.1C and B3.1D also share several features in common, such as the oven feature (F.785) and its associated ash collector (F.789) in the southwest corner of the building. In addition to this, Phase B3.1B also shares several features in common with Phases B3.1C and B3.1D, such as the oven (F.785) itself and the storage bin (F.786) in the northwest corner of the building. While these features are found in multiple subphases, indicating a strong continuity through the B3.1 subphases, they also often vary in size or shape in the different subphases, suggesting possible differences in use or importance at different times and possibly different renovators. Due to the limited number of analyzed flotation samples available from the Phase B3.1 subphases at the time of this work (N = 27 for all of Phase B3.1) and the fact that several samples were from features that spanned multiple subphases and therefore could not be accurately pinpointed to one particular subphase, the samples from each subphase were combined into a total Phase B3.1 data set for statistical analyses. Thus, with the data available for this study, it was not possible to closely examine the possible differences between feature use throughout the Phase B3.1 subphases. Further research into flotation samples from these features might yield greater information regarding any changes through the time span of this phase.[1]

For this study, after combining the flotation samples for all four subphases into one Phase B3.1data set, and

[1] Four flotation samples were excluded from statistical analysis (Flotation 4725, unit 8298; Flotation 5262, unit 8572; Flotation 5140, unit 8501; and Flotation 5205, unit 8554). Each of these samples had total sediment volumes of less than 1 liter, and when the counts and weights for floated material were standardized to 1 liter, the counts and weights for these samples were too greatly skewed.

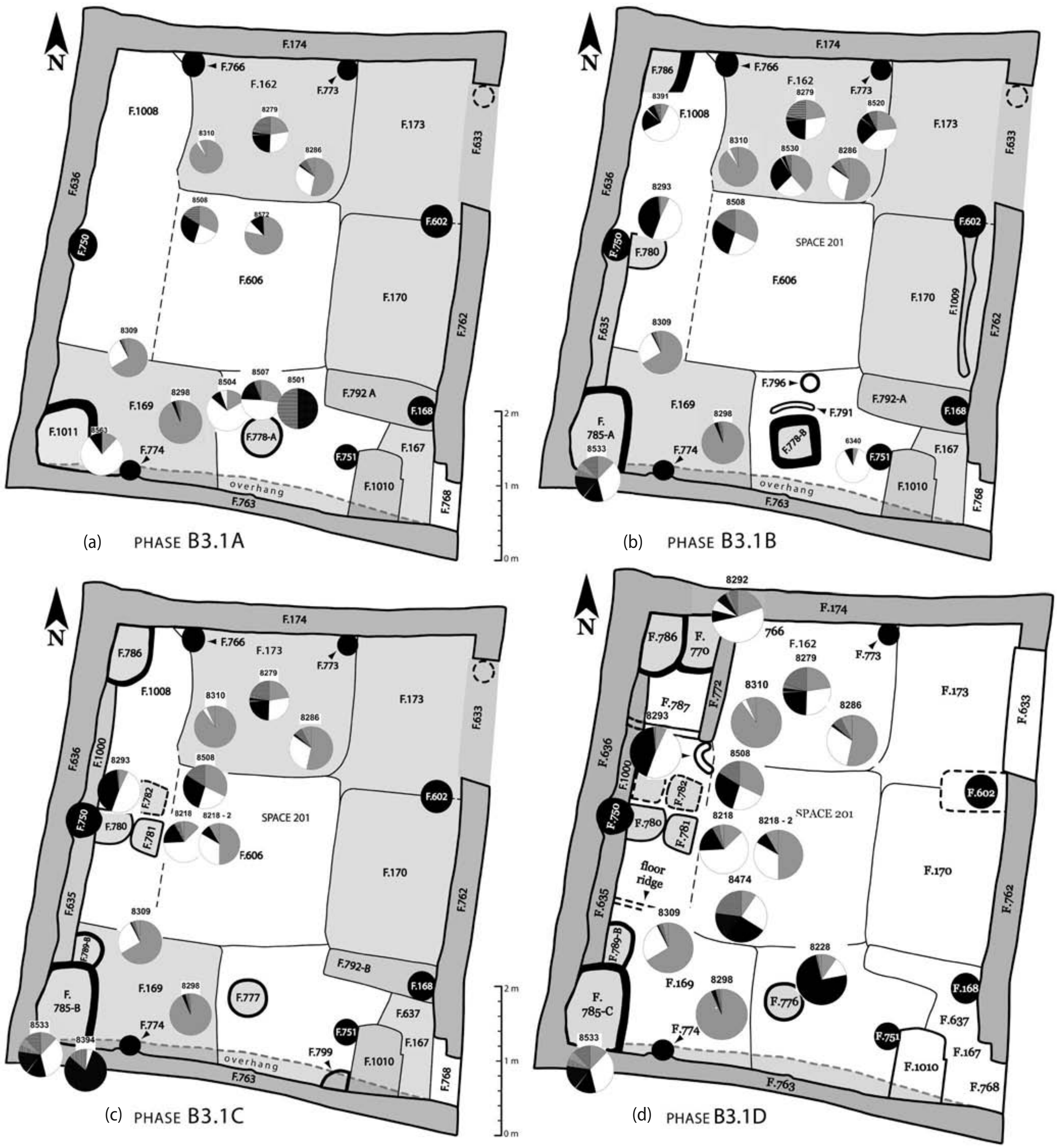


Figure 12.2. Plan of Building 3, Phase B3.1, with pie charts of plant presence: (a) Phase B3.1A; (b) Phase B3.1B; (c) Phase B3.1C; (d) Phase B3.1D.

excluding the samples with volumes under 1 liter, we had eight flotation samples from floors (including one sample related to the entrance), four from in situ fire installations (such as hearths), four from ovens, four from basins, and three from storage features (such as bins). The 22 flotation samples from Phase B3.1 that were included in statistical analysis are listed in Appendix 12.2 (on-line).

It is important to note that the number of flotation samples available from different context types varied considerably in Phase B3.1, as did the actual flotation volumes. For example, the northwest platform (F.162) provided far more flotation samples for this study than all the other occupation surface areas combined. This may be due in part to excavator interest in this platform as a unique feature in the building and their asking the field archaeobotanists to study this feature more intensively.

The flotation samples from Phase B3.1 reflect high quantities of cereal grains relative to other plant types. Chaff remains are the next most common plant type represented in the samples from this phase. While cereal grains (solid white in pie charts) do tend to outnumber chaff remains (solid black) in the samples, there are five samples with chaff remains outnumbering cereal grains (Flotation 5163, unit 8530; Flotation 5153, unit 8508; Flotation 4677, unit 8279; Flotation 4631, unit 8228; and Flotation 5116, unit 8474). These five samples represent various contexts. The first two are floor samples, the next two are hearth samples, and the final one is a sample from a basin. The fact that together these samples share a tendency toward higher quantities of chaff over cereal but are derived from different contexts suggests that the tendency to higher chaff numbers is not necessarily related to particular activities. Therefore, while cereal and chaff together represent the two most common plant taxa in Phase B3.1, cereal is generally more common than chaff, reflecting background noise of the deposits. Finally, we must note that, as with the other phases within the occupation of Building 3, these floor samples from Phase B3.1 do not seem to reflect discrete floor activities.

Phase B3.2

Several structural modifications occurred between the end of Phase B3.1 and the beginning of Phase B3.2 along the west side of the building, as shown in Figure 12.3. These reflect a sense of renovation, swapping the places of two common food activities: storing and cooking. A new cook has arrived perhaps and food is processed differently? The two storage bins (F.770, F.786) in the northwest corner of the building are gone in Phase B3.2, as are the three bins on the central western edge of the building near the circular wall (F.780, F.781, F.782). A large semicircular oven has been built in the place of the latter (F.646), while the Phase B3.1 oven and its ash collector (F.785, F.789) in the southwestern corner are replaced by a bin (F.769) and two basins (F.783 and F.771).

Eighteen flotation samples were analyzed from Phase B3.2. The majority came from the west side of the building, where most of the building changes took place. Two samples (Flotation 4361, unit 6663; Flotation 4632, unit 8231) were collected from the large semicircular oven (F.646),

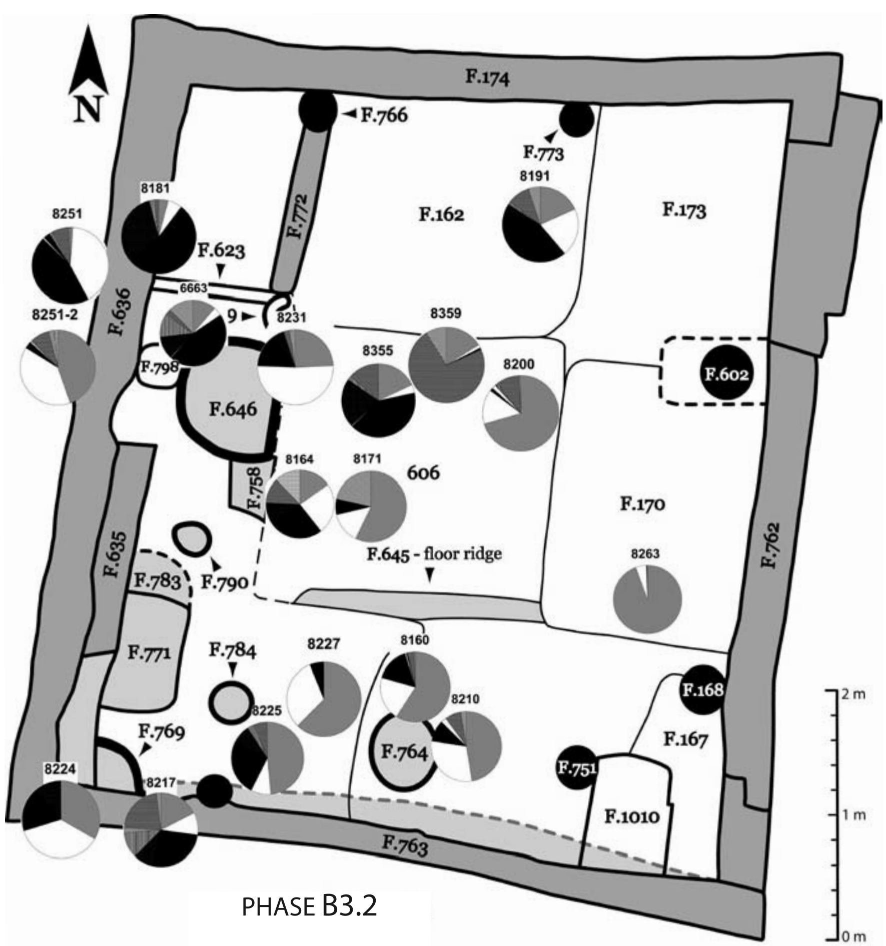


Figure 12.3. Plan of Building 3, Phase B3.2, with pie charts of plant presence.

and two samples (Flotation 4539, unit 8164; Flotation 4540, unit 8171) were taken from a clay ball cluster (F.758) next to the oven. Two samples (Flotation 4511, unit 8160; Flotation 4597, unit 8210) were also collected from the fire installation at the south end of the building (F.764.) The remaining 12 flotation samples were taken from various occupation surfaces within the building.

The 18 samples yielded a variety of different botanical materials in different proportions. Overall, wood, chaff, and cereal remains made up the majority of most samples. Figure 12.4 shows the counts of possible food remains present in each sample, with the samples grouped by context. From the occupation surfaces, Flotation 4827, unit 8359 had a very high count of underground storage tissue, and Flotation 4647, unit 8251 yielded a large amount of cereal grains. All four flotation samples from the two ovens had a relatively large amount of cereal, with Flotation 4361, unit 6663, from oven F.646 displaying the most even distribution of food materials. Flotation 4539, unit 8164, from the clay ball cache (F.758), had a relatively high amount of fruit, in addition to cereal and underground storage tissue.

Figure 12.5 shows the counts of materials considered to be non-food remains present in each sample, grouped by context. Wood and chaff are present in all of the samples. Flotation 4361, unit 6663, from oven F.646, which yielded the most even distribution of food materials, also shows the highest density and variety of non-food materials, with roughly even counts of wood, seeds, and herbaceous material and about three times as much chaff as most other samples. Together with counts of food-related materials, these data suggest that we are not seeing any discrete activity patterning in the botanical remains for Phase B3.2.

Phase B3.3

Thirteen priority macrobotanical samples were sorted from Phase B3.3 contexts (Figure 12.6). Of these, 12 were large enough to use in statistical analysis. All Phase B3.3 samples were taken from the central floor area (Space 201), the eastern platform (F.170), or the southwestern "cooking area." In general, plant taxon densities in samples from Phase B3.3 are similar to the "background noise" found in most other Building 3 use-life context samples.

The two samples taken from burials in this phase (Flotation 4615, unit 8183; Flotation 4548, unit 8183) are much different from other Phase B3.3 samples, with higher densities of wood (by an order of magnitude) and a higher cereal-to-chaff ratio. Macrobotanical samples from these Phase B3.3 burials are thus more similar to burial samples in Phase B3.4 than they are to other Phase B3.3 samples, suggesting a common pattern in all Building 3 burial fill of burned wood. One sample taken from a bin (Flotation 4748, unit 8305) is also distinct in its relatively higher density of cereal, chaff, and seeds. The botanical densities therefore support this bin as having been used for food storage. Unfortunately, based on the macrobotanical remains, ovens in Phase B3.3 are not clearly differentiated from in situ burning events.

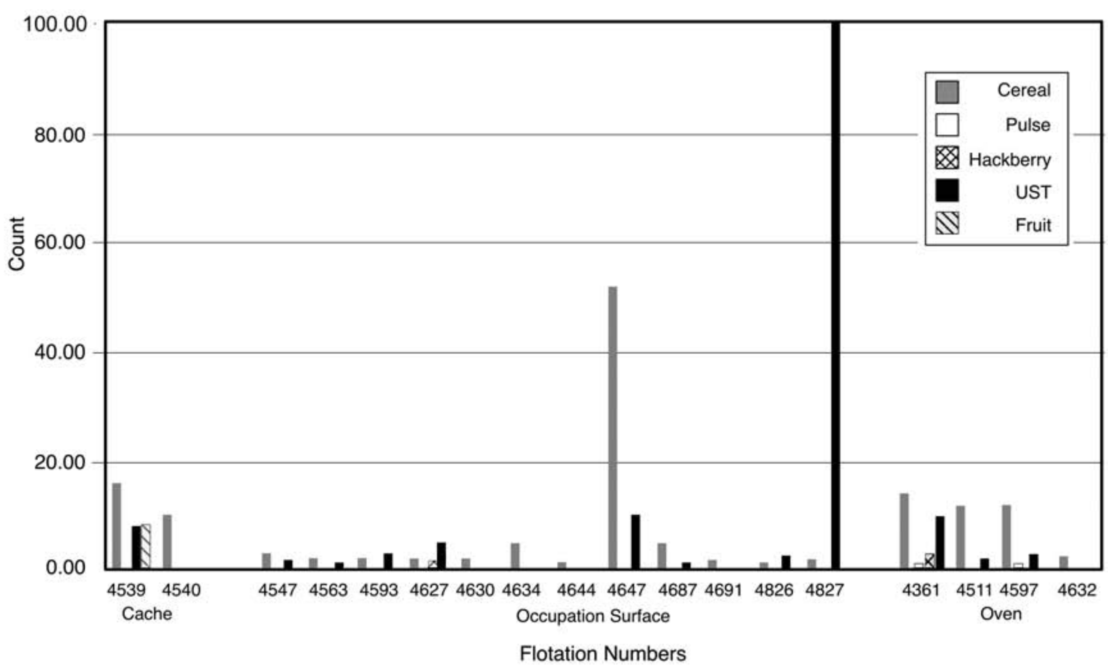


Figure 12.4. Counts of food-related botanical materials from Building 3, Phase B3.2. (UST = underground storage tissue.)

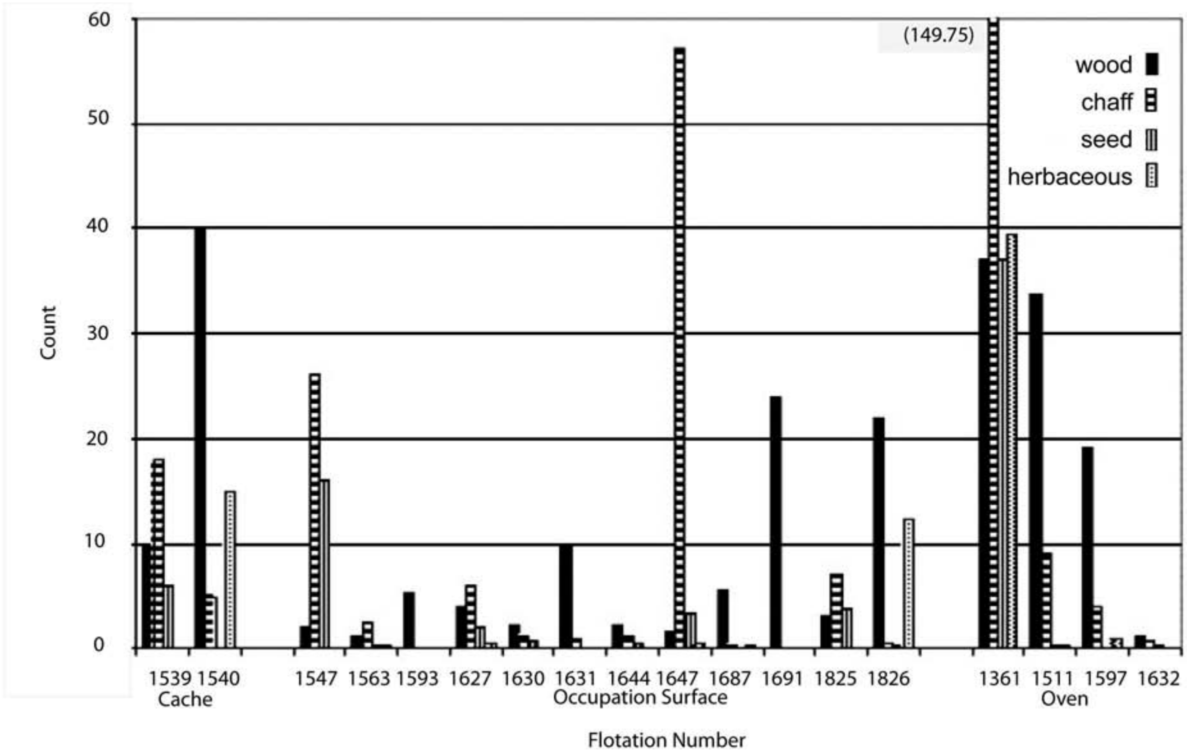


Figure 12.5. Counts of non-food-related botanical materials from Building 3, Phase B3.2.

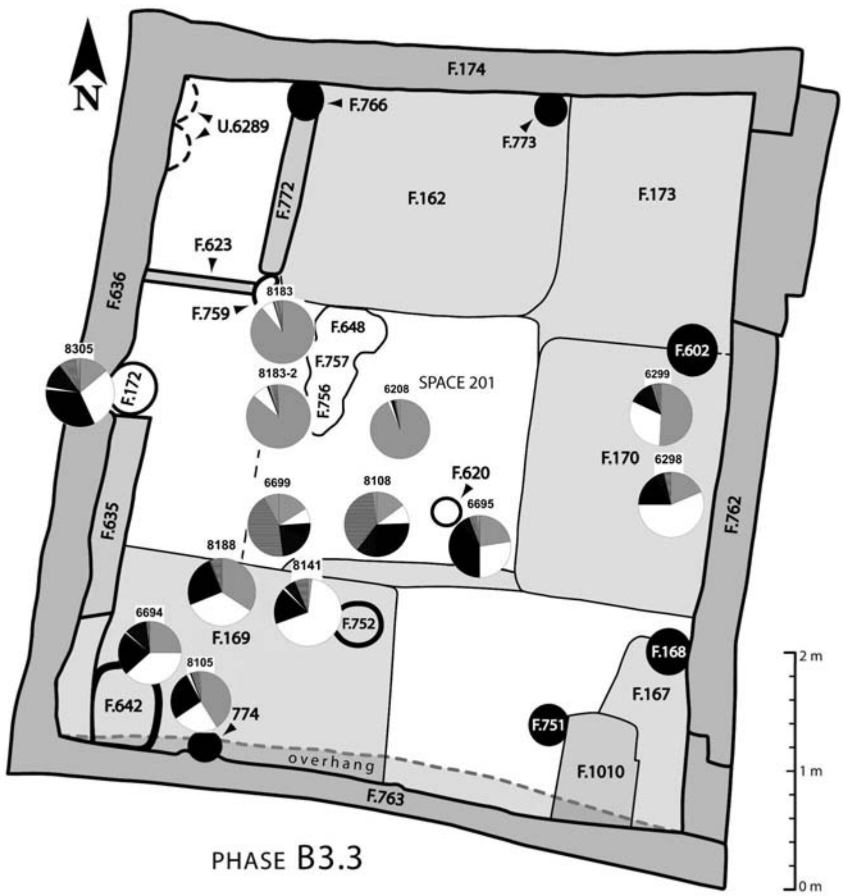


Figure 12.6. Plan of Building 3, Phase B3.3, with pie charts of plant presence.

Phase B3.4

Phase B3.4 is the last occupation phase in Building 3 and in some ways the most complex. In Phase B3.3, the oven was in its “traditional” place in the southwest corner of the building, but in Phase B3.4 it was rebuilt in a more prominent location. Phase B3.4 was divided into two subphases by the excavators (Figure 12.7). The major construction defining this phase are the two interior walls, constructed on a north–south alignment. In Phase B3.4B, the insertion of the screen wall on the west side of Building 3 separated Space 158 from the rest of the house (Space 86) permanently.

Phase B3.4 contained 43 analyzed flotation samples, of which 41 could be used for analysis, based on their size and density. These samples come from a variety of spaces, with much fewer coming from Space 158 in Phase B3.4B, the new smaller subdivision of the house. The only samples from that area in Phase B3.4B were from the very southern edge of the building (Figure 12.7a, b).

Correspondence analysis (Figure 12.8) on the Phase B3.4 botanicals reveals that all of the occupational phases look roughly similar. They cluster together but no one phase clusters at the exact center, suggesting a weak pattern throughout the sample population. We present this figure here because it helps us understand Phase B3.4. Phase B3.4 clusters near chaff, but it does not strongly correlate with any one taxon.

Phase B3.5A

Phase B3.4 is followed by a post-occupation phase, which is in part made up of the roof collapse in addition to a series of post-abandonment activities. Phase B3.5A represents the abandonment, post-occupation destruction, and infilling of Building 3. This being the case, most macrobotanical samples recovered from Phase B3.5A cannot be expected to reflect daily activities connected to the use-life of the building, except for the roof surface samples. Of 32 priority macrobotanical samples analyzed from this phase, 30 were robust enough to be included in statistical analysis. Samples from Phase B3.5A are mainly derived from roof collapse (N = 7), midden

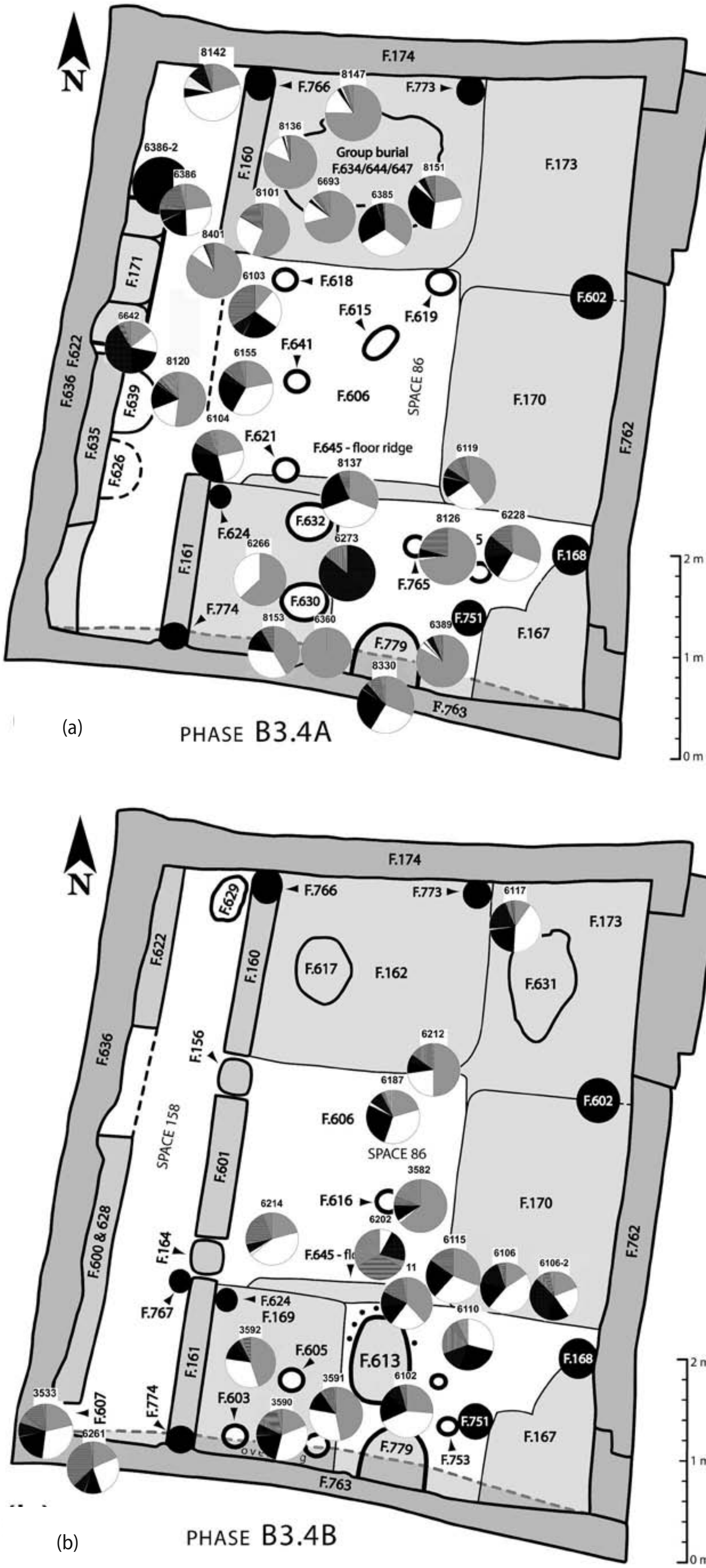


Figure 12.7. Plans of Building 3, Phase B3.4, with pie charts of plant presence. (a) Phase B3.4A; (b) Phase B3.4B.

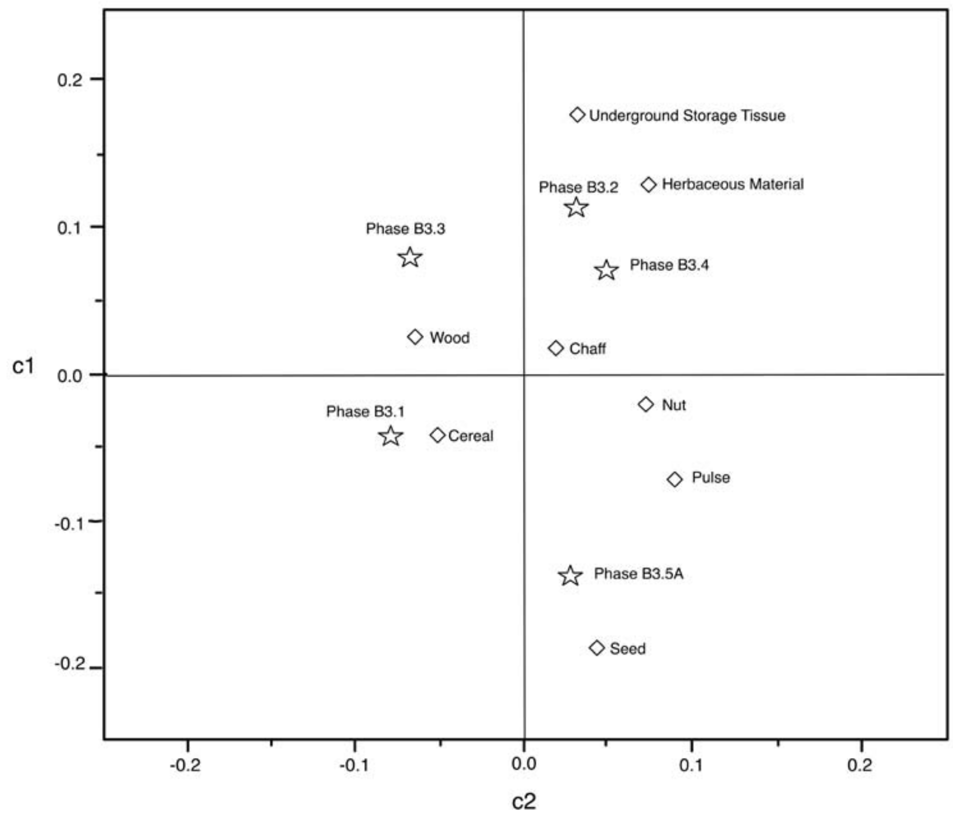


Figure 12.8. Correspondence analysis of eight botanical categories related to building phases of Building 3.

(N = 10), and fill (N = 10) contexts. The remaining samples are from the scapularium cluster (Cluster 1), which is a deposit with many *Bos* bones, interpreted as part of the ritualized closure of Building 3 (Figure 12.9) (Chapters 4, 5).

The macrobotanical assemblage of samples from fill, occupation surfaces, and the scapularium (Cluster 1) are not clearly differentiable from most other Building 3 samples. These all reflect the background noise present throughout all phases in this part of the settlement. However, samples from roof collapse and middens have patterns distinct from most other Building 3 samples, as illustrated when Phase B3.5A roof samples are compared with all analyzed samples (Figure 12.10).

Middens are characterized by higher densities of wood, dung, and seed remains. These samples may primarily represent the remains of hearth cleaning. The presence of dung is strongly positively correlated with that of seeds and herbaceous material, as seen in the linear regression of dung vs. seeds shown in the two graphs of Figure 12.11. If the macrobotanical assemblages of middens do reflect hearth-cleaning activities, the high density of dung suggests its common use as a fuel source.

The Phase B3.5A roof collapse (F.154) has a consistently higher density of cereal remains and a higher cereal-to-chaff ratio than most other samples analyzed from Building 3. Wood density from roof collapse samples is lower than from other samples with similar overall density. This pattern supports the long-held suggestion that the roof may have been used as a food processing or preparation area and should not, therefore, be considered post-occupation (Chapters 5, 6).

Although samples from the post-occupation scapularium (for a full discussion of this context, see Chapters 4, 5) are from the same general area as the midden samples, the macrobotanical assemblages of these contexts are not similar. Samples from the scapularium lack high amounts of wood and seeds found in most midden samples. One of the two analyzed samples from Cluster 1 (scapularium) also contains an unusually high amount of hackberry remains. The striking difference between these post-occupation scapularium and midden samples supports the interpretation of the remains from the scapularium as a single discard event or ritual discard in the form of an offering (Chapter 4), not merely background noise.

In sum, there is no discernible change through time of plant use or building use within the four main phases (B3.1–4) of Building 3's construction and use. Phase B3.5A represents distinctly different depositions from the earlier four phases, supporting the notion of quite different use of the space after the occupation of the structure. In the next section, we take a look at the actual cultural contexts to see if any locations are marked by culturally deposited plant remains.

Contextual Use of Building 3

In this section, we investigate what plant distributions can tell us about each context type within Building 3.

Storage Bins, Basins, and Caches

Eleven flotation samples were taken from storage contexts in Building 3—from bins, basins, caches, and one basket (Table 12.2). Samples from storage contexts were analyzed from all phases except Phase B3.5A, the post-occupation phase. The majority of storage contexts analyzed were from Phase B3.1; these included two bins (F.786, F.770), four basins, and a cache. Two caches from Phase B3.2 were examined, as was one bin from Phase B3.3. The single basket in the group represents the only storage context examined from Phase B3.4.

It is not entirely clear how features designated as basins at Çatalhöyük may have been used, and unfortunately the botanical data from basins in Building 3 are inconclusive in pointing to whether or not they were actually storage or processing features (see discussion in Chapter 4). The three tightly clustering basin samples all came from the same Phase B3.1 basin (F.781) (see Figure 5.30). A fourth sample (Flotation 4714, unit 8293) was taken from an adjacent Phase B3.1 basin (F.780) (see Figures 5.21, 5.22) and is another significant outlier on the principal components analysis (PCA) plot, with a particularly high density of wood, cereal, and chaff. This may indicate different uses for these adjacent features, or it may result from differential deposition after all of these contexts were swept clean. As discussed in the next section, however, there is some evidence that basins may have served a more specific food-related function than other storage contexts, based on their higher correlation with domesticates; perhaps they were used for some form of processing, even soaking or fermenting.

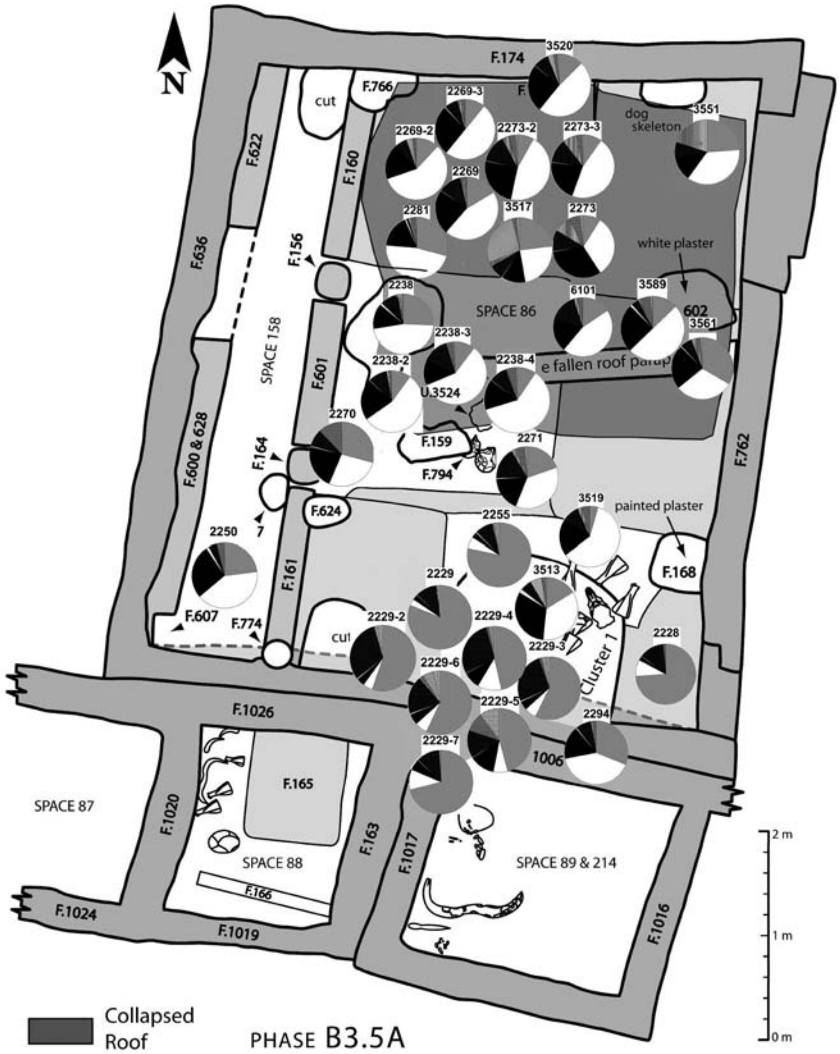


Figure 12.9. Plan of Building 3, Phase B3.5, with pie charts of plant presence.

Table 12.2. Storage contexts by phase

Phase	Unit	Flotation number	Storage context
1	8446	5081	Cache
1B	8391	5030	Bin
1B/C/D	8293	4714	Basin
1C/D	8218	4620	Basin
1C/D	8218	4621	Basin
1D	8292	4732	Bin
1D	8474	5116	Basin
2	8164	4539	Cache
2	8171	4540	Cache
3	8305	4748	Bin
4A	8151	4509	Basket

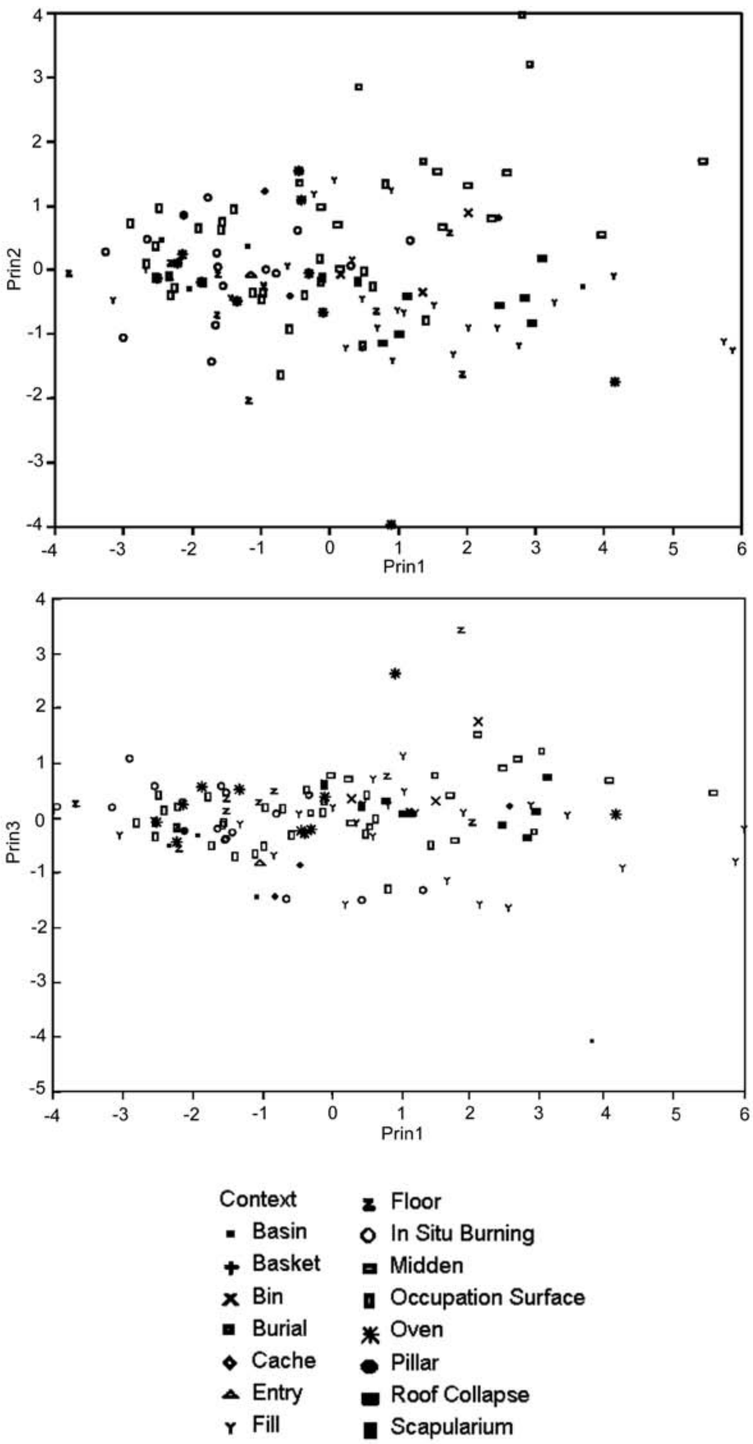


Figure 12.10. Principal components analysis of all Building 3 macrobotanical samples.

Overall, there does not appear to be a characteristic botanical signature in storage contexts. When storage contexts are compared with all other contexts in the building by PCA, storage contexts do not form a discernible cluster. The basket, which was from burial F.634, and the above-mentioned basin samples (Flotation 4509, unit 8151; Flotation 4714, unit 8293) are the most significant outliers (Figure 12.12). Similarly, there does not appear to be a strong association between storage contexts and the floors that surround the storage features, as discussed below. In general, the botanical data do not seem to clarify the contextual categories assigned by the excavators but do indicate that Building 3 was kept quite clean and tidy throughout its occupation.

Cooking Evidence and Related Practices

Hearths and Fires

Fourteen samples were analyzed from Building 3's in situ fire installations, which are from hearths and other heat-bearing features. These samples came from all occupation phases except Phase B3.2. As expected, the hearths were dominated by wood, cereal, and chaff, in that order. These frequencies may distinguish hearths from ovens, which are discussed below, although this conclusion is strongly impacted by the outliers. The principal components analysis that we ran on these data (Figure 12.13) revealed two outliers: Flotation 5143, unit 8504; and Flotation 5147, unit 8507 (both from the B3.1A–B hearth F.778). These outliers are marked by a dearth of material. The other samples contain disproportionately large counts of wood and other material, appropriate for hearths and ovens. These flotation samples provide further evidence that the majority of these Çatalhöyük buildings' use surfaces and workspaces were regularly swept. These samples have small volumes, making these conclusions more tentative.

Ovens

Eleven flotation samples from ovens were analyzed. These samples came from every phase except B3.4A. Despite the high number of ovens studied, their samples were all fairly sparse. The oven samples were dominated by seeds, chaff, and wood. This represents a distinct difference from the hearth botanical evidence but also suggests that ovens were regularly cleaned. The relative lack of wood and dung in the ovens supports the conclusion that these fuel-derived materials were regularly removed during cleaning events. The seeds and chaff may have entered together as food spills and as fuel from dung.

The ovens' overall data pattern was extremely impacted by the two outliers identified in our principal components analysis presented in Figure 12.14 (Flotation 4361, unit 6663, F.646, Phase B3.2; Flotation 5019, unit 8394, F.785, Phase B3.1C–D). The

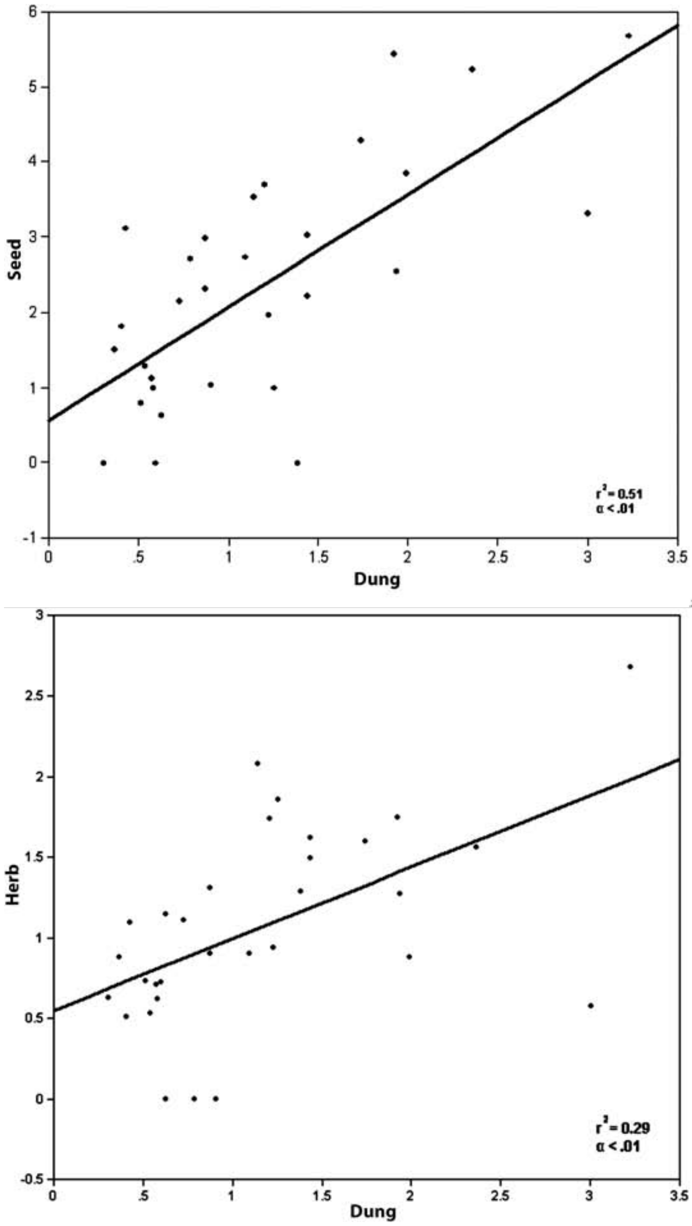


Figure 12.11. Linear regression of log-transformed values of dung vs. seeds and dung vs. herbaceous material.

first outlier is largely composed of chaff, and the second of seeds. The other samples have low overall counts but relatively more wood than the statistical outliers. These could represent remains of ovens that had not been thoroughly cleaned out.

This type of difference is illustrated in Figure 12.15. Flotation 5019 (unit 8394, F.785) is one of the statistical outliers, as its composition is unusually dominated by seeds. The wild seed concentration seen here indicates that this burning event may have involved the burning of wild plants for fuel or additions to meals.

Use of Space through Time

Floors

Forty flotation samples were analyzed from floor contexts. However, three of these (Flotation 4725, unit 8298; Flotation 5262, unit 8572; Flotation 4457, unit 6699) were excluded from our statistical analyses because they measured less than one liter in volume and therefore would have overly inflated standardized counts and weights (Table 12.3). The category of floors used here is similar to the floor contexts (coded as 2) and packing contexts (coded as 5) considered by Fairbairn, Near, and Martinoli (2005). Often in the field notes for Building 3, floors were described as "floor and packing." Thus, it was impossible to truly distinguish these two categories. They are therefore considered together in this chapter as "floors" (coded as 2). Of the 37 floor flotation samples interpreted here, seven are from Phase B3.1, twelve are from Phase B3.2, four are from Phase B3.3, ten are from Phase B3.4, and three are from Phase B3.5A (Table 12.3).

Due to the sampling strategy applied during the excavation of Building 3, there are more floor samples from some phases than from others. This is partly due to the (in)ability of excavators to separate floor from packing in different areas and life phases of the house (see Chapter 2). It should also be noted that the volumes for these flotation samples vary considerably. As elsewhere at Çatalhöyük, the floors of Building 3 were continually plastered and replastered throughout the

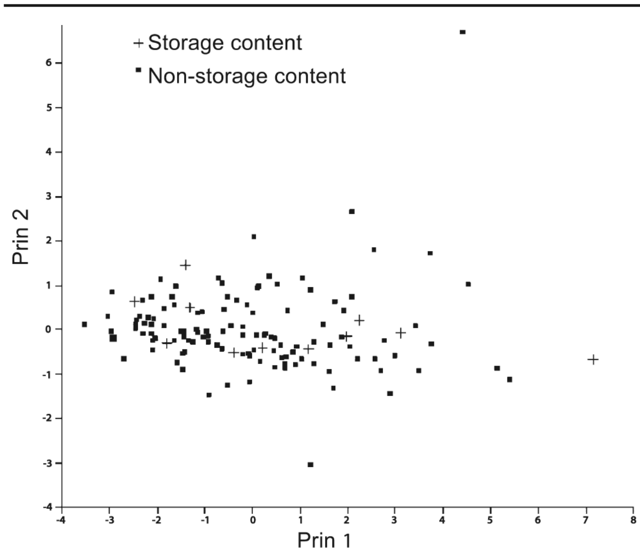


Figure 12.12. Principal components analysis of macrobotanical samples from storage-related and non-storage-related contexts.

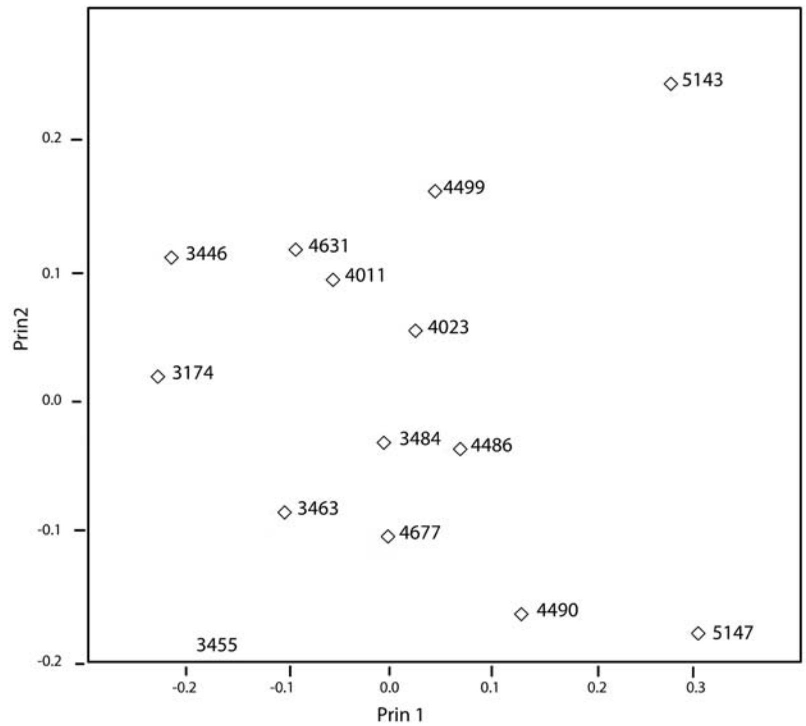


Figure 12.13. Principal components analysis of in situ burning contexts.

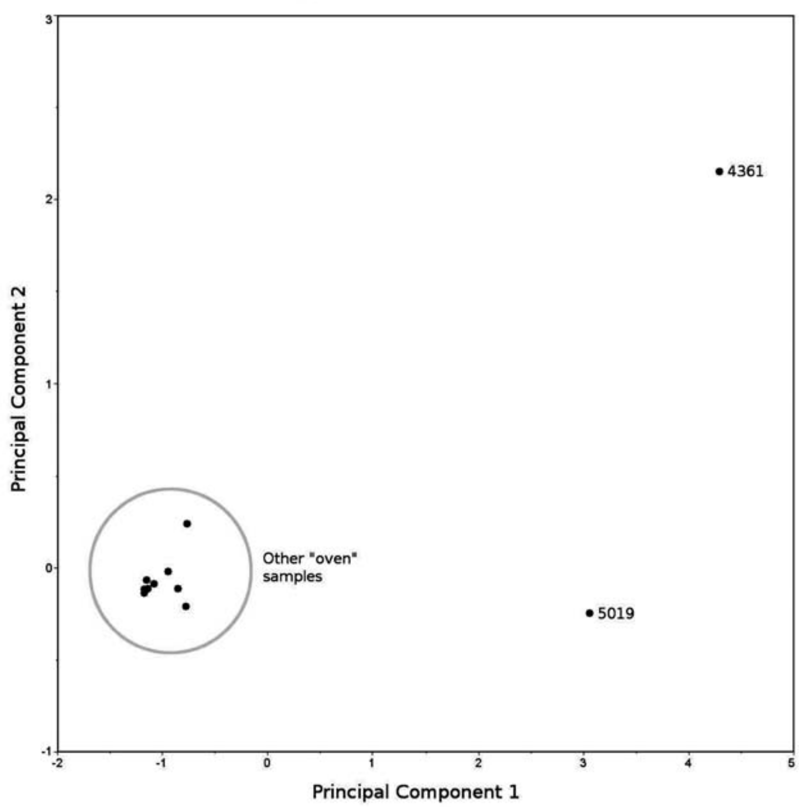


Figure 12.14. Principal components analysis of oven contexts.

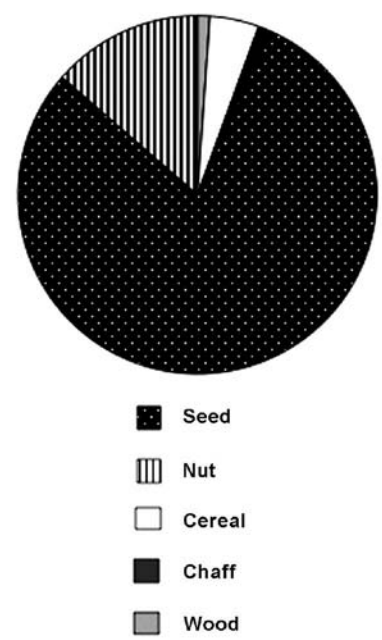


Figure 12.15. Pie chart of the major plant taxa found in Flotation 5019 (unit 8394).

Table 12.3. Floor samples available for Building 3 analysis by phase

Phase	Unit	Flotation no.	Flotation volume	Cultural context code	Cultural context description	Floor code	Excluded from statistics
1	6340	4163	5	2e	Entry	FE	
4A	6360	4147	2	2	Floor	FK	
4B	6111	3243	26	2	Floor	FK	
4B	6115	3237	3	2	Floor	FK	
4A	6385	4269	18	2	Floor	FB	
4B	6102	3242	18	2	Floor	FC	
4A	6119	3236	10	2	Floor	FK	
4B	6110	3241	9	2	Floor	FK	
4B	6117	3258	7	2	Floor	FB	
4B	6118	3230	3	2	Floor	FP	
4A	6389	4237	0.5	2	Floor	FK	
3	6699	4457	1	2	Floor	FC	X
1	8572	5262	0.5	2	Floor	FC	X
1	8298	4725	0.1	2	Floor	FK	X
1	8508	5153	8	2	Floor	FC	
2	8225	4644	7	2	Floor	FK/FS	
1	8310	4762	6	2	Floor	FP	
2	8191	4563	14	2	Floor	FP	
2	8224	4630	4	2	Floor	FS	
3	6299	4048	9	2	Floor	FP	
3	6298	4050	15	2	Floor	FP	
2	8200	4593	45	2	Floor	FC	
2	8251	4687	18	2	Floor	FK/FS	
3	8108	4459	6	2	Floor	FC	
2	8227	4634	1	2	Floor	FK/FS	
2	8355	4826	17	2	Floor	FC	
1	8309	4751	27	2	Floor	FK	
2	8217	4627	14	2	Floor	FS	
3	6695	4454	27	2	Floor	FC	
2	8263	4691	46	2	Floor	FC	

Table 12.3 (*continued*). Floor samples available for Building 3 analysis by phase

Phase	Unit	Flotation no.	Flotation volume	Cultural context code	Cultural context description	Floor code	Excluded from statistics
1	8286	4740	4	2	Floor	FP	
5A	3561	3204	40	2	Floor	FP	
1	8520	5158	10	2	Floor	FP	
5A	2281	1498	14	2	Floor	Fscap	
2	8181	4547	1	2	Floor	FK/FS	
1	8279	4706	12	2	Floor	FP	
1	8530	5163	25	2	Floor	FC	
5A	6101	3216	6	2	Floor	FP	
2	8251	4647	20	2	Floor	FK/FS	
2	8359	4827	4	2	Floor	FC	

Note: Floor samples excluded from statistics and the subcodes for the specific floor contexts are indicated. FK refers to samples from areas near hearths or ovens; FS refers to samples from areas near bins, caches, or basins; FK/FS refers to samples from areas equidistant from hearths/ovens and bins; FP refers to samples from platforms; FB refers to samples from near burials; FC refers to samples from the central space of the building; and FE refers to the sample from the floor area near the entry to the house.

building's occupation. In excavating Building 3, excavators therefore paid particularly close attention to identifying and removing individual floor surfaces. We thus have many floor samples with relatively small volumes. It is particularly important to bear this in mind when comparing floor samples with those from other contexts where higher flotation volumes were possible (such as middens).

To examine the floor contexts, we return to the principal components analysis run on the Building 3 macrobotanical samples to determine if a floor signature could be identified in comparison with other contexts. If such a floor signature existed, we could use it to differentiate "significant" archaeological indicators of plant use from "background noise." However, the comparison showed there to be no discrete floor signature (Figure 12.10). Thus, we tried to further differentiate samples within the floor category by running principal components analysis for floor contexts only (Figure 12.16). This analysis demonstrated that, despite our thinking otherwise, the floor contexts themselves were variable. They did not seem similar to one another even within specific phases. Thus, no clear floor signature of plants could be identified that distinguished these contexts from other non-floor contexts in Building 3 or from one another.

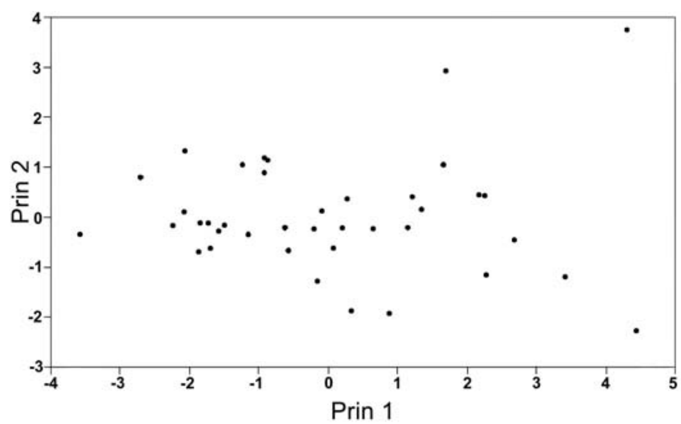


Figure 12.16. Principal components analysis of floor contexts.

To learn if the material on the floor was discrete and perhaps reflecting different activities, we considered whether some of the floor contexts were at least similar to nearby contexts (Lennstrom and Hastorf 1995). For example, were floor samples collected near specific hearths similar to the hearth features? This would suggest that the spill or rake-out deposit was related to the hearths' use, indicating dissemination of plant remains between these features. To do this, the floor samples were further classified by their location. Samples from areas near hearths or ovens were considered kitchen floors (FK); samples from near bins, caches, or basins were considered storage floors (FS); samples from areas equidistant from hearths/ovens and bins were considered kitchen/storage floors (FK/FS); samples from platforms were considered platform floors (FP); samples from near burials were considered burial floors (FB); and samples from the central space of the building were considered central room floors (FC) (Table 12.3). One sample (Flotation 1498, unit 2281) was placed in its own category (floor near the scapularium, Fscap) because it was the only sample located near the scapularium *(*Cluster 1) (see Figure 5.88). Another sample (Flotation 4163, unit 6340) was also placed in a unique category (floor near entry to building, FE) because of its location near the entry to the building during Phase B3.1. Both of these unique samples are included in the overall statistical analyses of the floor samples; however, neither is considered in further comparisons to other contexts due to their unique contextual associations.

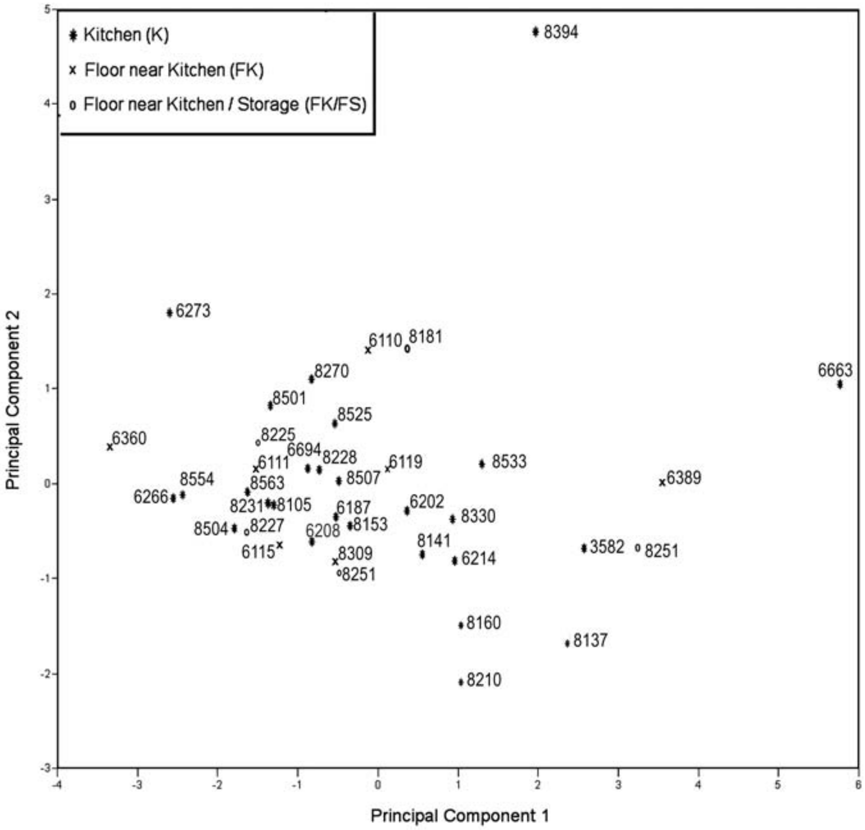


Figure 12.17. Principal components analysis comparing kitchen samples (hearths and ovens, K), floors near kitchens (FK), and floors near kitchen/storage areas (FK/FS).

A principal components analysis was again run comparing these specific floor contexts to spatially associated contexts to see if any correlations would emerge. For example, do the plant remains from kitchen floors (FK) resemble those from hearths and ovens (K) (Figure 12.17)? Do the plant remains from storage floors (FS) resemble those from bins, caches, or basins (S) (Figure 12.18)? Overall, the floor samples within these subcategories do not particularly resemble one another or their associated contexts, further verifying that these studied floor samples could not truly represent specific past activities.

Only one correlation emerged, in the kitchen floor samples, with Flotation 4634, unit 8227 (Phase B3.2 floor sample from the southwest kitchen area; FK/FS) and Flotation 5143, unit 8504 (F.778, Phase B3.1B; K). However, even these samples do not seem to have a strong relationship spatially or temporally. The plant component similarity seen in these two samples does not reflect a true association between these samples, as they are separated in both time and space. Thus, overall, kitchen floor samples generally do not resemble other kitchen-related feature samples (Figure 12.17).

Storage floor samples appear to resemble one another (cluster) more meaningfully, demonstrated in the principal components analysis (Figure 12.18). When looking at the PCA of these contexts in Figure 12.18, we see that Flotation 4634, unit 8227 (Phase B3.2 floor sample from the southwest kitchen area) and Flotation 4620, unit 8218 (Phase B3.1 basin F.781) cluster together. However, spatially and chronologically, these two samples should not bear any real contextual relationship.

As with the kitchen floors discussed above, we again see that these samples are separated enough in space and time to suggest that their similar plant make-up is not the result of similar activity or even cross-contamination between floors and neighboring contexts. Two other flotation samples analyzed here tell a similar story (Figure 12.18). Flotation 4644, unit 8225 from platform F.169 in the southwest kitchen area of Phase B3.2 and Flotation 5116, unit 8474 from the western basin F.781 in Phase B3.1 appear related in the principal components analysis; however, they are from different phases and locations in the building. It may be notable that two Phase B3.2 samples from the southwest kitchen area (Flotation 4634, unit 8227; Flotation 4644, unit 8225) resemble two samples from the same Phase B3.1 basin (F.781) (Flotation 4620, unit 8218; Flota-

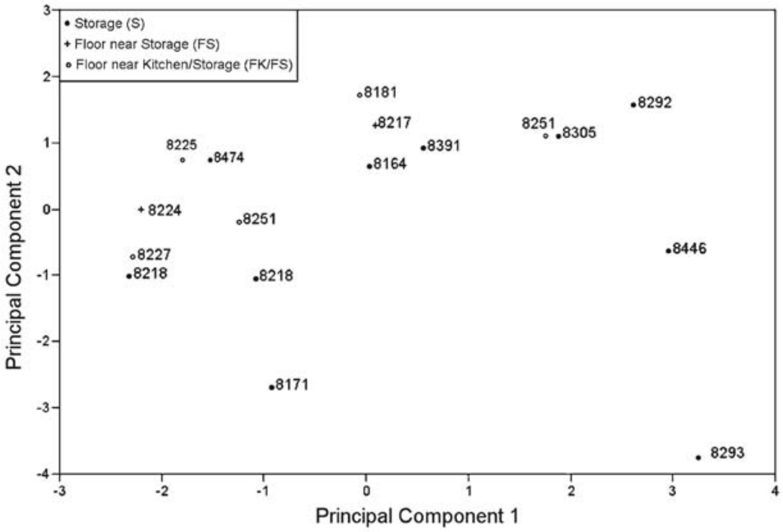


Figure 12.18. Principal components analysis comparing storage samples (bins, caches, and basins), floors near kitchens, and floors near kitchen/storage areas.

tion 5116, unit 8474). This similarity may be the result of disseminating plants from the basin area to other areas during the use of the basin. However, at this time it is not possible to identify clearly why these similarities may have occurred, particularly considering the temporal and spatial separation of these samples. Despite the ambiguous similarities between some storage floor samples and some storage feature samples, the storage floors, as a whole, do not appear to resemble one another, nor are they similar to other storage feature samples.

Roof Collapse

Seven roof collapse (F.154) samples were analyzed, all from Phase B3.5A (see Figures 6.18, 7.1). All roof collapse samples have a relatively high cereal-to-chaff ratio (2.96 average) and low densities of wood remains. Unlike in other analyzed BACH samples, the density of seeds in most roof samples is similar to the density of wood. These are also relatively low in relation to overall macrobotanical density across the structure. Most samples have a small but persistent presence of underground storage tissue. Four of these samples show unusually high densities of cereal remains (more than 100 per liter).

The cereal dominance makes these four samples stand out from the usual background noise of most flotation samples and may indicate that the roof area was used for the final stages of food processing, for cleaning winnowed stores, and/or for initial food preparation. The high cereal-to-chaff ratio suggests that earlier winnowing took place elsewhere but that the final cleaning, drying, grinding, and even cooking occurred here. Due to the dark, discrete layers within the large pieces of roof collapse, the Çatalhöyük conservation and geoarchaeology teams also claim that this was an area of concentrated food-related tasks. Therefore, this is one of the strongest conclusions the BACH archaeobotanical samples have provided for us, that the roof was indeed a place of domestic food preparation.

Burials

Burials were not a focus of the archaeobotanical work in Building 3 due to the pit matrix coming from an earlier, underlying midden. Thus, only five flotation samples from burials were analyzed. Of these five samples, two burial samples are from Phase B3.3, the earliest phase in which burials occur, and three burial samples are from Phase B3.4A. The analyzed burial flotation samples from Phase B3.3 (Flotation 4548, unit 8183; Flotation 4615, unit 8183) are both from F. 757, located in the central room of the building (Space 201). All three of the Phase B3.4A samples are from the north-central platform of the building (F.162). Of these samples, one (Flotation 4495, unit 8147) is from Feature 647, and the other two samples (Flotation 4485, unit 8136; Flotation 4463, unit 6693) are from Feature 634 (Figure 12.7). All five of these samples have volumes over a liter; therefore, all five were statistically analyzed.

As with other context types, a principal components analysis was completed to determine if the burial samples could be differentiated from non-burial samples (Figure 12.19). The results of this plot suggest that burial samples are distinguishable from many of the other contexts in Building 3.

A further principal components analysis was run on the burial samples to compare them with neighboring, potentially similar contexts, in order to determine if burials more specifically resembled their local environment. Figure 12.19 shows that when the samples from burials and floor areas near burials were compared to determine if burial fills resembled their surrounding floors (cf. Lennstrom and Hastorf 1995), burial fills appear to be relatively dissimilar to their neighboring floor contexts. Thus, burial practices probably included a careful and specific selection of fill material and activities, with little cross-contamination between these fills and surrounding floor sediments.

Because of the suggestion by the excavators that the Building 3 burials involved a certain degree of specific fill deposition, we wondered if burial fills resembled other fills found in Building 3. Burials and general fill samples can be compared when looking at the overall principal components analysis run for the total samples of Building 3 (Figure 12.10). As seen in the figure, the burial contexts appear to be distinct

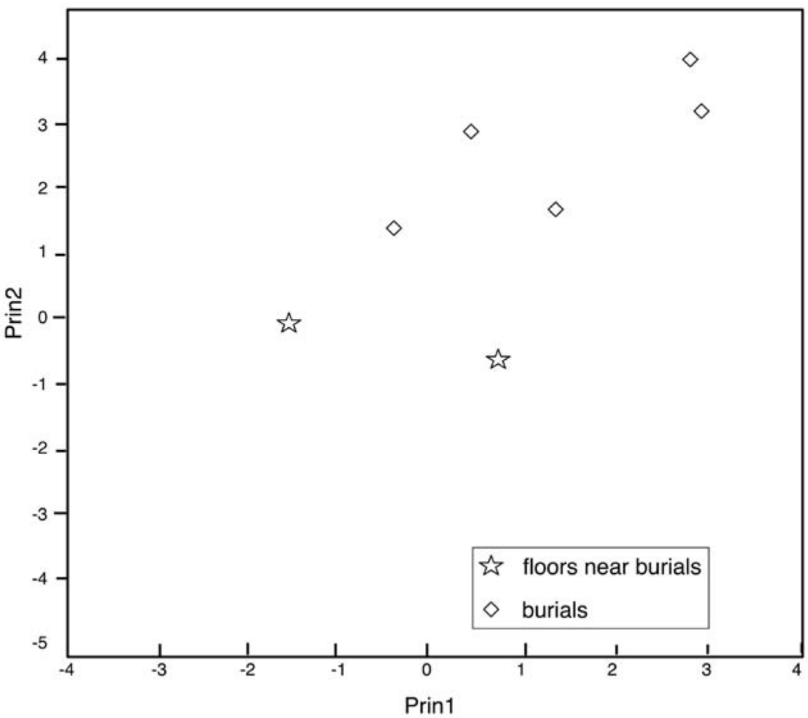


Figure 12.19. Principal components analysis comparing burial samples to floor samples near burials.

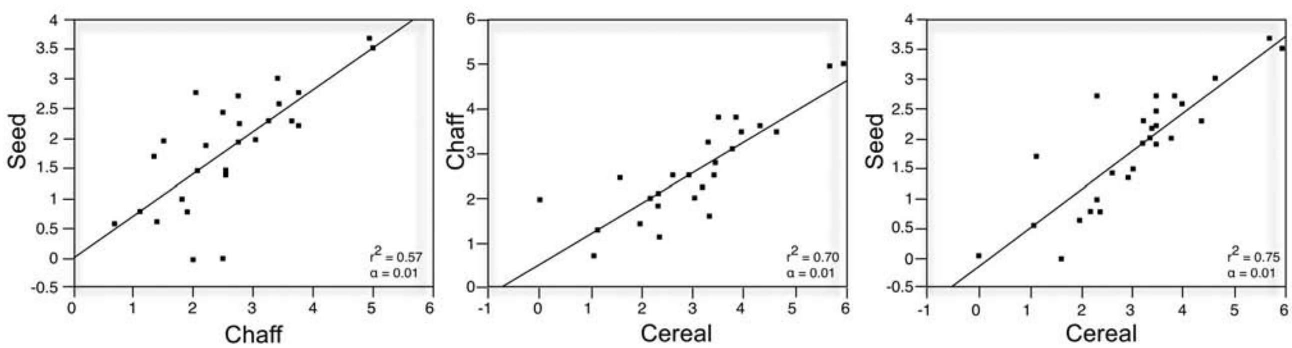


Figure 12.20. Linear regressions showing statistically significant correlations between cereal, chaff, and seeds from "fill" contexts.

from all other fill contexts. Therefore, it is possible that burial fill was from a different context than were other fills, and most likely from the previously deposited building and fill below Building 3. How distinct these sources of fills were (before Building 3) and how often the burial fill was selected from a unique location is not clear at this time. Further analysis of more samples could certainly shed light on these issues.

Fill

Thirty-two fill samples were analyzed from the deposits of Building 3. These samples are all from the later phases—B3.4A, B3.4B, and post-occupation B3.5A—due to the early emphasis on these areas, mentioned previously. Fill is a general category that the Çatalhöyük Research Project uses for matrix whose deposition is not clearly definable. Hence, by definition, it should have a general plant signature. When compared with samples from other contexts using PCA, fill samples do not produce a single distinct cluster (Figure 12.10). Plotting log-transformed data of the plant taxon categories against one another shows that some plant taxa from fill samples are significantly correlated with one another, particularly cereal, chaff, and seeds (Figure 12.20). This pattern suggests that these taxa were discarded as a common suite of materials. Botanical samples from fill, therefore, appear to be undifferentiated from—indeed create—the background noise of Building 3, and probably do not reflect intentional plant use or deposition. A few fill samples have a relatively high density of one or two plant taxa, differentiating them from other fill samples (Flotation 4471, unit 8126;

Flotation 5026, unit 8401), but there are not enough of these to suggest a pattern that we can readily interpret.

Middens

Ten midden samples were analyzed, all from Phase B3.5A, the post-occupation phase. Over half of these have a similar pattern of high-density wood remains (more than 100 per liter) and high density of seed remains (more than 50 per liter). We associated these frequencies with the persistent presence of dung. Of note, however, is that these were all deposited when Building 3 was unoccupied. Midden samples have a relatively distinct similarity as seen in their principal components analysis of all the samples (Figure 12.10). This covariance suggests that perhaps people were commonly using both wood and dung as fuel and that spent fuel was deposited in middens regularly. These later midden deposits therefore may represent hearth-cleaning debris, albeit from a different, neighboring building in the case of these 10 samples.

Summary of Contextual Analysis

The density of items per liter can inform us about the use patterns in different context categories. Table 12.4 provides us with a brief view of context densities. The only categories with fewer than 100 items per liter are the scapularium (Cluster 1), in situ fire installations, occupation surfaces, and ovens. The categories with higher counts are bins, burials, caches, fills, middens, and the roof collapse. Burning events and living surfaces were cleaned and less likely to contain botanical remains. Fairbairn, Near, and Martinoli (2005) reached similar conclusions regarding the other analyzed East Mound hearths and ovens. They also found that when outliers were removed, these samples had very small sample sizes and low median density values. This conclusion parallels our Building 3 findings.

Killackey (2001) studied the later levels from Building 3. In that study, she found that dung was burned in hearths and ovens and that the dung contained plants that were seasonal indicators and were almost entirely herbaceous. Dung pellets were was found in a few samples; however, the use of dung is generally verified by the large presence of herbaceous material and seeds, rather than of chunks of dung. Our archaeological samples contained little direct evidence of dung, but there were samples dominated by dung's indicator categories.

The botanical evidence of the various architectural contexts has highlighted a few activity patterns in Building 3. First, sadly, the floor deposits do not represent primary or even secondary deposits and are not indicative of any specific activity of the residents. There are more hints of actual use-related deposits in the hearths and ovens, however, with Space 158 being the most noticeable for storing nuts and fruits. Basins seem to have been used for a part of the food processing sequence, specifically fermentation. The post-occupation middens represent the rake-out not from Building 3 ovens, but from another house. The most discrete material comes from the roof layers, where we see remains from grain processing as well as cooking.

Table 12.4. Overall botanical standardized densities by context category

Context category	N*
Bin	229
Burial	369
Cache	134
Fill	140
Floor	55
In situ burning	43.2
Midden	351
Occupation surface	34.5
Oven	73.5
Roof collapse	170
Scapularium	67.2

* Counts are based on the eight most common plant categories.

Archaeobotanical Interpretations by Plant-Use Category

The following discussion explores what we can learn about the activities that went on in Building 3 when focusing on plant-use categories. We base our discussion on the material presented in Table 12.5.

Food vs. Non-food: Evidence of Storing, Preparing, Presenting, and Eating

An analysis of food items vs. non-food items shows some potentially interesting correlations in particular contexts. Food items are considered to be cereal, pulse, fruit, underground storage tissue, hackberry, and nuts. Non-food items are wood, chaff, dung, seeds, and herbaceous matter. Seeds are considered non-food because many may be by-products of food items brought into the building. That said, the species phase (3) of flotation sample sorting, which would identify seeds to specific taxa, may in the future reveal that some were used for food.

Table 12.5. Average density of wood, seed, and herbaceous matter by context category

Context category	Wood	Seed	Herbaceous material	Number of samples
Bin	19.47	2.47	2.27	3
Burial	301.10	0.05	5.65	5
Cache	54.57	3.51	3.97	3
Fill	37.85	10.38	2.09	30
Floor	26.16	6.23	0.39	10
In situ burning	17.16	1.68	3.39	15
Midden	215.09	72.27	7.78	10
Occupation surface	8.57	2.13	0.73	29
Oven	10.36	25.15	3.85	12
Roof collapse	23.74	19.02	1.25	7
Scapularium	16.33	6.86	0.91	1

Figure 12.21 shows a correspondence analysis of food vs. non-food items by context throughout Building 3. Overall, the contexts load more on the non-food items than on the food, probably due to high counts of wood and chaff and thus the background noise. Bins and roof collapse contexts are strongly correlated with food items, and basins and fill also show correlation. This indicates that bins and basins were used as food storage and other food-related activities. Figure 12.21 also clearly shows that, as we have seen in other analyses, food preparation probably occurred regularly on the roof.

From this point of view, burials, middens, and ovens are strongly correlated with non-food items. Ovens, in particular, tend to have a relatively high density of wood, seeds, and nuts. Overall, the botanical data from the samples analyzed in Building 3 do not provide much evidence for food preparation and presentation methods, except that the roof was a place where preparation took place, and, curiously, the basins might have been built for a specialized food activity; perhaps micromorphology could help us here.

Fuel Analysis: Wood Fuel vs. Fodder Fuel

Ethnographic studies associated with the Çatalhöyük project (Asouti 2005a) suggest that a variety of materials were probably used in the past to provide fuel for warmth, cooking, and other processing activities. Chaff was most likely regularly consumed by animals, whose dung could enter the archaeological record by being burned. Although dung clearly entered the botanical record as a fuel, dung's patterning does not correlate statistically with any one context or phase in the BACH samples.

While we completed this comparison to see what we could learn about Building 3, in the end the background noise negated any fuel patterning that might exist in the macrobotanical data. Wood is the main fuel category and is the most common plant in our samples. It dominates the middens and burial contexts. The middens were expected to be full of wood on account of their role as dumps for oven rake-outs, especially considering the relative paucity of wood in the ovens and fire installations, that is, the wood from these features was most likely swept away and deposited in the middens. Likewise, the burials, being dug into the underlying midden, were also expected to be repositories for wood.

A good proxy for wood fuel vs. fodder fuel use is the comparison between wood and wild seeds. The wild seed category is a broad grouping, but many of its components could have entered through fodder or dung. While middens do have the highest seed density of all contexts, other categories with high seed densities (ovens, roof collapse, and fills) also commonly contain wood. All of these contexts were likely repositories of dung, either for fuel use or perhaps as spaces where animals were kept.

Both wood and wild seeds also may have entered as temper in mud brick, gathered and reused from earlier middens. Previous analysis of mud brick revealed that there was substantial botanical material in the mud brick, but the majority of it was not carbonized (Fairbairn, Near, and

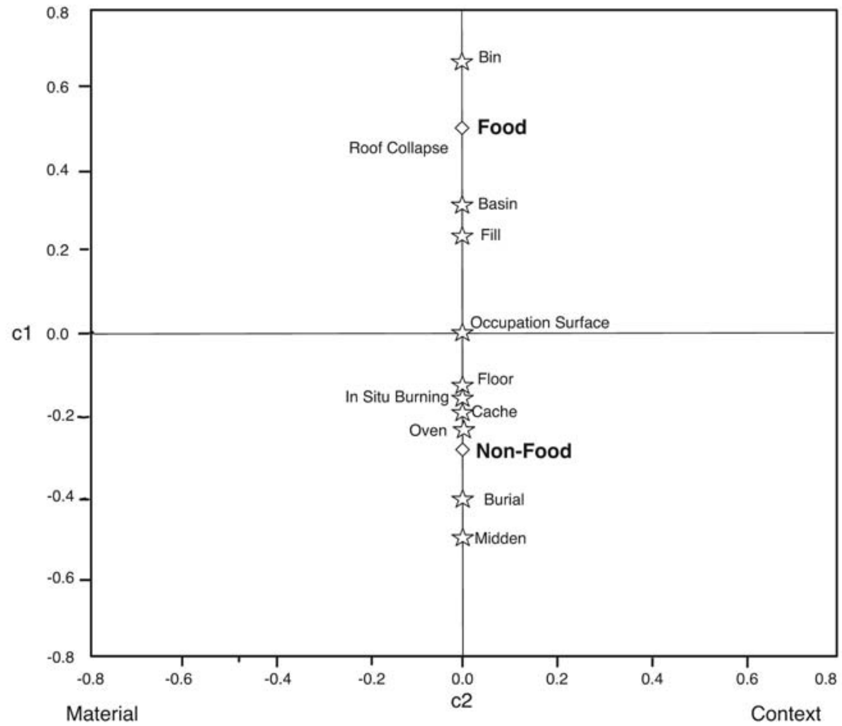


Figure 12.21. Food vs. non-food correspondence analysis.

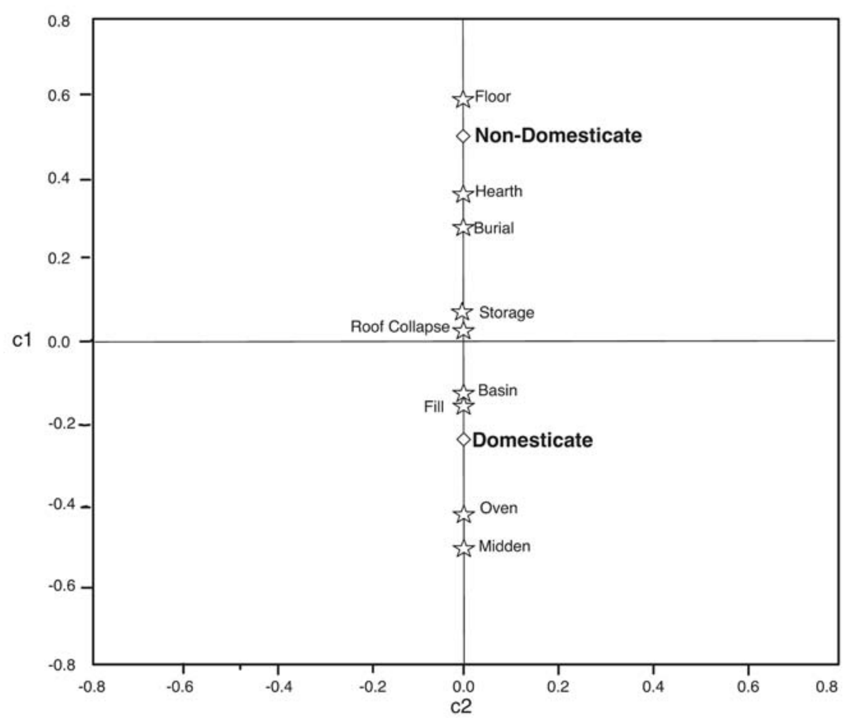


Figure 12.22. Correspondence analysis for wild and domesticate plant distributions by context.

Martinoli 2005). It is likely that dung and other materials were also common ingredients in the mud brick.

Wild vs. Domesticates

One of our primary research interests in examining Building 3 is the distribution of wild and domesticated plants throughout the various contexts in the building. To better view this comparison, we applied a correspondence analysis to wild and domesticated plant distributions by context (Figure 12.22). In this query of Building 3 deposits, the category of wild plants includes seeds, nuts, and underground storage tissues. The category of domesticated plants includes cereals, chaff, and pulses.

The correspondence analysis of these taxa shows that wild and domesticated plants do pattern by context. Floors, hearths, and burial contexts appear to be composed of higher quantities of wild plant types, whereas middens, ovens, basins, and fill contexts appear to be composed of higher quantities of domesticated plants. Some of these associations are particularly noteworthy. We would have assumed that hearths and ovens, both reflecting in situ burning contexts, might have similar wild and domesticated plant components. However, our analysis suggests that hearths have higher quantities of wild plants than the domesticate-rich ovens. This may indicate that people in Building 3 cooked slightly different foods in these two different burning settings. Perhaps ovens were used more for staple food cooking—hence, their higher association with domesticated plants. Meanwhile, hearths may have been used more for industrial purposes, or for snack food processing, explaining their greater covariance with wild plants. It is also possible that hearths reflect more one-time use activities for selected food processing events than do ovens. Therefore, a hearth may reflect roasting of a store of nuts, while an oven might more likely reflect regular and repeated plant processing, such as the cooking of ground cereal cakes. Here we get a glimpse of the personal decisions that the residents of Building 3 were making in their daily practice.

Based on what we have learned from the other analyses and archaeobotanical depositional discussion, we would have expected that storage and basin contexts would have similar wild and domesticated plant components. Instead, we see that basins seem to have a greater association with domesticated plants than do other storage contexts (such as bins and caches). This further supports the theory developed in this chapter that basins may have served a more specific food-related function, most likely for some kind of processing like pickling or fermenting (Atalay and Hastorf 2006). It is also possible that basins were reserved for storing a specific domestic plant food, while other storage contexts may have been for keeping a variety of plants. We know from Hillman's plant analysis of Mellaart's (1963, 1964) earlier excavations that bins tended to hold very clean, winnowed plants, usually domestic grains (Gordon Hillman, personal communication, 1996). Some wild taxa have been identified in bins, however. For example, seeds of shepherd's purse (*Capsella bursa-pastoralis*) and *Erysimum sisymbrioides* (also called Sysimbrium-type in Fairbairn, Near, and Martinoli 2005) have been found in clusters in Mellaart's Level VI, as well as in one storage bin (Helbaek 1964:122). The fact that the sampled storage contexts do not seem to be particularly filled with either the domestic or wild plant remains in Building 3 again informs us of the mixed deposit we are dealing with here.

It is also provocative that the floor contexts contain more wild than domestic plant remains. This may be because plants were generally spread around as features were cleaned and that there was a higher volume overall of wild plants on the site than domesticated ones. Further wild plants could have been used more commonly on the floors as mats or covering. Whatever was operating to bring these into the building, the final floor surfaces became a hodgepodge of deposit activities. When burials and fills are compared using principal components analysis (Figure 12.10), we learn that the two contexts are distinct. The fact that burials are more strongly associated with wild plants and that fills are more associated with domestic plants speaks to the earlier discussion of burial contexts being from a different historical deposit. This supports the excavators' idea that burial fills may very well have been from different sources than the other Building 3 fills, where the burial fill source was higher in wild plant types and the other fill sources were higher in domesticated plant types.

Comparing Broad Context Characterizations

To explore whether the macrobotanical composition of Building 3 occupation contexts (floors, occupation surfaces, in situ fire installations, and ovens) differed from construction contexts (fill, roof collapse) and post-occupation contexts (middens), a discriminant analysis was conducted on these three broader context categories (Figure 12.23). In this analysis, we attempted to assign every botanical sample to one of the three broad context categories based on its macrobotanical composition, producing a measure of category discreteness. This analysis classified 78 percent of samples into these correct broader context categories, suggesting that although these groups are more or less distinct, there is some overlap between the occupation and construction samples. A percentage composition by plant category for each group is reported in Table 12.6. Interestingly, construction contexts are differentiated from occupation contexts by a higher percentage composition of cereal remains (35 vs. 19 percent) and a higher cereal-to-chaff ratio (1.98 vs. 1.02). It is unclear why construction contexts contain more cereal than occupation contexts. One possible explanation is that poorly threshed straw was used in the construction of Building 3. Occupation contexts contain a higher percentage of seeds than construction contexts (13.8 vs. 8.4 percent), possibly resulting from the use of dung as fuel in these contexts. Post-occupation samples are differentiated from occupation period samples by a high percentage of wood remains and seeds, possibly reflecting debris from hearth cleaning (Fairbairn, Near, and Martinoli 2005:Table 8.9, p. 154).

Plant Use Change Over Time

A discriminant analysis using occupation contexts (floors, occupation surfaces, in situ fire installations, and ovens) grouped by temporal phase was conducted to explore whether any change in plant use over the period of Building 3's occupation could be detected (Figure 12.24). We previ-

Table 12.6. Percentage composition of broader context categories by plant types

	Wood	Cereal	Chaff	Pulse	Seed	Nut	Hack.	UST	Herb. Material	Dung
Use-life contexts	31.5	18.9	18.5	0.5	13.8	4.2	0.3	7.5	4.7	0.1
Construction contexts	23.5	35.1	17.7	0.4	8.4	2.7	0.2	10.5	1.3	0.4
Post-occupation contexts	59.6	7.4	5.9	0.3	20.0	0.1	0.0	1.8	2.2	2.7

Note: Plant categories "Unidentified" and "Fruit" were omitted (no values > 0.1).

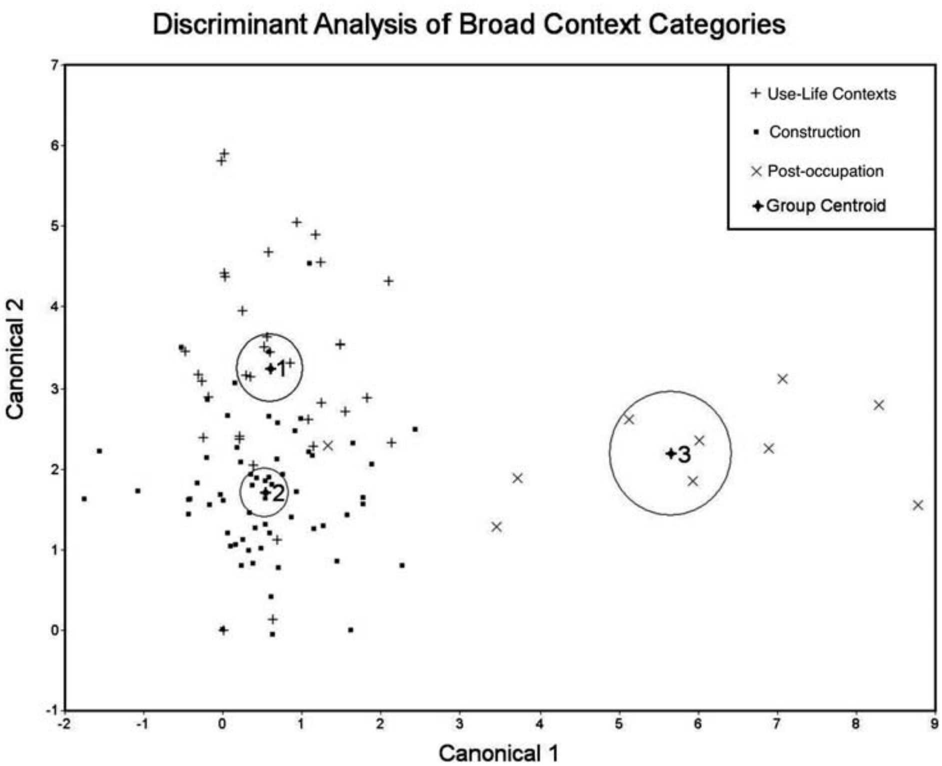


Figure 12.23. Discriminant analysis of broader context categories.

ously argued that occupation contexts are more or less differentiable from other context categories (Table 12.6). By restricting this analysis to occupation contexts only, we can mitigate potential skewing resulting from inclusion of samples with dissimilar compositions. This discriminant analysis of occupation contexts classified 33 of 63 (53 percent) occupation context samples into an incorrect temporal phase, suggesting that temporal phases are not very successful in differentiating these contexts.

Conclusions

What evidence have we gained about plant use at Çatalhöyük from Building 3? We know that while there are some unusual aspects about this house, such as odd entrances and nearby rooms, the life history of this building is quite similar to others in its neighborhood. In general, the plants were deposited steadily throughout the building's life history, with the domesticates being stored in bins and their remains being used in many ways, especially in brick building and as fuel via fodder. The plant spectra reflect what was being utilized in general throughout Mellaart's Level VII by the residents of Çatalhöyük, with a regular amount of domestic plant food being present. Figure 12.23 illustrates how the short phases between rebuilding within this house did not reflect any remarkable change in household activities, at least ones that directly related to plant remains. When these

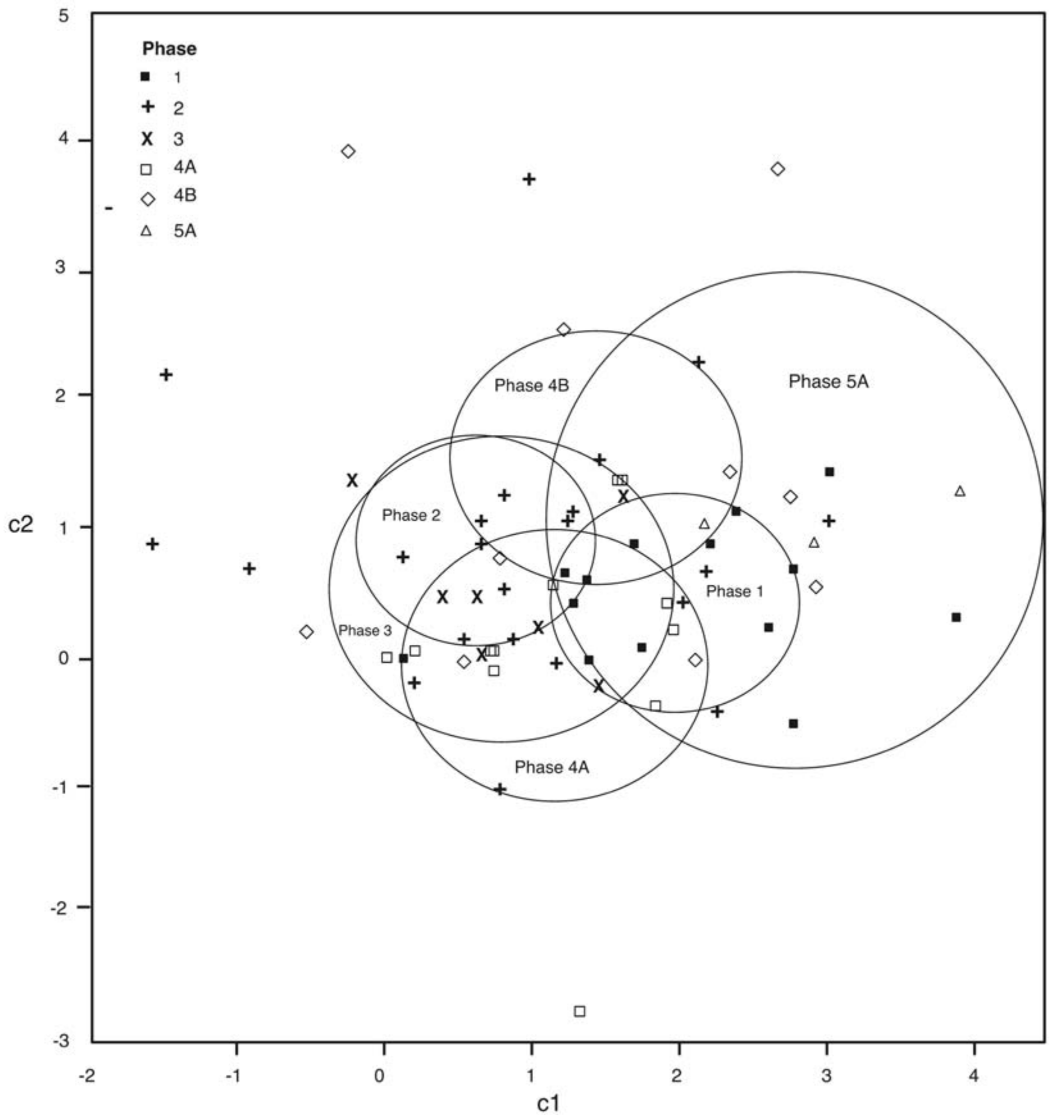


Figure 12.24. Discriminant analysis of use-life contexts grouped by temporal phase.

data are studied with the associated tools, bones, and sediment, the plant remains might participate more robustly in interpreting any shift in the house phases. For now, we see that the residents did what most other families did at Çatalhöyük: they slowly divided up their homes into special areas for storage and cooking, saving the central regions for gatherings, visits with the ancestors, and collective rituals, while they collected and farmed in the local landscape, working within the seasons and throughout the diverse possibilities of this region.

In terms of food production, the Building 3 residents clearly farmed and also collected vegetable food. As was shown in the discussion by Fairbairn, Near, and Martinoli (2005) about landscape use by the East Mound residents, we do know that the Building 3 residents also visited all of the available productive zones. They went to the mountains, marshes, grasslands, rises, and the local alluvial soils where winter crops were grown. They spent a great deal of time processing their food and storing it in bins, baskets, corners of rooms, and also in small caches.

They cooked in ovens and hearths of various earthen forms, some permanent, some expedient, and used both wood and animal dung for fuel. They were tidy and cleaned out their fire installations, probably dumping the ashes and debris in nearby middens, in fields or off-site. The roof was clearly used often for much processing and cooking, due to the dense lenses of ash seen in the layers. The roof could have been a common spot for many food preparation activities, such as drying food in the sun, parching grains, final cleaning of grain stores, and boiling hackberries into syrup.

Fairbairn, Near, and Martinoli ascertained a series of plant combinations that reflected different types of plant usage within these houses, even identifying primary and secondary deposits of in situ burning, ovens, hearths, rake-outs, floors, middens, and fills in specific phases (Fairbairn, Near, and Martinoli 2005:Table 8.6). We do not find such clearly associated combinations of plants in Building 3. The taphonomic processes of Building 3 played a major role in mixing and breaking up the plant remains that are distributed throughout the building, as did the roof collapsing onto the floor and all of its associated contexts. We did find variations in background noise, with periodic additions of processing evidence from the roof, and odd densities of food remains in Space 158. But the rest of the samples do not illustrate specific activities, nor better define their architectural areas. Thus, Building 3 is much like its neighbors, although it was rebuilt and its interior space quite radically reformed throughout its use-life. Building 3 does demonstrate that even at this later time on the East Mound, people still valued wild fruits and nuts.

Acknowledgments

This chapter represents the culmination of a series of specialists' work on the BACH archaeobotanical data. For their extra help on-site and at the flotation machine, we want to thank Meltem Açabay, Shahina Farid, and Aylan Erkal. The flotation samples were analyzed primarily by Kathryn (Katy) Killackey in the Archaeobotany Laboratory of the University of California, Berkeley, who wrote earlier reports on the data from this building, along with Peggy Hauselt, Harpreet Malhi, and Virginia Butler. We especially want to thank Sarah Jones, the IT person on the Çatalhöyük Project, who provided workable files of raw data for us and enabled us to synthesize the material so that the archaeobotany of Building 3 could be comparable with that from the other buildings at the site. Shanti Morrel-Hart participated in some of the computing.

This chapter is the result of many people's efforts, and many need to be acknowledged. However, our list would be so lengthy that the authors would like simply to note that the whole Çatalhöyük and BACH Project teams helped to make this happen in Turkey, especially Ruth Tringham and Mira Stevanović, who allowed us to work on this wonderful data set.

Chapter 13

Death and Its Relationship to Life: Neolithic Burials from Building 3 and Space 87

Lori D. Hager and Başak Boz

Burial practices of the Neolithic people of Anatolia have been the focus of considerable interest since James Mellaart's discovery in the 1960s of wall paintings showing headless humans amid striking vultures at the site of Çatalhöyük, Turkey. At the time, Mellaart (1967) proposed that these paintings represented a distinct funerary practice where the deceased inhabitants of the site were defleshed by the birds outside of the house prior to burial within the house. This view emphasized the secondary context of Çatalhöyük burials. The hundreds of skeletons uncovered from within the houses during Mellaart's excavations did not attest to this burial practice, but the vulture/ secondary inhumation idea continues to reside in many people's minds when they think of burial events at Çatalhöyük.

The excavations at Çatalhöyük since 1995 have added significant details regarding the burial practices of the Neolithic people who lived and died at the site. Andrews et al. (2005) report on the burial practices and the taphonomic processes at play for over 90 individuals recovered from the 1995–1999 field seasons in the NORTH and SOUTH Areas and the off-site locale of the KOPAL Area. Their findings run counter to Mellaart's claim for secondary burial preference and outline in detail the interment process at Çatalhöyük where primary inhumations outnumber secondary ones.

Early analyses of the skeletons from the Mellaart excavations were made by J. L. Angel (1971) and D. Ferembach (1972), the only two physical anthropologists to study the 1960s skeletal remains close to the time of the discoveries. Angel (1971) demonstrated his interests in disease, diet, and trauma by outlining the occurrence of pathological markers, dental attributes, and trauma-related injuries in the Mellaart skeletal sample. For instance, he noted a relatively high prevalence of anemia in the Mellaart sample and hypothesized a relationship among the potentially malarial environment in which Çatalhöyük was located, anemia, and the genetic blood disorder thalassemia. Based on his study of the human bones, Angel suggested a lifestyle requiring hard physical labor in an ecologically challenging environment where the Çatalhöyük people were faced with disease, accidents, and an adequate but uneven diet.

Ferembach (1972) studied the age and sex distributions of the Mellaart sample and was unable to find a burial pattern based on either of these factors. She also employed a technique commonly used at the time, craniometry, to measure variability in skull morphology in order to assess potential biological relationships between the inhabitants of Çatalhöyük and other peoples. She found that two skull forms, long-headed (dolichocephalic) and short-headed (brachycephalic), were present in the Mellaart skull sample and concluded that short-headedness was a local variant of the proto-Mediterranean form in Central Anatolia.

Discrepancies in provenience, numbering, and labeling have left the Mellaart sample in need of serious sorting in order to comply with current standards of research (Düring 2003; Hamilton 1996). Hamilton (1996) was unable to adequately assign grave goods to specific individuals due to insufficient labeling of the materials. In addition, Hamilton questioned the sex determinations, particularly since sex was sometimes based on the grave goods found with them rather than on any biological markers. To no surprise, Hamilton could not confirm Mellaart's assertions that there were sex differences in the nature of their grave goods. Düring (2003) later outlined the challenges Angel and Ferembach faced with the Mellaart-era skeletons, and he made an attempt to reconcile the differences in the basic data sets.

The Neolithic burials recovered from 1999 to 2002 by the BACH team in Building 3 and Space 87 are described in this chapter (see Figures 2.3, 2.11, 25.14). Since 2002, excavations have continued in the NORTH and SOUTH Areas of the East Mound, from which a large number of Neolithic skeletons have been recovered. We discuss some of these post-2002 finds when appropriate. The post-2002 finds are the subject of ongoing research; preliminary descriptions can be found in the archive reports compiled at the end of each field season (*Çatalhöyük Archive Reports*, Human Remains 2002–2008).[1]

DEATH AT ÇATALHÖYÜK

The burials from the post-Mellaart excavations reveal a clear pattern of preference for intramural burial (Farid 2007). While some Neolithic skeletons have been discovered outside of the context of houses in the KOPAL Area, it has now been sufficiently demonstrated that most of the dead were buried in the houses or adjacent spaces in primary contexts without prior excarnation. While many individuals were found in primary intramural contexts, some individuals were found in secondary ones, mainly due to the standard practice among the Çatalhöyük people to disturb the skeletons buried under the floors and other areas of the house, quite possibly their own ancestors. As a result, some skeletal elements were removed from their primary location and subsequently taken to a secondary location. In addition, some primary skeletons were disturbed for the removal of specific body parts that would later be placed in secondary contexts. The limited space available for intramural interment also meant that burial pits at Çatalhöyük often contained several individuals, despite the fact that each individual was usually interred in a separate burial event.

The people of Çatalhöyük had designated areas in the houses and other indoor spaces for interment, and they opened and closed these areas repeatedly over the life the house. The buildings were both a space for the living and a space for the dead. In general, when an individual died at Çatalhöyük, the final resting spot of the body would be the house or a smaller room or space adjacent to a house. A frequent burial spot in a house was under the floor of a platform. The central floor or other smaller spaces were also used for interment, and several neonates/infants have been found in side rooms and foundation layers. For burial in the platforms and floors, the plaster was cut, usually in an oval shape. The burial pits often gained in width over time as the grave was filled with later interments, due to a tendency to undercut the walls. In most instances, when the bones of individuals from earlier time periods were encountered, they were fully or partially exhumed or pushed aside rather than left alone. The new individual was placed into the burial pit in a flexed position with the knees loosely or tightly drawn to the chest and the body on the left side, right side, or back, or, as in two juveniles from Building 3, on the stomach. The orientation of the body in the grave varied.

Once the newly dead and any associated items were placed into the excavated pit, the opening was filled in with soils, new and old, together with broken bits of plastered floors or other items. The burial fill included lithics, animal bones, disturbed or discarded artifacts, construction materials, and loose human bone; plant remains were usually found in low densities (Fairbairn, Near, and Martinoli 2005). Typically, any loose bones from the earlier individuals were randomly placed back into the pit along with the soil comprising the burial fill. On several occasions, the bones from the disturbed individuals had been put back into the pit in a clearly patterned manner rather than randomly scattered throughout the burial fill. A familiarity with the bones of the ancestors by the descendants is clear from the reconstruction of their actions at interment. Finally, the floors, both cut and uncut, were plastered over, often several times. In this way, the dead became completely entombed under the house floors.

Infants were often buried in baskets. Mellaart (1967) reported that older juveniles were placed in baskets at interment, but this was not verified during the 1995–2002 excavations. Some adults were likely wrapped in matting at interment. The baskets from Building 3 and Space 87 in the north were associated with infants and children. In some instances, postmortem binding of the body and the placement of pigments in the grave and/or on the body occurred. Pre-interment binding for some individuals is suggested at Çatalhöyük by the presence of phytoliths around the head and mandible, hips, knees, and/or ankles.

Grave goods and personal belongings were sometimes placed with adults and sometimes with children, though they seem to be associated more often with the latter. These include items such as beads, shell, bone ornaments, stone tools, pigments, bracelets, anklets, and armbands. One individual was found in direct association with a lamb (Russell and Düring 2006). Many individuals, adults and children, have been found absent associated cultural materials. The main pigments associated with the skeletons were cinnabar and red and yellow ocher; green and blue pigments occurred but less frequently.

LIFE AT ÇATALHÖYÜK

From a bioarchaeological viewpoint, the people of Çatalhöyük were faced with many challenges relative to their lifestyle as sedentary agriculturists. Aggregated living con-

[1] *http://www.catalhoyuk.com/archive_reports/* (accessed 3 February 2012).

ditions are suggested from the distribution of the numerous houses across the site (Matthews 1996a; Shell 1996). Recent studies indicate that the site was likely occupied year-round by a large population between 3,500 and 8,000 people (Cessford 2005b; Russell and McGowan 2005). The houses were accessed through the roof, which also served as the only source of ventilation in the windowless houses. There is some evidence for animal penning on-site (Matthews 2005b). Congested living conditions in these types of houses presented certain challenges relative to the overall health of humans, including issues related to sanitation, ventilation, the spread of infectious diseases, a proximity to seasonal marshlands, and a proximity to penned animals (Goodman and Martin 2002; Steckel and Rose 2002).

The environmental context suggests life cycles dictated by distinct seasonal changes, including spring flooding around the mound, hot and dry summers, and moist and cold winters (Fairbairn, Asouti, et al. 2005; Matthews 2005a; Roberts et al. 1996). The Çatalhöyük people cultivated cereals, barley, wheat, rye, and pulses but also relied on wild plants, making use of the abundant reeds and sedges from the surrounding wetlands (Atalay and Hastorf 2005; Fairbairn, Near, and Martinoli 2005; Hodder 2005b; Rosen 2005). The dominant domesticated animals were sheep, goats, and dogs. Numerous cattle bones were found on the site, but these animals were nondomesticated at this time (Russell and Martin 2005).

The people of Çatalhöyük practiced a lifestyle that required a certain amount of time away from the mound in activities related to planting and tending of crops and animals and to procuring wood for fuel, clays for house construction, and other resources. There is evidence to suggest that at least some of the agricultural fields, herding areas, and fuel sources were located in the upland areas some distance away (ca. 10 km) from the mound (Asouti 2005b; Fairbairn, Asouti, et al. 2005; Russell and Martin 2005). Long-distance travel is suggested from the trade items found at the site. These include shells from the Red Sea (ca. 700 km distant) and the Mediterranean (Reese 2005). Date palms from palm-leaf baskets or cordage have been sourced to Syria, Mesopotamia, or the Levant (Rosen 2005). The source of much of the obsidian used by the Çatalhöyük people comes from the Cappadocia area some 200 km away (Carter, Poupeau, et al. 2005). The off-mound activities suggest a lifestyle that was active, mobile, and dynamic for many members of the community.

The findings of Molleson et al. (2005) from the 1995–1999 seasons suggest a community confronted by high infant mortality, the presence of infectious diseases, and possibly vitamin D deficiency in babies. A diet of soft foods high in carbohydrates is demonstrated by the high prevalence of dental caries and calculus for the people of Çatalhöyük (Boz 2005). Nonspecific physiological stress is indicated from enamel hypoplasia in juvenile teeth for children aged 1.5–5 years of age and from signs of anemia on the cranial bones of some individuals. Black lung disease, or anthracosis, has been posited for some of the older individuals, who may have spent more time in smoke-filled houses relative to other age groups (Andrews et al. 2005; Birch 2005). On a positive note, the fact that older individuals are in the sample at all may be a sign of the overall survivorship of the population.

Goals of Present Study

From 1999 to 2002, the BACH excavations yielded 19 Neolithic burials in two spaces (Figure 13.1). Ten individuals were directly associated with Building 3, Space 86 (see Figure 4.1). An additional nine individuals were discovered in the partially excavated eastern portion of Space 87 located south of Building 3. We describe these burials relative to their archaeological context and the bioarchaeological analysis of the skeletons undertaken in the laboratory. A

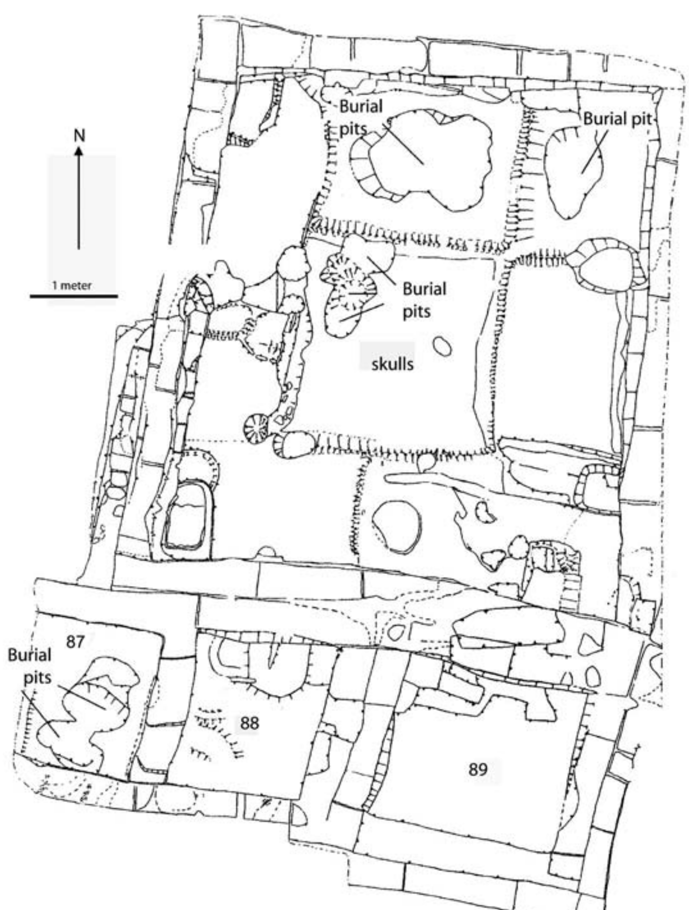


Figure 13.1. Location of burial pits and two skulls in Building 3 and Space 87.

sequence of burial events is offered for each space. Comparisons with the other Neolithic sites in Anatolia are made where the information is available. Finally, we add the BACH burials to what is known about the burial practices of the people of Çatalhöyük from previous studies relative to the treatment and management of the dead, the use and reuse of space at interment, rituals surrounding the dead, and the memory of the dead among the living.

METHODS

The excavation and recording of the skeletons followed the guidelines set out by the Çatalhöyük Research Project. Particular attention was paid to the burial cuts in each floor so that a sequence of burial events in Building 3 and Space 87 could be accurately reconstructed. The burial fill was subjected to flotation in all instances. All burials were drawn in the field either by hand or digitally, or in some cases, by both techniques. All bones were labeled at the time of lifting; and in the case of the scattered remains of disturbed skeletons, each element was numbered, labeled, and mapped by its location in the burial pit prior to being removed.[2]

Laboratory analysis was consistent with methods and techniques in Andrews et al. (2005) and Molleson et al. (2005). Additional samples for stable isotope analysis and microwear analysis were taken in the laboratory. Bones were conserved in the field and the laboratory as necessary.

RECONSTRUCTIONS

As archaeologists, we encounter the dead through the last remaining part of the body, the bones and teeth. For the Neolithic people, this skeletonized perspective would not have been their view of death at the time of interment. Rather, they would have seen and managed the full body with all of the soft tissues intact. In an effort to visualize the burial event as it might have happened in the Neolithic, reconstructions of the primary burials from Building 3 were made by illustrator John Swogger. The images are meant to evoke a response to the skeleton as a person rather than as bones alone. The images represent the principal characters in the story of Building 3, and seeing them as people rather than as skeletons gives us a sense of who they might have been, young or old, male or female. The reconstructions help us see the people who in death, and perhaps in life, were directly linked to Building 3.

The images are primarily based on the drawings and photographs of the skeletons in situ. In addition, following the bioarchaeological analysis in the laboratory, age and sex traits were added. For Lucy Hawkes (Hawkes and Molleson 2000), who made reconstructions of several Çatalhöyük skeletons from the 1995–1999 excavations, the Building 3 images were not meant to depict specific individuals in terms of physical features (as might occur in a forensic analysis), but rather to be general representations of the dead. In each reconstruction, body position, age, sex, and associated materials are empirically based and accurate, whereas the soft tissue is interpretive. Hawkes demonstrates that an assessment of how the body was treated and managed after death could be more accurate by considering the proportions of the full body rather than just the skeleton, particularly for the flexed body positions characteristic of Çatalhöyük burials. Interestingly, she concludes that in some instances, the integrity of the body appears to have been less important than getting the body to fit into the grave.

BURIALS FROM BUILDING 3, SPACE 86

From 1999 to 2001, the remains of 10 Neolithic people were uncovered during the excavations of Building 3 (Space 86). Eight individuals were in primary contexts in burial pits in two platforms and the central floor. Two individuals were represented by their skull only. Placed in a secondary context, the skulls were intentionally placed together in Building 3 during the abandonment of the house. The primary inhumations were found under the floors of the house: three children were buried in the central floor, four individuals were buried in the north-central platform, and one individual was buried in the northeast platform (Figure 13.2). Two of the primary burials in the north-central plat-

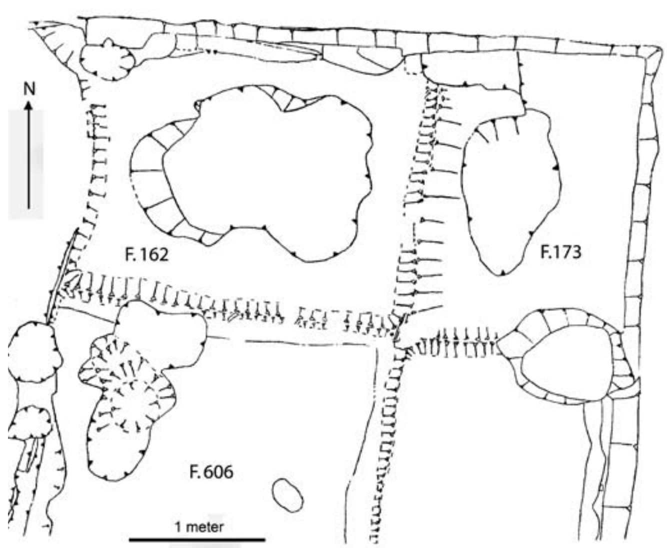


Figure 13.2. Closeup of Building 3 burial pits in the north part of the house.

[2] Conventions employed in this volume include: special or "X" finds that are expressed with their unit number as 8501.X1; samples as 8501.S1; finds retrieved after excavation from heavy residue, etc., receive a variety of identifiers such as 8501.D1, 8501.H1, 8501.A1. Each skeleton has its own unit number (often expressed as digits in parenthesis). The skeleton unit is part of a burial feature that also includes units for the burial fill, burial cut, and any other associated layers or materials.

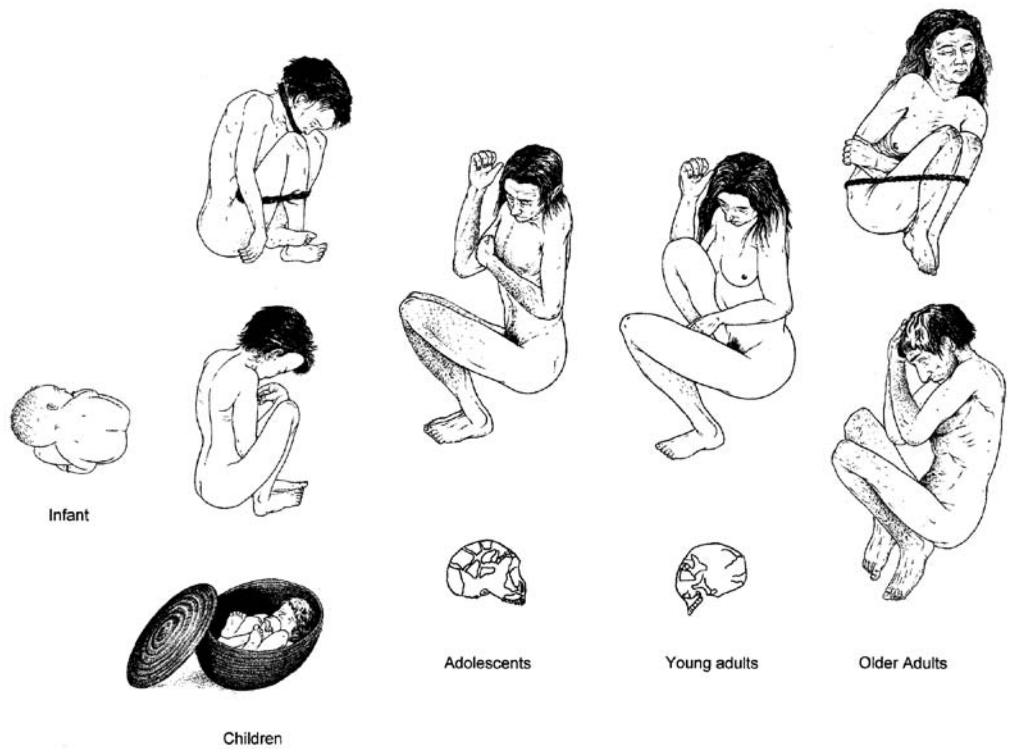


Figure 13.3. People of Building 3 by age.

form were disturbed for the interment of a later burial. Six primary context burials had not been disturbed. No headless bodies were found in Building 3.

The burial descriptions are arranged by the phases of the house in which they were found, beginning with the chronologically oldest burials (Phase B3.3) and proceeding to the most recent, Phase B3.5A (see Figure 4.3). Each description considers the archaeological and bioarchaeological record of the individual, including the location of the burial within the space, the nature of the grave cut, the orientation and position of the body within the burial pit, a determination of age and sex when possible, an evaluation of the overall health and well-being of the individual, and the presence of pigments, baskets, mats, grave goods, and/or personal belongings in direct association with the individual. Key attributes of the individuals from Building 3 are summarized in Table 13.1. The Building 3 individuals are presented by age in Figure 13.3.

Descriptions of Burials from Building 3, Space 86

Phase B3.3: Central Floor

The first intramural burials in Building 3 were three young children. An infant was buried first, followed by two older children soon thereafter. The children were located in the north part of the central floor (F.606) against the west wall of Space 86 and the north-central platform (F.162) to the north (Figure 13.4; see also Figure 4.15). The house had been in existence for several years before these first burials occurred in Phase B3.3 (Chapters 5, 22).

Feature 757, Skeleton 8184

The skeleton of an 8- to 10-month-old infant was found buried in the north-central floor of the main room of the house against the west wall of Space 86 (Figures 13.5, 13.6c). The infant is the youngest individual in Building 3 and chronologically the earliest, having been placed into the house before anyone else. The baby was placed in a lidded basket prior to interment. The skeleton (8184) was oriented in a west–east direction, with the head pointing west. The body was on its stomach, with the head placed on the left side. The face was oriented to the north. The right arm was alongside the face, bent at the elbow. The lower arm was under the head. The left arm was along the side of the body, bent at the elbow at a 45-degree angle. The hand was placed near the shoulder. The lower body was bent at the hips; the legs were under the upper body. Both legs were bent at the knees, and the right lower leg was on top of the left lower leg. Some bones are fragmentary, others nearly complete.

The baby's cause of death could not be determined. The eye orbits of this individual displayed cribra orbitalia, which suggests the infant had nonspecific anemia. The upper

Table 13.1. Key attributes of Building 3 skeletons

Phase	Location	Burial cut	Skeleton	Orientation	Position	Age	Sex	Condition	Associations
3	North-central floor (F.606)	F.648	6681	West–east, facing north	Flexed on left	8–10 years	N/A	Intact	Phytoliths (cord); yellow ocher
3	North-central floor (F.606)	F.756	6682	South–north, facing north-west	Flexed on left	7–8 years	N/A	Intact	None
3	North-central floor (F.606)	F.757	8184	West–east, facing north	Flexed on stomach, in basket	8–10 months	N/A	Intact	Bone spatula, red and green pigments, shell, beads, wooden box; phytoliths (basket)
4a	North-central platform (F.162)	F.634	8115	Northwest–southeast, face up, slightly to northeast	Flexed on back	40–45 years	Female	Intact	Phytoliths (cord); possible association: basket, blue pigment
4a	North-central platform (F.162)	F.644	8113	South–north, facing east*	Flexed on right*	18–22 years	Female	Disturbed	None
4a	North-central platform (F.162)	F.647	8114	South–north, facing east	Flexed on right	14–16 years	Male	Disturbed	None
4b	Northeast platform (F.173)	F.617	6237	Southeast–northwest, face down	Flexed on stomach, in basket	3–4 years	N/A	Intact	Shell, phytoliths (basket)
4b	North-central platform (F.162)	F.631	6303	South–north, facing east	Flexed on right	40–45 years	Male	Intact	Probable association: wooden plank
5/6	North-central floor (F.606)	F.794	3529 x1	West, facing north	On left side	12–14 years	N/A	Skull only	3529.X2; bone, shell; near bucranium
5/6	North-central floor (F.606)	F.795	3529 x2	South, facing east	On right side	Young adult	Female	Skull only	3529.X1; bone, shell; near bucranium

*Inferred from burial cut and location of articulated left foot.

dentition is anomalous in that the left central and lateral incisors are fused, a relatively uncommon dental anomaly.

Skeleton 8184 was found in a basket with grave goods and personal belongings (see Figure 5.52). Red ocher and phytoliths were present on some of the cranial bones, and a shell lined with red ocher was found near the back of the head (Figure 13.6b; see also Figure 5.54). A lump of yellow material resembling hard soil or clay, as yet unidentified, was found in the shell. An animal bone pin made with care and precision (see Chapter 8) was also located near the head region, with the end embedded in a piece of malachite (see Figure 5.55). The form and shape of the malachite suggest it may have been in a pouch with the bone pin stuck in it when the infant was buried. In addition, fragments of wood were found near the pin and pigment, suggesting both items were originally inside a box (Figure 13.6a). At the time of death, strings of beads were placed on both arms before interment. Several rows of gray beads

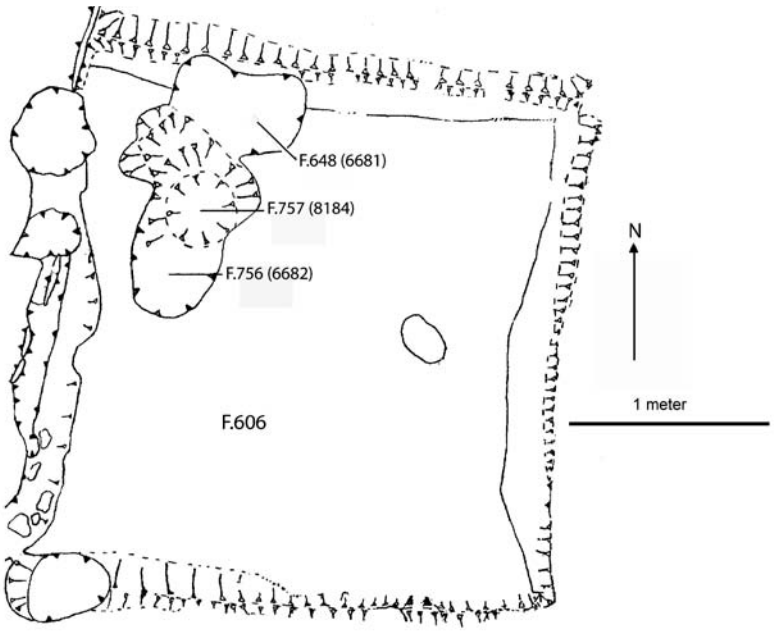


Figure 13.4. Central floor (F.606), Phase 3 burial cuts.

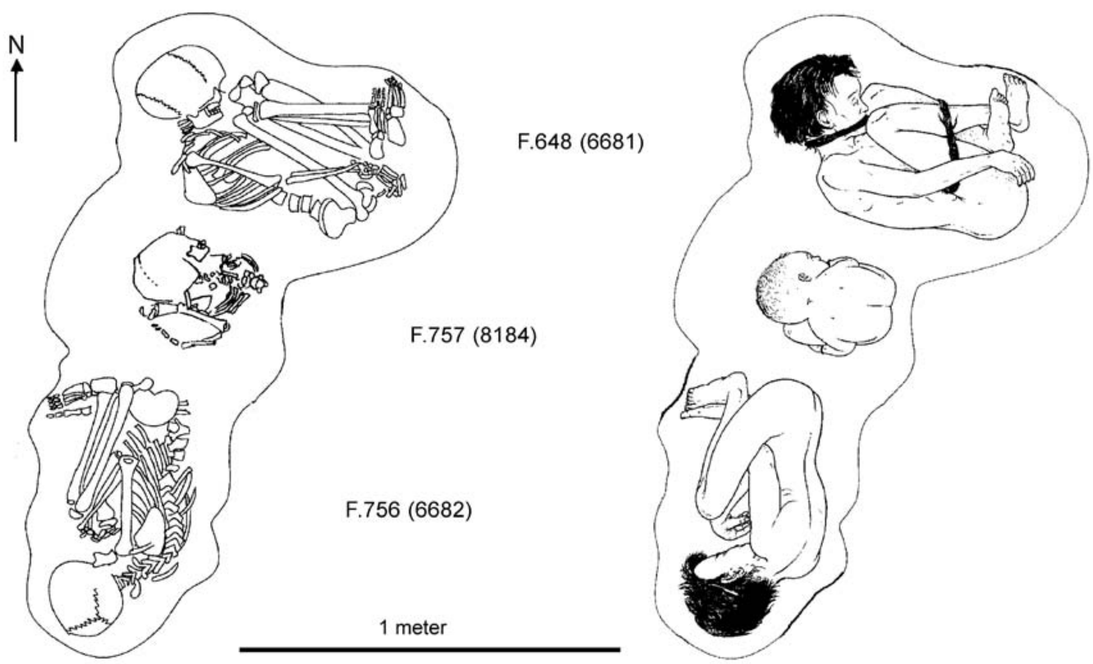


Figure 13.5. Central floor (F.606), Phase 3 burials: infant (8184) and two children (6681, 6682).

of baked clay were wrapped around the upper right arm (see Figure 5.53). A bracelet/armband of reddish baked and unbaked clay beads was found on the upper left arm, with a few white beads interspersed among the red ones (see Figure 21.4). This individual had the most grave goods/personal belongings of any other individual in the BACH sample.

Feature 648, Skeleton 6681

The skeleton of an 8- to 10-year-old child was found buried in the central floor of the main room of the house next to the north-central platform and the western wall of Space 86 (Figure 13.5; see also Figure 4.15). The body was aligned west–east with the head pointed west. The child was lying on its left side, with the head also on the left, facing east.

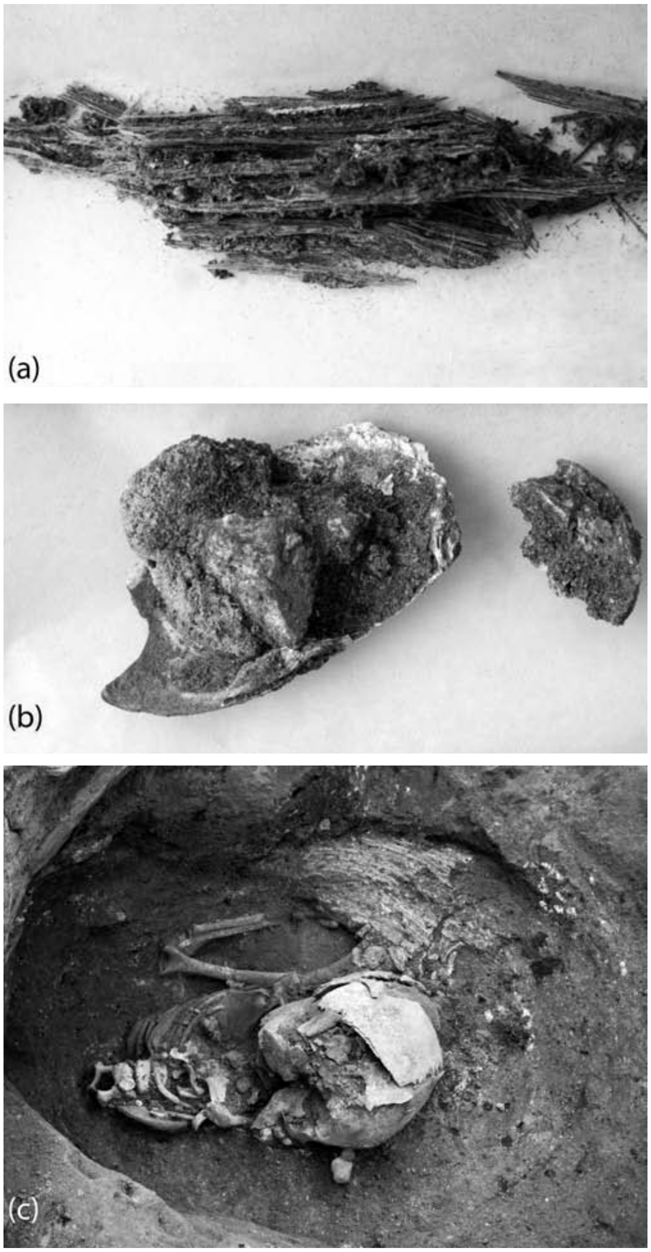


Figure 13.6. Grave goods: (a) wood, possibly from a box; (b) bivalve shell filled with red ocher, associated with (c), infant burial (8184), taken from above looking southeast.

The body was tightly flexed, with the knees drawn up to the chest and the head bent toward the knees. The right arm was alongside the body with the hand resting on the pelvis. The left arm was bent 90 degrees under the body, and the hand was on the left hip. The left foot was crossed in front of the right ankle as if to keep the legs together. Pieces of phytoliths were observed around the lower jaw and the legs, but they were not continuous. It is likely the body was bound prior to burial with cordage made from plant fibers. The preservation of most of the bones is good, although some long bones are fragmented.

Observations on the oral health of this child include one carious tooth, slight calculus, and chipping. Three permanent incisors exhibit enamel hypoplasia suggesting nonspecific physiological stress. The incisors are shovel-shaped. A metopic suture is persistent. Early fusion of the metacarpals, metatarsals, and the phalanges was noted.

There were no grave goods associated with the child. A yellow organic residue still to be analyzed was found in the lower thoracic region. Several of the ribs and thoracic and lumbar vertebrae are stained yellow, presumably from this residue.

Feature 756, Skeleton 6682

A child aged 7–8 years was found buried in the central floor of the main room of the house near the western wall of Space 86 (Figure 13.5). Oriented in a south–north direction with the head to the south and feet to the north, the body was lying on its left side. The head was also on the left side, facing northwest. The child was tightly flexed, with the knees drawn up to the chest and the head at the knees. The right arm was bent 45 degrees toward the head, with the hand curled under the chin. The left arm was extended under the body, and the hand was placed between the legs near the feet. There was almost no space between the legs and the body because of the tight flexure. The feet were parallel to one another. The bones are in good condition.

Signs of infection in the form of periostitis are present on the lower jaw. The dentition shows signs of calculus build-up on several teeth. Chipping of the enamel of some teeth was noted.

Early fusion of the hands and feet follows the same pattern noted above for skeleton 6681. Moreover, not all of the vertebral bodies are fused to the neural arches for skeleton 6682, which is on the late side of the typical fusion pattern. No associated artifacts were found with this child.

Phase B3.4A: North-Central Platform

The north-central platform was opened for human interment in Phase B3.4A and later in Phase B3.4B (Figure 13.7; see also Figure 5.67). The burial cuts were clear in some instances, and less clear in others. In Phase B3.4A, the remains of three individuals (8113, 8114, 8115) were placed in the north-central platform. One of these individuals was an adolescent male (8114), one a young adult female (8113), and one an older adult female (8115).

Feature 644, Skeleton 8113

This individual was a young adult, probably female, aged between 18 and 22 years at the time of death (Figure 13.8). This was a primary burial that had been disturbed during

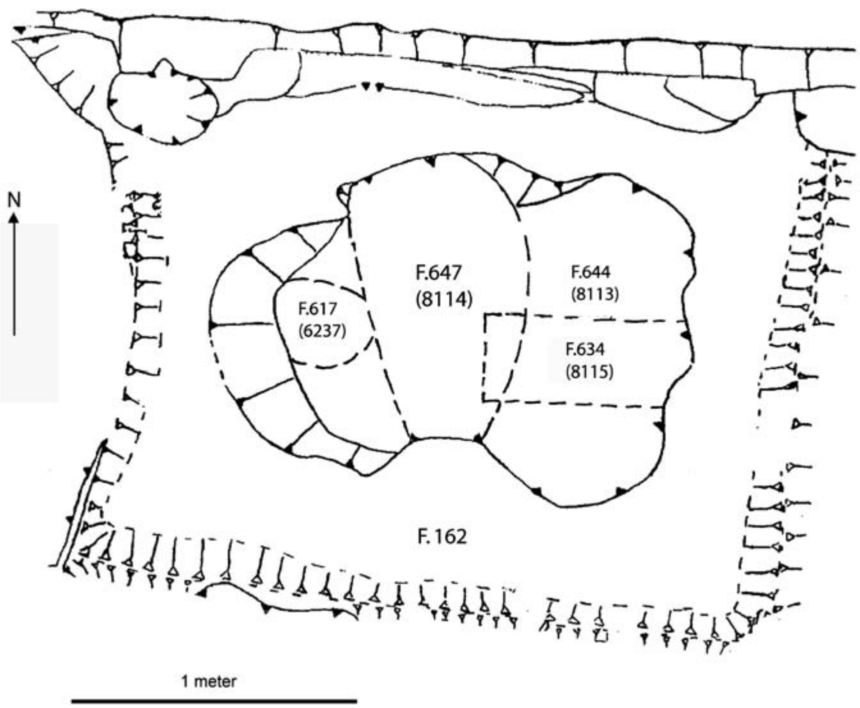


Figure 13.7. North-central platform (F.162), Phase B3.4A and B3.4B burial cuts.

Neolithic times for the burial of an older woman (8115). Nearly all the bones of the young woman (8113) were removed from their original place of interment during the excavation of the burial pit for the older woman's interment (8115), leaving only the left foot of skeleton 8113 intact. When the later grave was being filled in, the loose bones of the young adult (8113) were scattered randomly within the burial pit as part of the burial fill, mixed also with the slightly disturbed remains of an adolescent (8114). The majority of skeleton 8113 was recovered during the excavation of the burial pit. Burial position and orientation were inferred from the size and orientation of the burial cut and from the left foot that remained in situ. The body was flexed on its right side, head pointing to the south, head possibly on the right side, facing east. The preservation of the bones is good to fragmentary.

On the cranium of skeleton 8113 we found a remnant of the metopic suture. The dentition is characterized by slight to moderate dental wear, slight calculus, enamel hypoplasia, and enamel chipping. One tooth displays significant lingual wear, a type of wear that has been noted on several individuals at Çatalhöyük. This kind of wear is attributed to a use-wear other than chewing. Pulling reeds and leather by the teeth to soften the material for basketry and mat making could account for it. Having significant wear at this young age could indicate that this young woman started repetitive activities involving her teeth at quite an early age and continued them regularly. Muscle markings on the lower jaw suggest robust muscles in life for this young female, which is consistent with this hypothesis.

This young woman also seems to have had a condition associated with high physical demands in the lower back region. The condition, called spondylolysis, results in the separation of the neural arch from the vertebral body of the fifth lumbar vertebra. The separation is related to mechanical stress, although there may be a genetic component also. The ribs of the lower back show signs of heavy muscle use, which is consistent with an overuse of the lower back during life. In addition, the right tibia shows signs of stress from overexertion at the knee. All these conditions are indicators of a highly physical individual whose body was negatively impacted by the overexertion.

The overall health of this young female was also compromised by an infection evidenced by the presence of periostitis bilaterally on the clavicle and femur.

No grave goods were found in association with this disturbed interment.

Feature 647, Skeleton 8114

Feature 647 is the skeleton (8114) of an adolescent aged between 14 and 16 years, possibly male. While the majority of the skeleton was intact, the lower limb bones had been disturbed by the burial of the older woman (8115) later in the history of the house (Figures 13.8, 13.9). These leg bones had been removed during the excavation of the burial pit for the older woman (8115) and then randomly thrown back into the pit when the grave was filled in.

Skeleton 8114 was lying on the right side with its head pointing to the south, facing east. The body was loosely flexed at the hip, and by inference, at the knees. The arms were bent 45 degrees at the elbow and extended toward the head. All of the right leg and part of the left leg had been moved from anatomical position. The rest of the skeleton was intact. The condition of the bones is fragmentary.

As on three other individuals from Building 3, a metopic suture is present. The teeth have slight to moderate amounts of calculus and dental wear. Enamel hypoplasia is present on several teeth. The left M3 is impacted and angled toward the M2. The M2 has a carious lesion on the

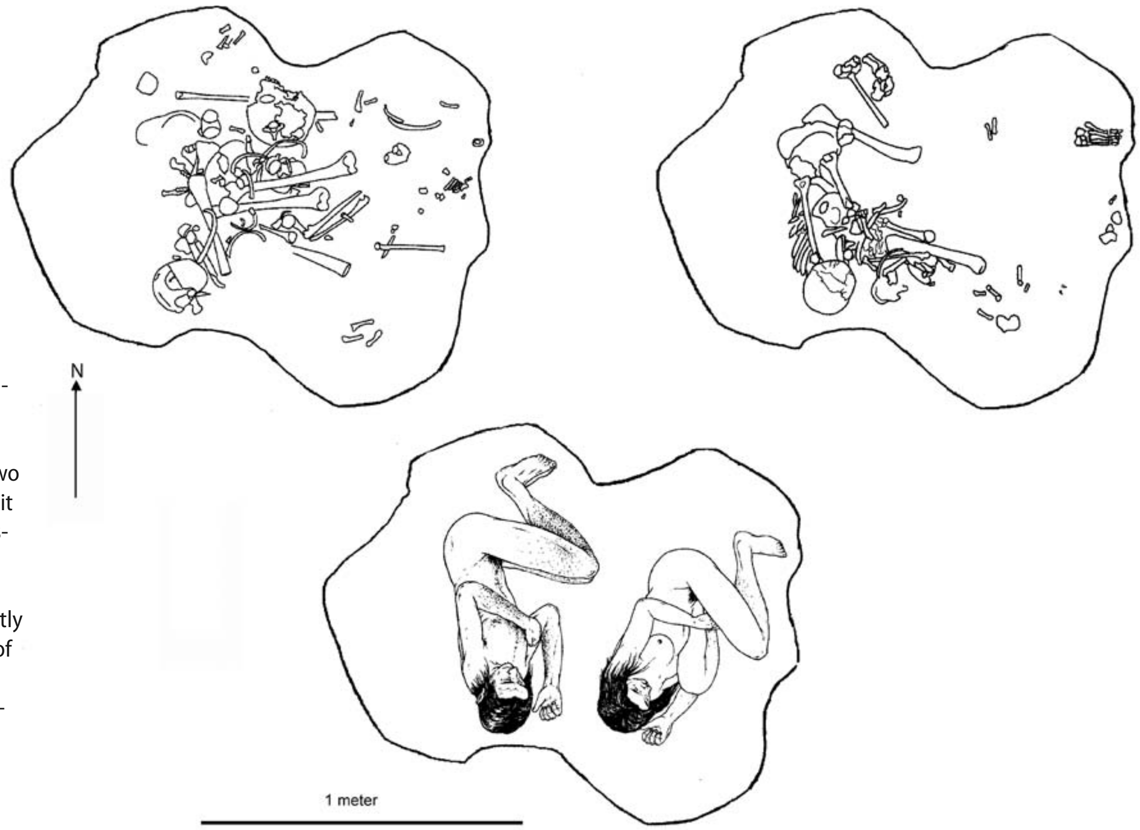


Figure 13.8. North-central platform (F.162), Phase B3.4A burials: the upper two levels of the grave pit reveal the highly disturbed skeleton of a young adult female (8113) and the slightly disturbed skeleton of an adolescent male (8114); a reconstruction shows their inferred original positions before disturbance.

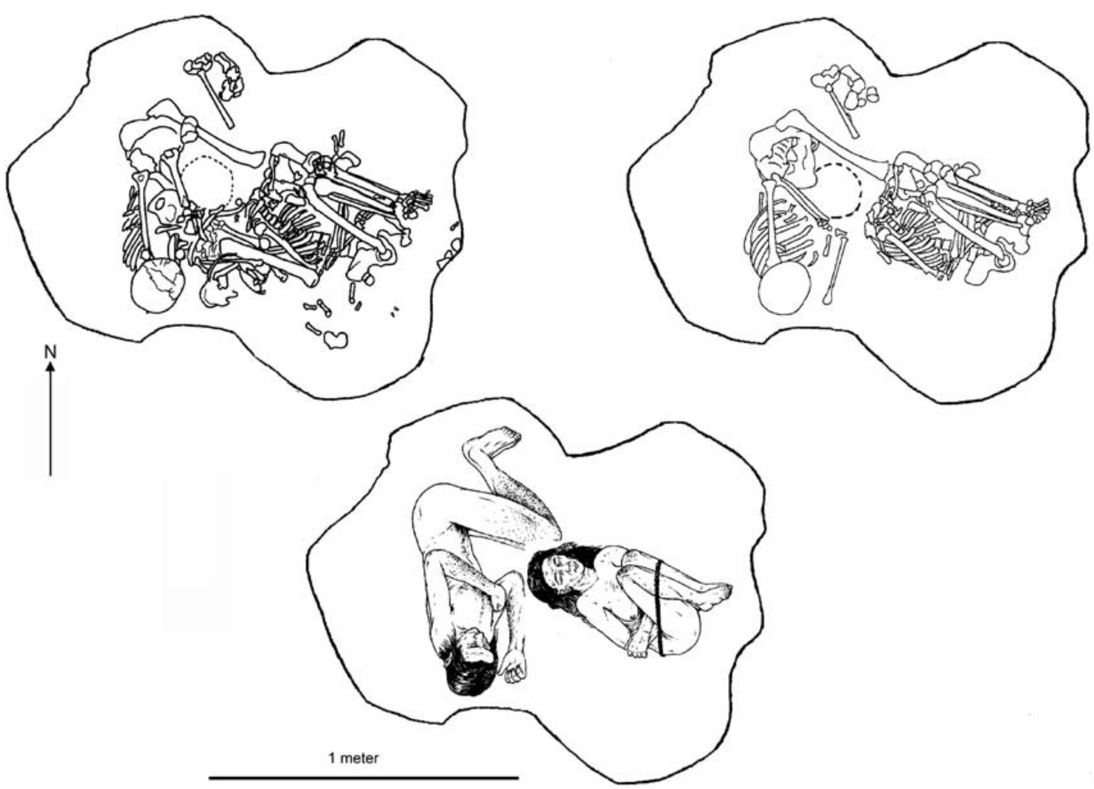


Figure 13.9. North-central platform (F.162), Phase B3.4A burials: the middle and lower levels of the grave pit with the disturbed remains of skeletons 8114 and 8113 and the undisturbed skeleton of an older adult female (8115); a reconstruction of their positions when the older female was the last individual buried in the platform.

distal aspect in the area of the impacted M3. The two upper M2s are reduced in size relative to the normal condition. Incipient dental caries is present on M1 and M3.

Several elements of the lower limbs show signs of mechanical stress. Cortical defects are present on the right and left femurs and both tibiae. The left tibia is more severely affected than the right. The right fibula is characterized by a proximal epiphysis that is porous with polished bone (eburnation) on the surface of the tibial plateau. The upper fibular metaphysis has a substantial bony extension (spicule) on the back side of the bone, a sign of mechanical and/or trauma-related stress. Moreover, the fibula was significantly bowed, a condition possibly linked to acute plastic bowing deformity (APBD) where the bone responds to force by bowing rather than fracturing or dislocating (Stuart-Macadam et al. 1998). Repetitive loading can be a factor in APBD, particularly in bones that are growing and remodeling (Stuart-Macadam et al. 1998). The right and left ankle bones also have bony extensions where they articulate with the calcaneus, the left more so than the right. All of these conditions are indicators of high levels of mechanical stress on the knee and ankle from high physical demands on this adolescent.

No grave goods were present.

Feature 634, Skeleton 8115

This skeleton represents the articulated remains of a female of 40–45 years. Skeleton (8115) was lying on her back, leaning slightly to the left (Figure 13.9). The body was tightly flexed at the hips so that the knees were drawn to the chest. The head was pointing to the northwest, and the face was oriented to the north–northeast. The left arm was bent at the elbow, with the lower arm and hand extending toward the right elbow. The right arm was slightly bent, with the lower arm extending toward the feet. The right hand was between the lower legs. Preservation of the bones is relatively good, although several bones are fragmentary.

The oral health of this older woman was consistent with her age. Calculus on the front lower teeth is severe. Enamel hypoplasia is evident on a number of teeth in the form of both lines and pitting. Six teeth have carious lesions, and dental wear is moderate to heavy on all teeth. One lower molar shows antemortem chipping. There is antemortem tooth loss of an upper premolar, and an abscess is present on the mandible.

Skeleton 8115 has strong muscle markings throughout, suggesting this was a robust, well-muscled female. Her skull and mandible indicate she had well-developed jaw muscles, and the muscles of the postcranium were equally well developed. Even so, the right and left arm bones are noticeably light in weight. This may be indicative of osteoporosis in this older adult female.

Degenerative joint disease (osteoarthritis) is evident in several areas of the body as osteophytic growths and lipping, including the middle and lower back regions and the hips. The right and left hipbones have large preauricular sulci with extensive lipping, particularly on the right side. An ossified xiphoid or possibly ossified costal cartilage was noted on the sternum.

Four mid-thoracic ribs have healed fractures. All of these ribs are from the left side of the body and represent a minimum of two episodes of trauma to the ribs. Three of these fractures are at the costal ends of the rib, with two of the ribs forming a false joint at the site of the healed fractures. One healed fracture is at the mid-shaft of another rib and may have occurred earlier than the other rib fractures.

The lower limb attests to the asymmetrical response to physical demands during this older woman's life. This was a strong, active woman who used her right lower limb more extensively than she did her left. In all respects, there is a clear emphasis on the right side of the lower body in weight-bearing activities such that the right side of the lower limb was especially robust and rugged. The right side of the body shows greater degeneration than the left side because of this overdependence on one this side, especially after many years of life. Both the right pubic symphysis and the right hip joint show signs of increased degeneration relative to the left side. The right hip joint, for example, has woven bone lining the acetabulum, suggesting a trauma-related reaction to stress. The reason for this inclination toward the right side may be related to the two episodes of broken ribs on the left side that the woman had endured, although other factors may also account for this asymmetry.

Extra-articular facets are present on the left ankle and the left patella. In addition, the right distal foot phalanges of the big toe have facets. The presence of the facets suggests that kneeling was part of this person's regular activities.

A black residue was found in the thoracic region of skeleton 8115. The presence of this residue resembles the residue found with other older individuals from the site. These residues have been interpreted as black lung disease, caused by poor ventilation in the houses.

Most notably, there were phytolith remains on the exterior of the left hipbone at the upper ilium (see Figure 4.16). The phytoliths represent the remains of a braided cord made from plant fibers. The presence of this cord is suggestive of postmortem, pre-interment binding. It is also possible the cordage represents the remains of the older woman's clothing, perhaps a belt.

Yellow residue was found within the ribcage. A small fragment of a basket and a piece of blue pigment were located near the right shoulder of skeleton 8115. The exact relationship of these items to the woman is not clear (see Figures 5.68, 5.69).

Phase B3.4B: Northeast Platform

Feature 631, Skeleton 6303

This skeleton is an adult, probably a male, aged 40–45 years. This older individual (6303) was buried in the center of the northeast platform in an oval cut, with the head to the south and the feet to the north (Figures 13.10, 13.11; see also Figures 5.83, 5.84). The face was oriented to the east. The body was in a tightly flexed position, lying on its right side. The right and left arms were bent at the elbow, with the lower arms extended toward the head. The right and left hands were in front of and under the head. The legs were bent at the hip and knee. The feet were parallel to each other. The preservation of some of the bones is fair to good, although other bones are more fragmentary than others.

The oral health of this individual was poor. The teeth show a slight to moderate amount of calculus, and dental wear is extensive on all teeth except the third molars. Several teeth are carious, and abscesses are present on the upper jaw at three different tooth locations. Periodontal disease is observed on the maxilla and mandible. Antemortem tooth loss is evident for the right upper first molar.

Degenerative joint disease is slight, particularly for an individual of this age. There is mild osteophytic lipping on the left upper femur that is related to a cortical defect on the femoral neck due to mechanical stress on the joint. Osteophytes are also evident bilaterally at the knees. Overall, the bones are robust but lightweight, particularly the bones of the hand and hips. This may be indicative of osteoporosis.

Stature is estimated at 168–174 cm, based on the maximum lengths of upper and lower limb bones (Trotter and Gleser 1958).

No associated artifacts were found with this older individual (6303), although a burned wooden plank was located within the burial pit in the level just above the feet of the skeleton (in the north). The wood may be unrelated to the skeleton, but its location in the burial pit near the skeletal elements suggests it was associated. Moreover, a skeleton of a juvenile dog was found in the northeast corner of the house near the individual (6303).

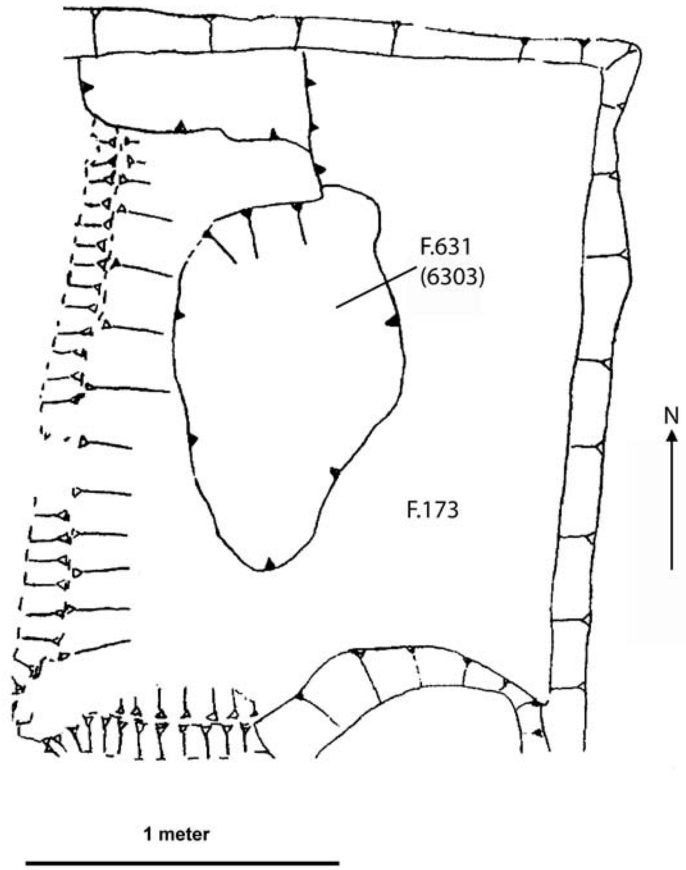


Figure 13.10. Northeast platform (F.173), Phase B3.4B burial cut.

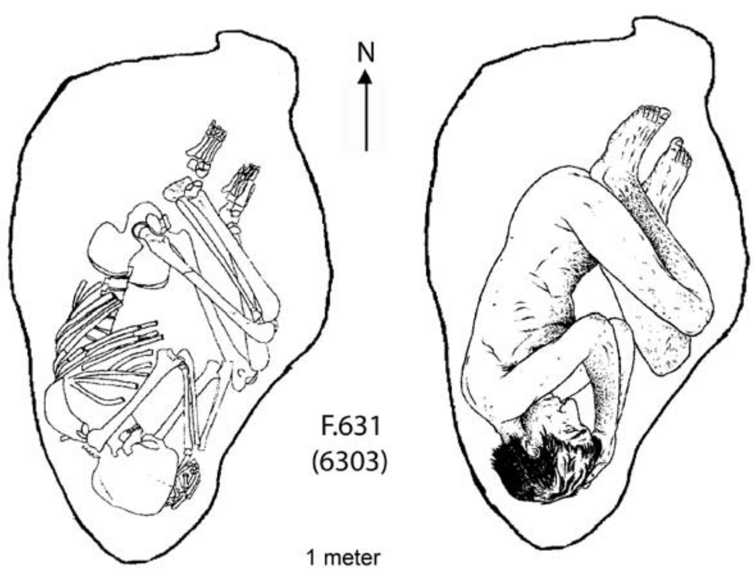


Figure 13.11. Northeast platform (F.173), Phase B3.4B burial: older adult, probable male (6303).

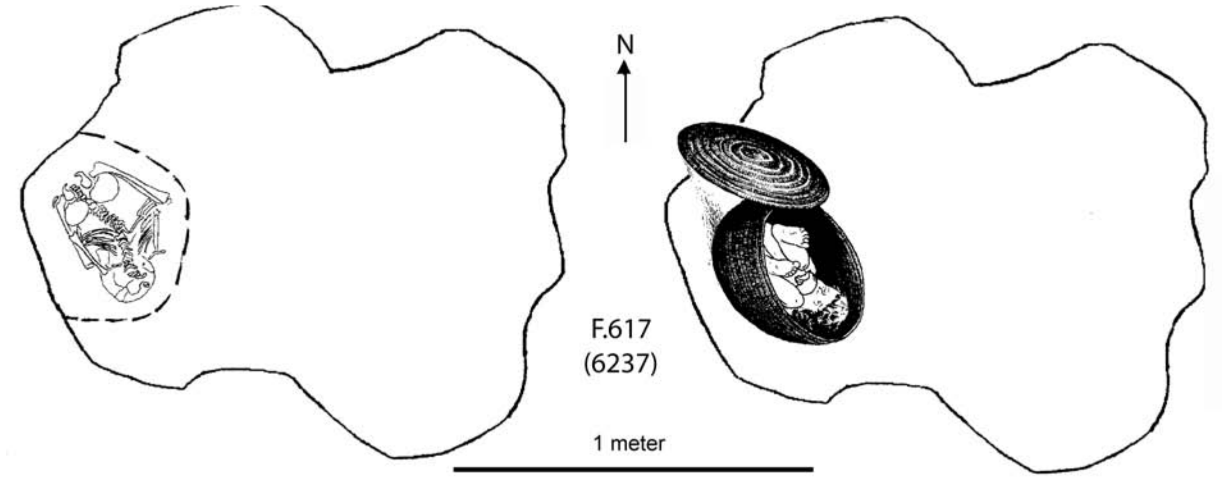


Figure 13.12. North-central platform (F.162), Phase B3.4B burial: child (6237).

Phase B3.4B: North-Central Platform

Feature 617, Skeleton 6237

The skeleton is of a child aged 3–4 years. This child was found in a basket in the north-central platform in a burial cut through thick plastered floors (Figures 13.7, 13.12; see also Figures 5.81, 5.82). This was the last primary interment in Building 3. The body was lying on its stomach, aligned southeast–northwest. The head was pointing north and the face was down. Both arms were bent under the body, and the legs were flexed on either side of the body. The condition of the bones is poor.

The overall health of this child was compromised. The presence of cribra orbitalia on the eye orbits is suggestive of nonspecific anemia. In addition, periostitis from a nonspecific infection is evident on several bones of the body.

Dental caries is associated with one of the deciduous molars, and enamel defects are located on the deciduous canines. Moderate dental wear is found on the back teeth; the front teeth exhibit more extensive wear.

One shell was recovered near the pelvis of this child. No other grave goods or associated objects were found with this child.

Phase B3.5A: Central Floor (F.606), Cluster 2, Skulls 3529.X1 (F.794), 3529.X2 [6618] (F.795)[3]

Two secondary-context skulls were found in the north-central area of Building 3 (see Figures 4.8, 5.90, and frontispiece). Where the mandibles and postcranial elements of the two individuals ended up is not known, but they were not found in Building 3 or Spaces 87, 88, or 89. The two heads, an adolescent and a young adult female, were set facing each other, with their upper foreheads touching. The angle formed between the two faces was 90 degrees. The close proximity of the heads and the precise nature of their positions strongly suggest the intentional placement of the heads in the central floor area.

A bucranium and the collapsed roof were in close association with the two skulls. The two heads, the bucranium, and the fallen roof comprise Cluster 2 (see Figures 4.12, 5.91) and are related to the abandonment and closure of the house (Chapters 5, 22).

Feature 794, Skeleton 3529.X1

This cranium is from a 12- to 14-year-old adolescent of indeterminate sex. The cranium was placed on its left side, with the apex of the head pointing west and the face to the north. The skull is fragmentary. There is some porosity of the cranium.

Slight calculus is evident on the front teeth. Dental wear is slight. Enamel hypoplasia is present on most teeth, and one upper central incisor is chipped.

Feature 795, Skeleton 3529.X2 [6618]

This cranium is from a young adult female of 18–22 years. The skull was on its right side, with the apex of the head pointing south and the face to the east. The preservation of the cranium is fragmentary. There is a metopic suture present. Asymmetry in the size of the left and right mastoid processes was noted. Skeletal indicators of nonspecific anemia in the form of porotic hyperostosis are evident on the cranial vault bones.

[3] During excavation in 1999, the skulls were recorded as "X" or "special" finds of unit 3529. In 2001, they were each given their own unit number (as well as feature number). Skull 3529.X1 was designated unit 3529; skull 3529.X2 was designated unit 6618.

Slight calculus is present on the back teeth. Nearly all teeth have indications of enamel hypoplasia. The anterior teeth, especially the incisors, have significant chipping. Dental wear is moderate. Bone remodeling of an upper premolar socket suggests antemortem tooth loss.

SEQUENCE OF BURIAL EVENTS FOR BUILDING 3, SPACE 86

A close examination of the archaeological context of the burials provides evidence for a plausible reconstruction of the sequence of burial events within each phase of Building 3 (Figures 13.2, 13.13; Table 13.2). The beginning two phases in the life of the house (Phases B3.1, B3.2) are absent of any burials. It is not known if any individuals associated with the house died during these first two phases. In Phase B3.3, three children were buried near one another in the central floor, thus beginning the use of Building 3 as a place for the interment of the dead. The first burial event in Building 3 was the interment of an infant who was placed in a basket in the middle of the pit. The death of the baby was followed by the death and interment of two young children, one placed on each side of the baby. The nature of the burial cuts and the fact that the baby was not disturbed by the interment of the older children suggest there

Table 13.2. Chronology of Neolithic burials (by unit numbers) in Building 3 by phase

	Phase B3.1	Phase B3.2	Phase B3.3	Phase B3.4A	Phase B3.4B	Phase B3.5A
Early	None	None	8184	8113 8114	6303	
Late			6681 6682	8115	6237	3529.X1 3529.X2

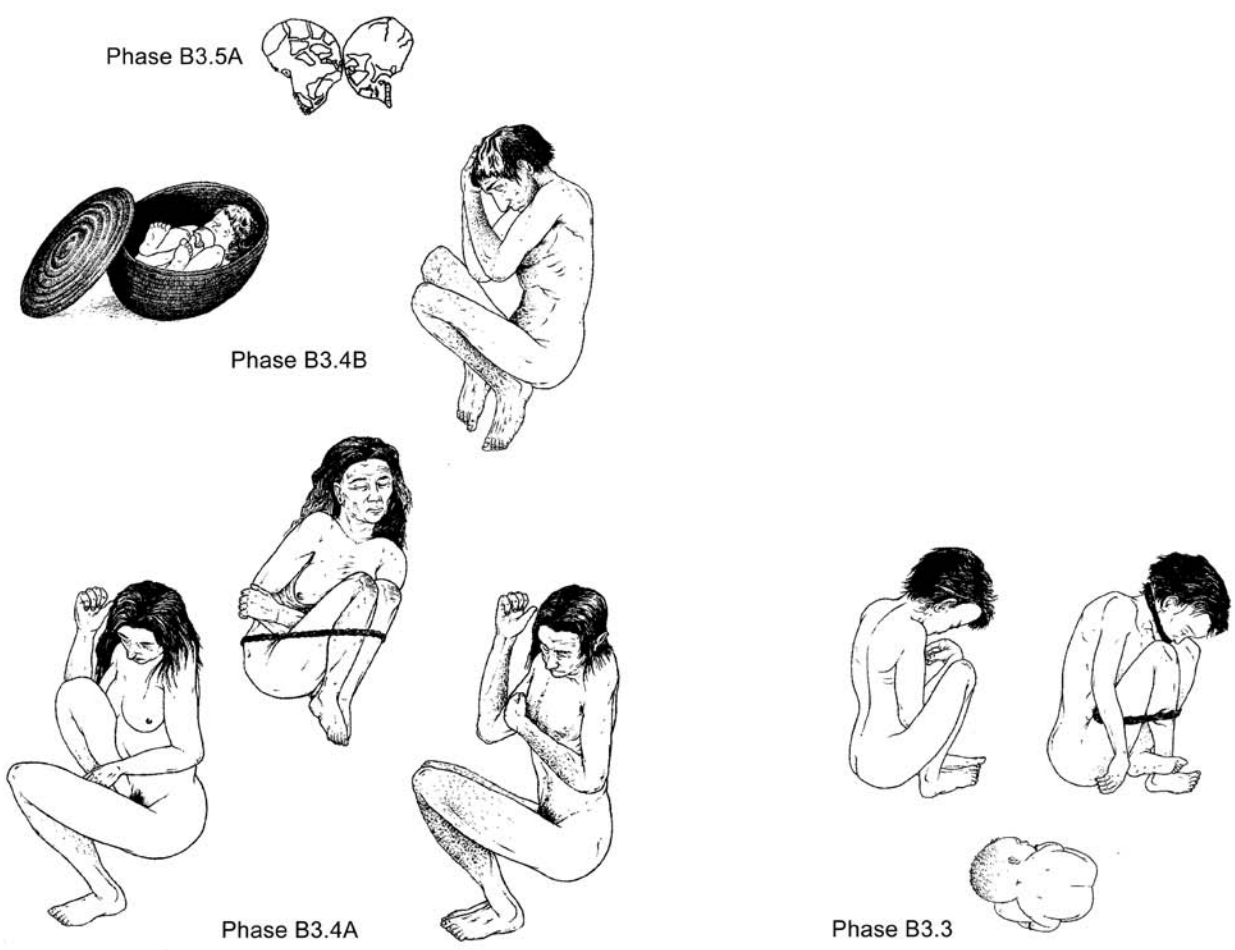


Figure 13.13. People of Building 3 by phase.

was a memory of the earliest baby burial and that all three died within a short time span. It seems likely that the two older children died at or near the same time and were interred in a single burial event. No other individuals were found in the central floor area during Phase B3.3.

In Phase B3.4A, three individuals were buried in the north-central platform in a minimum of two burial events. Three burial cuts (F.634, F.644, F.647) were made into the multilayered plaster floors of the north-central platform (F.162) during this phase (Figure 13.7). The two earlier graves (F.644, F.647) were oriented north–south, while the later grave (F.634) was aligned east–west. Three individuals were associated with these graves: a young adult female (8113, F.644), an adolescent male (8114, F.647), and an older female (8115, F.634). While the young adult female (8113) and the adolescent male (8114) were buried in distinct graves, their deaths likely occurred within a short time span. Later in Phase B3.4A, the older female (8115) was buried in the platform, with her east–west-oriented grave cutting into the skeleton of the young adult (8113), greatly disturbing it and the legs of the adolescent (8114).

During Phase B3.4B, an adult was placed in the northeast platform, and a child was buried in the north-central platform. The orientation of older individual (6303), probably a male, in the northeast platform was the same as the two earlier individuals (8113, 8114) found in the north-central platform in Phase B3.4A: head to the south, flexed at the hips and knees, body on the right side, and knees to the chest. The older adult (6303) was the only individual to have been buried in the northeast platform. Based on the level of the plaster floors in which the burial cuts were made, the older individual (6303) died slightly earlier than the child (6237). The young child (6237) was the last individual to be buried in a primary context in Building 3. The burial cut (F.617) for the young child (6237) was located west of the cuts made for the individuals who were buried earlier in the north-central platform. These earlier burials were not disturbed by the interment of the child (6237). After the burial of this child, the northern platforms and the central floors were not opened again for human interment in the Neolithic.

In the last phases of Building 3 (Phase B3.5A), the house was closed and abandoned (Chapters 5, 22). Some walls were taken down and the wooden posts retrieved. The roof was cut from east to west, and it subsequently collapsed over the northern part of the house. The central area of the floor near this roof collapse provided an intriguing arrangement of two skulls next to each other, with their upper foreheads touching (Figure 4.8 and frontispiece). The two disarticulated human skulls (3529.X1, 3529.X2 [6618]) were placed with intention near the southern edge of the collapsed roof in the center of the house. A fragmented hearth was over one cranium (3529.X2 [6618]), and a plastered bucranium (3524) was located near the two skulls on a floor between the midden and the roof. All of these materials, including the human skulls, were in a context that appears to be associated with the abandonment of the house. It is noteworthy that the first and last placement of human remains in Building 3 occurred in the north-central floor area.

Burials from Space 87

In 2002, nine individuals were discovered during the excavation of the eastern portion of Space 87, a room adjacent to Building 3 (Figure 13.1). Space 87 is one of three rooms (with Spaces 88 and 89) separated from Building 3 to the south. The east wall of Space 87 is a single wall, but the north and south walls are double. The western portion of the space remains unknown, since it was under the tent at the time of excavation and remains unexcavated. The final depth of Space 87 is also unknown, since the excavation of the space was stopped with skeletons still showing. All references hereafter refer to the excavated portion of the space in 2002.

Stevanović (Chapter 5) notes that all the known walls are thickly plastered. The east and south walls were painted red, particularly in the southeast corner. Thick plaster characterized the floors in which the burial cuts were made, while thin layered plaster floors appear to have covered the burials. Phytolith analysis of the burial fill for two individuals (8490, 8494) demonstrates the presence of several plant remains, including husks, bark, dicot leaves, reeds, and sedges (Chapter 11).

Several distinct grave cuts were made into the floors of a large platform (Figure 13.14). In the top layers—that is, the most recent part of the sequence—two separate burial pits existed in the plastered floors, a northern one and a southern one. As the sequence progressed into the middle and lower layers, the burial cuts overlapped each other, particularly in the central portion of the space, and the wall between the two pits disappeared. At the lower excavated layers of the space, one large burial pit was revealed. All of the individuals were located in a relatively small area in the south-central area of Space 87.

Seven individuals were lifted and studied in the laboratory; two individuals remain in situ. All of the individuals represent primary inhumations, some intact and some disturbed. Many times, the burial of one individual clearly disturbed an earlier burial. Animal disturbance was evident throughout the burial pit. Loose human bones from other individuals were found in the burial fill.

The following descriptions are chronologically presented, beginning with the earlier burials that remain in situ and ending with the last interment in the space. Key attributes of the burials from Space 87 are summarized in Table 13.3.

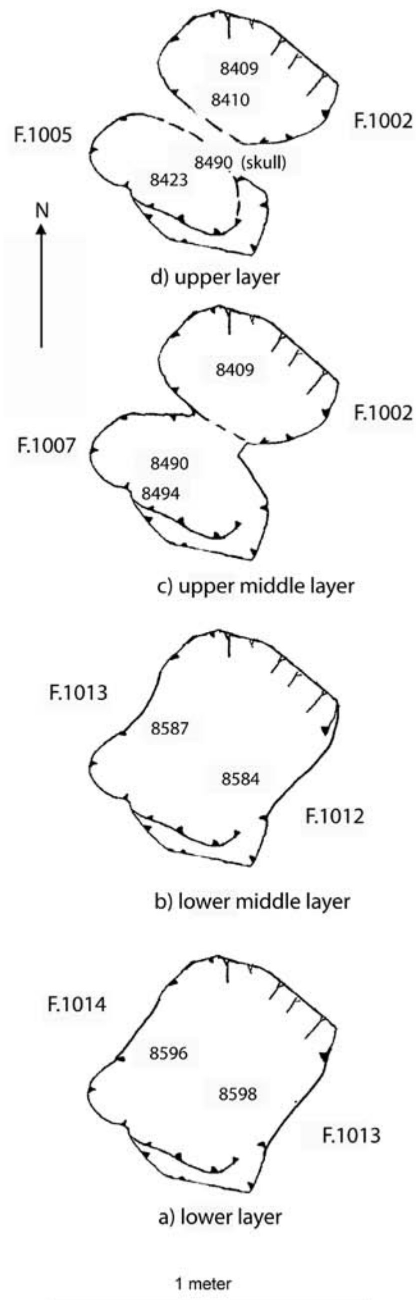


Figure 13.14. Space 87 burial cuts: (a) lower layer; (b) lower middle layer; (c) upper middle layer; (d) upper layer.

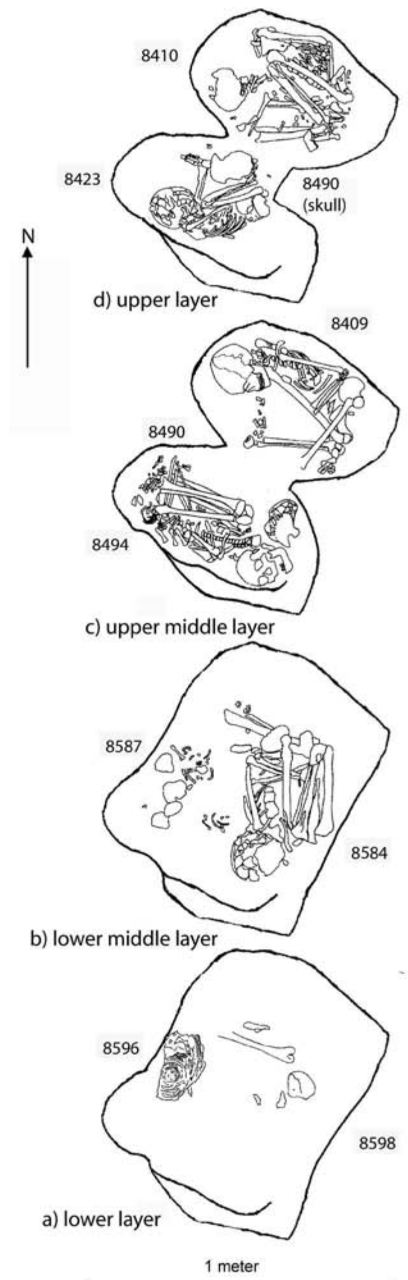


Figure 13.15. Space 87 burials: (a) lower layer; (b) lower middle layer; (c) upper middle layer; (d) upper layer.

DESCRIPTIONS OF BURIALS FROM SPACE 87

Space 87 Burials Left in Situ

Two individuals (8596, 8598) were uncovered at the end of the 2002 field season in Space 87 (Figure 13.15a). Due to the lateness in the season, these two individuals were left in situ. Field observations on these partially excavated skeletons are given below.

Feature 1014, Skeleton 8596

Phytoliths from a large lidded basket (8597) gave the first indication of this burial, skeleton 8596 (see Figure 5.106). The neonate/infant was found within the folds of the lidded basket (Figure 13.16). The skeleton and the phytoliths were in close approximation and were not separated. The skull of the neonate/infant was placed against the western edge of the basket. The basket was cut through its middle by

Table 13.3. Key attributes of Space 87 skeletons

Burial cut	Skeleton	Position	Orientation	Age	Sex	Condition	Associations
F.1002	8409	Flexed on right side, facing south-east	West–east, facing south-east	13–15 years	N/A	Partially disturbed	None; possible bone belt hooks and eyes in fill above
F.1002	8410	Flexed on right side, facing south-east	West–east, facing south-east	44–50 years	Male	Intact	None; possible bone belt hooks and eyes in fill above
F.1005	8423	Flexed on right side, left leg extended to north	West–east	8–9 years	N/A	Intact	None
F.1007	8490	Upper body flexed on back, lower limbs on right	East–west	13–15 years	N/A	Partially disturbed	None
F.1007	8494	Flexed	Possible east–west	4–6 months	N/A	Partially disturbed	None
F.1012	8584	Flexed on back	South–north	44–50 years	Female	Intact	None
F.1013	8587	Flexed on left*	South–north*	New-born–2 months	N/A	Disturbed	Yellow ocher
F.1014	8596	Indeterminate	Indeter.	Infant	N/A	Probably intact	In lidded basket
F.1013	8598	Flexed on left*	East–west*	Adult	Indeter.	Probably intact	None visible

* Inferred position and orientation

Figure 13.16. Neonate/infant (8596) in a lidded basket (8597) in Space 87.

animal disturbance and continued into the western wall of the space.

Feature 1013, Skeleton 8598

This adult skeleton (8598) was found directly below skeleton 8584 in the southeastern portion of the burial pit. The body appears to be flexed at the hip and knees, with the head oriented to the east.

Feature 1013, Skeleton 8587

This skeleton (8587) was a neonate who died within the first two months of life. Sex is indeterminate. No pathologies or anomalies were noted.

The remains of the neonate (skeleton 8587) were found scattered in the western portion of the burial pit under the adolescent (8490) and to the west of an older female (8584) (Figures 13.15b, 13.17). The burial cut for the neonate was distinct in the plaster floor at its western edge. Some bony elements were missing due to later activities by humans and animals. Even though the neonate was clearly disturbed, some elements of the axial skeleton remained intact. The inferred body position from the intact bones suggests the body was placed on its left side with the legs flexed at the hip and knees. The head may have been oriented to the south. The preservation of the bones is good.

Yellow ocher was found in association with the cranium, although no grave goods or personal belongings were found. Phytoliths were found in the area near the infant but were not in direct association with it.

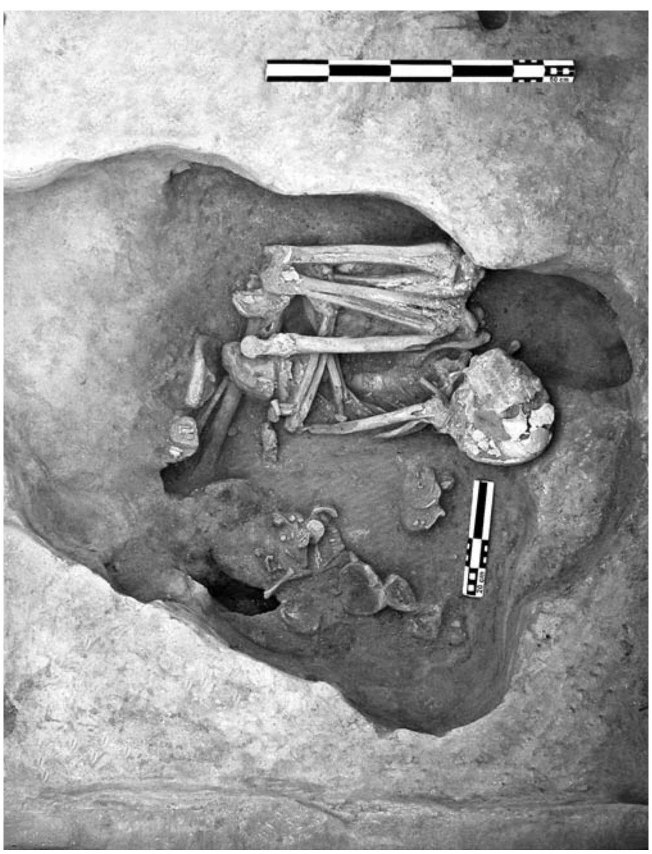


Figure 13.17. Burial (F.1013) of an adolescent (8598) on top of a neonate (8587) in Space 87, Phase S87.1.

Feature 1012, Skeleton 8584

This skeleton (8584) was a female, aged 44–50 years at the time of death. The burial cut was evident at its eastern edge, but the rest of the cut had been disturbed by later burial events. The main axis of the body was oriented south–north, with the head pointing to the south (Figure 13.15b, 13.18). At the same level and to the west was the neonate (F.1013, 8587).

The body of this older woman (8584) was tightly flexed at the knees and hips, placed on her back, tilted slightly onto the right side. The arms were bent at the elbows, placed between the legs. Both the feet are missing due to disturbance by animals and/or to make room for the burial of a later individual (8410). The preservation of the bones is poor.

Only the teeth of the lower jaw were present. These teeth are highly worn, and four are chipped. The calculus buildup is slight, with periodontal disease present at the left premolar position. Enamel hypoplasia is present on both lower canines.

This older woman had degenerative joint disease of the spinal column. Possible osteoporosis is also suggested by the lightness of the bony elements. While much of the

Figure 13.18. Burial (F.1012) of a mature female (8584) in Space 87, Phase S87.1.

skeleton is gracile, the robust muscle attachment sites in the upper body suggest high levels of activity in this part of the body during life. A preauricular sulcus is present on the left hipbone, which is indicative of childbirth and/or robust muscle development.

Black residue was found in the chest region, both internally and externally (cf. Figure 13.20). This may represent a fungus rather than black carbon residue. No grave goods were found associated with skeleton 8584.

Feature 1007, Skeleton 8494

This skeleton (8494) was an infant, aged 4–6 months at the time of death. Sex is indeterminate. The cranium and mandible of the infant were disturbed and moved by the interment of an adolescent (skeleton 8490) who was buried at a later time (Figures 13.15c, 13.19). The infant (8494) was discovered in the area of the hip and feet of the adolescent (8490). The burial cuts for the adolescent (8490) and the infant (8494) were indistinguishable from each other.

The position and orientation of the infant (8494) were difficult to determine due to the disturbance of the bones. It is possible the head was oriented to the east. Some of the elements of the axial skeleton appeared to be articulated, although the majority of the bones were disarticulated or missing entirely. This suggests at least partial disturbance of the infant (8494) by later individuals and by postdepositional animal activity. Moreover, the pattern of disturbance of the cranium and mandible relative to the rest of the body suggests the infant (8494) was disturbed before decomposition was complete. The interment of this infant did not disturb any skeletons below it.

No grave goods were found with this individual. No pathologies or anomalies were evident on the skeletal elements. Preservation of the bones is fair to good, except for the highly fragmented cranium and mandible.

Feature 1007, Skeleton 8490

Skeleton 8490 was an adolescent who was 13–15 years old at the time of death. Sex is indeterminate. This primary inhumation consists of a nearly complete skeleton that disturbed the infant (8494) below it and was disturbed by the child 8423 above it (Figure 13.15c). The cranium and mandible of the adolescent (8490) were articulated and must have been displaced from the rest of the skeleton during the excavation of the later burial pit (Figure 13.18). It is likely the body was not completely decomposed when it was disturbed.

Except for the skull and mandible, the rest of the body remained intact in a tightly flexed position. The lower body was on its right side and the upper body resting more on its back. The main axis of the body was oriented with the head to the east. The lower arms and hands were placed between the flexed legs. Preservation of the bones is poor to good. The cranium and mandible are particularly fragmented, since these bones were located in an area of high animal disturbance.

The bones are relatively gracile. Physiological stress is indicated by cribra orbitalia on the eye orbits, suggesting nonspecific anemia, and enamel hypoplasia on the teeth.

Figure 13.19. Burial (F.1007) of an infant (8494) and an adolescent (8490) in Space 87, Phase S87.2.

Several teeth show evidence of calculus buildup and slight to moderate wear.

Black residue was found in the upper thoracic area, both on the anterior and interior surfaces of the ribs (Figure 13.20). No grave goods were found with skeleton 8490.

Feature 1005, Skeleton 8423

This individual (8423) was a juvenile, aged 8–9 years old at the time of death. The child (8423) was located in the southern burial pit in the upper layer of Space 87 at approximately the same depth as the adolescent (8409) and older man (8410) in the northern burial pit (Figure 13.15d). The interment of the child (8423) disturbed another individual from lower in the sequence, the adolescent (8490). The skull and mandible of the adolescent (8490) were found atop the lower arms, hands, and right foot of the child (8423), while the rest of the body of the adolescent (8490) lay below the child (8423).

The child (8423) was a primary inhumation in a distinct burial pit. The main axis of the body was oriented in an east–west direction with the apex of the head pointing to the west. Placed on its left side, tightly flexed at the hips and at the right knee, the left lower leg was extended rather than flexed at the knee. The left foot pointed to the north. Both arms were extended alongside the body. The preservation of the bone is fair to poor. The cranium, for example, is highly fragmented, while other parts of the body are better preserved. Animal disturbance in the immediate vicinity resulted in some bones being absent.

Enamel hypoplasia is evident on three upper teeth, and calculus is present on some of the lower teeth. Several teeth are chipped, and the deciduous molars are moderately worn.

A black residue was found in the upper thoracic cavity at the ribs, internally and externally. No grave goods were found with this individual.

Feature 1002, Skeleton 8409

Skeleton 8409 was an adolescent, aged 13–15 years at the time of death. Sex is indeterminate. This was a primary inhumation that had been pushed to the north edge of the burial pit during the interment of a later individual (8410) (Figure 13.15c; see also Figure 5.105). The majority of the adolescent skeleton (8409) remained intact, although the disturbance was clear. The pattern of bone articulation of the skeleton (8409) suggests the body was not fully defleshed when it was disturbed. Preservation of the skeleton varies from good to poor.

The body of skeleton 8409 was tightly flexed, placed on its right side. The main axis of the body was oriented east–west, with the apex of the head pointing west. The head was facing southeast. The body of the new individual (8410) was placed immediately south of the adolescent skeleton (8409) in exactly the same position and orientation.

The lower dentition exhibits one carious lesion, calculus on the incisors and canines, and enamel hypoplasia on two teeth. No other pathologies or anomalies were observed.

While no grave goods were found directly associated with this individual, a polished animal bone belt hook and eye were found in the upper burial fill above the adolescent (8409) and the male (8410) who was buried later (see Figure 15.14). It is possible that the bone artifacts were associated with 8409 before it was disturbed by 8410. However, the exact association of these artifacts with one of these two individuals remains unclear.

Figure 13.20. Detail of the blackened ribs of the adolescent (8490) in Space 87, Phase S87.2.

Feature 1002, Skeleton 8410

This individual (8410) was a male, aged 44–50 years of age at the time of death. He was the last individual to be buried in Space 87 (Figure 13.15d). This was a primary inhumation that caused the disturbance of an earlier burial, the adolescent (8409), and possibly others. Skeleton 8410 was found in a tightly flexed position, on its right side, with the main axis of the body oriented east–west and the apex of the head pointing west. This is the same position and orientation as the adolescent (8409). The skeleton of the older man (8410) was fully articulated and had not been disturbed. Preservation of the bones is fair to good.

Oral health was consistent with the age of this man: dental caries in the lower dentition, calculus on both upper and lower teeth; one abscess on the left side at the premolar position. The teeth are highly worn, and several show evidence of chipping. Enamel hypoplasia is evident on the upper molars and incisors.

Signs of periostitis resulting from a nonspecific infection were noted at the proximal ends of both femurs. A black residue was noted in the thoracic region and may be related to black lung disease (cf. Figure 13.20).

Squatting facets were observed on the distal tibia and talus from both legs.

No grave goods were found in direct association with this individual. However, there is a possibility that the animal bone artifacts (belt hooks and eyes) found in the burial fill above both skeletons 8409 and 8410 were associated with the older man (8410) instead the adolescent (8409).

Sequence of Burial Events in Space 87

The individuals in this part of Space 87 were buried in close proximity to one another, both vertically and horizontally. The tight constraint of the skeletons in such a small area was remarkable. The closeness of the bones in the space and the pattern of the disturbance of earlier burials by later ones reflect the repeated use and reuse of the small space through time for the purpose of human interment. Except for the last interment (8410), the later burials appear to be more disturbed than the earlier ones. Full decomposition of the body had not occurred in at least three instances. This suggests that interment was done in rapid succession, with little time between interments. Based on the archaeological record, the following sequence of burial events in the excavated portion of Space 87 is offered (Table 13.4). The burials can be divided into earlier ones (8596, 8598, 8587, and 8584) and later ones (8494, 8490, 8423, 8409, 8410).

Earlier Burials (Figure 13.15a, b)

The burial pit in the lower levels of Space 87 was a single pit. The bodies were oriented in a north–south direction.

Table 13.4. Sequence of burial events in Space 87 (youngest to oldest)

Skeleton	Comments on disturbance
8410	Last interment in Space 87, partially disturbs 8409
8409	Partially disturbed by 8410
8423	Partially disturbs 8490
8490	Partially disturbed by 8423; partially disturbs 8494
8494	Partially disturbed by 8490
8584	Undisturbed
8587	Disturbed
8596	Possibly intact; neonate/infant in basket, remains in situ
8598	Possibly intact; adult, remains in situ

Two individuals were found in the lowest excavated level, a neonate/infant in a lidded basket (8596) and an adult (8598). These two burials were found at approximately the same level and remain in situ. The death and interment of the two individuals precedes the burial of all the other individuals recovered from this part of Space 87. The basal and the western areas of Space 87 have not been excavated, so it is not possible at this time to say how many more individuals are buried in the space.

Two individuals, an older female (8584) and a newborn (8587), were buried in the large burial pit. Under the older woman and newborn were two individuals (8596 and 8598) who were never fully excavated due to time constraints. The interments of the woman (8584) and the infant (8587) did not disturb the individuals buried below them. The older female (8584) was intact, although in poor condition, and had not been disturbed by later burial events. The newborn (8587) was disturbed by later humans, animals, or both.

Later Burials (Figure 13.15c, d)

The upper layers of the burial pit were separated into a northern and southern portion. The orientation of the bodies in these levels was east–west. The upper middle layer of the southern burial pit contained an infant (8494) and an adolescent (8490). The cranium and mandible of the infant (8494) were displaced to the east, while the postcranial skeleton was found to the southwest near the hip and knees of an adolescent (8490). It was the interment of the adolescent (8490) that disturbed the infant (8494). During the interment of the adolescent (8490), the Neolithic people encountered the head of an infant (8494) in the pit they had dug. They buried the adolescent and then placed the skull and mandible of the infant back into the pit apart from the rest of its skeleton. Given that the mandible of the infant was displaced with the cranium, it is highly likely the body was disturbed before decomposition of all the soft tissues was complete.

Having disturbed the head of the infant (8494) when being interred, the adolescent (8490) was later disturbed for the interment of a child (8423). Like the infant before it, the cranium and mandible of the adolescent (8490) were displaced together, suggesting that the body had not fully decomposed when it was disturbed.

In the upper layer of the southern burial pit, a young child (8423) was buried. While the body was in the normally flexed position of the Çatalhöyük people, the child's left leg was extended from the knee, an unusual position. The head of the child was oriented to the west in a manner similar to the other burials from the same level of the burial pit to the north, the adolescent (8409) and older man (8410). The child (8423) was found intact.

The adolescent (8409) was the next to last individual to be buried in Space 87. This skeleton (8409) was pushed to the north to make room for the final burial event, the interment of the last individual (8410). Once the older man (8410) was interred in the burial pit, the floor was plastered over and the area was not opened again for human interment.

Isolated Bones

In Building 3 and the nearby spaces, there were several loose human bones found in non-burial contexts. Some of these bones belong to post-Neolithic burials and others to Neolithic individuals. Distinguishing post-Neolithic isolated bones from Neolithic ones in these disturbed contexts was not possible. Many bones were likely disturbed and redeposited through small mammal activities, while others represent the disturbance of Neolithic skeletons by post-Neolithic people. Other isolated bones likely come from the disturbance of Neolithic skeletons by Neolithic people where bones of previously interred people were disturbed and some of these skeletons subsequently came to rest outside of burial pits.

The scattered isolated bones comprise all different body parts, although the smaller bones of the hand and feet were found more often than the larger bones, a pattern typical of disturbance through rodent activity. However, the presence of larger bones, such as part of the pelvis, tibia, and femur, suggests multiple reasons for the disturbances. The archaeological context of the isolated bones is discussed more specifically by Stevanović (Chapter 22) and Russell (Chapter 8).

Bioarchaeological Perspectives on Life at Çatalhöyük

An examination of the skeletal biology of the BACH burials contributes to our overall knowledge of life at Çatalhöyük. The previous work of Angel (1971) and Ferembach (1972) are important sources of information on the Mellaart-era skeletons, but due to the problematic nature of the skeletal material (Düring 2003; Hamilton 1996), these data are treated here with caution. The BACH material is mainly compared with the skeletons recovered from the 1995–1999 field seasons as reported by Molleson et al. (2005) in terms of demography, biological distance, health and diet, trauma, and activity patterns.

Demography

As in Building 1 and the SOUTH Area, nearly all age groups and both sexes are represented in the BACH sample (Table 13.5). In Building 3, one infant, three young children, two adolescents, two young adults, and two older adults were buried in this house. Of the nine individuals from Space 87, three are infants, one is a child, two are adolescents, and three are adults. Two of these adults are older. Adults aged in their 30s are absent from the sample. The high percentage of juveniles in the BACH sample supports the notion that high juvenile mortality may have characterized the people of the site (Molleson et al. 2005). However, considering the large size of the site relative to the small number of buildings excavated thus far, it may be premature to reconstruct the demography for the entire site at this point.

Three females and two males were buried in Building 3, and one female and one male were identified in Space

Table 13.5. Number of BACH individuals by age

Age category	Building 3	Space 87	Total
Neonate/infant	1	3	4
Child	3	1	4
Adolescent	2	2	4
Young adult	2	0	2
Mature adult	0	0	0
Old adult	2	2	4
Adult (nonspecific)	0	1	1
Total	10	9	19

87 (Table 13.6; Figure 13.3). Given that most of the BACH sample is comprised of juveniles, sex was indeterminate in many instances.

Biological Distance

Several nonmetric traits on the cranium and postcranium were noted for the individuals from Building 3 and Space 87 (Table 13.7). These traits may give some indication of the biological relationships of the individuals recovered, although some caution is warranted. Saunders (1989) suggests that some nonmetric traits have a higher heritability factor than others. Cheverud and Buikstra (1981a, 1981b) find that hyperostotic traits (excess ossification) and hypostotic traits (incomplete ossification) have a stronger genetic component than foraminal traits. The individuals in Building 3 have a high percentage of individuals with a persistent metopic suture (44 percent), a hypostotic trait. The four individuals (6681, 8113, 8114, 3529.X2 [6618]) with the persistent metopic suture from Building 3 come from different phases. If this trait is a marker for biological relatedness, then it demonstrates kinship of the individuals through the life span of the house.

Table 13.6. Number of BACH individuals by sex

Sex	Building 3	Space 87	Total
Male	2	1	3
Female	3	1	4
N/A	5	7	12
Total	10	9	19

Table 13.7. Nonmetric traits for the BACH individuals

Nonmetric Trait	Building 3 (N = 10)	Space 87 (N = 7)	Total (N = 17)
Metopic suture persistent	4*	0	4
Supraorbital notch/ foramen	6	3	9
Suprameatal pit/ depression	3	2	5
Parietal foramen	5	1	6
Conjoined teeth	1	0	1
Hypoglossal canal single	2	0	2
Palatal pitting	3	0	3
Lambdoid ossicles	2	0	2
Humeral septal aperture	2	2	4

*Excludes one juvenile under 2 years

Suprameatal pits or depressions are found in equal frequency in Building 3 and Space 87 individuals. The presence of supraorbital notches or foramina is high for individuals in both Building 3 and Space 87, and those with parietal foramina are well represented for the Building 3 burials. Four of seventeen BACH individuals, two from Building 3 and two from Space 87, have a humeral septum, which may have greater significance relative to activity patterns than heredity (Larsen 1997). Molleson et al. (2005) note a supracondylar fossa on several individuals in Building 1 and one from SOUTH Area.

Health and Diet

In terms of overall health, the BACH burials represent a group of people with a variety of conditions (Table 13.8). There is evidence for nonspecific physiological stress in several of the individuals recovered. For example, enamel hypoplasia is present in the majority of individuals from both Building 3 and Space 87. Molleson et al. (2005) and Boz (2005) report on a high enamel defect ratio in the samples from the 1995–1999 excavations when compared with the Neolithic sites of Aşıklı Höyük and Çayönü (Özbek 1997, 2005). In the BACH sample, skeletal markers suggesting anemia are found in four (of 19) individuals in the form of cribra orbitalia and/or porotic hyperostosis. Angel (1971) mentions the high prevalence of anemia and relates this to the presence of malaria and the genetic blood disorder thalassemia. Malarial-related explanations are plausible, given that the site was seasonally surrounded by marsh, an environment that may have sustained a mosquito population. Molleson et al. (2005) record the high prevalence of cribra orbitalia on infants, but unlike Angel (1971), they suggest that anemia might be a result of infant malnourishment. The BACH samples add to the database on anemia in children, but more work needs to be done to resolve its causation.

In terms of oral health, considering the age distribution for this small sample, the prevalence of dental caries is quite high (almost 50 percent, excluding the infants). A similarly high prevalence for dental caries was found in the samples from the 1995–1999 excavations (Molleson et al. 2005). The presence of dental caries in deciduous teeth was noted in both the 1995–1999 and BACH samples. This suggests that cariogenic factors were in the food from an

Table 13.8. Conditions relating to the health of the BACH individuals

Condition	Building 3 (N = 10)	Space 87 (N = 7)	Total (N = 17)
Nonspecific anemia	3	1	4
Periostitis	3	1	4
Degenerative joint disease	2	2	4
Possible osteo-porosis	2	1	3
Spondylolysis	1	0	1
Cortical defects	3	0	3
Trauma	1	0	1
Enamel defects	2	0	2
Periodontal disease	1	0	1
Dental caries	5	2	7
Calculus	8	4	12
Abscess	1	1	2
Enamel hypoplasia	7	5	12
Chipping	6	3	9

early age—food intake high in carbohydrates and other starch resources (Boz 2005). The stable isotope data suggest weaning before two years, although the sample of juveniles is small in the study (Richards and Pearson 2005). Molleson et al. (2005) place weaning no earlier than two years, based on dental development in the Çatalhöyük juveniles.

The importance of carbohydrates in the diet is also evident by the high presence of calculus accumulation. Although the degree of accumulation is not heavy, it is observed in most of the individuals (12 of 19) from Building 3 and Space 87. This finding is in agreement with the nature of calculus in the 1995–1999 samples (Boz 2005) but is higher than what has been found at Aşıklı Höyük and Çayönü (Özbek 1997, 1998, 2004). Pottery analysis has pointed out that there was a radical change in both the quality and quantity of the pottery beginning at Level VII, perhaps changing from one pottery tradition to another within one or two generations (Chapter 16; Birch 2005). Perhaps this shift in pottery use caused a change in food preparation and led to changes in oral health. Another striking finding on the small BACH sample is the high amount of chipping on the teeth. This could be an indication of hard food particles in the diet; or it could be due to the use of the teeth in working with non-food items.

Black lung disease is possible for the older adult female (8115) from Building 3, who had black residue in the thoracic region of the skeleton. Black residue has been found with other individuals, all of them older adults (Andrews et al. 2005; Molleson et al. 2005). The residue has been identified as insoluble carbon. Andrews et al. (2005) hypothesize that older people may have spent more time in smoky rooms than younger individuals, and in so doing, inhaled a great deal of smoke from the poorly ventilated rooms. A black residue was also noted for three individuals from Space 87, two of whom are juveniles (8490 and 8423) and one an older female (8584). The analysis of these residues has been inconclusive to date.

Periostitis, a nonspecific infection of the outer layer of the bone, was noted on the bones of four individuals. Two juveniles (6682, 6237) and two adults (8113, 8410) show signs of infection. Periostitis is often the result of a bacterial infection, including trauma-induced infections due to injury (Larsen 1997). Chronic or long-term infections can ultimately impact the life of the individual.

Trauma

The older female (8115) from Building 3 had broken her ribs on her left side in two different events. The body was asymmetrical in the strength of the muscle markings, size of the bone, and in the amount of mechanical stress to the joints as she aged. The entire right side of her body was significantly more built up relative to the left. The rib fractures to the left side may explain this asymmetry. The rest of the individuals from Building 3 and Space 87 show no signs of trauma. Molleson et al. (2005) report on trauma on a few skeletons from the 1995–1999 excavations. Most of these traumas appear to be due to accidents rather than to interpersonal violence. By contrast, Angel (1971) found several examples of trauma-related wounds and injuries in the Mellaart-era skeletons, and he suggested that some of the fractures and wounds were the result of interpersonal contact in addition to accidents. The skeletal series from other Neolithic sites such as Aşıklı Höyük and Çayönü also show low numbers of trauma, which some have interpreted to mean that these people were living a peaceful life (Özbek 2004).

Activity Patterns

The skeleton is in a constant state of remodeling as it responds to the life experiences of the individual. Skeletal indicators on the activity patterns of the BACH people suggest that high physical demand and subsequent mechanical stress occurred for at least some individuals.

Degenerative joint disease (DJD) (osteoarthritis) was present in four older individuals from Building 3 and Space 87. The two older males and two older females were in their late 40s or early 50s. Glencross et al. (2008) found that at Çatalhöyük, males and females had a net loss of cortical bone at about the same rate, based on a radiogrammetric study of the second metacarpal. One probable male (6303) had a cortical defect and resultant DJD on the left upper leg at the hip joint. He also suffered from the effects of osteophytic growth at the knees but was otherwise not afflicted. The other male (8410) suffered from DJD in the hands, lower vertebral column, and pelvis. One older female (8584) had signs of DJD in the hand and vertebrae, and the other older female (8115) in the back and pelvis. The pattern of DJD in these individuals suggests high levels of physical demand and/or mechanical stress in the affected areas (e.g., leg/knee, back, hand). The older probable male (6303) from Building 3 was relying heavily on his left leg and his knees in his daily activities where the physical demand was high and potentially repetitive. For the older individuals, the age-related DJD in the vertebral column is indicative of a life of using the back in weight-bearing activities.

Besides the probable male (6303), two other individuals (8113, 8114) had cortical defects at the insertion sites of muscles which resulted from mechanical stress in the region of the defect. The young adult female (8113) had cortical defects in the knee region on both tibia, while the adolescent male (8114) exhibited signs of mechanical stress at the right knee. In both instances, this is a sign of stress on the legs due to highly demanding and/or repetitive physical activities involving the knees. The ages of these individuals—a young adult (8113) and as an adolescent (8114)—suggest that individuals in this age group were active and probably in the labor force. Cowgill and Hager (2006) found that the Çatalhöyük juveniles exhibited postcranial robusticity early in life, typically by 6 years of age. Various factors may be responsible for the pattern of bone development seen in the juvenile sample, including genetics, nutrition, and activity patterns. A comparative post-Neolithic sample of people who buried their dead at Çatalhöyük and possibly lived nearby, presumably with different genetics and different nutrition, displayed similar results, suggesting that the commonality of landscape is the best explanation for the similar patterns in bone development. In particular, terrain has been shown to have a significant effect on postcranial robusticity (Ruff 2000a, 2000b; Ruff et al. 1984). Relative to the labor force, few modern agricultural societies use children under 6 years of age, but slightly older children, between 6 and 10 years, begin to work in light, unskilled tasks, while a more significant entry into the labor force is generally made after 10 years of age (Bradley 1993; Moberg 1985), not unlike the local children of the nearby village of Küçükköy, where the children are seen herding on a regular basis. A labor force pattern such as this may have been in effect at Çatalhöyük, particularly if the agricultural fields or other resources were located some distance away from the site in the upland areas (Asouti 2005b).

Confirmation that the young adult female (8113) from Building 3 experienced elevated levels of physical activity is the presence of spondylolysis, a stress fracture in the lower back. Activities involving the bending and extending of the back are associated with this condition, which is consistent with the inferred well-developed lower back muscles for this individual (8113). A genetic component has been forwarded for spondylolysis, but there is strong evidence to suggest that mechanical stress is responsible (Larsen 1997). Molleson et al. (2005) noted spondylolysis in two males and one female at Çatalhöyük, which they suggest may have resulted from heavy loading in the lower back region.

Non-articular facets were noted for two individuals in the BACH sample. From Building 3, the older female (8115) has lower limb facets, suggesting extensive kneeling; the older male (8410) from Space 87 also has lower limb facets, suggesting squatting occurred on a regular basis. Kneeling and squatting for extensive periods are consistent with the findings from the 1995–1999 excavations at Çatalhöyük (Molleson 2000; Molleson et al. 2005) and with those from the Neolithic sites of Çayönü and Aşıklı (Özbek 2004).

Burial Practices at Çatalhöyük

The BACH burials from Building 3 and Space 87 give us a view on the treatment at death of two groups of people: one group of individuals buried within a house, and a second group buried in a small adjacent room. The close proximity of the interment areas suggests a potentially close relationship between the people of Building 3 and those buried in Space 87. However, the individuals from each space were treated differently in death, possibly indicating differential treatment in life.

In human societies, the death of an individual sets in motion the culture's traditional actions and belief systems regarding death. At a minimum, death requires the disposal of the body, and in most human societies, death also invokes a host of other customs and rituals related to the dead. Because the individuals who were alive to bury the dead were active participants in the burial event, each discovery of a human skeleton buried at an archaeological site is evidence of human-to-human contact. Thus, the archaeological context reflects the actions of the living toward the dead in the most direct sense. Moreover, the burials at Çatalhöyük took place in the house or room where the living continued to reside. The physical link of the dead and the living adds a dimension to the burial event and to life afterward that is not found in societies where interment is far from the house. The BACH burials add to what we have learned about the intramural burial customs at Çatalhöyük. With skeletons found in both a house setting and in a smaller room, the BACH burials are informative on the treatment and management of the dead body with regard to the use and reuse of space for interment, rituals surrounding the dead, and the remembrance of the dead by the living.

Use and Reuse of Space

Given the specificity of location for burials intramurally in Building 3 and Space 87, the use and reuse of space and the sense of place for the people associated with the house and the adjacent room can be explored. In Building 3, relative to human interment, the use of space and sense of place are clear. There was an unmistakable preference for burial and for secondary placement of skulls in the northern half of the house. The 10 individuals recovered from the house were all found in the north: five from the north-central floor, four from the north-central platform, and one from the northeast platform. The southern half of the house had no burials or secondary-context skulls. Interment of mature individuals occurred only in the northern platforms. No burials were found in the central-east platform of Building 3, even though this platform was used for interment in other buildings. In Building 1, several older adults were buried in the central-east platform (Cessford 2007b). In the SOUTH Area, most of the burials in Building 6 occurred in the central-east area, with the children mainly buried on the east side of the house (Farid 2007). In Building 17, which lies directly below Building 6, two infants were found by the east wall, and an older female was found under the south platform near the south wall.

The north-central floor was a popular interment area for the people of Building 3. In the first interment phase of the house (Phase B3.3), three children (8184, 6681, 6682) were buried in the western part of the central floor. Two secondary skulls (3529.X1, 3529.X2 [6618]) were placed east of the children in the center of the house at its closure (Phase B3.5A). These individuals represent 50 percent of the Building 3 sample. The location of the children and the two skulls in the north-central floor at the beginning and the end of the life of the house appears to have been intentional.

Four of the eight primary burials in Building 3 were interred in the north-central platform (8113, 8114, 8115, 6237). These include a child, an adolescent, a young adult female, and an older adult female. A minimum of three burial events, and possibly four, occurred in this platform in Phases B3.4A and B3.4B. During Phase B3.4A, two individuals were disturbed for a later burial event. This is the only time primary inhumations were disturbed in Building 3. By comparison, the northwest platform and north-central area of Building 1 experienced several episodes of reuse by later burial events in the house (Cessford 2007b). The northwest platform had a large number of burials with a high percentage of juveniles, while the poorly defined north-central area was dominated by double burials and secondary ones.

In Building 3, the northeast platform was used for the interment of a single older individual, probably male (6303) in Phase B3.4B. The burial pit was centrally located in the platform, oriented with the longest dimensions north–south. Like the grave cuts in the north-central platform, the grave cut for this older man demonstrated the steady hand of the excavators and their clear intention relative to the selection of the burial site. Once the older individual (6303) was buried in the northeast platform of Building 3, the floor was sealed and the northeast platform was not used for human interment again. In comparison, the last individual buried in Building 1 was one of two individuals, either the adult 1378 or the headless body of another adult (1466) (Cessford 2007b). Both are considered to be males.

Andrews et al. (2005) and Hamilton (2005c) find no clear pattern in the location of the remains of children in the houses. The excavations at Çatalhöyük demonstrate that neonates and infants were buried in a variety of contexts, while the burial of adults tended to occur in platforms and central floors (Cessford 2007b). In the SOUTH Area, five neonates/infants were found in contexts where adults have not been found, such as near hearths or ovens, suggesting more flexible burial patterns for neonates and infants relative to adults (Farid 2007). In Building 6, for example, one infant burial (4406), rich with grave goods, was found under the southwest platform, and one neonate (4927) was found at the southern part of the east wall of a small space (Space 173), possibly the antechamber of Building 6.

Along with two adults, four neonates were found in the foundation layers of Building 1 but nowhere else in the house (Cessford 2007b). Three of these neonates were at the threshold between the larger main room (Space 71) of Building 1 and a smaller storage area (Space 70). One neonate (2532) was found in association with an adult female (2527) in the north-central foundation layers. Some have suggested she died in childbirth (Cessford 2007b). An older man was found near wall molding in the central-west area.

The excavations from 2002 to 2007 have significantly increased the number of children found at the site. These burials confirm the notion that children were interred in a variety of contexts (Hager and Boz 2002–2008).

The use and sense of space in Space 87 is in stark contrast to what we see in Building 3. Space 87 had several individuals interred in a small, tightly constrained area. A minimum of nine individuals were retrieved from the excavated eastern portion of the space. It seems likely that additional individuals remain in situ in the unexcavated western portion. Thus far, all the burials have been primary. By contrast, only eight people were buried within the larger space of Building 3 in three distinct interment areas in the north part of the house (central floor; north-central and northeast platforms). While the meaning of these differences is incompletely understood due in large measure to our limited knowledge of the total area of Space 87, it is clear that the individuals from Space 87 and Building 3 had not been treated in the same way at the time of death.

Moreover, the intense use and reuse of the overlapping burial pits in Space 87 means skeletons of ancestors/family/friends were constantly being encountered each time a new person died. Familiarity with articulated and disarticulated human bone was part of Çatalhöyük life. Many of the individuals in Space 87 disturbed someone else at interment and, in turn, many of these same skeletons were disturbed by later burial events. When earlier individuals were encountered, the grave diggers tended to push or move them aside rather than remove them. By contrast, the two disturbed individuals from the north-central platform in Building 3 were fully or partially removed. These bones became part of the burial fill for the later burial event. It is possible that the differential treatment of the in situ skeletons is a consequence of the dimensions of Space 87. Differences in the physical space alone would have guided how interment proceeded. From digging the grave, to managing the corpse, to filling in the grave, all of these acts would have been performed differently in the more confined area of Space 87 compared with the more spacious platforms and floors of Building 3.

The BACH project's excavation of Space 87 tended to link that space with Building 3 in a direct manner, even though the exact relationship of the people of Building 3 and Space 87 is not well understood. One argument against a direct relationship between Building 3 and Space 87 (and Spaces 88 and 89 to the east) is the presence of a double wall separating them from Building 3 in the north. This type of wall may signify that Space 87 (and Spaces 88 and 89) are associated with a different, unexcavated house, possibly to the west, since the south wall is also double. This would mean that the individuals found in Space 87 may be more directly related to people from a house other than Building 3.

However, the proximity of Space 87 to Building 3 may reflect a direct relationship between the two. This raises the possibility that the differential treatment of the dead and differential use and reuse of space was based on the nature of their relationship. If the people interred in these two spaces were related, then what were the criteria for burial in the house vs. for burial in the adjacent space?

It has been noted previously that the number of burials found intramurally varies from house to house, and this may have significance regarding burial customs at Çatalhöyük (Baird 2005; Düring 2001, 2003; Hodder, ed. 2005a; Hodder 2005b, 2005d; Matthews 2005a). The primary burials from Building 3 contribute to this discussion, since eight burials seems too few for the occupants of a large house with a life span of 45–90 years, just as the 62 individuals found buried in Building 1 seems too great (Cessford 2007b). Moreover, there are other buildings at Çatalhöyük that do not contain any burials at all, such as Building 2 (Farid 2007). The large number of individuals buried in Space 87 may demonstrate that life in a house and death in a house may not be equivalent, since the individuals of Space 87 presumably lived in a house despite being buried in a smaller room.

The "extra" individuals in Building 1 and Space 87 may resolve the low number of dead recovered from Building 3. The disparity in the number of individuals buried per house has prompted a view of some buildings at Çatalhöyük as "ritually elaborate buildings" (Düring 2001, 2003), "dominant houses" (Hodder, ed. 2005a; Hodder 2005b, 2005d) within "suprahouseholds" (Matthews 2005b) or "interhouseholds" (Baird 2005). Characterized by a large numbers of burials, well-defined platforms, and architectural decorations such as wall paintings, relief plasters, and cattle bucrania, the large "suprahouseholds" would have been the focal house in an aggregation of households relative to burial and perhaps other ritual activities. A focus on a single house for the burial of many suggests there was a strong link between the people of several houses in life. Russell and Martin (2005) demonstrate that ceremonial feasting and the spread of animal bones on the house floors afterward occurred in houses, perhaps as evidence of social gatherings in which many houses were brought together.

With its architectural decorations and large numbers of burials, Building 1 is considered to be one of the special interment houses. The red painted walls and many burials in Space 87 also may be indicative of a special place for interment, albeit on a much smaller scale than Building 1. Building 3 is interesting because the number of burials is small, and yet this was a large house with wall paintings, well-defined and well-maintained platforms, and a bucranium near two secondary-context skulls which had been deliberately placed in the center of the house at abandonment. Moreover, ceremonial feasting of two red deer characterizes the foundation layers of Building 3, suggesting that Building 3 was a focal place of social interaction at the beginning of the house (Chapter 8).

Even with some houses acting as a focal house for multiple others, it has been argued that the basic unit of autonomy and centrality in Çatalhöyük society was the house (Baird 2005; Hodder, ed. 2005a; Hodder 2005b, 2005d; Matthews 2005a, 2005b). Hodder (Hodder, ed. 2005a; Hodder 2005b, 2005d) maintains that the people of Çatalhöyük became more house-oriented and less community-oriented through time, with the centrality of the house most evident in the middle of the occupational sequence. Hodder (2005b) and Matthews (2005b) point out that the orderly, well-stocked houses were the focus of a range of diverse activities in life as well as the place of interment at death, suggesting that there was a specific connection at the level of the house that did not exist at the larger community level. Moreover, the site primarily consists of densely packed houses with little evident public space (Hodder, ed. 1996; Hodder 2005d). With the house central to Çatalhöyük society, it is possible that the linking of many houses into a "suprahousehold" may have acted as a mini-community within the larger community where the population may have reached several thousand or more individuals (Cessford 2005b).

The individuals buried in any given house, space, or "suprahousehold" are likely to be affiliated by kinship (Baird 2005; Cessford 2007b; Hodder 2005d; Molleson et al. 2005). Biological relatedness among individuals is suggested by Molleson et al. (2005). The people from Building 3 represent nearly all age groups, possibly even several generations of a single family. Space 87 may also represent related individuals. If these two groups are kin-related and they experienced differential treatment at death, then it is possible that interment may have been based on the line of descent of the deceased individual. Burial in the house may have been reserved for the members of a particular line of descent, whereas interment in Space 87 may have been for the others. Confirmation of this hypothesis will depend on the recovery of ancient DNA from the samples and/or additional morphological studies on the teeth and bones where the genetic component of the traits is high.

Baird (2005) proposes that the houses linked in death ("interhouseholds") may be extended families or "linked lineages" and that the building where the most burial rites occurred was also the focus of increased social interactions. Moreover, Baird suggests the social networks evidenced in shared burial rites may translate to an increase in the access to resources based on these networks. Fairbairn, Asouti, et al. (2005) have noted the importance of extensive social networks in the kinds of subsistence activities that Çatalhöyük people would have faced in a seasonally complex environment. They suggest social alliances based on kinship or residential groupings may have served as a way of dealing with the seasonality of resources. There is some evidence for residential groupings from the stable isotope analysis on animal and human skeletons from the NORTH and SOUTH Areas from the 1995–1999 excavations by Richards and Pearson (2005). They found that the individuals from the NORTH Area were more variable in their isotope values than the individuals from the SOUTH Area, suggesting differential diets in these two subpopulations at Çatalhöyük. As one explanation for these results from a small sample size, Richards and Pearson suggest a differential access to food between the residents of the NORTH and SOUTH Areas of the site, possibly reflecting differences in mobility on and off the site.

Rituals Surrounding the Dead

Death rituals directly link the living to the dead. The treatment and management of the corpse is an important aspect of burial rituals in many past cultures and in modern societies cross-culturally. Archaeologically, the preparation of the body can be inferred from the size and nature of the grave pit, the placement of the body in the grave (body position and orientation), from evidence of binding, and from the presence of baskets, mats, and pigments. Grave goods and personal belongings put in the grave with an individual give evidence of the connection of the person to these items, either in life, in death, or both. It is also possible that grave items help the individual transcend from the living to the dead.

Position and Orientation

All the BACH individuals were flexed, a pattern found consistently throughout the site (Andrews et al. 2005; Hamilton 2005c). In Building 3, the two older children in the north-central floor were on their left sides, both their heads on the left side, facing the north/northwest. The baby in the middle was on its stomach, with the head on the left, facing north. The body orientation for the three children was noteworthy, even though one child (6682) was oriented with the head to the south and not to the west like the others (Figure 13.5). This may have been an instance where fitting the body in the grave had priority over orientation (Hawkes and Molleson 2000), or it may have been intentional. According to Andrews et al. (2005), neonates and infants were placed in the grave on their backs more often than adults. The Building 3 infant and young child were on their stomachs.

Three of the four mature individuals from the north-central and northeast platforms were flexed on their right side with the knees drawn to the chest, the head to the south, and the face to the east. The similarity in body position and orientation for these three skeletons is striking

(Figure 13.8; see also Figure 13.11). The fourth adult, an older female from Phase B3.4A, was on her back, leaning slightly to the left side in a northwest–southeast orientation. Interestingly, the older female was placed in the similar orientation as two of the children (6681, 8184) from the north-central floor. Her body position differed, however, because she was on her back.

The position and orientation of the two secondary skulls suggest deliberate placement of the heads together. One head was pointing to the west and the other to the south. With their upper heads touching, the faces opened to each other, one facing north and the other east.

In Space 87, the upper-layer burials were positioned in an east–west orientation with the head to the west, while the lower burials were in a north–south orientation with the head to the south. There does not appear to be much distinction given to the position and orientation of children vs. adults in this space.

Baskets, Mats, and Binding

The two youngest children from Building 3 and a neonate/infant from Space 87 were placed in baskets prior to interment. Babies in baskets have been found in many instances in the SOUTH Area, including six neonates/infants in baskets from Building 6 (Farid 2007), many being lidded coiled baskets (Wendrich 2005). Interestingly, Wendrich (2005) also found that some of these baby baskets show traces of wear, suggesting that the baskets were recycled rather than specially made for the baby at the time of death. The phytolith analysis of the baskets from the NORTH and SOUTH Areas by Rosen (2005) reveals that most baskets were made from wild grasses, probably procured from materials from the dry, warm areas away from the site. Rosen found that some neonatal/infant baskets were made from a specific wild grass that was not used for the construction of any other kind of basket. Moreover, she noted that the grasses of the baby baskets were interspersed with floral elements, suggesting the collection of the materials and/or the construction of the baskets in the spring. Variation in the selection of baskets for these babies is suggested by the presence of wear on some baskets (Wendrich 2005) and by the specific construction of other baskets for neonates/infants only (Rosen 2005). The basket selection may be related to the suddenness of death, the time of year when death occurred, and/or the availability of resources at the time of death. By contrast, all of the matting associated with adult burials was from sedges which were abundant in the surrounding wetlands (Rosen 2005).

Building 3 demonstrates the use of baby baskets in the NORTH Area. It is suggested that both children (8184, 6237) were placed in the basket on their backs, covered by the basket lid or mat, and then turned over onto the stomach when placed into the grave. A neonate/infant was found in a lidded coiled basket in Space 87 with the bones visible between the upper and lower layers of the phytoliths. Placement of the babies in lidded baskets means the view at interment was of the basket and not of the baby directly.

Phytoliths suggestive of pre-interment binding were noted for two individuals from Building 3. One is an adult and the other a child. The child (6681) had phytoliths present at the mandible and knees, whereas the older adult female (8115) had phytoliths evident on the hipbone. The cordage represented by the phytoliths on the hipbone of the older woman (8115) revealed an intricate braiding pattern (see Figure 4.16). It should be noted that this cordage could be part of the clothing of the older woman rather than evidence of binding. No evidence of binding was found on the Space 87 individuals. Preservation may be a factor in the number of individuals found in association with binding cords, mats, or baskets. Three instances of pre-interment binding fibers or "textile tapes" were found on one baby and two adults from Building 1 (Hamilton 2005c). The apparently infrequent use of binding tape or cord, coupled with the tight flexion position for the skeletons, may suggest a way of handling the corpse that was quite effectual even in the absence of binding. For many of the babies and young children, baskets were useful for the management of the body after death. For adults, the body was sometimes wrapped in mats, which may have helped the living manage the flexed body at the time of interment.

Pigments

Red pigments such as red ocher and some cinnabar have been found in the context of human burials with no visible pattern regarding age or sex (Hamilton 2005c). In Building 3, the one infant (8184) had red pigment in a shell near its head. Several individuals, mostly babies from the SOUTH Area, were found with red ocher, including a shell with red ocher found near the face of a 2- to 3-year-old child (2842) in Space 112 (Farid 2007; Hamilton 2005c).

Mellaart (1967) suggested a ritual association of burials and the presence of red ocher painted on nearby walls. While not all walls adjacent to burials were painted red even within a single house, the red paint on some walls may be correlated with burial events. For instance, the walls adjacent to the northwest platform of Building 1 and the north-central platform of Building 3 were painted red. The platforms were clean, white, and well maintained. In Building 1, Cessford (2007b) considers the possible relationship of the red walls and the high number of juveniles found in the northwest platform. Based on the micromorphological analysis of the walls and floors in Building 1, Matthews (2005b) notes that the walls next to the northwest platform were painted red in approximately 10 of 35 plasterings, especially those walls found early in the sequence. Matthews (2005b) believes that the use of red ocher on the walls may have significance in dividing the "domestic" and the "ritual" areas of the house, suggesting that the wall paintings are linked to events with symbolic meaning such as burial events. Moreover, the floor plastering data indicate a particular emphasis on keeping the platforms clean and white with repeated plasterings using vegetal-tempered plasters and many layers of finishing plasters (Matthews 2005a). This suggests that when someone died who was to be buried in the north-central platform of Building 3, for example, the walls were painted red and, at the end of interment, the platform was replastered white. The contrast between the white plaster and the red ocher must have been striking.

Red paint characterized the east and south walls of Space 87, with the thickest layers of paint in the southeast corner. The north wall does not appear to have been painted, and the west wall has not been exposed. The large number of burials combined with the red painted east and south walls suggests that Space 87 was a potentially complex space for interment and ritual. It will be interesting to see how the space unfolds relative to the painted walls and the burials in future excavations.

Yellow ocher was found in association with one child from Building 3 and one infant from Space 87. Hamilton (2005c) reports that several individuals who were found associated with yellow ocher had been predominantly, perhaps exclusively, placed on their left side. The two BACH individuals found with yellow ocher were also on their left side, although the burial position for the infant from Space 87 is inferred.

Blue pigment was found near the older female (8115) in the north-central platform in Building 3, possibly in a basket. Several individuals from Çatalhöyük have been found with blue and green pigments (Hager and Boz 2002–2008; Hamilton 2005c; Mellaart 1964). A sizable amount of green pigment in association with a bone spatula, a possible pouch, and a wooden box was found with the infant (8184) in Building 3. Mellaart (1963) thought the bone spatula may have been used for the application of cosmetics. Green pigment was found in three instances by Mellaart (1964) but not in the excavations from 1995 to 1999 (Hamilton 2005c). It is possible these pigments were used for facial or body decoration.

Grave Goods/Personal Belongings

The BACH sample is like other burials at Çatalhöyük relative to grave goods and personal items: some people have a lot, many have nothing, and children tend to have more items than adults. As in other Neolithic settlements, the presence of grave goods or personal belongings with juveniles indicates the relative importance of children in Çatalhöyük society (Hodder 2005d).

Of the BACH sample, several interesting materials (bone spatula, malachite, shell, red pigment, beads) were found associated with the infant 8184. This infant had the most grave goods and/or personal belongings in the BACH sample. In addition, the only bone artifact found in direct association with a skeleton in this house was found with infant 8184 (Chapter 15). This was the first and youngest individual to be buried in Building 3.

A skeleton of a juvenile dog was found in the northeast platform of Building 3 (Chapter 8). The burial of skeleton 6303 (single older individual, probably male) and the burial of the dog were separated by time, and therefore the events may or may not be related. The dog burial is of note, however, since only a few complete skeletons of animals have been found at the site (Russell and Martin 2005). In the 2004 field season, a fully articulated lamb was found in direct association with an older male in Space 112 in the SOUTH Area (Hager and Boz 2004; Russell and Düring 2006). This is the only instance of a complete animal being buried at Çatalhöyük and the only complete animal to be buried alongside a human burial. Russell and Düring (2006) discuss the position, orientation, and context of this unusual double burial of an old man and a lamb and offer various explanations for their relationship, including ones related to herding animals, pets, wealth, status, shamans, and the afterlife.

In Space 87, belt hooks and eyes made from a large mammal were found in the upper grave fill layers, likely to have been associated with the adolescent (8409), but possibly associated with the older man (8410). Russell (Chapter 15) notes that the bone artifacts were used together and show evidence of wear. The belt hooks and eyes are clothing-related, suggesting that people may have been buried in their clothes. No other cultural materials were found with the Space 87 individuals.

Secondary-Context Human Skulls and Disarticulated Human Bones

At Çatalhöyük, the number of isolated skulls and headless bodies is low relative to the number of intact primary burials recovered from the site (Andrews et al. 2005; Hager and Boz 2002–2008). Nonetheless, all instances of isolated skulls and headless bodies in their various contexts are worth noting. Skulls found in secondary contexts include a skull (5022) found in a post-retrieval pit in Building 6, the two skulls from Building 3, and a plastered skull from Building 42. The plastered skull (11330) was found in direct association with an adult female (11306) in the SOUTH Area at the northeast part of Building 42 (Hager and Boz

2002–2008 [2004]). The building had been partially excavated by Mellaart in the 1960s. This is the first plastered skull to be found at Çatalhöyük, and it is the only one to be found in close association with another human. Plastered skulls are known from such sites as Jericho (Palestine), Ain Ghazal (Jordan), Tell Ramad (Syria), and Koşk Höyük (Anatolia) (Bonogofsky 2004; Özbek 2005, 2009; Öztan 2002). In 2007, a group of five skulls was discovered in the 4040 Area, with two other isolated skulls located nearby. From the SOUTH Area, three isolated skulls were found in Building 44, including a juvenile (11621) who was found in the foundation of a bench.

Skeletons without skulls, or headless bodies, also have been found at Çatalhöyük. In some instances, it is clear that the skull was taken intentionally. Andrews et al. (2005) noted two such examples of headless bodies (1466, 4593) in the 1995–1999 samples from Çatalhöyük. The nature of the decapitations and the positions of the bodies suggest that the burial of the individuals was done with the intention of returning for the skull at a later date. In one case (4593), cut marks were detected on the cervical vertebrae, suggesting the head was taken while some soft tissue remained. Since 2004, additional headless bodies have been found in the 4040 and SOUTH Areas, including a female (13162) from Building 60 who likely died in childbirth with a full-term fetus engaged in her pelvis. In Building 49, the majority of burials in the northwest platform were missing their heads, but many of these were also missing other body parts. One individual (16697) had only the head missing. Adults and children have been found headless in other buildings and spaces in the 4040, Team Poznan (TP), and SOUTH Areas.

The two secondary-context skulls from Building 3 contribute to the discussion of a possible skull cult at Çatalhöyük (Düring 2003; Hodder 2005d). The isolated skulls, headless bodies, a plastered skull in the arms of another individual, and the vulture imagery associated with headless bodies at Çatalhöyük leads Hodder (2005d) to consider the specific ancestral links of these skulls to the individuals digging them up and using them later, with the recovered skulls perhaps representing particular ancestors known to the Neolithic excavators. These actions with the interred skulls and other body parts clearly indicate a strong link between the living and the dead.

The exact placement of the two skulls at the end of the life of Building 3 can best be described as ritualistic behavior associated with the abandonment of the house (Chapter 22). In Building 6, an isolated skull (5022) was found at the north end of the west wall in a post-retrieval pit, probably placed there during the early construction phase of the house. The rest of the body was not located. These two finds—a skull in the post-retrieval pit in the foundation layers of Building 6 and the two skulls placed on the central floor at the end of the life of Building 3—demonstrate that Çatalhöyük people used the skulls to begin some houses and to end others.

Human bone fragments other than whole skulls have been found at the site in many different contexts, including secondary contexts that suggest movement of skeletal elements around the site post-interment. From the last phase (B3.5A) of Building 3, a flint dagger and its bone handle (2210.X9) were found with parts of a human skull, a burned human mandible, and several cattle horns in an area of burning. In addition, near the south wall in the kitchen area, there was a cluster of cattle scapulae in a primary midden deposit in association with several disarticulated human bones (2281) to the west of the cluster (see Chapters 8, 22). The human bones primarily consist of the postcranial remains of an older adult, possibly female, and a juvenile. Cranial remains of an infant are also in the disarticulated remains. In Space 87, the infill above the floor had several disarticulated human bones, some burned, in association with animal bones, burned oven material, and fragments of brick (Chapter 22). All of these contexts are associated with the abandonment of the house or space. Disarticulated human bones and teeth have also been found in midden deposits, burial fill, animal deposits, walls, and off the site at KOPAL.

Memory: Remembering the Dead, Forgetting the Dead

The evidence from the archaeological record suggests that the ancestors and their bones were part of the immediate memory of the people at Çatalhöyük. The intramural burial custom secures the dead within the living area and potentially forces the living to constantly remember the dead. Hodder (2005c) suggests "scales of memory" where memories exist at the level of the house, with immediate links to the dead under the house floors, and at the level of the "suprahousehold," where several houses are linked together in life and in death. For Hodder, the focal houses with their greater number of burials indicate an investment in the continuity of remembrance at a level larger than the house.

Based on radiocarbon dates from the site, Cessford (2005b, 2007a) has estimated that the life of a house at Çatalhöyük was approximately 70–100 years in the early levels of the site and 50–70 years in the later levels. A typical house was likely to have a life span of 45–90 years. Based on a generation of about 30 years' duration, each house potentially could be used for three to four generations. If the houses were occupied continuously, it seems likely that the Neolithic people could have remembered who was buried in which platform or under what floor. It is even possible that the later people could associate some bones with specific individuals (Hodder 2005d). And yet, they disturbed them anyway. We have sound archaeological evidence that disturbance of bones occurred from later times toward those of earlier times (possibly descendants disturbing their ancestors' bones). Indeed, at Çatalhöyük, there was a constant encountering of bones due to the repeated use of the house space for interment. Moreover, skulls found in secondary contexts suggest deliberate procurement of these individual skulls from somewhere for other uses.

In both areas of the BACH burials, the use and reuse of space is apparent. For Building 3, the Neolithic people could have known about the earlier burials in the north-central platform before they disturbed them, but perhaps they had forgotten their exact location. On the other hand, perhaps they knew that two individuals were in the platform before they excavated the burial pit for another, but it did not matter. Moreover, there may have been intentional placement of these three individuals together, even if they did not die contemporaneously. Perhaps the individuals shared a close relationship that was reflected by their interment together. This hypothesis seems plausible if we consider there were other places available in the house for interment, such as the large central-east platform which was not used for burial in Building 3. In other buildings at Çatalhöyük—in Buildings 1, 6, and 17—the central-east platform was an important area of interment.

In Building 3, the north-central floor was reserved for the three young children in the early phases of the house. Given that none of these children were disturbed in later times, even in an area of high activity, it is likely a memory of these individuals and their death remained intact throughout the life of the house. Also undisturbed was the lone occupant of the northeast platform, the older probable male (6303). His burial near the end of the life of the house suggests a memory of his location was nearly certain. The wooden plank near the base of his skeleton may have served as a grave marker or had some other meaning relative to the older man found under it. Near the end of the burial sequence in Building 3, the young child (6237) was the last to be buried in the north-central platform and the last primary interment in the house itself. The interment of this child did not disturb the other burials in the north-central platform. This could be the result of the people not digging very deeply into the platform for the burial of a small child, or it could mean that they knew that the other people were buried in the platform and were careful in their excavations not to disturb anyone.

The ability of the living to remember the individuals buried in Space 87 seems likely, given that disturbance of the dead occurred frequently in this space. Three individuals (8409, 8490, 8494) were disturbed before decomposition of the soft tissues was complete, suggesting that the time frame between interments was short. All the burials were in close proximity to one another, with the disturbance increasing in the more recent upper levels. For these reasons, Space 87 appears to have been intentionally filled with the dead in a time span consistent with a memory of the others already buried in the pit.

Views of Death

The intentional burial of the dead has been a human custom for thousands of years. This suggests that people have pondered the meaning of death and its relationship to life for a long time. The vast literature on the anthropology of death in modern cultures points to the overall importance of death in every modern society. Similarly, archaeologists encounter human skeletons on a constant basis and have thus studied in great detail the mortuary practices of past peoples. That people view death differently across time and space is no surprise.

A past-oriented view of death at Çatalhöyük is strongly suggested by the intramural burial customs where the dead and the living coexist. Moreover, the secondary use of skulls and other body parts in ritualistic activities indicates a direct link to, and perhaps veneration of, the dead. In addition, the culling of skulls from previously buried individuals, as indicated by the headless skeletons in both the NORTH and SOUTH Areas, suggests the procurement of specific body parts such as the skull, perhaps from known ancestors.

Even with this overwhelming link to the dead through an intramural burial custom and a reuse of human skeletons in later activities, the people of Çatalhöyük also appear to have had an equally important future-oriented view of death. The presence of neonates in foundation layers, near entryways, and in the lower levels of houses may indicate a link between the vitality of youth and the future life of the house (Baird 2005; Cessford 2007b; Hodder 2005a; Matthews 2005a). It is possible that the burial of young individuals at the base layers of the house was thought to confer a long life to the house and the future people associated with it. In addition, many neonates/infants show signs of differential treatment by the presence of grave goods and/or personal belongings, the presence of pigments, and by their placement in baskets for burial. The importance of the young to the future life of the house and its inhabitants seems likely.

Additional evidence of a view of death that speaks to regeneration is found in a splendid figurine discovered during the 2005 field season in the SOUTH Area of Çatalhöyük. The figurine is headless but there is a slit in the neck region that is suggestive of a removable head. The front side of the piece is with little doubt an accurate representation of a very pregnant female. The swollen breasts are pressed down by the hands in what appears to be an effort to show their fullness. The belly is large and the navel is sticking out, as often happens in many modern women at or near term. The legs seem to disappear under the weight of the swollen womb. By contrast, the back of this figurine is stunningly different. It shows in some detail the human skeleton from the back. The arms are full on the front side yet skeletonized on the backside. Both scapulae and hipbones are there. The spine juts out in relief while the ribs are incised around the torso. It is noteworthy that the ribs connect to the spine before they wind around the torso, as this suggests a basic understanding of skeletal back anatomy and is direct evidence that the Neolithic sculptor had intimate familiarity with the human skeleton. The juxtaposition of the skeletonized body and the pregnant female in the same figurine suggests a consideration of birth and death as events on the same continuum. Perhaps death reminded the people of Çatalhöyük that life continues. While a full analysis of this important figurine is pending and other interpretations are certain, its relevance to the dualities of birth-death and ancestors-descendants is credible, particularly given the context of human interment in this society.

Conclusions

Two groups of individuals were recovered during the BACH excavations: one group from Building 3 and one group from Space 87. Like other Çatalhöyük burials, Building 3 and Space 87 interments were mostly primary inhumations with no signs of excarnation. The primary BACH inhumations were buried in the same manner as other Çatalhöyük people: the body flexed in a grave dug into the floors. Orientation of the body in the grave varied, although there were micro-patterns within each space. The first and last individuals buried in Building 3 were young children. The older individual buried in the northeast platform was the next to last to be buried in the house, having died not long before the last child. Two secondary-context skulls were deliberately placed in the center of Building 3 at the time of the abandonment of the house.

Space 87 consists of primary inhumations where disturbance for later burials was constant. The last individual buried in Space 87 was an older male (8410). The first person buried in the space is unknown. The pattern of disturbance in the use and reuse of the burial pits in Space 87 suggests continual contact between the living and the dead.

The majority of individuals recovered in the BACH sample were juveniles. The only age category missing in the BACH sample was 30-year-olds. Like the other Çatalhöyük samples, the BACH group has older individuals, a positive indication of the overall survivorship of the population.

A look at the overall health and well-being of the BACH sample reveals that a range of conditions affected these people, including nonspecific infections, anemia, possible black lung disease, trauma-related injuries, degenerative joint disease, spondylolysis, and other indicators of mechanical stress. A mobile and active lifestyle is suggested from the skeletons, with some individuals exhibiting signs of excessive physical demands due to potentially repetitive activities. An examination of the oral health demonstrates a relatively high prevalence of dental caries and calculus.

The three youngest BACH children were found in baskets. Red, yellow, blue, and green pigments were noted in association with some of the BACH burials. Red pigment was also used to paint the walls of two interment areas where several individuals were interred (north-central platform in Building 3 and Space 87). Grave goods and personal belongings were uncommon. The infant (8184) from Building 3 had the greatest amount of associated materials found with it relative to all the individuals of Building 3 and Space 87.

When they died, the people of Building 3 and Space 87 were placed in a deliberate fashion in specific locations in the house or smaller room. These individuals were related in death to Building 3 or Space 87, although their relationship in life to each space is not fully known. In addition, the individuals in Building 3 and Space 87 may or may not be directly related to one another, just as the people of Building 3 may or may not be related to those of Building 1.

The treatment and management of the corpse differs in some ways in Building 3 and Space 87. All the bodies were in a tightly flexed position, suggesting sufficient handling of the body at death to achieve the burial positions. Two instances of possible pre-interment binding were found on individuals from Building 3; none were found for Space 87. Placing adults in mats may have aided in the management of the corpse, but evidence of matting is not present. Space 87, being smaller than Building 3, may have shaped the actions of the living toward the dead at the time of interment, including limiting the number of individuals in attendance at the burial. In contrast, the larger Building 3 offered a more spacious place for the interment, and this may have had an impact on the burial event.

Each interment represents a burial event that took place in the house or space, perhaps disrupting the interior space of the house or room for a short time. It is likely that people gathered for the burial event and perhaps held a ceremony. In some areas of interment, burial events may have been marked by painting the surrounding walls red. The paint was short-lived, but even in its short duration and in contrast with the newly plastered white platform floors, the painted walls would have served as a reminder that the house had experienced a death recently. In some instances, the death of an individual may have even precipitated the abandonment of the house. But often after death and interment, life in the house resumed, and the link between the living and the dead continued.

Chapter 14

Post-Neolithic Use of Building 3 (Space 86), Space 88, and Space 89

Daniela Cottica, Lori D. Hager, and Başak Boz

Skeletons representing six primary inhumations of Roman origin were found in the upper layers of Building 3 (Space 86) and in the adjoining smaller spaces to the south (Spaces 88 and 89) during the 1997–98 field seasons (see Figure 5.99). The individuals were post-Neolithic individuals who differ from the earlier Neolithic people in how they were buried in the grave (extended on the back) and by the age of the associated grave goods (Roman). These Roman-age skeletons were buried in shallow, rectangular graves, with the body extended on the back and the arms placed alongside the body. In some instances, iron nails from the original wooden coffin were found (e.g., F.150, F.152). The majority of the burials were closely but randomly spaced in an east–west orientation with the head to the west; the bodies were not perfectly aligned to the true cardinal axis (Figure 14.1). The only exception to the east–west orientation was an adult male (F.158) in a north–south alignment with the head to the south. This orientation is unusual in the nearly 200 post-Neolithic burials recovered from Çatalhöyük. Perhaps the unique grave orientation was dictated by the chronology of the deposition, the cultural identity of the deceased, and/or by the presence of other cultural features not detected by the excavations thus far.

Excavations in the BACH Area yielded the human remains of four mature adults, one adolescent, and one child. An examination of the bones suggests three were males, two were females, and one was a child of indeterminate sex. The associated funerary objects of the child were typical of female children of Roman times.

Five of the six individuals were buried with funerary goods of ceramic, glass, bone, stone, or metal (Table 14.1). The only grave lacking funerary objects belonged to an older male (F.154) whose skeleton was displaced from its original position. Extensive postdepositional disturbance characterized the grave, which may be why the skeleton was displaced and why we found no associated grave goods.

Six Roman Burials in the BACH Area

The analysis of the graves, grave goods, and skeletons of the six post-Neolithic individuals found in the BACH Area has yielded information regarding the chronology, biology, and cultural attitudes regarding death at a Roman outpost in the first to third centuries A.D. We were able to establish a reasonable chronology of the individuals on the basis of the associated artifacts. Age and sex determinations were made for five of the six individuals based on evidence from the skeletons. The sixth sex assessment was based on the funerary objects found in association. Overall health and lifestyle assessments were made based on skeletal indicators. Stature was estimated whenever possible. A detailed catalog of the associated grave goods and their chronological placements is presented in detail by one of the authors (D. C.) in Appendix 14.1 (available in the on-line edition).

Feature 150, Skeleton 2219[1]

Located in Space 86, this individual was a tall, robust adult male (Figures 14.2, 14.3). Certain skeletal attributes, such as an ossified thyroid cartilage, suggest he was relatively old (45–50+). The bones are not well preserved, and they are light and brittle. This is suggestive of osteoporosis. Even so, the bony elements are large and robust. In nearly all areas of the skeleton, muscle attachment sites indicate this individual was quite strong and well built when he was alive. The upper limbs are particularly well developed. This pattern of muscle development indicates this man participated in activities requiring substantial upper-body strength throughout his life.

The pattern of degenerative joint disease (DJD) observed in this individual, coupled with the overall robusticity

[1] Each skeleton has its own unit number (often expressed as digits in parenthesis). The skeleton unit is part of a burial feature that also includes units for the burial fill, burial cut, and any other associated layers or materials.

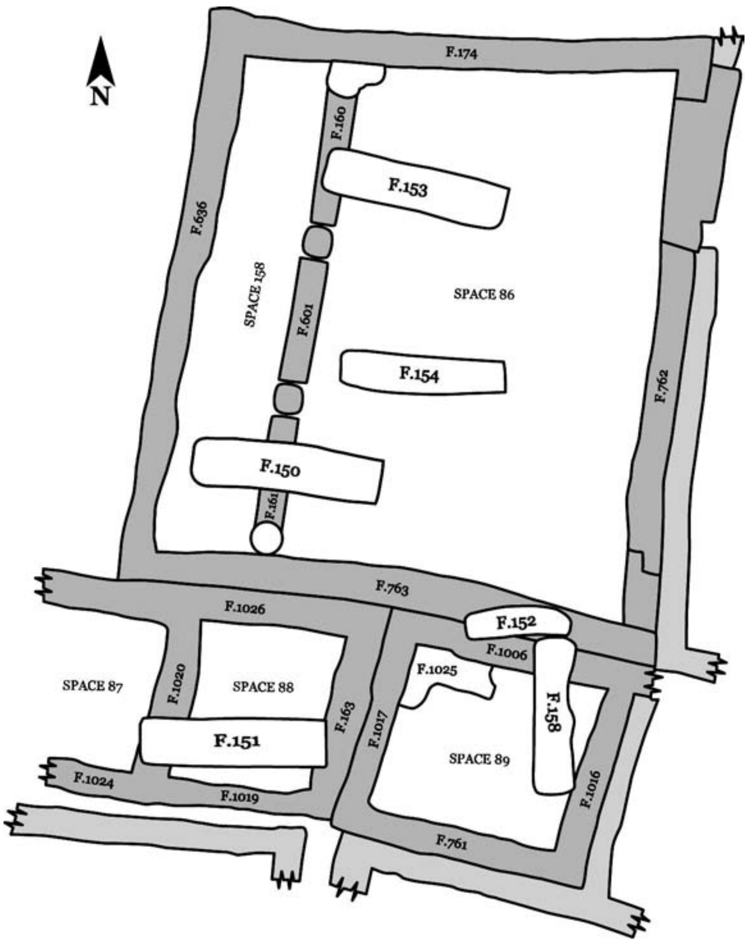


Figure 14.1. Plan of the Roman burials excavated in 1997 and 1998 in the BACH Area.

of the bones, suggests constant and repetitive use of the upper limbs in daily life. Evidence of DJD is present at the sternal ends of the ribs, the thumb (first metacarpal), the distal phalanges of the hand, and one foot phalanx. The vertebral column shows no sign of degenerative joint disease, which is surprising given the older age of the individual. The left wrist (radius, distal) displays a healed Colle's fracture typical at the wrist. This kind of fracture usually results from an attempt to brace oneself against a fall using the hand. The DJD at the left elbow (radius, proximal) is likely due to the long-term impact of the fracture on the range of motion at the elbow.

The sternum is noticeably asymmetrical in the length of the manubrium (the left side is longer than the right). Two other individuals from this sample have similarly asymmetrical sterna (F.151, F.153). This anomaly may be indicative of a biological relationship among these three individuals, although environmental factors are equally plausible. Stature was estimated by taking in situ measurements of several long bones. These suggest this man was 2 m tall, based on regression formulae for white males in Trotter and Gleser (1958). Black staining is evident on some of the ribs, both internally and externally. The staining may be due to a fungus present at the site (Andrews et al. 2005) and/or manganese staining.

A stone disk was found in the grave with this individual.

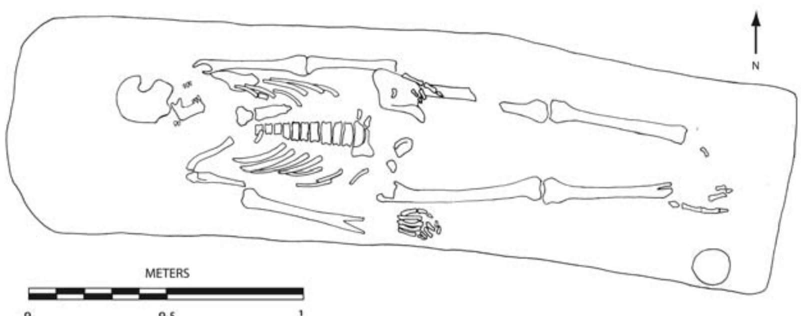


Figure 14.2. Plan of F.150, an older adult male.

Figure 14.3. Roman burial (F.150) cut through the fill of the southern part of Building 3 in Phase B3.5B, looking west.

Table 14.1. Key attributes of the six Roman burials from the BACH Area

Feature	Skeleton	Age	Sex	Position/ orientation	Funerary objects	Position of artifacts	Date
150	2219	Older adult	Male	Extended on back, east–west (head west)	Stone disk	?	N/A
151	2212, 2231	Mid-adult	Female	Extended on back, east–west (head west)	Glass unguentarium, same as F.152; stone disk	By the head	Late 1st to early 3rd century A.D. (probably late 1st–late 2nd century A.D.)
152	2226, 2232	3–4 years	N/A from bones; associations suggest female	Extended on back, east–west (head west)	Glass unguentarium, same as F.151, two copper beads, bone (hair) pin, bone needle or toilette stick (cf. comments in cat. no. 9)	Unguentarium: by the head next to the right ear. Beads: by the neck. Bone objects alongside left leg	Late 1st to early 3rd century A.D. (probably late 1st–late 2nd century A.D.)
153	2235, 2245	15–16 years	Female	Extended on back, east–west (head west)	Ceramic lamp; terracotta unguentarium	At the feet	Late 1st century B.C. to early 1st century A.D.
154	2244	Mid- to older adult	Male	Extended on back, east–west (head west)	None (possibly disturbed)	N/A	N/A
158	2265	Mid- to older adult	Male	Extended on back, north–south (head south)	Ceramic items: lamp (similar type as in grave F.153 but better quality), cup, bowl, flagon: good quality tableware	By the head, to the right	Late 1st century B.C. to ca. mid-1st century A.D.

Feature 151, Skeleton 2212 and 2231

The grave of this individual was located in the southern portion of Space 88 (Figures 14.4, 14.5). The top of the grave cut into the wall separating Spaces 87 and 88. This individual was an adult, probably a female. This woman was 30–35 years of age at the time of her death. She was of moderate size and build. Regular, daily activities involving the upper body are suggested from the overall size and the well-demarcated muscle attachments of the upper limb bones. Muscles involved in movements of the shoulder girdle and arms, such as the pectoralis major, deltoid, and trapezius muscles, were particularly strong. Even the lower arm muscles such as the pronator muscles involved in the intrinsic movements of the hand were well defined. While

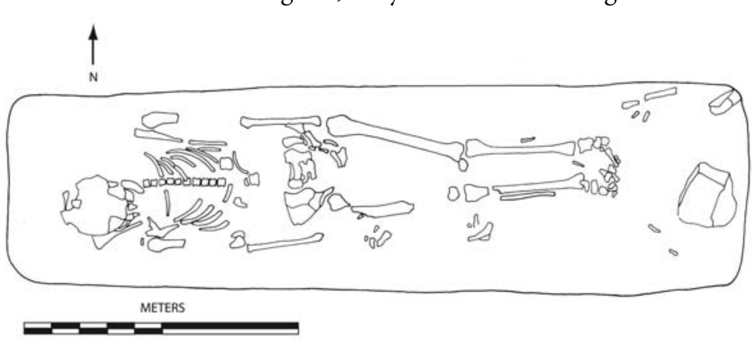


Figure 14.4. Plan of F.151, a middle adult female.

Figure 14.5. Roman burial (F.151) cut through the fill of Space 88 in Phase B3.5.

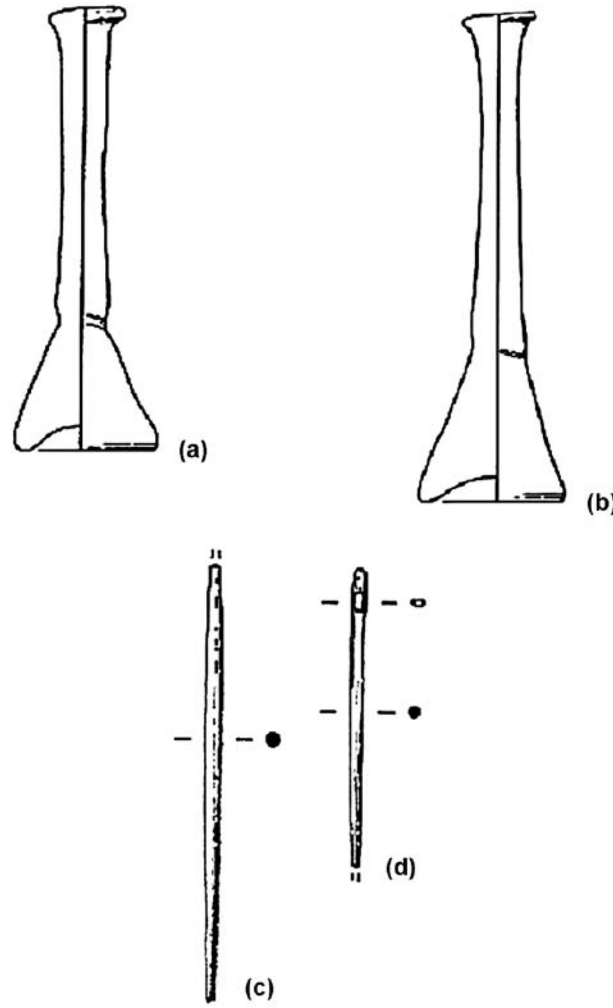


Figure 14.6. Grave goods from F.151 and F.152: (a) glass unguentarium (2212.X1) (cat. no. 7); (b) glass unguentarium (2226.X1) (cat. no. 8); (c) bone hairpin (2226.X3A) (cat. no. 9); (d) bone needle (2226.X3B) (cat. no. 10).

not as visibly developed as the upper limbs, the bones of the lower back and limbs also indicate this woman was active and highly mobile in her lifetime.

Pitting of the dorsal aspect of the left pubic bone was evident. This has often been cited as evidence of childbearing, although an equally strong link to age has been demonstrated (Suchey et al. 2005). No pathologies were noted. Degenerative joint disease is not present on any of the bones.

As in F.150 and F.153, the sternum is asymmetrical at the manubrium (the right side is longer than the left side). In addition, the xiphoid process of the sternum is ossified in this female. Also similar to F.150, the ribs are stained black on their internal and external surfaces. Stature was estimated in situ at 1.60 m based on Trotter and Gleser (1958) for white females.

A complete free-blown glass bottle or unguentarium (2212.X1)[2] (Figures 14.6a, 14.7d) had been placed near the right ear of the individual in a manner identical to that of F.152. This perfume bottle is similar to De Tommaso type 46 (De Tommaso 1990), with thick and folded rim, long cylindrical neck, rather flat, conical body, and a concave base. This is one of the most common unguentarium types in the Eastern Mediterranean, where it is found mainly in contexts dating to the second to early third centuries A.D., although the form originated at the end of the first century A.D. and was very popular from the Flavian period to the Antonine age (late first to late second century A.D.). Among the most significant published comparanda we may cite are Form 82 variant A2 in Isings (1957); no. 43 in Lightfoot and Arslan (1992:87), and no. 33 in Lightfoot (1989:35). A specimen at Eskişehir Museum—no. 12, not illustrated—is mentioned by Yelda Olcay (2001:153) and dated to the second or third century A.D. A further example is known from Çatalhöyük (Lyon and Taylor 2003:Figure 19).

A small stone disk (ca. 2 cm in diameter) was also found near the head of the deceased. A large rock (2212.X4) (ca. 0.30 × 0.30 m) had been placed at the foot of the grave.

[2] Conventions employed in this volume include: special or "X" finds that are expressed with their unit number as 8501.X1; samples as 8501.S1; and finds retrieved after excavation from heavy residue, etc., receive a variety of identifiers such as 8501.D1, 8501.H1, 8501.A1.

Figure 14.7. Grave goods from F.151 and F.152: (a) and (c) glass unguentarium (2226.X1) (cat. no. 8); (b) and (d) glass unguentarium (2212.X1) (cat. no. 7); (e) bone needle (2226.X3B) (cat. no. 10); (f) bone hairpin (2226.X3A) (cat. no. 9).

Feature 152, Skeleton 2226 and 2232

The grave of this young child was found in the eastern portion of the double southern wall of Space 86, which separates it from Space 89 (Figures 14.8, 14.9). The child was approximately 3–4 years of age at the time of death. The right lower arm and hand bones were missing from the grave. This arm was located at the edge of the grave and may have been lost due to rodent activity or other postdepositional forces. No pathologies were noted on any of the bones. Cause of death is indeterminate.

Several grave goods were found associated with this child (Figures 14.6b–d, 14.7a, c, e–f). A glass perfume bottle or unguentarium had been placed near the right ear of the child. The bottle is similar in shape, size, and date to the one found with F.151. In Roman times, these grave goods were typically placed with females. Two copper beads were found near the neck region between the glass bottle and the head. One nearly complete bone needle, together with a bone hairpin/toilette stick (in two joining fragments), was found near the left leg.

The needle (only the lower end is missing) belongs to Béal's type A XIX, 6 (Béal 1983:182 no. 6). It is characterized by a rectangular head, rectangular needle's eye, and body with rounded section. Among the most significant comparanda are nos. 423 and 427 (from Lyon with further bibliography) in Béal (1983:169–170, Plate XXXI); Figure 501 in Birò (2004); and nos. 940–941 (from Ephesos) in Gassner (1997:Tafel 70). As far as chronology is concerned, this type is very common throughout the Roman world from the first to the fourth century A.D.

The hairpin displays a rounded section throughout its length; the upper end (or head) is plain and lightly conical in shape, the lower end is pointed; the pin is entirely undecorated. This piece can be classified as Béal's type A XX 1 (Béal 1983:218 no. 1). Because of its very basic morphology, it can be interpreted as a hairpin or, alternatively, as a stick to be used in the female toilette to apply make-up or perfumes. Among the most interesting morphological comparanda we can cite are nos. 574–575 in Béal (1983: 183–184, Plate XXXIV); type 1 "Pins with a plain conical head" in Crummy (1979:159–170); nos. 2, 3, 7, 11 (from Delos) in Déonna (1938: Plate LXXXIV, 717); and no. 2385 (from Corinth) in G. R. Davidson (1952:Plate 120). As far as dating is concerned, Crummy's type 1 is dated 70–200/

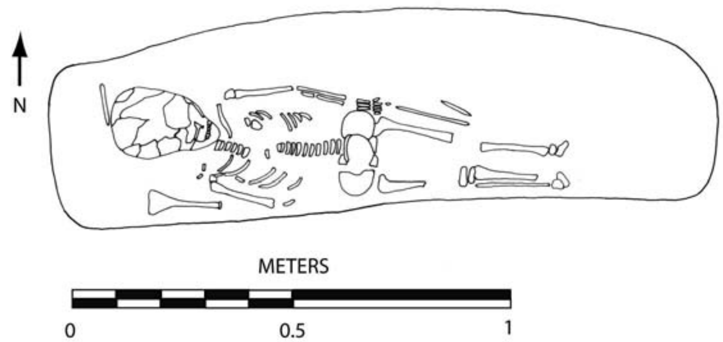


Figure 14.8. Plan of F.152, a 3- to 4-year-old child.

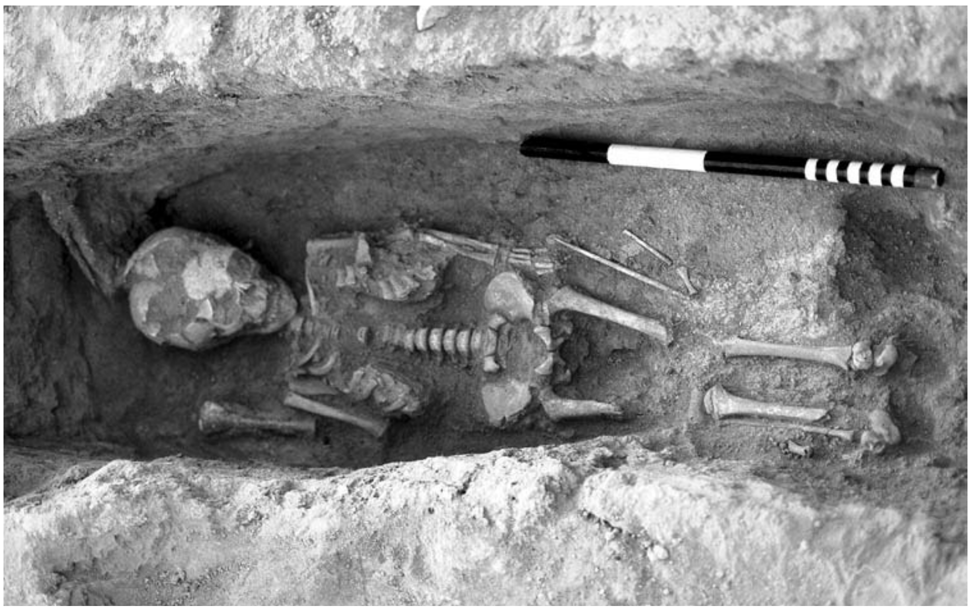


Figure 14.9. Roman burial (F.152) cut into the south wall of B3 in Phase B3.5B, looking from above toward the north.

250 (i.e., common in Flavian to Antonine deposits); Béal's type A XX 1 is common throughout the Roman period from the first century B.C.

Feature 153, Skeleton 2235 and 2245

The grave of this adolescent female was located in the northern part of Space 86 (Figures 14.10, 14.11). The deep rectangular pit abutted the collapsed remains of a thin curtain wall. This grave was the deepest of the post-Neolithic graves.

The individual was approximately 15–16 years of age at the time of death. The presence of well-defined muscle attachment sites in the lower back area suggests an active lifestyle for this adolescent, which likely involved carrying heavy loads. The manubrium of this individual is asymmetrical in length (right side is longer than the left), as in F.150 and F.151. The left seventh costal notch is irregular and uneven, with a bony growth at the inferior aspect of the notch. One lower rib is distinct in having a bony spine projecting from its sternal end and likely represents the seventh rib. The bony growths appear to be trauma-related. Black staining is evident on the ribs both internally and externally. Stature was estimated in situ at ca. 1.60 m, based on Trotter and Gleser (1958) for white females.

Associated grave goods found with this individual include a lamp and a terracotta unguentarium (Figures 14.12–14.14). The wheel-made lamp of light buff clay (2237.X2) (Figures 14.12a, 14.14a, c, e) is typologically similar to Bailey type Q 460—for example, no. 462 (from Calymna)—with carinated body, wide filling-hole, teapot-like nozzle, vertical folded handle, and slightly raised base (Bailey 1975: 196, Plate 86). This object can be interpreted as a crudely made regional product. The lamp is lightly scorched around the nozzle, as if fired only once. On the basis of comparative evidence, our lamp can be dated to the late first century B.C. to the early first century A.D.

The complete terracotta unguentarium (Figures 14.12e, 14.13c, d [2237.X1]) is wheel-made, with piriform body, short-flanged rim, long cylindrical neck, flat base, and wide ribs on neck and body. Although it does not find close edited parallels, on the basis of its overall morphology this vessel can be dated in the first century A.D. (see Camilli 1999).

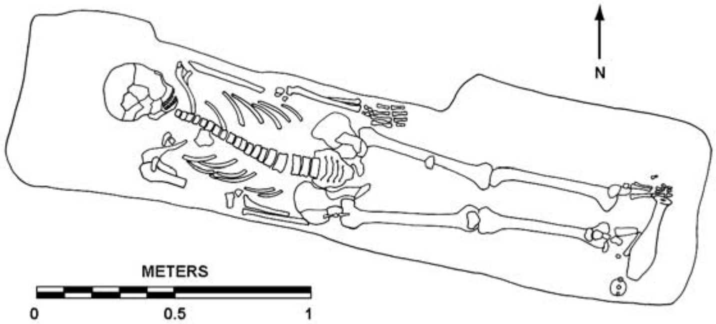


Figure 14.10. Plan of F.153, a 15- to 16-year-old female.

Figure 14.11. Roman burial (F.153) cut through the deposits, including the collapsed roof remains, at the northern end of Building 3 in Phase B3.5B.

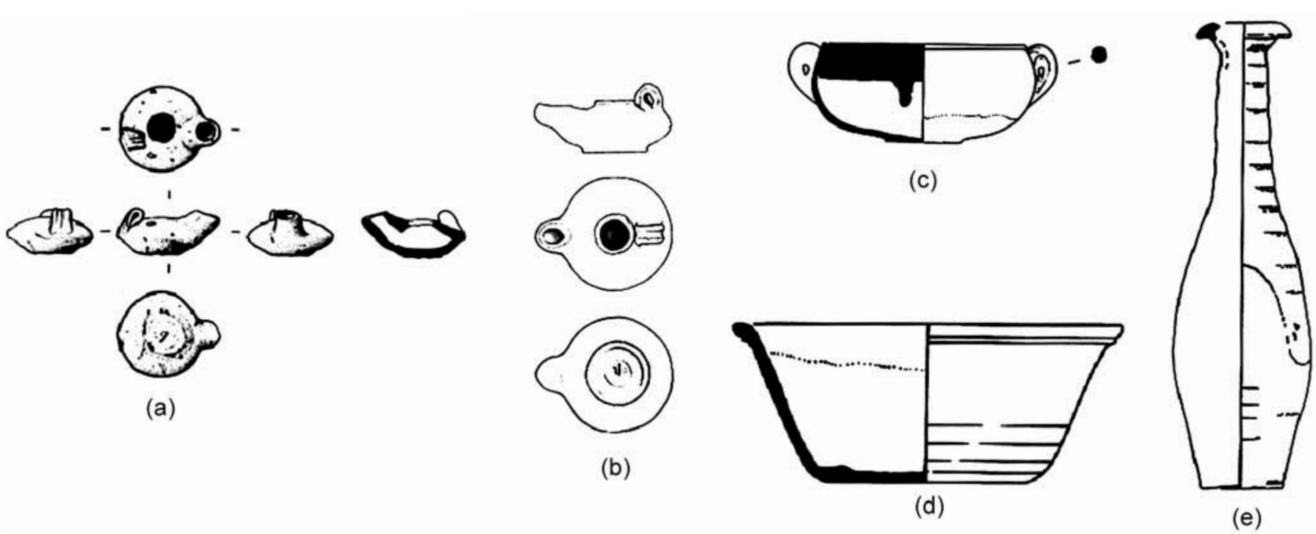


Figure 14.12. Grave goods from Features 153 and 158: (a) lamp (2237.X2) (cat. no. 1); (b) lamp (2263.X2) (cat. no. 2); (c) cup in "sanded ware" (2263.X3) (cat. no. 3); (d) bowl in terra sigillata (2263.X4) (cat. no. 4); (e) terracotta unguentarium (2237.X1) (cat. no. 5).

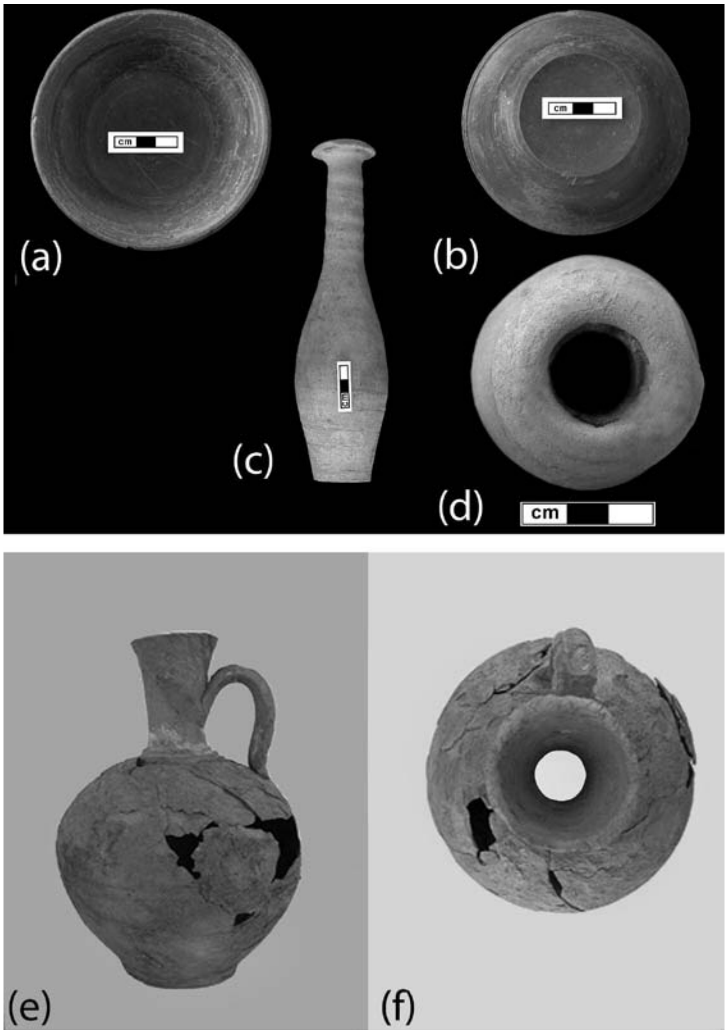


Figure 14.13. Grave goods from Features 153 and 158: (a, b) bowl in terra sigillata (2263.X4) (cat. no. 4); (c, d) terracotta unguentarium (2237.X1) (cat. no. 5); (e, f) flagon (2263.X1) (cat. no. 6) after reconstruction.

Feature 154, Skeleton 2244

The grave of this adult male was located in the central portion of Space 86 with the west end of the grave slightly cutting into the thin partitioning wall (Figures 14.15, 14.16). The orientation of the grave was slightly off the east–west orientation of the other post-Neolithic graves at east/northeast by west/northwest. The bones are fragmentary.

This was a robust, strong male. The dentition is highly worn, which suggests a mature adult male. The third molars are multi-cusped with peg-like roots. Indications of age, such as the face of the pubic symphysis, suggest this individual was at least 35–39 years old at the time of death. In addition, the xiphoid process is ossified. The sternum is noticeably curved.

The size of the acetabulum suggests this individual was of moderate to large body size. On the cranium and mandible, the muscle attachment sites for mastication are well defined. Features related to repetitive tasks involving the shoulder girdle are indicated from the depressions and indentations on the upper ribs and the sternal end of the clavicle. The postcranial bones also exhibit strong muscle attachment sites, particularly in the lower limbs. The observed pattern of muscle development indicates this male led an active, mobile life. Degenerative joint disease is evident in the lumbar vertebrae in the form of Schmol's nodes and slight osteophytic lipping on the vertebral bodies. The auricular facet of the hipbone also has slight lipping at its inferior edge. Several ribs are stained black both internally and externally.

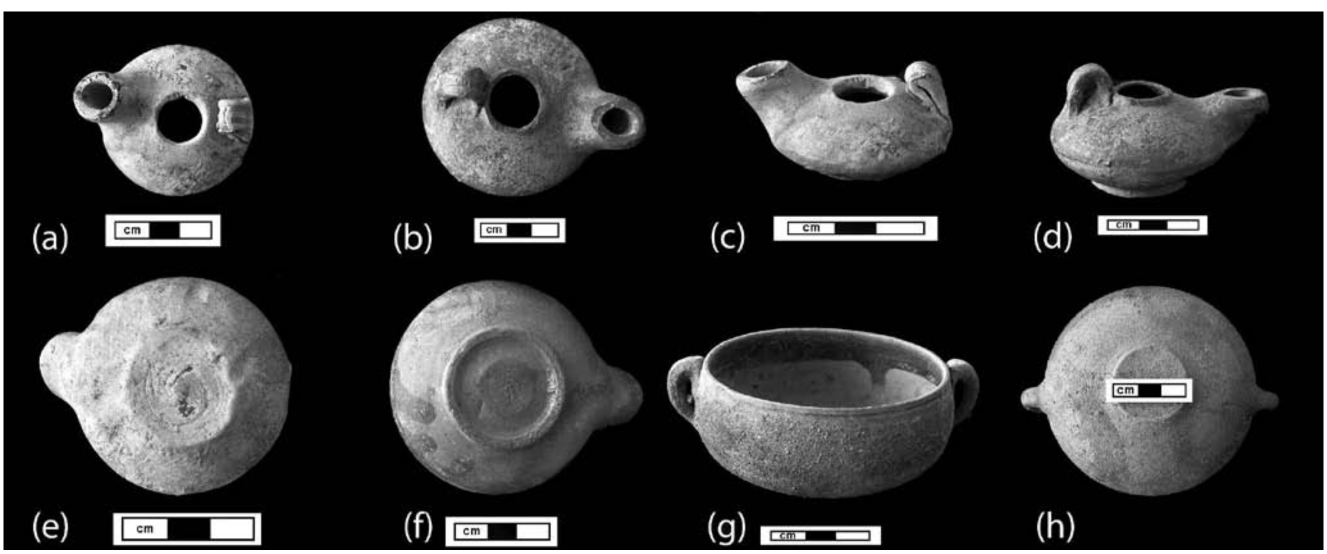


Figure 14.14. Grave goods from Features 153 and 158: (a, c, e) lamp (2237.X2) (cat. no. 1); (b, d, f) lamp (2263.X2) (cat. no. 2); (g, h) cup in "sanded ware" (2263.X3) (cat. no. 3).

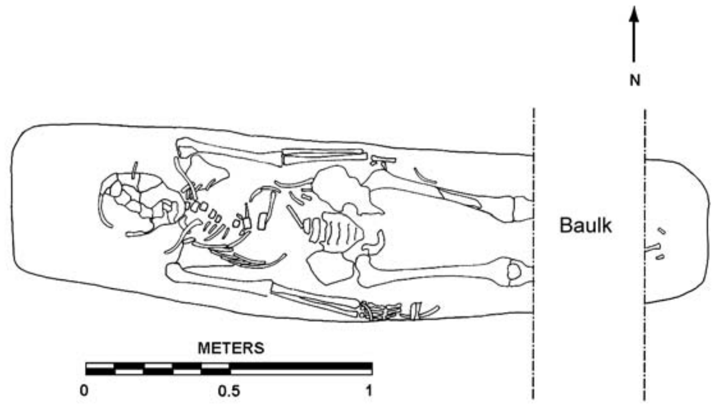


Figure 14.15. Plan of Feature 154, a middle to older male.

Figure 14.16. Late Roman burial (F.154) cut through the fill in the center of Building 3, looking south.

Stature was estimated in situ at ca. 1.80 m based on Trotter and Gleser (1958).

No grave goods were located with the skeleton; post-depositional disturbance to the grave area was extensive.

Feature 158, Skeleton 2265

Located near the eastern edge of Space 89, this grave was oriented in a north–south direction (Figures 14.17, 14.18). The bones are highly fragmented. This individual was a mature adult male. The high wear on the teeth, the presence of an ossified thyroid cartilage, and an ossified xiphoid process are consistent with an older person. The body of the sternum is noticeably curved.

The size and overall robusticity of the bones indicate this male was active and mobile during his lifetime. The upper and lower limbs exhibit well-demarcated muscle attachment sites, and the bones are large. Even the hands are large and well developed. Several of the teeth, including the incisors, canines, and first molars are characterized by linear enamel hypoplasia, which is indicative of physiological stress during the phases of enamel development early in life. This man may have suffered from deficiencies in nutrition, illness, or other nonspecific disruptions to the developmental processes. Degenerative joint disease is evident as slight osteophytic lipping on the bodies of a few thoracic and lumbar vertebrae. Incomplete transverse foramina are present on the left sides of C1 and C2.

Several ribs are stained black internally. One fragment of the right clavicle also shows black staining. As with the other individuals from this late sample, the staining may

Figure 14.17. Plan of Feature 158, a middle to older male.

Figure 14.18. Late Roman burial (Feature 158) cut through the fill in Space 89 with north–south orientation of skeleton, looking west.

be due to the presence of a fungus at the site (Andrews et al. 2005) and/or manganese staining.

Four complete terracotta objects were found in association with this male (Figures 14.12–14.14, 14.19): a wheel-made lamp, a two-handled cup, a red glazed bowl, and a flagon. All of these objects were found in their original position, to the southeast of the deceased's head. The lamp (Figures 14.12b, 14.14b, d, f [2263.X2]) is similar to Bailey's type Q 460 (compare to no. 462 from Calymna [Bailey 1975:196, Plate 86]), with carinated body, raised neck around the filling-hole, teapot-like nozzle, vertical folded handle, and base with low ring foot. This lamp type can be dated from the late first century B.C. to the early first century A.D.

The cup (2263.X3) (Figures 14.12c, 14.14g, h) is a two-handled "sanded ware" (Jones 1950:190–191) or a "rough cast" cup, with a plain, slightly incurved rim, pierced handles below the rim—a hemispherical body—and a gently raised base. It can be dated as Tarsus "sanded ware," which does not appear before the first century A.D., comparable to Jones 1950: Figures 150 and 197 from Tarsus.

The bowl (Figures 14.12d, 14.13a, b [2263.X4]) is an example of wheel-made regional terra sigillata. It has an outflaring rim, straight body walls, and a flat inner base with a low ring foot. The vessel is slipped all over with red slip that appears brown on the lower body (both interior and the exterior), as if in the kiln vessels were fired piled one on top of the other. There are some deeply incised parallel grooves on the lower exterior of the body due to final trimming. The bowl does not have close parallels, but its overall morphology seems to anticipate Eastern Sigillata A (ESA) form 58 (compare to *Atlante II*, 39, and Tav. VII, 11)[3] and can be dated to the early Roman period.

A complete wheel-made flagon (Figure 14.13e, f [2263.X1]) was found broken in several fragments but was later restored in the laboratory. The vessel is characterized by a cylindrical neck ending in a plain, outflaring rim, globular body, and a slightly raised flat base. The handle has a rectangular section, and traces of red slip/coating are present on the shoulder and belly of the vessel. This flagon does not find close published parallels in the region; however, its overall morphology is reminiscent of Eastern Sigillata A (ESA) form 109 (compare *Atlante II*, 45 and Tav. X, 1), dating around the mid-first century A.D.

ISOLATED BONES

Skeleton 2210.1 and 2210.2

The burned remains of an adult maxilla (2210.X1) and mandible (2210.X2) were found in the soils in close proximity to the Roman burials. The teeth were shattered and

[3] *Atlante II = Enciclopedia dell'Arte Antica Classica e Orientale. Atlante delle Forme Ceramiche,* Vol. II (Rome, 1985).

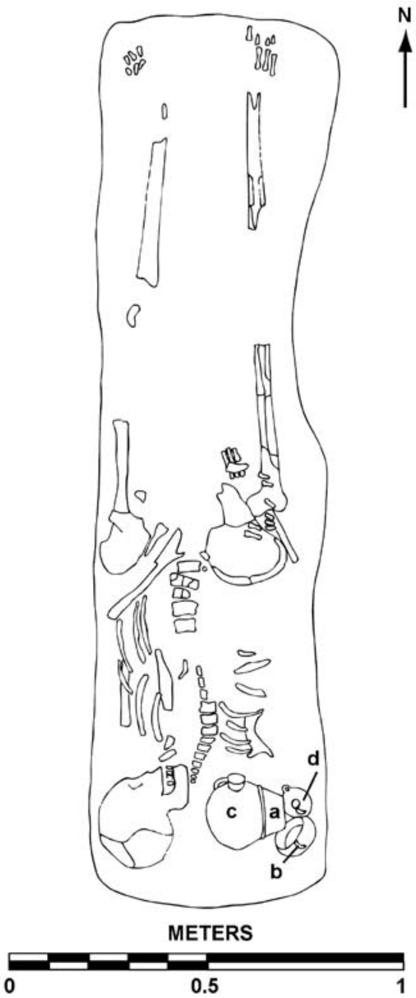


Figure 14.19. Plan of Feature 158 with the location of the grave goods: (a) terra sigillata bowl; (b) "sanded ware" cup; (c) flagon; (d) lamp.

their morphology altered as a result of having been burned at a relatively high heat. The presence of these bones at the same level as the Roman burials initially suggested that they were post-Neolithic. However, it is not possible to determine this precisely.

Associated Artifacts of the Post-Roman Burials[4]

Roman Funerary Objects

As part of the Roman funerary ritual (*funus*), some personal items were usually placed in standard positions by the deceased: at the right side of the head, as in burials F.151 and F.152, by the feet as in F.153, or in the hands as in burial F.152. In the archaeological record, grave goods deposited in the *funus* can be accompanied by other artifacts belonging to the dress and gear of the deceased. This is the case of the child found in F.152, who was wearing a necklace and holding a couple of bone tools in its left hand; a perfume bottle (unguentarium) had been placed by the head. All the artifacts, now at the Konya Museum, were found in a good state of preservation and complete, or almost complete, as in the case of the bone objects (Figures 14.6c, 14.7f [2226.X3A], 14.6d, 14.7e [2226.X3B]) (cat. nos. 9–10).

Grave goods often provide useful information on the chronology of the burials. In the Roman world, the forms of glass and pottery artifacts were often dictated not only by functional concerns but also by taste, market demand, and, in the case of imported luxury goods, fashion. Consequently, the life span of their production and circulation often can be restricted within a narrow chronological slot, if seriation of contexts can be performed. So far at Çatalhöyük, this method of artifact analysis has not yet been attempted on Classical finds. At the same time, very little is known about the Roman town of Iconium (modern Konya) and its surrounding region in terms of material culture.

Therefore, the morphology of the retrieved grave goods from the post-Neolithic phases of Building 3 was compared with evidence available for finds from distant sites in Anatolia and the Roman Empire, in order to assign a likely chronological range to these objects. On the basis of available comparanda, the burials can be dated between the first and second/early third centuries A.D. (Table 14.1). Sometimes different individuals had similar grave goods. For instance, the glass unguentarium found in grave F.151 (Figures 14.6a, 14.7b, d [2212.X1]) (cat. no. 7) is typologically similar to the unguentarium from grave F.152 (Figures 14.6b, 14.7a, c [2226.X1]) (cat. no. 8); the lamp from F.153 (Figures 14.12a, 14.14a, c, e [2237.X2]) (cat. no. 1) is typologically comparable with the lamp from F.158 (Figures 14.12b, 14.14b, d, f [2263.X2]) (cat. no. 2). The information gleaned from burial typology, grave alignment, and the mode of body and grave good deposition suggests that a relatively short time span occurred between the interments.

Contextual Analysis of the Finds

The excavated artifacts were deposited in graves as part of a funerary ritual; their function was to accompany the deceased in his/her afterlife, and they reflect relevant elements of the social identity of the deceased (Hope 2001:16). In keeping with some stereotypes of identity in use throughout the Roman world, usually female burials contained a number of items belonging to the *mundus muliebris* (Menichetti 1995:56–80). These were functional objects used in everyday life that, in becoming part of a funerary context, acquired

[4] For the full catalog of these artifacts, go to Appendix 14.1 (on-line). Catalog numbers cited in the text refer to the appendix.

further symbolic meanings (Cottica 2006:192–203). Mirrors, hairpins (Figures 14.6c, 14.7f [2226.X3A]) (cat. no. 9), perfume bottles (Figures 14.6a, 14.7b, d [2212.X1], 14.6b, 14.7a, c [2226/X1], 14.12e, 14.13c, d [2237.X1]) (cat. nos. 5, 7, 8), and similar toilet gear visually symbolized and defined femininity. Accordingly, these objects played an important role in Roman construction of gender. Moreover, artifacts could add further details on women's social status: age, marital status, role in the family, and even, in the case of luxury goods, social rank.

The Roman world took a particular interest in feminine status symbolism, especially if it was in any way connected with the family and the role of the deceased within the family (Cottica 2007:225). As underlined by R. Berg (2002:31), whereas "men's symbols were those of the public world, war and politics, . . . women's status marker derived from the private sphere." Indeed, in female graves, concepts such as (domestic) virtue and fertility were usually symbolized by objects employed in textile manufacture (Cottica 2006, 2007; Larsson 2007), such as spinning implements, loom weights, and needles (as in the case of our cat. no. 10).

According to scholars in the Roman world, beauty reflected virtue: therefore, adornment (such as jewelry) and beauty (or toilet gear) could be seen as symbols of fertility as a virtue (D'Ambra 1996:219–220). The function of jewelry in constructing identity could differ according to age: in young females, as in the case of Feature 152, jewels and body ornaments (cat. nos. 13–14) acquired a protective element, acting as amulets, often given as a birthday present.

The presence of a lamp among the grave goods (cat. nos. 1–2) bore a symbolic meaning directly connected with the perception of afterlife in the Roman world, and the item was meant to guide the deceased's path through darkness.

The raw materials used to manufacture artifacts could add a further element in constructing identity: gold, bronze, amber, ivory, and, to some extent, glass were considered high-quality material, and their presence is usually a marker of the status and well-being of the deceased. Decorated goods or imported objects had a similar function in a grave.

In this respect, the male in F.158 is of great interest because of the rich variety of objects contained in his grave (Figure 14.18), which included a complete dining set (cat. nos. 3–4, 6) made of quality tableware. Its presence in the funerary context testifies to the social status and cultural background of the deceased. The bowl (Figures 14.12d, 14.13a, b [2263.X4]) (cat. no. 4) and cup (Figures 14.12c, 14.14g, h [2263.X3]) (cat. no. 3) fall within the category of vessels of typically Roman production and well illustrate the achievements of Roman technology in pottery manufacture. Indeed, the production of "sanded" and "red slip" wares (cat. nos. 3–4) was not known in the Hellenistic period. Vessels made in "sanded ware" (cat. no. 3) are not commonly found in the Eastern Mediterranean, and they may have been imports from the Aegean coast. Finally, it is interesting to note that the lamp found in F.158 (Figures 14.12b, 14.14b, d, f [2263.X2]) (cat. no. 2) is a better-quality version of the similar object from F.153 (Figures 14.12a, 14.14a, c, e [2237.X2]) (cat. no. 1).

In summary, the personal objects examined from the funerary contexts mirror standard divisions in ancient society based on gender, age, rank, status, and role in society, underling that diversity was a concept inherent within Roman society. In the Classical world, multiple elements could be added in the construction of the deceased's identity, including the construction of a funerary monument and the insertion of a written text. The latter features usually appear in urbanized and highly structured social contexts, where a direct communicative relationship could be established between the deceased and the living, based on pictorial and verbal elements. In the area of Building 3, only unpretentious burials have been found, consisting of wooden coffins placed in the grave pit: these data seem to reflect the funerary practices of a small rural community, where only basic levels of social stratification were in place.

THE BACH ROMAN BURIALS IN THE CONTEXT OF POST-NEOLITHIC ÇATALHÖYÜK

The Roman burials from the BACH excavations in 1997–1998 are not isolated in the topochronological context of post-Neolithic Çatalhöyük. Indeed, numerous burials, features, and finds have been identified and defined as Classical, Hellenistic, and Late Roman/Byzantine in the archive reports. Various post-Neolithic people used the East and West Mounds of Çatalhöyük as cemeteries, often disturbing the Neolithic structures, features, and human remains in the process.

The data so far collected draw a very clear picture of folks in the Classical (and post-Classical) period using the Neolithic mounds as burial grounds for a local population, settled somewhere nearby. In 2005, a team from Selçuk University launched a new research project aiming to locate and date possible Classical or Byzantine settlement(s) and sites. Investigations and evaluation trenches opened in 2006 to the southeast of the East Mound revealed that historic sites had to be searched farther afield (Baldiran and Korkmaz 2006:136–140). The evidence from Çatalhöyük can thus be supplemented with the data collected in the Konya Plain Survey Project directed by D. Baird[5] attesting to a spread of small settlements and villages throughout the

[5] *www.liv.ac.uk/sace/research/projects/konya.htm* (accessed 2 November 2011).

plain in Classical times, especially in the early Roman period (Baird 1996a, 1997, 1998, 1999, 2005).

Post-Neolithic burials and features have been brought to light on the East Mound in the 4040, SOUTH, and Istanbul Areas (see *Çatalhöyük 2003–2006 Archive Reports*), and Hellenistic and Early Roman activity has been observed especially in the TP Area (Czerniak et al. 2002).

In addition, on the West Mound the presence of a late cemetery has been extensively documented in recent years (Biehl et al. 2006:123–125; Gibson and Last 2003), along with pottery finds of Hellenistic/early Roman date (Last 1996b). Further evidence came to light in the 2006–2007 field seasons (Trenches 5–7), when several Byzantine and Medieval burials were excavated in the West Mound (Baldiran 2007).

The Building 3 burials confirm that in Roman times, males, females, and children were buried on the East Mound. The analysis of the bones of these individuals suggests they led active, physically demanding lives. The six post-Neolithic burials of Building 3 and its immediate vicinity are consistent with the other Roman burials found at Çatalhöyük in terms of position, orientation, and associated materials.

The graves were single and simple inhumation pits of rectangular shape containing a supine skeleton, oriented east–west, with head to the west. The one exception is F.158, where the skeleton was buried in a north–south alignment. Often evidence of a wooden coffin was found. Other types of grave constructions were also use in post-Neolithic Çatalhöyük and especially in the Late Antiquity/early Medieval period, such as box graves in mud brick and/or brick construction (i.e., stone- and tile-lined) (Baldiran 2007: 145–146; Biehl et al. 2006:123).

Future investigations into the differences among the excavated post-Neolithic burials concerning topographical location and funerary rituals (i.e., grave goods, grave construction techniques, modes of deposition) could yield interesting results. Indeed, a systematic study of available data could throw light on the transition from Hellenistic/Roman (pagan) communities to Late Antique (Christian?) communities at Çatalhöyük.

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Part 4

Changing Materialities in the BACH Area

In *Çatalhöyük Volume 5: Changing Materialities at Çatalhöyük: Reports from the 1995–99 Seasons*, the focus was on the relationship of Çatalhöyük residents to the material world, involving especially the analysis and interpretation of movable artifacts. We have mirrored the CRP discussion of changing materialities in Part 4 of *Last House on the Hill*.

In his introduction to *Çatalhöyük Volume 5*, Ian Hodder remarks that with the increasing settling down in longer-established settlements that make a permanent mark on the landscape, "Humans get increasingly caught up in society through their involvement with objects"(Hodder 2005a:10). In other words, they become entangled in everyday acts of planning and carrying out tasks that involve people and materials which themselves are tangled in a web of dependencies. We can see it in the intricate webs of "taskscapes" for procuring materials for building, eating, drinking, feasting: no task is a simple act. The act of bringing water and building materials to a house or building site must have become more and more complicated as the mound grew in height. The history of the Çatalhöyük mound is a history of the increasing complexities of living and the perhaps increasingly ritualized strategies of the human agents to center themselves in their entangled world. In the BACH Area, we were excavating buildings that lay chronologically in the middle of this process, as far as the East Mound at Çatalhöyük is concerned.

As in other excavations that the BACH project leaders had directed, the driving force of our analyses of excavated materials was the life history of objects—the procurement of raw materials, manufacture, consumption, maintenance, and final deposition as garbage, loss, or cache—all of which are discussed in this section of *Last House on the Hill*. In one previous project (Selevac), this aspect of materiality was related to the intensification of production; in another (Opovo), it was related to social inequality among households. In the BACH project, these questions are in the background of the investigation of Neolithic households in Anatolia, but the details of life in the neighborhoods and the villages as a web of microhistories are also driving our project.

Many of the authors of chapters in *Çatalhöyük Volume 5* also authored the specialist reports on movable artifacts from the BACH excavation. Nerissa Russell, for example, wrote the worked bone reports for both volumes (Chapter 15, this volume), in addition to being the lead author on the faunal analyses. This reflects her long-standing interest in this topic, even as an undergraduate student.[1]

Jonathan Last analyzed and published the Neolithic East Mound ceramics from the Çatalhöyük Research Project 1995–1999 excavations and based his analyses of the BACH material on these previous studies (Chapter 16, this volume). His focus in both publications is on how ceramic frequencies can function as chronological indicators in the sequence of Çatalhöyük deposits to reveal a transformation of the settlement from the late Aceramic Neolithic to the fully Ceramic Neolithic. His analysis makes a significant contribution to the dating of Building 3 in the Çatalhöyük sequence, as discussed in Chapter 3.

[1] Nerissa Russell's senior thesis as an undergraduate at Harvard University, written under the supervision of Ruth Tringham, was the analysis of bone tools from the Neolithic settlement of Selevac, Serbia, and later was published in the monograph of that project.

Sonya Atalay authored the analysis of the clay balls from both the 1995–1999 excavations of the Çatalhöyük Research Project and the 1997–2003 excavations of the BACH Area (Chapter 18, this volume). Atalay argues for the importance of clay balls in food preparation, specifically cooking, at a time when there was a relative lack of ceramic vessels. *Çatalhöyük Volume 5* contains an article about baskets and basketry by Willeke Wendrich which also demonstrates the entanglement of non-ceramic vessels in food preparation in Neolithic Çatalhöyük. Some of the baskets she discusses are from the BACH Area.

Tristan Carter was the lead author of the chapter on the analysis of lithic materials in *Çatalhöyük Volume 5*. He joined Heidi Underbjerg in writing the final lithic report of the BACH materials in 2005 in order to make the analysis more comparable with the format of the earlier publication, and to include his expertise in the examination of the obsidian assemblage. Their report (Chapter 19) mirrors the format of his chapter in Volume 5. Carter's analysis of obsidian sources for the BACH materials, using the XRF laboratory at UC Berkeley, has been published separately from this volume.

Katherine (Karen) Wright joined Adnan Baysal in writing the chapter on the ground stone or macrocrystalline rock assemblage for the Çatalhöyük Research Project 1995–1999 materials in *Çatalhöyük Volume 5*. Their final report on these materials for the BACH volume (Chapter 20) is based very closely on this publication. Karen Wright also has a special interest in the beads manufactured out of a variety of materials, but especially macrocrystalline rocks, and wrote Chapter 21 in this volume about these materials. This report is rather different from that of Naomi Hamilton who reported on the beads of the 1995–1999 excavations, which incorporated data from a University of London project that is investigating diversity of bead technology in Neolithic Southwest Asia.

Chapter 17 on the clay figurines from the BACH excavations was authored by Carolyn Nakamura, who did not participate in the publication of the clay figurines from the 1995–1999 excavations. In fact, Nakamura argues that her method of analysis and interpretation diverges strongly from that of Naomi Hamilton, who authored the study of figurines in Volume 5.

Chapter 15

Worked Bone from the BACH Area

Nerissa Russell

The Berkeley team recovered 188 pieces of worked bone from in and around Building 3 (see Figure 4.1). Three of these were grave goods in Hellenistic burials and will not be considered further here. I report here on the 185 Neolithic bone tools. This should closely approximate the total number of bone tools from the BACH Area. In addition to those tools recognized during excavation, tools were identified and recorded when the faunal remains were studied or assessed. With the exception of a few units from disturbed contexts, all the dry-sieved material was studied or assessed, along with almost all of the flotation material greater than 4 mm (see Chapter 8). "Worked bone" here includes artifacts made of any vertebrate skeletal material: bone, antler, tooth, or turtle shell. The methods used are the same as for the worked bone from the NORTH, SOUTH, and KOPAL Areas reported previously (Russell 2005), including zooarchaeological, typological, and microwear analysis. Throughout this report, I refer to the "previously analyzed assemblage" from the NORTH, SOUTH, and KOPAL Areas for comparison.

Tool Types

I have defined the tool types on the basis of form and, where possible, microwear evidence for function. The distribution of tool types is generally similar to that seen in the other areas analyzed so far (Russell 2005), with points (42 percent) and rings (18 percent) predominating, and substantial amounts of manufacturing debris (11 percent). The chopper is a new tool type for the site. Several tool types found in the other areas do not occur here. In most cases, they were very rare in the previously analyzed assemblage, so their absence in the BACH Area may be simply a function of sample size. Two types, however, seem notable in their absence: chisel/gouges and plaster tools. Chisel/gouges are made on unsplit distal tibiae, worked to a beveled tip that shows signs of use on a resistant material. They were probably used in making the wooden vessels found by Mellaart (1967). They do not occur above Level IX in the published assemblage but are found in later levels in material subsequently studied from the SOUTH and 4040 Areas (Russell and Griffitts in press). Plaster tools are made on cattle scapulae, usually with beveled edges, and were apparently used to shape plaster features. They are often placed in houses at abandonment. While Building 3 had many scapulae placed in it, none were worked. The plaster tools were particularly common in Buildings 1 and 5 in the NORTH Area, adjacent to the BACH Area and close to Building 3 in time. Thus, their absence in the BACH Area is puzzling.

Points

Points (sharp-tipped, unperforated tools often called awls, perforators, or pins) are the most common tool type. In general, they resemble those studied earlier from the site. They are made mainly on sheep/goat metapodials (Tables 15.1, 15.2; Figures 15.1–15.3), especially since the "medium mammals" are likely to be sheep and goat, and many of the "long bones" are probably also metapodials. There is no preference for metacarpals or metatarsals, but they are more often (66 percent) made on the distal end. The percentages made on split long bones (83 percent) and showing signs of curation through resharpening and repair (77 percent) are in line with the rates for Level VII and VI points elsewhere on the site (Figures 15.4–15.5). One notable departure in raw material choice is seen in 8178.F55, made on a crane tarsometatarsus (Figure 15.6). This carefully

Table 15.1. Bone tool types by taxon

	Tool type (number and percent)															
Taxon	Point	Rounded point	Needle	Chopper	Pottery polisher	Spatula	Handle	Pendant	Bead	Ring	Belt hook or eye	Fishhook	Pressure flaker	Preform/waste	Indeterminate	Total
Hare-size mammal									2 22.2%							2 1.1%
Medium mammal	25 32.1%		12 70.6%						2 22.2%	27 81.8%				5 25.0%	2 18.2%	73 39.5%
Pig-size					1 25.0%											1 0.5%
Large mammal	1 1.3%	1 100%	5 29.4%	1 100%	3 75.0%	1 100%		1 33.3%	1 11.1%		2 100%	1 50.0%		1 5.0%	4 36.4%	22 11.9%
Sheep/ Goat	51 65.4%						1 50.0%			5 15.2%				9 45.0%		66 35.7%
Cattle							1 50.0%									1 0.5%
Red/ fallow deer								2 66.7%	1 11.1%				1 100%	3 15.0%	5 45.5%	12 6.5%
Boar									1 11.1%			1 50.0%		1 5.0%		3 1.6%
Bird	1 1.3%								2 22.2%	1 3.0%				1 5.0%		5 2.7%
Total row %	78 42.2%	1 0.5%	17 9.2%	1 0.5%	4 2.2%	1 0.5%	2 1.1%	3 1.6%	9 4.9%	33 17.8%	2 1.1%	2 1.1%	1 0.5%	20 10.8%	11 5.9%	185

made, highly polished point closely resembles another (4878.F506) on the same bone from Level pre-XII.B in the SOUTH Area.

The points range from expedient tools, quickly manufactured with minimal effort and usually discarded after brief usage, to carefully finished objects with extensive shaping. On the whole, little effort was devoted to modification of the bases of bone points at Çatalhöyük. Only 37 percent of the points have any modification of the base beyond splitting. Only 10 percent may be said to have extensive modification of the base; the rest show only slight smoothing, rounding, or flattening.

There are, however, some differences in manufacturing techniques from the points previously studied. While most of the points were split through unassisted fracture, there was a somewhat greater use of grooving to guide the fracture in the BACH Area. In the analyzed NORTH, SOUTH, and KOPAL assemblages, only 4 of the 245 points showed traces of groove-and-split, and 2 of those were questionable, with a single piece of groove-and-split waste. Of the 77 BACH points, 2 show signs of groove-and-split, and there is a piece of groove-and-split waste. The groove-and-split technique requires somewhat more labor but more reliably produces a usable blank and may permit the manufacture of two or more points from a single long bone. A still more labor-intensive technique, although less conservative of raw material, is also more popular in the BACH Area than in the previously analyzed assemblage. In this technique, the point is formed by abrading extensively along the length of the bone, producing a section through the epiphysis and straight, flat sides leading from it (Figure 15.7). This technique was used only four times in the previously analyzed assemblage, although it becomes quite common in the later Neolithic levels of the East Mound (Russell and Griffitts in press) and the Chalcolithic West Mound. Three of the 77 BACH points are made this way, and, like the points from

Table 15.2. Bone tool types by body part

	Tool type (number and percent)															
Body part	Point	Rounded point	Needle	Chopper	Pottery polisher	Spatula	Handle	Pendant	Bead	Ring	Belt hook or eye	Fishhook	Pressure flaker	Preform/waste	Indeterminate	Total
Tooth									2 22.2%			1 50.0%		1 5.0%		4 2.2%
Antler								2 66.7%					1 100%	3 15.0%	5 45.5%	11 5.9%
Rib	2 2.6%		17 100%		4 100%				1 11.1%						5 45.5%	29 15.7%
Humerus										1 3.0%						1 0.5%
Radius	3 3.8%													1 5.0%		4 2.2%
Femur							1 50.0%		2 22.2%	18 54.5%				10 50.0%		31 16.8%
Tibia	10 12.8%															10 5.4%
Meta-podial	39 50.0%			1 100%			1 50.0%							3 15.0%		44 23.8%
Long bone	24 30.8%	1 100%				1 100%		1 33.3%	4 44.4%	14 42.4%	2 100%	1 50.0%		2 10.0%	1 9.1%	51 27.6%
Total	78	1	17	1	4	1	2	3	9	33	2	2	1	20	11	185

the later periods, they are more thoroughly abraded than the previously reported specimens. Although most of the tools previously analyzed came from earlier periods than the BACH Area, this does not seem to be simply a temporal difference. The immediately adjacent and roughly contemporary NORTH Area has no examples made by abrasion or groove-and-split among its 35 points. The bases of BACH points tend to be more extensively modified than those from the previously reported assemblage, where 73 percent have no base modification beyond splitting (71 percent in the NORTH Area) and only 10 percent are extensively modified (14 percent in the NORTH Area). In the BACH Area, only 53 percent have no base modification, and 31 percent are extensively modified. Thus, the people depositing points in the BACH Area were more inclined to invest extra time in manufacture, in ways that served primarily to produce a more aesthetically pleasing artifact. Bone points perhaps played a larger role in constructing personal identity here.

Function

The BACH Area points show microwear reflecting a similar range of functions to that seen in the previously analyzed assemblage. Most of the preserved tips with use-wear can be described as either rounded or battered from wear at a microscopic level. Two of the 28 tips (7 percent) that can be assessed combine rounding and battering. The exact uses are unclear, but the battered tips were probably used on tougher organic materials than the rounded tips. Even more clearly than in the previously analyzed assemblage, the rounded wear tends to occur on more slender tips than the battered wear, as measured by the breadth at 1 cm from the tip (Figure 15.1). The rounded wear is somewhat more common than the battered wear (57 vs. 36 percent).

One point (8110.X1), its very tip missing due to excavation damage, shows fine transverse striations near the tip, which appear to result from rubbing on very fine-tempered ceramics or plaster with what looks more like a burnishing than a perforating motion. Perhaps it was used incidentally

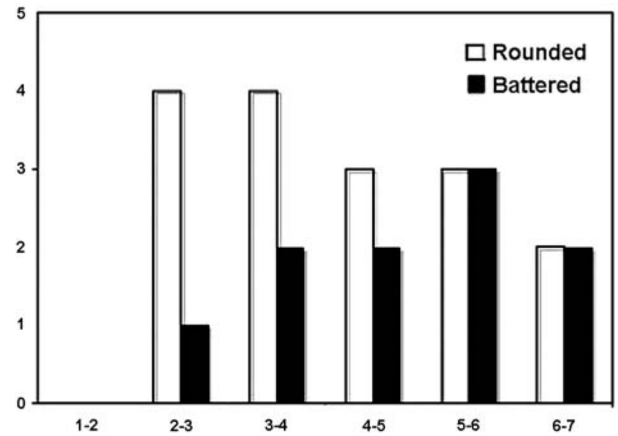


Figure 15.1. Breadth of battered and rounded point tips 1 cm from tip (mm).

Figure 15.2. Point on a split proximal metacarpal (8629.F1).

Figure 15.5. Moderately expedient point on an unsplit proximal radius (8629.F24).

Figure 15.3. Point on an unfused, unsplit distal metapodial (8629.F2).

Figure 15.6. Point on a crane tarsometatarsus (8178.F55).

Figure 15.4. Expedient point on a tibial crest (3549.X1).

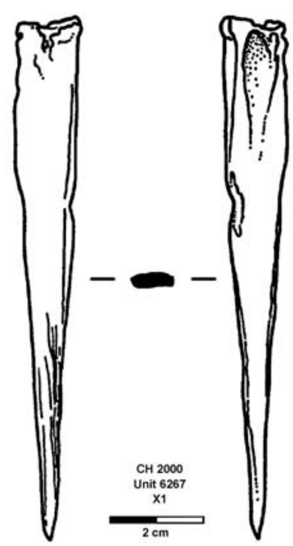


Figure 15.7. Abraded point (6267.X1).

Figure 15.8. Fragment of a burned point with transverse cuts on the shaft (8625.F4).

to polish ceramic objects, or maybe it was polished by rubbing it on the wall or some convenient plaster feature. Three points (6307.X1, 8375.X1, 8625.F4) exhibit the deep transverse cuts on the shaft made at various points during use that were observed on several points in the previously analyzed assemblage (Figure 15.8). These are clearly part of the use rather than the manufacture of the artifact, and likely result from cutting something against the point, probably in the course of sewing or basketry. None of the BACH examples has a preserved tip. In the previous analysis, three out of four with preserved tips had rounded wear, and the fourth was battered.

Rounded Points

Rounded points are pointed artifacts with tips that are rounded rather than sharp, which would not be used for perforation. There is a single rounded point from the Neolithic deposits in the BACH Area (6252.X1), a beautiful small tool with a flaring round base with a perforation, carved from cortex of long bone, probably from a large mammal (Figure 15.9). It is very symmetrical and carefully finished—a real piece of craftsmanship. It was probably deliberately polished and seems primarily ornamental, perhaps a hairpin or used to hold clothing. There is no wear in the perforation, which seems to be merely decorative. This artifact came from burial fill but was apparently not associated with a particular skeleton. It may have belonged to a disturbed burial, as it is the kind of personal item often found in graves.

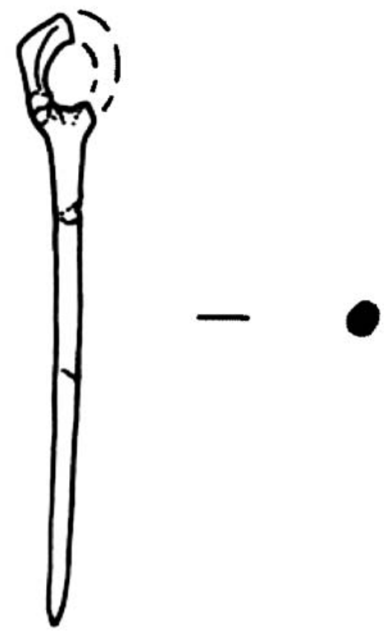


Figure 15.9. Rounded point (6252.X1).

Needles

I label as "needles" the long, broad, flat tools with flat, rounded tips and a large perforation at the base, which Mellaart (1967, 1962:56) calls "bodkins" or "weaving needles." They were probably used in netting or weaving. They are made on split ribs, mostly sheep-size but a few large mammal (Tables 15.1, 15.2). They are generally well over 10 cm long and rather fragile, so almost always fragmentary. Sometimes needles that break through the perforation were repaired by drilling a new hole, and this occurred on one of the BACH needles (2261.F35). As in the previously analyzed assemblage, they are relatively common and form just under 10 percent of the worked bone assemblage. In the previously analyzed assemblage, perforations were created by cutting only in Level VIII and below, while drilling was used only from Level IX on. All five of the preserved needle bases from the BACH Area were formed by biconical drilling, although three were subsequently enlarged by scraping. Thus, the temporal change in perforation techniques is supported by the BACH material.

Choppers

A single fragmentary artifact (2250.F101) falls into the chopper category. It appears to have been used but not actually shaped. A cattle-size metatarsal shaft shows many small flakes and general battering along its straight edge on the distal end. Frison (1974:41, Figure 1.16) argues that such bones are choppers used to dismember carcasses in butchery. Based on his ethnoarchaeological observations, Binford (1981:163) has countered that the pattern of flaking actually results from tapping the bone to remove the marrow. In this case, in addition to the flakes, there is some polish covering the flakes and the inner and outer sides of the shaft. This suggests it was indeed used as an expedient tool, although the polish seems to extend too far up the shaft for most chopping uses.

Pottery Polishers

There are four pottery polishers from the BACH Area, all made on ribs, mostly large mammal and one pig-size. The striations indicate fine or very fine temper, and it is possible that they may have been used to shape and burnish clay balls or plaster features in addition to pottery. They are slightly more common here than in the previously analyzed assemblage, and similar in form. They are still quite scarce compared with Neolithic assemblages in Southeast Europe, where much of the pottery is highly burnished (e.g., Russell 1990).

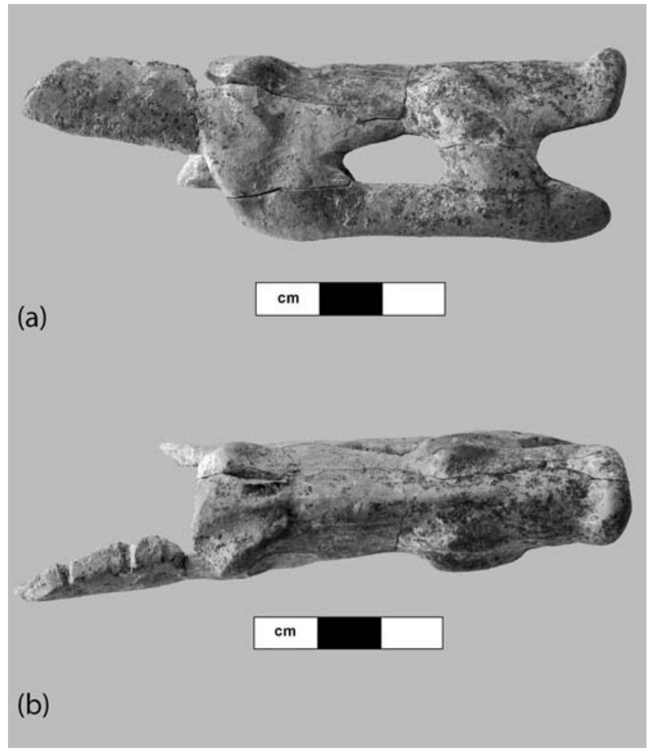


Figure 15.10. Carved dagger handle in the shape of an animal (boar?) head (2210.X9): (a) from the side; (b) from the top.

Spatulas

I term "spatulas" the small, often decorated spreaders called "cosmetics tools" by Mellaart (1967:214–215). The single example from the BACH Area (8184.X4) comes from a burial and was found with its tip stuck into a lump of blue-green pigment. It is a small spatula with a rounded tip, a straight, round shaft, and a base that opens out into an oar shape with a straight end. It is simple in design but carefully made and almost perfectly symmetrical. It would indeed work well to draw lines with pigment on the skin or elsewhere.

Handles

Two bone handles for other artifacts were recovered from the BACH Area. One (6279.X2) might actually be a ring preform, as it is a section of sheep/goat femur shaft with many broad grooves running around it and one end ground more or less flat. But the grooves do not join up to circle the bone, and it would be difficult to use them to break off ring blanks. Although a calcareous coating makes it difficult to be sure, the inside seems reamed out, so the grooves may decorate the handle for some tool.

There is no doubt about the function of the other handle (2210.X9), a piece of large cattle metacarpal proximal shaft carved in the shape of an animal head and found with a large flint dagger stuck into it (Figure 15.10; also see frontispiece of this volume). The dagger and its handle lay, together with parts of a human skull and several cattle horns, in an area of burning, and the handle itself had been highly burned in a reducing atmosphere. It was shattered but probably complete in the ground; one prong has been lost, perhaps carried away in an animal burrow. The inner cavity of the bone is virtually untouched, while the outer side has been carved in relief so thoroughly that none of the original bone surface remains. It is clearly meant to represent an animal head, probably a boar, although it could be seen as an equid or feline. It bears a strong resemblance to two carved stone boars' heads from Göbekli Tepe in southeastern Anatolia about a millennium earlier (Peters and Schmidt 2004). At the proximal end of the shaft segment, the end where the dagger was inserted, were two notched flanges (one lost), around which some fiber was presumably wound to bind the dagger into the handle. Thus, they would probably not have been visible when the dagger and handle were assembled and are unlikely to represent ears. There are a few traces of chipped stone tool cuts on the handle but no striations from sandstone. The smooth, rounded surface must have been attained by burnishing with leather or some fairly soft, fine-grained substance after carving. The central cavity is much larger than the dagger, so it must have been packed with some organic substance, now lost, to hold it in place firmly. The dagger blade shows little or no sign of use, and the handle seems too short (9 cm) to hold comfortably in an adult hand. So perhaps it was intended primarily for display. It is analogous to a bone dagger handle carved in the shape of a snake from a burial in Mellaart's excavations (Mellaart 1964).

Pendants

I term "pendants" objects designed to be worn suspended alone or as the centerpiece of a necklace, while those meant to be strung as part of a composite necklace, bracelet, and so on, I call "beads." While beads are more easily grouped into types, the pendants tend to be variable and unstandardized in form. Some general types recur, however. Of the three pendants from the BACH Area, two are of the type most common at the site in general. These are long, narrow, roughly rectangular, rather crudely worked pieces of split antler, with a perforation at one end. It is not certain whether these are actually pendants, some kind of weight, or perhaps "bullroarers" that were swung around on strings to make a loud noise. The remaining example (8272.F1) is a fragment of a long, narrow pendant on a large mammal long bone shaft. The BACH Area lacks the more elaborate and carefully finished pendants sometimes found in burials.

Bone Beads

The previous analysis of Çatalhöyük worked bone defined three major bead types, two of which had three subtypes each (see also Chapter 21). The main types are tubular beads, red deer canine variants, and double-ended beads. The tubular beads subdivide into simple tubular, tall ring, and barrel-shaped varieties. Red deer canine variants include genuine red deer canines, fake red deer canines, and stylized red deer canines. All the main types occur in the BACH Area, although not all the subtypes are found there. Additionally, there is one example of a new type: rectangular beads.

Among the tubular beads, there are three simple tubular and two tall ring subtypes. These form percentages of the total bead assemblage similar to those found for these subtypes in the previously analyzed assemblage. The simple tubular beads are made on segments of long bone shafts: one bird, two hare-size mammals. The segments are created by the cut-and-break technique and sometimes then smoothed and polished slightly. The tall ring beads follow the ring manufacturing technique (see below), at least in part, and are more thoroughly finished. They are taller and usually smaller in diameter than the rings. The BACH tall ring beads are both made on sheep-size long bones, in at least one case a femur, like the rings themselves. As in the previously studied assemblage, the tubular beads all come from secondary or tertiary contexts: midden, fill, or construction material. Two come from a burial fill (8421.F34, tall ring variety, and 8421.F35, simple tubular variety), but do not seem to be associated with skeletons.

Red deer upper canines are vestigial teeth with no enamel and a distinctive shape well suited for piercing to make beads. However, there are only two per animal, and female canines are too small to make good beads. So at least since the Natufian (Phillips et al. 1998), people have made imitation red deer canines out of bone. In the previously analyzed assemblage, the imitation beads far outnumbered the real ones at Çatalhöyük. However, in the BACH Area, the red deer canine variants are much rarer, and the single occurrence is a genuine tooth found in fill (Figure 15.11). This bead broke through the perforation and was repaired with a new perforation lower down. There was little room left on the thin root of the tooth, so the thin edge separating the old and new perforations broke again through to the old perforation. However, it seems to have continued in use. Since there is only a small gap, a thick thong would have held it.

Double-ended beads are found only in the BACH and adjacent NORTH Areas, two each. These beads are not perforated, but small, flat, elongated diamonds with notches and grooves creating a waist in the center to tie them to a fiber (Figure 15.12). It is possible they are not beads but, perhaps, fishing gorges (Campana 1989:39; 1991; Craig 1967). The site lacks remains of fish large enough to be caught by this method, however (Van Neer et al. in press). The BACH Area double-ended beads were found in construction material.

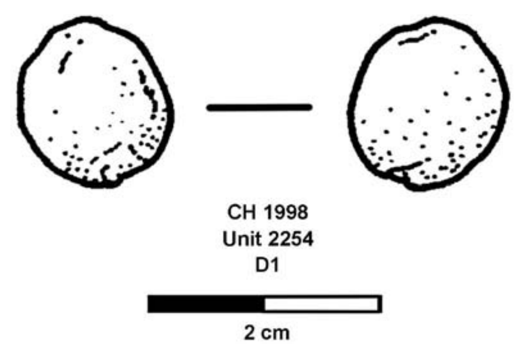


Figure 15.11. Red deer canine bead, repaired with reperforation (2254.D1).

Figure 15.12. Double-ended bead (6287.F1).

Figure 15.13. Bead on a boar incisor (8307.F1) (photo courtesy of Katherine Wright).

The final bead, also found in construction material, is an unusual one made on a boar lower incisor (Figure 15.13). Both ends and all faces have been ground into a rectangular shape, leaving almost no enamel. There are two apparent false starts on drilling a perforation, before one was successfully drilled and subsequently heavily worn from use. A set of similar boar incisor beads were found as grave goods in a burial in Building 50 in the SOUTH Area.

Rings

As in the previously analyzed assemblage, rings are the second most common bone tool type (after points) in the BACH Area. With very rare exceptions, all the Çatalhöyük rings follow a standard manufacturing method: blanks were removed from a sheep/goat femur using the cut-and-break technique, the inside was hollowed out with flint scrapes circling the inner surface, the broken edges were ground smooth, and sometimes the outer surface was abraded slightly or deliberately polished. As elsewhere, the BACH Area rings vary in size, height, thickness, and care in finishing. Many are too small for adult fingers. The BACH rings also show the variation in color seen elsewhere. While most are the brown color typical of archaeological bone, two are evenly burned black, perhaps deliberately. More mysteriously, 7 of the 33 BACH rings are nearly as white as fresh bone. It is unknown what causes these rings to retain their white color, but it suggests some kind of special treatment. All of the rings found in the BACH Area are fragmentary, and all are from secondary contexts, although some from burial fills might ultimately derive from disturbed burials. One ring from the BACH Area is unusual in that it is made on bird bone. It could be a tall ring type bead but is the right size and shape for a ring and follows the manufacturing method except the inside was not scraped (no need, since the bird bone is thin already). In the previous analysis, four rings with pillars, following a quite different manufacturing technique, were found in Level VIII and earlier. None were recovered from the BACH Area, suggesting this type may have disappeared by ca. Level VI.

Belt Hooks and Eyes

The only examples of belt hooks and eyes from the BACH Area were found in loose association in the upper grave fill above two burials. It is likely that they were disturbed from an earlier burial. They are well matched in size and style so were likely used together (Figure 15.14). Object 8385.X1 is the hook, more elongated than those displayed in the Museum of Anatolian Civilizations in Ankara from Mellaart's excavations. It is made on a segment of a robust large mammal long bone shaft. A perforation was drilled in the base end, with use-wear on the side toward the base, presumably from the belt strap. The tip and inside of the hook also show considerable use-wear from contact with the eye. There are two odd, overlapping cuts on the outer edge mid-shaft, quite polished from use. They are deep and made with multiple strokes. They look deliberate, but their function is obscure. Possibly they are stray marks of some kind from manufacture.

Object 8385.X2 is the eye that most likely was used with 8385.X1. It has a figure-8 shape with two large holes, and a "tail" with a small perforation to attach it to the belt strap, as indicated by wear on the base end of the perfora-

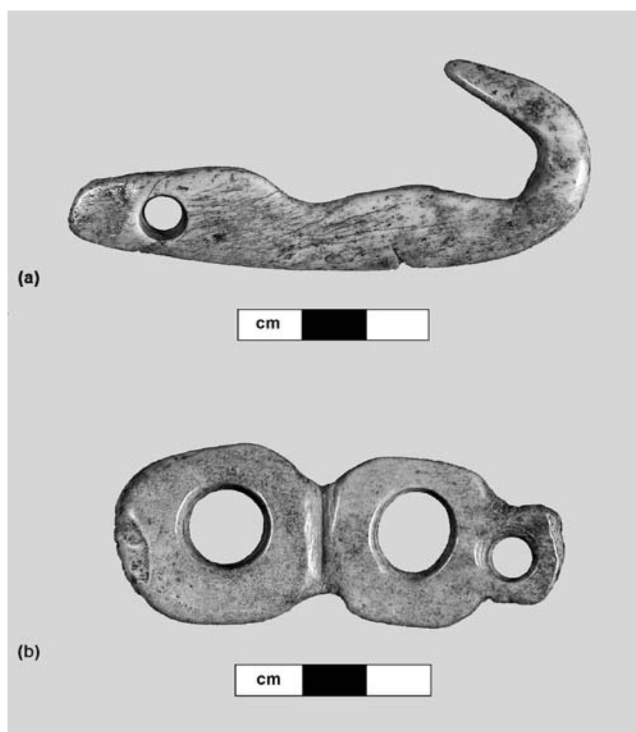


Figure 15.14. Belt hook and eye: (a) hook (8385.X1); (b) eye (8385.X2).

tion. This perforation matches that on the hook in size. The two larger holes both have use-wear on the side toward the tip, showing they were used to provide alternate belt sizes. Between the two large perforations, a waisted area has been carved in from the sides and accentuated with a line incised across the front between the notches. Both hook and eye are highly polished, probably partly from use and partly deliberately as part of the manufacturing process.

Fishhooks

Two fishhook fragments were found in the BACH Area, one in fill and the other in roof construction material. Both are therefore probably redeposited from elsewhere. One (3531.F1) fits with those previously reported from the site in that it is made of split boar's tusk and bears two notches on the side that seem to be decorative. The other (2238.F137), a curved fragment of carved bone, is almost certainly a fishhook but is made of bone rather than boar's tusk.

Pressure Flakers

A single probable pressure flaker (6169.X1) was found in the BACH Area. It is made on an antler tine whose tip has been carved to a dull, rounded bevel (Figure 15.15). The microwear traces are not entirely clear, but nicks and scars suggest the tine may have been used at the tip as a pressure flaker and in the middle as a soft hammer. It was found in a floor unit, perhaps built into the floor or perhaps left or placed on the floor.

Preforms and Waste

I have combined unfinished tools and the waste from tool manufacture because it is sometimes difficult to distinguish them. Such items can indicate the location of tool making and provide insight into the manufacturing process.

Point Preforms

Although points were the most common bone artifact type, point preforms and waste were relatively rare at Çatalhöyük, because points were, for the most part, roughed out by unassisted fracture. The blanks or waste from this process are indistinguishable from the results of marrow fracture and, in fact, may simply have been chosen from pieces created by breaking bones for marrow. In the BACH Area, there was a single preform and one piece of waste likely from point manufacture.

Figure 15.15. Antler pressure flaker (6169.X1).

A split sheep/goat metapodial (6113.F31) has been scraped to begin shaping it, leaving the edges smoothed and creating a bevel on the spongy bone near the proximal end of the bone. There is no sign of use, the spongy bone makes a bad tip, and the tool is too narrow to make an effective chisel or gouge. So this is most likely a roughout for a point, with the next step being to work the beveled end into a tip, bringing it back from the spongy zone in the process. It is not clear why this piece was never finished. It was found amid fallen wall plaster on a floor and thus may have been left at abandonment or may have been redeposited.

A piece of groove-and-split waste (8463.F1) on a sheep/goat metatarsal attests further to the occasional use of this technique to produce blanks, mostly likely for points. It was found in a discrete pocket of burned material (although it itself is unburned) sandwiched between packing layers in Space 88. It was thus likely redeposited and does not necessarily relate to activities in that room. Its surface condition is fresh, so it was probably discarded from more or less contemporary use, however, rather than deriving from reworked construction material. What seem to be loosely woven phytoliths in the open marrow cavity may indicate that it was contained in a bag.

Bead Preforms

One bead preform and one piece of waste from bead making were recovered from the BACH Area, covering two different bead types (see also Chapter 21). While the only finished red deer canine bead is a genuine tooth, there is an unfinished fake red deer canine bead (6250.X2) (Figure 15.16). It is a realistic rendition carved from a chip of large mammal long bone cortex, finished except for the perforation. This follows the more usual manufacturing process seen elsewhere at the site, where the perforation follows the shaping. Less often, the roughouts are pierced early in the process, before carving and grinding the bead to shape. In this case, the microwear shows that the shaping must have been done in stages, with some polishing between episodes of grinding. On this bead, the last step in shaping was thinning the top from both sides in preparation for perforation. This bead preform was found in a special deposit built into a platform, suggesting it was not lost but deliberately left unfinished. This seems reminiscent of the set of 12 fake red deer canine bead preforms found in a burial in Building 17 in the SOUTH Area.

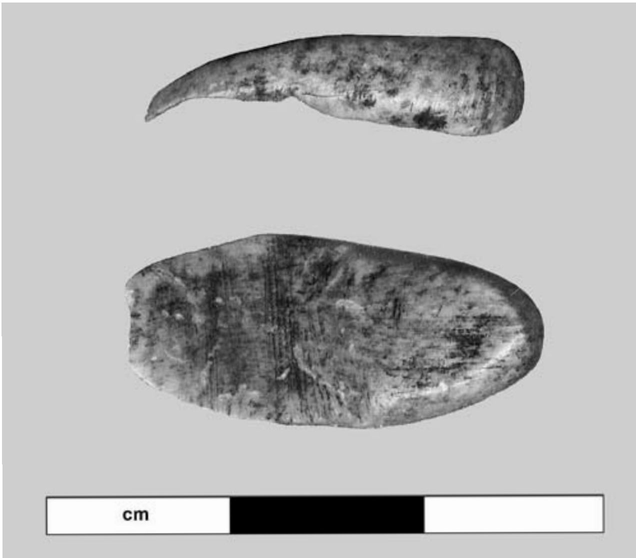


Figure 15.16. Preform for imitation red deer canine bead (6250.X2): front and side views.

Figure 15.17. Ring preform (8629.F4).

Figure 15.18. Ring preform (8629.F28).

A shaft segment of a goose radius (8629.F10) shows cut-and-break marks at one end, indicating that one or more simple tubular beads have been removed from it. It comes from a midden deposit in Space 85 that contains many remains of bone working.

Ring Preforms

Ring preforms and waste (long bones, generally sheep/goat femora, showing signs of the removal of ring blanks by the cut-and-break method) are strikingly common in the BACH Area, where they account for 12 of 20 preform and waste specimens. In contrast, there were only 5 of 58 preform/waste specimens related to ring manufacture in the previously analyzed assemblage. Thus, there must have been substantial ring-making activity in or near Building 3. These pieces are found from the midden underlying the house to the fill of a post-retrieval pit in the abandonment phase. None are from primary contexts. Most come from middens, a few from bricks and mortar or fill. There is a particular concentration of six specimens from the midden in Space 85 just outside the west wall of Building 3, five of them from unit 8629 (Figures 15.17, 15.18). There may have been small-scale specialization in ring manufacture, much as seen with beads in Building 18 in the SOUTH Area. Is the unusual burial in Building 1, adjacent to Building 3, in which a skeleton wore five bone rings on its fingers (Russell 2005:356), related to this activity?

Interestingly, even in this limited area, we see the same variation in the order of operations in producing ring blanks evidenced in the previously analyzed assemblage. Sometimes both articulations were removed first, producing a cylinder from which rings were then scored and removed one at a time. Sometimes only one end was removed and then ring blanks gradually detached. Sometimes all the rings were marked out with grooves at the start. Sometimes two at a time were so marked. One preform (8629.F28) is made on a femur whose distal end had been gnawed off by a dog (Figure 15.18). The gnawing did not damage the part needed for ring manufacture, but it does indicate that raw material was probably chosen from discarded bones after consumption, rather than specifically selected during butchery.

Fishhook Preforms

Object 6609.X1, from a floor in Space 89, is a preform for a split boar's tusk artifact, possibly a fishhook. Preforms in the previously analyzed assemblage showed that at Çatalhöyük fishhooks were made by splitting the tusk to produce a flat piece, grinding this into an oval or trapezoidal shape, drilling two large holes in the center, snapping it through the holes, and then carving it into shape. This piece comes from the beginning of this sequence. The tusk has been split and retains a groove down one side from this operation. It appears to have been flaked to rough out the shape (a crude trapezoid about 5 cm long), and there is a little abrasion on the outer and occlusal surfaces. It remains quite thick and is clearly unfinished. At this point, it could also become a pendant or other type of artifact.

Figure 15.19. Indeterminate bone artifact; possible musical rasp (8625.F3).

Antler Preforms

Three pieces of antler (3545.F65, 8629.F20, 8629.F23) exhibit traces of the groove-and-splinter technique (Clark and Thompson 1954). The first two are probably waste removed by this method, while the last is a preform for some small antler artifact. It is a roughly rectangular piece of split antler beam cut along both long edges. Both ends have been sliced on a bevel, and the inner surface has been slightly smoothed.

Indeterminate

Eleven pieces are of indeterminate type. Five are fragments too small to identify the artifact type and will not be discussed further. Four are segments of split antler beam with rounded, somewhat flattened tips. They look like the "bull-roarer" pendants without the perforation, but seem finished. A split antler tine with a rounded tip is similar.

The remaining artifact (8625.F3) (Figure 15.19) is quite different. It is the tip half of a split rib tool, carefully scraped and abraded to produce a flat spatulate form with a flat rounded tip. Along part of one edge, a series of notches have been incised, giving a comb-like effect. They are worn on the high points in between rather than in the grooves, suggesting it was not actually used with a combing action. Perhaps it is a musical rasp, which seems consistent with the use-wear.

Repair

Maintenance of tools through repair is one measure of their value. I have discussed resharpening of points above. In addition, four tools were reworked to repair damage. A longitudinal chip off the tip of a point (3580.F46) was ground to smooth it at the same time that the tip was resharpened. A less successful repair attempt on another point (8436.F116) used a more drastic method. The cut-and-break technique was used to remove the tip preparatory to forming a new one. However, perhaps because the many deep stray marks would have made the surface too rough for scraping, the toolmaker repeated the cut-and-break operation further back, leaving the shaft segment between the two assisted breaks. The other two repairs reflect the tendency to break through the perforation, necessitating piercing a new hole and smoothing the broken edges of a bead (2254.D1) and a needle (2261.F35).

Worked Bone in Context

Table 15.3 shows that the distribution of bone tool types in context types is variable. In contrast to the previously analyzed assemblage, needles are less common in middens than in other contexts, and preforms/waste occur more often in midden than in fill (Russell 2005). In the previously analyzed assemblage, only ornaments and one spoon were securely associated with skeletons in burials. In the BACH Area, the only such bone artifact is a spatula found with pigment. A needle from burial fill (8315.X1) was probably complete in the ground (very rare for needles) and thus may have been associated with the skeleton, although the rest of the bone in the unit looks as though it comes from fill. The same is true of a rounded point (hairpin? 6252.X1) found with jumbled human bones in a grave, and the belt hook and eye in unit 8385, which were probably originally associated with a skeleton disturbed by a later burial. In both the BACH Area and the previously analyzed assemblage, the absence of the otherwise common points in burials is conspicuous.

While most tools found in construction material are redeposited from their original discard location, in a few instances intact tools showing no signs of wear may have been deliberately built into bricks. These would include the complete point and bead in the bricks of unit 6267, and perhaps the bead in the platform floor of unit 6287. Interestingly, both these beads are of the double-ended type. Beads are found in construction material with some frequency and may be small enough to be redeposited without suffering much surface damage. The point in unit 6267, however, seems less likely to sneak into a brick unnoticed.

Some specific contexts are worthy of note with respect to their bone artifacts. A bin fill that included a clay mini-ball concentration in Phase B3.4A (6641) has an unusually high density of bone tools (.075 per liter, while the overall density for the BACH Area is .003) (see Figure 5.43). The tools are three points, two complete and one missing its base. The complete points seem still usable, certainly if they were resharpened. One was expediently manufactured, and perhaps all, as well as the clay balls, were associated with the preparations for a particular event. All three points have sharp, slender tips; two have tip angles of 10 degrees, the third of 12 degrees. Two have been resharpened, and none show much use since their latest sharpening. The one

Table 15.3. Bone tool types by context type

	Tool type (number and percent)															
Context	Point	Rounded point	Needle	Chopper	Pottery polisher	Spatula	Handle	Pendant	Bead	Ring	Belt hook or eye	Fishhook	Pressure flaker	Preform/waste	Indeterminate	Total
Midden	34 44.7%		4 5.3%	1 1.3%				1 1.3%	1 1.3%	19 25.0%				9 11.8%	7 9.2%	76
Fill	18 40.9%	1 2.3%	5 11.4%		1 2.3%		1 2.3%		3 6.8%	7 15.9%	2 4.6%	1 2.3%		2 4.6%	3 6.8%	44
Pit fill	3 50.0%									2 33.3%				1 16.7%		6
Between-wall fill	1 100%															1
Special dump	1 33.3%						1 33.3%							1 33.3%		3
Burials						1 100%										1
Floor	3 25.0%		3 25.0%					1 8.3%	1 8.3%	1 8.3%				2 16.7%	1 8.3%	12
Con-struction material	15 40.5%		5 13.5%		3 8.1%			1 2.7%	4 10.8%	4 10.8%		1 2.7%	1 2.7%	3 8.1%		37
Mixed	1 100%															1
Total	76	1	17	1	4	1	2	3	9	33	2	2	1	18	11	181

with the most wear is rounded rather than battered. It seems likely that they were all used in similar tasks, perhaps making clothing or containers. If the mini-balls were used in cooking, this may be part of the remains of the preparations for a ceremony that included a feast. Alternatively, these items may have been stored in the house during occupation and dumped in the bin at abandonment.

A point and needle were likely left or placed on the floor of unit 8384 when the next floor was laid over it in Phase B3.1. The same may be true of point 8263.X1 in Phase B3.2, the possible fishhook preform 6609.X1 in Phase B3.4, and the possible pressure flaker 6169.X1 in Phase B3.4B. Among the multiple cattle scapulae forming an abandonment deposit (Cluster 1) (see Figure 5.88) in Phase B3.5A were found a "bullroarer" pendant (2296.F80) and a complete point (2296.X1). It is not clear whether these were lying on the floor deposit like the scapulae, or in the midden that surrounded them, but they may well have been placed. Likewise, an unfinished point (6113.F31) found in a group of plaster chunks on the floor in Phase B3.5A may have been left or placed on the floor at abandonment or, less likely given its size (11 cm) and fresh surface, may derive from the plaster itself.

I have already discussed the concentration of preforms and waste, especially ring preforms, in Space 85 immediately to the west of Building 3. It is possible that these items resulted from bone working in the immediate area, but these midden deposits appear to be secondary. Thus, they were probably dumped from the roof of Building 3, either from actual roof activities or carried from inside the house. The density of bone rings from all units in the BACH Area is 0.0005 per liter, or 0.0006 per liter when only fully studied units are considered. In the previously analyzed assemblage, the density was 0.0002 per liter (the same for all units or only fully studied units). Thus, rings as well as preforms are considerably more common than usual in the BACH Area.

An antler artifact (6250.X1) and a bead preform (6250.X2) were found with an obsidian tool as a distinct special deposit built into the floor of a platform in Space 88 (Figure 15.16). This fits the pattern of commemorative deposits buried in the floors, most often platform floors, of the Çatalhöyük houses (Russell, Martin, and Twiss 2009). These deposits incorporated souvenirs of events into the fabric of houses. In this case, there is an intriguing indication of incompletion (possibly neither bone artifact is finished) that is hard to interpret. A different kind of special deposit occurred in unit 2210 in Space 89, where an elaborately carved bone handle holding a large flint dagger (see Figures 4.14, 5.124, 5.125) was found together with a set of large wild cattle horns and fragments of several more horns and fragments of a human skull. All were burned along with a large amount of organic material, probably as part of the abandonment behavior in this area.

Conclusion

While the density and general patterning of the BACH Area bone tools are similar to those of the KOPAL/NORTH/SOUTH assemblage, the BACH Area does have some distinctive features. Perhaps most strikingly, Building 3 seems to have been a center of ring manufacturing, much as Building 18 in the SOUTH Area was a center of bead production. While in each case there were notable concentrations of preforms and waste, the scale remains small. This is clearly not full-time specialization, but some people who were particularly skilled at certain crafts producing a little extra for exchange with their neighbors. The BACH Area has a rather high number of rings that have been treated in some way that leaves them white even after millennia in the soil, perhaps another sign of special skill.

While a few bone artifacts appeared in burials, special deposits, or abandonment deposits, most seem to have operated in the utilitarian sphere. The most spectacular of the special objects is the carved handle for a flint dagger, in a burned abandonment deposit with bucrania and a human skull. Among the more everyday objects, there seems to be somewhat more variability in point manufacture in the BACH Area than elsewhere, in part foreshadowing changes in base treatment that become common in later levels.

Acknowledgments

I am grateful to Rebecca Daly, who recorded some of the tools discussed here. I have also benefited from discussions with BACH team members in setting the bone tools in context.

Chapter 16

Neolithic Pottery from the BACH Excavation

Jonathan Last

This chapter discusses the pottery recovered from the BACH excavations between 1997 and 2003. The BACH Area lies directly southeast of the NORTH Area, the pottery from which is discussed in detail in *Çatalhöyük Vol. 5* (Last 2005). Hence, the broader context of the Neolithic pottery and the details of the methodology adopted are not repeated here.

Quantification

As in the nearby and broadly contemporary Building 1 (NORTH Area), the pottery from Building 3 and adjacent spaces in the BACH Area was not abundant. From the finds made during excavations of contemporary levels in the SOUTH Area by Mellaart in the 1960s, we may assume that the majority of pots were removed from the building prior to its closure or, if broken in use, were discarded in extramural midden deposits, which have not been extensively excavated on the northern part of Çatalhöyük East. The small BACH assemblage therefore adds little to our general understanding of pottery typology and function in the Neolithic but may instead be useful in helping us understand the date, phasing, and formation processes of deposits in and around Building 3 (see Figures 4.1, 4.3).

A total of 456 items were recorded in the BACH database, of which 373 (81.8 percent) were Neolithic potsherds (including 121 small fragments in a sample from basin F.781, most belonging to a single vessel); 34 (7.5 percent) were Late Neolithic (i.e., from East Mound levels later than Building 3) or Chalcolithic (West Mound type); and 49 (10.7 percent) were "Classical" (Hellenistic/Roman/Byzantine), including 6 whole pots, which were grave goods in two Late Roman graves (F.154, F.158) (see Chapter 14 for further discussion).

The units that contained Classical material were mainly late grave fills (2206, 2212, 2220*, 2226, 2235, 2237, 2263; 27 sherds) but also included upper, possibly disturbed building fills in Space 86 (2200–2202, 2213,* 2221*), other deposits in Space 86 (midden 2227,* wall collapse 2233,* and pit fill 2241), building fills in Space 87 (3549*), Space 88 (2266), Space 89 (2224, 2275*), Space 158 (2223), and Space 201 (8633*), as well as floor packing (8340*) in Space 201.[1]

The Late Neolithic/Chalcolithic material, handmade and mostly red-slipped sherds, came from a similar range of deposits, again primarily from the Roman grave fills (2206, 2212, 2219–2220, 2235, 2263; 18 sherds) but also from building fills in Space 86 (2200–2203, 2218, 2230), Space 89 (2210,* 2224), and Space 158 (2207, 2208*), and other deposits in Space 86 (midden 2209,* 2227, 2229,* 2250, and pit fill 2241*) and Space 158 (wall 6364).

The units from which the later material derives (excluding those with single small sherds only) also yielded 74 Neolithic sherds (19.8 percent of the total), which should therefore be regarded as potentially displaced or residual. Forty-three of these came from the Roman grave fills and were certainly redeposited.

The total weight of the Neolithic pottery is ca. 2.14 kg, giving a mean sherd weight of ca. 5.7 g. Without the numerous small sherds from basin F.781, this rises to ca. 7.4 g, but the figure is still low compared with that from the adjacent NORTH Area (Buildings 1 and 5). This may reflect higher recovery rates of tiny fragments from the BACH Area.

There were 29 rim sherds among the Neolithic assemblage, with a total rim EVE (estimated vessel equivalent) of approximately 2.1 (assuming that sherds for which a diameter could not be measured fit the mean measurement).

[1] Those units marked with an asterisk (*) contained only single small sherds less than 2 cm across, which were most likely intrusive from animal or plant action.

Table 16.1. Fabrics from the BACH Area

Group	Sherd count	Mean sherd weight (g)	Rims	Bases	Lugs
1 (vegetable-tempered)	157 (42.1%) 37 (14.6%)[a]	8.9/4.1[a]	4	3	—
2 (sand-tempered)	28 (7.5/11.1%)	6.4	4	—	—
3 (mineral-gritted)	186 (49.9/73.5%)	7.1	14	1	1
4 (grog?)	2 (0.5%)	9.0	—	—	—

[a] Without F.781 group

This figure implies that the BACH assemblage represents the physical equivalent of just two complete pots (although in reality it comprised small parts of dozens of vessels). In fact, a significant number of sherds appear to have derived from two vessels, fragments of which were dispersed across a number of units. These pots and the implications of their distribution are discussed further below.

Establishing the date and phase of an East Mound assemblage is closely related to the proportions of different fabrics and vessel forms, which seem to have changed over time in a regular way, especially in the period of technological development between Mellaart's Levels VIII and VI (outlined in Last 1996a, 2005).

Fabrics

The sherds from the BACH Area can be assigned to the broad fabric groups identified for the NORTH and SOUTH Areas and described further in Last (2005). The breakdown of fabrics from the BACH Area is shown in Table 16.1. Group 1 (tempered with chopped straw or similar vegetable matter) represents the thick-walled, tub-shaped vessels, often with light-colored or mottled surfaces, that were ubiquitous until Mellart's Level VIII but disappeared around his Level VI. Group 2 (sand-tempered) is essentially the same fabric but without the admixture of straw. Group 3 (mineral-tempered) represents the taller, thinner-walled, dark-faced pots that predominated from Mellaart's Level VI onward.

The most closely comparable assemblage in terms of fabric proportions is the small group of sherds from Building 5 in the NORTH Area, which was assigned to Mellaart's Level VII. If, however, we exclude the cluster of Group 1 sherds from basin F.781, which may represent a single pot (but were too friable and fragile to attempt refitting), the proportion of Group 1 sherds falls to 14.6 percent and that of Group 3 increases to 73.5 percent, which is very similar to Building 1, assigned to Mellaart's Level VI. At the very least, therefore, we can say that the BACH assemblage is consistent with that from the NORTH Area, and Building 3 can be broadly dated to Mellaart's Levels VII–VI.

If the assemblage from the main spaces of Building 3 (Spaces 86, 158, 201) is broken down by phase (Table 16.2), then a distinction emerges between the occupation phases (B3.1–B3.4)—with about 35 percent Group 1 sherds (not counting the F.781 assemblage)—and the closure/post-abandonment phases (B3.5A), with 5–10 percent. This might suggest that the main phase of activity is more likely to be contemporary with Building 5 than Building 1.

The proportion of different fabrics may also shed some light on the relative chronology of the surrounding spaces (Table 16.3). In fact, while the pottery from Space 85 (all midden deposits) has similar fabric proportions to the occupation phases of Building 3, Spaces 88 (fill and floor deposits) and 89 (primarily building fill) have a lower proportion of Group 1 pottery and may therefore be later in date.

Forms

Rims

In terms of vessel shapes, the main distinction is between closed forms (termed "holemouths") and open or neutral

Table 16.2. Fabrics from Building 3, central spaces

Fabric Group	1	2	3
Phase B3.5B (post-Neolithic)	2 (4.0%)	5 (10.0)	43 (86.0)
Phase B3.5A (building fill & post-abandonment)	9 (11.3%)	4 (5.0)	67 (83.8)
Phase B3.1–4 (construction & remodeling)	15 (37.5%)	3 (7.5)	22 (55.0)

Table 16.3. Fabrics from Building 3, peripheral spaces

Fabric Group		1	2	3	Totals
Space 85		4 (36.4%)	1 (9.1%)	6 (54.5%)	11 (100%)
Space 87		0	0	3 (100.0%)	3 (100%)
Space 88		2 (11.1%)	2 (11.1%)	14 (77.8%)	18 (100%)
	Building fill	*1 (14.3%)*	*1 (14.3%)*	*5 (71.4%)*	*7 (100%)*
	Floors	*1 (9.1%)*	*1 (9.1%)*	*9 (81.8%)*	*11 (100%)*
Space 89		3 (14.3%)	5 (23.8%)	13 (61.9%)	21 (100%)

Note: Italicized data from Space 88 represent the breakdown (subset) within the space.

forms ("bowls"). Shape is identified solely from rim angles, as body and base forms are basically the same. With few exceptions, complete profiles were rare, so the height of the pot could not be determined. While the larger assemblage from Mellaart's excavations suggested that open forms do indeed tend to be bowls (mouth diameter greater than height), this is not exclusively so, as seems to be the case with vessel B3/2 (Figure 16.1b; see below). Similarly, closed forms may be squat tubs, especially among the early (Group 1) pottery. The small assemblage of rims from the BACH Area (Table 16.1) includes 3 closed (H) forms and 13 open (B); another 6 rim sherds are too small or uneven for us to be certain of their form. This overall figure masks a difference between the "archaic" fabrics (Groups 1 and 2), with no H forms, and the "new" ones (Group 3), with three. This is similar to the NORTH Area trend, though with fewer H forms overall. The relative lack of holemouths may indicate Building 3 is slightly earlier in date than Building 1, as suggested by the fabrics, but it might also reflect variations in the functional vessel assemblage between the two buildings.

Open or neutral vessel rims ("bowls") from Building 3 fall into three types (explained further in Last 1996b, 2005):

- B1—with upright wall and slightly inturned rim (Figures 16.1b, 16.2b, d)
- B2—with upright wall and straight rim (Figure 16.2c)
- B5—hemibowl

Closed vessels ("holemouths") from Building 3 belong to two types:

- H3—with straight wall and neck (Figure 16.2a)
- H4—with inturned rim (Figure 16.1a)

Bases

Bases from the BACH Area were similarly restricted, comprising just one type:

- T1/4—simple, angular to rounded junction (Figures 16.1a, 16.2e, f)

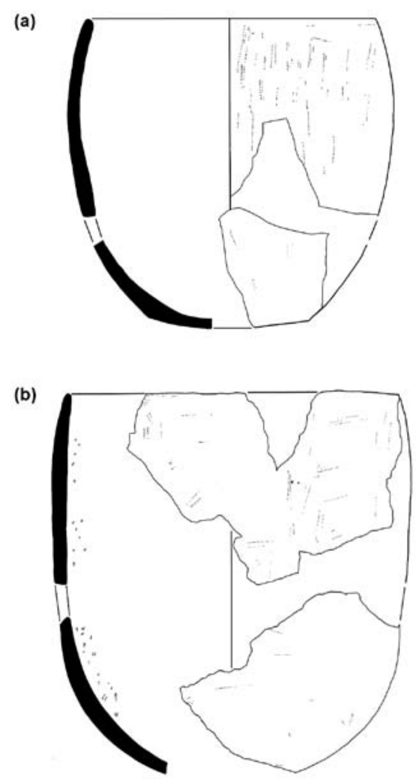


Figure 16.1. Pottery from the BACH Area: (a) vessel B3/1, fabric 3; (b) vessel B3/2, fabric 3.

Three of the bases are in Group 1 fabrics and one is in Group 3 (vessel B3/1: Figure 16.1a, and discussed below), so there is no sense of typological evolution in this small assemblage. The only possible developed form is a foot-like fragment (Figure 16.2g) from Space 89, but this is perhaps more likely to have been part of a figurine or other clay object.

Lugs and Handles

As in the NORTH Area, lugs were extremely rare in Building 3—in fact, there was only one example, and that came from one of the potentially disturbed or contaminated upper building fill units in Space 86 (2202). The lug (Figure 16.2h) was a perforated example with a "pointed" profile (see Last 1996b) in a Group 3 fabric, a common feature of larger assemblages of Mellaart's Levels VI–V. Unlike the three lugs from Building 1, which were all unusual in form, this was typical of the types found in large quantities by Mellaart (and during surface collection).

Manufacture

Forming

In terms of potting, the most evident trend over time in the NORTH and SOUTH Areas is toward thinner walls, which is also related to the change from Group 1 to Group 3 fabrics. In the BACH Area, overall mean sherd thickness is 5.9 mm, which is closely comparable with the figure for Mellaart's Level VI in the NORTH and SOUTH Areas (5.7 mm). This figure excludes the F.781 group; if that is included, the mean rises to approximately 7.2 mm, closer to the figure for Level VII elsewhere (8.1 mm). This average figure hides a distinction between the three main fabric groups, which shows that Group 3 sherds are (as expected) considerably thinner than Groups 1 and 2 (Table 16.4). Interestingly, the small assemblage of sherds assigned to the Late Neolithic or Chalcolithic shows an increase in mean thickness again.

Firing

Surface firing colors vary across all the fabric groups, but Table 16.5 shows that dark surfaces predominate among Group 3 sherds, whereas lighter shades are more common among Groups 1 and 2. The distinction is more marked in terms of exterior colors than interiors. Moreover, mottled surfaces are far more common among Group 1 sherds than in Group 3, again as expected, with Group 2 having intermediate values. The more even firing and darker colors of the later Group 3 pottery seem to reflect a greater control

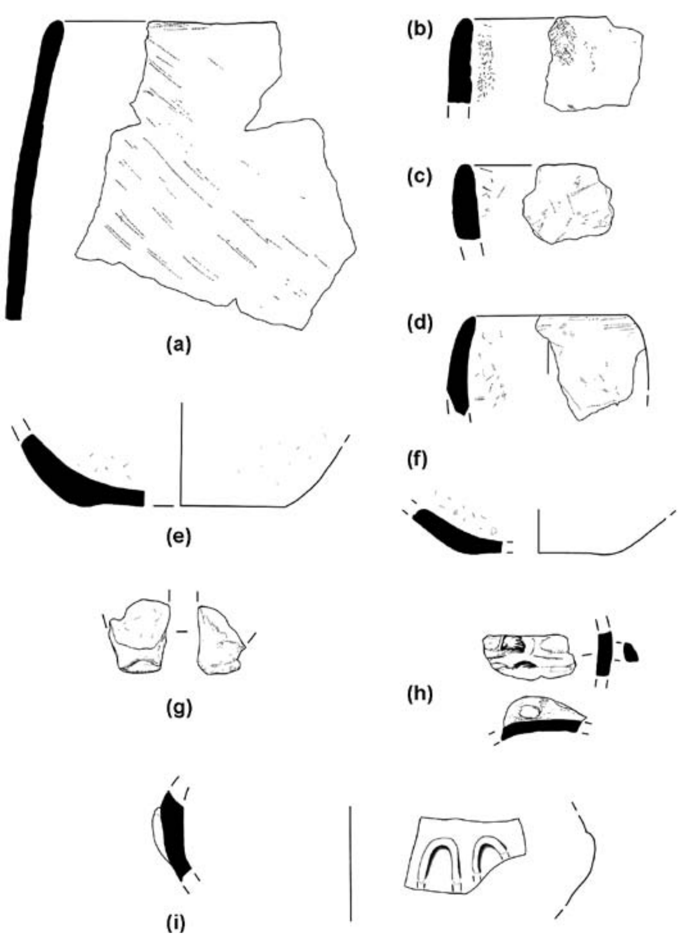


Figure 16.2. Pottery from the BACH Area: (a) 3531.X1–X2, rim, fabric 3; (b) 8474.X1/1, rim, fabric 1; (c) 2249.S1, rim, fabric 1; (d) 8589.X1, rim, fabric 1; (e) 8472.S1, base, fabric 1; (f) 3537.S1, base, fabric 1; (g) 8405.X7, figurine (?) foot; (h) 2208.S2, lug, fabric 3; (i) 2212.S6, decorated body, Chalcolithic (?).

Table 16.4. Vessel wall thickness by fabric group

Fabric	Min.	Max.	Mean
1	4 mm	13 mm	8.4
2	4.5	10	7.0
3	3	12.5	5.3
LN/Chalc*	4	10.5	6.7

* LN = Late Neolithic; Chalc = Chalcolithic

of the firing process and perhaps a switch from open or bonfire firing to closed ovens or even purpose-made kilns.

In terms of fabric colors in cross section (Table 16.6), Group 1 sherds are most likely to have gray or grayish brown cores, Group 2 light brown, and Group 3 red-brown or red. This probably reflects higher firing temperatures for Group 3 and may also relate to the use of different clay sources. For further discussion of the pottery technology, see Last 2005.

The different fabric groups also vary in their hardness (Table 16.7), with a much higher proportion of Group 3 sherds in the "hard" category (resistant to fingernail

Table 16.5. Vessel surface color by fabric group

	Group 1		Group 2		Group 3	
Surface color	Ext. (%)	Int. (%)	Ext. (%)	Int. (%)	Ext. (%)	Int. (%)
Dark gray	18.4	29.7	21.5	32.0	36.2	37.2
Dark brown	18.5	24.3	14.3	20.0	33.4	24.0
Mid-gray	5.3	5.4	–	4.0	1.1	1.7
Mid-brown	23.7	24.3	25.0	20.0	18.9	22.2
Light brown	23.7	16.2	35.7	20.0	3.7	7.2
Orange/red	10.4	–	–	4.0	5.9	8.4
Single color	60.5	73.0	78.6	92.0	90.2	90.6
Mottled	39.5	27.0	21.4	8.0	9.0	10.1
Total (N)	38	37	28	25	185	180

Table 16.6. Fabric (section) color by fabric group

	Group 1		Group 2		Group 3	
Fabric color	Outer (%)	Core (%)	Outer (%)	Core (%)	Outer (%)	Core (%)
Dark gray	48.7	69.2	33.3	60.7	30.9	34.0
Gray-brown	23.1	20.5	7.4	10.7	8.3	9.0
Dark brown	–	–	7.4	7.1	10.5	8.9
Light brown	20.5	5.2	37.0	17.8	10.5	11.1
Red-brown	5.1	2.6	7.4	3.6	11.6	8.9
Light gray	–	–	–	–	1.1	1.1
Orange	–	–	3.7	–	1.7	1.1
Red	2.6	2.6	3.7	–	25.4	25.2
Total (N)	39	39	27	28	181	179

scratching) than Group 1 or 2 sherds. This probably also relates to the temperature and duration of the firing process.

The results from the BACH Area therefore support the suggestions made on the basis of other assemblages that Group 3 pottery is better fired than Group 1 (Last 2005).

Surface Finish and Decoration

Surface finish on the BACH pottery, as with that of the SOUTH and NORTH Areas, is largely restricted to burnishing or smoothing, the difference essentially being the presence of a visible luster (Table 16.8). The data clearly show that Group 3 sherds tend to have a higher burnish than Group 1, while there are fewer Group 3 than Group 1 sherds with no surface treatment at all. Group 2 tends to have intermediate values. Across all the fabric groups, there was clearly more attention paid to exterior than to interior surfaces. In a few cases among the Group 3 sherds, the direction of the burnishing lines is shown by visible marks: about twice as many are burnished in a vertical than in a horizontal direction.

In a few cases, there are signs that a slip may have been applied prior to the burnishing, largely because of a sharp difference in color between surface and fabric. This becomes far more common in the Late Neolithic, where the presence of red slips is one of the distinguishing features of the intrusive pieces discussed above.

Formal decoration (incision, painting, plastic) is entirely absent from the Neolithic pottery in the BACH Area, as with contemporary or earlier deposits elsewhere. Incised and plastic decoration has occasionally been found in later Neolithic assemblages, while painted designs are exclusively a feature of Early Chalcolithic (West Mound) pottery. A single example with plastic decoration among the small BACH assemblage of later pottery (from a grave fill deposit) comprises an unusual curvilinear motif, unfortunately not preserved in full (Figure 16.2i). As the known examples with molded decoration often appear to depict or imitate animal heads, it is possible these represent horns.

DISTRIBUTIONS

The small number of sherds and their distribution across numerous spaces and building phases means that, as with

Table 16.7. Fabric hardness (resistance to scratching) by fabric group

Fabric Group	Hard (%)	Hard/ medium (%)	Medium (%)	Soft (%)
1	12.8	15.4	56.4	15.4
2	33.3	3.7	44.4	18.5
3	55.0	10.6	33.3	1.1

Table 16.8. Surface finish by fabric group

Fabric group	Full burnish		Light burnish		Smooth		None	
	Ext. (%)	Int. (%)	Ext. (%)	Int. (%)	Ext. (%)	Int. (%)	Ext. (%)	Int. (%)
1	36.8	16.2	39.5	29.7	10.5	21.6	13.2	32.4
2	46.4	20.8	28.6	12.5	21.4	33.3	3.6	33.3
3	68.1	40.2	18.9	27.0	10.8	21.8	2.2	10.9

Table 16.9. Neolithic sherd statistics by deposit type

Deposit type	Sherd count	Percent of Group 1/2 sherds (%)	Mean size (mm)	Thickness (mm)	Weight (g)	Abrasion*
Building fill	69	29.9	30.0	5.9	7.3	2.8/3.1
Midden	63	17.5	35.5	5.7	9.3	2.4/2.7
Platform/ floor	35	22.9	35.2	5.5	7.6	1.9/2.6
Wall	23	39.1	22.1	6.0	7.1	2.7/3.0

* Abrasion statistics are based on visual scoring of wear to edges and corners.

Table 16.10. Neolithic sherd statistics (Group 3 only)

Deposit type	Sherd count	Mean size (mm)	Thickness (mm)	Weight (g)	Abrasion*
Building fill	47	27.5	5.3	5.8	2.6/3.1
Midden	52	36.0	5.3	9.4	2.2/2.6
Platform/floor	26	38.8	5.1	8.9	1.6/2.4
Wall	14	18.6	4.9	8.1	2.2/2.7

* Abrasion statistics are based on visual scoring of wear to edges and corners.

the NORTH Area, there is little opportunity to study patterning and variability within individual assemblages because they are simply not large enough. However, we can look at overall differences between different deposit types, with a view to understanding something of the formation processes of these deposits. Table 16.9 shows that midden and floor deposits have larger sherds on average than building fills and walls. They are also less worn on average, though this is more evident for floors than middens. This might suggest that whereas sherds from floors and middens represent primary or secondary refuse, left where they were discarded, material from building fills and walls has been reworked and redeposited (i.e., "tertiary" refuse), leading to higher levels of breakage and abrasion. This conclusion needs to be tempered by the observation that middens and floors also have lower proportions of Group 1 and Group 2 sherds, which are softer and might be more susceptible to abrasion and breakage. However, if only Group 3 sherds are considered (Table 16.10), we see that these basic distinctions still hold: sherds from floor deposits are relatively large and unabraded; those from middens are equally large but more abraded, perhaps suggesting the latter contexts were more exposed to the elements.

Table 16.11 shows the full breakdown of sherds by space, phase, and deposit type (excluding the Roman graves). As assemblages become smaller, statistical comparisons obviously have less validity. However, we can note some differences between deposits considered together above. The midden in Space 86 has larger sherds than that in Space 85, perhaps because it contains almost exclusively Group 3 sherds and may therefore be somewhat later in date. Similarly, building fill in Space 86 has slightly larger sherds than that in Space 89, although the proportions of Group 3 sherds are similar (70 percent and 65 percent).

One other aspect of the pottery that adds to our understanding of the formation processes of these deposits is the distribution of multiple sherds from the same vessel. Various scenarios can be suggested for this situation. In the first, a complete (or near-complete) pot might be left in situ at the time of the building's abandonment, destruction, or reconstruction and become crushed or dispersed by collapse and infilling of the surrounding space. This appears to be the case with "vessel 4" within Building 1 in the NORTH Area (Last 2005), which was 75 percent complete and comprised 20 sherds in three groups lying over an area of about 1 m^2; and also with a complete Early Chalcolithic basket-handled jar found in two groups (the top and bottom of the pot) a couple of meters apart within Building 25 on the West Mound. In the second scenario, sherds of the same pot might have been introduced from another part of the site within the material used to infill a space. In this case, there might be no association with surfaces, and no focus or center to the distribution. A third scenario is structured deposition, the deliberate placement and perhaps arrangement of a pot or group of sherds within a deposit, as part of a ritual act associated with, for example, the foundation or closure of a building or space. On the East Mound, such practices were more likely to involve materials such as animal bone, obsidian, or ground stone than pottery, but on the West Mound, pottery has been implicated in this kind of deposit.

In Building 3, an obvious candidate for the first kind of deposit is the Group 1 vessel from basin F.781, which unfortunately could not be reconstructed. However, there were also two instances of pots found in pieces across a number of different units. In each case, there is a group of sherds that physically join one another and another group whose sherds do not refit but are sufficiently similar to be assigned to the same vessel with a high degree of probability. (Because the pots have few distinctive features, there are also many other sherds from across the BACH Area that might belong to one of these vessels.) The first pot (vessel B3/1: Figure 16.1a) occurs in units 2203, 2209, 2216, 2218, 2227, 2228, 2239, 2255, 2260, and 2270 (24 sherds: Table

Table 16.11. Breakdown of Neolithic sherds by space, phase, and deposit type

Space	Phase	Deposit type	Sherd count	Mean size (mm)
86	?	–	5	–
86	5A	Arbitrary	1	
86	5A	Building fill	27	30.1
86	5A	Collapse	6	
86	5A	Midden	48	36.9
86	5A	Plaster/wall	2	
86	5A	Platform/floor	2	
86	5A	Roof	6	(22.4)[b]
86	4	Building fill	2	
86	4	Floor	1	
86	4	Wall	1	(19.5)[a]
86	1/2	Platform/floor	2	27.0
86/158	4	Wall	2	14.5
158	?	–	3	–
158	5A	Building fill	9	28.1
158	5A	Floor	1	38.0
158	4	Floor	1	9.0
158	4	Wall	4	28.0
158	1	Wall	4	14.5
201	?	–	5	
201	1/2	Basin	121	(F.781)
201	1/2	Plaster/wall	2	(26.8)[b]
201	1/2	Platform/ floor	17	46.3
87	–	Building fill	2	
87	–	Floor	1	(22.0)[a]
88	–	Building fill	7	49.3
88	–	Floor	12	26.6
89	–	Building fill	20	26.1
89	–	Floor	1	18.0
41	–	–	1	26.0
85	–	Midden	11	27.4
Unknown	–	–	3	–
	TOTAL		330*	

* The 43 sherds from Roman graves (Phase B3.5B) are not included
[a] Includes all units with ceramics in this context in this phase.
[b] Includes all units with ceramics in this phase except for those specified from other contexts.

Table 16.12. Sherds of vessel B3/1 (all from Space 86)

Sherd	Type	Size (mm)	Deposit
2203.S5		37	Fill
2209.S4		31	Midden
2209.S12	R	40	Midden
2209.S13		39	Midden
2209.X2		39	Midden
2209.X3		18	Midden
2216.S1		34	Fill
2218.S2		31	Fill
2227.S1	R	54	Midden
2227.S2		38	Midden
2228.S1	R	56	Midden
2228.S2		41	Midden
2228.X4		44	Midden
2228.X7		78	Midden
2239.S1		67	Midden
2255.S2		26	Midden
2255.S3		53	Midden
2255.X3	B	88	Midden
2260.X1	B	99	Arbitrary
2270.S1		25	Midden
2270.X1		45	Midden
2270.X4/1	R	66	Midden
2270.X4/2	R	46	Midden
2270.X6	R	87	Midden

16.12; Figure 16.3). The second (vessel B3/2: Figure 16.1b) occurs in units 2250, 6112, 6201, 8222, 8290, 8318, 8348, 8356, 8376 and 8589 (14 sherds: Table 16.13 and Figure 16.3). Both are thin-walled, dark burnished, mineral-tempered (Group 3) pots, with similar shapes. In neither case was the vessel complete, and their full profiles could not be established with complete confidence (only B3/1 had a base). Both appear to be jars (taller than their maximum diameter) with slightly inturned rims, although this is more marked in B3/1 (which has a rounder profile and is classified H4) than in B3/2 (which has a straighter, more upright profile and is classified B1). Both are characteristic of the

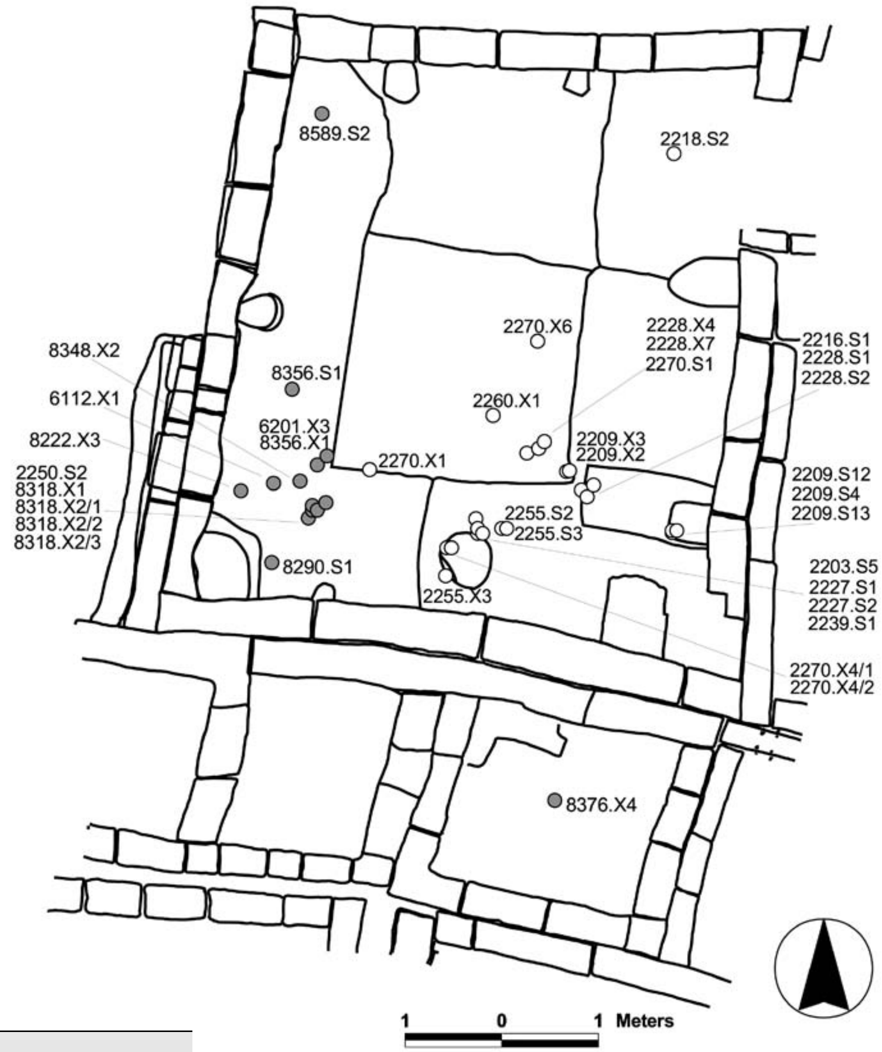


Figure 16.3. Distribution of sherds of vessels B3/1 (white)—B3/2 (gray).

Table 16.13. Sherds of vessel B3/2

Sherd	Type	Size (mm)	Space	Phase
2250.S2		25	86	5A (Midden)
6112.X1		38	158	5A (Floor)
6201.X3	R	42	158	5A (Fill)
8222.X3		36	201	1 (Floor)
8290.S1		24	201	1 (Floor)
8318.X1		20	201	1 (Floor)
8318.X2/1	R	75	201	1 (Floor)
8318.X2/2	R	85	201	1 (Floor)
8318.X2/3		112	201	1 (Floor)
8348.X2		39	201	1 (Floor)
8356.S1		28	201	1 (Floor)
8356.X1		37	201	1 (Floor)
8376.X4		17	89	Fill
8589.S2		23	201	– (Midden)

dark-faced vessels with simple forms that predominate on the East Mound in Mellaart's Levels VI and V.

Vessel B3/1 was distributed within late (Phase B3.5A) midden and building fill units in Space 86 (Figure 16.3). The sherds were rather widely scattered across an area of approximately 2 × 2.5 m in the central and southern parts of the room, with no distinct concentration, although there was a cluster on the northern edge of the southeast platform. This suggests that the final infill of the space was essentially a unitary event. The focus on midden material suggests that the second scenario outlined above might best indicate the formation processes involved: the pot was probably broken elsewhere and discarded within the midden deposits that accumulated in the abandoned building.

Vessel B3/2 was generally lower down in the Building 3 stratigraphy, primarily deriving from a more restricted area of about 1 × 1 m in the southwest corner of Space 201 (the initial open space of B3), but with pieces in the Space 86 Phase B3.5A midden, the fills of Space 89 and Space

158, and the early midden below Building 3 in Space 201 (Figure 16.3). This pot might fit the first scenario, perhaps originally located on platform F.169, but it has been widely dispersed (and partly removed) during the subsequent remodeling of the building.

Conclusions

The size, nature, and distribution of the pottery assemblage from Building 3 is reminiscent of that from Building 1, reinforcing the impression that while pottery was certainly in fairly common use at this time, little of it was discarded or abandoned within buildings. Excavating a large midden deposit on the northern part of the East Mound must be a priority if the use and discard of pottery at this time are to be better understood. Nevertheless, it may not be a coincidence that the three vessels discussed above (B3/1, B3/2, and that from F.781) all derived primarily from the southern half of the main space, like vessel 4 in Building 1 (Last 2005). In both Buildings 1 and 3, ovens and fire installations were primarily associated with this end of the building. If we ignore vessel B3/1, which may not be associated with the main occupation of the building, then the other two vessels suggest a southwestern focus for activities involving pottery in Building 3.

The BACH assemblage also seems to confirm that at this time, around Mellaart's Level VII, there were two traditions of pottery in use, although one replaced the other rather quickly (at least in an archaeological sense—it may have taken a generation or two). The full significance of the technological developments and the overlap between them will only be understood once we discover more about the manufacture and use of pottery, whether from new excavations uncovering more in situ remains or from scientific analysis of thin-sections and residues.

Chapter 17

Figurines of the BACH Area

Carolyn Nakamura

This paper presents a brief discussion of the BACH figurine corpus, its particularities, and how it compares with the general figurine patterning across the site. Given that work on the Çatalhöyük figurines is still ongoing, the information presented here is primarily descriptive rather than interpretive.

Background

In 2004, Lynn Meskell and I joined the Çatalhöyük research group and implemented a new program of research for the figurines. The figurine corpus consists of 1,906 objects to date, the bulk of which are very fragmentary. Of the definitive figurines (737), the majority consist of unsexed forms. Contrary to popular belief, only 2 percent of the collection clearly depicts female sex characteristics, most commonly breasts. The various forms are made primarily of clay, although some forms are rendered in stone. In addition to the few but well-known anthropomorphic representations (human types), the most common figurines are the zoomorphic (quadrupeds and horns) and abbreviated (with divided and undivided base) forms (Nakamura and Meskell 2004, 2006). Some figures are very small and briefly rendered, measuring less than 1 cm in height, while others are quite detailed and sport finely modeled features on both large and small examples. Also provocative are the separate bodies and heads found with dowel holes. Such diversity also extends to the find spots, most of which are secondary contexts such as room and bin fill, midden, building material, and spaces in between walls or buildings. Rarely, figurines have been found in situ as occupational deposits on floors or platforms (Hamilton 2005b; Meskell and Nakamura 2005).

This variety of forms and find/disposal contexts suggests any equally diverse suite of uses, thus complicating any simplistic interpretation of figurine work at the site. For instance, it is possible that the simple marl and plaster forms (horns and abbreviated types) may show a stronger affiliation to other plastering activities at the site than to the stone human figurines. However, despite this diversity, the most recent studies still approach the Çatalhöyük figurines as if they constitute a meaningful emic category, the overarching function and meaning of which might be extracted in terms of ritual and/or domestic practice (Hamilton 2005b; Hamilton et al. 1996; Voigt 2000). Such analyses, however, in presenting a *product*-oriented approach, ignore areas of overlap between figurines and other clay technologies and representational media, thus producing a static view of figurine work. Our present research rather seeks to investigate figurines as a *process*, looking at all aspects of material acquisition, object production, form, circulation, and disposal. For more specific information and details of this research and the figurine corpus of the entire site, please refer to our contributions in the Çatalhöyük yearly archive reports (Meskell and Nakamura 2005; Nakamura and Meskell 2004, 2006) and articles (Meskell et al. 2008; Nakamura and Meskell 2009).

The BACH Figurine Corpus

The BACH excavations produced 240 potential figurines and figurine fragments from Building 3 and Spaces 85, 87, 88, and 89 (see Figure 4.1). Within this assemblage, only 10 examples are complete or nearly complete figurines, while the rest are very fragmentary. In this and other ways, the BACH figurines generally conform to patterning seen across the site: (1) zoomorphic forms predominate, followed by abbreviated forms, with few anthropomorphic forms found; (2) the corpus is very fragmentary; and (3) the majority of figurines derive from secondary deposition contexts. Given that Building 3 and Spaces 85, 87, 88, and 89 comprise a building (Building 3), an external midden area, and a southern annex of three rooms with seemingly different functions and characters (Spaces 87, 88, 89), which are all roughly contemporary, the BACH assemblage provides a unique opportunity to examine and compare figurine patterning from these different contexts, each of which will be discussed separately.

Building 3

On first glance, Building 3 stands out from other excavated buildings at Çatalhöyük by the large quantity of figurines that were found in its excavation. With its total of 141 figurines and figurine fragments, the Building 3 assemblage outnumbers the next largest building assemblage (Building 1) by more than four times (Table 17.1). This high number in itself may not necessarily be significant. While Building 3 has been completely excavated, other buildings at the site are truncated or have been only partially excavated. Therefore, figurine counts alone can be misleading. In order to offset such factors, we calculated figurine densities from the ratio of figurine numbers to the total volume of material excavated from buildings prior to being dry sieved for individual small finds (Table 17.1) (see also Meskell et al. 2008: Table 1) . These densities then allowed us to roughly compare figurine assemblages from buildings across the site.

Notably, we find that Building 3, while having the highest number of figurines, does not have the highest figurine density. But it does appear to fall within the high range of 3 to 4.5 figurines per kL (Table 17.1) (see also Meskell et al. 2008: Table 3, for buildings from all levels). Building 49, which dates to Mellaart's Levels VII–VI, has a similar (and even slightly higher) figurine density compared with Building 3. However, Building 49 has a significantly lower dry-sieve volume and figurine total than Building 3, and its figurine assemblage, comprised almost exclusively of quadrupeds, is rather different from the spread of figurine types most commonly found within buildings (see discussion below). The composition of the Building 3 figurine assemblage, on the other hand, tracks closely with the more common figurine patterning we see in buildings across the site. Given these differences, comparisons between these two buildings are rather uninformative. More telling is the comparison of Building 3 with other fully excavated buildings from Mellaart's

Table 17.1. Figurines found in buildings (Mellaart's Levels VII–VI/V) by number and density

			Figurines and dry-sieve volume		
Building	Levels	% excavated	Volume (kL)	No. of figurines	Density
1	VII–VI	Full	60.59	31	0.51
2	IX	1/3	20.83	24	1.15
3	**VII–VI**	**Full**	**35.32**	**141**	**3.99**
4	VIII	1/3	5.20	3	0.58
5	VII–VI	Full	37.56	19	0.51
6	VIII	1/3, truncated	28.54	17	0.60
10	III–IV	Full	6.23	2	0.32
17	IX	1/2	36.3	22	0.61
18	X	Full	3.31	15	4.54
23	X	1/2	8.75	6	0.69
29/42	V–IV	Full	0.92	3	3.27
43	VIII	Full	5.835	3	0.51
44	IV	Full	1.152	1	0.87
45	V–IV	Full	0.40	1	2.50
49	VII–VI	Full, Fast track	3.145	13	4.13
53	VI	Full	5.60	1	0.18

Table 17.2a. Breakdown of Building 3 figurine types by context

	Construction	Fill	Midden	Floor/ platform	Burial	Other/ unstratified	Total
Abbreviated	4	10	6	2	0	1	23
Anthropomorphic	1	2	0	0	0	2	5
Zoomorphic	15	15	10	7	5	2	54
Geometric	0	3	0	0	0	0	3
Figural-unknown	0	1	1	0	0	0	2
Nondiagnostic	15	23	6	5	3	2	54
Total	35	61	16	14	8	7	141
% of total	25%	38%	16%	10%	6%	5%	

Table 17.2b. Density of Building 3 figurines by deposition (Spaces 86, 158, 201)

Building 3	Primary units	Secondary units	Midden units	All units
No. of figurines	5	122	14	141
Total volume (kL)	72.45	25.34	27.41	35.32
Figurines/kL	0.69	4.82	5.11	3.99

Levels VII–VI that have comparable dry-sieve volumes. Buildings 1 and 5 from Mellaart's Levels VII–V are interesting in this regard. Compared with these two buildings, Building 3 does appear to have a significantly higher total figurine density (Table 17.1). This finding, although inconclusive, may suggest that Building 3 was associated with more intensive figurine activities than its other known contemporaries. However, the predominance of Building 3 figurines come from fill and construction units (Table 17.2), and the five figurine fragments that derive from primary contexts[1] are all fragmentary, nondiagnostic pieces. It is also striking that the breakdown of Building 3 figurine forms tracks closely with the overall patterning we see from all buildings across the site (Table 17.3).

Since most figurines come from infill and construction materials within buildings, this correlation might suggest that the deposition in Building 3 conforms to a general kind of building fill/construction patterning. Such deposits may be similar in make-up to midden, in the sense that they often include discarded, everyday materials along with building material rubble. However, it is notable that some building infill appears to have been carefully processed or even screened (Buildings 1, 4, and 5). In fact, there is some evidence of this differentiation in fill within Building 3, where the northern part of the house was filled and blocked by roof collapse and the southern half with mixed building materials and midden deposits (Chapter 5). It has been suggested that these different fills relate to "clean" versus "dirty" spaces, respectively (Chapter 5). This north/south division of space is typical of Neolithic houses at Çatalhöyük. Such differentiation might also then point to a differentiation within secondary figurine deposition in houses. If we look at the number of figurines found in the fill and construction materials from the north and south areas of Building 3, we find that there are almost twice as many figurines associated with the north than the south (Table 17.4). Yet when we examine the fill units only, this difference is significantly reduced. It would be difficult to argue for any correlation between figurine practice and differential house filling practices.

However, this result might suggest that figurines appear to be more concentrated in construction materials rather than in house fill in the northern half of Building 3. For instance, there are close to three times more figurines found

[1] Units 6398 and 8359 may be primary or secondary contexts (Mirjana Stevanović, personal communication) and produced two and three figurines, respectively. However, of these five, all but one example is extremely fragmentary and nondiagnostic. The one complete figurine is an abbreviated form (8359.H1).

Table 17.3. Comparison of Building 3 figurine assemblage composition with figurines in all buildings

	Building 3		All buildings	
Figurine form	No. of figurines	% of total figurines	No. of figurines	% of total figurines
Abbreviated	23	16	53	16
Anthropomorphic	5	4	20	6
Zoomorphic	54	38	109	34
Other	5	4	37	11
Nondiagnostic	54	38	105	32
Total	141		324	

Table 17.4. Figurines from north and south areas of Building 3

	All secondary units		Secondary fill units	
Building section	No. of figurines	% total	No. of figurines	% total
North	61	53	33	46
South	37	32	23	32
Central	18	16	16	22
Total	116	—	72	—

in platforms in the north (11) than in the south (4). It is appealing to imagine that the presence of figurines may have correlated in some way to these well-maintained, "ultra-white"-plastered and elaborated platforms (F.162, F.170, F.173) or the practices associated with them. However, such relationships would be difficult to explore or argue. Moreover, these figurine numbers must first be compared against the overall figurine density values in the northern and southern units of the building. Unfortunately, at the time of writing, these calculations had not been completed.

Another notable pattern can be seen in the apparent increase in figurine numbers starting at Phase B3.4A and hitting a peak in Phase B3.5A, when the building undergoes an elaborate closure procedure (Table 17.5; see Figure 4.3). Spatially, there is some suggestive, although inconclusive,

Table 17.5. Building 3 figurine numbers by occupation phase

Phase	Number of figurines
1A: Initial construction and layout of Building 3: roof access and kitchen area in southeast, furnishings along west wall	4
1C: Few changes to layout	2
1D: Few changes to layout	1
2: Blocking of wall opening (F.633) in east wall, and changes in fire installation configurations	5
3: First burials interred in Building 3 (central space); changes in spatial layout to resemble Phase B3.1	2
4A: Change to two-room configuration with introduc tion of two partitioning walls, burials in north-central platform	11
4B: Solid barrier between two rooms established, burials in north platforms	18
5: Closure and abandonment of residence	53

patterning (Figure 17.1). In Phases B3.1 and B3.3, figurines concentrate in the west and south areas of the building, while in Phase B3.2 figurines occur in the north-central part of the building and in the southeast corner. In Phase B3.4A, figurines occur in most parts of the building, excluding the northwest and southeast areas. In Phase B3.4B,

(a)

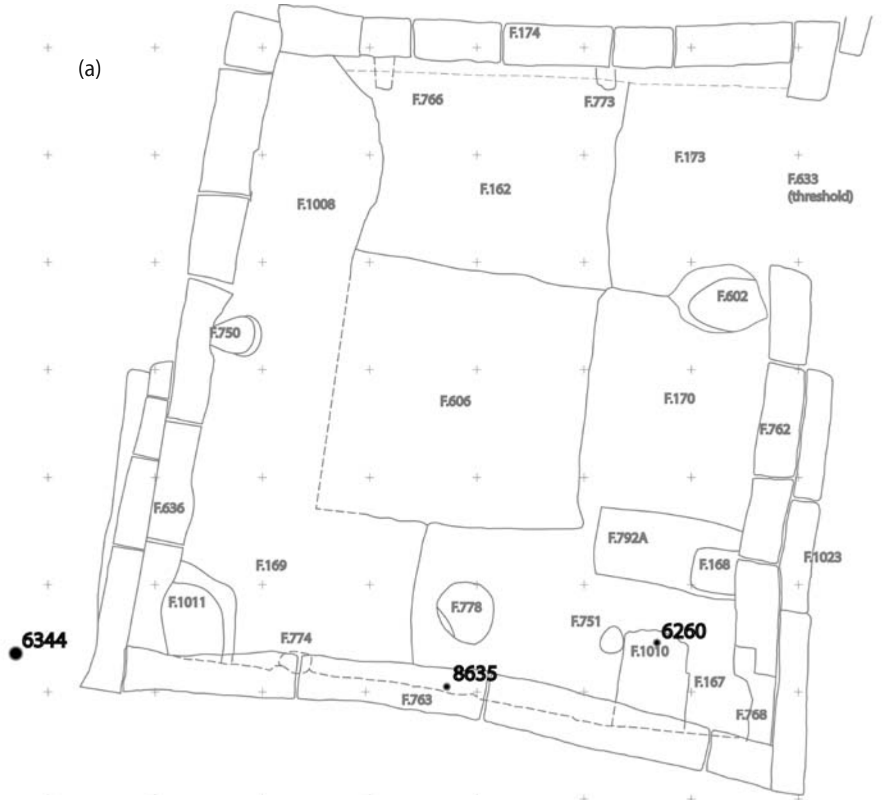
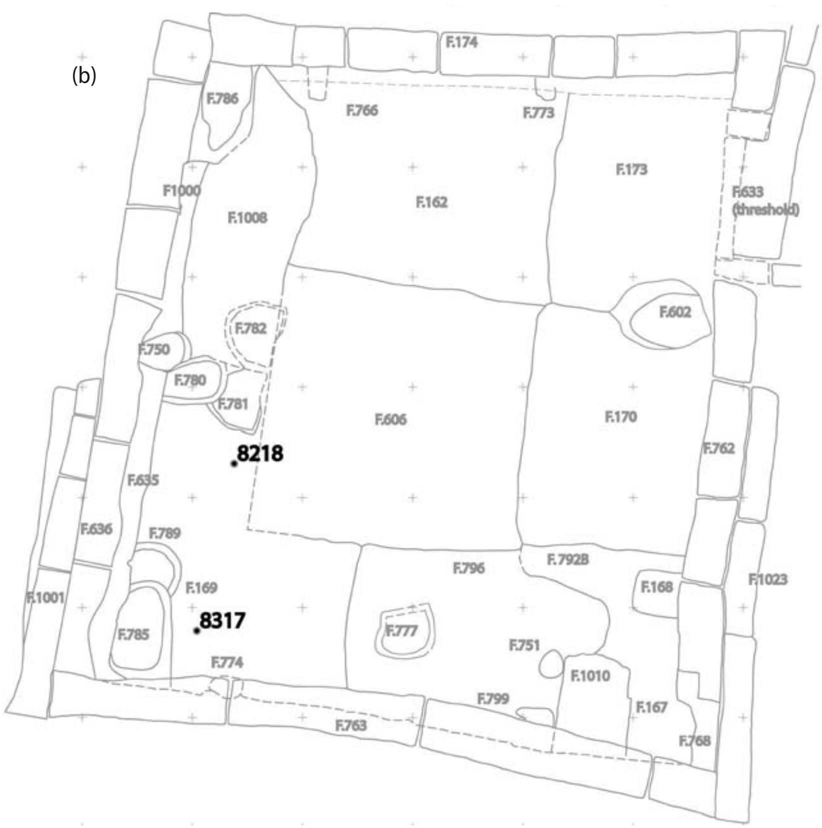


Figure 17.1 *(on following three pages)*. Building 3 phases with figurine locations. (a) Phase B3.1A; (b) Phase B3.1C; (c) Phase B3.1D; (d) Phase B3.2; (e) Phase B3.3; (f) Phase B3.4A; (g) Phase B3.4B; (h) Phase B3.5.

(b)



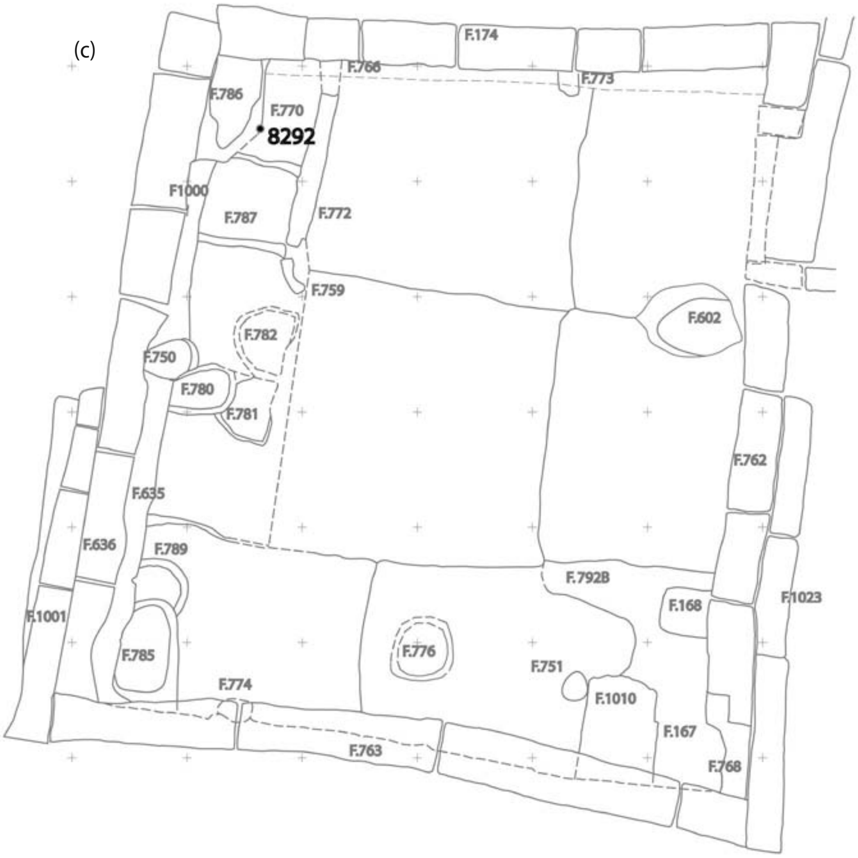
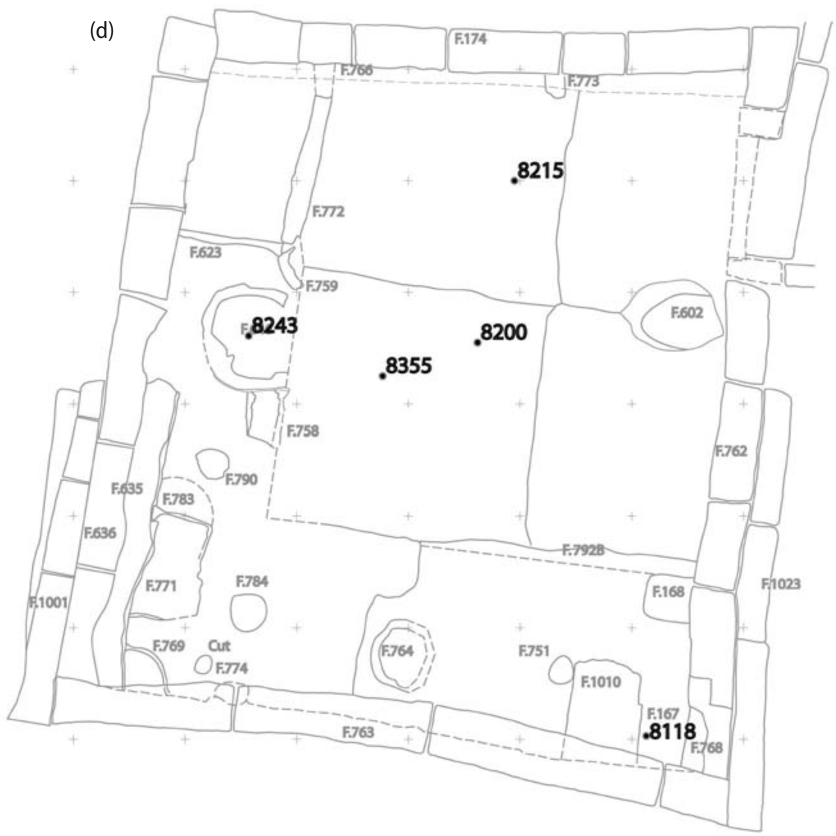


Figure 17.1 (*continued*). Building 3 phases with figurine locations. (c) Phase B3.1D; (d) Phase B3.2.



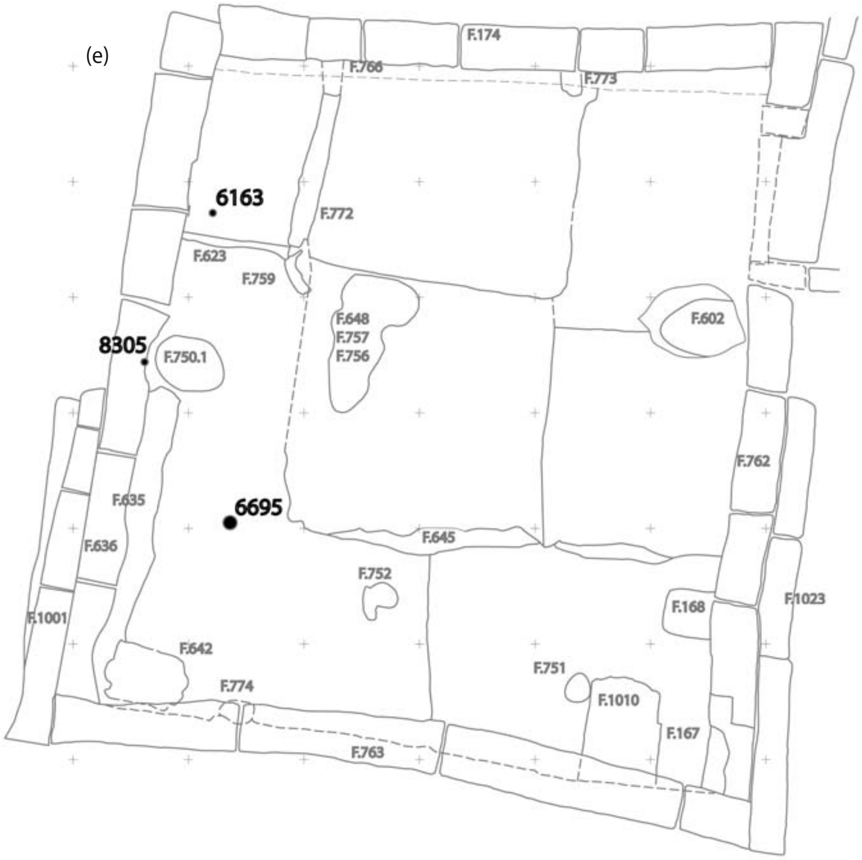
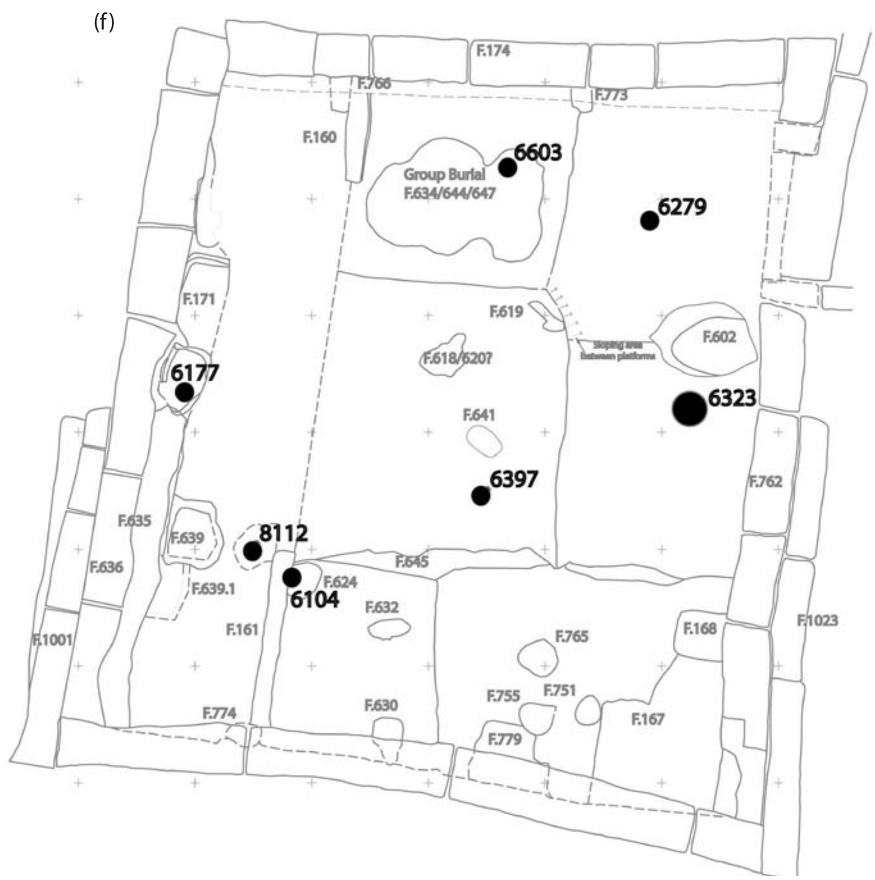


Figure 17.1 (*continued*). Building 3 phases with figurine locations.
(e) Phase B3.3; (f) Phase B3.4A.



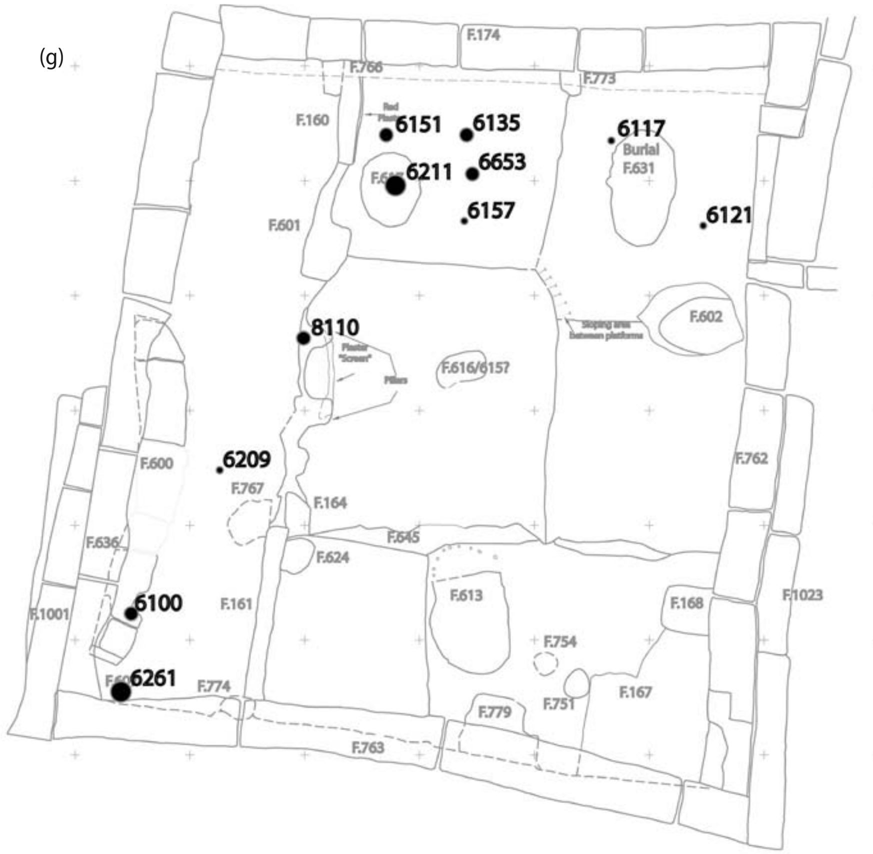
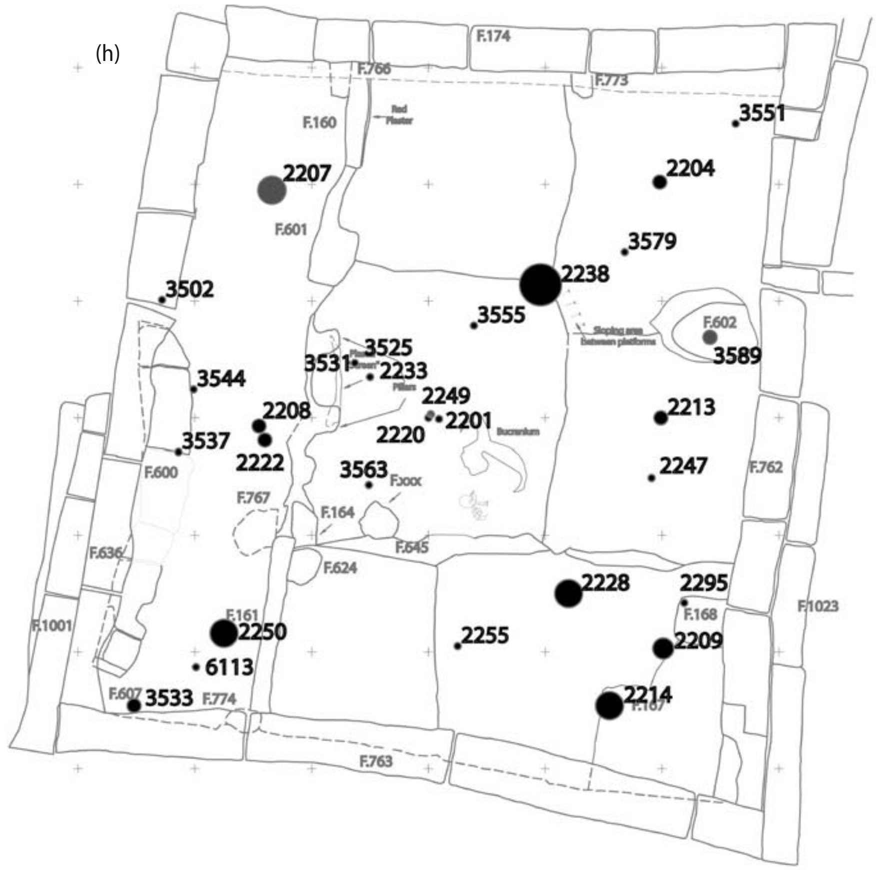


Figure 17.1 (*continued*). Building 3 phases with figurine locations.
(g) Phase B3.4B; (h) Phase B3.5.



figurines concentrate in the north-central platform (F.162) and its associated burial, as well as in the northeast platform (F.173) and fill and the make-up of features in the western part of the building. Finally, in Phase B3.5A, figurines are found in numbers greater than all the previous phases combined and seemingly throughout the building.

These changes in figurine deposition over time may roughly correlate with activity areas. In Phase B3.1, all the storage and cooking facilities were located on the west wall, and the kitchen area was in the south (Chapter 5). In Phase B3.4, a partition was introduced separating the western space from the main space, and there was an increase in diverse forms of activities in the central area (Chapter 5). Perhaps most evocative is the stunning increase in figurine numbers associated with the final phase of closure and abandonment of the building.

Again, while it is tempting to try to argue for some kind of correlation between building closure and figurine occurrence, there is little substantive evidence to flesh out such an interpretation. As noted in previous chapters, the northern and southern parts of the building underwent different "closure" procedures; Stevanović states that the northern/clean area was blocked by roof collapse, whereas the southern/dirty area was filled with building and midden materials (Chapter 5). However, there does not seem to be a significant difference between the northern and southern parts of the building in terms of figurine numbers during this final occupation phase.

In terms of trying to correlate figurines with specific building events or features, there are again some suggestive but ultimately inconclusive associations. Six figurine fragments were associated with roof collapse (unit 2238), and four were from floor occupation (units 3566, 3579, 6163, 8481). Hodder (personal communication) has suggested that the figurines associated with the roof may in fact have been on the roof at the time of collapse. However, these examples and those from primary contexts are few, and all are either very fragmentary or nondiagnostic pieces. It therefore seems imprudent to make too much of them.

Only five complete figurines, all abbreviated forms, were found in Building 3: 2207.X2 and 2207.X6 (North-fill), 2229.D1 and 2229.H4 (North-midden), and 8446.H3 (South-middeny fill). Archaeologists such as John Chapman (2000) have made compelling arguments for the idea of fragmentation as being socially meaningful. It would be difficult to explore this idea here given the dearth of figurines from primary contexts. Although most of the Çatalhöyük figurines are indeed fragmentary, this condition most likely derives from their deposition in fill, midden, and construction matrix. The occurrence of intact figurines in these Building 3 units, then, is likely explained by the structural mechanics of the different figurine forms. Compared with the anthropomorphic and zoomorphic forms that often have small, extended appendages, the generally simple and sturdy abbreviated forms are relatively streamlined and more likely to remain intact in such contexts.

Space 85

This space was an open area to the west of Building 3 containing a large midden. The BACH team excavated a small segment of midden in order to expose the west walls of Building 3; therefore, these materials do not represent the entire midden deposit sequence. However, it is thought that this midden was used by the occupants of Building 3 and nearby buildings and can be considered as contemporary with Building 3 occupation. A relatively large number of figurines came from this space compared with other external/midden areas (Table 17.6).

The very high density of figurines in Space 85 is striking and supports the idea that some kind of intensified figurine production was associated with Building 3. However, this same result also suggests that such figurines were neither a specialized ritual form nor necessarily domestic

Table 17.6. Density of figurines in external spaces

Space	Mellaart's Levels	Total dry sieve volume (kL)	No. of figurines	Density
60	V–IV	6.88	39	5.67
85	VII–VI	1.84	54	29.40
106	VII	5.09	2	0.39
107/108	VII	0.74	3	4.08
115	VIII	38.48	66	1.72
117	IX	21.99	108	4.91
181	Pre-Level XII	34.29	84	2.45
226	V–III	14.78	15	1.02
227	IV–III	0.12	2	16.67
260	VI	1.44	4	2.78
261	VI	10.56	51	4.83
268	IV–II	3.19	11	3.45
279/280	V	30.12	159	5.28
306	V–IV	5.68	1	0.18

Table 17.7. Comparison of Building 3 and Space 85 assemblages by figurine type

Figurine Form	Building 3		Space 85-Midden	
	No. of figurines	% of total figurines	No. of figurines	% of total figurines
Abbreviated	23	16	10	19
Anthropomorphic	5	4	2	4
Zoomorphic	54	38	18	33
Geometric	3	2	1	2
Figural-unknown	2	1	0	0
Nondiagnostic	54	38	23	43
Totals	141		54	

in nature. Like other figurines across the site, they were highly disposable. The high density of figurines in middens seems to demonstrate that these were everyday objects associated with practices that circulated between different spaces and/or people. Furthermore, the similarity in the way figurine types were distributed in the Space 85 and Building 3 assemblages lends further support to the idea of clay figurines being rather mundane objects, both in circulation and ultimately in disposal (Table 17.7). There does not appear to be a certain type of figurine that is treated differently by the occupants of this building; rather, all types were found with equal frequency in buildings and in midden.

This picture clearly deviates from the traditional idea of figurine practice at Çatalhöyük espoused by James Mellaart (1967) and Maria Gimbutas (1989, 1991). If Building 3 did in fact locate some form of intensified figurine production and activity, then these practices clearly did not articulate any kind of reverent religious or ritual expression, especially those related to notions of a "mother goddess" or fertility.

Spaces 87, 88, and 89

These spaces make up three different rooms to the south of Building 3. While similar in size, they appear to have had rather different characters and functions (Chapter 5). To briefly summarize, Space 87 housed an inventory of a large house and was intensely plastered with painted walls. It contained a large platform in which several burials were interred. This space also demonstrated a similar correlation between roof collapse infill and "clean" space, and mixed deposit infill and "dirty" space as seen in Building 3 (Chapter 5). Rather differently, Space 88 appeared to contain a production area with storage features and production surfaces. Finally, excavators ascribed to Space 89 a more symbolic or decorative character, as no domestic or production features were located within it. The characterization of Space 89 was the most problematic, as there was no clear evidence for a typical house floor, and its most notable feature consisted of a contrast between relatively sterile room infill and a top layer of highly burned fill with a high density of finds.

Table 17.8. Figurines from Spaces 87, 88, and 89

	Space 87	Space 88	Space 89
No. of figurines	4	13.5	16.5
Total volume (kL)	0.97	8.44	72.50
Density (figurines/kL)	4.13	1.60	2.28

All the figurines from these spaces come from secondary deposition, and all but one from Space 89 are zoomorphic forms or nondiagnostic pieces. Space 87 has a figurine density closest to that of Building 3 (Table 17.8). However, all of the examples from this space are possible horn fragments, mostly from construction. Space 88 figurines are mostly nondiagnostic from fill, with only one quadruped fragment and three possible horn fragments. Space 89 produced the highest quantity of clear figurines, mostly from fill, with one complete quadruped (8432.X2), one partial quadruped, and five or six horn fragments. Given the secondary deposition and the relatively small numbers of figurines, it is difficult to suggest any further interpretation of the assemblages from these spaces.

Figurine Types (Appendix 17.1 [On-line])

Anthropomorphic Forms

Only two "human" forms came from the BACH Area: 6260.X1 and 8686.H1. Figurine 6260.X1 (Figure 17.2) is the head and bust of a human female. The entire back of the figure is very flat and is incised. The head appears triangular when viewed from above, and the face has incised eyes, ears, and mouth, while the nose and ears are modeled. The figure has large, forward-projecting breasts (the left breast is mostly missing) and stub arms/shoulders. The break at the waist is very eroded and smooth. In her notes, Naomi Hamilton noted a possible polish on the breasts, but this was difficult to see when we reexamined the figurine in July 2004, as the piece appears to be leaching some material. This figurine lacks contextual information, as it comes from an animal hole. Excavators surmise that most of the material from this unit comes from Space 89, or less likely from a burned layer underneath the platform (F.167).

Figurine 8686.H1 (Figure 17.3) is a complete, unsexed anthropomorphic figure. But the figurine also has traits that are suggestive of non-human or abbreviated forms. The small figure is triangular in shape, with a broad torso and protruding belly, but with no limbs, thus lending it an "abbreviated" appearance. The back is very flat and continues up to form the back of the head, which is also triangular. The top of the head is broad and marked by a thin ridge, which is divided down the middle by an incised mark. This aspect can make the figure appear as if it has large, animal-like ears. The face sports incised eyes and a modeled nose. This figurine comes from the top surface of a midden underneath Building 3. While we have interpreted this piece as being an anthropomorphic form, the depiction of selectively exaggerated features, such as the abdomen and nose, is similar to what we find among the abbreviated examples.

Zoomorphic Forms

The BACH Area also produced two complete quadruped figurines (2250.X2, 8432.X2). Figurine 2250.X2 possibly represents a goat, given the apparent depiction of a "bearded" chin; however, Naomi Hamilton interprets this feature as an effect of the animal's mouth being open (Figure 17.4). This figurine came out of room/platform fill and was found near an obsidian point fragment (2250.X1) and a decorated figurine or model fragment (2250.X3).

Figurine 8432.X2 has the more typical "cattle-like" appearance of figurine quadrupeds (Figure 17.5) and came from an arbitrary layer of fill in a small room south of Building 3 (Space 89). Previously, the project had been interested in interpreting the quadrupeds as specific animals; however, we are now wary of assuming that these figurines

Figure 17.2. Female anthropomorphic figurine (6260.X1).

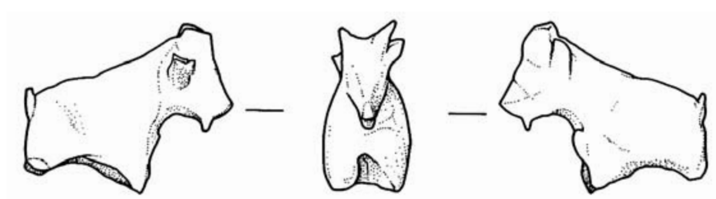


Figure 17.4. Quadruped (2250.X2).

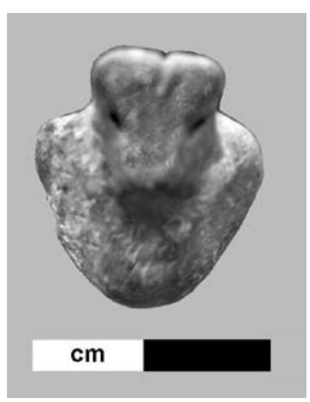


Figure 17.3. Unsexed anthropomorphic/hybrid figurine (8686.H1).

Figure 17.5. "Cattle-like" quadruped figurine (8432.X2).

were meant as naturalistic images of specific animal species. In fact, it is very difficult to specifically identify the quadruped figurines. Cattle are the most common and identifiable by the presence of curved horns (and ears). Boars are the second most identifiable quadrupeds, shown with a curved, ridged back, prominent tail, and delineated snout. Other varieties, such as sheep/goats, are present but more difficult to identify. Overall, most attention seems to be paid to horns and ears, and to a lesser degree, to snouts and tails. A few examples depict manes and navels. The bodies of quadruped figurines appear to be more generic, and there is no attempt to depict sex characteristics as there is in the wall paintings. In the wall art, the animal imagery shows details of sex and characteristic markings and features that make the figures clearly identifiable as boars, deer, cattle, or leopards. By contrast, the figurines are much more generalized, limited more to a three-dimensional outline of animal forms. It is possible that some of this difference arises from various factors such as speed of manufacture or whether the images were meant to invite visual vs. tactile engagement. For instance, the comparatively undetailed figurines were made quite rapidly, and their three-dimensional form suggests that tactility and handling were perhaps more salient than their visual specificity.

Most of the horn fragments found in the BACH Area were of the curved variety (Figure 17.6). One somewhat unusual example is 2209.H2, which has the appearance of a boar's tusk given its small, curved but relatively flat shape (Figure 17.7). It is often difficult to determine if these horns were once attached to figurines depicting quadrupeds and bucrania (Figure 17.8) or were made as complete horns. We have found examples of all three types at Çatalhöyük.

Figure 17.6. Curved animal horn (6672.H1), typical of many found at Çatalhöyük.

Figure 17.7. Curved animal horn/tusk (2209.H2).

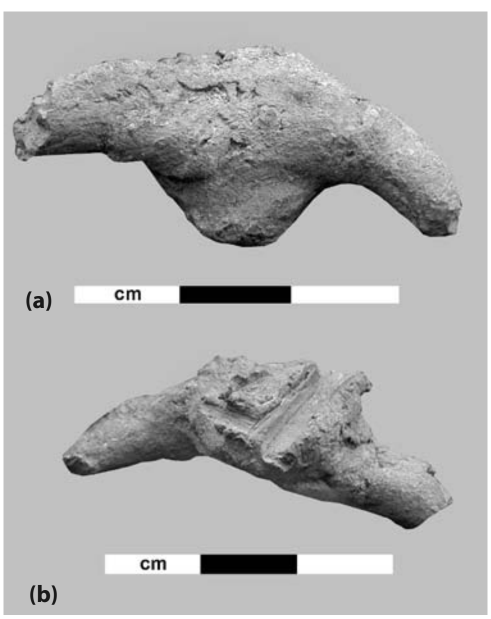


Figure 17.8. Bucranium figurine (3502.X1): (a): top view; (b): view of bottom showing gouge marks.

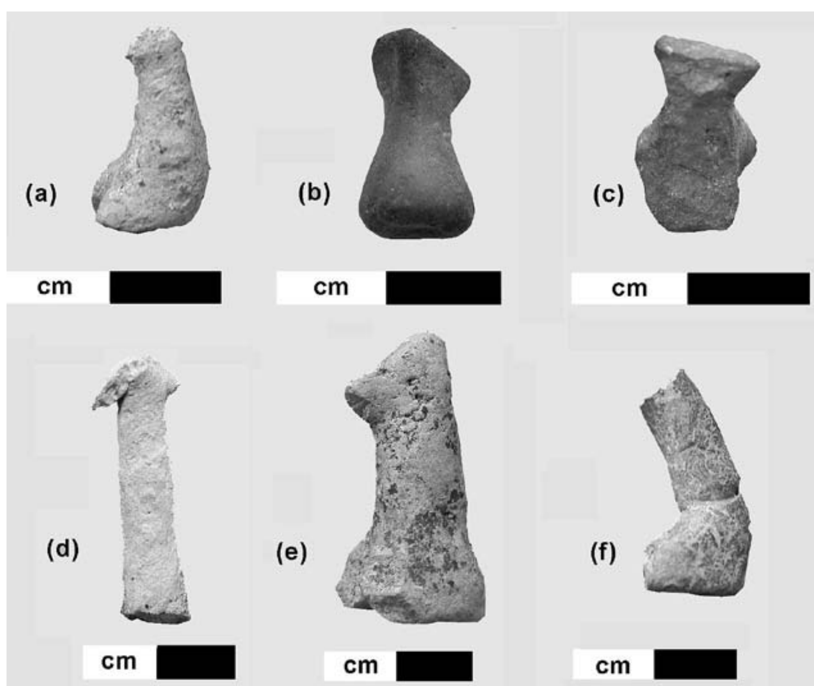


Figure 17.9. Figurines of abbreviated forms: (a) 8652.H1; (b) 8359.H1; (c) 8215.H1; (d) 6666.H1; (e) 8624.X1; (f) 8699.H7.

Abbreviated Forms

Like the greater figurine corpus of Çatalhöyük, the abbreviated figurines from the BACH Area show a diverse range of examples (Figure 17.9). Prior to 2006, we had considered abbreviated forms as a subset of anthropomorphic figurines; however, given their representational grammar, which exaggerates traits that are generally common to both humans and animals, we now consider them as a separate form, on a level with anthropomorphic and zoomorphic forms (Nakamura and Meskell 2006). It is important to note, however, that from the outset we have emphasized that such designations should be regarded as broadly descriptive indicators rather than as categories in a rigid typology, since the diversity of the figurine corpus encompasses many intermediary forms that fall in between these groupings (Nakamura and Meskell 2004). For instance, BACH figurine 3552.H3 (Figure 17.10) is an indeterminate form that is reminiscent of some abbreviated figures and of Mellaart's "schematic" human figures (Mellaart 1964:Figure 30a, b; 1967:Figure 72).

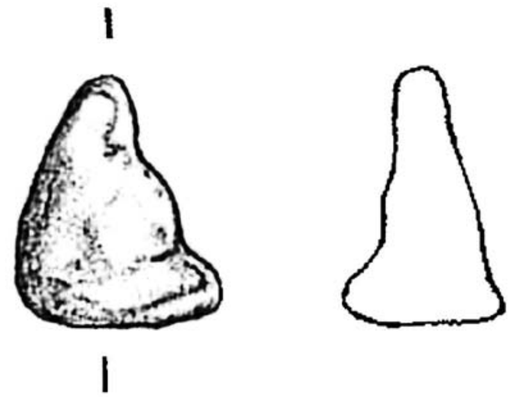


Figure 17.10. Indeterminate figurine (3552.H3) from the BACH Area (drawing by John Swogger 1999).

ONGOING WORK

The BACH excavations present a unique opportunity to look at figurine practices throughout the life cycle of a single building. In the future, we plan to carry out more fine-grained spatial analyses of the figurines, which might detect patterning not currently apparent. We will also continue to consider the extensive range of possibilities for figurines inherent in their specific materiality. As material objects, given their particular size and form, figurines can be *present* in many ways: they can travel, be hidden or lost, or be proxies for other beings. Virtually anyone can make the clay pieces (and possibly even the stone examples) with a minimal amount of practice. Their size invites an experience of mastery that we have explored elsewhere and in previous reports (Nakamura 2005; Nakamura and Meskell 2004). We need to acknowledge the persistence of objects, and the way the makers of objects may take advantage of this property for particular agendas and practices.

Figurine practice should also be considered in terms of related practices, such as wall paintings and plastered room features (bucrania), and other clay industries. It is likely that different figurine types were embedded in different kinds of practices. As noted above, we find similar animal representations in both figurines and wall paintings, but the two-dimensional paintings rely on a more elaborate detailing of markings, of sex and species traits, to communicate different types (cattle, boar, leopards) and even species of animals (vultures, cranes)—traits that are absent among the figurines. This distinction may suggest that the wall paintings and figurines engaged people and things in different ways. Creating a figurine would have brought the maker into an immediate physical relationship with the object, an object that may not have been viewed or handled by anyone else. Figurines invite a visceral, intimate bodily connection. In contrast, wall paintings impose an experience of distance; their presentation enables a large group of people to engage the same painting simultaneously. In the future. our research will continue to explore figurine work as an activity enmeshed within various processes rather than as end products. We will also continue working with the excavators and other specialists to rethink the manufacture, circulation, and uses of figurines at the site.

ACKNOWLEDGMENTS

I would like to thank Lynn Meskell, Mirjana Stevanović, and Ruth Tringham for their help in preparing the text, and Laura Steele for creating the distribution plans.

Chapter 18

Analysis of Clay Ball Materials from the BACH Area

Sonya Atalay

This report presents the data from, and analysis of, all the clay balls, objects, and mini balls for all BACH Area units, including Building 3, Spaces 88, and 89 (see Figure 4.1). An introduction to the clay ball materials from other areas of the site and discussions of the use and symbolic meanings of ball materials have been published elsewhere (Atalay 2003, 2005; Atalay and Hastorf 2005, 2006).

The majority of the material from the BACH Area was recorded at the Phase 1 level of analysis, including count and weight data (Appendix 18.1 [on-line]). A subset of the BACH Area material was recorded in more detail, at the Phase 2 level of analysis, including the examination of the full attributes of each piece from the entire unit. This subset of material was chosen for further study in part by cross-referencing the list of studied material from the faunal, botanical, and lithics teams. Additionally, there were several units that appeared more rich or interesting in terms of their clay ball content, and these were also part of the Phase 2 analysis. In Appendix 18.1, units that were studied at the Phase 2 level of analysis have been marked as such.

General Notes on the BACH Area Clay Ball Material

Of the over 1,100 units excavated in the BACH Area, 162 units had clay ball material (clay balls, geometric objects, or mini balls). Figures 18.1 and 18.2 illustrate the total number of pieces and total weight for each clay ball material type. As discussed below, a unique mini-ball feature (F.758) was found in the BACH Area which contained nearly 800 mini-ball pieces (see Figure 5.43; Chapter 5). The counts and weights of ball materials from this feature are not included in Figures 18.1 or 18.2, since the presence of this one feature shifts the overall picture of clay ball types within BACH Building 3 dramatically. Figures 18.3 and 18.4 do include the count and weight data for F.758. Since the mini balls weigh so little (typically 1 g or less), the inclusion of F.758 has a much greater effect on the count data than on the weight data.

Without considering F.758, the BACH Area had a larger percentage of clay balls than mini balls and geometric objects—a situation similar to that of other areas of the site. The mini balls are smaller and less dense than the clay balls and geometric objects, which explains why they make up a smaller percentage of the data set by weight (only 2 percent). However, a comparison of the overall percentages of the balls, objects, and minis by count shows that the balls not only have a higher total mass but are also more numerous than the mini balls and geometric objects. Balls make up 77 percent of the total assemblage by count. This same pattern is true for other areas on-site, where in every other building excavated, clay balls consistently outnumber mini balls. When F.758 is included in these calculations, the BACH Area stands out from other areas on the site in that the count of mini balls is actually larger than the balls and objects (Figure 18.4).

The BACH Area mini balls outnumber clay objects by more than 50 percent (Figure 18.1). While there are only 57 (7 percent) geometric objects from the entire BACH assemblage, there are 129 (16 percent) mini-ball pieces. Of course, this contrast is even more apparent when the 785 mini-ball pieces from F.758 are considered, bringing the mini-ball percentage to 57 percent, while the objects make up only 4 percent of the total assemblage. One might think that this large mini-ball count is related to the fragile fabric of the mini balls and can be attributed to differential breakage (creating more pieces and thus increasing the count). However, this is not at all the case, since the majority of the mini balls found are whole and not fragmented at all. In fact, the high amount of fragmentation of the geometric objects might contribute to a higher number of objects,

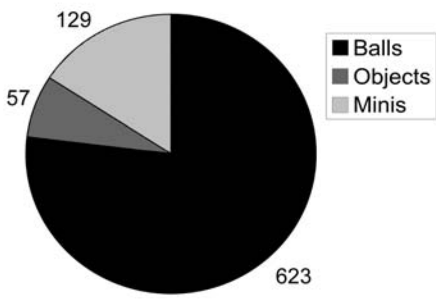


Figure 18.1. Clay ball materials by count, excluding mini balls from F. 758.

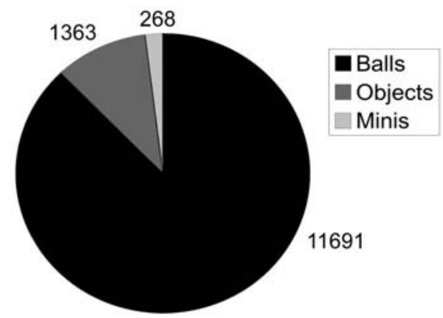


Figure 18.2. Clay ball materials by weight, excluding mini balls from F. 758.

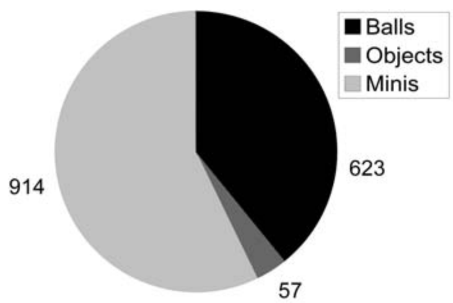


Figure 18.3. Clay balls by count, including mini balls from F. 758.

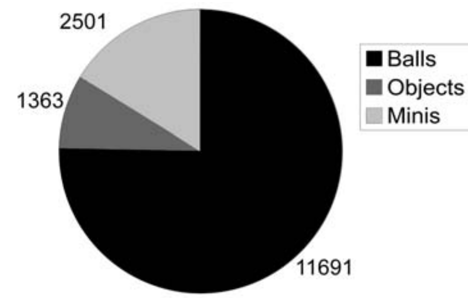


Figure 18.4. Clay balls by weight, including mini balls from F. 758.

falsely inflating the difference between objects and mini balls.

Comparison of Building 3 with Other Buildings

Although the clay balls constitute a large percentage of the Building 3 assemblage, when compared with the buildings from the SOUTH Area, the clay ball counts for the BACH Area are quite low. A direct density comparison of Building 3 clay ball materials with those from other areas of the site is not possible due to the incomplete nature of the data sets analyzed from other buildings (analysis of a limited sample of units from the SOUTH, KOPAL, and NORTH Areas, vs. data for all BACH units). However, having recorded a representative sample of material from the SOUTH and KOPAL Areas, it is clear that the amount of clay ball materials from the BACH Area is much lower than from buildings of comparable size in the SOUTH, or in off-site locations in the KOPAL Area.

The BACH Area is not alone in having a low amount of clay ball materials. The amount of material found in the BACH Area closely resembles that found in neighboring Buildings 1 and 5 (NORTH Area). Similarly, both the BACH and NORTH Areas have a larger percentage of total mini balls than geometric objects (by count).

Attributes of Clay Ball Materials from Building 3

In terms of attributes, Building 3 clay balls, minis, and geometric objects are similar to materials found elsewhere onsite in nearly all respects. However, there is a clear distinction between the BACH materials and those from other areas on the site in terms of ball and object fragmentation. The number of whole (unbroken) and three-quarter-size clay balls is much lower in the BACH Area than in the SOUTH and KOPAL Areas. This trend is also evident in the NORTH material, which also has only a very small number of whole clay balls. While the low number of whole balls is predominantly a reflection of the lack of in situ clay ball features found in the BACH Area, this does not entirely explain the fragmentation pattern of these materials. Nearly every building excavated in the SOUTH Area had a large number of whole balls found in room fill, packing, and leveling units. However, in the BACH Area, only two whole balls were found (in units 8142 [room fill] and 8292 [floor packing]) and no three-quarter-size balls. Additionally, the only clay objects found in the BACH Area were fragments smaller than one-quarter of the complete form. In comparison with the material recovered from each of four buildings in the SOUTH Area, there are at least 50 percent more *whole* clay balls recorded in fill and packing contexts of the latter than in the BACH Area (in some cases, there are as many as 20 whole balls from room fill contexts).

Feature 758: The Mini-Ball Basin

Prior to the 2001 season, all clay ball materials in Building 3 were in secondary or tertiary contexts. The majority of balls, minis, and objects were primarily fragments found in room fill or packing contexts. This pattern resembles that of the ball materials found in the NORTH Area, but is in direct contrast to balls and objects found in the SOUTH Area. In the SOUTH Area, the majority of buildings assigned to Mellaart's Level VII and below had at least one feature with clay balls found in large or moderate numbers in primary-use contexts (e.g., whole balls and clay objects filling bins or lining oven bases).

Feature 758, found in Building 3, Space 86, excavated in the BACH Area in 2001, was not only the first primary-context clay ball feature in Building 3, but it was also the only mini-ball feature found on the entire site. The feature is made of a fine white plaster base that abuts the southern edge of a horseshoe-shaped oven (Figures 18.5, 18.6; see also Figures 5.43, 5.44). The white plaster forms a rectangular shape that was filled with mini clay balls and then covered with a similar white plaster superstructure. The plaster shape of this feature might best be called a "basin" or "tray." The mini balls were placed in the basin while the plaster of the basin's base was still wet. This is apparent from the rounded indentations the mini balls made in the still-wet plaster (see Figure 5.44). Some of the balls themselves were not sun baked or fired prior to their placement in the basin, as they had been clearly deformed to the shape of the balls and basin around them. There were 727 mini balls (2,070 g) in the fill of the basin (unit 8164) and another 58 mini balls (163 g) adhering to the white plaster superstructure covering the basin (unit 8100) when it was first exposed—bringing the total number of mini balls for this feature to 785 pieces (2,233 g), all whole. Although the mini balls in this feature were unbroken when initially uncovered, their lack of firing makes them quite fragile, and several were fractured during excavation.

The mini balls in Feature 758 were all made from a very similar clay matrix and were likely all manufactured at once. None were fired, and most do not show evidence of having been sun-dried. The balls in situ were surrounded with a fine plaster-like matrix that was likely poured into the basin after the balls were in place. The uneven texture and lack of smooth surface coherence on the mini balls was unlike the usual surface found on mini balls elsewhere in Building 3 or other areas of the site. The surface texture of the mini balls is strong evidence that the clay from which they were formed was still wet when the balls were placed in the basin. The clay matrix of these mini balls is similar to that of other mini balls found on-site and is lacking any macro (visible) organic or mineral inclusions. The balls

Figure 18.5. Mini-ball "basin" (F.758) next to oven (F.646), with Sonya Atalay lifting the balls.

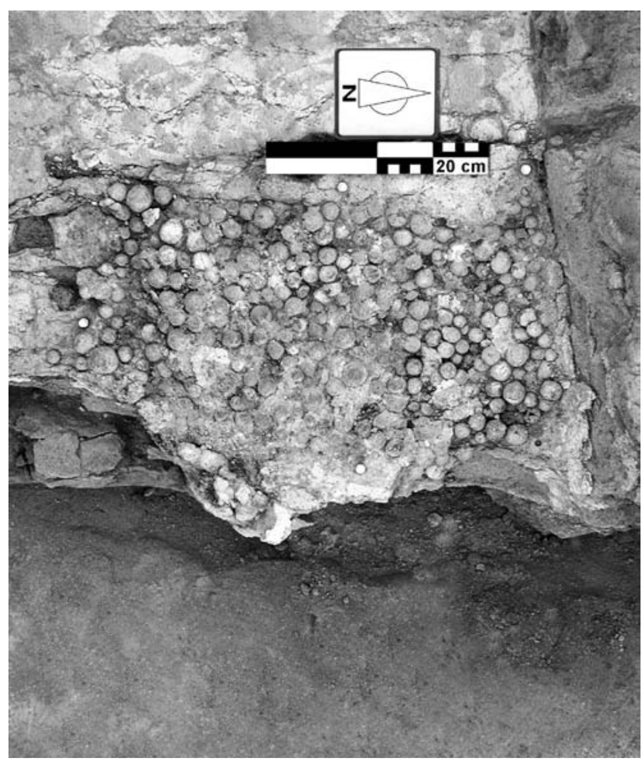


Figure 18.6. Closeup of mini-ball basin (F.758) abutting oven.

were also examined using a 10× hand lens, revealing a very fine clay matrix with no visible organic or mineral inclusions. The surface of many of these balls is moderately rough due to flaking and the adherence of plaster matrix to the surface of most balls, likely the result of having been placed in the basin while still wet and surrounded and enclosed by wet plaster. The diameter range for the balls is 0.9–2.8 cm, and most are spherical although not perfectly rounded. They seem to have been quickly formed and then placed directly into the basin.

Although this basin was built to abut the oven (F.646) to the north of it, the balls it contained do not seem to have been heat affected. There was some slight discoloration of the plaster basin's base and edges nearest to the oven, but the mini balls themselves do not appear to have been indirectly fired by the oven's radiant heat. The mini balls in the northernmost section of the basin (nearest to the oven) are similar in hardness, color, and texture to those in the south of the basin. Relying on this evidence, I feel this feature was not functionally related to the oven (that is, it was not used for cooking or warming food). However, it is quite possible, and I believe likely, that for those who built the fine plaster basin, filled it with nearly 800 clay balls, and then quickly covered it, this feature held a great deal of symbolic meaning and may have been strongly associated with the oven.

My interpretation of this basin feature is that its importance was related to the social aspects of the house and the symbolic association of oven with home and household. I believe it was built near the hearth in order to be associated with the "center" of the household. The hearth may have represented not only a place to prepare and cook food and to warm the building, but also a central focus of the inhabitants' family life and well-being. If this was the case, then things placed (buried) near the hearth may have also been associated with the symbolic center of the household and might have also enjoyed its protection. In this view, the mini balls could have represented many things: memories of people, days, feasts, grain gathered and stored. Whatever these mini balls represented, placing a ball in this basin near the hearth may have been a way to also keep those people, materials, or memories safe and symbolically "home" near the hearth. Conversely, these mini clay balls might have represented something from the community outside being brought into the hearth area in an additive way, providing the "household" members themselves some benefit in a communal symbolic act of "warming"—perhaps an act we might conceive of as a form of "housewarming."

While I cannot be certain about the exact meaning these mini balls had before they went into the ground, it is certain that they were not intended to be seen on a daily basis and were sealed quickly with a plaster superstructure or lid. Additionally, the mini balls did not receive enough heat from the hearth to become baked or fire hardened. This indicates that F.758 was never warm enough to have been used in cooking, and its functionality as a food-warming device seems extremely limited and unlikely.

Other Notable Clay Ball Contexts in Building 3

There are several other notable clay ball contexts in Building 3. In the post-occupation fill (unit 2249) south of a Roman burial pit (F.154) and east of the plaster of the screen wall (F.155), there were 14 mini balls and 2 clay ball fragments. While these were not associated with the burial itself, it is notable that a cluster of mini balls was found above the burial pit floor, since perhaps the mini cluster was originally in primary context before disturbance by the digging of the burial pit. The 14 mini balls range in color from light gray to light orange, with diameters of 0.8 to 1.5 cm.

The clay ball materials from the infill of storage bin F.770 (8292) (see Figure 5.23b) are also interesting because each had an elaboration. The unit contained one whole mini ball that was pierced and a whole clay ball that had two deep finger-impressions that looked to have been used as a location for holding the ball. The whole ball (8292.X3) has a diameter of 6.4 cm and weighs 239 g; and the mini ball (8292.X1) is 1.5 cm in diameter and weighs 2 g. These materials are notable because there were no others found with such elaboration in Building 3 and few similar to these across the site as a whole. Adding to this is the fact that these two were found together in the context of a redeposited oven. This redeposited oven context, with the presence of a highly elaborated whole clay ball and whole mini ball, indicates that both the clay balls and mini balls held some sort of symbolic and/or functional association with ovens. In the original analysis of these objects, I also noted the special nature of this clay ball and mini ball and the possibility of their being intentionally placed in the bin-like feature:

> These two balls are very interesting in that they look identical, even though one is a mini and the other a whole clay ball. They have a similar plaster or salt residue on them and both have a flat area from what looks like finger holding areas. It is rare to find a whole ball in a BACH context, so that makes this unit even more interesting. It seems that these items may have been intentionally placed in the bin, perhaps on a smaller scale, as what was found in Bin unit 1889, since there were also some articulated faunal pieces. Perhaps as the Faunal Team has postulated, these were related to the oven feature from unit 8251, which also had interesting "special" pieces, for ball and for faunal. The mini has a hole through it, maybe a bead.

It is also fired—very unusual for a mini. (Sonya Atalay, personal communication [diary], 2001)

This association of clay balls with the oven feature makes sense, since clay balls were used in earlier levels for cooking in baskets (as stone boilers) and, after breaking, were sometimes used to line the base of ovens, likely to increase the heat retention of the oven while retaining their symbolic associations as transformers of foodstuffs to culturally acceptable and edible meals. Although not the common practice in later levels (post-Mellaart Level VII contexts) (Atalay 2003, 2005), there is one example of a similar practice in Building 3 (oven F.1011, unit 8565) in which several stones and fragmented clay balls were found in the packing below the oven floor. Furthermore, as described in detail above for F.758, there appears to have been a strong association in this building (Building 3) for mini balls with the oven. Thus, the presence of this mini ball and clay ball in unit 8565, along with what appear to be remains of a redeposited oven, is intriguing; and it may represent a form of "foundation deposit" of sorts.

Interestingly, there were also several other occurrences in Building 3 of mini balls found on or under floors or packing deposits—perhaps serving as a "foundation deposit" (see section "Foundation Deposits and Commemorative Deposits" in Chapter 4). In Phase B3.1A of Building 3, 45 whole mini balls, 29 of which were together in a cluster (Figure 18.7), were found in the packing under the floor (8468) (see also Chapter 5). Under the same floor, two bifacial obsidian points in an ashy matrix and numerous pig bones (an uncommon faunal occurrence at Çatalhöyük) were deposited. The packing also contained oven wall fragments. In a later phase of Building 3 (Phase B3.1B), in the packing beneath the floor of the northeast section of the "kitchen" area (unit 8466) was a cluster of seven whole mini balls, all similar in shape and color. In the same deposit were phytoliths and red ocher. The layer of floor and packing below unit 8466, which comprised the earliest phase of the "kitchen area" (unit 8491), also contained several clay balls.

Figure 18.7. Cluster of 29 mini clay balls found in the packing under the platform (F.167) in the southeast corner of Building 3.

In addition to these contexts of mini balls below floors, there were also several contexts in Building 3 of mini balls found below walls, in what may also have been foundation deposits—for example, units 8679 and 8670 under the east wall of Building 3. The numerous examples of mini balls found below floors and walls in Building 3 are interesting, particularly in light of the unique mini-ball feature (F.758) that was found in the building. The only other case of a clay ball in a type of foundation deposit was in Building 5 of the NORTH Area, covered with packing and on the floor against the wall (F.227). However, the ball of this deposit (3810.X3) was a whole clay ball (not a mini-ball cluster), and it had been placed in the center of sheep horn-cores with attached frontlet (3810.X2) (Cessford 2007b).

Conclusion

The clay balls in Building 3 present a contrast to those found in the later levels of the SOUTH Area but are much more similar to the situation in the NORTH Area (Buildings 1 and 5) in terms of the types of ball materials found, their quantity, and density (count and weight). However, although the clay ball materials from Building 3 are similar in many ways to those from the NORTH Area, they differ in one dramatic way—the contexts in which they were found. Unlike in the NORTH Area, Building 3 had the unique mini ball Feature 758 which contained nearly 800 freshly made and quickly deposited and covered mini balls. In addition, there were also numerous cases of mini-ball clusters found in the building, all of which were associated in some way with an oven (redeposited or otherwise), in the kitchen ("dirty") area, or beneath the buildings' walls. This situation provides useful information about the possible use and meaning of the mini balls in a way that no other building or area on-site has. Yet it also raises more questions about the role of the mini balls: Did the mini balls have some sort of special significance for the inhabitants of this building? Why were they used particularly for foundation deposits? What does this tells us about the changing role of mini balls in daily life and how their uses and meanings changed through time and in different houses at Çatalhöyük? These are all interesting questions that analysis of further buildings in lower and upper levels may help to answer. For now, the situation of mini-ball function and symbolism in Building 3 remains unclear, although very intriguing.

Chapter 19

The Flaked Stone Assemblage from the BACH Area

Tristan Carter and Heidi Mariendahl Underbjerg[1]

The BACH Assemblage in General

The BACH Area excavations generated 24,950 pieces of obsidian and flint from 809 units. In each occupation phase, the assemblage was dominated by obsidian (98.9 percent), primarily in the form of non-cortical blanks (Table 19.1).

The entire assemblage was recorded in our Phase 1 mode of analysis—documenting the count, weight, and raw material (obsidian or flint) of all material by unit and by mode of recovery (dry sieve, heavy residue, X-find). A subsample of this material—including all units from 1997 to 2003—was then studied at our Phase 2 analysis, each artifact being described individually, recording metrical data, raw material, debitage type, cortical cover, dorsal scar pattern, number of scars, distal end type, macroscopic traces of use-wear and all forms of retouch. Some 2,249 pieces were accorded this level of analysis. Finally, 42 pieces of obsidian were selected for a characterization study using EDXRF at UC Berkeley. This study has been published in full elsewhere (Carter and Shackley 2007:443); a précis of these results and an updated discussion appears at the end of this chapter.

The Chipped Stone Industries Represented in the BACH Area Assemblages

The BACH Area chipped stone assemblage is complex, embodying a range of different raw materials and knapping technologies. In terms of raw materials, our Phase 1 analysis simply made a generic distinction between obsidian and flint, categories that each embody a wide range of different source materials. Characterization studies at Çatalhöyük have demonstrated clearly that throughout the Neolithic, there was more than one obsidian source being exploited by the community. In keeping with other Neolithic settlements in central Anatolia, the vast majority came from the two major sources of southern Cappadocia, East Göllü Dağ and Nenezi Dağ (Carter et al. 2005, 2006) (Figure 19.1). These raw materials are both represented in the BACH assemblage, albeit in different proportions and consumed in quite distinct manners (Carter and Shackley 2007). The differential use of these obsidians is something we witness throughout the Neolithic at Çatalhöyük, and as we shall demonstrate below, it is never as simple as East Göllü Dağ technology A, Nenezi Dağ technology B. It is also clear that while most of the obsidian artifacts from the BACH Area were produced on-site (some within Building 3 itself and its immediate environs), there was also a handful of more specialized products for which we found no associated manufacturing debris. It is suggested that these artifacts, usually in the form of technically well-made larger blades, derive from more exclusive modes of production, either performed elsewhere on-site or perhaps more likely procured as ready-made implements from source-based specialist workshops (cf. Balkan-Atlı and Binder 2001b). The evidence for parallel *chaînes opératoires* is a recurrent feature of Çatalhöyük's obsidian assemblages; the nature of production and tool types may change through time, but technological variability is a constant throughout the history of the site.

The flint—or the non-obsidian chipped stone component—appears to comprise a larger range of different raw materials based on their variant colors and textures, and, as with the obsidian, demonstrates various different reduction

[1] This chapter and its research was originally written by Heidi Underbjerg. Tristan Carter, as leader of the lithics team of the Çatalhöyük Research Project and specialist in obsidian sourcing, then added materials, based on a survey of a subsample of the material and ensuring the comparability of the BACH sample with the other Neolithic assemblages at Çatalhöyük. All illustrations have been drawn by Heidi Underbjerg, except 8182.A1 drawn by Ana Spasojević-Bezić and 2210.X7–X9 drawn by Adrian Chadwick.

Table 19.1. Relative proportion of flint and obsidian from detailed study subsample

	Flint count	Flint %	Obsidian count	Obsidian %
Flake cores	6	0.4	62	4.2
Blade cores	2	0.1	28	1.8
Modified debitage	23	1.5	284	18.7
Debitage	33	2.2	1074	71.1
Total	64	4.2	1448	95.8

strategies (Doherty et al. in press). Unfortunately, the origin of these siliceous resources is much less clear. The massive east–west karstic range of the Taurus Mountains no doubt contains a number of chert sources, while radiolarites are known from the Antalya region. In addition, southeast Anatolia and the Levant are known as an area of good-quality flints and cherts that may have provided some of Çatalhöyük's raw materials and/or finished products (Bezić 2007; Borrell 2005; Mellaart 1967:213).

With regard to the techno-typological analysis of the BACH Area material, we follow—where pertinent and with (stated) modifications—the terminology and structure outlined for the analysis of the SOUTH and NORTH Area chipped stone assemblages from Çatalhöyük (Carter,

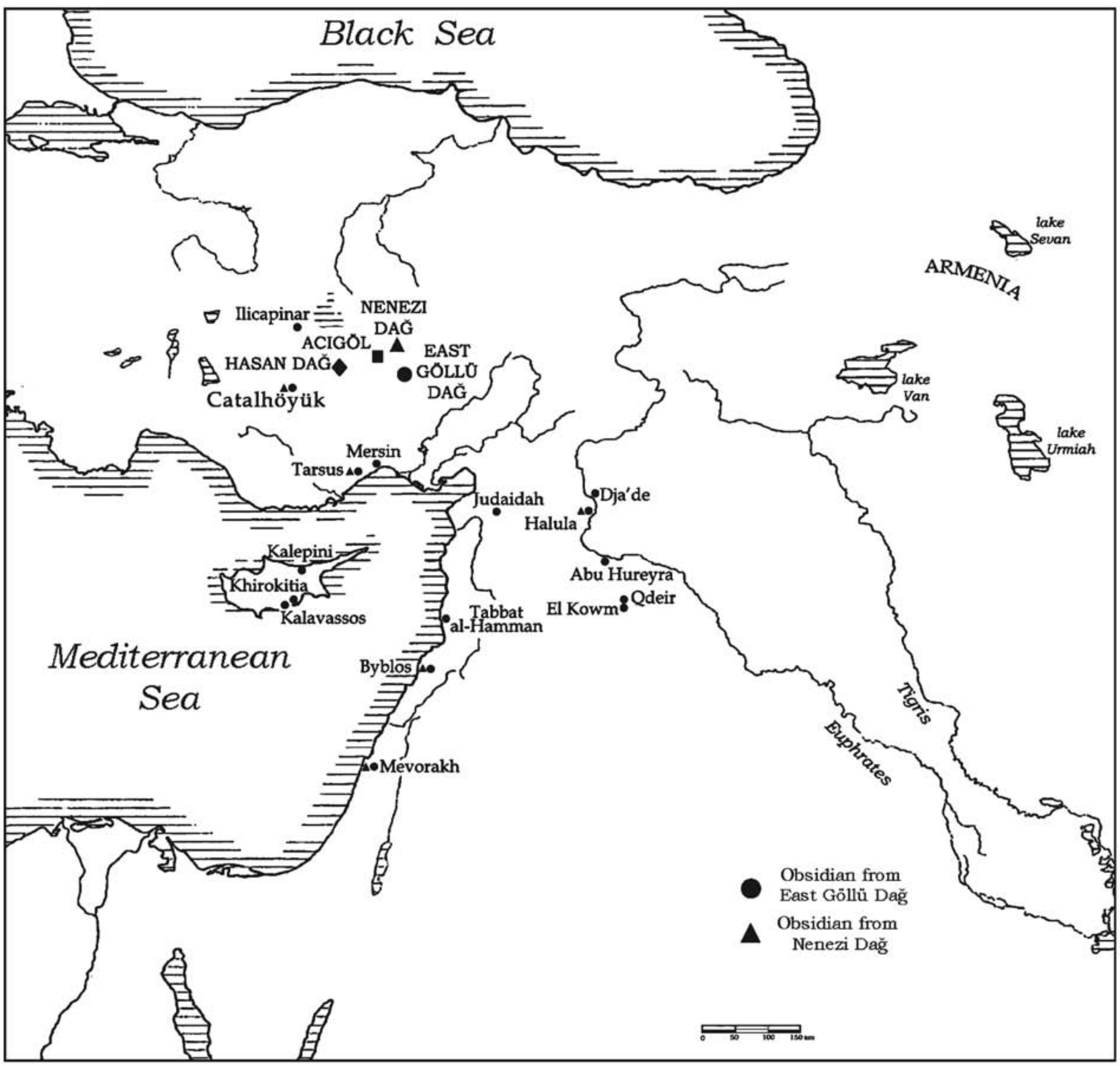


Figure 19.1. Map of the obsidian sources used during the Neolithic at Çatalhöyük.

Conolly, and Spasojević 2005)—namely, the documentation of a series of lithic "industries."

Obsidian Industry 1

Obsidian Industry 1 covers the production of small, irregular blades, blade-like flakes, and flakes produced from single-, opposed-, and multiple-platform cores by a relatively low-skilled percussion technique (6602.A1 [Figure 19.2a], 6233.X2). The nuclei were usually worked to the point of exhaustion (8200.A1 [Figure 19.2b], 6144.X1), their final form often being classifiable as a *pièce esquillée,* due (we think) to their final reduction by anvil technique (6304.A1). A small proportion of the blades and blade-like flakes were modified, with linear retouch, notches, and backing. The cores, along with preparation and rejuvenation pieces, were recovered from Phases B3.1 to B3.4B (e.g., from B3.1, 8349.X1 [Figure 19.4d]).

This locally performed knapping tradition was the primary mode of working obsidian at Çatalhöyük throughout its earlier history, from the Aceramic Neolithic up until approximately Mellaart's Level VI (Carter, Conolly, and Spasojević 2005). With regard to the organization of production, it appears to have been performed at the household level, documented in most of the buildings excavated in the SOUTH Area (Mellaart's Levels VII–X) during the 1990s, its knapping debris forming a recurrent component of these structures' artifact-rich "dirty floors" (Carter, Conolly, and Spasojević 2005:256). During this period, the community was primarily exploiting East Göllü Dağ obsidian, and it appears that this low-skilled inclusive technology had an almost exclusive relationship with this particular raw material. The dominance of this industry in the Building 3 assemblage helps us to relate the structure to the earlier part of the Early Ceramic Neolithic (ECN) sequence at Çatalhöyük, with analogous material from nearby Buildings 1, 48, 49, and 77 (from the NORTH and 4040 Areas).

Obsidian Industry 3

Obsidian Industry 3 was involved with the reduction of "special implements" (nonlocally manufactured projectiles and large scrapers), through a process analogous to "burination," by removing the edge of the tool, or flaking a dorsal or ventral surface. It is argued that the (re)use of these implements was associated more with ritual practices than with formalist notions of raw material maximization, perhaps relating to the killing of a symbolically potent item, specifically the hunting of animals and the processing of their skins (artifacts that also embodied nonlocal technical know-how). The BACH Area assemblage produced a few pieces that relate to this "tradition," not least from the fill of Space 89, which yielded an example of blade-like pieces removed from the surface of a point made of what appears to be East Göllü Dağ obsidian (8432.A3). A projectile of the same raw material had one of these blanks removed

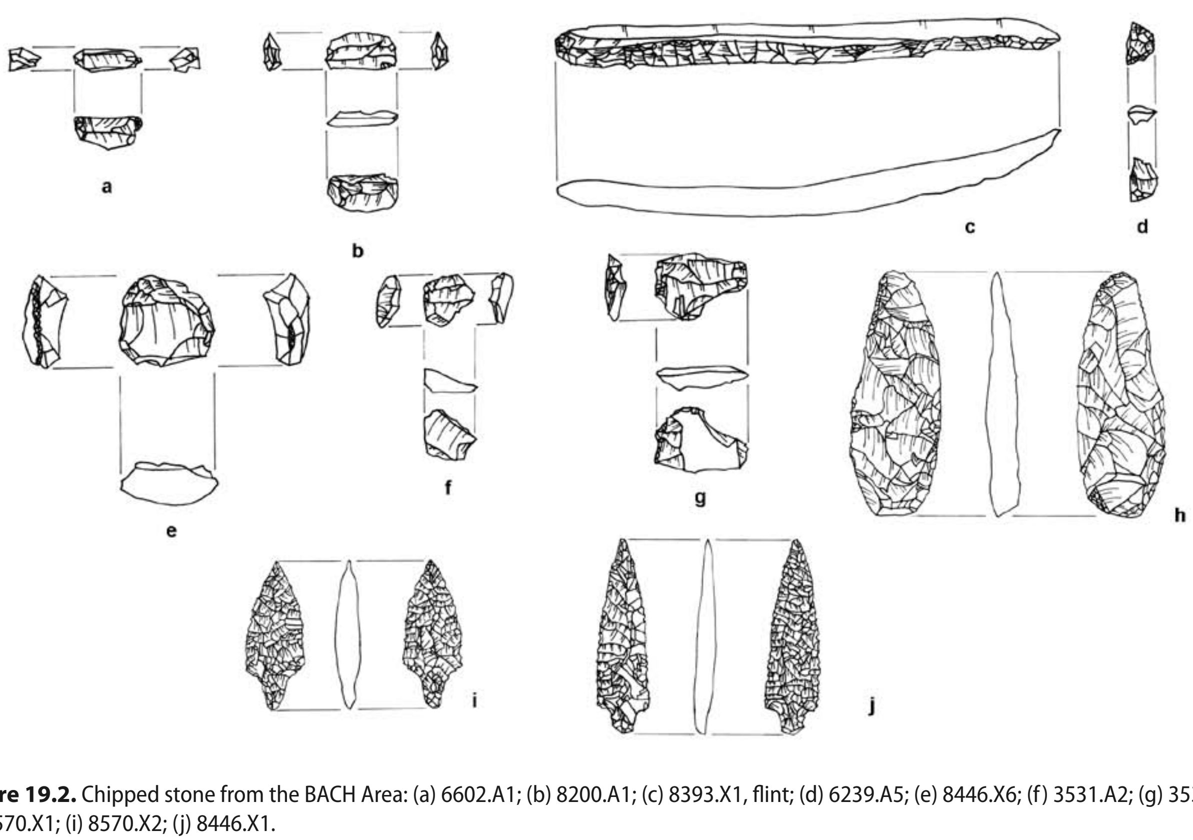


Figure 19.2. Chipped stone from the BACH Area: (a) 6602.A1; (b) 8200.A1; (c) 8393.X1, flint; (d) 6239.A5; (e) 8446.X6; (f) 3531.A2; (g) 3537.A2; (h) 8570.X1; (i) 8570.X2; (j) 8446.X1.

from its dorsal surface (8432.A6). In addition, the infill of Space 87 produced a very fine example—again made of the same obsidian (6247.X3). This mode of reduction does not appear to be raw material exclusive (something we note throughout the Neolithic sequence), since from a Space 201 midden there was a small point made of Nenezi Dağ obsidian that had a "burin" scar some 2.18 cm long down one margin (8589.A5).

Obsidian Industry 4

This industry involved an opposed-platform blade technology, the end-products being relatively large. Typically, artifacts from this tradition represent only a minority component of the BACH Area assemblage. Comparable products are known from Building 1, with a group of 12 blades from a hoard (Carter, Conolly, and Spasojević 2005:263–264, Figure 11.31c:1–12), which have been shown to be made of Nenezi Dağ obsidian (Carter et al. 2006:905). Throughout the Neolithic at Çatalhöyük, this technology is represented almost exclusively by its end-products, suggesting that the community was procuring the blades ready-made, conceivably from specialist quarry-based workshops (for which we have an Aceramic Neolithic precedent at Kaletepe on East Göllü Dağ (Balkan-Atlı and Binder 2001a, 2001b). These opposed-platform blades, specifically those with triangular cross sections, were primarily modified into projectiles.

The BACH Area assemblage contains a few products from this tradition, including a medial blade from a Phase B3.2 (packing) context (8389.A2) that appears to be made of Nenezi Dağ obsidian, while two fragmentary projectiles made from opposed-platform blades, apparently of East Göllü Dağ obsidian, were found in Space 88 (8615) and Space 201 (8612).

Obsidian Industry 5

Obsidian Industry 5 is our category for blanks relating to the manufacture of prismatic blades from unipolar cores. This "industry" is now acknowledged to be an inadequate means of describing the single-platform blade technologies of Çatalhöyük, as it subsumes a range of technologies (direct/indirect percussion and pressure) and their variants. Unipolar prismatic blades were recorded in every phase of the BACH Area occupation sequence; cores and other manufacturing debris, however, do not seem to be well represented (if at all), suggesting that the occupants of Building 3 may have been reliant on knappers from other buildings for access to these skilled products (cf. Conolly 1999b). Nevertheless, there is one distinctive rejuvenation piece in the form of a core-tablet (made of Nenezi Dağ obsidian), albeit from the Phase B3.5A infilling midden (2229.A7).

These blades, invariably broken, were recorded from contexts related to Phases B3.2 and B3.4A and from unphased midden (Space 85) and burial deposits. Having made a cursory examination of this material in 2007 and 2008, Carter believes that these blades were made exclusively from Nenezi Dağ obsidian. This is entirely in keeping with the results from our associated characterization study (Carter and Shackley 2007) and accords well with analyses of the material from nearby Buildings 1 and 5 (Carter et al. 2006) and of the spatially and temporally proximal assemblages from the 4040 Area. The regularity of many of these blades, with parallel margins, dorsal ridges, and even thickness through the body, together with their relatively small bulbs and small, plain or linear platforms, suggests that they were the product of pressure-flaking techniques (cf. Conolly 1999b). Examples of these blades were documented from various units, including a possible exhausted blade-core or thick reduced blade (8389.X2) and blade fragments from middens and other contexts in Space 85 (8253, 8629), Space 86 (2228.A4, 3543.X3, 6141.A1), Space 201 (8656, 8589.A3/A4, 6382.A6, 6334, 8603), Space 88 (8632), Space 89 (6167), and a topsoil unit (8623).

Obsidian Industry 7

During the first half of the Early Neolithic occupation at Çatalhöyük, East Göllü Dağ obsidian appears to have been brought to the site either in the form of large, thick, and often part-cortical flakes. Some of these flakes have quite heavy use-wear (large step-scars from percussive use, such as butchery), although we are not sure where they were actually used—at the quarries, en route to the site, or at Çatalhöyük itself. These "quarry flakes" tended to be recovered whole only in hoards (Carter 2007), as once retrieved from the ground they formed the raw material (cores) for the manufacture of the simple percussive blade-like flakes and flakes (our Obsidian Industry 1; see above).

The other type of artifact we included in Obsidian Industry 7 is the large biface preform, the other means by which East Göllü Dağ obsidian was brought to the site in the first half of the Early Neolithic, products we again tended to recover primarily from hoards (Carter 2007; Conolly 2003). Like the thick "quarry flakes," these have also been interpreted as a type of raw material to be transformed upon their retrieval from in-house caches, at which point they were thinned and shaped into fine, bifacially modified projectiles (Conolly 1999a:35–37). Some of the material associated with this industry (which we now acknowledge is a rather clumsy category) has been included in our characterization studies and has been sourced exclusively to East Göllü Dağ (Carter et al. 2005:295; Carter and Shackley 2007:11). Moreover, excavations at Sector M, Kaletepe-Kömürcü, have produced evidence for the manufacture of these biface preforms, providing us with the starting point in this sequence of events (Balkan-Atlı and

Binder 2001a:201; Cauvin and Balkan-Atlı 1996:257, Figure 7:1). We have good evidence for the reduction of both "quarry flakes" and biface preforms in Building 3, as indeed we have from most of the earlier Early Neolithic structures investigated at the site, with the debris from the working of our Obsidian Industry 7 blanks comprising the bulk of the material within their "dirty floor" deposits.

Typically, only a few complete bifaces were found in the BACH Area excavations. One example (8182.X1) came from a platform floor (F.169), arguably a closure deposit of some kind, made of East Göllü Dağ obsidian (with the blue-black tinge that one associates with Kaletepe-Kömürcü material) measuring 8.78 × 4.21 × 129 cm. Another biface of the same raw material came from what appears to have been a Phase B3.1A obsidian cache, measuring ca. 11.5 cm long (8570.X1 [Figure 19.2h]). A number of other contexts did produce fragmentary examples, including 6144.X1, 6211.X2 (measuring 4.13 cm long [Figure 19.12a]), 2212.A1/A2, 6239.A5, and 8388. In turn, there were numerous deposits that included quantities of thinning flakes related to the final stages of transforming these preforms (e.g., Phase B3.1's 8292.A1 [Figure 19.4c]), all appearing to be made of East Göllü Dağ obsidian (e.g., units 8312, 8354, 8629 [Space 85], and 8405 [Space 89]), while the Phase B3.1 obsidian hoard 8446 also contained an example (also recorded as a *pièce esquillée* [8446.X2]).

Flint Industry 3

This industry refers, as does Obsidian Industry 5, to the manufacture of prismatic blades from single-platform cores. Because of this overlap, we find this classificatory category problematic, likely subsuming the products of a number of different unipolar blade technologies. Indeed, while most of these blades are relatively narrow (under 1.5 cm wide), there are a couple that are significantly larger, specifically two glossed tan chert blades measuring 3.12 cm and 3.3 cm wide (from 2216 and 2268, respectively). The scale of these pieces is reminiscent of Canaanite blades, a type of product that one associates traditionally with the northern Levant and a technology (often related to the manufacture of sickle/threshing sledge elements) that is now known to have a heritage stretching back to the earlier Neolithic (Anderson et al. 2004).

We assigned one of the BACH Area's most important chert artifacts to this industry: a complete leaf-shaped dagger (with tang/haft) measuring 16.8 cm, made of a fine-grained, light brown chert from the upper levels of Space 89 (2210.X7–X9 [Figures 19.3, 19.20]).

A variety of raw materials are represented in this category, with different colored cherts plus a few pieces of red radiolarites. The lack of cores and other manufacturing debris suggests strongly that the blades were procured ready-made; this is typical of what we see throughout most of the Neolithic at Çatalhöyük. Most of the blades had parallel margins and dorsal ridges—that is, they derived from the *plein débitage* (true end-products). A notable exception is a complete blade with remnant cresting scars from the initial run of core reduction (8393.X1 [Figures 19.2c, 19.21]). Made of a fine-grained brown chert, the piece measures ca. 14 cm long and has a plain platform and a diffused bulb of percussion; the implement came from a small subfloor cut in the Phase B3.1 kitchen area, interpreted as the remains of a cache (see Figure 5.27; Chapter 5).

A great many of these blades appear to have been used for cutting silica-rich plant materials, as evidenced by the presence of macroscopic gloss along one, or both, margins (Bettison 1985; Levi-Sala 1988; Meeks et al. 1982, inter alia). These "sickles" could have been used to reap cereal, or to cut grasses and/or other plants for fodder, roofing materials, twine, or basketry. This group of tools is of some interest to us, as "sickles" were long considered a rare tool type at Çatalhöyük (Ataman 1988:63, 244). The following contexts produced examples of glossed (unipolar) blades:

- 8547.X1 (Phase B3.1): tan chert glossed blade.
- 8446.X7 (Phase B3.1C): medial segment of an orange chert blade, denticulated on one margin but with gloss on the opposite edge, measuring 2.66 × 1.82 × 0.59 cm.
- 6289.X1 (Phase B3.4A): distal section made of orange chert measuring 3.28 × 1.91 × 0.56 cm, with gloss on the inner (left) edge.
- 2268 (Phase B3.4B?): a 3.3-cm-wide tan chert blade with glossed edge.
- 2229.A1 (Phase B3.5A): striped flint blade with evidence of curation/reworking, as most of the gloss on one edge has been removed by secondary retouch.

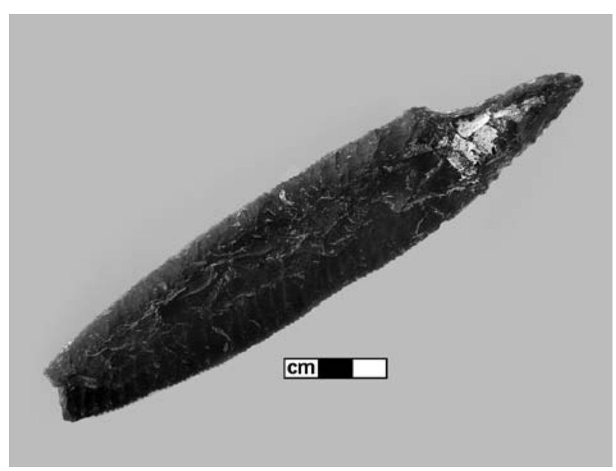


Figure 19.3. The flint dagger from Space 89 (2210.X7).

- 2216 (Phase B3.5A): medial section of a part-cortical tan chert blade 3.12 cm wide, with both margins denticulated and glossed.
- 3542.X5 (Phase B3.5A): glossed blade of light brown chert, 6.22 cm long.
- 3549 (Phase 87.3): tan chert blade denticulated and glossed on both margins.
- 8632 (Space 88): regular blade, possibly pressure-flaked, retouched, and glossed on both margins.
- 8685 (Space 88): burned chert blade with gloss.
- 6550.A1 (Space 85): made of orange chert.
- 6382.A8 (Space 85): glossed blade of gray-brown chert.
- 8624 (Space 85): fine reddish chert prismatic blade with gloss measuring 6.5 × 2.32 × 0.5 cm.

While glossed blades represent a major component of Flint Industry 3 material, there are also a few backed pieces (e.g., 8547.X1). There is also a very interesting and rare leaf-shaped point made of red radiolarite 2.77 × 127 × 0.56 m (8580.A1), an end scraper made on a thick, unipolar, orange chert blade from 8589, plus a few unmodified pieces (e.g., from 8485).

Flint Industry 5

This industry is essentially analogous to Obsidian Industry 1—that is, the production of blade-like flakes and flakes by percussion from relatively small cores (Carter, Conolly, and Spasojević 2005:228, 245). It is not particularly well represented in the BACH Area assemblage, though some cores have been identified from Phases B3.1 (8446.X6 [Figure 19.2e]), B3.4B (3537.A2 [Figure 19.2g]), and B3.5 (3531.A2 [Figure 19.2f] and 2227.A1). In addition, a multiple-platform flake core from the fill of Space 89 (6147.X2) was documented. Of the small quantity of related end-products, a number of the flakes had been modified on one or two of the edges and used as scrapers.

BUILDING 3 ASSEMBLAGE BY PHASE

Phase B3.1

This phase produced 462 pieces of chipped stone from 185 units, of which 141 were analyzed on an artifact-by-artifact basis (Figure 19.4). A relatively high proportion of these pieces had been modified into tools (N = 35/127, 28 percent).

Obsidian Industry 1

Obsidian Industry 1 is the dominant tradition in this phase, with a large quantity of irregular blades or blade-like flakes and non-cortical flakes, plus a few exhausted cores.

Obsidian Industry 7

Obsidian Industry 7 is represented primarily by material from two obsidian hoards. The smaller of the two assemblages, unit 8570, has just two implements, one of them a complete biface preform made of what appears to be East Göllü Dağ obsidian (8570.X1 [Figure 19.2h]). The larger hoard (8446) includes a thinning flake related to the latter stages of transforming one of these preforms into a finished projectile (8446.X2). Another thinning flake from a Phase B3.1 context was recorded from 8292.A1 (Figure 19.4c)

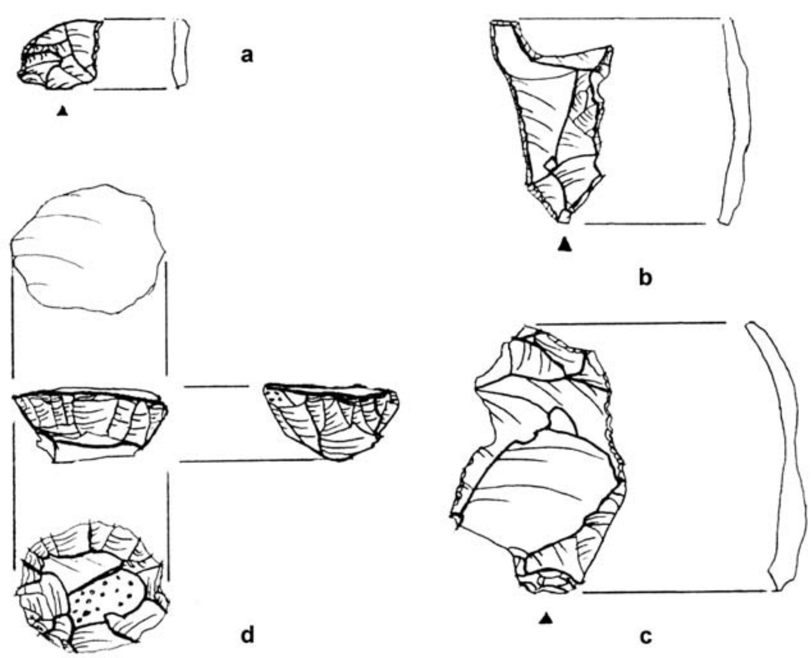


Figure 19.4. Chipped stone from the BACH Area, Phase B3.1: (a) 6391.A2; (b) 8310.A1; (c) 8292.A1; (d) 8349.X1.

Flint Industry 3

Flint Industry 3 is represented by a number of blanks, not least the fine, complete, unipolar blade with remnant cresting scars (8393.X1 [Figures 19.2c, 19.21]). Also included in this group is the medial section of a glossed blade of orange chert (8446.X7 [Phase B3.1C]) measuring 2.66 × 1.82 × 0.59 cm and a blade of red radiolarite that had been unifacially retouched into a leaf-shaped point. The latter is an extremely rare item at Çatalhöyük, where projectiles are almost always made of obsidian (Carter, Conolly, and Spasojević 2005:276); it measures 2.77 × 127 × 0.56 m (8580.A1). There are also two medial blade fragments, one backed (8547.X1) and the other unmodified (8485).

Flint Industry 5

Flint Industry 5 is represented by two cores, one with an exhausted, part-cortical, single-platform nucleus, plus an exhausted opposed-platform core (8446.X6 [Figure 19.2e]), and by three flakes, one of which was retouched on its left margin and used as a scraper (8446.X7).

Chipped Stone from Phase B3.1 in Context (Figure 19.5)

Of the 19 units that produced the Phase B3.1 fully analyzed assemblage, the internal midden was the most productive, with 56.6 percent of the overall assemblage, followed by the floor units.

- *Internal midden*: The material from this context includes five cores from Obsidian Industry 1 (8589.A5–A9), one *pièce esquillée* (8585.A1), a core rejuvenation flake (8589.A1), and 16 modified blades/flakes. While Obsidian Industry 1 is the primary tradition represented, there are also various blade products from unipolar cores and all other techniques discussed above.
- *Packing*: This context produced a small assemblage from five units, with nine flakes and blade-like flakes, four of which had been retouched (8218.A2, 8310.A1 [Figure 19.4b], 8310.A2, 8377.A1).
- *Floors*: Twenty pieces of chipped stone, mainly in the form of unmodified flakes, came from floors.
  - — *Floor no. 2*: Two units produced four flakes and an opposed-platform core from Obsidian Industry 1 (6233.X2).
  - — *Floor no. 10*: Three units produced 21 pieces of flint and obsidian, including two retouched blade fragments (8537.A1, 8547.X1).
  - — *Floor no. 11*: Four units yielded unmodified debitage from Obsidian Industry 1.
- *Plaster*: Only two pieces came from this context: a leaf-shaped point made of red radiolarite (8580.A1) and a flake scraper with retouch on all edges (8580.A2). This small group of material, along with the polished groundstone ax that also came from this context (8580.X1), makes for an interesting deposit, reminiscent of a number of other "special" implements that were deliberately placed/buried at moments of change in the life histories of these buildings (Carter, Conolly, and Spasojević 2005:282). There were numerous instances where such implements—projectiles, in particular—were plastered over during the construction of a new oven, or a new surface for a platform or floor; the inclusion of a non-obsidian projectile was extremely rare.
- *Oven*: This feature generated four flakes.
- *Bin*: Three units produced five pieces of obsidian, two of which had been retouched and used as scrapers (F.782: 8415.A1, F.786: 8550.A1).
- *Hoards/caches*: From the Phase B3.1 occupation came three subfloor caches of chipped stone—units 8446, 8570, and 8393—which we interpret as the remains of deliberately deposited hoards (cf. Carter 2007; Conolly 2003). The first deposit had been placed in a shallow cut (F.799) in the area close to the south wall of Building 3 and the entry bench (F.1010). It contained six pieces of obsidian and two of orange chert (Figure 19.6), comprising a complete tanged point (Figure 19.2j [8446.X1]); a *pièce esquillée* made on a large, flat, thinning flake from a biface measuring 5.15 × 4.26 × 0.7 cm [8446.X2]; two relatively large blade-like flakes (8446.X4, X5); a small part-cortical orange chert blade-like flake core, measuring 2.84 × 2.67 × 1.15 cm (8446.X6); and a medial unipolar orange chert blade, denticulated on one margin and with "sickle gloss" on the opposite edge, measuring 2.66 × 1.82 × 0.59 cm (8446.X7). The associated heavy-residue sample included more chunks of East Göllü Dağ obsidian, plus a number of thinning flakes from biface manufacture. The location and contents of this hoard find parallels with many others from Çatalhöyük (Levels VII–X), although the inclusion of two pieces of chert within the deposit is not particularly common (Carter 2007; Conolly 2003).

  The second hoard included two complete and apparently unused projectiles (8570.X1, 8570.X2 [Figure 19.2h–i]) lying next to each other in the packing of the earliest floor. While it has been interpreted as a foundation deposit (Chapter 4: Figure 4.10; Chapter 5: Figure 5.16), one wonders if a cut of a small cache-containing pit might have been missed by the excavators, as almost invariably such items were only deposited within living buildings (Carter 2007). Both points are tanged and covered in fine bifacial retouch, examples of Conolly's types 5 and 10 (Conolly 1999a:39–40), and appear to be made of East Göllü

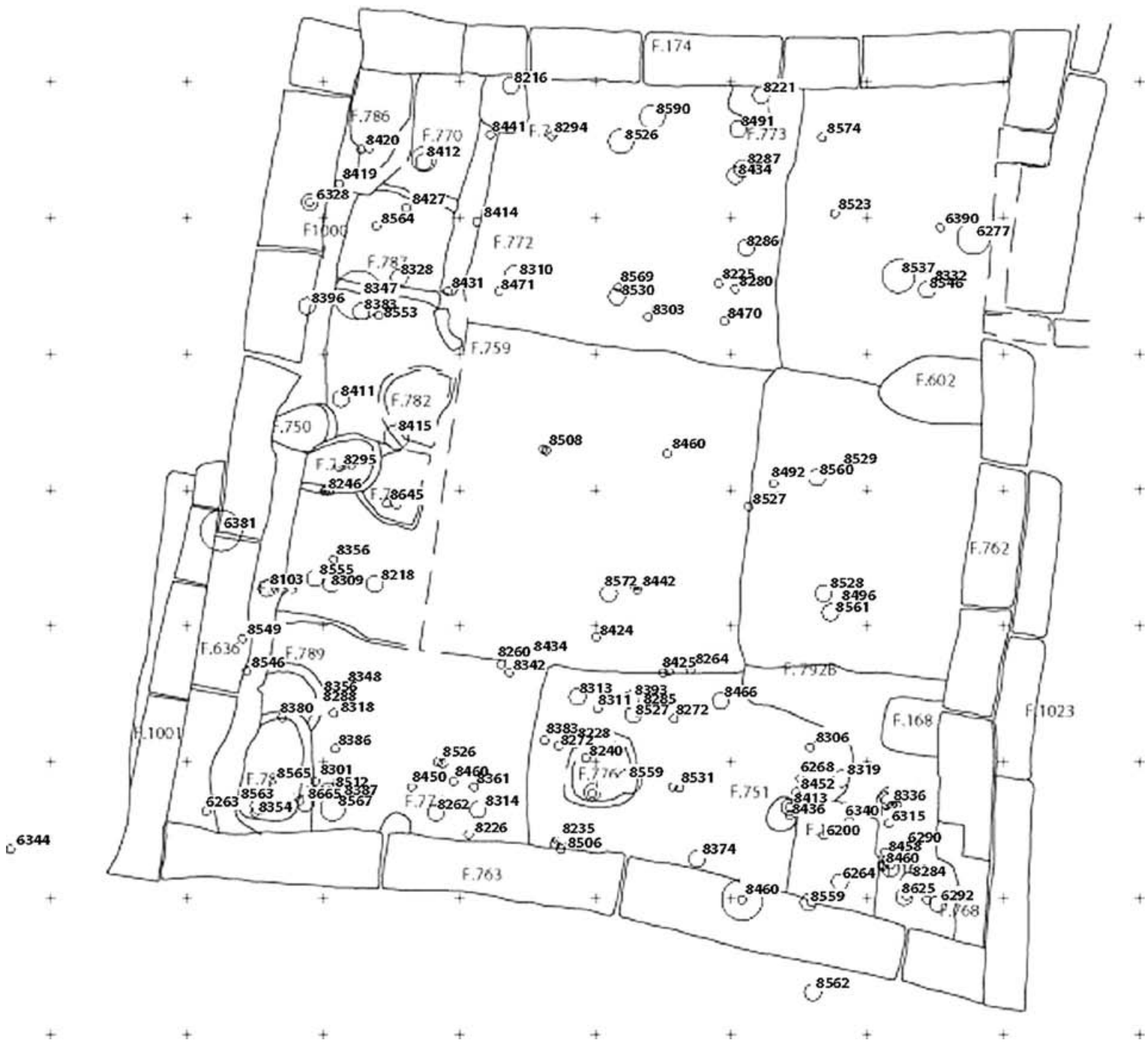


Figure 19.5. Distribution plots of obsidian pieces in Phase B3.1.

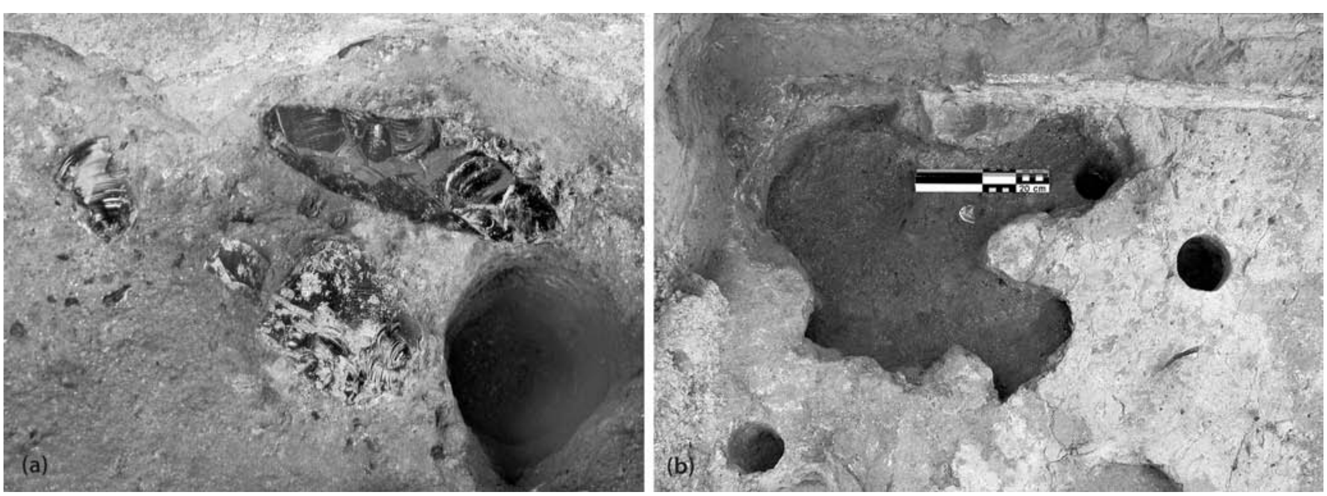


Figure 19.6. The cache of six pieces of obsidian and two of orange chert interpreted as a foundation deposit: (a) the in situ context of the cache; (b) the cut (F.799) under the earliest floor of Building 3 (8446.X1–7) in which the cache was found.

Dağ obsidian. The elongated form of 8570.X2 suggests that it was made on a nonlocally produced blade (though it is considered likely that both points were modified at Çatalhöyük), the slightly shorter 8570.X1 possibly representing a final product made from one of the Kaletepe Sector M biface preforms (see above).

The third instance of a hoard, or cache, came from a small subfloor cut north of the oven (F.778) and contained a complete remnant crested blade (ca.14 cm long) of a fine-grained brown chert (8393.X1 [Figures 19.2c, 19.21]; see also Figure 5.27; Chapter 5). The burial of such an implement in a manner that is contextually analogous to the other two hoards is very unusual, as the practice of "hoarding" chipped stone at Çatalhöyük is almost exclusively related to obsidian, with only the very occasional piece of chert accompanying these deposits (Carter 2007:344).

- *Miscellaneous units*: Pit fill, walls, threshold, burial fill, posthole fill, and construction contexts produced a mere 19 pieces of chipped stone (10 units), mainly in the form of unmodified flakes, together with a thinning flake from biface reduction (8292.A1 [Figure 19.4c]) and a single-platform flake subconical core of obsidian (8349.X1 [Figure 19.4d]).

Phase B3.2

This phase produced 313 pieces of chipped stone from 100 units. Of the 85 artifacts individually analyzed, 24 had been modified and used as tools (29 percent).

Obsidian Industry 1

All seven cores from Phase B3.2 were assigned to this industry, including 8384.X2, 8384.A2 (Figure 19.7a–b), and 8158.A3. Two of these cores had also been retouched along one margin, while another nucleus could be classified as a *pièce esquillée* (8384.A3 [Figure 19.7d]). The other cores associated with this tradition came from 6192.X1 and 8200.A1 (Figure 19.7c), while the last piece is of some interest, with a larger, flat, circular platform from which a number of blade-like flakes and standard flakes had been removed. Its form is reminiscent of a mirror preform, though it is quite a small piece.

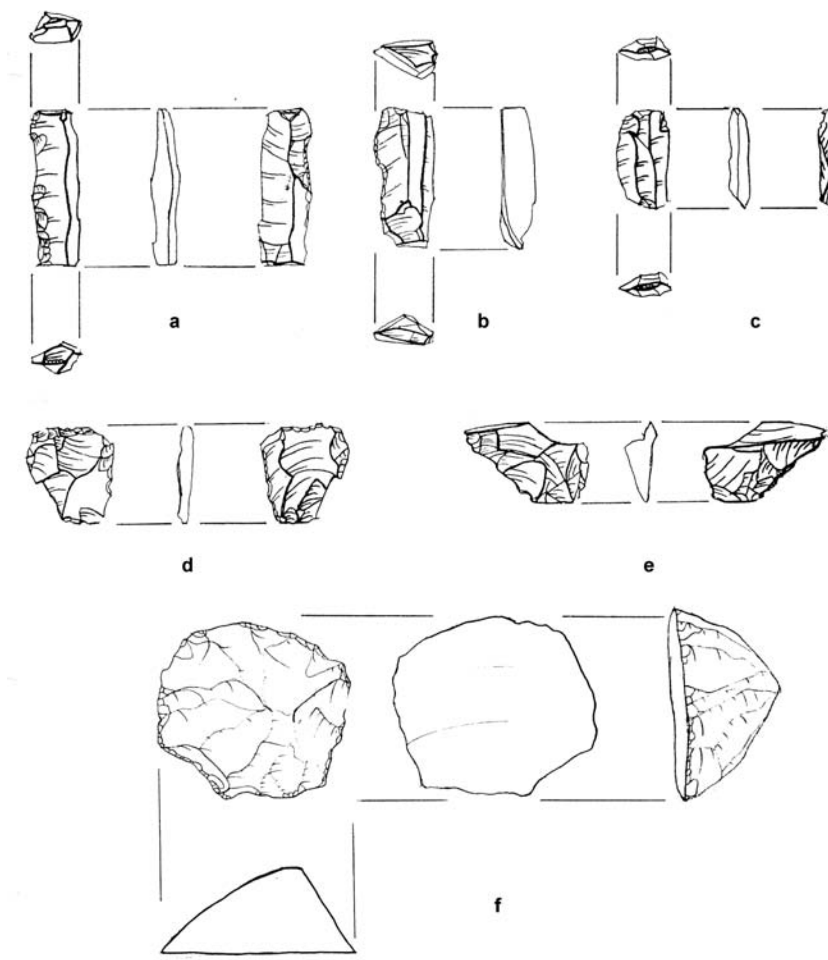


Figure 19.7. Chipped stone from the BACH Area, Phase B3.2: (a) 8384.X2; (b) 8384.A2; (c) 8200.A1; (d) 8384.A3; (e) 8215.A1; (f) 8182.A1.

Obsidian Industry 5

A small quantity of unipolar prismatic blades were found, one of which had been retouched on its distal end to make a piercer (8182.A1 [Figure 19.7f]).

Obsidian Industry 7

Two biface fragments were recorded from this phase (8215.A1 [Figure 19.16b], 8436.A1).

Flint Industry 3

Flint Industry 3 is represented by two blade segments (8357.A1, 8384.A4) and a flake. The blades were retouched on one edge and probably used as scrapers.

Lithics from Phase B3.2 in Context (Figure 19.8)

The major assemblages from this phase relate to packing and floor contexts (76.6 percent):

- *Packing*: The largest assemblage, of which 48 pieces were studied fully, these included three cores (8200.A1, 8384.A2, 8384.X2), a *pièce esquillée* (8384.A3), and several flakes and blade-like flakes, some retouched.
- *Feature lid/cut:* This was a surprisingly productive context, including an opposed-platform blade-like flake core (8158.A1) and five flakes.
- *Floor:* This was also quite productive, with 5 of the 18 blanks analyzed having been retouched and used as scrapers.
- *Miscellaneous units* (the fills and deposits associated with bins, fire installation, and platforms, inter alia): Two pieces are worthy of note: a biface fragment (8436.A1) and a piercer made on a segment of a unipolar prismatic blade (8182.A1).

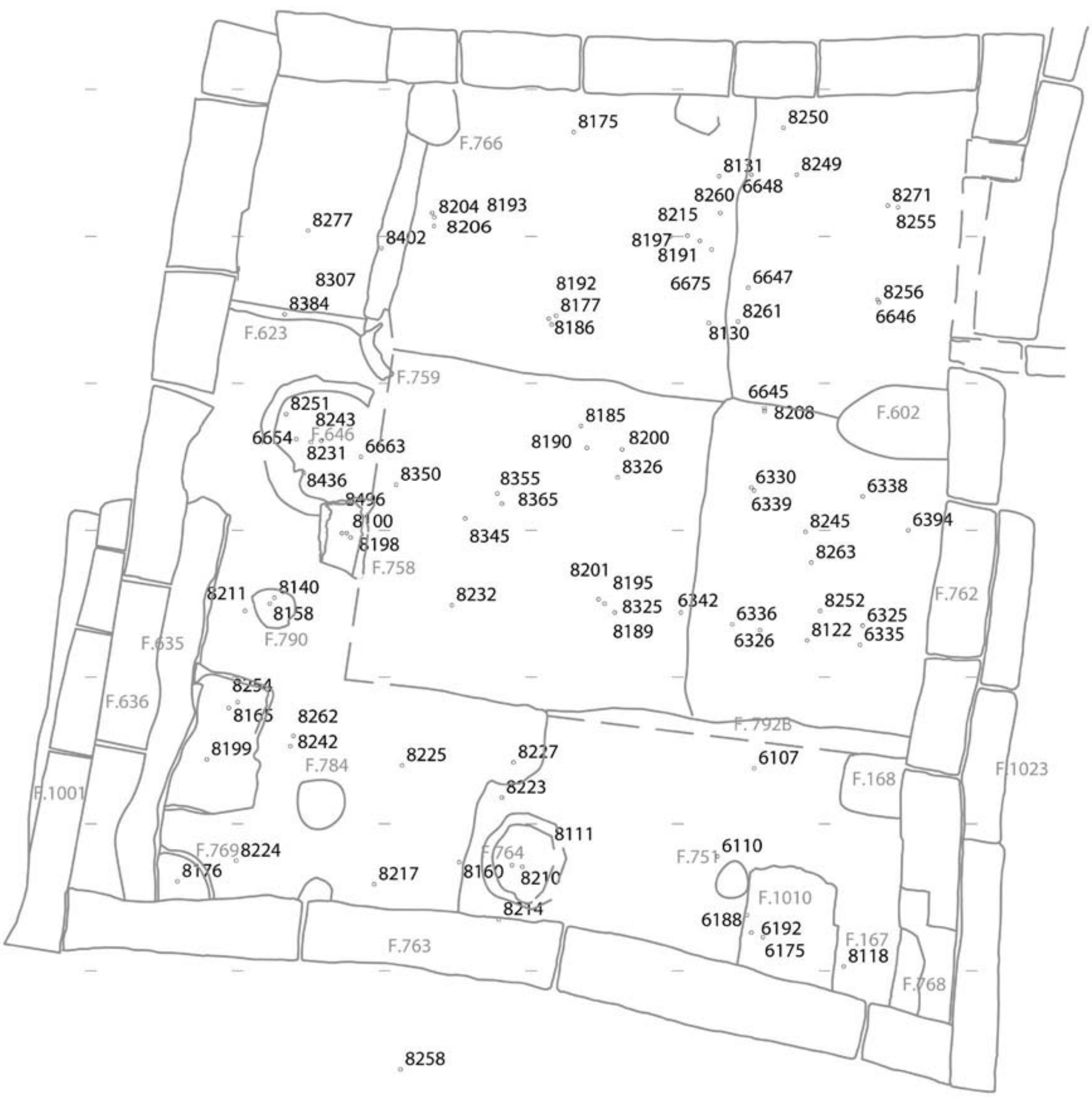


Figure 19.8. Distribution plots of obsidian pieces in Phase B3.2.

Phase B3.3

A total of 171 pieces of chipped stone were registered from this phase, coming from 56 units; 35 of these were analyzed fully (Table 19.2). It is thus quite a small assemblage compared with those from other occupation phases.

Obsidian Industry 1

Obsidian Industry 1 is again the main tradition represented. This material includes a multiplatform flake core (6304.A1) that had been retouched into a scraper. Six of the flakes had been retouched on one or more of the edges.

Obsidian Industry 7

Obsidian Industry 7 produced the tip of a biface from floor deposit 6695.A1 (Figure 19.9a).

Lithics from Phase B3.3 in Context (Figure 19.10)

- *Floors:* These were some of the less productive units, with a core, three flakes, and the tip of a biface (6695.A1 [Figure 19.9a]).
- *Burial fill:* This context produced undiagnostic non-cortical flake debris.

Table 19.2. Distribution of chipped stone by phase

Phase/ context	Cores	Modified debitage	Debitage	Total
B3.1	9	35	97	141
B3.2	6	24	55	85
B3.3	1	6	28	35
B3.4A	3	23	137	163
B3.4B	6	12	80	98
B3.5A	22	78	227	327
Space 85	12	60	228	300
Space 87	3	9	56	68
Space 88	1	10	21	32
Space 89	18	51	119	188
Total	81	308	1,048	1,437

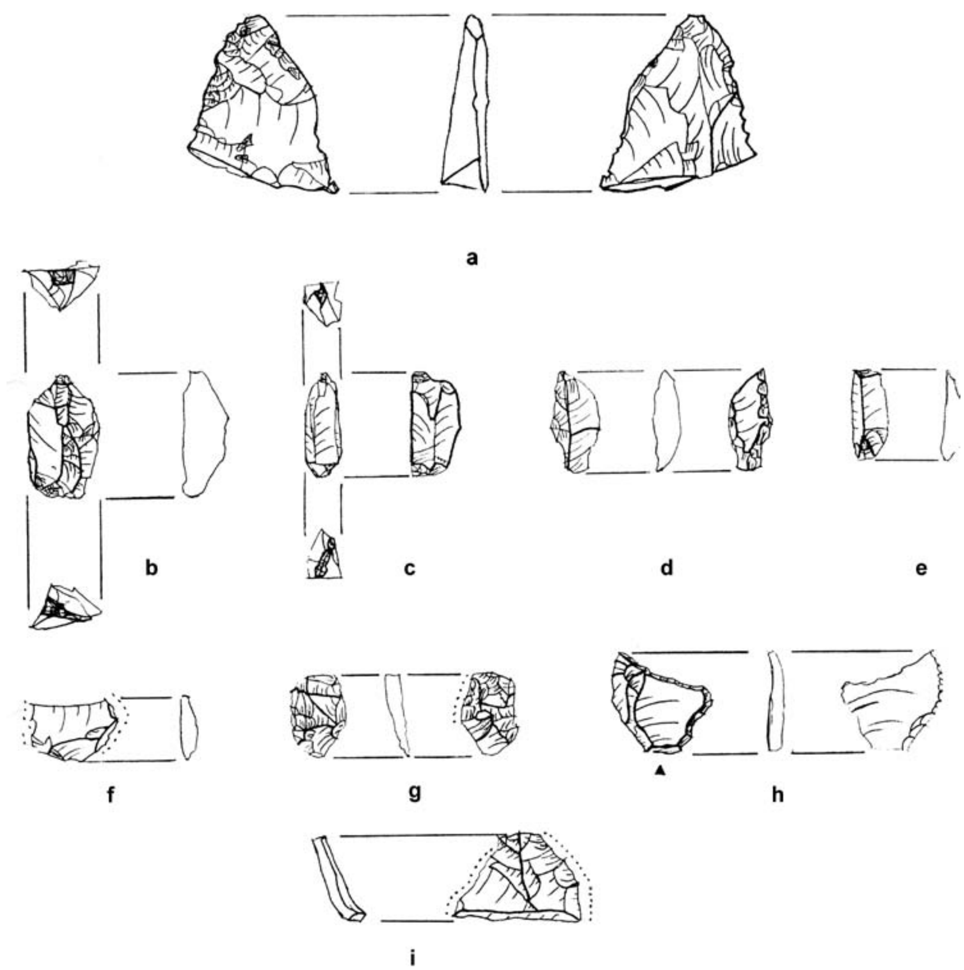


Figure 19.9. Chipped stone from the BACH Area, Phases B3.3 and B.4A: (a) 6695.A1 (Phase B3.3); (b) 6309.X1; (c) 6602.A1; (d) 6323.A1; (e) 6279.A1; (f) 6633.A1; (g) 6642.A1; (h) 8315.A2; (i) 6129.A1.

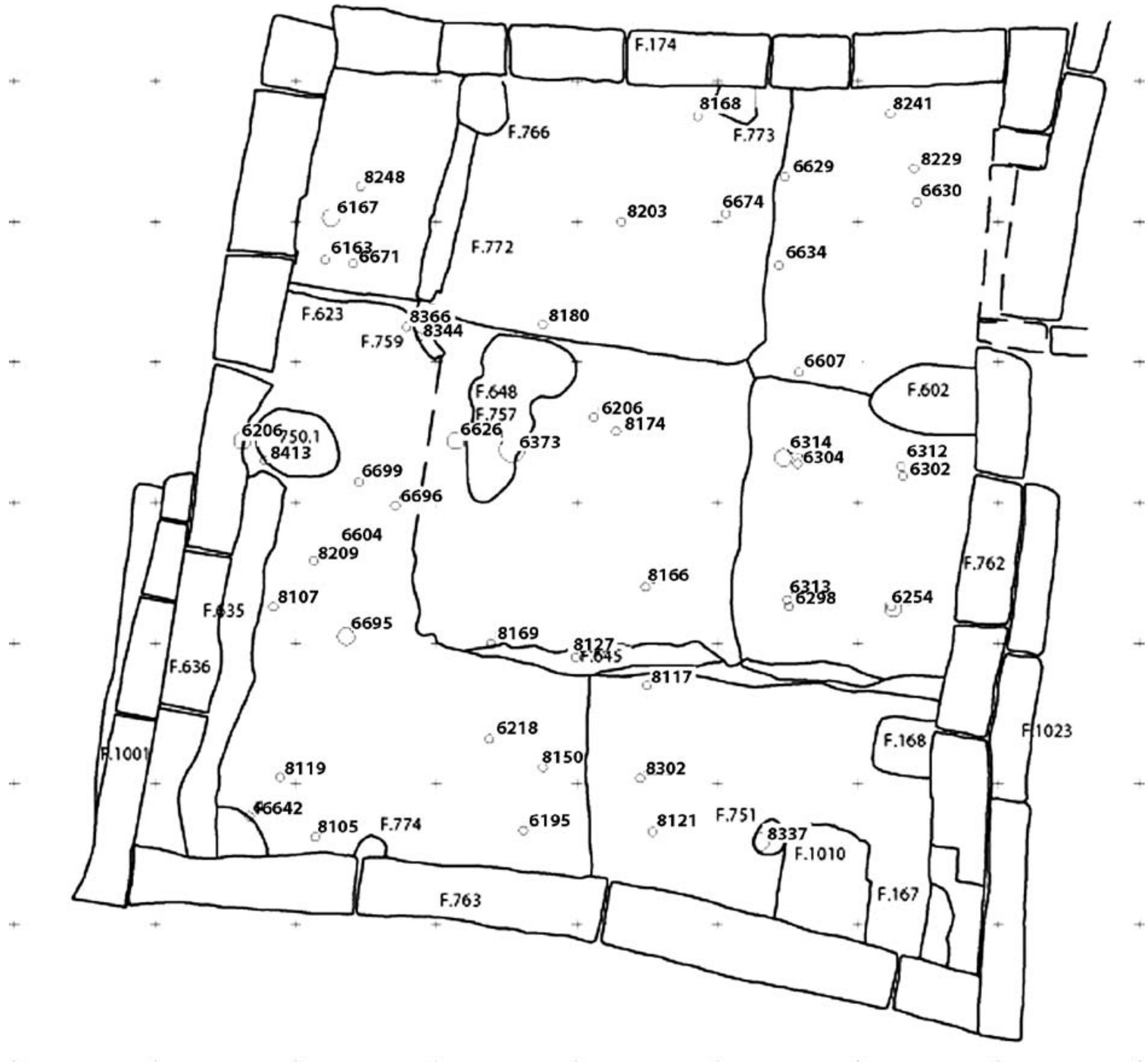


Figure 19.10. Distribution plots of obsidian pieces in Phase B3.3.

- *Packing:* This context yielded two flakes, one of which had been retouched.
- *Fill:* Most of the Phase B3.3 chipped stone came from fill, mainly blade-like flake and flake products of Obsidian Industry 1, of which only three pieces were retouched into scrapers.

Phase B3.4A

This phase produced 855 pieces of chipped stone from 130 units; 163 pieces were analyzed fully (Table 19.2).

Obsidian Industry 1

Obsidian Industry 1 is again the main obsidian industry represented. The three nuclei were all intensively worked. One of them is a multiple-sequence flake core (6309.X1 [Figure 19.9b]); the other two are opposed-platform blade-like flakes or flake cores (6602.A1 [Figure 19.9c], 8135.A1).

Obsidian Industry 7

Obsidian Industry 7 is represented by quantities of thinning flakes from biface manufacture, plus a large biface fragment from a fill context (6279.A5).

Flint Industry 3

Flint Industry 3 in this phase is represented by a fine orange chert unipolar prismatic blade with "sickle gloss" which had been placed in a bin F.629 (6289.X1).

Flint Industry 5

Flint Industry 5 is represented by only four pieces, including one blade-like flake with retouch on both margins (6378.A1).

Chipped Stone from Phase B3.4A in Context (Figure 19.11)

The analyzed chipped stone was recorded from 14 different contexts represented by 44 distinct units, the material mainly coming from room and burial fills.

- *Fill:* The three fill units produced 26 pieces, primarily in the form of unmodified flakes. There was also a large fragment of a biface preform (6279.A5).
- *Burial fill:* This context yielded a large assemblage of 68 pieces (42 percent of the Phase B3.4A assemblage) related almost entirely to the Obsidian Industry 1 production of blade-like flakes and flakes, including cores (6602.A1 [Figure 19.9c]) and core rejuvenation pieces. Most of this material was unmodified, though one blade-like flake had been retouched into a scraper, as had five non-cortical flakes (6323.A1, 6633.A1 [Figure 19.9f], 6639.A1, 8315.A1, 8315.A2 [Figure 19.9h], 6323.A1 [Figure 19.9d]). We do not believe this material was deliberately added to the burial; instead, it is likely to represent redeposited artifacts from the fill that the grave had been cut into.
- *Floors:* Ten units produced 14 pieces of chipped stone, mainly relating to Obsidian Industry 1, including a multiple-platform core and three flake-scrapers (6129. A1 [Figure 19.9i], 6357.A1, 6257.A2).
- *Packing:* These units contained only 10 pieces, mostly flakes, aside from a biface fragment (6642.A1 [Figure 19.9g]) and a double side-scraper on a flake (8401.A1).
- *Fire installation and oven:* These three units produced nine flakes.

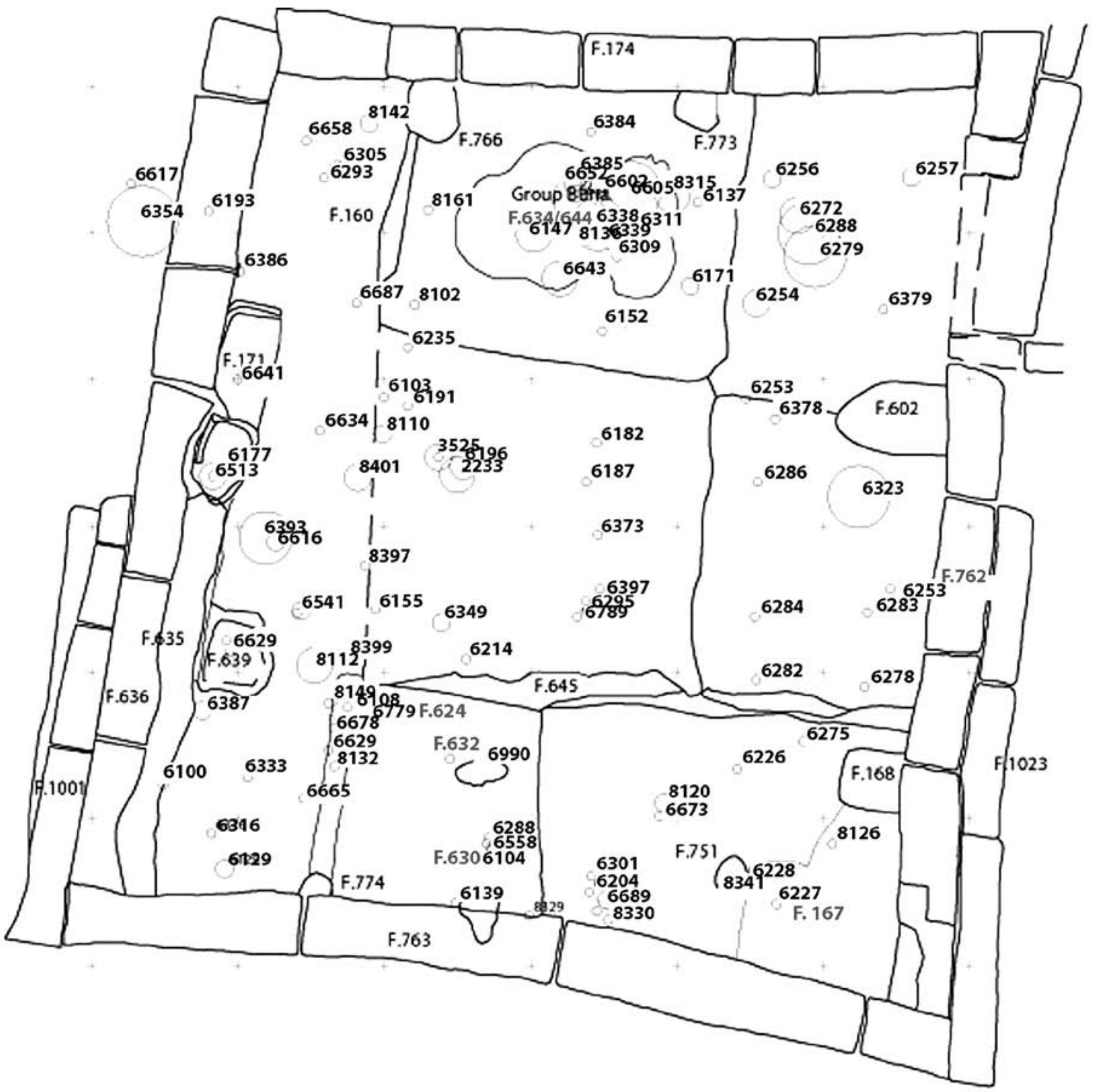


Figure 19.11. Distribution plots of obsidian pieces in Phase B3.4A.

- *Walls:* A small number of flakes, plus an opposed-platform flake core (8135.A1), were recovered from wall contexts.
- *Miscellaneous units:* Seven units relating variously to a pillar, platform, post-retrieval pit, bin, and basin produced a mere 10 pieces of chipped stone, mainly flakes. Two flakes had simple linear retouch (6254.A1, 6255.A1). A noteworthy item is the distal section of a glossed unipolar part-cortical prismatic blade of orange chert which came from the lowest part of a bin (6289.X1). We believe that this sickle element, a fairly rare tool type within the BACH Area assemblage, was deliberately placed in the bottom of the bin as part of a closure ritual. The placement of nonlocally produced or rare chipped stone implement types in bins at the end of their lives is known from a number of other pre-Mellaart Level VI contexts at Çatalhöyük. For example, a fine flint perforator (covered in ocher) was placed in such a structure in Building 18, a Mellaart Level X structure from the SOUTH Area (Carter, Conolly, and Spasojević 2005:282), while a complete obsidian projectile was placed in a bin within the burned Building 52 in the 4040 Area (Twiss et al. 2008:46).

Phase B3.4B

This phase produced 312 pieces of chipped stone from 75 units, of which 98 pieces were fully analyzed (Table 19.2).

Obsidian Industry 1

Obsidian Industry 1 is represented by four flake cores, including opposed-platform (6362.A1, 6211.A6) and single-platform examples (3590.X1, 6144.X1).

Obsidian Industry 7

Obsidian Industry 7 is represented by a fragmentary biface preform that came from a fill context associated with burial F.617 (6211.X2 [Figure19.12a]), while a thinning flake came from another burial fill (6252.A1 [Figure 19.12h]).

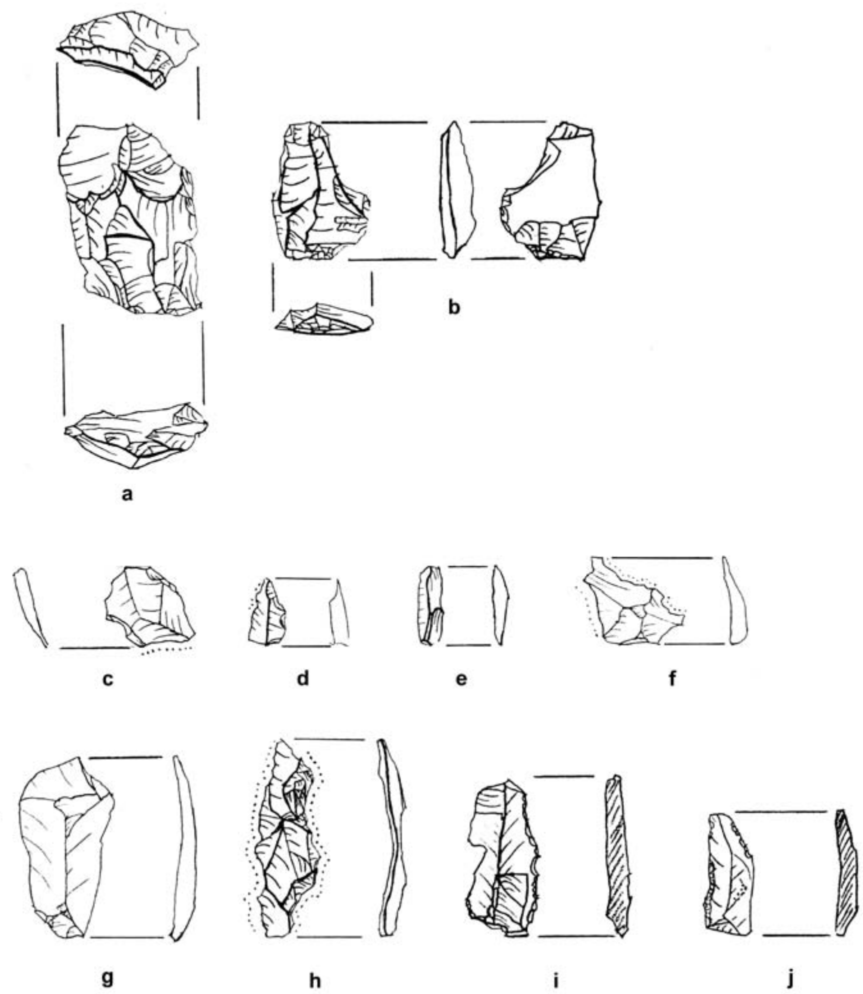


Figure 19.12. Chipped stone from the BACH Area, Phase B3.4B: (a) 6211.X2; (b) 3537.A2; (c) 6123.A2; (d) 6211.A5; (e) 6211.A4; (f) 6211.A3; (g) 6211.A2; (h) 6252.A1; (i) 6116.X2; (j) 6169.A1.

Flint Industry 5

Flint Industry 5 is represented by an opposed-platform flake core from wall construction (3537.A2) and a part-cortical flake.

Lithics from Phase B3.4B in Context (Figure 19.13)

Twenty-eight units from 14 contexts produced 98 analyzed pieces of chipped stone relating to Obsidian Industry 1 and Flint Industry 5, mainly from burial fills.

- *Burial fills*: The most significant item from the Phase B3.4B burial fills is the fragmentary biface preform associated with burial F.617 (6211.X2 [Figure 19.12a]); given the state of the piece, it is thought to represent redeposited material from the fill into which burial pit F.617 cut, rather than an actual grave good. This interpretation applies also to the other chipped stone artifacts from these contexts, most of which are related to Obsidian Industry 1. These include an opposed-platform flake core (6211.A6), a blade-like flake (6211.A4 [Figure 19.12e]), a thinning flake (6252.A1 [Figure 19.12h]), and three flake-scrapers (6211.A5, A3, A2 [Figure 19.12d, f, g]).
- *Fill*: These four units produced nine pieces of obsidian, including a flake core (3590.X1) and a flake-scraper (6123.A2 [Figure 19.12c]) fragment. The latter had been further modified on the distal end and used as a

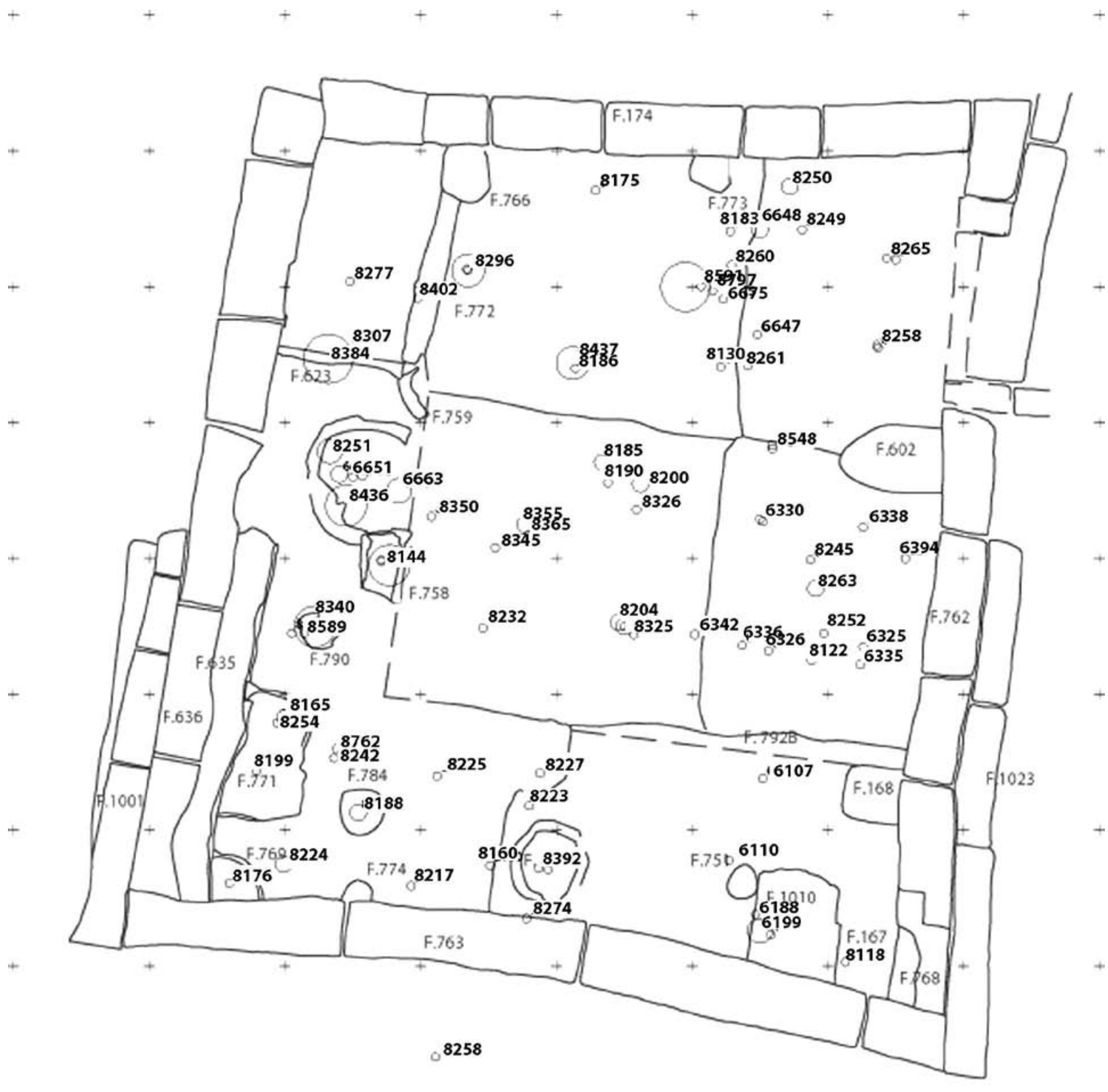


Figure 19.13. Distribution plots of obsidian pieces in Phase B3.4B.

scraper. By contrast, only one of the four blade-like flakes had been modified and used as a tool (6279.A1 [Figure 19.9e]).

- *Screen wall*: This wall divided the house into two spaces; during the excavation twelve pieces of obsidian were discovered, with eight flakes, three modified flakes (6391.A2 [Figure 19.4a], 6391.A3, A4), and one modified blade-like flake (6391.A1).
- *Walls*: The four wall units produced a small quantity of chipped stone, with seven flakes, one blade-like flake retouched on its distal end (3537.A1), and a flint flake core with opposed and crushed platforms (3537.A2).
- *Floors*: Only a small amount of material came from the latest floor units, all flakes, of which one had been retouched (6114.A1). The lower floor units produced more chipped stone (N = 20), with flakes again dominant; one irregular blade was retouched on both edges (6265.A1).
- *Packing*: This context produced three flakes and a flake core with a faceted platform (6144.X1).
- *Miscellaneous units*: These include midden, post-retrieval pit, pit fill, ashy fill, platform, and niche contexts, comprising 8 units with 19 pieces of obsidian. The material was, as usual, dominated by flakes, together with an opposed-platform flake core (6362.A1), plus two irregular blades with marginal retouch (6116.X2, 6169.A1 [Figure 19.12i, j]).

Phase B3.5A

This phase produced 1,325 pieces of chipped stone from 97 units, of which 327 pieces were fully analyzed (Table 19.2).

Obsidian Industry 1

Obsidian Industry 1 is again the dominant industry, with 20 cores relating to the manufacture of flakes and blade-like flakes, of which 4 were multiple platform (e.g., 2222.A2, 2270.A5, 2229.A14, 2238.A2), 3 were single platform (2204.A2 [Figure 19.14d], 2223.A1, 2229.A6), and 13 were

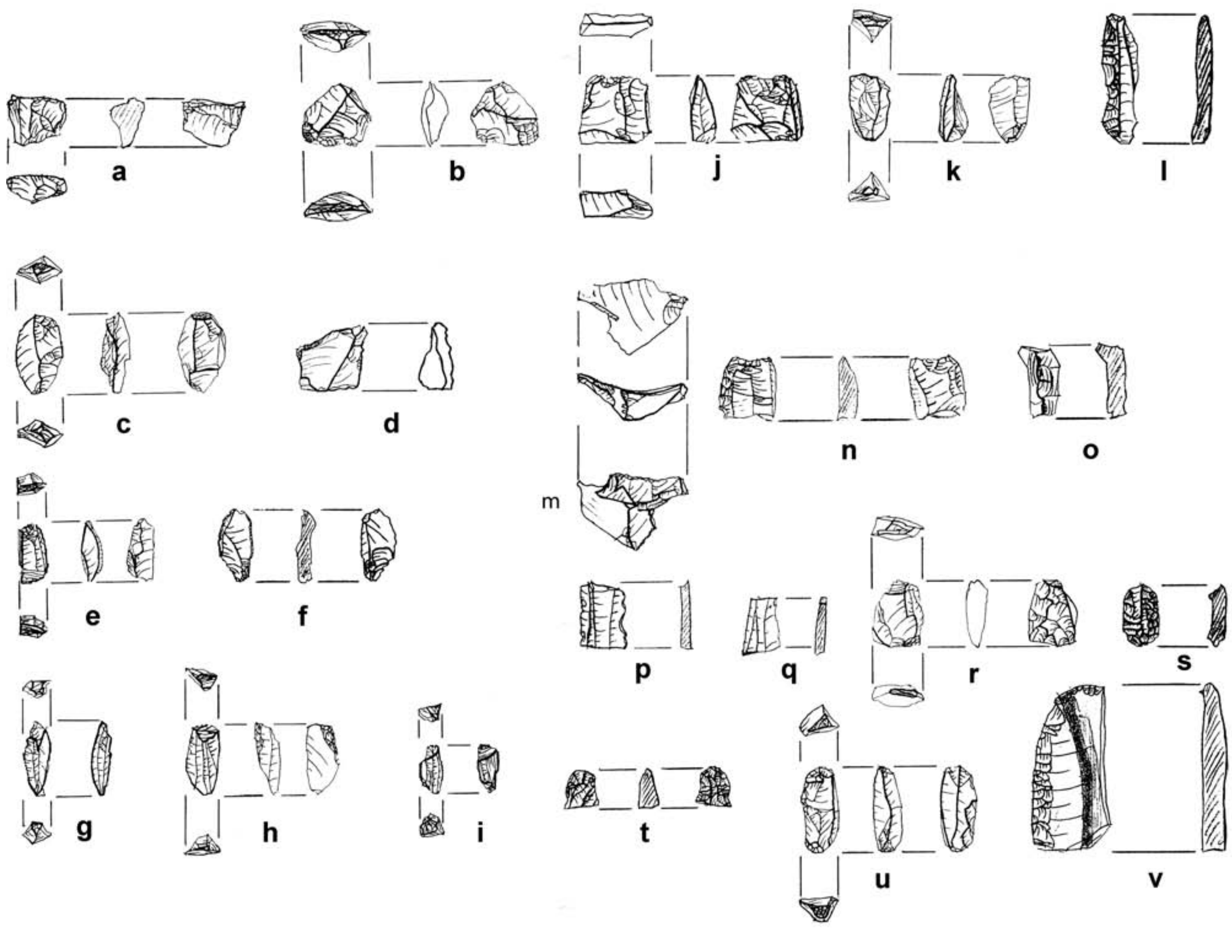


Figure 19.14. Chipped stone from the BACH Area, Phase B3.5A: (a) 2222.A2; (b) 2229.A14; (c) 2238.A2; (d) 2204.A2; (e) 2220.A3; (f) 2246.A1; (g) 2269.A1; (h) 2228.A6; (i) 2229.A13; (j) 2203.A2; (k) 2220.A2; (l) 2229.A7; (m) 2270.A1; (n) 2274.A1; (o) 2247.A1; (p) 2235.A4; (q) 2235.A1; (r) 2209.A5; (s) 2221.A2; (t) 2229.A8; (u) 2227.A1 flint; (v) 2229.A1 flint.

opposed platform (including 2220.A3, 2246.A1, 2269.A2, 2228.A6, and 2229.A13 [Figure 19.14e–i]).

Obsidian Industry 5

Obsidian Industry 5 is represented by seven unipolar prismatic blades (2235.A4 [Figure 19.14p], 2235.A1 [Figure 19.14q], 3543.X2, 2235.A2, 2235.A4, 2272, 2228.A4, 2255.A6), three of which have simple retouch.

Obsidian Industry 7

Obsidian Industry 7 is represented by five biface fragments (2209.A5, 2221.A2, 2229.A8 [Figure 19.14r–t], 2270.A2, 2229.A4).

Flint Industry 3

Flint Industry 3 included a striped flint blade with evidence of resharpening, as most of the gloss on one edge was removed by retouch (2229.A1 [Figure 19.14v]).

Flint Industry 5

Flint Industry 5 is represented by two exhausted cores and seven flake and blade-like flake fragments; one flake had been retouched (3542.X5). One unipolar core with a plain platform (3531.A2) was found in the collapse of Building 3; the other, an opposed-platform nucleus, came from building infill (2227.A1 [Figure 19.14u]).

The Lithics from Phase B3.5A in Context (Figure 19.15)

Phase B3.5A generated the largest proportion of the BACH Area chipped stone assemblage, with 327 pieces from 46 units. As before, material pertaining to Obsidian Industry 1 dominated.

- *Fill:* Fill contexts were the second most productive units, with 73 artifacts recorded fully. This material included eleven cores from Obsidian Industry 1, six with opposed platforms (2200.A3, 2203.A1, 2220.A2, 2298.A1, 2220.A3, 2269.A2), two with single platforms (2204.A2,

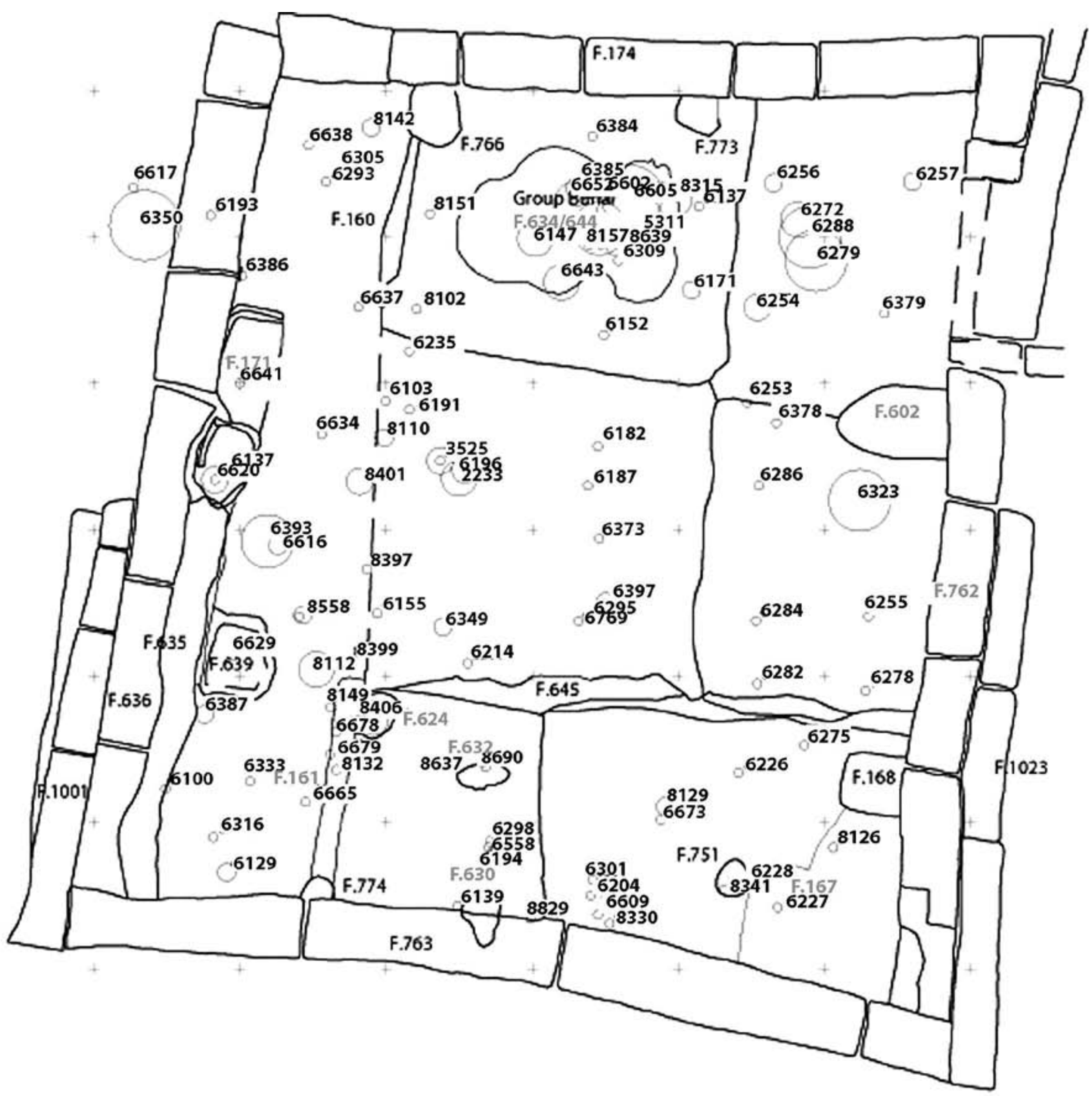


Figure 19.15. Distribution plots of obsidian pieces in Phase B3.5A.

2223.A1), and two with multiple platforms (2222.A2, 2270.A5). There were also two biface fragments relating to Obsidian Industry 7 from unit 2203. Unit 2227.A1 produced the sole Flint Industry 5 core from these deposits. Of the 56 blanks recorded from Phase B3.5A fills, 20 had been retouched into tools.

- *Midden:* These were by far the richest Phase B3.5A contexts, with 173 pieces inventoried fully, representing diagnostic material from Obsidian Industries 1, 5, and 7, plus material associated with Flint Industry 5. The six cores all belonged to Obsidian Industry 1, with four opposed-platform flake and blade-like flake cores (2214.A1, 2229.A12, 2228.A6, 2229.A13), a single-platform flake core (2229.A6), and one multiple-platform flake core (2229.A14). In turn, there was a regular unipolar prismatic blade fragment from Obsidian Industry 5 (2255.A6), a single biface fragment from Obsidian Industry 7 (2229.A8), and a core rejuvenation piece from Flint Industry 5 (2209.A1).
- *Fire installation and oven:* Only a few pieces came from these two units, including a multiple-sequence flake core (2238.A2) and a retouched irregular blade fragment.
- *Roof collapse:* The nine units associated with the roof contained 30 pieces of obsidian, again mainly in the form of flakes, plus five irregular blades and two modified regular prismatic blades (3543.X2, 2272).
- *Miscellaneous units:* These cover occupation debris, collapse, post-retrieval pit contents, ashy fills, and the like. The platform and wall comprised seven units that produced 13 pieces of chipped stone, all but 2 of which were flakes. There was also a single-platform flake core (3521.A2) related to Flint Industry 5 from the collapse, and an opposed-platform flake core of obsidian (3589.A7) from the post-retrieval pit. Two other units of collapse contained eight pieces of obsidian, with one blade-like flake (from 3531), plus seven flakes, one modified into a scraper (3531.A1).

SPACE 85

Space 85 constituted an artifact-rich external midden to the west of Building 3, excavated in 17 units that produced 4,510 pieces of chipped stone, of which 2,410 came from heavy residue. From this material, a subsample of 300 artifacts was analyzed fully (Table 19.2; Figure 19.16).

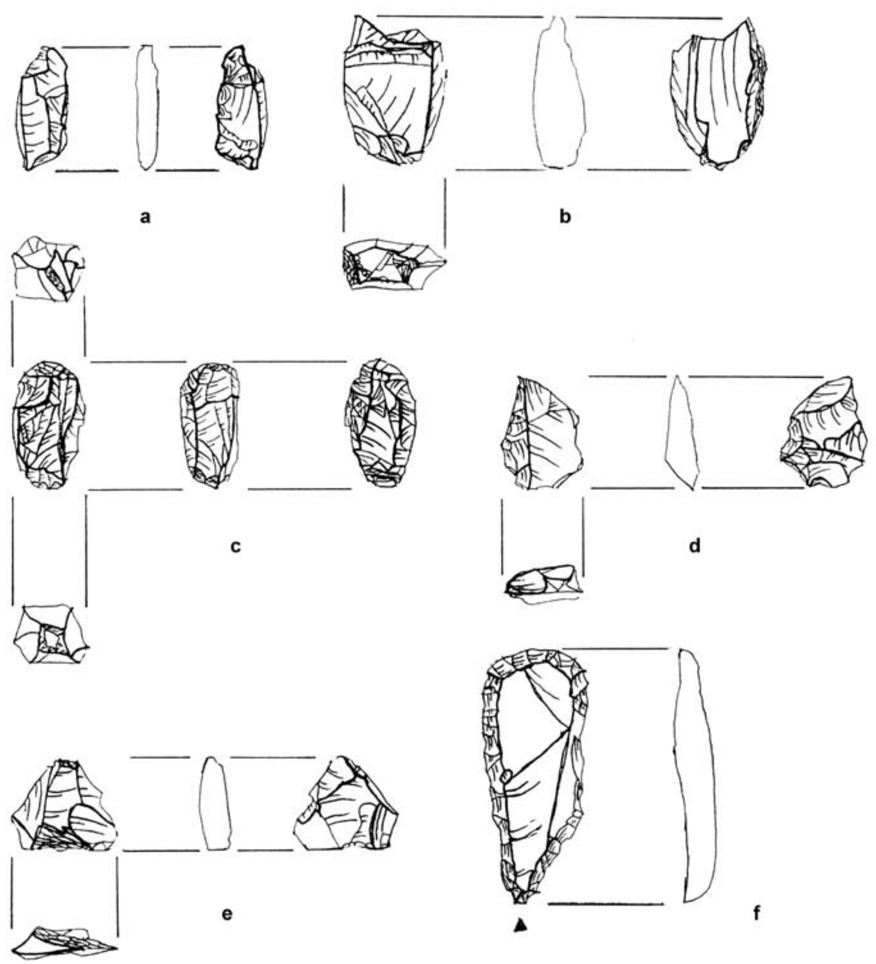


Figure 19.16. Chipped stone from the BACH Area, Space 85: (a) 6364.A3; (b) 8215.A1; (c) 8253.X2; (d) 8312.A1; (e) 8178.A3; (f) 8178.A1 flint.

Obsidian Industry 1

Twelve cores relating to this technology were recorded, comprising four multiple-platform cores (6364.A3 [Figure 19.16a], 6398.A1, 8253.X2 [Figure 19.16c], 8312.A1 [Figure 19.16d]), five single-platform flake cores (6640.A1, 6650.A2, 6650.A3, 6662.A1, 6666.A4), two opposed-platform flake cores (8178.A11, 8178.A13), and an opposed-platform blade-like flake core (6364.A2).

Obsidian Industry 5

Space 85 produced two regular unipolar prismatic blade fragments.

Obsidian Industry 7

Two biface fragments were recorded (8178.A15, 8312.A3).

Flint Industry 3

A single prismatic blade retouched into an end- or side-scraper (8178.A1 [Figure 19.16f]) was recorded.

Flint Industry 5

Six pieces of the assemblage were flint flakes and non-regular blades, two of which had been retouched (6650.A1, 8354.A4).

Chipped Stone in Space 85

Among the 60 retouched blanks were two borer/piercers (6666.A3, 8178.A20) and two fragmentary bifaces (8178.A15, 8312.A3). Five flakes were recorded as combination tools—meaning they were used for both cutting and scraping (8143.A1, 8178.A16, 8354.A1, 8354.A3, 8429.X2). There were also 46 scrapers, mainly in the form of double side-scrapers (e.g., 6364.A4, 6650.A1, 6662.A4, 8159.A2, 8178.A8, 8253.A1, 8312.A12, 8312.A7, 8312.A9, 8354.A7, 8429.X1).

Space 87

Space 87 produced 181 pieces of chipped stone from 16 units, of which 68 artifacts were fully analyzed (Table 19.2; Figure 19.17).

Obsidian Industry 1

Obsidian Industry 1 is the dominant technology, represented by three cores, with a multiple sequence flake core (3549.A1), a single-platform flake core (3560.A1), and an opposed-platform flake core (8385.A1). Sixteen of the 56 blanks inventoried relating to this tradition were retouched and used as scrapers.

Obsidian Industry 3

Obsidian Industry 3 is represented by only two pieces, one from a unipolar blade (3549.A2 [Figure 19.17c]), while the second represents a blade-like flake struck off the face of a projectile (3549.A3 [Figure 19.17d]).

Flint Industry 5

Flint Industry 5 produced two irregular blades (3549.A1 [Figure 19.17a], 8566.A2), one of which was retouched into a scraper.

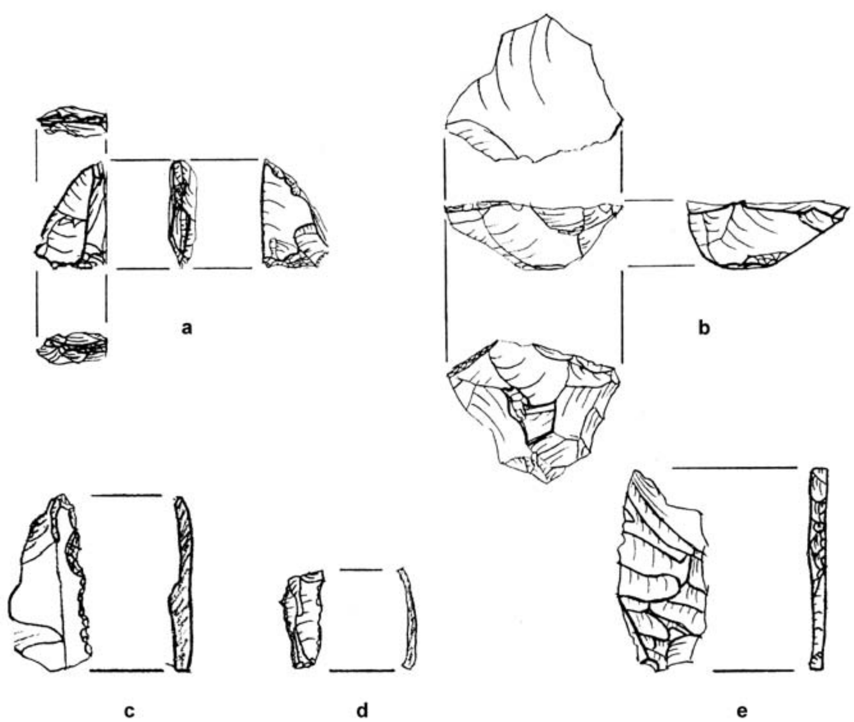


Figure 19.17. Chipped stone from the BACH Area, Space 87: (a) 3549.A1; (b) 3560.A1; (c) 3549.A2; (d) 3549.A3; (e) 6247.X3.

The Chipped Stone from Space 87

In this space, obsidian was once again dominant, with only two pieces of flint (0.03 percent). Much of the material was considered to be in secondary context.

- *Room fill:* Typically, the four units of fill in Space 87 were by far the most productive (cf. Carter, Conolly, and Spasojević 2005).
- *Burial fill:* Chipped stone was recovered from four different burial contexts in Space 87 and included one core (8385.A1) and a variety of modified and unmodified blanks. None of this material is considered to represent actual grave goods; all are interpreted as "background noise" from the redeposited fills into which the burials were cut.
- *Debris on floor:* Of the chipped stone pieces from the first floor of Space 87, some were found directly on the floor (6247.X3, 6247.X4, 6247.X5) and are considered to represent artifacts that had been deliberately left there. Perhaps not insignificantly, one of these pieces was a blank deliberately removed from the dorsal surface of a finely retouched projectile made of East Göllü Dağ obsidian (6247.X3 [Figure 19.17e]).

Space 88

Space 88 produced 215 pieces of chipped stone from 23 units; of these, 32 artifacts were analyzed fully; 10 of these were retouched (Table 19.2; Figure 19.18).

Obsidian Industry 1

This industry is represented mainly by flakes, aside from one opposed-platform core (6244.A1 [Figure 19.18a]). Three of the blade-like flakes had been retouched on the right edge.

Obsidian Industry 4

Obsidian Industry 4 is represented by only a handful of material; a projectile (with covering unifacial retouch) from this space is thought to have been on an opposed-platform blade (2266.A6 [Figure 19.18e]).

Obsidian Industry 7

Obsidian Industry 7 is represented by two fragmentary biface preforms (2212.A1, 2212.A4 [Figure 19.18b–c]).

Flint Industry 5

Flint Industry 5 is represented by two broken blade-like flakes (2266, 2266.A1) and two flake-scrapers (3500.A1 [Figure 19.18d], 8457.X1) of chert.

Chipped Stone in Space 88

Typically for Çatalhöyük, little material was found in association with the platform in Space 88, with only four pieces of obsidian: a core (6244.A1 [Figure 19.18a]), two retouched flakes, a non-regular blade, plus a retouched flake of chert.

- *Burial fill*: This context was poor by comparison with most BACH Area burial fills; a biface fragment was the only piece of note (2212.A5).
- *Fill units*: These were the most productive in this space; the material included the tip of a projectile (2266.A6).
- *Niche*: This context produced one retouched flake.
- *Floor units*: These units produced only a few flakes and blade-like flakes, one of which had been retouched.
- *Packing*: Only one flake and one blade-like flake were recovered from this context category.

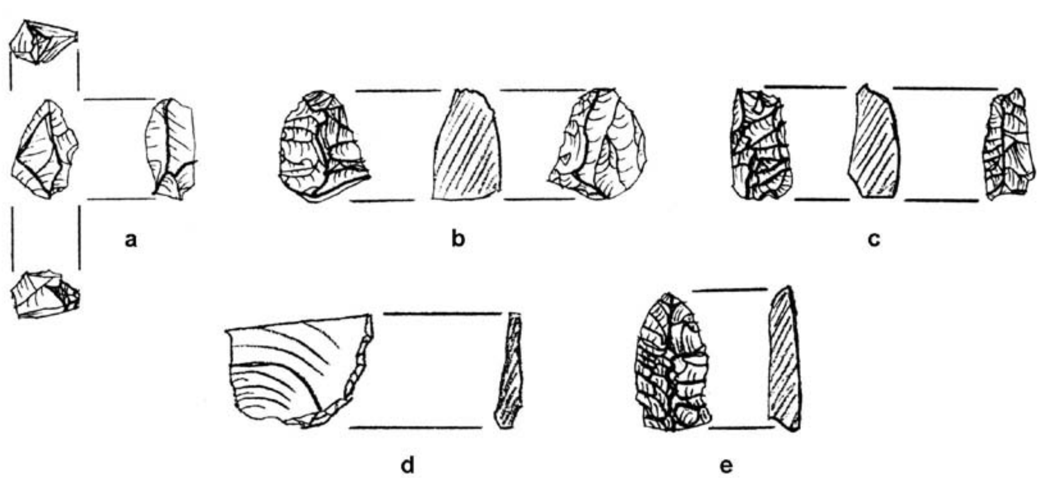


Figure 19.18. Chipped stone from the BACH Area, Space 88: (a) 6244.A1; (b) 2212.A1; (c) 2212.A4; (d) 3500.A1 chert; (e) 2266.A6.

Space 89

This space produced 836 pieces of chipped stone from 24 units, 188 of which were analyzed fully. Of this material, 51 pieces (26.6 percent) had been retouched and used as tools. There were 18 cores inventoried, of which 15 related to Obsidian Industry 1, while one was associated with Flint Industry 5 (Table 19.2).

Obsidian Industry 1

As usual, this was the dominant component, including fifteen nuclei, seven of which had multiple platforms (2224.A5, 2224.A6, 8388.A1 [Figure 19.19a–c], 6147.X2, 8405.A12, 8432.A1, 8433.A1]), four had opposed platforms (2210.A2 [Figure 19.19d], 6147.A2, 8472.A3, 8472.A5), and three had single platforms. A *pièce esquillée* (840.X3) was also assigned to this industry.

Flint Industry 3

The complete leaf-shaped dagger (with tang/haft) measuring 16.8 cm, found in the upper levels of Space 89, was assigned to this industry (2210.X7–X9 [Figures 4.14, 19.3, 19.20]). While the dorsal surface's coverage by fine, invasive, pressure-flaked retouch makes it difficult to state conclusively that the original blank was a unipolar blade, comparanda from broadly contemporary buildings nearby in the NORTH and 4040 Areas would seem to suggest this is the most likely technology. The blade itself was almost certainly imported ready-made, potentially from southeast Anatolia or the northern Levant.

Flint Industry 5

This industry has few components, but we found clear indicators of its production in Space 89, represented by two cores (6147.X2, 8432.A7), three blade-like flakes, and four flakes.

Lithics in Space 89

- *Fill*: Eighteen units of fill produced most of the analyzed chipped stone from Space 89, including 14 of the cores, plus the core tablet, the core rejuvenation piece, and 5 fragmentary bifaces. A large flint dagger measuring 16.8 cm and made on a long prismatic blade of fine-grained light brown chert was found in the upper levels of Space 89, together with a carved bone handle in the form of an animal head (2210.X7–X9; see Figures 4.14, 5.122, 5.124, 5.125, 19.3, 19.20). The dagger was found with a large cattle bucranium and fragments of human bone (see section "Space 89" in Chapter 5). The blade had been transformed into a roughly leaf-

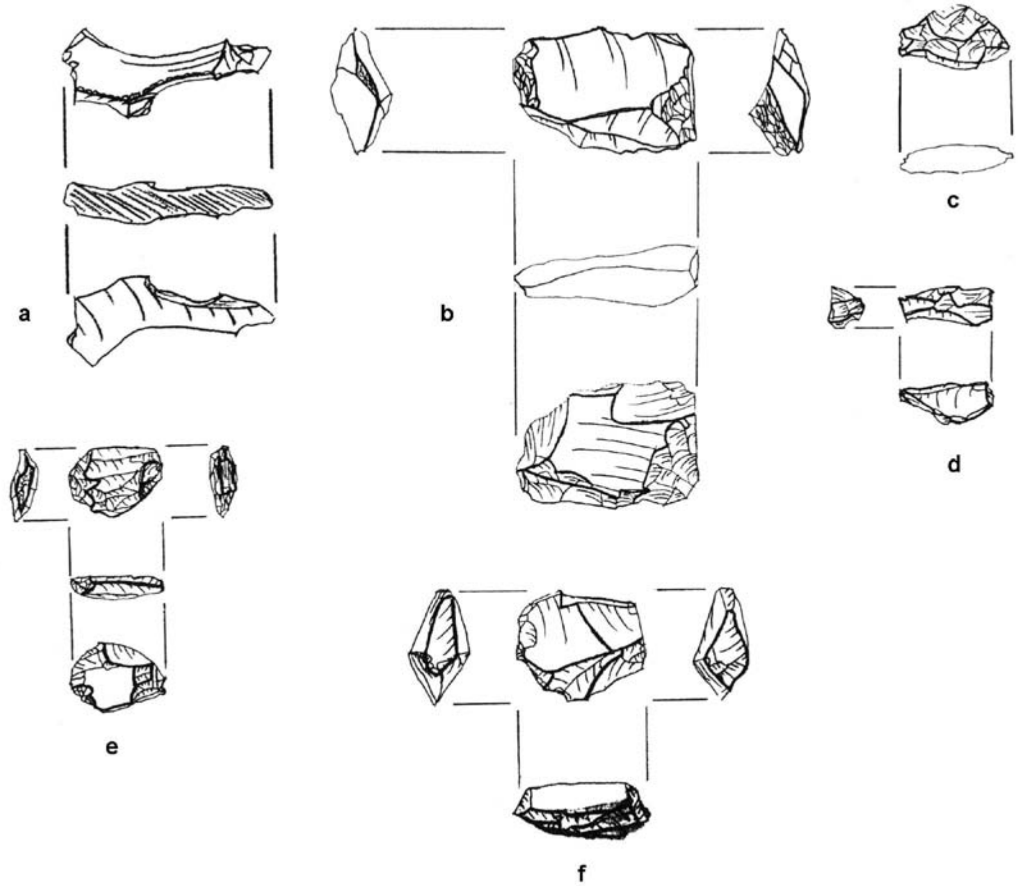


Figure 19.19. Chipped stone from the BACH Area, Space 89: (a) 2224.A5; (b) 2224.A6; (c) 8388.A1; (d) 2210.A2; (e) 3587.X3; (f) 2263.A1.

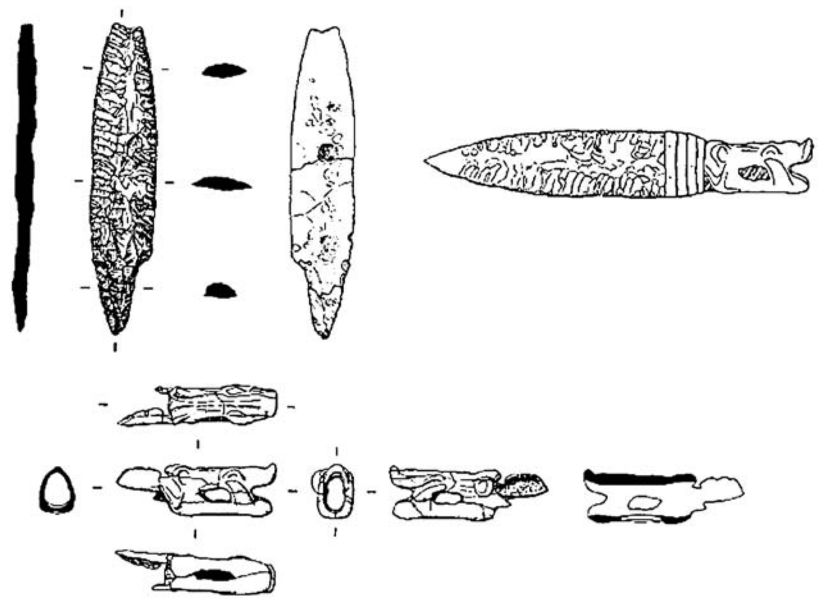


Figure 19.20. Chipped stone from the BACH Area, Space 89. Flint dagger and carved bone handle (2210.X7–X9).

shaped dagger with a tang/haft through the use of fine invasive pressure-flaked retouch that covered ca. 90 percent of the dorsal surface and the ventral surface of the haft. The dagger itself has parallels within Çatalhöyük, both with regard to raw material and to the form of modification, mainly from the later levels at the site (Conolly 1999a:41–42). That said, such pieces remain remarkably rare. Conolly (1999a:41) recorded only eight pieces from the 1960s excavations. No doubt they represent important emblems of status, often displaying traces of wear (specifically dulling/polishing of dorsal ridges), suggesting that they had been in use for a long time prior to their being taken out of circulation, perhaps owned by specific members of the community/kin-group/lineage, handed down through time.

- *Walls*: Little chipped stone came from the excavations of the walls, but one core fragment (8433.A1), several flakes, and irregular blades were identified.

Technology

Most of the BACH Area chipped stone assemblage is related to the relatively low-skilled production of obsidian blade-like flakes and flakes using a percussive technology from small single-, opposed-, or multiple-platform cores whose reduction involved only a minimum of preparation (Obsidian Industry 1). The mean length, width, and thickness of these cores are 2 cm, 1.5 cm, and 0.7 cm, respectively. The starting point for this reduction sequence appears to have been the procurement of thick flakes (sometimes part-cortical) from the quarries at East Göllü Dağ in southern Cappadocia (Carter, Conolly, and Spasojević 2005); these blanks were a recurrent feature of the subfloor hoards at Çatalhöyük (Carter 2007; Conolly 2003). Some of the end-products of Obsidian Industry 1 were then modified with simple linear retouch, often into small scrapers.

The remainder of the obsidian assemblage is comprised of a quantity of unipolar prismatic blades (Obsidian Industry 5) that appear to have been mainly made of Nenezi Dağ obsidian. Because we found no associated manufacturing debris for these blades, it is likely that they were either made elsewhere on the site or perhaps at quarry-based specialist workshops. A great many of these blades were retouched into "formal tool types." In turn, there were even smaller quantities of prismatic blades knapped from opposed-platform cores (Obsidian Industry 4), represented by examples made from both Nenezi Dağ and East Göllü Dağ obsidian. These were often employed to make projectiles. A visual scan of the BACH Area obsidian assemblage suggests that in excess of 90 percent of the material came from East Göllü Dağ, the remainder from Nenezi Dağ. This is in contrast to the much more even ratio suggested by our characterization study (Carter and Shackley 2007). We believe that this contrast is due to the sampling strategy targeting techno-typologically diagnostic material, whereby the end-product blade material made of Nenezi Dağ obsidian became overrepresented in the samples chosen for elemental analysis.

While the "flint" component represents only a minority of the overall BACH Area assemblage, it embodies a technological variability not dissimilar to that seen in the obsidian. Most of the material appears to relate to the manufacture of blade-like flakes and flakes by percussive techniques (as in Flint Industry 5), essentially the same form of reduction as witnessed with Obsidian Industry 1. There are a series of unipolar prismatic blades that once again seem to have been procured ready-made (Flint Industry 3); a great many of these blades seem to have been employed for the cutting of silica-rich plant materials, as evidenced by their glossed edges. Within this group of unipolar blades, it is quite apparent that a number of distinct *chaînes opératoires* are represented on the basis not only of the various raw materials employed (different colored cherts, red radiolarite, and true flint), but also the significant scalar differences, with some blades over 3 cm wide.

Distribution of Tool Types

The BACH Area chipped stone assemblage includes 281 pieces that had been retouched and used as tools. In keeping with what we have seen previously at Çatalhöyük, however, only a few of these could be interpreted as clear types, such as end-scrapers or points, most of the implements coming under the heading of "non-formal tools" (cf. Conolly 1999a: 48–57). While somewhat irregular in form, 235 (83.6 percent) of the 281 modified implements could be classified as types of scraper, mainly produced on flakes relating to Obsidian Industry 1.

There are also 27 projectiles (9.6 percent of the tools), mainly broken and all of obsidian, apart from a leaf-shaped point made of red radiolarites from Phase B3.1 (8580.A1). Typically for Çatalhöyük, these points embody a variety of forms (cf. Conolly 1999a:38–41, Figure 17.1h–i), including ovates, plus tanged and shouldered examples, usually involving the use of bifacial covering retouch. While retouch coverage can obscure the form of the original blank, we believe that they were probably all made on opposed-platform blades.

The assemblage also includes 14 retouched pieces interpreted as multifunctional tools (as they could have been used for both scraping and/or cutting), plus 5 piercers made on small flake-like pieces that had their distal ends shaped by retouch into a point.

Arguably the finest piece from the BACH Area assemblage is the large flint dagger with its carved bone handle (2210.X7–X9 [Figures 19.3, 19.20]), one of only a very few that were finely worked and no doubt highly valued weapons/emblems of status (Bialor 1962:74; Conolly 1999a:41).

The Sourcing Study Revisited

In 2005, 42 obsidian artifacts from the BACH Area assemblage were elementally characterized by Steve Shackley at UC Berkeley's XRF lab using the nondestructive technique of energy dispersive X-ray fluorescence, the results of which were published in *Archaeometry* (Carter and Shackley 2007). The analysis indicated that the artifacts were made of obsidian from the two main sources of southern Cappadocia, with 25 sourced to East Göllü Dağ (59.5 percent), the remaining 17 having a chemical signature that matched the products of Nenezi Dağ (40.5 percent). Comparisons were made between the results from Building 3 and those from the analyses undertaken on nearby Building 1 material (Carter, Conolly, and Spasojević 2005), with both assemblages having much the same techno-typological characteristics and a similar relative proportion of East Göllü Dağ to Nenezi Dağ obsidian.

The one problematic aspect of the 2007 paper was the claim that the Building 1 and Building 3 assemblages provided us with examples of community "hot spots" vis-à-vis the introduction of new technical practices (Carter and Shackley 2007:450–451). It was argued that these buildings offered the earliest evidence for the on-site manufacture of pressure-flaked blade production, a significant change in how obsidian was being worked at Çatalhöyük (Conolly 1999a), whereas "contemporary" deposits elsewhere on the mound (the SOUTH Area) lacked such material. This argument was forwarded on the basis of the radiocarbon dates from Building 1 (which was assumed to be roughly the same date as Building 3), which seemed to indicate that it should be placed at approximately Mellaart's Levels VIII–VII (Cessford 2001). Things have changed. A recent reappraisal of the radiometric analysis has indicated that technical problems existed with the original AMS dates (producing results that were 100–300 years too old; Bronk Ramsey et al. 2004). Buildings 1 and 3 have now been reassigned to approximately Mellaart's Levels VI–VIIA (A. Bayliss and S. Farid, personal communication; see also discussion in Chapter 4). As such, the obsidian assemblages from these two structures now must be viewed as being entirely in accordance with what one should have expected based on the studies of Level VI material from the Mellaart excavations and the more recent work on the SOUTH Area sequence (Carter, Conolly, and Spasojević 2005; Conolly 1999b).

Conclusion

The assemblage from the BACH Area displays a number of parallels with those from other pre-Level VI buildings at Çatalhöyük (from NORTH, 4040, and SOUTH Areas) in terms of technology and the overwhelming dominance of East Göllü Dağ obsidian. Obsidian Industry 1 is by far the most common, with its emphasis on the production of blades and blade-like flakes. This relatively unskilled technology was practiced by using a percussion technique for the manufacture of small blades and blade-like flakes, and the cores were intensively worked to exhaustion.

As in other pre-Level VI buildings, the richest deposits tended to be external middens, followed by room infill, most of which we consider to be in secondary context; the same argument follows for the majority of the chipped stone from burial fills. The artifacts themselves represent an array of implements (and their associated manufacturing debris) relating to daily domestic activities such as food preparation, as well as the working of leather, wood, bone, and horn. The more functionally specialized implements seem to have been made from nonlocally produced blades; this applies especially to the sickle elements made on imported unipolar chert/radiolarite/flint blades, and to the projectiles for hunting and/or warfare and display that were made from large obsidian blades and/or imported biface preforms from Kaletepe Sector M on the eastern flanks of Göllü Dağ.

With regard to actual in situ material, Building 3 again provided us with data comparable with that recovered from other pre-Level VI structures—namely, the burial of subfloor hoards and the accumulation of knapping debris in the "dirty floors" at the southern end of the building, near the oven and other fire installations (Carter, Conolly, and Spasojević 2005:239). The contents of both the hoards and the "dirty floor" deposits also find parallels from pre-Level VI buildings elsewhere on the site vis-à-vis the burial of biface preforms and thick "quarry flake" fragments made of East Göllü Dağ obsidian. Some of these were no doubt disinterred and then knapped around the area of the fire—hence, the concentration of thinning flakes and debris/end-

Figure 19.21. Flint blade (8393.X1) surviving in a cut (F.796) in the floor of Building 3 dating to Phase B3.1B and interpreted as an emptied cache of flint blades.

products relating to Obsidian Industry 1. The one interesting exception is the apparent burial of the long remnant crested blade of chert (8393.X1 [Figures 19.2c, 19.21]), as subfloor caching tended to be something almost exclusively associated with obsidian at Çatalhöyük (Carter 2007).

Finally, the inclusion of fine "interesting" implements in ritual deposits relating to moments of closure, or transformation (the plastering of an oven, the construction of a platform, or the abandonment of a bin) was something seen not only in Building 3, but also in a number of other pre-Level VI structures (Carter, Conolly, and Spasojević 2005: 282).

Chapter 20

Ground Stone Tools and Technologies Associated with Buildings in the BACH Area

Katherine I. Wright and Adnan Baysal

The Neolithic period witnessed a vast expansion in technologies and the use of diverse materials. This expansion was particularly striking with respect to the use of rocks for making artifacts.

On the whole, Palaeolithic populations utilized a wider array of materials for making chipped stone tools than is sometimes remembered. Depending on location and resource availability, Palaeolithic groups—even as early as the Lower Palaeolithic—made use not only of chert/flint but also of quartzite, basalt, limestone, and other materials. Most of these materials had some degree of conchoidal fracture, but some resource-poor Lower Palaeolithic groups (for example, in India) are known to have attempted to exploit even granite, for making hand axes (Petraglia 2005). Abraded stone tools used for pounding and grinding occur quite early in the archaeological record, although they are rare. They include Lower Palaeolithic anvils used with pounders (Goren-Inbar et al. 2002) and grooved stones, incised stones, and ocher-milling tools from the Middle Palaeolithic (Henshilwood et al. 2001). These trends only increased as the Upper Palaeolithic evolved, and by the end of the Palaeolithic and the beginning of the Neolithic, the expansion of stone technologies—more materials and more techniques—reached new heights (DuBreuil 2002; Wright 1994). In a sense, then, ground stone artifacts lie at the heart of changes in stone technology in the Neolithic.

Methods of Analysis

Techno-typological analysis of these diverse lithic artifacts involves procedures similar to those established for chipped stone studies (Odell 2004), with emphasis on raw material availability and procurement, transport of materials from source to site, primary and secondary lithic reduction techniques, use and recycling of "finished" tools, and abandonment (Adams 2002; Baysal 2009; Wright 1992b). We have discussed this approach elsewhere in more depth in relation to Çatalhöyük, along with our classification and definitions of artifact types (Baysal and Wright 2005).

In this report, we present the ground stone materials from the BACH Area at Çatalhöyük—that is, from Building 3 and the adjacent Spaces 85, 87, 88, 89, 41, 40 (see Figure 4.1). We include here all stone artifacts except for obsidian and flint chipped-stone tools, obsidian mirrors, stone figurines, and stone beads, which are described in other chapters in this volume. Initially we present an overview of the assemblage from these areas. We then discuss specific contexts of the finds from Building 3 (phase by phase) and from the adjacent spaces (see Figure 4.3).

Many of the artifacts from Çatalhöyük and from the BACH Area are fragmentary. Sometimes, site formation processes (fire, postdepositional freezing and thawing) can break ground stone artifacts into fragments. One of the most essential tasks in ground stone analysis is therefore to find out whether fragments (especially from the same context) can be refitted to one another. We have found this to be successful in past studies (Wright 1992a, 1993). We attempted this whenever possible, especially in looking at contexts where we suspected such refits might be successful. In some cases, they were.

Overview of the BACH Ground Stone Assemblage: Techno-typology

The total number of ground stone artifacts analyzed from the BACH Area was 272 (Table 20.1; see also Appendix 20.1 [on-line]).[1] Eleven different raw materials were used for these items.

[1] See the on-line "mirror" of this volume at *http://www.codifi.info/projects/last-house-on-the-hill*.

Table 20.1. Overview of BACH Area ground stone assemblage: Raw frequencies

		Igneous			Sedimentary					Metamorphic		Other	
Artifact Class		Andesite N	Basalt N	Diabase N	Chalk N	Flint N	Lime-stone N	Sand-stone N	Quartz-ite N	Marble N	Schist N	N	TOTAL
A	Vessels	1					1						2
B	Mortars												0
C	Pestles												0
D	Pounding tools		4										4
E	Grinding slabs	97	7										104
F	Handstones	10	6	1						1			18
G	Abrading slabs						1				4		5
H	Handheld abraders	1	1				5	7		4	4		22
I	Grooved stones						1	2					3
J	Perforated stones												0
K	Cutting tools			10									10
L	Fire-damaged rocks												0
M	Debitage	49	1	1		1	9		1	1	2		65
X	Unidentifiable ground stone fragments	16	8	1	2		9	1				2	39
Y	Miscellaneous/ other												0
Total ground stone artifacts		174	27	13	2	1	26	10	1	6	10	2	272
% of all ground stone artifacts		64.0	9.9	4.8	0.7	0.4	9.6	3.7	0.4	2.2	3.7	0.7	100.0

Final forms of ground stone artifacts are profoundly affected by the raw materials chosen. Particular characteristics such as fracture, hardness, texture, compressive strength, and resistance to abrasion vary considerably among rocks used for ground stone artifacts. Thus, we present the artifacts first in terms of the materials, lithic reduction techniques, and the typology of forms that results from progressive lithic reduction. We then turn to a discussion of contexts and distributions.

Igneous Rocks

In terms of raw materials, igneous rocks greatly dominate the assemblage (79 percent of all ground stone artifacts). Since Çatalhöyük itself lies in a sedimentary context, this dominance of igneous (especially volcanic) rocks indicates the significance of importation of rock from rather distant volcanic sources, which is also reflected in the emphasis on obsidian in the chipped stone (Chapter 19) (for discussion of ground stone artifact sources, see Baysal and Wright 2005; Türkmenoglu et al. 2005).

Andesite

Andesite is by far the most common material (N = 174, or 64.0 percent of all artifacts). The probable sources of andesite at Çatalhöyük, and its petrological characteristics, are discussed elsewhere (Baysal and Wright 2005). Most andesite artifacts are fragments of grinding slabs (N = 97, or 55.7 percent of the andesite items).

Andesite grinding slabs or grinding slab fragments are the most common single artifact type in the whole BACH assemblage (N = 97, or 35.7 percent of all ground stone artifacts). Only three complete grinding slabs were found. One of these, 6153.X1, was found in Space 88, in a fill of Feature 610 (Figure 20.1). This is an oval slab with a flat to slightly convex use surface, suggesting that it had not been used for very long before it was abandoned (had it been long used, we would expect a concave use surface).

The second most common artifact type made of andesite is debitage (N = 49, or 28.2 percent of the andesite artifacts). Debitage is also the second most common artifact type in the whole BACH assemblage (18.0 percent of all ground stone artifacts). These are mainly flakes, but also include one or two items suggesting cores, and some artifacts that we suspect are shatter (for definitions, see Adams 2002; Andrefsky 1998, 2001; Odell 2004). Analysis of cores and flakes is still in progress (Baysal 2009), and we do not present detailed discussion here. However, we can say that the flakes are true flakes, struck by hard hammers with clear platforms and bulbs of percussion. The flakes are distinctly different from flakes produced by heavy fire damage to andesite objects. Analysis of a fire-shattered andesite mortar (from elsewhere on the site) revealed flake forms that could not be confused with flakes deliberately struck during manufacture (Wright and Baysal 2005). Consequently, we know that manufacture of andesite artifacts was being conducted on-site.

Unidentifiable ground stone fragments (N = 16)—most of them probably from grinding slabs or handstones—constitute about 9.2 percent of the andesite items and 5.8 percent of all ground stone artifacts.

Handstones and handstone fragments (N = 10) comprise about 5.7 percent of the andesite artifacts and only 3.7 percent of all ground stone items in the assemblage. Complete examples are few, but include oval, plano-convex manos that could be used in one hand (e.g., 3537.K1 [Figure 20.2a]), and small one-hand manos of discoidal type (e.g., 8405.X5 [Figure 20.2b]).

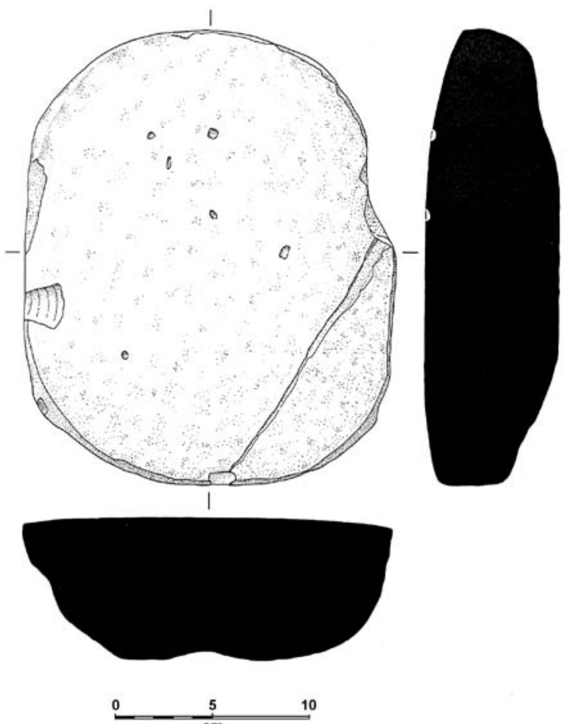


Figure 20.1. Andesite (gray vesicular): grinding slab, complete (6153.X1), from Space 88 (F.610 fill).

Basalt Artifacts

Basalt artifacts (N = 27) constitute 9.9 percent of all artifacts. Basalt was used for about the same range of artifact types as andesite (Table 20.1).

The use of basalt and andesite primarily for grinding tools, such as grinding slabs and handstones, probably reflects recognition on the part of artisans that these materials have naturally rough textures (from pores or vesicles in basalt, and from rough surfaces in andesite) (cf. Schneider 2002). At the same time, these materials have a high resistance to abrasion, meaning that particles do not detach too easily (this is especially true of basalt). Resistance to abrasion is measured, using certain standards and controls, in loss of cm^3 from a 50-cm^2 surface area. The figure for basalt is 5–7 cm^3, a low figure indicating high abrasion resistance. Basalt also has high impact strength, which is measured (again using certain standards and controls) in number of blows to destruction. For basalt, this figure is about 12–17 blows. Thus, basalt and andesite are relatively resistant to breakage by force of impact (Schumann 1992).

Diabase/Meta-basalt/Meta-Gabbro

Only 12 artifacts (4.8 percent of all artifacts) in the assemblage were made of diabase/meta-basalt/meta-gabbro. These materials are greenish black, fine-grained metamorphosed

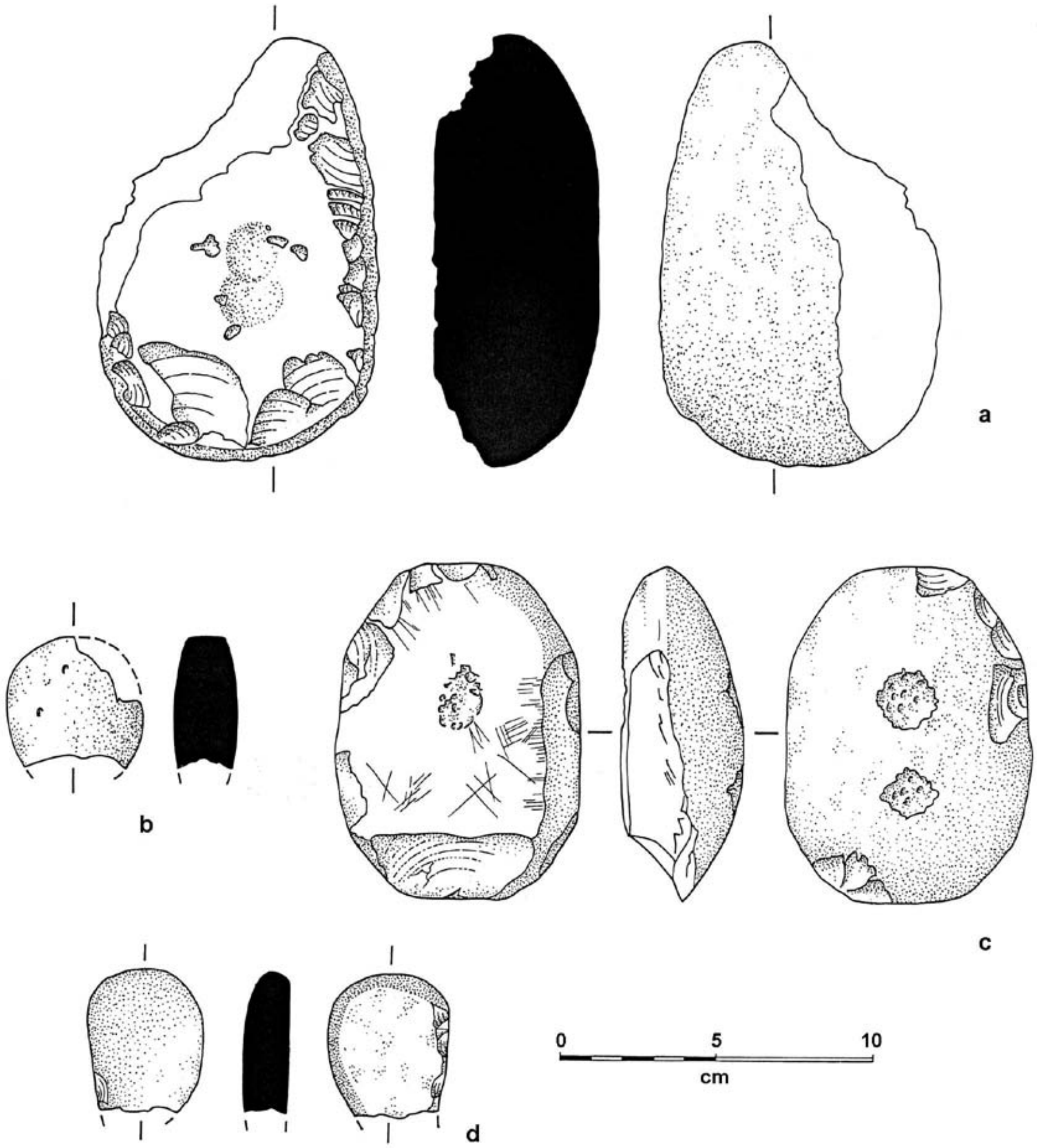


Figure 20.2. (a) Andesite (gray): handstone, complete (3537.K1), from Building 3, Phase B3.4B, layer relating to the west wall. (b) Andesite (gray): handstone, almost complete (8405.X5), from Space 89, eastern part, arbitrary layer. (c) Marble (pale gray-brown): handstone/hammerstone (3560.X1). (d) Marble (gray): polishing pebble, complete (6334.K1), from Building 3, phase not known, midden outside the west wall.

basalts or gabbros altered by serpentinization (Schumann 1992). Most of these (N = 9) are axes or axe preforms in various stages of manufacture, use, or resharpening. These are all small, even the most "unfinished" items, indicating that the artisans were aiming to make small and relatively standard sizes of axes.

The preforms suggest that the materials were flaked, ground, and even partly polished *before* the cutting edge was produced (Figure 20.3a, c–e). Flake scars on the preforms indicate both larger flake removals on the faces (e.g., Figure 20.3d, e) and small retouch scars around the sides (e.g., Figure 20.3c, e). Creation of the working edge or bit appears to have been a relatively late stage in the manufacturing process, although final grinding of the whole ax seems to have been needed even after the edge was formed (Figure 20.3e). Resharpening of finished axes is indicated by flakes struck from a finished, polished ax (Figure 20.3b).

The diabase/meta-basalt/meta-gabbro used for the axes are fine-grained and strong materials. They are very resistant to abrasion (loss in cm^3 from a 50-cm^2 surface area = 7–8 cm^3). They also have extremely high impact strength (11–16 blows to destruction) (Schumann 1992). Consequently, these axes would have been difficult to make and robust in use as axes.

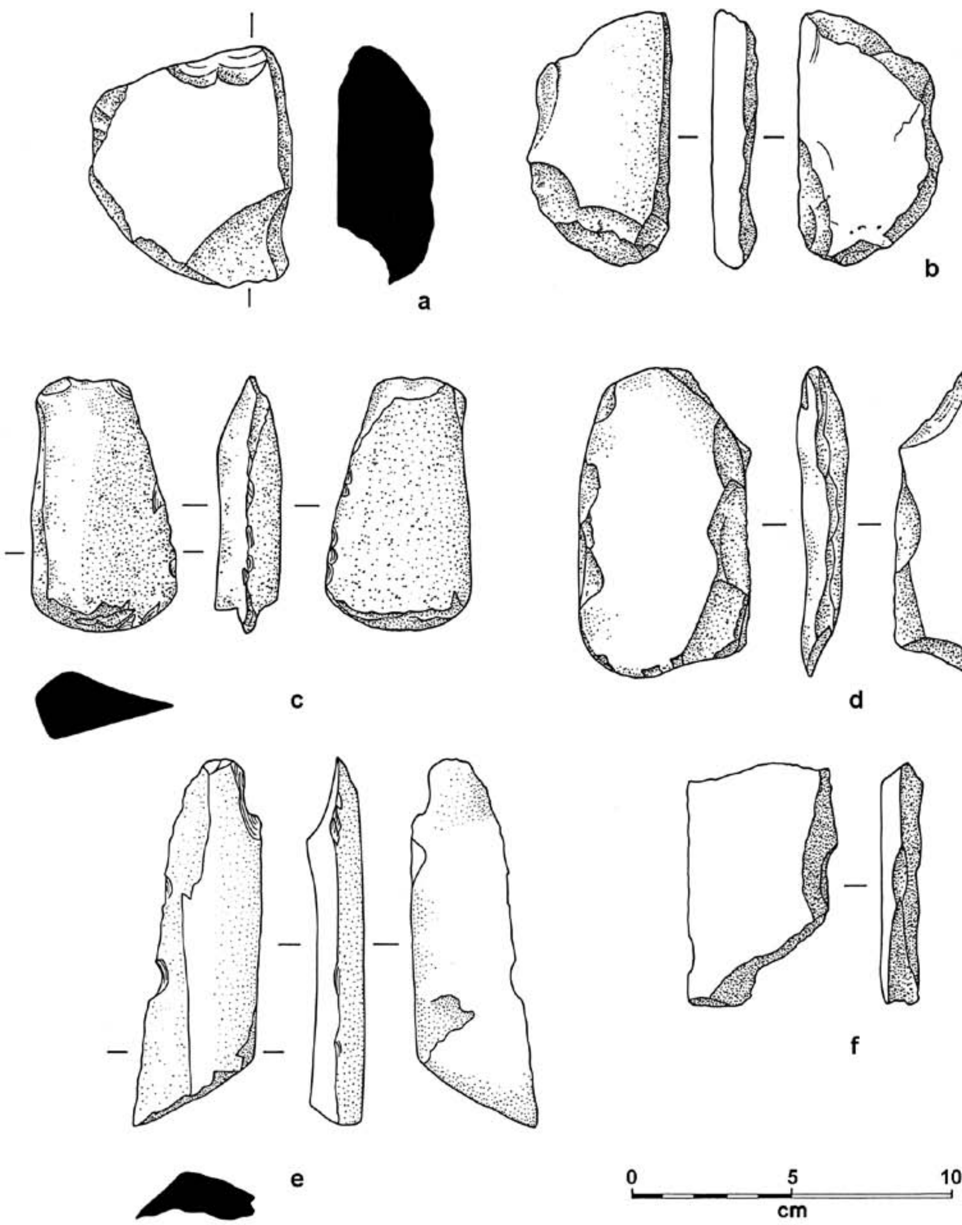


Figure 20.3. (a) Diabase (black): ax preform, complete (8159.X3), from Space 85, black midden. (b) Diabase (greenish black): flake struck from an ax (6272.X2), from Building 3, phase not known, burial lid, platform F.173. (c) Diabase (black): ax preform, broken (8603.K1), from Space 85, brick and mortar layer. (d) Diabase (black): ax preform, broken (2246.K1), from Building 3, Phase B3.5A, 2 × 1 m area in Space 86; dimensions: 30 × 21 × 14 mm. (e) Diabase (greenish black): ax preform, complete (8604.X1), from Space 89, arbitrary layer of packing. (f) Sandstone (pink): whetstone/cutting tool (abrader-knife), complete (2218.K1), from Building 3, Phase B3.5A, F.173, northeast platform fill.

The small size of these tools could be partly a result of curation and extensive resharpening. However, this does not seem to be the only explanation for the small size; some of the ax preforms seem to be "fresh," representing the start of new axes from raw nodules, rather than reworking or modifications of older, larger axes (Figure 20.3a).

It appears, then, that these axes were made to be relatively small, if also robust and strong. It follows that they were probably used for small-scale cutting tasks, and the occurrence of these items in graves (though not in the BACH Area itself) suggests that they had significance as identity markers and in ritual.

Sedimentary Rocks

Artifacts made from sedimentary rocks constitute only 14.8 percent of the BACH assemblage (N = 40). Çatalhöyük lies in a sedimentary context with lake limestones;

other limestone outcrops occur closer to the site than do outcrops of in situ igneous rocks (MTA 2002b). Rocks brought in close to the site via the Çarşamba Çay could include a variety of types, but sedimentary rocks should dominate these. On the whole, sedimentary rocks were used for small items, such as handheld abraders (sanders and whetstones), grooved shaft-straighteners, and vessels.

Limestone

Limestone was the most common sedimentary rock used for ground stone artifacts (N = 26), and these items comprise 9.6 percent of all ground stone artifacts (Table 20.1). Artifacts of limestone included debitage (true flakes) (N = 9), unidentifiable worked pieces (N = 9), a grooved shaft-straightener (N = 1), and a vessel fragment (N = 1).

The most numerous finished tools made of limestone are artifacts used for fine polishing. These include one fine abrading slab (polishing slab) (for a similar example, compare Baysal and Wright 2005:Figure 13.3:14). They also include five handheld abrading tools, all of which are polishing pebbles (for similar examples, albeit in marble, compare Baysal and Wright 2005:Figures 13.3:16, 13.4:7). (See the discussion of similar items made of marble, below.)

Sandstone

Sandstone artifacts (N = 10) comprise 3.7 percent of the assemblage. Of these, two grooved shaft-straighteners were found and one unidentifiable but worked item.

The most numerous sandstone tools were handheld abraders (Figure 20.4a) and, in particular, an artifact type that we call a whetstone/cutting tool or "abrader-knife." This artifact type is made of a fine-grained but abrasive material (sandstone or schist), displays broad surfaces that are abraded, and has one rough, sinuous cutting edge with a relatively wide edge angle. The edge was usually formed by both flaking (as indicated by scars) and grinding. The sandstone examples are shown in Figures 20.3f, 20.4b–d. Opposite the cutting edge is a thick unretouched edge suitable for grasping in the hand (e.g., Figure 20.4c, left drawing). In some cases, these artifacts seem to have been made on large primary sandstone flakes which preserve the platform and bulb of percussion (e.g., Figure 20.4d). Flat faces

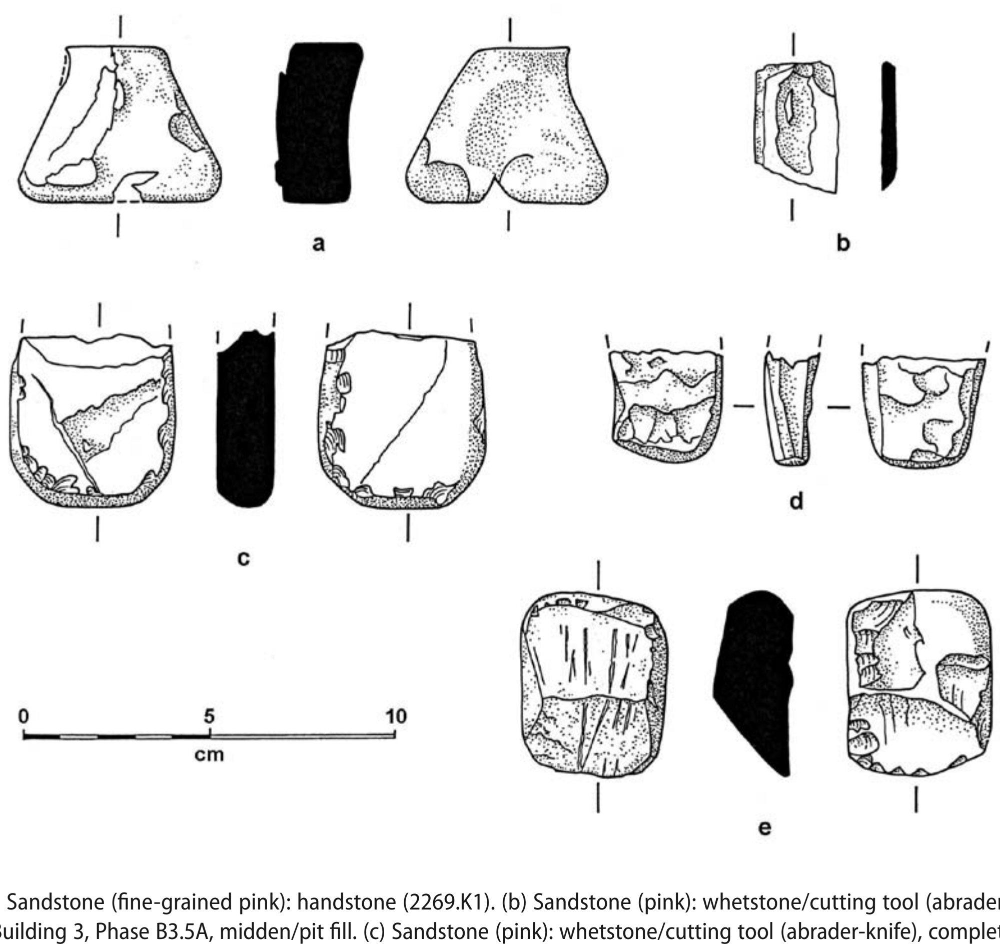


Figure 20.4. (a) Sandstone (fine-grained pink): handstone (2269.K1). (b) Sandstone (pink): whetstone/cutting tool (abrader-knife), complete (2229.K2), from Building 3, Phase B3.5A, midden/pit fill. (c) Sandstone (pink): whetstone/cutting tool (abrader-knife), complete (8629.K1), from Space 85, midden to west of west wall. (d) Sandstone (red): whetstone/cutting tool (abrader-knife), complete (2261.X4), from Building 3, Phase B3.5A, bricky material west of curtain wall. (e) Schist (gray-green): whetstone/cutting tool (abrader-knife), complete (8629.K2), from Space 85, midden west of west wall.

on some of these items suggest that abrasion along a plane, as well as cutting activities, were involved in the use of these objects (Figures 20.3f, 20.4b). Artifacts of this type also occur in schist (see below). We suspect that these objects played a role in the abrasion of diabase axes, but experiments are needed to explore this further.

Sandstone was probably an important and hard-to-come-by rock at Çatalhöyük. It was clearly used for smaller-scale abrading activities requiring fine grinding work, and probably mainly related to craft production rather than food preparation, although such tools could have figured in both kinds of activities (Baysal and Wright 2005).

The general hardness of quartz (Mohs = 7) and the variable texture of sandstone (from coarse to fine) make it the ideal material for controlling abrasion of softer materials (such as limestone, which is composed mainly of calcite, Mohs = 3). Depending on the degree of cementation of the mineral grains, sedimentary sandstone has a variable resistance to abrasion. On average, quartz sandstone loses 10–14 cm^3 per 50 cm^2 of surface area, meaning that grains detach easily (which is why Neolithic groups that relied on sandstone milling tools in food processing often may have had extreme tooth wear).

Metamorphic Rocks

Artifacts made from metamorphic rocks (N = 16) constitute 5.9 percent of the BACH assemblage.

Marble

Only six marble items emerged from the assemblage (2.2 percent of the whole assemblage), of which four are handheld abraders. These are polishing pebbles (Figure 20.2d) of the kind found elsewhere on the site (see Baysal and Wright 2005:Figures 13.3:16, 13.4:7). These, along with their counterparts in limestone (see above), could have figured in polishing of plastered surfaces on walls and floors, based on both ethnographic and experimental data (Baysal and Wright 2005).

However, there is a possibility that marble pebbles of this kind may have sometimes been preforms for figurines, although there is no hint of this in the BACH examples. Marble is a soft material composed of calcite and thus is capable of being carved with relative ease. It also takes a polish easily.

Other marble items included a handstone (N = 1) (Figure 20.2c) and a flake (N = 1).

Schist

There are 10 schist artifacts in the assemblage (3.7 percent of the BACH ground stone). Four of these are small abrading slabs—namely, palettes with small oval use surfaces. Only one of these is unbroken (for similar examples, see Baysal and Wright 2005:Figure 13.2:10). Such artifacts were sometimes used for crushing pigments, but we saw no signs of this on the BACH examples.

Four additional schist items were handheld abraders, all whetstones, of which two also have what appears to be a cutting edge and were therefore classified as whetstone/cutting tools or "abrader-knives" (Figure 20.3f) (for other examples, see Baysal and Wright 2005:Figure 13.5:3–4). These may have been in secondary use, made from worn-out palettes.

Contextual Analysis

Details of the context of the artifacts are documented in Appendix 20.2 (on-line).

Contextual Analysis of Building 3

From the foregoing, we can see that very few in situ caches, collections, or "toolkits" of ground stone artifacts were found in this building. Most artifacts were broken and in secondary contexts. There is little clear evidence of activities involving the use of these items. Exceptions probably include the use of broken andesite grinding slabs in relation to fire features (hearths and ovens). These items may have served as heat storage stones (cf. "potboilers") (Atalay and Hastorf 2005; Wright and Baysal 2005). We found little evidence of activities involving ground stone artifacts from roof contexts.

Changes in the ground stone assemblage from early to later phases in Building 3 suggest possible patterns in the use-lives of these tools. Phases B3.1–4 revealed only small numbers of artifacts (under 20 items in each case). Most of these were broken and found in contexts of discard. By contrast, Phase B3.5A revealed many more artifacts (N = 129), which is consistent with curation of valued hard-to-get materials. Overall, it seems that such artifacts were retained as long as possible, recycled through time, and mostly abandoned at the end of the use-life of the house itself. Few artifacts were found on floors or in other in situ contexts. This contrasts with the situation seen in Space 88 (see below).

Contextual Analysis of Space 85

From Space 85, which is unphased, came 15 ground stone artifacts, all from middens. Space 85 yielded a miscellany of mainly fragmentary items from middens.

Contextual Analysis of Space 87

From Space 87 came eight ground stone artifacts. No generalizations can be made from the small collection of items from Space 87.

Contextual Analysis of Space 88

Space 88 produced 45 ground stone artifacts, including the largest collection of unbroken and in situ items in the

BACH Area. This collection is considerably larger than the ones recovered from Space 85 (N = 15), Space 87 (N = 8), and Space 89 (N = 15). Space 88 presents the clearest picture from the BACH Area—however partial that picture—of a household ground stone tool kit. It is noteworthy that three complete grinding slabs—two oval and one rectangular—were found in this room, suggesting that the household to which it belonged kept multiple grinding slabs (see Figure 5.114).

Also from the room were unbroken handstones, a schist whetstone, and other items. Collectively these suggest a coherent tool kit possibly representing a range of artifacts deemed useful for a particular household. As this room was small, we suspect one of its functions may have been storage of these ground stone items. Although some andesite flakes are present, there is relatively little to suggest manufacture of stone artifacts in this space (but micro-artifact and/or micromorphological analysis could show a different picture).

Contextual Analysis of Space 89

Fifteen artifacts came from Space 89. These include only a small miscellany of items, mainly fragmentary and mainly in secondary contexts.

Conclusions

The ground stone artifacts from the BACH Area are consistent with patterns established for Çatalhöyük generally (Baysal and Wright 2005): an emphasis on igneous rocks (in terms of artifact numbers); a high degree of breakage, curation, reuse, and recycling of ground stone materials; use of different materials consistently for certain artifact types (andesite for grinding slabs, diabase for axes); use of broken grinding slab fragments in connection with fire features (hearths, ovens), perhaps as "potboilers"; and indications of deliberate cleaning out of ground stone artifacts during abandonment, and removal of broken items to secondary midden contexts.

Few concentrations revealed evidence for specific activities and tool kits, or the spaces in which such activities might have taken place. Some of the artifact concentrations within Building 3 may suggest ground stone artifact production (such as occurrences of basalt hammerstones and andesite flakes). Space 88 revealed what may be a cache of stored ground stone items, relatively "new" tools, in numbers suggesting that households kept multiple tools of similar functions (for example, three complete grinding slabs: Figure 5.112) (Chapter 6).

Acknowledgments

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Chapter 21

Beads and the Body: Ornament Technologies of the BACH Area Buildings

Katherine I. Wright

Issues and Methods in the Study of Ornaments

Using Ornaments: The Body and Individual Identity

Individuals use dress and personal ornaments to express identity in relation to the social structures in which they live. Dress contributes to the day-to-day construction of social categories such as gender, age-sets, status, ethnicity, and group identities (Barnes and Eicher 1992; Eicher 1995; Goffman 1956; Roach and Eicher 1979; Sciama and Eicher 1998; Sorensen 1991, 1997). These categories change in the course of the life cycle of individuals. Dress is a nonverbal signal of a person's stage in life: infancy, childhood, adolescence, marriage, parenthood, old age, widowhood, death, and, finally, burial or disposition of the dead body. Countless ethnographies document the uses of dress to mark *rites de passage* from one stage to another. In such rituals—naming ceremonies of infants, weddings, funerals, and the like—public displays of dress and body decoration reinforce, for wearer and viewer, social values, acceptance of an individual into a new group, and new expectations of the individual (Barrett and Richards 2001; Carey 1998; Fiore 2006; Green 2006; Lane 1998; Turner 1969).

Thus, personal ornaments and dress are an important unspoken system of visual communication, via symbols, concerning where and how a person "fits in" to a social setting. Much anthropomorphic art in the Neolithic Near East can be understood as representations of people shown in different stages of life—as members of hunting groups, women on the verge of motherhood, and so on. Various elaborations of dress can be seen in these artworks, suggesting not necessarily "the gods" (Cauvin 2000), but people themselves—or perhaps both (Wright 2006b).

A lively debate has emerged in anthropology and archaeology concerning the degree to which the individual human body is a symbol of social relations and an arena for the imprinting of culture on individuals. Some see the body as restricted by cultural rules—a vehicle for expression of social ideals which are more or less enforced (Bourdieu 1977; Butler 1993; Douglas 1966; Foucault 1977, 1978). Others argue that individuals play a much more active role in the negotiation of identity between an individual and his or her social world; "individuals matter" (Meskell 1999) and can be agents of deliberate social change, not purely subject to social constrictions (Bahrani 2001, 2002; Giddens 1987; Meskell 1999, 2001). Individuals use dress to make political statements; such statements are taken very seriously by political authorities (Carey 1998; Hallpike 1969; Layton 1989). Examples today include the wearing of traditional ethnic or tribal dress in states trying to replace those traditions with national identity; or the *failure* to wear such dress where such attire is seen as acceptance of national laws.

These issues are important because they affect how we interpret archaeological data on dress. Archaeologists like patterns and they like to infer social rules from them. For example, in an analysis of personal ornaments associated with skeletons in graves, archaeologists will often go on a search for patterning, defining group differentiations on the basis of variability in mortuary treatment. Are there similarities between bead types and gender or age groups? Suppose we find such patterns? Many archaeologists will then try to generalize (usually regretting the size of the available sample and its representativeness). Patterns identified may be inferred in terms of social rules about decoration of the body of certain age-gender groups, at least in the context of death and mourning. If there is little variability in body decoration from one individual to another in a given age-sex group (for instance, adult females), it is tempting to infer social rules concerning dressing the deceased individual. We might also be tempted to infer a relative egalitarianism if variability is low.

On the other hand, if there are wide disparities in ornaments within and between groups, we may be willing to contemplate that individual preferences of the ancient mourners played a role in causing these wide differences. Or we may be tempted to consider the possibility of status variations or hierarchies. Traditionally, processual approaches were very much concerned with identifying differences in access to exotic or precious items as an indicator of rank and hierarchy. Despite critiques of this sort of analysis (Parker Pearson 1993, 1999), differential access to exotic goods would still have to be explained, and an appeal to individual preference might simply not be enough.

These issues are central at Çatalhöyük, because many of the personal ornaments do come from burials and ornaments constitute the single most common type of durable grave goods. However, the body in death is only one specific context of personal ornamentation—one in which the dress of an individual has actually been chosen by others (mourners). Choices concerning dress in life are much harder to determine from archaeological remains. One classic means is to study representations of dress in art and iconography. This too presents interpretive complexities, since such images are produced for such a wide range of uses and may have all sorts of meanings. On the whole, how people dressed in life is difficult to infer from available archaeological evidence. One way of getting at this is to look closely at production areas and compare them to contexts in burials. This might permit us to identify what was being produced routinely—for use in life and exchange—and to identify the extent to which materials and types so produced are similar to those we see in burials.

Magic, Symbolism, and Value

We tend to assume that beads were made primarily for use in body adornment, but ornaments serve a wide range of purposes in small-scale societies. Classic examples are the uses of beads as tokens of magic and as "money." Beads are widely used as amulets in connection with averting illness, aiding in pregnancy, and other such practices (Beck 1976; Carey 1998; Sciama 1998). A bead may actually represent goodness and the life force; its value may not be in the material of the bead but in how old it is and whether it was inherited from ancestors (Janowski 1998). In the historical Near East, "clothing the gods"—decorating statues of divinities with special dress and ornaments—was a crucial ritual habit aimed at ensuring divine favor, and such adornments were stored in temples (Oppenheim 1949). Like today's "New Age" subcultures that ascribe healing properties to crystals, many early cultures had unpredictable beliefs about magical effects and symbolic content of ornaments.

The use of beads as a medium of exchange is well known throughout the world and raises difficult questions about value systems and trade patterns. This has particular importance for analysis of why people made beads and placed them in graves and what value different types of beads may have had for the people of Çatalhöyük. Traditional assumptions in archaeology about the value of materials have tended to center on difficulty of access, exotic status (that is, imported materials), or the energy required to acquire a material and make an object from it. These assumptions are influenced by our own notions of value, but value systems are so divergent from one culture to another that we can be easily misled (Appadurai 1986). Classic examples from European contact with Native Americans highlight these divergences dramatically. In exchange for beads that Europeans offered as "trifles," Native Americans "very willingly traded everything they had," in the words of Christopher Columbus (Columbus 1969:55).

A central goal of the work on beads at Çatalhöyük was to identify the range of materials used for personal ornaments and their probable sources. Materials coming from long distances included marine shells and some rocks and minerals. Most bone and clay beads were probably of local origin, although much further work is needed to verify this. In the case of imported beads, we face a number of questions. Were the raw materials imported and then worked on-site? Do we see evidence of manufacturing in materials that are rare as finished beads (perhaps suggesting exports)?

Production, Technology, Specialization: The Making of Ornaments

In the Near Eastern Neolithic, people began to make beads, pendants, and other items of adornment using a much wider array of materials and techniques than in earlier periods. This rise in diversity begins in the late Epipalaeolithic (for example, Natufian) and in the early aceramic Neolithic. By the time Çatalhöyük was occupied, the expansion of beadmaking was reaching new levels, with hints of craft specialization by households in the southern Levant (Wright and Garrard 2003).

Beadmaking thus represents one strand of the vast expansion in technology that characterized the Neolithic period generally. What underlay this expansion and how does it relate to social changes? Some argue that the Neolithic is a case of people becoming entangled in material culture (Hodder 2004b, 2006a). Recently, archaeologists have been looking at technology from new perspectives that emphasize individuals, agency, and choices (Dobres 1998, 1999, 2000; Dobres and Hoffmann 1994; Dobres and Hoffmann, ed. 1999; Dobres and Robb 2000; Robb 1999)—part of a wider trend in acknowledging that the archaeological record is composed of millions of individual actions (Gamble and Porr 2005; Hill and Gunn 1977; Hodder 2000; Meskell 1999). In technology studies, there is particular interest in identifying individuals via *chaînes opératoires*, which can reveal artisans having different skills or making different choices (Balfet 1991). This approach contrasts with those that emphasize how whole groups of people organize different technologies (for example, expedient vs. curated) (Nelson 1991). Although often presented as a debate, in fact the two approaches can complement each other.

One goal of the bead studies at Çatalhöyük was to explore tensions between the overall patterns of technological organization in beadmaking and the role of the individual artisan in bead production. Study of material sources and whole assemblages composed of raw materials, beadmaking tools, debitage, microartifacts, bead blanks, and finished beads can reveal aspects of both.

Analyses of personal ornaments in the Near East have often been either very broad overviews of types (Bahrani 1995; Canby 1995; Maxwell-Hyslop 1971) or descriptive analysis of particular data sets from specific sites, often emphasizing typology as opposed to technology. Studies of whole technologies of ornament manufacturing—raw material acquisition, workshops, *chaînes opératoires,* and discard patterns—are still rather few and have mostly emerged in recent years. Most detailed work of this kind has been concerned with Chalcolithic and Early Bronze Age sites, especially in the Indus Valley, Iran, and Arabia (Gwinnett and Gorelick 1981; Inizan et al. 1992; Kenoyer 1986, 1992a, 1992b, 1994; Kenoyer et al. 1991; Piperno 1983; Roux 1999; Roux et al. 1995; Roux and Matarasso 1999; Tosi 1989; Tosi and Vidale 1990; Vanzetti and Vidale 1994; Vidale 1986, 1989a, 1989b, 1995). Far fewer such studies have been done in the Levant and Turkey (Bar-Yosef Mayer et al. 2004; Calley 1989; Grace 1989; Wright and Garrard 2003).

For the Palaeolithic and Neolithic Near East, studies of shell beads outnumber those of other materials (Bar-Yosef Mayer 1991, 1997). For stone beads, there are many typological studies (Hamilton 2005a, 2005b; Maréchal 1991; Talbot 1983). Analysis of stone bead technologies from pre-Chalcolithic sites are still few, but fortunately this is changing (Barthelmy de Saizieu and Bouquillon 1994; Berna 1995; Garfinkel 1987; Gorelick and Gwinnett 1990; Rollefson 2002; Wright 2008; Wright et al. 2007; Wright and Garrard 2003).

A number of studies in Chalcolithic and Bronze Age sites have explored questions about craft specialization (Kenoyer 1992a; Piperno 1976; Roux and Matarasso 1999; Vidale 1989a). For the Neolithic, there is some evidence for small-scale specialization in workshop sites (Wright and Garrard 2003), but how beadmaking was played out in terms of social organization in larger village sites is still largely an open question—partly due to excavations in the past that did not always emphasize fine sieving and recovery of micro-artifacts from heavy residues. These are essential for retrieving beadmaking refuse (and even beads, which can be as small as 2.5 mm in diameter).

Thus, investigation of specialization in beadmaking at Çatalhöyük is a central goal of the bead team. We have some initial hints. There are indications that (1) some individuals or households had access to a wider range of materials for personal ornaments than other households (as indicated by variations in burials); and (2) some households and areas (such as Buildings 16, 17, 18, parts of the 4040 Area) display extensive evidence for bead manufacturing, while others apparently do not (e.g., Building 3, discussed here). Investigating these issues will require much research on the non-obsidian micro-artifacts at Çatalhöyük, a project that has only just begun.

Ornament Studies at Çatalhöyük

A broad general typology of personal ornaments from Çatalhöyük was presented by Naomi Hamilton, and an overview of raw materials was presented by Jackson (Hamilton 2005a; Jackson 2005). Based on a sample of ornaments from a range of areas excavated in the 1990s, these provided a foundation from which to launch a full, systematic analysis of beadmaking technologies, forms, production, and use.

This detailed work was begun in 2005 with the formation of "Team Beads." The most pressing tasks were (1) creation of a digital database for ornaments and related items, which did not exist earlier; (2) analysis of technology: beadmaking tools, manufacturing processes, *chaînes opératoires*, debitage, blanks, and finished ornaments; (3) creation of a coherent typology permitting comparisons with other sites; (4) raw material characterization and sourcing studies; (5) investigation of contexts in which beads were made, used, and discarded. As of summer 2006, some 4,500 beads had been subjected to analysis along these lines. Materials were initially identified by hardness, luster, transparency, specific gravity, and color. Samples were then chosen for more detailed analyses of materials and trace elements via SEM, electron microprobe, and laser ablation ICPMS.

Building 3 and its surrounding structures permit us to explore a bead assemblage from one household and areas immediately adjacent to it. In some respects, Building 3 appears to be a fairly "standard" Çatalhöyük house (to the degree that there is such a thing), lacking unusual or exceptional features. As such, it is an excellent baseline from which to begin exploring beadmaking and use—and the variations in these, from one house to another.

Methods of the study of personal ornaments ideally involve investigation not only of finished ornaments but

Table 21.1. Stone ornament classification scheme

	MAJOR CLASSES		SIZE CATEGORIES*
A	Beads	1	0.0 – 2.5 mm
B	Pendants	2	2.5 – 5.0 mm
C	Bracelets	3	5.0 – 7.5 mm
D	Rings	4	7.5 – 10.0 mm
E	Head ornaments	5	10.0 – 12.5 mm
F	Earrings	6	12.5 – 15.0 mm
G	Chokers/necklaces	7	15.0 – 17.5 mm
H	Pins	8	17.5 – 20.0 mm
I	Buckles/clasps	9	20.0 – 25.0 mm
J	Other	10	> 25.0 mm
X	Roughouts and blanks		*Based on maximum dimension. For disk or ring beads, this is diameter; for long beads, this is length.
Y	Debitage		
Z	Related tools		
A	BEADS	B	PENDANTS
1	Indeterminate bead fragment	1	Indeterminate pendant fragment
2	Irregular bead	2	Irregular pendant
3	Miscellaneous bead	3	Miscellaneous pendant
4	Multiple perforation bead (> 2)	4	Multiple perforation pendant (> 2)
5	Double perforation bead	5	Double perforation pendant
6	Disk bead	6	Disk pendant
7	Ring bead	7	Ring pendant
8	Spherical bead	8	Spherical pendant
9	Oval bead	9	Oval pendant
10	Teardrop bead	10	Teardrop pendant
11	Triangular bead	11	Triangular pendant
12	Trapezoidal bead	12	Trapezoidal pendant
13	Square bead	13	Square pendant
14	Rectangular bead	14	Rectangular pendant
15	Cylindrical bead	15	Cylindrical pendant
16	Barrel bead	16	Barrel pendant
17	Conical bead	17	Conical pendant
18	Biconical bead	18	Biconical pendant
19	Butterfly bead	19	Butterfly pendant
20	Chevron bead	20	Chevron pendant
21	Unperforated “scarab stone,” incised		
22	Lenticular / fusiform bead with convex sides		
23	“Axehead” bead		

Continued on facing page

also of all materials relating to beadmaking, including unworked nodules of similar materials found on-site; minimally worked nodules (roughouts), unfinished beads (blanks), drills, possible saws, abrading tools, and microartifacts from heavy residues, which reveal the presence of debitage (for discussion of these methods, see Kenoyer 2003; Wright and Garrard 2003).

However, the report presented here is preliminary. Some analyses are still in progress, including analysis of heavy residues, debitage, trace elements, and many aspects of the bone and shell beads. Analyses of heavy residues generally at Çatalhöyük have thus far concentrated on obsidian and bone (Cessford and Mitrovic 2005). Obsidian beads are extremely rare at Çatalhöyük (a single bead

Table 21.1 (*continued*). Stone ornament classification scheme

C	BRACELETS			D	FINGER RINGS (inner diameter > 10.5 mm)
1	Indeterminate bracelet fragment			1	Indeterminate ring fragment
2	Irregular bracelet			2	Irregular ring
3	Miscellaneous bracelet			3	Miscellaneous ring
4	Plain bangle			4	Plain band
5	Bangle with relief decoration				
6	Bangle with incised decoration				
7	Bangle with relief and incised decoration				
8	Bangle with scalloped edge				
X	ROUGHOUTS AND BLANKS	Y	DEBITAGE	Z	RELATED TOOLS
1	Indeterminate	1	Undifferentiated	1	Microdrill
2	Disk	2	Nodules	2	Engraver
3	Barrel	3	Cores	3	Saw
4	Rod	4	Flakes	4	Abrader
5	Other			5	Drilling bench/anvil
				6	Other

blank was found among 4,500 artifacts examined thus far). Thus, we need to investigate all of the other materials in the heavy residues in order to locate beadmaking debitage. It is, however, clear that such debitage exists, especially in certain houses (Cessford and Mitrovic 2005; Hamilton 2005a; S. Mitrovic, personal communication).

Thus, this report concerns mainly finished items, blanks, and artifacts that may have related to beadmaking. In addition, some artifacts in the Konya Archaeological Museum were unavailable for direct study at the time of writing. However, the vast majority of beads and blanks from the BACH Area were analyzed and are presented here.

Hamilton's earlier typology for the Çatalhöyük ornaments was descriptive and terminologically idiosyncratic (Hamilton 2005a), using terms not in common use elsewhere, complicating comparisons with other sites. The nomenclature used here conforms broadly with common terminologies developed in bead studies (Beck 1981; Dubin 1995; Lankton 2003) but incorporating variations seen in the Near East (Wright and Garrard 2003).

A basic typology of personal ornaments is thus being developed that may prove useful in comparative studies (Table 21.1). Although this is based on stone ornaments, aspects of this approach may be applicable to analyses of clay, bone, and shell beads. This involves classification of materials into broad technological classes based on stage or role in manufacturing: finished ornaments (A–J); blanks and roughouts (X); debitage (Y), such as cores, flakes, and micro-artifacts; and related tools (Z), such as drills or abraders.

Of the finished ornaments, broad functional categories were defined: A = individual beads (with symmetrically placed perforations); B = pendants (with asymmetrically placed perforations); C = bracelets (that is, individual artifacts large enough to go on a human wrist); and D = finger rings (that is, individual artifacts large enough to go on a human finger). In the first stage of classification, categories C–J refer to individual artifacts, not combinations of beads. Thus, a classification of an artifact as a "bracelet" means one artifact (a bangle) suggesting that use. Combinations of beads that also served as bracelets can only be determined via analysis of placement within graves. This is a second level of analysis beyond basic classification.

Within each class of finished ornaments (A–J), types are numbered, beginning with indeterminates (irregular and miscellaneous categories), followed by formal types based on the shape in plan of the largest surface of the bead (e.g., disk-shaped, cylindrical, butterfly beads). In some cases, the size of the perforation relative to the whole bead is considered (for example, the distinction between disk beads and ring beads; see below). Subtypes (not shown in Table 21.1) are based on variations such as shapes in cross section (Wright and Garrard 2003).

Thus type A6 is a disk bead, circular in plan, with a small perforation. The cross section is often rectangular, but it may also be trapezoidal, plano-convex, or other shapes. Type A7 (ring bead) is similar, but the perforation is larger relative to the whole bead. Other common types are A15 (cylindrical beads), A16 (barrel-shaped beads), and A22 (lenticular/fusiform beads).

Within the class of roughouts and blanks (X), subclassifications (only a few are shown in Table 21.1) are based on the type of finished product of which the blank is an earlier stage (for example, a disk bead blank) and the stage of reduction reached at the time of abandonment (such as abraded but not drilled; or abraded and drilled but broken during drilling). Classification of blanks according to reduction stages is essential for reconstructing *chaînes opératoires* in beadmaking (cf. Vidale et al. 1992; Wright et al. 2007). These classifications are only discussed briefly here, since so few bead blanks were found in the BACH Area.

MATERIALS, TECHNOLOGY, AND TYPOLOGY OF THE BACH BEADS

In all, 521 ornaments were recovered from the BACH excavations, of which 477 were analyzed (Table 21.2). Most were made of stone (39.7 percent), clay (39.0 percent), or shell (14 percent), with smaller numbers of bone beads (6.3 percent) (Figures 21.1, 21.2). A few copper beads (N = 3) and glass beads (N = 1) were found in late (post-Neolithic) contexts. Of the stone beads, 10 different materials were identified (discussed below).

Table 21.2. BACH Area personal ornaments by material

Material origin	Material	N	% of all beads and blanks	% of all rocks and minerals excluding clay
	Rocks and minerals (excluding clay)			
Sedimentary or metamorphic	Limestone/marble: pink	108	22.6	56.8
	Limestone/marble: white	15	3.1	7.9
	Limestone/marble: gray-brown	6	1.3	3.2
Sedimentary	Travertine: yellowish white	1	0.2	0.5
	Chert: green	1	0.2	0.5
Metamorphic	Schist: gray-green to black	44	9.2	23.2
	Serpentinite (?): black and green	3	0.6	1.6
Igneous	Basalt/dolerite/diabase: gray to black	9	1.9	4.7
Mineral	Common opal: white	1	0.2	0.5
	Galena: gray metallic	2	0.4	1.1
Subtotal	Stone: All rock and mineral types	190	39.7	
Clay		186	39.0	
Shell		67	14.0	
Bone		30	6.3	
Copper		3	0.6	
Glass		1	0.2	
Subtotal	All analyzed beads	477	100.0	
Unclassified	Not examined (Konya Museum)	44		
	TOTAL	521		

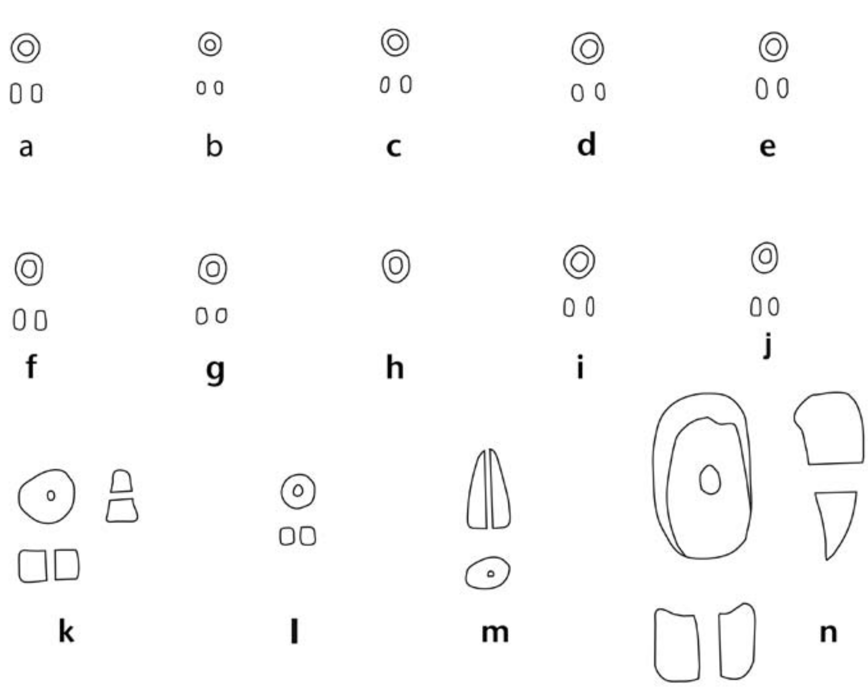

Figure 21.1. Drawings of ornaments from the BACH Area. (a–e) Clay ring beads (type A7) from infant burial (8184.X2); light red (2.5YR 7/6). (f–j) Clay ring beads (type A7) from infant burial (8184.X1); dark yellowish brown (10YR 3/4). (k) Clay disk bead (type A6) from F.634 burial fill (6323.H4); olive gray (5Y 5/2). (l) Chlorite schist ring bead (type A7) from F.634 burial fill (6693.H1); dark reddish brown (5 YR 3/2). (m) Clay lenticular bead (type A22; fragment of one end) from F.644 burial fill (6643.H1); light brownish gray (10YR 6/2). (n) Clay rectangular pendant with triangular long section (type B14) (8594); very dark gray (7.5YR 3/1).

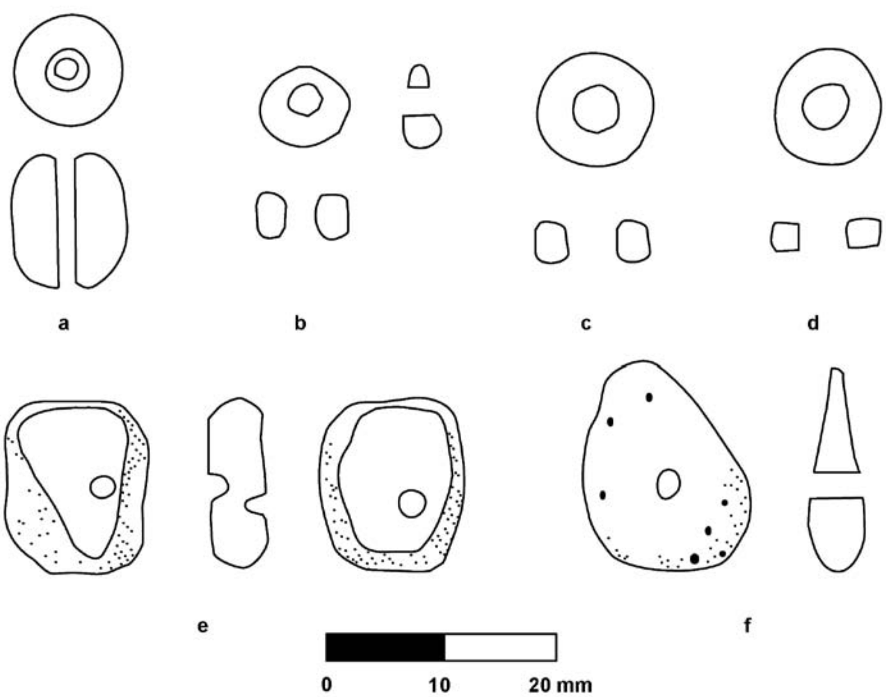

Figure 21.2. Drawings of ornaments from the BACH Area. (a) Galena barrel bead (type A16) from F.173 platform fill (2218.H1); bluish gray (Chart 2 for Gley 6/10B). (b) Schist (talc schist/steatite) ring bead (type A7) from black debris, west side of F.601 screen wall (6116.H1); dark greenish gray (Chart 1 for Gley 4/10Y). (c) Bone ring bead from Space 158; very pale brown (10YR 7/4). (d) Shell ring bead from Space 158; pinkish white (5YR 8/2). (e) Chlorite schist disk bead preform (type X2) from midden (6620.H2); greenish black (Chart 1 for Gley 2.5/10Y); see also Figure 21.7. (f) Basalt disk bead preform (type X2), possibly made on a basalt flake (8162h1); dark reddish brown (5YR 3/2).

Table 21.3. BACH Area bone, clay, and shell personal ornaments by type

Material		Type	N	% of beads and blanks of same material
Bone*	A1	Irregular ring bead	1	3.3
	A5	Rectangular bead with double perforation	1	3.3
	A7	Ring bead	6	20.0
	A15	Cylindrical bead (fragment)	2	6.7
	A22	Tubular bead	2	6.7
	C1	Bracelet	1	3.3
	D4	Finger rings	10	33.3
	J1	Other	7	23.3
		All bone ornaments and blanks	30	100.0
Shell*		Theodotus	8	11.9
		Dentalium	6	9.0
		Other/Undetermined	53	79.1
		All shell ornaments	67	100.0
Clay	A1	Indeterminate fragment	2	1.1
	A3	Other	15	8.1
	A6	Disk bead (complete)	2	1.1
	A6	Disk bead (fragment)	1	0.5
	A7	Ring bead (fragment)	66	35.5
	A7	Ring bead (complete)	44	23.7
	A8	Subspherical bead (complete)	3	1.6
	A8	Subspherical bead (fragment)	12	6.5
	A22	Lenticular bead (complete)	15	8.1
	A22	Lenticular bead (fragment: end)	17	9.1
	A22	Lenticular bead (fragment: midsection)	5	2.7
	B14	Rectangular pendant (complete)	3	1.6
	X5	Blank (subspherical)	1	0.5
		All clay ornaments and blanks	186	100.0
TOTAL			283	

*Nomenclature for bone and shell beads is provisional.

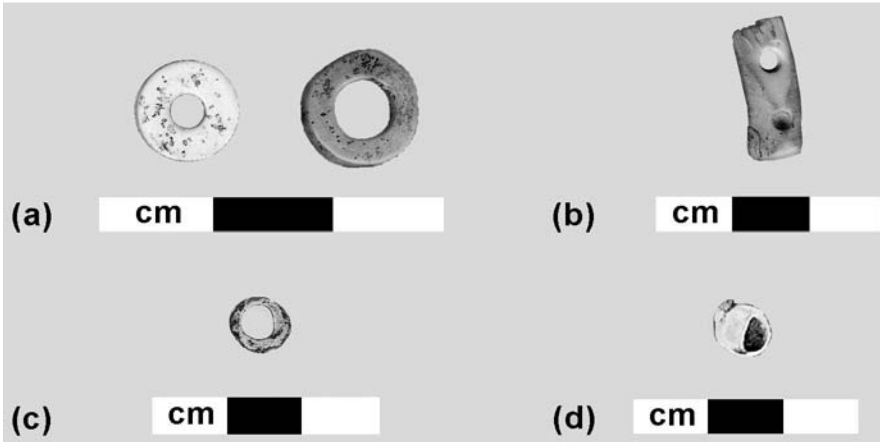

Figure 21.3. Bone and shell ornaments from the BACH Area. (a) Shell disk bead (left); bone ring bead (right) (8108). (b) Bone rectangular bead with double perforation, 8307.H1. (c) Bone ring bead, 2335.F1. (d) Shell bead, *Theodoxus*, 6100.H1.

Bone and Shell Beads

Analyses of bone and shell beads are still in progress (Reese 2005; Russell 2005), but we can make some preliminary observations (see Chapter 15: Figures 15.11–15.13).

Of 30 bone ornaments examined here, several provisional forms were identified (Table 21.3). Finger rings were particularly common (N = 10). Other types include small ring beads (N = 6) (Figures 21.2c, 21.3a, c); a few cylindrical and lenticular (fusiform) beads; a rectangular bead with a double perforation (Figure 21.3b); a bracelet fragment; and other items not classified.

Of 67 shell beads, most are as yet unanalyzed, but they include *Theodoxus* and *Dentalium* (identifications by David Reese) (Table 21.3; Figures 21.2d, 21.3a, d).

Clay Beads

Clay beads were found in about the same numbers as stone beads (N = 186; Table 21.3). Some were unbaked and others were fired very briefly, at poorly controlled low temperatures. All are fragile, even those that were baked, but the unbaked examples are extremely soft and friable, easily broken if not handled carefully. The colors of the baked clay beads are generally light red (Munsell 2.5YR 7/6). Unbaked (or only very slightly baked) beads vary in color: from olive gray (5Y 5/2) to light brownish gray (10YR 6/2), dark yellowish brown (10YR 3/4), or very dark gray (7.5YR 3/1) (Figure 21.1a–k, m–n). Sometimes, black fireclouds are seen, usually on the lenticular/fusiform beads. Temper content varies. There are indications of both grit and chaff tempers included in the clays, but in all cases the material is coarse and appears to have been added only casually, with minimal attempts to make tempering particles homogeneous in size.

Apart from the evidence of light firing on finished beads, we have little evidence (so far) for clay bead production technologies, but possibilities are suggested under each type discussed below. Work on clay sources and composition has only just begun, but initial observations indicate that the firing of these beads was usually at much lower temperatures than those suggested by vessels and figurines (Atalay 2005; Cessford and Near 2005; Last 2005; Nakamura and Meskell 2006).

Clay beads occur in a variety of forms (Table 21.3). Most numerous (59.2 percent) are ring beads (complete or fragmentary). These are among the smallest beads in the BACH assemblage. Most are about 2.5 to 3 mm in diameter (across perforation), about 2 mm in height (= length along axis of perforation), with perforations of 1 to 2 mm in diameter. A very few are as large as 5 mm in diameter (Figures 21.1a–j, 21.4a–c). Many ring beads came from the one burial (F.757, an infant) that contained numerous grave goods (discussed below). These ring beads are among the most carefully baked clay beads, although some were either unbaked or only very slightly baked. The faces of these beads (the sides showing the perforation) are either flat or slightly concave. The edges (the outer walls) are usually very even and straight, perpendicular to the faces. These beads are also quite standardized in size (Figures 21.1, 21.4).

No unfinished bead blanks for clay beads were seen, and experiments in replication will need to be conducted. However, these preliminary observations suggest that one means of creating them may have been (1) forming a smooth clay cylinder; (2) piercing it with a long thin rod; (3) baking the cylinder; (4) sawing or slicing off individual beads from the cylinder; (5) stringing the beads; and (6) rolling them on an abrasive stone such as fine sandstone.

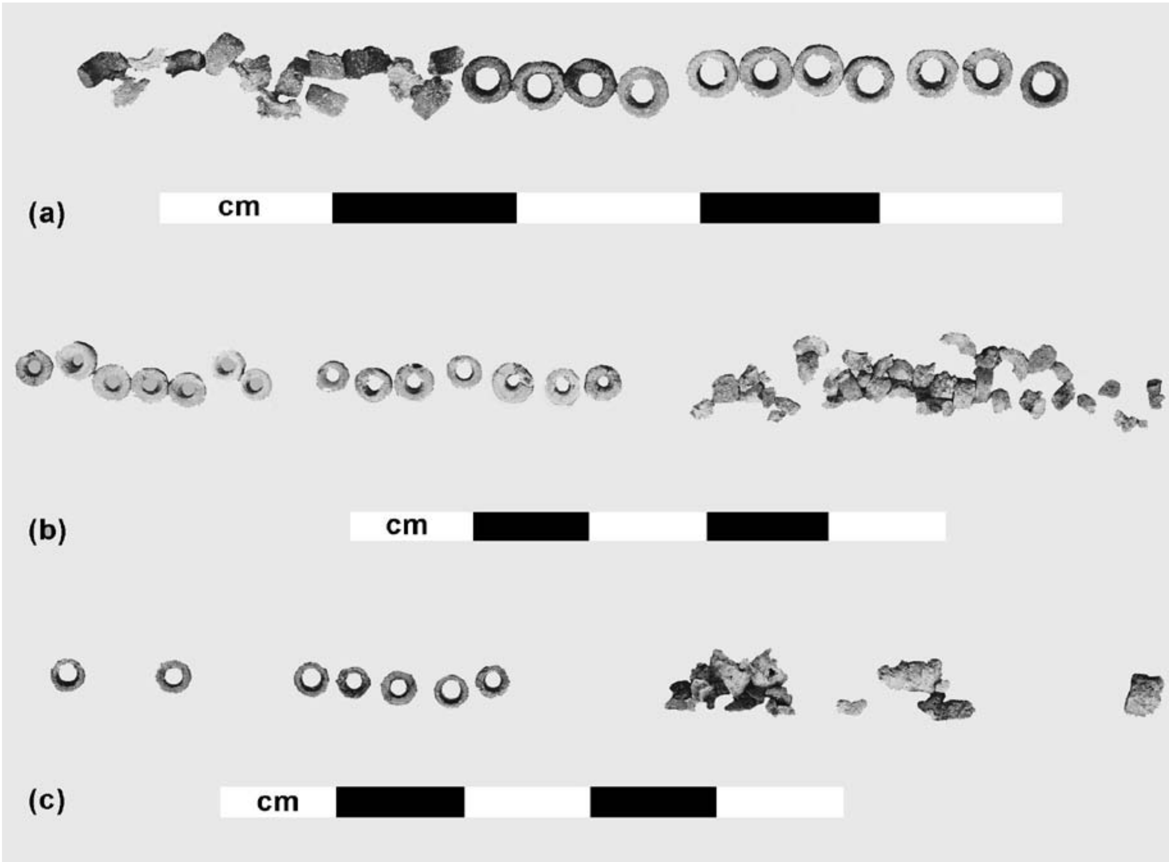

Figure 21.4. Clay ring beads (type A7) from infant burial (skeleton 8184): (a) 8184.X1; (b) 8184.X2; (c) 8184.X6.

Such procedures have been observed in archaeology, ethnography, and experiments in the making of disk beads from soft stones of Mohs hardness 1–3 (Barthelmy de Saizieu and Bouquillon 1994 on cylinder-drilling and sawing/slicing; Foreman 1978 on stringing and abrasion). We do not seem to have direct evidence from the BACH Area concerning the perforation tools; no such long, narrow items appear in the obsidian-flint assemblage in the BACH Area (Chapter 19) or, thus far, elsewhere (Carter et al. 2005). However, elsewhere on the site, tiny drills made of diabase have been found which might have served this purpose (Wright 2006a); bone or even wooden items could also have been used.

Similar to the ring beads are disk beads, of which only a few were found; these have very small perforations (Figure 21.1k) and were usually well baked.

About 19.9 percent of the clay beads are lenticular or fusiform beads. Some are complete, and others are fragments of midsections or ends. These are tubular forms with convex sides compressed at the ends (Figures 21.1m, 21.5a–c, e). They are the most fragile of the clay ornaments, usually fired only very slightly at extremely low temperatures; some seem to be almost unbaked. They are typically light brownish gray or dark yellowish brown, sometimes with black fireclouds. These are among the largest of all beads (of any material) in the BACH assemblage. Unbroken specimens range in length (length = height of bead along the axis of perforation) from 10 to 28 mm, with diameters (measured across the perforation) of 7 to 11 mm. Perforation diameters vary from 1 to 4 mm, suggesting variations in the thickness of strings used to suspend such beads. These beads are extremely unstandardized, varying widely in size and shape. This, along with the evidence for light firing, suggests the possibility that these beads were formed around a thin rod or leather string, smoothed into shape, and briefly subjected to heat before being considered finished.

The third most common clay beads are subspherical (8.1 percent). These are globular, roughly spheroid beads usually found as fragments (Figures 21.5d–e). They range from 8.5 to 17 mm in diameter (across the perforation) and 4.5 to 17 mm in height (length along the perforation). The perforations vary in diameter from 0.5 to 5 mm, again suggesting variations in strings for suspension. Possibly a similar procedure to that of the lenticular beads was used for these subspherical beads.

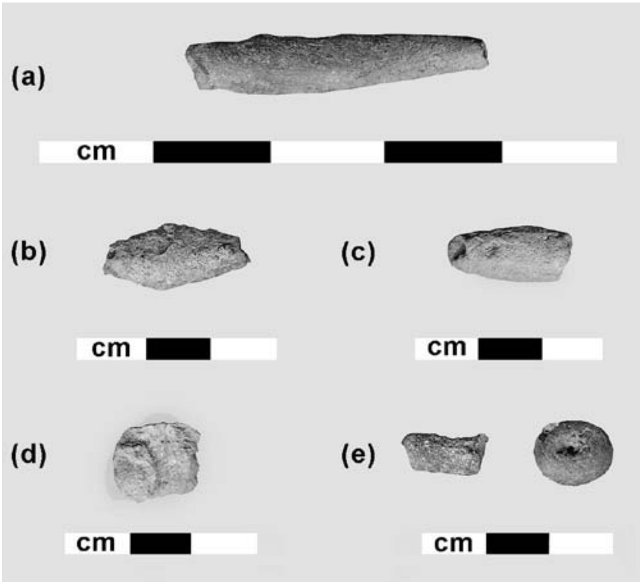

Figure 21.5. Clay beads from BACH area. (a–c) Lenticular beads (type A22): (a) 6211.X3; (b) 8652.H1; (c) end fragment, 8623.H1; (d) subspherical bead fragment (type A8), 6398.H3; (e) lenticular bead fragment (type A22), 8622.H1, and subspherical bead (type A8), 8622.H2.

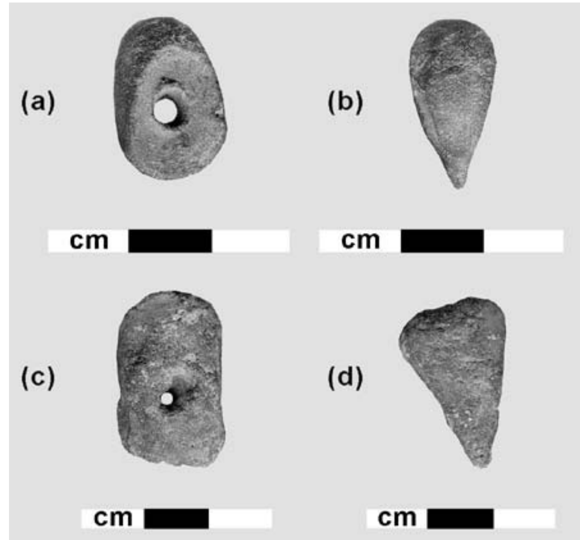

Figure 21.6. Clay ornaments from the BACH Area: rectangular pendants with triangular cross sections (type B14). (a) 8594.H1, front view; (b) 8594.H1, side view; (c) 8621.H1, front view; (d) 8621.H1, side view.

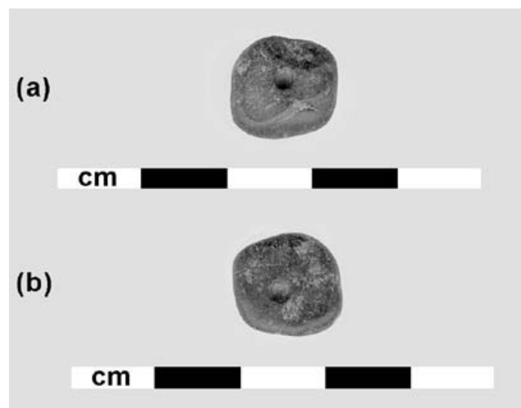

Figure 21.7. Chlorite schist preform of a disk bead (type X2) (6620.H2). (a) Obverse; (b) reverse. Note the incomplete perforation, which was begun from opposite faces of the pebble. Perforation was begun after some abrasion, but final shaping came after perforation.

Three rectangular clay pendants, all complete, were found in the BACH Area (Figures 21.1n, 21.6a–d). These are a particular subtype of rectangular pendants, which are triangular in the long section, so that one end of the bead forms an edge. The overall effect resembles an ax with a perforation in the center of the broad faces. These are among the largest ornaments from the BACH Area, with the longest diameter (across perforation) ranging from 12.5 to 29 mm. The short diameter ranges from 10 to 17 mm. The perforations range from 2 to 5 mm, and remains of a clay "lip" or ridge can be seen around the perforations (e.g., Figure 21.7a). These were carefully formed, well baked, and very dark gray in color, lacking fireclouds. The surfaces are smooth and may have been abraded, but on the whole these beads—the most carefully formed of all the larger clay beads—require further study regarding manufacture.

Stone Beads

Materials and Sources

Among 190 ornaments made from rocks and minerals, eight different basic materials were identified (Table 21.4), with some color variations within the materials (Table 21.5). The materials are mostly soft (Mohs 1–4) with rare exceptions (chert, common opal: Mohs = 7). The materials come from sedimentary rocks (limestone, travertine, chert); metamorphic rocks (marble, schist, serpentinite); igneous rocks (basalt/dolerite/diabase); and minerals (common opal, galena) (Figures 21.2a–b, e–f, 21.7, 21.8). Initial identifications were based upon such tests as Mohs hardness, reactions to hydrochloric acid, specific gravity, luster, color, texture, and forms of visible crystals (if any). Magnifications of 10× to 40× were normally used for making observations in the field. In comparison with identifications made by Jackson (2005), there was substantial agreement, although Jackson's summary rarely specified particular beads by context number. Compositional analysis of Çatalhöyük beads (including several from the BACH Area) via electron microprobe and other techniques has begun but at this writing is still in progress.

Table 21.4. BACH Area: Stone beads by type and material, raw frequency, and percentage frequency (N = 190)

	Limestone/Marble		Travertine		Chert		Schist		Serpentinite		Basalt / dolerite / diabase		Common opal		Galena		Total	
Type	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A1 Bead (indeterminate fragment)			1	0.5					2	1.1							3	1.6
A6 Disk bead	7	3.7					2	1.1			2	1.1					11	5.8
A7 Ring bead	117	61.6					39	20.5	1	0.5	5	2.6					162	85.3
A15 Cylindrical bead	1	0.5					1	0.5									2	1.1
A16 Barrel bead					1	0.5							1	0.5	1	0.5	3	1.6
B1 Pendant, indeterminate fragment											1	0.5					1	0.5
B9 Oval pendant	1	0.5															1	0.5
X1 Blank (bead) indeterminate							1	0.5							1	0.5	2	1.1
X2 Blank (disk bead)	3	1.6					1	0.5			1	0.5					5	2.6
TOTAL	129	67.9	1	0.5	1	0.5	44	23.1	3	1.6	9	4.7	1	0.5	2	1.0	190	100.0

Full analysis of sources of stone beads from Çatalhöyük has only just begun. Systematic site-catchment study of pebble and rock sources immediately next to Çatalhöyük is still in progress. However, many of the materials used for stone beads could have been acquired locally (limestones, phyllites, and other materials brought in by streams; see below). A few materials may have been acquired from a greater distance and more intentionally (candidates include serpentinite, galena from the BACH Area; turquoise, apatite, carnelian, and other materials from the wider Çatalhöyük assemblage).

In order to clarify the nature of rock and mineral sources for artifacts at Çatalhöyük, an overview of the regional geology is needed. Çatalhöyük lies in a zone of Quaternary alluvium and especially in an early Holocene alluvial fan characterized by clays, silts, alluvial gravels, sand, and—at the base—calcareous lacustrine marls (see Figure 1.3) (Hodder 2005d:Figure 1.1; Kuzucuoğlu 2002; Kuzucuoğlu and Roberts 1997; Roberts et al. 1996). The lake marls are blocky, fine-grained, quite hard, pale gray to yellow. They can be seen and collected on and near the site today, and unworked natural samples of these materials turned up in the off-site KOPAL palaeoenvironment excavation (Baysal and Wright 2005; Roberts et al. 1996). Thus, the immediate vicinity of Çatalhöyük has only an extremely limited range of in situ beds of rocks. However, deposition of pebbles and gravels by the Çarşamba Çay and other streams would have expanded the possible repertoire of stone sources for artifacts, if the desired artifacts were fairly small in size (Baysal and Wright 2005; Roberts et al. 1996; Türkmenoglu et al. 2005; and see below).

This general area of Quaternary lacustrine and alluvial deposits extends widely in all directions around Çatalhöyük (20–40 km from the site), and this zone includes marshes. Lake chalks and variants of calcareous sinter (tufas, travertines, and dripstone) are all theoretically possible in freshwater areas with lakes, marshes and springs (Schumann 1992) and may have been available in this zone (especially to the north), but this needs further exploration.

The closest in situ sources of other rocks lie to the west, south, and southeast of Çatalhöyük. About 4.5 km south of Çatalhöyük begins a narrow zone (Q-19-k) of Quaternary

Table 21.5. BACH Area stone ornaments by material, color, and type

Material origin	Material	Type	N	Percent
Sedimentary or metamorphic	Limestone/marble: pink	A6 Disk bead (complete)	1	0.5
		A6 Disk bead (fragment)	1	0.5
		A7 Ring bead (complete)	23	12.1
		A7 Ring bead (fragment)	83	43.7
	Limestone/marble: white	A6 Disk bead (complete)	3	1.6
		A7 Ring bead (complete)	5	2.6
		A7 Ring bead (fragment)	6	3.2
		B9 Oval pendant	1	0.5
	Limestone/marble: gray to brown	A15 Cylindrical bead (fragment)	1	0.5
		A6 Disk bead (complete)	2	1.1
		X2 Blank (disk bead)	3	1.6
Sedimentary	Travertine: yellowish white	A1 Bead (indeterminate fragment)	1	0.5
Sedimentary	Chert: green	A16 Barrel bead	1	0.5
Metamorphic	Schist: gray-green to black	A15 Cylindrical bead (fragment)	1	0.5
		A6 Disk bead (complete)	2	1.1
		A6 Disk bead (fragment)	0	0.0
		A7 Ring bead (complete)	25	13.2
		A7 Ring bead (fragment)	14	7.4
		X1 Blank (bead) indeterminate	1	0.5
		X2 Blank (disk bead)	1	0.5
Metamorphic	Serpentine/Serpentinite (?): black & green	A1 Bead (indeterminate fragment)	2	1.1
		A7 Ring bead	1	0.5
Igneous	Basalt/dolerite/diabase: black	A6 Disk bead (complete)	1	0.5
		A6 Disk bead (fragment)	1	0.5
		A7 Ring bead (complete)	4	2.1
		A7 Ring bead (fragment)	1	0.5
		B1 Pendant: indeterminate fragment	1	0.5
		X2 Blank (disk bead)	1	0.5
Mineral	Common opal: white	A16 Barrel bead	1	0.5
Mineral	Galena: gray metallic	A16 Barrel bead	1	0.5
		X1 Preform (bead) indeterminate	1	0.5
		TOTAL	190	100.0

sandstones (*kumtasi*), mudstones and claystones (*çamurtasi*), and *karasal*. This extends in a narrow band to the southwest along the Çarşamba Çay, beyond Çumra to points south. Astride this zone are large exposures (Q1–18-k) of Quaternary limestones (çaliktasi), sandstones (kumtasi), mud- and claystones (çamurtasi), and karasal. Farther to the southwest (m3pl–20 k) are Miocene-Pliocene limestones, sandstones, mud- and claystones, and karasal (MTA 2002a). Thus, good deposits of limestones, sandstones, and mud- and claystones were available to artisans of Çatalhöyük, no more than 4.5 km from the site. These deposits, at the mouth of the Çarşamba Çay to the southwest, are the beginnings of a zone of limestone highlands composed of karstic, soft limestone Neogene lacustrine plateaus. Possibly associated with some of these limestones—but this is still under investigation by Chris Doherty and Tristan Carter—are various forms of chert, radiolarite, and lacustrine quartzite that appear in the chipped stone assemblage (C. Doherty and T. Carter, personal communication).

Farther to the southwest lie the Taurus highlands and Lake Sugla. The Çarşamba Çay stream travels southeast from Lake Sugla, turns toward the northeast near Bozkir, and drains into the Konya Plain. It thus travels through deposits of continental clastic rocks (m3pl, m3, m2), Neritic limestones (t2k, jk, k2, t2j), carbonate and clastic rocks (p2), and tuffte, spilite, and basalt with, in some places, ophiolite sheets (tP) (MTA 2002b). Ophiolites are a collective term for green-colored basic and ultrabasic rocks—for example, serpentinite, periodotite, gabbro, and basalt (Schumann 1992:322).

About 40 km to the west of Çatalhöyük lies Alaçadag (in the Erenler Dagi), composed of massifs of old volcanoes and major deposits of Upper Miocene-Pliocene andesites (m3pla). A zone of continental clastic rocks (m3pl) lies between the andesites and the alluvial zone of the Konya Plain. From the Alaçadag volcanoes, a stream (the May River) flows through these andesitic and clastic rocks, into the Konya Plain at its southern edge, where the Çarşamba Çay alluvial fan begins (MTA 2002b).

Thus, both the May and the Çarşamba streams pick up small rocks from rather distant areas and deposit them at various stages along the way, resulting in pebble dumps that can be seen in areas near and southwest of Çatalhöyük (cf. Türkmenoglu et al. 2005). That these streams deposit pebbles of diverse materials from distant origins into a Çatalhöyük "catchment" can be seen in small rounded pebbles—large enough for beadmaking—of gray limestones, red jasper, and other rocks incorporated into the locally made mud bricks used to build the experimental house (I am grateful to Chris Doherty for pointing this out).

About 35 km to the southeast of Çatalhöyük lies Karadag, part of the Acigöl eruptive complex, with Upper Miocene andesites. In this general area also lie Jurassic-Cretaceous marbles (mr), just north and east of Karadag; these are the nearest sources to Çatalhöyük of in situ true marbles.

In this general direction, but closer to Çatalhöyük (ca. 25 km southeast of the site), are peridotites (y) with concentrations of chromite and magnesium (MTA 2002b). These are ultramafic igneous rocks, rich in olivine, of which one variant is harzburgite (Schumann 1992:224). About 50 km northwest of Çatalhöyük, east of Alaçadag and just southwest of the town of Konya, lies another zone of peridotites (y) among limestones and various carbonate and clastic rocks (MTA 2002a). Alteration of peridotites by metamorphic processes (high temperature and pressure) can result in serpentinization of olivine in the peridotite—this is one way in which serpentinites are formed (Pellant 1992:194; Schumann 1992:322).

About 50 km northeast of Çatalhöyük are large marble deposits (mr) of Palaeozoic/Mesozoic and Middle Triassic-Jurassic age (MTA 2002b).

Sources of schists and phyllites near Çatalhöyük are difficult to determine. The phyllites are often very soft, only partially metamorphosed, with foliations that break easily, possibly suggesting that some sources lie among the claystones and mudstones found 4.5 km southwest of Çatalhöyük. This will need further investigation. Large deposits of true fully metamorphosed schists (P) occur northwest of Alaçadag (some marble also occurs there). Much larger deposits of schists and phyllites occur far to the south, in the Taurus Mountains close to the coast. These more distant regions to the south have significant sources of copper, turquoise, and lead (MTA 2002b).

Massive sources of serpentine and serpentinite in Turkey occur in the Taurus Mountains north of Adana and the Gaziantep-Amanus area (far to the east of Çatalhöyük). Closer to Çatalhöyük, such materials would be unsurprising in areas with other ophiolites, such as the ophiolite sheets southwest of Çatalhöyük (through which the Çarşamba flows) and peridotite outcrops southeast of Çatalhöyük (see above).

Sources of harder stones used for beads at Çatalhöyük will need further exploration. Cherts are sometimes seen, but not in large numbers, and they appear to be somewhat different from those that occur in the chipped stone (the latter were inspected with the assistance of Tristan Carter and Chris Doherty). Sources of other hard stones (common opal, quartz, agate, carnelian) are still under investigation.

Manufacture Techniques, Blanks, and Finished Forms

From ethnographic, experimental, and archaeological evidence, tool kits and debris suggesting the making of beads from soft stones should include drills and saws of hard materials (e.g., flint); anvils or benches; antlers for pressure flaking; possibly capstones (for stick drills) or perforated weight stones (for pump drills); coarse and fine-grained abrasive grinding slabs; shallow vessels to hold water; unfinished bead blanks; and debitage (flakes and other chips or debris) (Foreman 1978; Kenoyer 2003; Wright 1982). Such items have been identified in workshops of metamorphosed limestone beads of the same age as Çatalhöyük, but in Jordan (Critchley 2000; Wright 2008; Wright et al. 2007; Wright and Garrard 2003).

Although items relating to bead manufacture have been found at Çatalhöyük, in the BACH Area specifically, we have few of them. Unfinished bead blanks (mostly of disk or ring beads) are rare (Table 21.4); no drills were found; as yet we have no indication of debitage suggesting beadmaking. Abrading slabs made of coarse and fine textures (andesite, sandstone, schist, phyllite) occur in the Çatalhöyük ground stone assemblage generally (Baysal and Wright 2005). However, few such items were recovered from the BACH Area (Chapter 20). Possible manufacture techniques are discussed below under each material.

The most common material in the BACH assemblage is limestone or marble, both composed primarily of calcite, a soft mineral (Mohs = 3) readily identifiable via Mohs hardness test, reaction to hydrochloric acid, and other observations. A strict distinction between sedimentary limestone, partially crystallized limestone, and true metamorphic (fully crystallized) marble was difficult to draw, given the small size of most beads and restrictions on the use of analytical techniques that would damage them. Some of these beads revealed crystals (easy to see at 10× or less) suggesting marble (Schumann 1992:280, 324); others did not. Consequently, it was decided to group these calcite-rich ornaments under the rubric of limestone/marble. In his summary study, Jackson (2005) described similar beads as marble; in various reports, Mellaart alludes to the presence of many limestone beads (e.g., Mellaart 1967:Plates 103–104). Depending on the specific bead, either could be correct. The sources of limestone and marble for these beads could have been either secondary sources—pebbles from the Çarşamba Çay—or primary bedrock sources farther away (see above). This will require further exploration. Limestone/marble beads vary in color. Most (by far) are pink (5YR 7/3), light reddish brown (5YR 6/4), or red (2.5YR 4/6). A few are white or pale gray to brown (Table 21.5).

About 90.6 percent of the limestone/marble ornaments are small ring beads; indeed, this is the most common type of stone bead in general (61.6 percent). They are similar in form to the ring beads made of clay, except that the annular faces are always flat (never concave); the sides are straight, perpendicular to the faces. These beads display extreme miniaturization and standardization. They almost always range from 2 to 4 mm in diameter and 1–2 mm in height, with perforation diameters from 1 to 2 mm. Only rare examples are larger.

A few disk beads, with smaller perforations relative to the overall diameter, were also found in this material. Only one bead blank in limestone/marble was found, and it suggests a disk bead.

The BACH disk bead blanks and finished disk and ring beads suggest two procedures for production. One is the perforated cylinder and slicing procedure similar to that described for clay beads, above, and observed in connection with steatite beadmaking at Neolithic Mehrgahr, Pakistan (Barthelmy de Saizieu and Bouquillon 1994). The BACH ring and disk beads are well abraded, carefully formed, with sharp right angles at the interface between faces and edges. The extreme consistency in thickness/height could suggest careful slicing of preforms from a perforated cylinder, followed by stringing and hand-rolling of the stringed beads across an abrading slab (Foreman 1978). Not only does this produce straight upright edges, but abrasion of the beads against each other flattens the faces and can contribute to standardized thicknesses.

The other possible procedure would be production of individual disk bead blanks before drilling, followed by drilling of individual blanks, one at a time (Foreman 1978; Kenoyer 2003). The rare disk blanks seem to suggest the latter procedure, since the preform was roughly shaped by flaking and chipping (possibly with an antler, on an anvil) and briefly abraded to smooth out the faces and edges. However, the abrasion was incomplete, and the bead remained irregular in plan, not circular. Other beads of limestone, notably cylinders and a pendant, suggest bead-by-bead production and individual drilling of this kind.

The second most common rocks used for beads are several varieties of schist (a group of metamorphic rocks). Schists account for about 23.1 percent of the stone beads (Table 21.4). Schists have a texture characteristic that Çatalhöyük artisans exploited in beadmaking—namely, schistosity, a kind of bedding or lamination that can result in the breaking off of flat, leaf-like pieces. This feature is enhanced when platy minerals (such as mica) are present, as they often are. Schists allowed beadmakers a "quick" method of acquiring flat faces with less grinding time (although edges still had to be abraded to evenness). The disadvantage is that this same feature resulted in easy breakage of beads so that some schist beads appear to be much thinner than they originally were. Some schists are also very soft (e.g., talc schist, or steatite, Mohs = 1–3).

The schist varieties at Çatalhöyük and at BACH include phyllite, a finely laminated material that is normally dark olive gray in color (5Y 3/2). This is a soft material subject to easy fracture along the schist planes. Phyllites in general are low-grade, slightly metamorphosed alterations of slates,

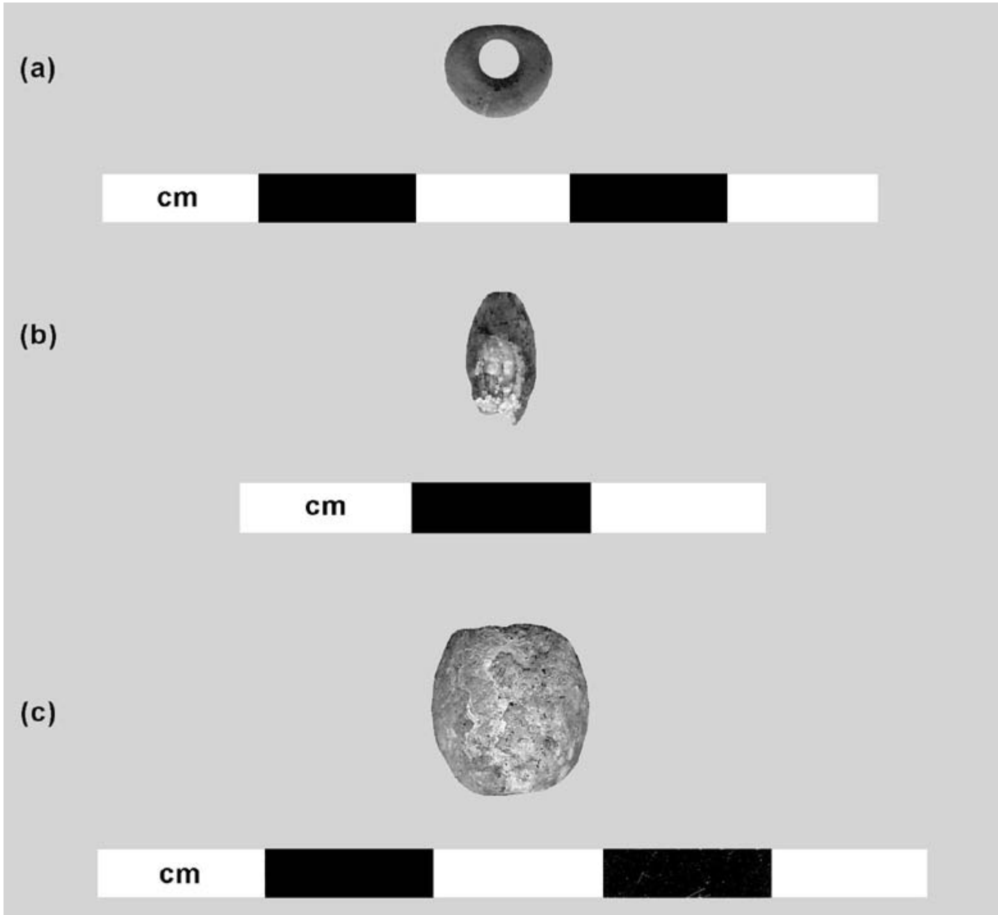

Figure 21.8. Finished stone beads from the BACH Area. (a) Talc schist (steatite) ring bead, type A7 (6116.H1); (b) barrel bead (type A16) made of common opal (2235.D2); (c) galena barrel bead (type A16) (2218.H1).

containing quartz, feldspars, mica, and chlorite. They have a silky luster and are gray-green in color. They form from low-grade metamorphism of pelitic (clayey) sediments such as claystones, slates, shales, and mudstones (Pellant 1992:210; Schumann 1992:312; Whitten and Brooks 1972:33, 342, 349). Pelitic sediments of this kind occur about 4.5 km south of Çatalhöyük (see above), but exact locations of phyllites in the natural state need to be determined. The Çatalhöyük beadmakers exploited the easy cleaving of this material into flat faces. The drawback was that these beads break easily, also along the schistosity planes. This results in bead fragments that preserve the shape of the bead in plan but have a thickness as low as 1 mm or even less.

Other varieties include a paler green talc schist (also known as soapstone or steatite), and purplish black chlorite schist. The talc schist (steatite) is a dark greenish gray color with waxy luster, a soapy feel, and very low hardness (Mohs ranges from 2.5 to 3; the material can be made harder if heated; cf. Kenoyer 2003:14) (Figures 21.2b, 21.8a). Chlorite schist has similar characteristics but ranges from a dark purple-black to greenish brown (Chart 1 for Gley 2.5/10Y), and there is a gray streak when it is rubbed on a porcelain streak plate (talc schist has no streak).

A disk bead blank of chlorite schist (Figures 21.2e, 21.7) reveals that at least some preforms were drilled individually rather than sawn from perforated cylinders. The blank shows an individual roughout that was chipped and abraded on faces and edges into a roughly rectangular disk shape. Drilling from opposite faces (bipolar drilling) was begun, but the drills were unaligned, so the artisan abandoned the blank (Figure 21.2e). This procedure contrasts with steatite beadmaking techniques observed at Neolithic and Chalcolithic Mehrgahr (Pakistan), where sawing of perforated cylinders was characteristic (Barthelmy de Saizieu and Bouquillon 1994).

Small ring beads are the most common form in schist (Table 21.4). As with limestone/marble ring beads, the sizes range from 2 to 4 mm in diameter, 1–2 mm in height, 1–3 mm in height/thickness, and 1–2 mm in perforation diameter. Again, extreme miniaturization is evident. Other, larger, beads include disks and cylinder beads.

At the moment, our evidence for heating of the talc schist and chlorite schist is equivocal. Heating of soapstone hardens it, from Mohs 3 to Mohs 5 (Kenoyer 2003:14). All of the examples from BACH measured Mohs 3 or less, but this does not necessarily rule out the possibility of heat treatment (Barthelmy de Saizieu and Bouquillon 1994).

Remaining materials occur only in small numbers (Tables 21.4, 21.5); we need only a few comments on those that might have been acquired from a greater distance (see discussion of material sources, above).

Beads of galena are rare at Çatalhöyük, but both blanks and finished beads occur (both occur also in Building 3). That the material is galena and not hematite was confirmed by specific gravity, lack of streak, and testing with hydrochloric acid which produced the characteristic hydrogen sulfide odor; also, a galena blank displays stepped cleavage and a cubic crystal structure. A complete barrel bead in galena was found (Figures 21.2a, 21.8c). Sources of the galena are unknown, and it is not clear whether or not galena might have been brought into the Konya Plain by the Çarşamba or other streams. Major sources of lead do occur in the Taurus to the south.

The identification of a few items as serpentine or serpentinite is tentative awaiting further testing, but the characteristics of these materials are consistent with the attribution: low hardness (Mohs = 2.5–4); greasy or waxy luster; white streak; opaqueness; and dark black, green, and white crystals (often easy to see with the naked eye) (Pellant 1992:194; Schumann 1992:88, 322). Subject to the confirmation of this identification, the nearest serpentine/serpentinite sources would be expected in (1) ophiolite sheets; and (2) outcrops of peridotite (for locations, see discussion of the geology, above).

Hard materials (Mohs 6 and higher) are rare among Çatalhöyük's beads. However, a few examples do occur. In the BACH Area, these hard rocks are represented by black basalt/dolerite/diabase (including a blank; Figure 21.2f); a green chert bead fragment; and common opal (this last is not the famous opalescent, precious variety, but an opaque yellowish brown material; Figure 21.8b) (see also Jackson 2005).

In the small numbers of these unusual materials, there is a certain diversity in forms: ring beads occur, but there are also relatively unusual types, such as pendants and barrel beads, which are not common in the pink limestone/marble and schist materials.

Contextual Analysis

As noted, there was little in the way of production evidence in the BACH Area. Most beads came from use (consumption) contexts (e.g., burials) or discard contexts. Small numbers of beads turned up in special contexts (e.g., bucrania; scapularia). Also, small numbers of beads were clearly moved around by disturbances of various sorts (cleaning, rebuilding activities, animal burrows, and the like.).

Unfinished beads turned up in interesting places; for example, a galena blank, irregular in shape but perforated, emerged from the fill of burial F.634 (6323). One talc schist/steatite blank turned up in unit 8108 (floor unit), associated with Space 158—along with five other stone beads (of diverse materials), a bone bead, and a clay bead. Unit 6393 (F.623), also of Space 158, revealed two further stone beads. Of possible craftworking areas, two finished stone beads emerged from a midden in the F.606 central floor, which also revealed painted plaster fragments, grinding slab fragments, and unworked stone (2255).

Caches or special deposits of beads were suggested by a number of clusters. Of course, care is needed in documenting this, since rodents can move beads around in burrowing, and the BACH Area had numerous animal burrows. Some 37 shell beads turned up in association with a bin (F.1003) in Space 88, in packing on one side of the bin where a number of plaster fragments also appeared (8505). In Space 89, four beads emerged from a burned area of fill around the bucranium (2210), and two were associated with Cluster 1 (the "scapularium," 3517) in Building 3. A number of beads were found in association with the F.167 entry platform (2214: three stone, one clay, and one shell; 6110: two stone and two shell, including *Theodoxus* and *Dentalium*; 6192: two stone beads). An interesting number of beads appeared in roof collapse contexts (e.g., 2238: four stone beads and seven clay beads, all spherical). Collectively, some of these deposits may hint at the use of beads in ritual activities—defined on the basis of other data such as animal bones—associated with building and abandoning houses.

Beads in Building 3 Burials

If production contexts are difficult to identify in the BACH Area, one context of use is readily discernible. By far the richest contexts with ornaments at Çatalhöyük are burials, of which there were several in and about Building 3. This discussion concerns only the Neolithic graves, which are more fully described by Hager and Boz in Chapter 13.

Burial F.757 (Phase B3.3, Central Floor Area): Ornaments with Infant Skeleton and in Fill

The earliest grave (F.757) in Building 3—and the richest in terms of grave goods—was that of an infant (8184) interred in a basket with a lid (see Figures 5.52, 13.6; see also Chapters 4, 13). The skull revealed traces of red pigment, a material also found in a shell behind the skull. Near the skull, a small bone spatula was found inserted into a nodule of malachite; fragments of wood were found nearby (possibly remains of a box). Baked clay beads of gray color were found around the upper right arm (which was bent with the lower arm near the skull) (see Figure 5.53). Another set of clay beads (baked and unbaked, mainly pink) were found around the upper left arm (which was bent with the hand near the left shoulder). A few white beads were also found here. No bone beads were found in association with this skeleton.

All of the clay beads are very small, fragile ring beads (type A7), 3 mm in diameter or less, between 1 and 2.5 mm thick. These were collected in three groups. Group 1 (8184.X1) consists of 12 complete and 12 fragmentary beads made of clay (Figures 21.1f–j, 21.4a). Most are dark yellowish brown (10YR 3/4). Group 2 (8184.X2) consists of 14 complete beads made of pink baked clay, and 34 fragments of the same type and material (Figure 21.4b). Also in this group were seven white beads (now housed in the Konya Archaeological Museum and not yet evaluated) made of either shell or limestone/marble. Group 3 (8184.X6) consists of 18 clay ring beads (type A7) 3.5 mm or less in diameter. Fourteen are gray-brown clay, unbaked or only lightly baked (eight complete, six fragments). Four are baked orange-pink clay beads (one complete, three fragmentary).

No beads were found as part of the basket (8373). However, in the burial fill (8183) were found 19 clay beads, all of the A7 ring bead type. They consisted of 7 beads, dark brown in color; 11 fragments of such beads; and 1 gray clay bead which was larger than the rest, at 5 mm in diameter (but also very thin: only 1 mm in height). No shell, bone, or stone beads were found in this fill. Relationships between the beads from this fill and any skeletons are not clear, but beads turned up in burial fills elsewhere, and this is unlikely to be merely an accidental result of disturbances (e.g., by animal burrows).

Burial F.756 (Phase B3.3, Central Floor Area): Beads in Burial Fill at Edge of Pit

Burial F.756 is a child of about 7 years of age. No ornaments or other grave goods were found in direct association with skeleton 6682. One black basalt disk bead fragment (about half remaining) was found in the fill (8167) at the edges of this burial (8167.H1). This is a disk bead of type A6, a rather large bead, at 6 mm in diameter, with a thickness of 2.80 mm and a perforation diameter of 2 mm.

Burial F.644 (Phase B3.4A, North-Central Platform [F.162]): Beads in Burial Fill

F.644 was a burial in a pit placed in the north-central platform. No ornaments or other goods were found in direct association with this skeleton of a young adult (8113) or its burial lid (6602). In the fill (6603) of the burial pit, two ornaments were found. One is a stone ring bead (type A7) probably made of pink limestone (it is in the Konya Archaeological Museum) (6603.H3). This has a diameter of 3 mm and a height/thickness of 1 mm. The second is a broken bone finger ring (6603.X1). The diameter of the original was 16 mm and the thickness is 4 mm.

Burial F.647 (Phase B3.4A, North-Central Platform [F.162]): Beads in Burial Fill

Feature 647 was a burial pit later cut by burial F.634. No beads were found in direct association with its skeleton (8114) of a young adult or in burial lid units (6617, 6632). In the burial pit fill (6633), a fragment of a tiny schist ring bead (type A7) was found. Although too small to measure, this was undoubtedly under 3 mm in diameter, and the preserved height/thickness is 1 mm (6633.H1). One clay ornament fragment came from a slightly lower layer of pit fill (6643), consisting of one end of a lenticular fusiform bead (6643.H1). The bead was broken approximately in half.

Burial F.634 (Phase B3.4A, North-Central Platform [F.162]): Beads in Burial Fill

Feature 634 was a burial that disturbed both F.644 and F.647. No beads were found in immediate association with its skeleton (8115) of a mature female or the burial lid units (6308, 6309, 6310, 6311). The burial pit fill (6323, 6623) contained human bones, disturbed and scattered, and four relatively large beads. Of the three stone beads, one is a complete dark gray-green schist disk bead (type A6), measuring 7 mm in diameter, with a height of 3 mm and a perforation diameter of 1 mm (6323 H4). A second bead is a large, complete ring bead (type A7), material unknown (housed in the Konya Archaeological Museum); this has a diameter of 6 mm and a height of 2 mm (6623.H5). The third stone item is a galena bead blank, irregular in plan, flat in section, with a complete perforation. The final product intended is unclear, so it is an indeterminate preform (type X1). The blank is 22 mm in diameter and 18 mm in height/thickness (6623.X8). One clay bead was found in this fill: a disk bead fragment, with a diameter of 6.43 mm, a height/thickness of 3.28 mm, and a perforation diameter of 0.88 mm (6323.H4).

Nine beads—two stone beads, six clay beads, and one bone finger ring—were found in the lower level of burial pit fill (6693) that was shared with F.644 and F.647. One stone bead is a complete, black ring bead (type A7) made of basalt/dolerite/diabase (6693.H1). This is 3 mm in diameter, with a height/thickness of 1.5 mm and a perforation 1.5 mm wide. The second stone bead (6693.H2) is of the same material and the same dimensions but is a fragment. The bone finger ring is oval, with diameters of 14 and 8 mm and a thickness of 2 mm. It is polished on all sides, and there are striations from manufacture on the inner face. Six clay beads (in the Konya Archaeological Museum) were also found in this fill (6693.X3).

Burial F.631 (Phase B3.4B, Northeast Platform [F.173]): Beads in Burial Fill

In the burial F.631, no beads were found in direct association with the adult male skeleton (6303). In the burial pit fill (6288), there were two stone beads. One is a ring bead (type A7), 6 mm in diameter and 2 mm in height. The other is an indeterminate. In a slightly lower layer of pit fill (6279), there were four beads. Two are small stone ring beads, one of which is complete; this measured 3 mm in diameter and 1 mm in height. Two fragments of clay lenticular beads were also found, one being the midsection of a bead and the other an end fragment.

Burial F.617 (Phase B3.4B, North-Central Platform [F.162]): Beads in Burial Fill

The child skeleton (6237) in burial F.617 was buried in a basket with a shell (but not a bead) that was found near the pelvis. Four beads were found in the burial pit fill (6211): two stone ring beads (material unknown), one clay barrel bead, and one shell bead (*Theodoxus*; David Reese, personal communication).

Beads Found in Burials from Space 87

Primary burials of nine individuals (seven of which were excavated) were discovered in Space 87, south of Building 3 (Chapter 13). Skeletons were in various conditions of preservation as a result of disturbances from sequential burials and animals.

Burial F.1005: Bead in Fill

No beads were found with the juvenile skeleton (8423) in F.1005. The burial pit fill (8421) produced a fragment of a small pink limestone ring bead.

Burial F.1002: Beads in Fill

Feature 1002 contained the burial of two skeletons: one was an adolescent (8409) slightly disturbed by a mature male skeleton (8410). Neither skeleton revealed any directly associated beads or grave goods. However, in the upper burial fill (8385), possibly associated with 8409, a bone belt hook and eye were found along with two unbroken stone beads (Chapter 13). These are (1) a small, complete white marble ring bead (type A7), measuring 3.3 mm in diameter, 1.5 mm in height, and 1 mm in perforation diameter; and (2) a likewise complete ring bead made of schist (4 mm in diameter, 1 mm height, 1.5 mm in perforation diameter).

Discussion of Contextual Analysis

What emerges from the ornaments in the BACH Area graves is how lacking in diversity they are. The great majority are very small, type A7 ring beads, mostly in limestone/marble or dark gray-green schist. Even the exceptions are modest—dark in color (e.g., basalt/dolerite/diabase), not large, not "showy." Materials are simple and many could have been collected from the Çarşamba, not far away, with perhaps a few possible exceptions (galena, basalt, serpentinite). Nearly all are made of soft materials (Mohs 2–4).

Although the number of burials here was small, and several were disturbed, some general observations are possible. First, it is evident that personal ornaments were central to burial practices, even if not all graves contained large numbers of beads, and even though we find beads immediately *next* to a skeleton only in the case of F.757 (skeleton 8184). More common was the situation of finding small numbers of beads in burial fill deposits. In some cases, this probably resulted from disturbances (later burials, animal activity). In other cases, there is a possibility that beads were deliberately deposited in fills as part of mortuary ritual—for example, in the case of the substantial number of beads from the fill of the essentially undisturbed infant burial F.757, which also had many ornaments directly linked to the skeleton (8184).

Among the small number of graves within Building 3, there are differences that are not readily explained. Why did infant burial F.757 (8184) have so many more beads than other individuals? The only thing that seems to stand out in connection with 8184 is that this was the first burial to take place in the building. Consequently, emotional motivations (a child, the first death during the occupation of the house) may have led to this grave being given some elaborate decoration (Chapter 13).

It has been noted that at Çatalhöyük generally, burials with ornaments were often infants and children (Hamilton 2005c) and that fewer adults seem to have had decorations. This provisional generalization is not statistically valid (in light of available samples), and there are important exceptions.

Within Building 3, it is noteworthy that apart from skeleton 8184, there was little to distinguish the adults from the children. Within this particular house, among this small group of presumably kin-related people, age seems not to have been the driving rationale for differences of decoration in burial. In short, status achieved in the course of one person's life cycle seems not to have been marked strongly in death, in this case. This tends to militate against the idea that *all* variations in burial in Neolithic societies can be attributed to variations of age, sex, and achieved status, and we may have to look elsewhere for reasons for grave good variations.

This raises the question, then, of prestige hierarchies. Insofar as access to exotic, elaborate, or unusual ornaments is a reflection of social prestige or other indicators of rank, the Building 3 inhabitants appear not to have been blessed with special access of this kind, with the single possible exception of the occurrence of galena as both an unfinished blank and as a finished bead. Most materials are overwhelmingly simple, locally available, manufactured by simple techniques, and so on.

The "plain and simple" ornaments of Building 3 are a substantial contrast to some other graves, notably from the SOUTH Area, where both Mellaart and the current excavations have revealed some comparatively spectacular burials laden with large beads in bright colors, conspicuous shapes, and exotic or special materials. For example, Mellaart excavated some graves with large turquoise beads, pink limestone or marble barrel beads, substantial bone beads, and miniature limestone ring beads, the latter serving as fillers separating the large conspicuous beads and pendants (Mellaart 1967:Plate XV, 103–104). In another example, skeleton 1860 in the SOUTH Area (10529) was the body of a young child of about 12 years of age. Here, the ornaments included many of the small, type A7 pink limestone ring beads—but accompanying these were large white marble beads of diverse forms, beads of serpentine/serpentinite, and a butterfly bead in steatite (K. Wright, work in progress).

Interpreting such contrasts will require a larger sample and more detailed data on grave goods. Possibilities that need to be explored are differences due to age and life transitions of individuals. Yet another set of issues concerns burial as a process of ritual enactment, considerably more complex than the mere placing of ornaments on the body of the deceased. Very possibly, other occurrences of beads in unusual contexts (bucrania, scapularia, entry platforms) suggest that beads and pendants figured in abandonment habits or rituals, of which clothing the dead was only one aspect.

Comparisons with Other Sites in Anatolia and the Near East

The BACH Area ornaments represent only a limited range of the ornament types seen at Neolithic Çatalhöyük as a whole. However, it may be useful to comment briefly on comparisons with contemporary Neolithic sites (see Figure 1.2).

Concerning stone bead techno-typology, many sites of this age have beads shaped like disks, rings, cylinders, and barrels, which seem to be fairly universal shape choices. However, there appear to be differences between Neolithic sites in terms of more elaborate or larger beads and pendants, and many contrasts in materials. Çatalhöyük's larger ornaments in stone tend to be butterfly beads, rectangular pendants shaped like elongated celts, and beads shaped like shaft-hole axes (none of which occur in the BACH Area). The butterfly bead is a widespread form in Neolithic western Asia, found at Abu Hureyra and many other sites (cf. Lankton 2003; Moore 2000). The situation for the "ax" shapes (also absent from BACH) is less clear. Published illustrations of beads from other Anatolian sites display forms not seen at Çatalhöyük: Aşıklı (large oval agates); Çayonü (biconical beads); Çafer Höyük (elaborate bracelets) (e.g., Cauvin 1989; Cauvin and Aurenche 1982; Cauvin et al. 1999; A. Özdoğan 1999; Özdoğan and Başgelen 1999).

These and other Neolithic sites seem to emphasize locally available rocks and minerals for stone beadmaking, albeit some exchange was undoubtedly going on (Wright and Garrard 2003). In all, shell beads testify more readily to long-distance contacts than do stone beads, but much further work is needed on this. Generally, the pattern of idiosyncratic village-specific bead styles, combined with emphasis on local materials, appears to match the situation in contemporary sites in the Levant.

One comparative issue arising from the Çatalhöyük data concerns beads in burials. It is frequently stated that in sites of the Pre-Pottery Neolithic B in the Levant, mortuary practices did not normally include personal ornaments. Instead, these practices emphasized manipulation of the skeleton via decapitation, plastering, pigments, and so on. However, a few PPNB sites have revealed beads from burial contexts, or ritual contexts with mortuary remains (e.g., Nahal Hemar, Israel) (Bar-Yosef and Alon 1988).

The Çatalhöyük burials do seem to be somewhat unusual in the large numbers of personal ornaments found in some of them. However, the Çatalhöyük data also suggest that extreme care has to be taken in looking for beads—which can be as tiny as 2 mm in diameter and as few as three or four together—in burials and grave fills. In short, it is important to consider the possibility of subtle "grave goods" in the form of a few ornaments being deposited as graves were filled. Simply because we do not always see large numbers of beads next to skeletons does not mean that beads were not part of mortuary ritual. This underlines the importance of subjecting all burial-related deposits to flotation and searching for micro-artifacts in heavy residues.

Conclusions

Craft technologies expanded in diversity and complexity in the Neolithic, and indeed this is the hallmark of the period. But crafts are not only interesting in terms of technological histories. In fact, they are central to the expression and creation of social identities (Costin et al. 1998). Like other crafts, ornaments were clearly a central means of defining social identities at Çatalhöyük. Initial indications are that these identities were complex and worked on the individual, household, community, and regional levels.

There is every indication that beadmaking at Çatalhöyük was a classic example of a prestige technology (Hayden 1998). The precise practices of how this was played out in personal ornamentation are still under study. But already it is clear that between households, there were different degrees of access to materials, varying levels of expertise, and at least hints of small-scale, household-level specialization, as defined by Costin (1991) and as indicated elsewhere in the Neolithic Near East (Wright and Garrard 2003).

Hodder suggests that Neolithic Çatalhöyük was becoming entangled in material culture (Hodder 2005a). It is difficult to disagree. Skeletons at Çatalhöyük suggest that people may have been literally, physically bound up in cords for burial. For the living, personal ornamentation was very possibly also a crucial vehicle for construction of social relationships in early villages—a visible binding of the social contract. If, as some suggest, the body is a map of the social order (Douglas 1966), the general Neolithic proliferation of diverse materials for clothing and adornment suggests that Neolithic societies recognized a wide range of definitions of "seemly" presentation of the self (cf. Goffman 1956).

Neolithic anthropomorphic art—statues, figurines, paintings, sculptures, stelae—delineates highly specific modes and variations in dress on people so displayed—clothed hunters in the bull hunt paintings, details of dress (or not) on statues and figurines (Wright 2000). Ornaments and dress are often media for reinforcing status and role, enforcing social codes, defining age-related transitions (e.g., to adulthood). Was Neolithic jewelry so abundant and diverse because sedentary life demanded a raft of detailed definitions of correct social behavior in various contexts? Or was it a medium for lively expressions of individuality (Meskell 1999)? Did some households have greater access to special materials and crafts made from them? Were some households specializing in ornament production? These and other questions are being addressed in studies of beads at Çatalhöyük and beyond.

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Part 5

Taking the Analyses and Interpretations One Step Further: Alternative (Nontraditional) Directions of BACH Research

Like Volume 6 of the 1995–1999 CRP excavation report entitled *Perspectives on Çatalhöyük*, Part 5 of the print edition of *Last House on the Hill* comprises five chapters that treat the presentation of excavation and analytical results as the starting point of more interpretive and synthetic studies, sometimes falling outside the boundaries of traditional "site reports." Like the CRP, we include them in our volume rather than as separate journal articles, since we feel that they demonstrate the contextualization and recontextualization of the BACH project in a broader set of questions than more traditional questions of "what happened in the past." The context in our case comprises a certain degree of reflexivity in how narratives about the past—especially in the absence of any written records of that time—are constructed by twenty-first-century archaeologists from industrialized and urbanized countries that are steeped in traditional values of colonialism and militarism. How can these narratives be best disseminated to broad audiences who have expectations of immediacy, immediate results, and visual stimulation wherever and whenever they may be in the world, in a way that does not compromise the transparency of the interpretive process of archaeology? What is the effect of our narratives of discovery, interpretation, and synthesis on people with different expectations? Can we broaden our narratives by incorporating the imagined and experienced multisensorial world and body?

Thus, we address in *Last House on the Hill* a number of topics that reflect the interests of the BACH team and that have not been addressed so explicitly in previous CRP volumes—for example, the intricacies of house construction and maintenance; replication and experimentation with full-scale models to investigate prehistoric life and the formation of the archaeological record; digital documentation of the excavation process and open access to the recontextualization of the media record; the construction and the multisensorial experience of place both now and in the past, including vision, sound, and touch at Çatalhöyük; and exploration of virtual representation and the presentation of our work on the Internet. Some of these have been incorporated into earlier parts of the print edition of *Last House on the Hill*.

In this Part 5, Mirjana Stevanović and Ina St. George (in Chapters 22 and 23, respectively) both seek to enrich their experience of the lost and fragmented world of Neolithic buildings by experimental replication of the process of constructing and elaborating prehistoric structures. Their investigations both involve empirical research, but also collaboration and consultation from local builders (both men and women in the surrounding villages). Mirjana Stevanović incorporates the results of her replication of brick and mortar construction into her chapter on Neolithic house construction in Part 2. Ina St. George was a member of the CRP conservation team of 2003; her interest in the recording and conservation of painted wall plasters coincided with the experimental painting of wall plasters in the Replica Neolithic House.

The Replica House was a unique contribution of the BACH team and one that reflects our long-standing interest and experience in the use of experimental research to investigate empirically the human manipulation of materials in general, and especially architecture. The Replica House had a beneficial side effect in the public presentation of the prehistoric past to visitors of all ages and backgrounds. The Replica House was often the starting and end point of a visit, and definitely its high point.

The presentation of the prehistoric past to ourselves and to the public was always a significant focus of the Çatalhöyük Research Project as a whole, including the BACH project. Attention has been paid to the management of the site as a cultural heritage place, with planning for an expanded future during the lifetime of the umbrella project, perhaps culminating in its status as a World Heritage site. All members of the project were aware of this theme in our presentation of multivocality and multiple interest groups, with a number of publications addressing this issue. The publication of an international project on Mediterranean prehistoric heritage, in which the Çatalhöyük Research Project played a vital role, made significant contributions to this dialogue and was one of the starting points for Ruth Tringham's chapter on "The Public Face of Archaeology at Çatalhöyük" (Chapter 25). The other inspiration for that chapter was experiencing the effect of the BACH repurposing of Çatalhöyük archaeological digital media for public live and on-line performances.

Two chapters in this section address the growing interest in the idea of approaching the people of the past through both contrasting and common sensorial experience of a place that exists now and also existed in the past. Michael Ashley addresses this theme through the sense of vision in Chapter 24, anchoring his ideas in the empirical data of vision science as well as interviews with archaeologists on-site. He draws attention to the contrasting visual experiences of Çatalhöyük in the current interior sheltered spaces on the mound as well as in the prehistoric enclosed interiors.

In her Chapter 26 that concludes the print edition of *Last House on the Hill*, Ruth Tringham approaches these challenges through an exploration of the full-body multi-sensorial experience of both modern (archaeologists) and Neolithic residents of Çatalhöyük. In her chapter, she emphasizes the sense of touch, expanding its sensations beyond the obvious haptic sensations of surface, form, pressure, pain, temperature, and texture, to include the full-body sensations of balance and the sense of movement in any part of the body. An important aim of the excavation program at Çatalhöyük—and the BACH Area was no exception—was to construct movement through space within and around the houses by the prehistoric residents and visitors; the tasks that were carried out in different parts of the house, on its roof, and outside its walls; the social practices of communication with members of the household (dead and alive) and with neighbors; and this in terms of repetitive practices and rules, and short- and long-term changes. Tringham anchors her investigation in the archaeological data of the Çatalhöyük project, using existing methodologies such as contact trace analysis and human kinetics. She argues that the concept of "taskscapes" enables us to think about the temporality, events, and rhythms of the body's haptic responses, which themselves are essential elements of understanding social practice. She suggests that another anchor to investigating sensory responses in the past is the process by which practices that started as new and unfamiliar experiences became familiar and "enactive knowledge." These are avenues to the CRP's dominant theme of social practice that have been unexplored until *Last House on the Hill.*

Chapter 22

Building the Replica Neolithic House at Çatalhöyük

Mirjana Stevanović

The Aims of the Project

Experimental study, including the construction of replicas, has been an important part of archaeology. Because the past is only partially known to archaeologists, we often use the fragmentary remains that we have to reconstruct it or, more accurately, to construct it (Stone and Planel 1999). One role for archaeologists is to provide their audiences with avenues for interpreting the past. The construction of replica buildings is a tremendous tool for this purpose. However, it is valid as an interpretation only if based on the most up-to-date information available. Some of the most influential efforts in archaeology to re-create construction sites were those of Hans-Ole Hansen at Lejre (Hansen 1961, 1962), and Peter Reynolds at Butser (Reynolds 1979). These two projects tried to build replicas of prehistoric houses using only prehistoric technology and materials; they conducted scientific experimentation and were the focus of extensive scientific research. In this, they are examples that set the standards for experimental work in archaeology and are not easy to follow. At Çatalhöyük, the experiment in building a replica house was undertaken based on the latest knowledge about the architecture at the site. We were literally on the mound excavating the Neolithic houses while at the same time constructing the Replica House on a building site located just off the mound.

The aims of this experiment were twofold. The research on architecture by the new excavation project at Çatalhöyük used experimental research to aid analytical, scientific assessment of the Neolithic houses. Building the Replica Neolithic House thus became a necessary component of the overall research design. It was perceived as an opportunity to try out locally available resource materials and building techniques that might also have been used by the prehistoric builders. It is fundamentally important for our understanding and explanation of the Neolithic community to determine how and why certain technological solutions were chosen and how they were executed (see Figure 2.13).

At the start of the new excavation at Çatalhöyük, the knowledge of architecture based on the earlier excavations by Mellaart was limited. The excavations in the 1960s focused on the appearance of the houses, their walls symbolically imbued with paintings and installations made of cattle horns. Other aspects of the houses, such as the range of building materials used, brick composition and methods for their manufacture, the process of house construction, and others drew much less attention and were not an explicit focus of research.

Questions regarding these attributes were raised, however, during the renewed (since 1995) excavations. Newly unearthed houses generated much discussion about the mud bricks—whether, for instance, they were pre-manufactured or made on the walls. How, in the case of large mud bricks, were they transported from the place of manufacture to the building site? How were the house roofs constructed and with what types of materials? How were the houses accessed and how were they lit, considering the absence of windows?

One way to tackle the multitude of questions was by creating a replica of the Neolithic built environment and evaluating why some of the architectural solutions were preferred. The exercise in house building was seen as an opportunity to become much more familiar with the multiple steps involved in the complex process of house production. According to ethnohistorical sources, mud-brick or adobe architecture is known to be labor intensive, cyclical in nature, and a cooperative venture that draws together the larger community. If so, the better understanding of house construction on our part offered an insight into the social organization of occupants of Çatalhöyük houses.

The second aim, and a very important component of the Çatalhöyük project, was to inspire interest in this site among the general public. The Replica House is a full-size representation of a Neolithic building, and it will remain on permanent display as a part of the Visitor Center at Çatalhöyük. It offers the public one interpretation of the architecture at this site. As such, this archaeological experiment reaches beyond the scientific experiment and its practical results and enters the field of archaeological representation. This kind of representation complements but also competes with other representations of Çatalhöyük architecture, expressed through text or through hand-drawn or computer-generated illustrations.

The Replica House Project started in 1997, when several important preparatory steps for the house construction were taken. One was the exploration of local resources in search of the appropriate building materials. Second was the drafting of plans for the house, which was important not only for the project but also for the local authorities, whose permit we needed. A model of the house was constructed, which included all the important structural elements that were to be reproduced in the Replica House.

A controlled experiment in brick manufacture was then conducted, the aims of which were to assemble test bricks from the locally available clays, and then to transport and store them. During the 1998 and 1999 field seasons, we manufactured the majority of mud bricks needed for the house and then started the construction of the house walls. The following year (2000), the building was roofed and work on the interior began. Building the interior features, plastering the walls and floor, and painting the walls were undertaken in small increments in the course of numerous seasons. Several layers of wall and floor plasters and two sets of wall paintings were also introduced. Experiments continued with firing the oven, monitoring the interior temperatures, and evaluating the natural lighting. The Replica House Project is ongoing, and in each season it increasingly engages the Çatalhöyük team members who experiment with the construction of the house interior and experience the house's atmosphere. There are future plans to increase the number of interior features, to monitor natural changes to it over time, and to maintain the house in good condition.

The overall experiment has been conducted in phases. This gradual approach gave us time to obtain a permit from the local authorities for a building site. Also, using raw materials in the vicinity of Çatalhöyük required that we negotiate with the landowners on whose land these materials were found. Finding semiskilled or fully skilled workers likewise took time. In addition, my participation in the project demanded that it proceed slowly, since I was simultaneously supervising the BACH excavation as a field director.

There were many participants in the project. In addition to myself, Vladimir Ilić helped in planning the building process, creating the model, drawing up the plans needed for the permits, and overseeing the initial stages of the construction. Ismet Ozkut, a local brick maker from Çumra, carried out the task of brick manufacture. Haji Veli, a builder from nearby Küçükköy, joined the project in 1999 and took over the house construction from Ismet Ozkut. A number of women and men from Küçükköy who worked in the excavation and participated in processing finds were also involved in the construction of the Replica House. Hulusi Yaşlı, Ahmet Sivas, Ahmed X, and Khalil X worked on the acquisition of raw materials, assisted in brick manufacture, and later participated in house construction. Local women Hatiçe Yaşlı and Mavili Tokyağsun worked on plastering the house interiors. Jim Vedder, a volunteer archaeologist, and Tania Stefanova, an archaeologist working on the excavation in the BACH Area, helped in burnishing the plasters. John Swogger, the project illustrator, and conservators Brigid Gallagher and Ina St. George invested their skills in painting the walls. Numerous other project members occasionally helped to plaster the house interiors.

The entire process was a learning experience for all parties involved. For the archaeologists, this was an opportunity to reach into the prehistoric past and learn about traditional methods of construction. For the local women and men, it was an insight into archaeology. On numerous occasions, they expressed their surprise at our insistence on building the house in the most traditional way and on not using modern materials such as nails. This often led to long explanations of the reasoning behind the experiment and into our interpretations of Çatalhöyük's past.

Bricks and Other Construction Materials

Çatalhöyük buildings are distinguished by rectilinear frames with flat roofs and roof entrances, which were built up against and around one another with an occasional open court or blind alley so that the settlement plan resembles a honeycomb pattern. The walls of Çatalhöyük houses were constructed primarily from large mud bricks that were laid in courses with alternating layers of mortar, and generally overlapping one another for structural reasons. The size of the bricks varied and more than one size was in use in each house (Farid 2007; Mellaart 1967). It is important to note that despite the great range of brick lengths, all the bricks in a wall were of similar width and thickness (see Chapter 6 for details). That is, the bricks of a wall or a house showed considerable standardization, especially in their width, but less so in their thickness and least of all in their length.

This uniformity of brick width and thickness might be an indication that the Neolithic builders used molds or an open-ended frame that controlled the width but allowed for different brick lengths (Chapter 6). Alternatively, it has been suggested that the bricks might have been made on the wall itself in the *pisé* technique (Matthews and Farid 1996). I have previously argued that the majority of Çatalhöyük bricks were more likely than not to have been premanufactured in molds (Chapter 6).

Estimates of the quantities of the construction materials were made based on the preliminary calculations prepared for the permit application. Soil for mud bricks was estimated at 12 m^3 of earth for bricks, 3 m^3 of earth for mortar, 2.4 m^3 of earth for the roof, and 1.4 m^3 of earth for the floor and other features. Although we intended to re-create bricks of various sizes, the estimate for the quantity of soil was based on 850 single-size bricks (60 × 8 × 30 cm).

Selecting Soils for Bricks

Mellaart (1967) suggested that the bricks were made either of sticky clay mixed with chopped straw or of sandy clay. During the renewed excavation at Çatalhöyük, it became apparent that the brick soils were more varied in color and texture (Chapter 5; Matthews and Farid 1996).

Whereas nearly any soil can be used for mud bricks, some soils are better than others for this task. Crosby presented a chart that shows the major composition of several soils from which satisfactory adobes have been made, and he concluded that nearly any soil is adequate (Crosby 1983:13). Significant differences in the clay content and in the distribution of the particles exhibited in alluvial, lake-derived, and floodplain soils can result in their variable compressive strengths. Nevertheless, all of these soils have functioned well in their specific contexts. Çatalhöyük architecture itself also demonstrates that a variety of soils can be effectively used in house construction.

The ground surface soil in Neolithic times was likely comprised of backswamp soils that are presently buried by several meters of alluvium which has accumulated since then (Chapter 6; Boyer 1999; Roberts et al. 1996). Identifying the soils used in construction throughout the long history of this settlement and their resources is a long-term research question of the Çatalhöyük Research Project. Meanwhile, the solution for the Replica House Project was to identify what seemed to be the most commonly used building material and to utilize it for the experimental wall bricks. Based on the information available, the backswamp soil was designated as such material. This is a heavy silt-clay deposited in the "backswamp" environment of flood basins surrounding the site that was easily available at the surface, an important consideration for the large quantities of soil necessary for the construction of a Neolithic house. Luckily, an old irrigation channel to the south of the archaeological site was sufficiently deep to expose the backswamp layers in its sections underneath the subsequent deposits of alluvium. The canal section was sampled for the soils for the Replica House Project. Four soil types were extracted: (1) the upper alluvium layer soil, (2) backswamp soil that represents lower alluvium, (3) clay with rich organic content that lies under the backswamp soil, and (4) lake marl soil that lies under backswamp soil.

A gravity separation test was applied to the sampled soils to seek the source materials for bricks at Çatalhöyük. This simple test, which can be performed in the field, can indicate the proportions of sand, silt, and clay in soils (Boudreau 1971; Niebla 1983). This comparative test was conducted on three samples of Neolithic bricks and on four samples of locally available soils that were extracted from the channel south of the archaeological site. The results of the test indicated that by far the greatest similarity in particle separation existed between the backswamp soil and the soil from which the Neolithic bricks were made.

Unfortunately, the Replica House Project did not get permission to extract large quantities of the backswamp soil that would be needed for brick manufacture from the sampled irrigation channel. We were forced to find another source for the soils in another irrigation channel located not far away between the West and East Mounds of Çatalhöyük close to the Çarşamba River, which ran through the area during the Neolithic.

Despite the predominance of what we believe to be backswamp soil in bricks at Çatalhöyük, it was not an exclusive source for the Neolithic bricks. Strikingly different soils have been identified in bricks even in the same building at Çatalhöyük. It was not possible for the Replica House Project to include other types of soils since their sources had not been established. However, in order to test how a soil that is not backswamp behaved in bricks, another soil was included in the manufacture of experimental bricks. This soil came from the archaeological excavation and was collected as "slack soil" in the process of flotation. The flotation soil was routinely deposited in the pit near the flotation tanks. This soil had a notably sandy content, partially because its plant material had been separated out in the process of flotation. Another factor was that large quantities of this soil came from the excavated units in the NORTH Area of the East Mound, where alluvial deposits with medium to coarse sandy clay loam were used in construction.

Use of Plants in Brick Manufacture

In the mud-brick matrix at Çatalhöyük, organic remains appeared visible as silica voids, impressions of plants left when the soil was soft. Plant remains in Neolithic mud bricks came from two sources: from the source materials themselves and from temper, added to clays in the process of brick manufacture. Sometimes plant remains were predominantly concentrated on the outside surfaces of the mud brick, where they became trapped in the process of manufacture while drying on the ground. Micromorphological, archaeobotanical, and phytolith research at Çatalhöyük confirmed the presence of a variety of plants in the prehistoric deposits, even though not specifically in mud brick, plants such as cereal husks, wild-grass husks, awns, reeds, sedges, and sponge spicules (Asouti et al. 1999; Fairbairn, Near, and Martinoli 2005; Rosen 2005).

In mud bricks, vegetal material acts as a stabilizer, increases the workability, tensile strength, and cohesion of clay, and reduces cracking during the drying of bricks (Cytryn 1957). The plants used in the Replica House Project were obtained from two sources. Both straw and chaff were procured locally from Küçükköy, where they are used for construction and for animal fodder. It is worth noting that the villagers of Küçükköy collect straw and chaff in large quantities over years and store it in one location. The piles, 15–20 m long and up to 3 m high, are located at the southwest edge of the village. Hatiçe Yaşlı, the local woman who worked with us, advised us to use straw and chaff that were seasoned, that is, collected in prior years. Both Hatiçe and her husband, Mustafa, claimed that the older chaff and straw, when cured for one year, are better for construction. Fresh chaff is mainly given to animals as fodder. The aged chaff is more effective in building because the water, present in the cells of freshly harvested plants, has evaporated. This changes the size and hardness characteristics of the plant. Thus, if fresh plant material is incorporated into a mud brick, it shrinks over time as it dries out and creates a void in the brick, which could reduce the compactness and strength of the brick. We used the chaff and straw from Küçükköy for the mud bricks and for preparation of the outside plaster. The plaster that was applied on the interior of the Replica House incorporated dry plants of smaller size. They were collected on the Çatalhöyük East Mound, where dry grasses can be found in large quantities during summer months.

The proportions of the soil and plants in mud brick have been discussed at length in the literature on adobe making and traditional construction. Boudreau (1971) asserts that for mud brick, the clay content must be between 25 and 45 percent, and straw or vegetal material is absolutely necessary in order to prevent a high degree of cracking in the brick. He cautions that bricks with excessive clay content will develop cracks, and those lacking clay will be too weak and will crumble easily. McHenry (1973) states that straw is not a necessary addition to mud brick if the soil is a balanced mix of clay, silt, and sand; it can furthermore be a cause of trouble, since it provides a good environment in which pests such as rodents can nest and tunnel through the fabric of the brick. According to the U.S. National Park Service Technical Preservation Services, the factor for durability of mud brick is the inherent clay-to-sand ratio found in native soils, rather than any temper (Tiller and Look 1978).

We experimented with different quantities of vegetal temper in the brick soil matrix to find out the clay-to-sand ratio in the native soils surrounding Çatalhöyük (Table 22.1).

Initial Experiments in Brick Manufacture

The raw materials used in experimental brick manufacture are (1) backswamp soil, (2) sandy clay loam collected from the excavation as slack, and (3) a mixture of straw and chaff. With these materials, two mixtures or "recipes" for bricks were made. One comprised backswamp soil with chaff/straw, and the other comprised sandy clay loam with chaff/straw.

The first aim of the experiment was to test if bricks made without vegetal material would hold. In this experiment, backswamp soil, flotation soil, and a mixture of the two (half and half) were made. We then manufactured

Table 22.1. Proportions of the ingredients present in the mixes for mud brick

Soil mix piles	% of soil type 1	% of soil type 2	Vegetal materials	Other inclusions
(1) 84% soil and 16% vegetal	36% flotation soil	64% backswamp	16% straw/chaff	0
(2) 90% soil and 10% vegetal	30% flotation soil	70% backswamp	10% straw/chaff	0
(3) 84% soil and 16% vegetal component	0	100% backswamp soil	16% straw/chaff	0
(4) 84% soil and 16% vegetal component	0	100% backswamp soil	16% straw/chaff	0
(5) 84% soil and 16% vegetal component	0	100% backswamp soil	16% straw/chaff	0

three groups of bricks with each of these soils. Each group included two large bricks, two medium-size bricks, and two small bricks. While they were drying, we carefully monitored and recorded the changes in these bricks. All the bricks but one developed cracks. In most instances, the cracks did not render the bricks unusable. Only the smallest (30 × 8 × 30 cm) bricks—those made from flotation soil—did not crack. This experiment indicated that backswamp soil or flotation soil would be unsuccessful in bricks larger than 30 cm, which the majority of Çatalhöyük bricks were, if no vegetal temper was added.

On the other hand, the soil to which we added vegetal temper (ca. 10–16 percent) proved to be a good material for mud bricks. Those to which a larger volume of plants was added yielded bricks without cracks. This experiment confirmed what is already known from ethnographic sources: that most soils hold better the more vegetal temper is added to them (up to 25–30 percent). The experiment confirmed that we had to include plant temper in the manufacture of the mud bricks for the Replica House, but just how much of it was needed was not yet apparent. The micromorphological evidence from Çatalhöyük reported the presence of 10 percent vegetal temper in the Neolithic bricks (Matthews 2005b). In his project, Fathy (1973) used a ratio of one part sand to three parts of alluvium and sand mix by volume for mud-brick manufacture, to which 45 lbs. of straw per 1 m^3 of alluvium and sand mixture were added.

We decided to add 10–15 percent of vegetal temper to backswamp soil. Procuring the vegetal temper needed for construction in the Neolithic raises interesting questions, such as how and by whom the plants were gathered, how much preplanning was needed in this activity, what (if any) curing process was involved, and whether there was a need for storage of the plants or whether brick manufacture was coupled with the harvesting, planting, and gathering of specific seasonal crops.

Manufacture of Bricks for the Replica House

Brick manufacture started with mixing backswamp soil with water (Figure 22.1). Soils in piles 60–70 cm high were soaked with water until well saturated. The pile was allowed to stand until all the hard lumps of clay were thoroughly softened. The following day, or sometimes after two days, chaff and straw were spread over the top of the pile and the whole mass was turned over until a uniform distribution of all the ingredients was achieved (Figure 22.2). In mud-

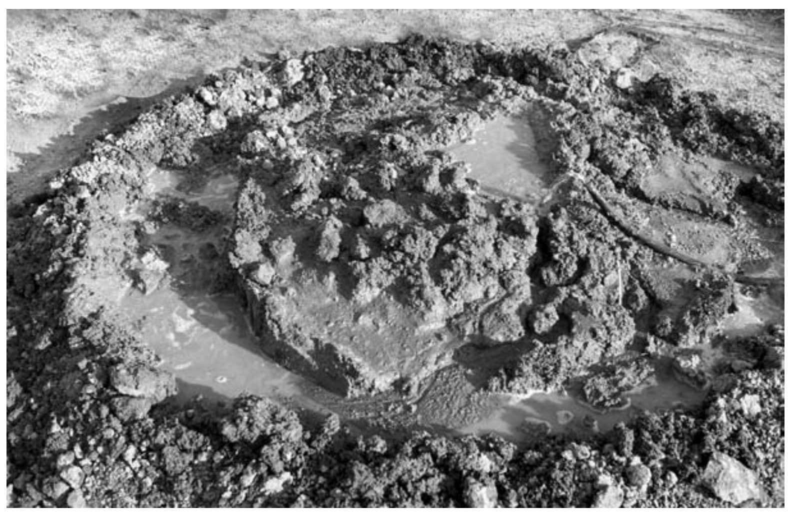

Figure 22.1. Brick manufacture: mixing the soil and water.

Figure 22.2. Brick manufacture: adding the straw and chaff.

brick production, paddling or mixing the mud with the proper amount of water is usually done by hand mixing or by trampling on wet mud by foot to break up the larger lumps of clay. In contemporary large-scale mud-brick manufacture, animals, such as horses and cows, are used (Little 1950). The mixing of the soil, water, and vegetal materials for the experimental bricks was done by hands, shovel, and feet (by walking on it). The pile of mixed mud and plants was left to soak at least overnight but preferably for two nights. In the morning, the same pile would be sprayed with water to replace what had evaporated during the night. Just prior to being poured in the molds, the clay mixed matrix was once more stirred and/or walked on.

Simple wooden molds were made of the type still in use in areas where mud brick is traditionally manufactured. Ideal mud bricks should be twice as long as they are wide to ensure maximum bonding (overlapping) of the brick as laid (Garrison and Ruffner 1983). The experimental molds were made in three sizes, which span the range of the most common brick sizes at Çatalhöyük, from the smallest (30 × 8 × 30 cm), to medium size (60 × 8 × 30 cm), and oversize (120 × 8 × 30 cm).

Before the clay mix was poured in, the molds were wetted on the inside, especially in the corners, to prevent the clay from sticking. Placed on the flat ground and spread with a thin layer of chaff/straw mix to prevent the bricks from adhering to the ground, the prepared mixture was poured into molds (Figures 22.3, 22.4). After the fourth or fifth brick, the mud stuck to the inside of the molds, but this did not worry Ismet, the brick master. Rather, he seemed to be pleased, because fine silt impregnated the mold and actually made it stick less to the brick. At the end of the day, the molds were left in the flotation tanks to soak overnight.

Figure 22.4. Brick manufacture: pouring the mix in the molds.

Figure 22.5. Brick manufacture detail.

Figure 22.3. Brick manufacture: laying bricks on the ground.

After the mix was poured into the molds, the soil was pressed in and the top surface was smoothed. A handful of water and soaked chaff and straw was placed on the surface of each brick, and then pressed with a trowel into the smooth top surface of the brick. After letting the brick set for a few moments, the form/mold was lifted off gently and gradually, with a bit of shaking; the resulting mass stood and held its shape (Figure 22.5).

The total number of manufactured bricks in the first season (1997) was 272, of which 68 were large bricks (120 × 8 × 30 cm), 68 medium bricks (60 × 8 × 30 cm), and 136 small bricks (30 × 8 × 30 cm). In the following year, we manufactured 364 bricks (91 large, 91 medium, 182 small). In 1999, an additional 300 bricks were made (75 large, 75 medium, 150 small size). Archive samples were taken from the five soil mixture piles. That is, 2 kg of soil mixture was taken in a sample for future reference and analysis. One brick sample was designated for micromorphological analysis.

Drying of Bricks

The bricks dried in the same area where they were poured (Figure 22.6). A large area was prepared that was flat and smooth, with no lumps on the surface that the clay could pick up. The bricks were left in place overnight and, in some cases, up to three days, until they hardened enough to be picked up and rotated to allow drying on all sides. To avoid bending the bricks, we turned them over on the opposite side and let them remain like that until they became flat. In the warm, dry Çatalhöyük summers, it took 7 days for the bricks to become hard and 15 days to dry completely. We determined whether the bricks that had dried for two weeks were "hard" by dropping one sideways from a height of ca. 0.70 m; if the brick remained unaffected, it was deemed "hard." Once completely dry, the bricks were transported from the manufacture area to the outdoor storage area where they were stacked sideways in three rows (Figure 22.7). We covered the top row of bricks with a plastic tarp to protect them from rain and snow between field seasons. While in storage, the bricks were air-cured, a process recommended by historic adobe builders, which takes a minimum of four weeks to complete (Tiller and Look 1978). No deterioration of the bricks was apparent, even after up to two years in this outdoor storage (Figure 22.8).

Figure 22.6. Brick manufacture: mud bricks drying.

Figure 22.7. Transporting the long bricks.

Figure 22.8. Brick manufacture: mud bricks drying/stored.

We did note, however, that after drying, the bricks were rarely the size of their mold because they shrank 2–3 cm in all dimensions as they dried. Brick shrinkage is known to be intense in hot environments. For instance, Fathy mentions that in Egypt, bricks shrink 37 percent while drying and, once completely dry, are very compact and hard (Fathy 1973). As they dry, bricks can acquire impressions from the materials that they come in contact with on the ground while still wet. In Egypt, these included small pebbles (up to 1.5 cm in diameter), wood, plants, and other objects. Such impressions or irregularities, if identified in the Neolithic bricks, could indicate the ground conditions in which the Neolithic bricks were made and dried.

Mortars

It has been suggested from the experience of modern adobe production that in a single house wall, bricks and mortars are best made from the same soils so that they will have the same properties during the inevitable process of moisture absorption, swelling, and shrinking, thermal expansion and contraction, and deterioration (Khalili 1986; McHenry 1973). "Historically, most adobe walls were composed of adobe bricks laid with mud mortar. . . . [N]o other material has been as successful in bonding adobe bricks. Today, cement and lime mortars are commonly used with stabilized adobe bricks, but cement mortars are incompatible with unstable adobe because the two have different thermal expansion and contraction rates. Cement mortars thereby accelerate the deterioration of adobe bricks since the mortars are stronger than the adobe" (Tiller and Look 1978).

In Çatalhöyük houses, mud brick and mortar were often made of the same raw material (but see Chapter 6; Matthews and Farid 1996). In the construction of the Replica House, the same soil was used for both mud brick and mortar. We applied the same procedure in mixing mud mortars as in mixing the mud brick: the soil was left to soak long enough to become wet all the way through, and it was mixed using shovels at the building site. However, the mortar was prepared in smaller quantities than the mud-brick mix and used either on the same day or within two days.

Wood, Reeds, and Matting

Timbers were used in the construction of Çatalhöyük houses. Mellaart (1967) found that in the earlier building horizons (Levels X–VIA), timber frames were used with mud-brick construction. He reported that gradually the emphasis on timber framework lessened, so that in his Level II, mud-brick pillars replaced the wooden posts. Asouti (2005b) suggests, based on charcoal found in excavation and through dendrochronological research, that oak and juniper were the principal construction timbers in use at Çatalhöyük. However, in modern Anatolian villages, juniper wood is the rarest and most valued timber (Asouti et al. 1999) and was replaced with poplar wood soon after poplar plantations were introduced in the area (Asouti 2005b).

Mellaart found evidence, and the new excavations confirm, that reeds, matting, and rope were used at Çatalhöyük in various contexts and that they also might have been part of house construction. Ethnographic research in the villages of the region show the use of reeds and matting in roof construction (Matthews and Ergenekon 1998). Loose reeds often covered in soot frequently occur in kitchens or entrances, while woven mats are often selected to line ceilings in living and reception rooms.

In constructing the Replica House, we used poplar wood, which is the only available construction wood in modern local markets. In addition to the two vertical posts inside the house, 22 beams and 65 crossbeams of poplar tree were incorporated. Four woven mats of the kind that are currently used in the local villages were used in the construction of the roof. Both wood and mats were purchased in the local markets of Çumra and Konya.

CONSTRUCTION OF HOUSE WALLS

To help us visualize the house before we began construction, we made a model that included all the structural elements we wanted to re-create (Figure 22.9). By 1999, a sizable quantity of mud bricks had been made and cured, a detailed plan for the building had been drawn, and the construction of the Replica House could finally begin. The building site near the Çatalhöyük Visitor Center was selected by the Çatalhöyük Research Project director and approved by the local authorities. The area had to be cleaned and leveled, and the outline of the proposed building was marked with string stretched between pegs set at the corners of the house. The outline delineated a rectangular structure whose long axis was oriented north–south and measured 8 m in length.

Figure 22.9. Model of the house.

The house currently stands at 4.5 m wide and 2.3 m high. The house comprises a large room and two small storage rooms located in the north end of the house. The central open space includes features placed along the house walls. The Replica House is not a copy of a specific Çatalhöyük house but rather incorporates the most commonly recurring elements of most houses excavated thus far.

The master builder, Haji Veli, and his five assistants spent 15 seven-hour days on the house construction. They carefully laid the rows of bricks and mortar until they reached the tops of the walls (Figures 22.10–22.12). The house walls were made of 25 rows of bricks and mortar of varied size. One continuous course of bricks on all four walls included an equivalent of 55 medium-size bricks (30 × 8 × 60 cm). During construction, the walls were kept straight by horizontal strings that were set at the ends of each wall (Figure 22.13). We checked the verticality of the walls under construction with a plumb, and we frequently reassessed this as the walls grew higher. Walls that are not straight have a tendency to tip over with time, due to the great weight and poor compressive strength of the adobe (McHenry 1984). Both devices that we used for determining if our walls were straight during construction—string and a version of a plumb—could have been known and used in the Neolithic. An alternative way of measuring if the walls are vertical would be to use a wood beam or plank and occasionally set it flush with the wall under construction. Adobe builders caution, however, not to lay more than six or seven courses of bricks in the wall in a single day, and we respected this warning. The wet mortar joints may compress before drying if under a heavy load (McHenry 1984). The head joints of bricks were staggered at least 10 cm so that no vertical joint would occur. The

Figure 22.10. House construction: plan of the house and the initial courses of brick and mortar.

Figure 22.11. Laying the walls.

Figure 22.12. Walls in progress.

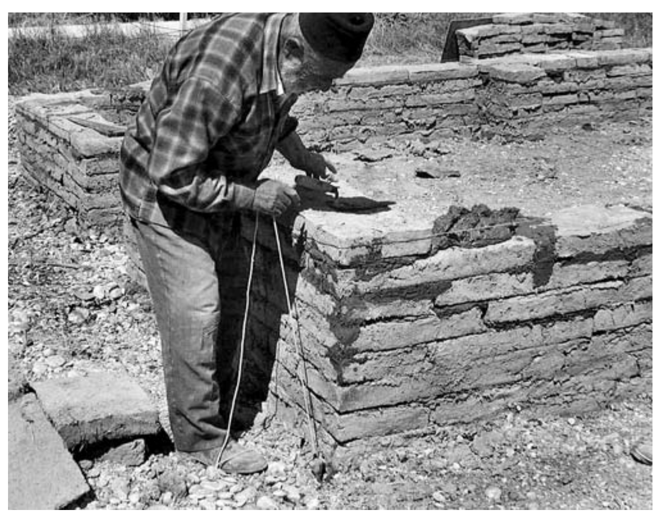

Figure 22.13. House construction: control of the walls under construction with strings.

workmen chose to work with medium-size bricks (30 × 8 × 60 cm), since, as they say, these bricks overlap well, combine easily, are easier to handle than the large bricks, and make the building process faster.

The Roof

The preservation of houses at Çatalhöyük is extraordinarily good but is nevertheless partial. The walls typically survived to a height of 1–1.5 m, but not a single standing roof had been excavated at Çatalhöyük. The existing evidence for roofs come from Mellaart's excavations and from the BACH excavation. Mellaart discovered on one occasion a well-preserved house wall in shrine VI.A.10 (reconstructed in Mellaart 1963:70, Figure 14; see also Mellaart 1967) that continued into the roof. He claimed that the small portion of the surviving roof indicated that it was made of wood beams set flat on the walls and/or posts that were covered with layers of clay. In Building 3 (BACH Area), a large portion of the house roof was excavated (Chapters 5, 6). The roof remains that were collapsed in the house interior comprised a 30-cm-thick deposit of numerous ca. 1-cm-thick coats of clay. No remains of the wood support for the clay cover were discovered.

We worked from the premise that the roofs at Çatalhöyük were multifunctional. In addition to protecting the inside of house and serving as entry point into the house, the roof provided a secondary living floor used for food preparation and other activities during the dry seasons (Chapters 6, 7; see also Figure 4.7; Cutting 2005).

Vernacular houses in low-rainfall climates typically have a flat or minimum-slope roof and are built without significant overhangs, except probably for sun protection (McHenry 1973:82). Adobe flat roofs have a thick coat of soil, which needs "tremendously strong ceiling supports, or narrower rooms," requires a "staggering" amount of labor in placing this much soil on the roof, and needs constant maintenance (McHenry 1984).

The majority of the illustrated reconstructions of Çatalhöyük houses show flat roofs of the type known from Pueblo architecture (with low parapet walls) of the Southwest United States (Tiller and Look 1978:50). In contrast to Pueblo houses, traditional mud-brick houses in the villages of Anatolia surrounding Çatalhöyük have flat or nearly flat roofs with smallish eaves and without parapets. This design, the residents of Küçükköy claim, is necessary in a climate where summers are hot and arid but winters are cold and moist. The roofs are made with as many poles as possible, ones that are even larger and thicker than is strictly necessary, in order to enhance the longevity of the buildings and reduce the amount of future repairs. The roofs are then covered with bundles of reeds and topped with two layers of soil.

Our dilemma for the roof of the Replica House at Çatalhöyük was whether to construct it in the Pueblo style or in the local style. In the end we opted for the latter, since none of us had hands-on experience with Pueblo-style roofs and so it seemed risky to introduce this design to the Replica House in this, our first such enterprise. The house had to endure a harsh winter relatively soon after its completion, and an effective roof was a necessity.

Strength, durability, and resistance to decay made juniper and oak the best choice for the main timber in the heavy Neolithic mud roofs at Çatalhöyük. However, as mentioned below (see "Wood, Reeds, and Matting," above), this type of wood was not available for the construction of the Replica House. We used poplar instead, which does not have the strength and durability of juniper or oak and possibly is not the appropriate type of construction wood for the heavy mud roofs of the kind found in Building 3.

The Replica House roof was set directly on the mud-brick walls. In the middle of the east and west walls, two vertical wood posts measuring 20 cm in diameter were positioned as additional support for the roof beams. The top course of wall bricks was overlain with the roof beams (Figure 22.14), and a space for the roof entrance was left in the southeastern corner. The roof entrance, measuring 1 × 0.5 × 1 m, was framed with the timbers, which were plastered all around (Figure 22.15).

Poplar tree trunks of varied but similar dimensions, averaging 10–15 cm in diameter, were stripped of bark and placed in two superimposed layers, one in an east–west direction and one in a north–south direction. Between the two layers of beams, a layer of matting was applied. The function of the matting was twofold: to protect the interior of the house from soil falling in from the roof, and to mask

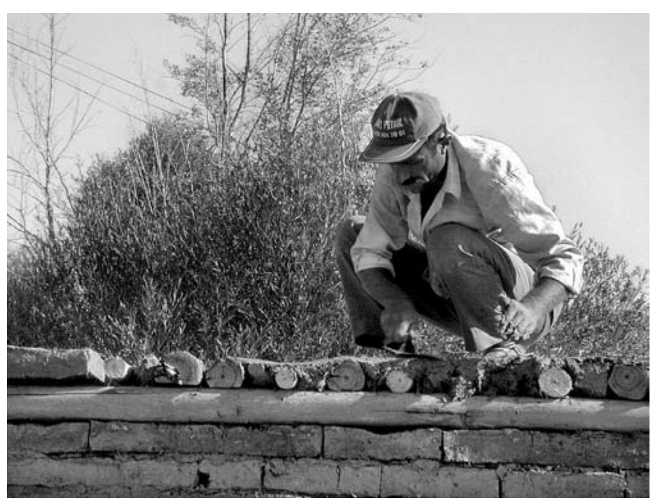

Figure 22.14. Roof construction.

somewhat the roof construction when viewed from inside the house (Figure 22.16).

A ca. 30-cm-thick cover of reed bundles, which were found in the canals that surround the archaeological site, was placed over the roof beams and the matting (Figure 22.17). The role of the reed bundles was to provide insulation from air and water. The roof was sealed with a 15-cm-thick layer of construction soil mix of the same kind as the brick mix locally known as *toprak*. This was overlain by another 15- to 20-cm-thick layer of waterproof soil known locally as *çorak* (Figure 22.18). Rich in carbonates and whitish in appearance, çorak comes from a source that is 5 km away from Çatalhöyük and is used for waterproofing roofs of houses in neighboring Küçükköy.

The Replica House roof was designed to slope from the center toward its edges along the north–south axis. In the middle of its long sides, two spouts carved in wood were placed in the top layer of clay to regulate water drainage (Figure 22.19). In adobe houses, waterspouts are recommended to be long enough to direct the water well away from the walls. The effects of direct rainfall on the walls are of relative unimportance, but a concentrated flow of water such as that from drainage can cause serious damage (Garrison and Ruffner 1983). The desired result for the Replica House was achieved such that the rooftop is flat enough to be used for domestic activities, which we believe was the case in the Neolithic, and at the same time the surface slopes sufficiently to allow rainwater to flow off the roof.

Figure 22.15. Roof entrance.

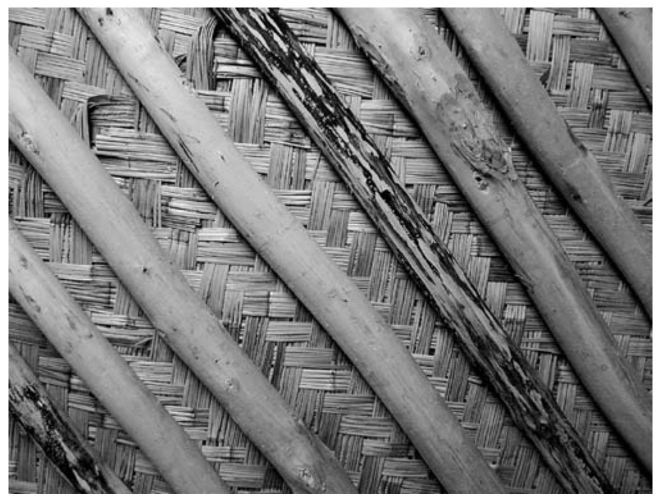

Figure 22.16. Matting on the roof (from the inside).

Figure 22.17. Roof construction.

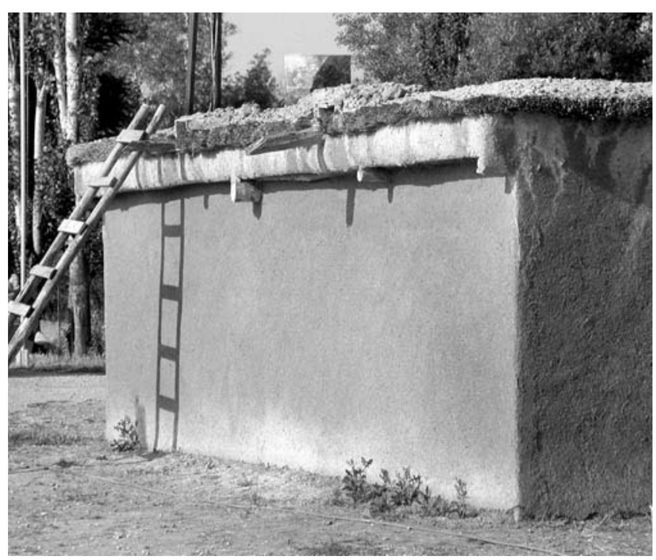

Figure 22.18. Roof construction.

Figure 22.19. Water spouts.

HOUSE INTERIOR

We furnished the house interior with two large platforms in the northeast and northwest corners (Figure 22.20). Similar to F.170 in Building 3 (Chapter 5), the northeast platform of the Replica House was built to border with an east–west-oriented bench. A smallish third platform on which the entrance ladder rests was positioned directly below the roof opening in the southeast corner of the building (Figure 22.21). All three platforms were built with thick packing made from the construction soil and a white plaster coat over the packing. We made sure that the packing soil was well compacted and that the platform edges were straight but with rounded corners, following the Neolithic example in Building 3.

The house oven was built attached to the south wall and stood below the roof entrance. This combination of features is known from Building 3 (F.779) and Building 5 (F.242). The oval-shaped oven measures 90 × 60 × 70 cm. According to the local tradition, women are responsible for building and maintaining ovens and hearths, since they are the ones who regularly use them and therefore are the ones who have the appropriate knowledge and skill. Hatiçe Yaşlı, who built the oven, made sure that the clay for the oven was well prepared. She invested much effort and time in cleaning the soil for impurities, such as pebbles, plant roots, and clumps of clay. After cleaning, she tempered the soil with fine sand and a fine chaff/straw mixture that she prepared earlier by sieving it through a fine-grained mesh. She then added a small amount of salt to the mix. Hatiçe completed the oven gradually and slowly, using the coil technique. A first coil in a horseshoe shape, similar to F.785 in Building 3, was placed directly on the house floor. In a couple of hours, after it had dried somewhat, the next coil was positioned over the first one, and the other coils fol-

Figure 22.20. House interior: two large platforms.

Figure 22.21. Stepping platform and the oven.

lowed in the same fashion. Each coil was 10 cm high. Not more than three coils were applied in a single day.

Prior to constructing the domed top of the oven, its walls were allowed to dry thoroughly. Constructing the oven dome is the most delicate part of the process, since it can collapse easily. To avoid this, the walls had to be properly hardened and dried. The wet clay in walls shrinks and moves as it dries and thus can jeopardize the roof under construction. Also, while the oven top was still open and the oven interior accessible, Hatiçe took the opportunity to finish construction of the oven floor. She applied two additional oven floors made of well-compacted clay. The oven roof included an opening at the very top (measuring 15 cm in diameter) that allows the smoke to escape upward and toward the roof opening (Figure 22.22). The oven mouth, measuring 30 × 20 cm, rests on a small step protruding from the north side of the oven. In keeping with the local tradition, Hatiçe made sure that before the newly constructed oven was used, its interior was coated with a layer made of the mixture of egg (100 g), salt, milk (ca. 240 mL), and water. She used a cloth to apply this mixture to the interior of the oven walls. This layer was meant to protect the oven walls from cracking and to facilitate accumulation of soot inside the oven, which, according to Hatiçe, is very desirable.

The storage area attached to the north end of the house was divided into two small rooms. A crawl hole leads from the central house space into the storage space. Each of the storage rooms can be reached through the crawl holes from the central area of the storage space (Figure 22.23). In the west room, four storage bins were constructed following the style of bins excavated in Building 5 (Figure 22.24). The bin construction followed the same routine as the oven construction. The clay was carefully screened for any impurities, soaked in water, and with minimal addition of sand and chaff/straw, shaped for use in the coil technique.

Figure 22.22. Oven opening under construction.

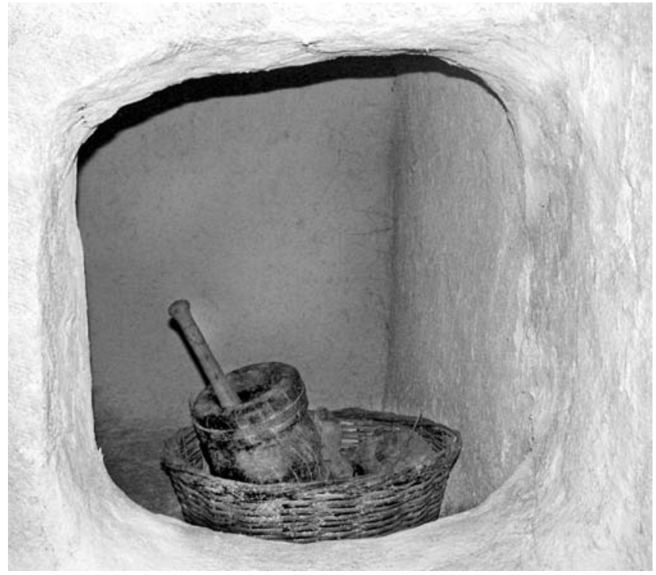

Figure 22.23. Crawl hole from central room into storage.

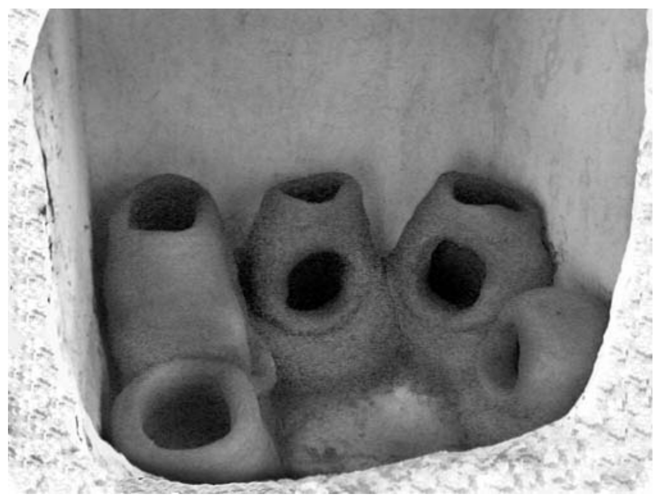

Figure 22.24. Storage bins.

Finishing surfaces

Exterior Plaster

Mud-brick "surfaces are notoriously fragile and need frequent maintenance. . . . Surface coatings such as mud plaster, lime plaster, whitewash, and stucco have been used" to protect the exterior and interior surfaces of new walls in vernacular architecture (Tiller and Look 1978:50). Mud plaster, which, like mud bricks, is composed of clay, sand, water, and straw or grass, has long been used as a surface coating.

Mud plaster bonds to the bricks because the two are made of the same materials (Tiller and Look 1978:50).

When the Replica House was ready for the finishing coat, we had yet to uncover archaeological evidence of plastered exterior walls. Since then, Space 112 (Mellaart's Level VII), with a plastered exterior wall, was excavated (Farid 2007) and changed our understanding. Nevertheless, we assumed in building the Replica House that the Neolithic houses at Çatalhöyük must have had freestanding walls with an exterior protection of some kind to shield them from the elements. Following this example, we decided to plaster the external walls with a waterproof covering to reduce erosion from rain and sun.

Two coats of mortar mixture rich in vegetal temper (with a combined thickness of 1.5 cm) were applied (Figure 22.25). Two thinner coats were applied instead of a thick one, because a plaster applied too thickly will develop shrinkage cracks and cause the wall to slump. The plaster was applied during one summer. The first coat was allowed to dry for one week before the second was added. The first coat that adhered to the mud brick was thicker, as its role was to cover the brick and mortar wall surface and to block all the openings between bricks. The second coat was thin in order to keep the same surfaces as smooth as possible.

Interior Plaster

Çatalhöyük house interiors have multiple plaster coats made of highly distinctive materials (white marl clays) that were applied as a white, smooth plaster finish to every surface: walls, floors, and features (see Chapters 6, 7, 23; Matthews et al. 1996). The clay used by the local villagers, whose source is 8 km northwest from Çatalhöyük (Matthews and Ergenekon 1998), was ultimately quarried for plastering the walls of the Replica House (Figure 22.26), since the marl from the deposits that Neolithic people would have used was inaccessible to us.

The initial plastering of the Replica House included three distinct layers: the preparatory layer, which functioned as mortar between brick and wall plaster; followed by the ground or base layer, composed of pale brown calcareous silty clay (typically 4–6 mm thick) and fine plant materials, which created slight irregularities in the surfaces; and the finishing layer, comprising finer white calcareous silty clay and a binder (water) with no inclusions (Figure 22.27). The plaster layers on the Replica House were made of locally available calcareous soil that was well processed (Figure 22.28). The soil was soaked in water for a minimum of three days; following this, the largest impurities were removed by hand, and then was strained with the solution through a fine sieve several times (Figure 22.29). The mixture was allowed to settle and the excess water to evaporate until it reached the consistency of paste, at which point it was ready to be applied. The base plaster layer contained an addition of fine chaff particles or small particles derived from dried wild grasses that grow on the mound and were sieved through small-mesh screens.

Figure 22.25. Outside plaster.

Figure 22.26. White clay for plaster: (a) the white clay source; (b) extraction of white clay.

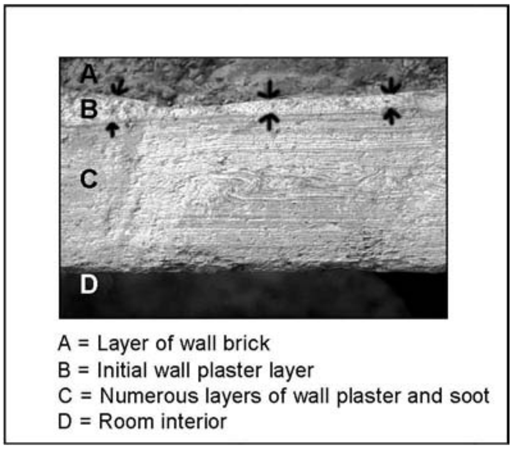

Figure 22.27. Section of the Neolithic wall plaster that shows numerous plaster coats.

Plaster Application

Applying plaster coats proved to be much more complicated than we expected. Wall and floor plastering is an activity traditionally reserved for the women in the local villages, and we followed this tradition as we plastered the Replica House. We applied the preparatory layer, which served to cover cracks and to provide a smooth surface for the finishing coat, with our bare hands (Figures 22.30, 22.31). Due to the scope and intensity of this work, we soon began investigating different tools to help in the application of the plaster. We experimented with using a soft cloth, which we would first dip into the solution of white clay and then spread in a circular motion on a limited surface of the wall. We completed plastering the walls by combining these two methods of application.

Figure 22.28. The locally available white clay.

Figure 22.29. Soaking the white clay.

Figure 22.30. Interior plastering.

Figure 22.31. Application of the preparatory layer of plaster.

The initial or preparatory coat was left to dry for three days before the base layer was applied. Due to the sizable quantity (25–30 percent) of vegetal matter present in this preparatory coat and also because of its relative thickness (> 1 cm), we found it to be moderately difficult to apply in an even and smooth layer while permitting minimum cracking as the surface dried out. Moreover, this preparatory layer did not cover the imperfections of the brick and mortar walls sufficiently. The next base layer was made with a maximum of 10 percent of vegetal matter. This clay and vegetal mixture could be spread in much thinner coats than our first effort, and as a result, its application required a slow and gradual buildup of the layer across the walls.

To my surprise, the applications of the preparatory and base layers were not sufficient to set up the wall surface for the finishing coat of plaster. The unevenness of the walls resulted from the way the bricks and mortars had been laid down—that is, their edges were not always flush with one another and sometimes the mortar has "leaked" out. These situations caused the wall to bulge, thus creating major obstacles to achieving the smooth finish of the kind that we see in the Neolithic houses at Çatalhöyük. Although the walls of the Replica House appeared smooth during construction, in actuality they were not. This could not be corrected with one preparatory and one base layer of plaster. Nevertheless, we proceeded to apply a finishing coat of white clay and decided to keep building the wall surface by successive applications of base and finish coats (Figures 22.32, 22.33). It is feasible that the Neolithic builders paid more attention to layering bricks and mortar during wall construction to avoid the problems in plastering we encountered. It is also possible that, when wall surfaces were uneven, they used thicker and/or multiple preparatory layers.

The finishing plaster layer contained no vegetal temper, and it proved to be the trickiest coat to apply successfully.

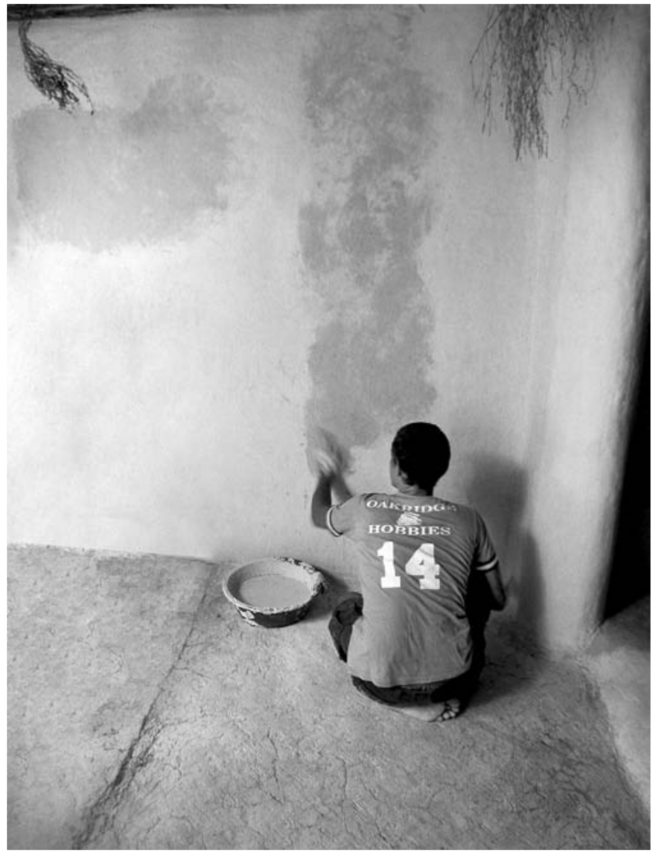

Figure 22.32. Application of the finishing coats in the house interior.

Figure 22.33. Application of the finishing coats in the house interior.

Regardless of how thick or thin was the water-clay solution that we used for this, or what type of application method (hands, soft cloth) we used, we could not achieve the flat, smooth, moist, and shiny effect of the finishing plasters in the Neolithic houses at Çatalhöyük. Our plaster was fairly unstable in the sense that, more often than not, thin cracks developed as it dried. We concluded that a more specialized application method for the finishing plaster layer was required, a method we had yet to discover. In our ongoing search for stable plaster with a smooth and shiny finish, we have been experimenting with various methods of application. The following sections will describe this process, which is still continuing since we are still not certain if the difference between what we can achieve and what the Neolithic houses show lies in different source material, method of application, labor investment, or the use of a sealer on top of the plaster (Chapter 23). Additionally, the interior plastering could have been conducted during the wet seasons, when the moisture in the air would have prevented the thin plaster coat from drying rapidly.

Burnishing the Plaster

Our further experimentation in methods of plaster application focused on burnishing the new plaster coat (see Chapter 23, "Plaster Application"). Our plaster burnishing was partially motivated by a desire to achieve a well-packed and polished clay surface, which was not possible by hand, and partially inspired by the tool assemblages recovered from Building 3, including numerous fragmented sandstone polishers from the floor packing of the building. Several stone polishers (see Chapter 20) from this building have large, flat surfaces characteristic of use in polishing. As noted by the stone tool specialists at the site, the amount of reuse of the stone tools on the mound is extremely high (Baysal and Wright 2005). Mellaart (1962:48) had previously noted white and green polishers as possible tools for plaster burnishing at Çatalhöyük. This method of plaster burnishing is also known to have been used in Neolithic sites across the Levant (Mellaart 1975).

Since sandstone is not locally available, in burnishing the Replica House we used locally available river pebbles. We began by burnishing smaller wall surfaces, and quickly realized how labor intensive the method was. The stone tools were pressed into the plaster layer and dragged in a circular motion over a designated area. This action pushed and packed the clay particles tightly to produce a polished effect. We also tried to burnish plaster with other implements, such as wood pieces or animal bone. However, the river pebbles produced the plaster finish that most closely resembled the prehistoric one (Figure 22.34). Traces of burnishing on these replica walls were sometimes visible as horizontal bands.

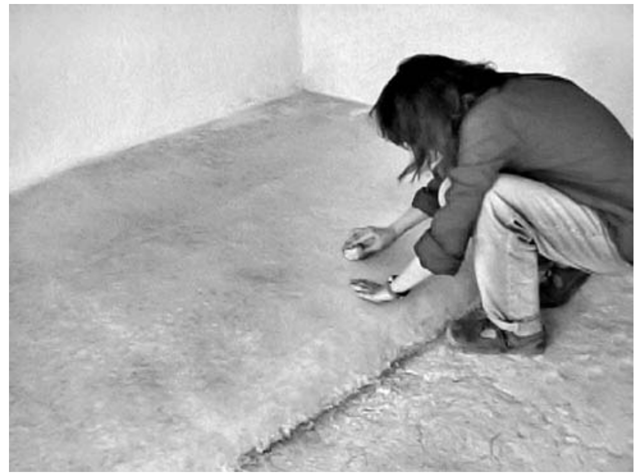

Figure 22.34. Burnishing the plaster on the house platform.

Burnishing was carried out on wet, semi-dry, and dry plaster surfaces. The results from wet and semi-dry surfaces are inconclusive at this point, but burnishing dry plaster produced a finish similar to that observed in the Neolithic. However, the burnished surfaces were not completely stable, and fine cracks appeared in some wall areas, whereas in other areas the plaster was stable with no cracking. It is likely that resistance to cracking depends on the amount of labor invested in the task and/or the skill of the person performing it, since cracks did not develop in areas where more effort and time were taken. Two burnished layers of plaster were sufficient to change considerably the appearance of the Replica House walls, making them flatter and much more similar to the prehistoric house walls. We felt, however, that the walls needed additional plaster coats to produce completely smooth and even wall surfaces. It is my strong impression based on these experiments that this method of burnishing the plastered surfaces was the one used in Neolithic Çatalhöyük.

In 2003, a conservator interested in plastered and painted walls—Ina St. George—joined the project with the intention of further experimenting with plastering the walls and replicating the Neolithic wall paintings. In adding another coat of wall plaster, she discovered that other application methods could also achieve stable and smooth plasters (see Chapter 23, Figures 23.6, 23.7).

Wall Painting

Paintings frequently occur on the walls of Çatalhöyük houses. They often appear as red monochrome panels but occasionally as representations of scenes with people and animals or geometric designs. Mellaart reported excavating wall paintings in shades of red, brown, buff, yellow, pink, orange, and occasionally black, with one instance of blue

(Mellaart 1967:132). He suggested that a full range of pigments derived from iron oxides, copper ores, mercury oxides, and possibly hematite was in use at Çatalhöyük (Mellaart 1967:131). However, hematite is the only mineral identified thus far from these paintings. Pigment identification conducted on a limited sample by the new team confirmed that the red pigments were iron oxides and the black is known as "bone black" or ground carbonized bone (Turton 1998). It is possible that a binder such as animal fat, egg, or vegetation rich in oil was used in paintings at Çatalhöyük (Turton 1998). However, scanning electron microscopy, microchemical spot tests, reactive staining, and fluorescence staining carried out on a limited number of samples of painted plasters from Çatalhöyük did not show the presence of an organic binder (Turton 1998).

Painting the walls of the Replica House began after several steps of preparatory work. The first was identifying and obtaining the minerals used by Çatalhöyük's inhabitants, followed by identifying the components included in the paint mixture. Despite the frequent occurrence of paint at Çatalhöyük—in wall paintings and reliefs and on skeletons, baskets, figurines, and pottery—as well as the presence of small lumps of the minerals in the infill of houses, we have not yet identified their sources. We have no information regarding the local sources of the iron minerals, except numerous suggestions that one might find those in the mountains around Çatalhöyük. Women from Küçükköy, who sometimes paint their houses, use what they call "exotic" clays, which are seasonally brought to the Konya Plain by people from the surrounding mountains (Hatiçe Yaşlı, personal communication).

For the replica paintings, we used natural iron oxide minerals in powder form obtained from an art supply store in San Francisco, California. Casein, a binder derived from milk that has been traditionally used in painting, was also taken to Çatalhöyük for experimentation. In 2002, conservator Brigid Gallagher, illustrator John Swogger, and I conducted a series of experiments mixing the iron-oxide pigment with casein to produce wall paint that could be used in the Replica House. Three different recipes were used for combining iron-oxide powder, casein, and water. In one case, casein, hot water, and ammonia were mixed before the pigment was added. In the second case, different amounts of the ingredients, minus ammonia, were used, while the in the third case we directly mixed the pigment and the solution of white clay. The first two replica wall paintings were executed with the paint produced according to the second and third recipes. One of these, a copy of the painting from shrine VII.8, was placed on the west wall and depicts vultures pecking at headless corpses (Mellaart 1967:Plates 48–49) (Figure 22.35). A combination of a monochrome base and a geometric motif (copied from Mellaart's unpublished slides) was reproduced on the east wall (Figure 22.36).

The three paints did not produce completely satisfying results, either because they were unstable or because the final result on the wall did not look like the Neolithic wall painting. Upon inspecting the wall paintings a year later in 2003, it was obvious that the paint containing casein binder did not hold well to the wall, and we decided to remove these paintings from the walls. However, instead of replastering the painted walls with a new coat of white clay and painting it over, as the Neolithic people would have done, we decided to completely scrape off the old paintings prior to replastering the wall. This was necessary because at some places, casein binder had caused the paintings to flake and detach from the wall plaster, which made us doubt that the new plaster coat would adhere to such a surface.

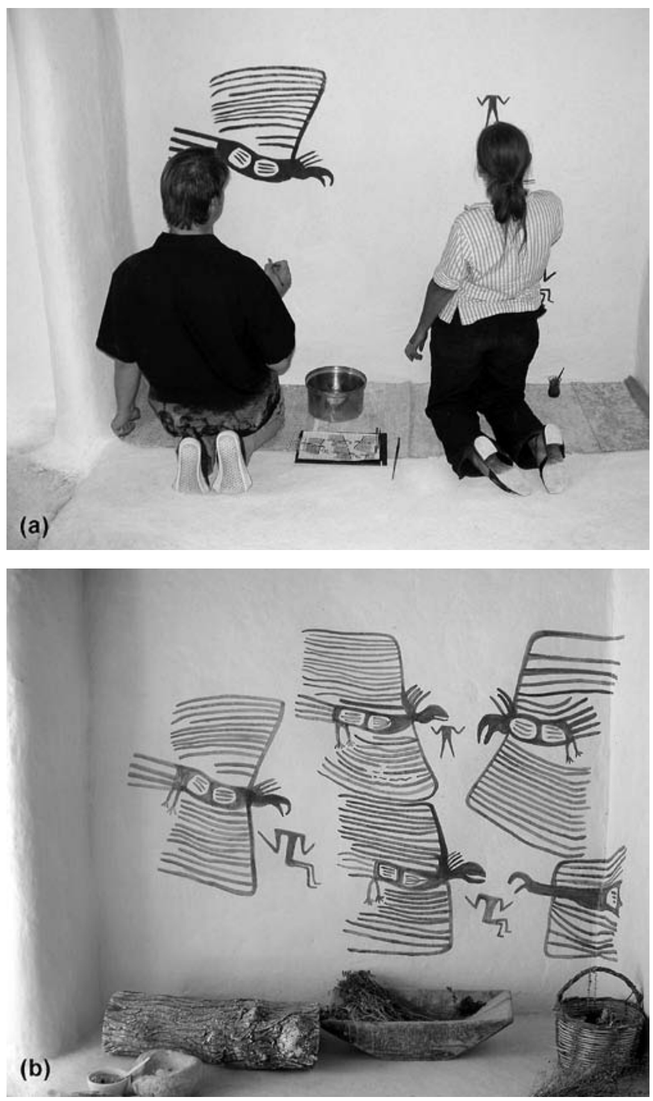

Figure 22.35. Painting the walls: (a) John Swogger and Brigid Gallagher paint the wall; (b) finished wall painting.

Figure 22.36. Team members replicating geometric wall painting in the Replica House.

Figure 22.37. Team members replicating geometric wall painting in the Replica House.

After removing the wall paintings, the next phase of the project started. We replastered the house walls using different methods (described in the next section, below). A solution of pigment (iron oxide) and water was made, and two new images were chosen: a geometric design on the west wall (Figure 22.37) and the "landscape" or "Volcano/City Plan" painting from shrine VII.17 (Mellaart 1967: Plates 59, 60) on the east wall (Figure 22.38; see also Figures 23.4, 25.10). Conservator Ina St. George painted the images (see Figures 23.1–23.4, 23.9).

This phase of the project is described in greater detail in Chapter 23. We can confirm that the wall paintings imply the use of a brush of some kind, which was already noted by Mellaart (1967:131). In the experimental painting, a soft natural-fiber brush was used, and the final painted surface looks very much like the Neolithic painted wall surfaces.

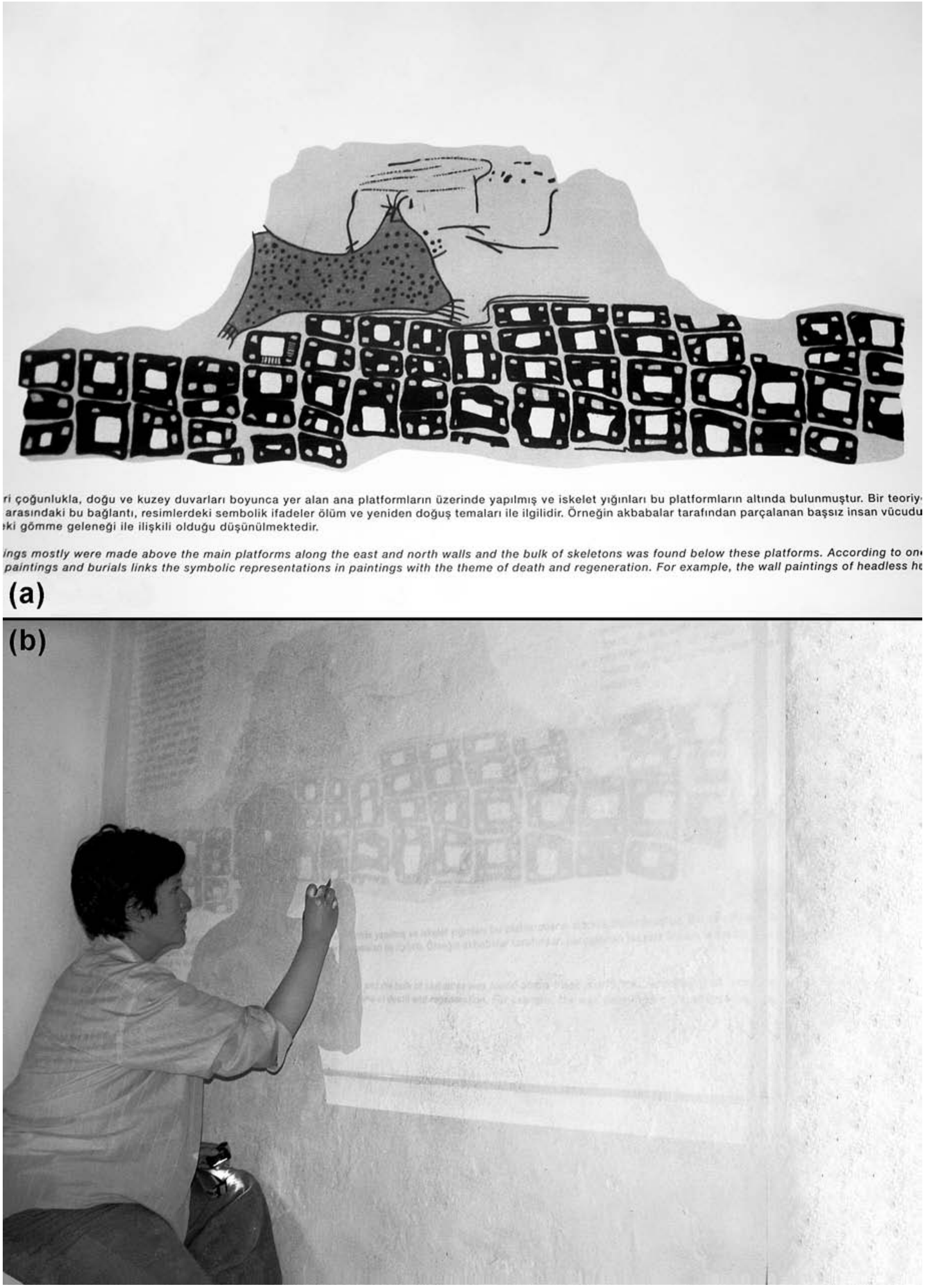

Figure 22.38. Replicating the landscape wall painting.

Maintenance of the Replica House

The Replica House was built as a single structure, and all its walls are exposed. The clay used in construction is a very soft and pliable material. The walls are subject to erosion by wind, rain, and even touch. The preservation of the walls depends on how the soft construction materials are used relative to the harder construction materials (Battle 1983). Clay does not bond well with harder materials, including wood, and the interfaces between the two construction materials are always a source of potential problems.

Research has shown that in this kind of architecture, most deterioration is due to such forces as erosion (basal and surface), penetration of moisture beneath the surface, spalling caused by insoluble and soluble salts (a chemical and physical reaction which has a physical effect on mud brick), development of cracks and bulges, failure of the protective coating, and upper wall displacement, leaning, and collapse (Crosby 1983). The most vulnerable points of mud-brick buildings are the roof, the drains, and the absorbent base along the groundline. Fathy points out "the greatest enemy of mudbrick is dampness. The mud may get wet from rain," snow, or dew; from capillary action transporting water from the ground; or simply from the humidity in the air (Fathy 1973:48). To keep it dry, or circumvent the effects of dampness, one may apply various remedies. "Seepage from below must be prevented . . . while the bricks may be protected by . . . plaster. Once mud-bricks are protected from damp, they will last for ever" (Fathy 1973:48). The extreme example of the preservative effect of desiccation are "domed and vaulted buildings, quite unprotected, in Bagawat and Kharga Oasis, Nubia that have withstood 1,600 years of wind and sand-storms of the desert" (Fathy 1973:48).

The most common damage to unprotected earth walls is basal coving or basal erosion, caused by rain splash at the base of the wall, tunneling by rodents, groundwater, or concentration of soluble salts (Caperton 1983). In the first three years after the Replica House was constructed, there were no signs of basal coving, but in subsequent years some changes have occurred. At places in the base of the walls, the exterior plaster layer has been removed by rain, which represents the beginning of the erosion process. Basal erosion is not considered a problem in mud architecture unless it is extensive. It is interesting to note that one solution for severe basal erosion practiced by adobe conservation specialists is to replace the bricks at the bottom of the wall. This is done by inserting new mud bricks (or half bricks) into the base of the wall and mortaring and packing them as tightly as possible. The bricks have to be dipped into water just before insertion to allow the mortar to dry slowly (Caperton 1983). This mending of the walls is not recorded at Çatalhöyük, although there may be one example of wall mending in the BACH Area. A single brick was found in the south wall of Building 3 in its bottom row that is completely different from the rest of the wall, and it could represent such a case of wall mending (Chapter 6).

Surface erosion, which typically occurs over the entire wall area, is not considered to be a threat. On the other hand, the occurrence of cracks and bulges are of the greatest concern, especially if they are active. Erosion or cracking in the walls has not been noted on the Replica House.

Maintenance of the roof is another major concern in this type of architecture. To remain waterproof, roofs have to be maintained year-round. Water can easily damage the clay cover and find its way inside the house. This is an annual occurrence in the Replica House. These leaks are not substantial, but every summer we have had to find and mend them. The roofs in nearby villages are resurfaced with new clay every three to five years to keep them waterproof. Because of our seasonal work at Çatalhöyük, house building and repair is always done in the summer, whereas in other places in the world where mud-brick architecture is used, this work often takes place in spring or autumn or occurs year-round.

Further experience with clay deterioration and maintenance comes from the interior of the house. For instance, the floor in the Replica House appears to be the most susceptible to damage. Plastered floors, if they are not very well maintained, do not last for a long time. What is more, plastering the house walls greatly affects house floors: a wet container leaves a mark and often considerably damages platforms or floors. The Neolithic inhabitants of Çatalhöyük would have needed to be wary of spilling liquids onto plaster floors and platforms from unstable containers such as clay-lined baskets or wooden containers with liquids in them. Similarly, walking on the floors with wet or dirty feet leaves marks. Reconstructing or adding interior features, typically done using brown clay, can make quite a mess on the surrounding white floors. Replastering the floor is the only solution in such instances. The house walls undergo damage as well. For instance, wall plaster rubs off and stays on the skin or fabrics every time one sits close to a wall. The roof leaks leave muddy marks on walls, and smoke from the oven leaves brown layers on the walls around it, which can be removed only by replastering the wall.

The Use of the House

The Replica House has been actively used for research and public purposes by the Çatalhöyük Research Project during excavation seasons. The house has been open to visitors who come to the site, and it has been used in further experimental studies, such as oven firing and wall painting. It is important to mention here that the Replica House includes two house entries, one on the roof and one through a doorway. That said, doorways rarely occur in the excavated houses at Çatalhöyük. Most Neolithic houses were entered only through the roof opening. Moreover, this opening would have been the only source of light for the house interior. However, occasionally, and especially when placed along a street, houses might have had a doorway positioned higher on the wall and shaped as a crawl hole (Mellaart 1967). Thus, the Replica House had an additional source of light coming through its doorway in the south wall. Although this certainly enhanced the lighting in the house, the doorway was a lesser light source than the roof opening. The quantity of light inside the house proved to be sufficient for the activities that were performed inside during the day. It seems that the whiteness of the walls and the floor contributed considerably to the overall amount and brightness of the light in the house.

Visitors who come to the site are typically first taken inside the Replica House before going on the mound to see the houses under excavation (see Figure 25.6). By stepping inside the Replica House, visitors are given an opportunity to visualize what a Neolithic house could have looked like and to experience its atmosphere (see Figure 25.27). This familiarity makes them better equipped to understand the excavated Neolithic houses, which are only partially preserved and often hard to interpret (see also Chapter 25).

In addition, several schools from different cities and villages in the region participate in the summer workshops at Çatalhöyük, which include visits to the Replica House. The children create models and reliefs inspired by what they see at the site and also in the Replica House. The house is also a desirable spot for Çatalhöyük team members who enjoy its climate and the feeling of seclusion it offers.

We carried out two experiments in firing the oven in the Replica House (see Figures 24.2, 24.20). Dry wood that was collected in the fields around the site was used as kindling, while the main fuel consisted of dung cakes made in Küçükköy. The fire was accompanied by intense smoke, which filled up the interior so that we could not remain inside for more than 20 minutes. The smoke did not, as we had expected, rush out through the roof opening above us. It seemed to us that most of the smoke stayed in the house, while some did go out through the roof opening. For this experiment, the side doorway was blocked. Hatiçe Yaşlı used wood panels to create a short rim around the roof opening in an attempt to improve the flow of the smoke upward and to prevent the wind from blowing the smoke back in the house. However, this did not produce the expected result. Hatiçe commented that if the house ceiling were higher, the smoke would have accumulated in the elevated areas, and the lower portions of the house would have been bearable.

Subsequent firing of the experimental oven produced a similar quantity of smoke to the first one. According to local tradition, accumulation of soot on the oven interior is essential for new ovens to work properly. However, after two instances of setting fires that produced massive quantities of smoke, only a very thin layer of soot had accumulated inside the experimental oven. It should be noted that despite the smoke intensity, no soot was observed on the walls or on the ceiling of the house. Apparently, much more smoke than from two oven lightings is needed for the soot to form. This experience indicates that inside the Neolithic houses, soot would have accumulated slowly and would have required numerous fires in the ovens and hearths. One wonders how the Neolithic people coped with this kind of environment on a daily basis.

Soot on house walls is recorded on the lower and middle portions of the prehistoric walls at Çatalhöyük. Its presence on the upper wall areas, however, is unknown, since those parts of the walls are regularly collapsed and destroyed. Moreover, several skeletons show "black lung" (see Chapter 13), a condition where layers of black organic material have accumulated on the lungs, which is ascribed to smoke inhalation (Birch 2005). Thus, it is feasible that Çatalhöyük inhabitants were accustomed to smoke in their everyday lives and that, for them, a house filled with smoke would have been a routine situation. Ethnographic records illustrate similar conditions in many societies where interiors are filled with smoke (Oliver 1987). On the other hand, it is also possible that the Neolithic houses had some kind of vent or chimney inside leading from the oven to the roof opening. Chimneys could have been permanent, perhaps made of clay, or temporary, possibly made of organic materials such as small bundles of reeds.

Lessons Learned

The Replica House Project at Çatalhöyük is ongoing, but we have learned some lessons thus far. Mud-brick buildings are considered to have many advantages and few disadvantages. Major benefits of mud-brick houses include the relative ease of construction when building materials, labor, and knowledge of the construction techniques are available, along with a flexible building process whereby changes can be accommodated easily by cutting and shaping bricks. Moreover, mud bricks provide better insulation than fired brick and concrete, and they have low sound-transmission levels through walls. Mud bricks can be very durable, and they are considered to be fireproof (McHenry 1984; Nabokov 1981). The Replica House has proved to have most of the benefits mentioned above, with the exception of durability and fire resistance, which have not yet been tested.

House Production

We can characterize the stages involved in house construction as moderately challenging. The soil and water needed in brick and mortar manufacture were available to us, but the extraction of soil from as deep as 4 m below the present surface required considerable labor. We transported the soil to our mud-brick manufacture site in wheelbarrows and in plastic sacks. If the soils had been closer to the site or had come from deposits near the surface, which most likely was the case during the Neolithic, the builders could have reduced their labor in soil extraction. It is also possible that some building materials came from the river deposits that accumulated seasonally after the spring floods near the mound. Considering that the Çarşamba River flowed by the settlement, extracting soil from its banks could have been easy. On the other hand, Neolithic builders would have invested massive labor in transporting water (in addition to the soils) from the same river to the brick-manufacturing site. This would have been the case even if the water were extracted not from the river but from the marshes around the settlement. In our view, the difficulties involved in hauling water from the edge of the settlement to a brick-manufacturing site within it would have been a decisive reason for manufacturing bricks at the settlement's edge and close to the water source. Manufacture of small bricks could have been accommodated within the settlement, but preparation of mud bricks for a house would have been completed outside the settlement. Our experiment confirms that bricks of various sizes, even very long ones, can be successfully transported, which would be a factor in choosing the location of the brick-manufacturing site.

Preparing mortar is considerably different from preparing mud bricks. Mortar could have been made near the building site. It is made of small quantities of soil and water that are mixed and should be used in the same day. It can sit for a day, but it cannot wait for as long a period as brick before being incorporated into a wall. Therefore, Çatalhöyük builders would probably have chosen to make their mortar mixtures at the building site rather than to transport it ready-made from outside the settlement. In addition, the ready-to-use mortar mix is soft and difficult to transport unless carried in closed containers. Thus, mortar preparation may have been accomplished in the open spaces and in the middens that surrounded the building site, an idea that is supported by the frequent incorporation of midden deposits into mortar at Çatalhöyük.

The necessary quantities of construction wood, soil, vegetal temper, and water for mud brick, mortar, and plaster were first calculated based on the archaeological excavations and later became more precisely defined as we constructed the Replica House. Matthews suggested that more than 500 to 750 mud bricks laid in 14 to 21 courses were needed for the construction of each 2- to 3-m-high building (Matthews 2005a), which amounts to a total of ca. 50 m^3 of sediment required for the mud bricks and the roof (Matthews 2005a). Cessford (2007b:414) calculated that in the construction of Building 1, a total wall length of ca. 35.0 m, at an average width of 0.4 m and an estimated height of at least 2.0 m, would have required 28.0 m^3 of material. The estimated 8.2 × 5.3 × 0.5 m roof was calculated to need 21.7 m^3 of soil, giving a total of 49.7 m^3 of soil for the whole building (Cessford 2007b).

In the Replica House, the walls (8 × 4.5 × 2.3 m high) called for nearly 936 bricks of the same thickness (8 cm) and width (30 cm), but of three different lengths (30, 60, and 120 cm) built into 25 courses. The total volume of soil used for mud brick and mortar amounted to 20.6 m^3, while the volume of vegetal matter was ca. 3.0 m^3. The volume of soil required for the roof amounted to 10.8 m^3. Manufacturing and drying brick for the Replica House was spread over several seasons because we could not devote an uninterrupted block of time to this task in one season. Depending on the size of the brickyard, Neolithic builders could have manufactured the bricks for a house of comparable size over the course of several months.

Mud brick is a relatively inert material that is wonderfully stable and extremely forgiving, allowing for modifications during house construction. For instance, in the midst of construction, we decided to increase the height of the walls, and in one week we were able to manufacture the necessary bricks and make the wall extension simply by adding rows of bricks. These bricks were made near the building site, and since we wanted to reduce their drying time, we made only small ones (30 × 8 × 30 cm).

One aim of the experiment was to explore the possibility of pre-manufacturing the bricks in various sizes, including the oversized bricks, from locally available materials and away from the building site. We also wanted to test a theory of which we were originally skeptical: that these bricks could be easily transported to the building site. The experiment proved that mud bricks as long as 120 cm did not need to be molded in situ on the walls, but could have been manufactured away from the building site and then transported back to it. It is our strong feeling that even longer bricks could be dealt with in the same way. This finding does not eliminate the possibility that some portions of the Neolithic house walls could have been made of bricks built in situ (pisé). Using bricks of various sizes in the Replica House did not impede construction, despite the workmen's preference for medium-size bricks, but it also did not prove to be of any particular benefit. The basic question remains, why did the Neolithic builders manufacture bricks in different sizes?

It is possible that the most challenging task for Neolithic builders was the construction and, in particular, the maintenance of the house roof. Balancing structural demands, limitations, and use-related requirements of the roof could not have been a simple chore. The roof had to be light enough so as not to compromise the walls structurally; but it had to be thick enough to be waterproof, it had to be flat enough to serve for foot traffic and other outdoor activities, and it had to drain the rainwater well. The Replica House shows that maintenance of the roof can be as demanding as its construction. During the rainy season, the roof is susceptible to small leakages, usually at the edges, which have to be mended soon after they occur. The roof entrance is an area prone to letting water inside the building. We have built a wood cover for the entrance, which in the fall is set in place and covered with a thick layer of çorak soil. If the Replica House were used during the wet seasons, it would certainly require a light structure such as a wood shelter above the opening. This shelter would only partially protect the interior from rain as people went in and out of the house. The damages made by rain on the house floor under the opening could be regularly mended during the wet seasons. However, without such a shelter, the building interior would be seriously compromised as people entered and exited the house.

Plastering

Whereas in brick manufacture and house construction we were able to accomplish our goals within the expected time, finishing the house interior turned out to be more challenging. Finishing surfaces and plastering walls, floors, and platforms proved to be very labor intensive and required skills that we have not yet fully mastered. We tried to replicate the Neolithic wall and floor plasters, which occur as thickish, smooth, and greasy surfaces, but our house plasters came out as thin, dry, and dusty. The superior qualities of the Neolithic plastered surfaces could possibly come from the use of marl clays that contain higher clay or lime content. These same clays may be not be accessible to us because those resources are now depleted. It has been hypothesized that the peculiar location of the settlement in the marshland could have been chosen for its abundance of high-quality construction materials (Hodder 2006a). However, it is also possible that those materials were limited in quantity.

Equally possible is that the thickness, smoothness, and shine of the Neolithic plaster could have resulted from an unknown treatment of the clays, one that produced white clay solutions of higher lime content. Sometimes, soil for pottery is prepared by being submerged in water in the pits on the ground surface. In these conditions, soil gradually dissolves and the different-sized particles of clay, sand, and silt naturally settle. Soil prepared thus can be controlled much better, and different layers or fractions can be extracted depending on need. The smallest clay and silt particles stay at the top and can be collected and used for very fine tasks. Taking the marshy environment around Çatalhöyük into consideration, it is likely that the white clays could have been found or kept in a similar watery environment.

It is also possible that Neolithic people used a method of applying plaster, or applied a treatment to plaster clay, as yet unknown to us. From the vernacular architectural experience, we know that adobe walls and, especially, floors may require several treatments to achieve smooth, crack-free surfaces. In addition to a solution of clayey soil and water, a sealer of some kind that also has a waterproofing quality might be needed. Sealing liquids that are thin enough to penetrate the plaster solution are oils, plant juices, and animal blood, which are known to have been used in vernacular applications (McHenry 1984).

In our experience, different methods of plaster application produced varied results. As already described, we could achieve a wall plaster similar in appearance to that from the Neolithic houses by burnishing the clay with stone tools.

In addition, unsealed earthen floors typically have a fragile surface and are a constant source of dust, as is the case in the Replica House. It is also possible that behavioral patterns, such as wearing leather moccasins and leather clothes or going around barefoot, contributed to the maintenance of the Neolithic floors, though this could not account for the even appearance of the plastered surfaces. That is, walking barefoot on the floors could transfer the oils from human feet into the plaster, which could have a sealing effect, but this could not be applied to the wall surfaces.

Although it is not yet apparent to us how the Neolithic inhabitants of Çatalhöyük created and maintained their plastered surfaces, we can see that they used a single method to achieve it, since there are no visible differences in the appearance of plasters in the houses excavated so far. The single obvious difference between some plasters seems to come from the use of different source materials. For instance, houses in the late levels (Mellaart's Level IV and up) appear to be plastered with marl clay that was unprocessed or came from a different source than those from earlier levels. The material used in the later levels appears to have less clay than that in the earlier levels; it crumbles easily and is greenish in color. The materials used in the earlier buildings comprised very malleable marl, in colors ranging from white to cream-white. The lesser-quality plaster clay found in the late levels at Çatalhöyük may indicate a depletion of the high-quality reserves of marl.

Labor Investment

Labor investment and the need for specialist builders have been discussed in reference to Çatalhöyük architecture (Chapter 6). Matthews (2005a) suggests that a range of house features, including rooftop and ladder accesses, are likely to have required a specialist builder. This is supported by contemporary traditional villages in which each household provides the labor for transporting building materials, making mud bricks, and building walls under instructions from a specialist builder (Matthews and Ergenekon 1998). The Replica House construction was largely based on this same tradition. With small interventions of a trained architect and an archaeologist, construction was carried out by the local traditional master builder and unskilled laborers, all of whom have performed or will perform the same task in their village. The most critical parts of the house construction were setting the wall foot on a well-graded ground surface to protect the future building from excessive moisture, building straight walls, and especially constructing the roof. It is likely that some Neolithic individuals were more skilled and/or more experienced in these specific tasks than others, and that they performed those operations for other houses in addition to their own.

Although applying mud plaster on the exterior walls of the Replica House required little skill, it was a time-consuming and laborious process. We have not yet recoated the building exterior and are not aware of the intricacies of that task. Traditionally in the Southwest United States, "adobe surface coating that protected the outside of the building was renewed every few years and was performed by women who used mud plaster mixed with straw" (Tiller and Look 1978). Once in place, the mud plaster must be smoothed. This is traditionally done by hand; sometimes deerskins, sheepskins, and small, slightly rounded stones are used to smooth the plaster to create a "polished" surface (McHenry 1973; Tiller and Look 1978). In Anatolian villages, women do the seasonal plastering of their houses, whereas men maintain the roof cover by renewing it or replacing it. Similarly, among the sedentary, agricultural Pueblo in the American Southwest, the house superstructure is built by a group of men who also construct scaffolding, at which point the women take over the final task of plastering (Nabokov 1981).

Plastering the interior would probably not have been a highly specialized job in the Neolithic, judging by how labor intensive it is, how frequently it was done, and how large the plastered surface was. For these reasons, it is possible that several or even all the household members had to take part in plastering. Painting the walls, on the other hand, could have constituted specialized knowledge, especially where figurative painting was involved. It is hard to imagine that all Çatalhöyük occupants could have been skilled enough to paint such intricate geometric designs or scenes with human and animal figures. In our experience, the construction of interior features is also labor intensive and requires specialized knowledge, but most likely in the Neolithic it was performed primarily, if not exclusively, by the house inhabitants. Nevertheless, all of these skills could have been obtained through experience, and most likely such experience was part of the life of most able members of Çatalhöyük.

Insulation

McHenry (1984) reports that the insulation value of mud-brick buildings, as measured by heat transmission through a given material, is minimal unless the walls are very thick and the thermal mass effect is beneficial. That is, the thermal mass of the wall can modify any average temperature differences, but the walls and roofs have to be solidly compacted to do so effectively. In Nabokov's (1981) view, adobe walls and roofs serve as the most basic passive solar heating system, and the mud-brick material contains the optimal density for delaying the transmission of outdoor temperatures to indoors. More precisely, it is not temperature-insulation, but rather the slow "breathing" of the walls and roofs that effectively averages the temperature. The consistent thickness of the walls and massive roofs in Çatalhöyük houses indicate that the occupants were aware of, and counted on, the insulating qualities of their houses.

During the work on the Replica House, the pleasant interior made it a refuge from the outside heat. Temperatures inside the Replica House were measured in 2002 and 2003 seasons by the conservation team in order to compare their change across different buildings at Çatalhöyük. The plots of the measurements, provided by Jackie Zak, a conservator on the team, clearly shows that as the outside temperature increased, the temperature inside the Replica House increased but at a lesser rate (Figure 22.39). Temperatures were also measured in two other structures on the site (Building 5 shelter and the SOUTH shelter): Building 5 closely followed the outside temperatures but was nonetheless warmer than the outside temperatures. The fact that Building 5, a Neolithic house, has no original roof but instead has a lightly constructed shelter over it may explain the observed temperature ranges (see also Chapter 24). By contrast, measurements from the SOUTH Shelter, a modern construction of metal and plastic overarching the large excavation area, show indoor temperatures that were considerably higher than the outside air (Figure 22.41). A comparison in relative humidity between the outside and the Replica House demonstrates that they changed at similar rates but that humidity inside the house generally stayed higher than that outside. This outcome would be desirable during the hot summer months in Anatolia (Figure 22.40).

Social Relations and House Construction

Accounts of traditional construction illustrate that this activity has almost always been a highly cooperative venture

(Fathy 1973; Khalili 1986; Nabokov 1981). House-building has often been a major social occasion in which men, women, and children cooperated and in which neighbors sometimes joined in order to reduce the time needed for construction. In some societies, it is believed that leaving a house unfinished overnight would be an invitation to evil spirits (Oliver 1987).

By building only a single freestanding Replica House, the experiment has not yet been able to account for numerous other aspects of house construction that the Çatalhöyük builders had to face. There are considerable differences in building a brand new Replica House and building a house in the Neolithic. The people at Çatalhöyük were building structures to fit limited spaces, often standing on the remains of a previous house. A crucial step in house construction would have been to secure a spot in the settlement in which a new house would be erected. It is possible that at the point when the limited grounds for building in the settlement were exhausted, the new houses had to be fit completely or partially on the stubs of previous houses. Therefore, the space for new buildings probably had to be negotiated with the inhabitants of other houses in the immediate vicinity. The negotiation may have included clearing the building site, which inevitably would have affected the immediate neighbors, and securing the passage from the building site to the construction resources and to the manufacturing ground. Given that much of the building material was obtained from off-site, the transportation of this material must have represented substantial labor, as it also probably would have had to be carried over rooftops. There are numerous other indications that community-wide solutions would have been required in this settlement. The close proximity of houses, sharing walls, and most likely sharing and/or fitting the roofs so that they could drain properly and serve as viable surfaces for activities all called for communal solutions.

The construction of the Replica House demonstrated that experimenting in architecture is different from performing experiments in other material culture. First, it is a large undertaking that consists of multiple processes that need precise design and calculation and depend on seasonality. This kind of experiment is inevitably public and thus is engaging for all, including the team members at Çatalhöyük, the local community, and tourist visitors. I believe that the experiment so far has been a mutually educational experience. The archaeologists and the local villagers have shared the experiences in house construction as well as respect for the local tradition regarding this practice.

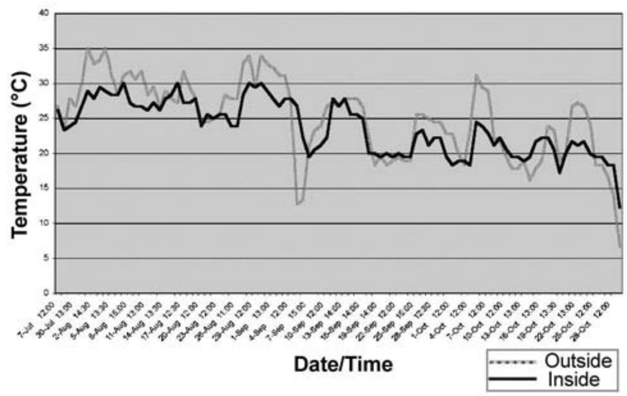

Figure 22.39. Temperature inside the Replica House.

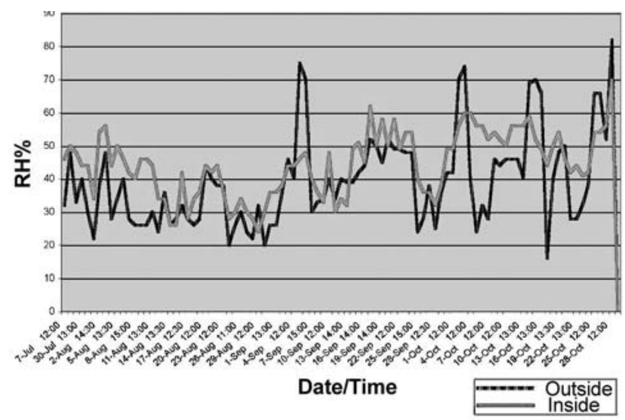

Figure 22.40. Relative humidity inside the Replica House.

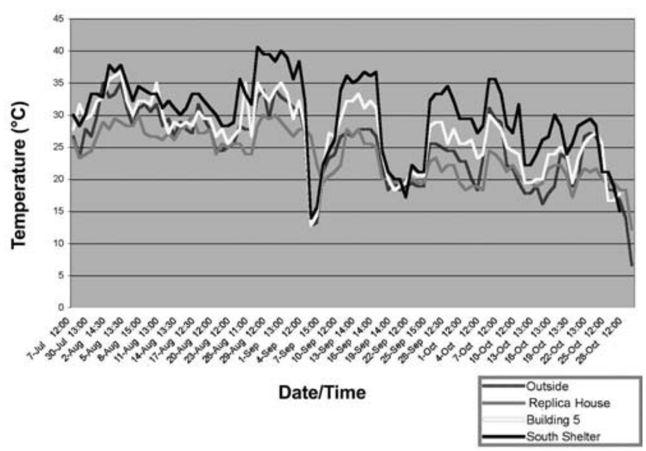

Figure 22.41. Temperature comparison.

ACKNOWLEDGMENTS

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Chapter 23

Çatalhöyük Murals: A Snapshot of Conservation and Experimental Research

Ina St. George

Theory without practice is empty; practice without theory is blind.

John Dewey (Berns 2000:1).

The architectural art[1] at Çatalhöyük, executed on a clay substrate with primarily earth pigments, impresses us artistically and archaeologically. Artistically, the paintings exemplify the ingenuity and talent of the Neolithic people who created them. These assets are also archaeologically relevant, as they echo the high level of social complexity for which the Çatalhöyük civilization is known (Hodder 2007).

The work presented here is based on research conducted over three field seasons at Çatalhöyük (2003–2005) (Figure 23.1). This chapter offers an overview of the many facets of research, rather than an in-depth focus on one area with an empirical conclusion of a narrow aspect of conservation. The choice of a broad treatment of the subject is to communicate the breadth of the research. Each facet of the project contributed to understanding the whole. Additionally, recent publications which focus exclusively on the architectural art of Çatalhöyük are few in number (e.g., Last 1998; Matero and Moss 2004), the majority of which are in the form of unpublished student theses and gray literature. This led me to present a broad introduction of the material, synthesizing prior research and documentation of the innovative approach of incorporating experimental methodology into conservation research.

The chapter begins with a general description of the types of architectural art on the site. This is followed by a discussion of the interdisciplinary context of the project and a summary of mural technology and what was learned about pigments and plasters during these seasons. The final sections report on the practice of experimental conservation,[2] including the art and interpretation involved in in-situ re-creation of Neolithic Art. The section on experimental conservation discusses how we utilized technological information and previous experiments to replaster and paint the BACH Replica Neolithic House. The goals and aims of the experimental approach are well expressed by Mirjana Stevanović in Chapter 22. The experience of replicating the plaster mixtures and paintings contributed to knowledge of the working properties and limitations of the clay materials, as well as an understanding of how Neolithic people may have used them to create the murals.

The application to conservation and preservation is in this transition from theory (the understanding gained from reports and a scientific knowledge of the behavior of materials) to practice (the empirical, tangible experience of handling those materials in process). Conservation involves a chemical and scientific understanding of materials and properties that tends to distance us from the artifact, or in this case, artwork. This chapter introduces an innovative approach. The conservator, here, is an active participant of experimentation on a macro scale, beyond the laboratory. This is a way to come to a greater understanding of materials, and by extension, how better to preserve them. The role of the conservator gains a new intimacy with the paintings, participating in a revolutionary shift of the process from theory into practice.

[1] The term "architectural art" is coined here to collectively refer to the variety of painted surfaces and reliefs found on the site.

[2] Methods in experimental archaeology that use replication to better understand the technology and manufacture of artifacts, such as flint tools, are well known. The innovation here, which I refer to as "experimental conservation," is to use this methodology in the investigation of wall art.

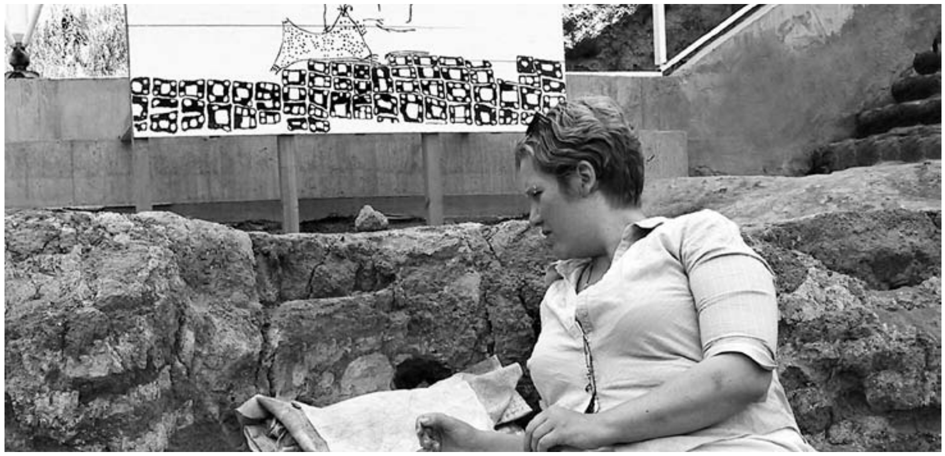

Figure 23.1. In the SOUTH Area, Ina St. George examines the mural exposed in the 2003 season by Shahina Farid. In the background, the Volcano/City Plan replica is situated where the original mural was discovered.

Architectural Art of Çatalhöyük: Typology and Interpretation

Wall art found at Çatalhöyük consists of modeled or incised plaster features, plaster bas-reliefs, and paintings (Mellaart 1967:102–103). Although the first two are outside the scope of this paper, it should be noted that they do demonstrate the artistic complexity and skill of their producers as much as do the murals.

As for a typology of the subjects of the paintings, Mellaart suggests six categories (1967:132–133) and Todd, four types (1976:37). The latter and more streamlined of the two typologies is adapted here, as it withstands further investigation. The four types are human and animal representations, geometric/ornamental, dado, and landscape. The first type depicts animals and humans, or the two in relation to one another (see Figure 22.35) (Todd 1976:37). Human and animal representations occur together in hunting scenes, as in "The Bull." Of the types of animals seen in the paintings, birds, especially bulls, vultures, and leopards, are the most prevalent. Additionally, there is a type of horned animal that Mellaart (1967:176) interpreted as a capricorn.

Geometric or ornamental-type painting comprises decorative designs as opposed to representational images. Examples are the repetitive abstract or geometric patterns that cover an entire wall, such as the triangle design replicated in the Replica Neolithic House (Figures 23.2, 23.3; see also Figure 22.37). Repetitious designs of handprints, circles, and those thought to imitate kilim patterns belong to this category of design (Mellaart 1967:Figures 29, 30, 37, 38).

The third type, dado, was observed throughout the chronology of the site. Red dado panels were installed on walls, and floors were painted red. Mellaart observed that few well-preserved houses are without the use of red paint. Its ubiquity extended to plastered house features such as posts, niches, doorways, benches, and platforms (Mellaart 1967:149). Proposed reasons for the use of red in the architecture and dado panels include the symbolic "blood and life" connotation, ritual (Mellaart 1967:150), as well as the functions of waterproofing and increasing the durability of the surface (Kingery et al. 1988:240, cited in Matthews 2005b:388).

One of the most famous designs of unique classification is the Volcano/City Plan (Figures 23.4, 23.10; see also Figure 22.38). Most agree that the squares along the bottom are a landscape, a schematic depiction of the houses in a plan of the city, although the controversy still continues as to what the whole design depicts. The figure at the top is thought to represent either a leopard skin or the exploding volcano of Hasan Dağ (Mellaart 1967:133)

It is possible that the design has nothing whatever to do with notions expounded in modern interpretations; indeed, any interpretations of the images as art with formal characteristics have the potential of (inaccurately) superimposing modern concepts on ancient activity (Last 1998: 359). Our view of the symbolism continues to be revised in light of new evidence. One point we can make about such figures as the vultures, bulls, or the "splayed" reliefs is that their meanings were part of a continuity of mythology. That is, the myths from which the figures and designs stem echo from a time before the life of the site and continue after it (Hodder 2006a:164). Forthcoming publications by the author will offer further investigations into the art historical relevance of the paintings and their place in the timeline of ancient art.

The relevance of the typology to the research conducted here is that a variety of types were chosen for "experimental" replication. A design of vultures (an animal representation) was replicated by Stevanović in 2002. The Volcano/City Plan mural, being one of the most popular designs, was chosen for replication during the 2003 season (Figure 23.4; see also Figure 22.38). The last replica painted in the BACH Replica House in 2005 exemplifies the repeating, geometric design (Figures 23.2, 23.3; see also Figures 22.36, 22.37). Also in 2005, the author painted a second replica of the Volcano/City

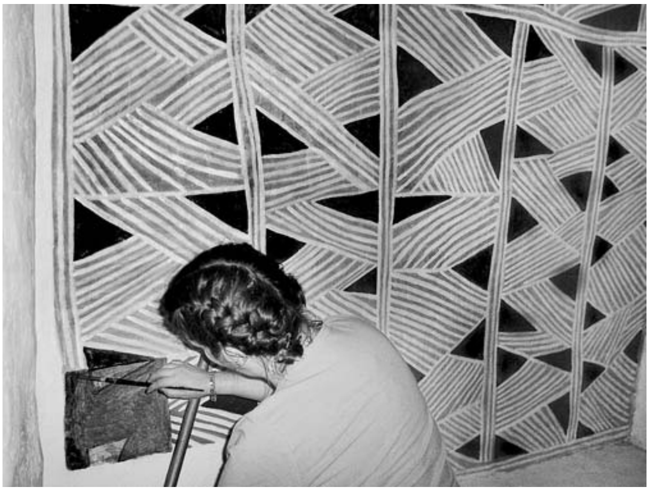

Figure 23.2. Painting a replica of the geometric design mural.

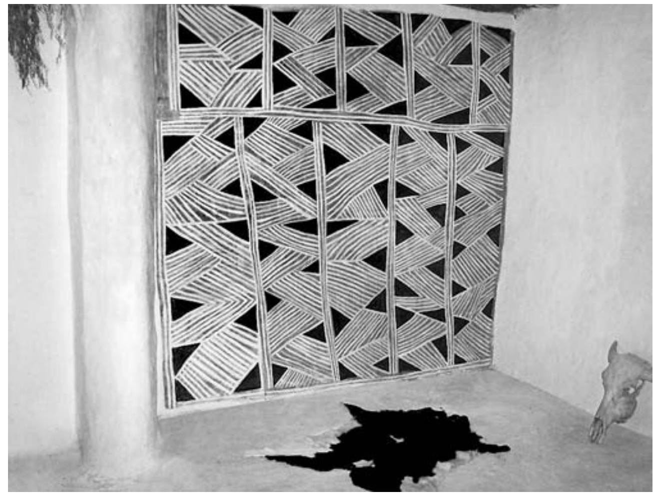

Figure 23.3. Replica of the red triangle mural on the west wall of the Replica House.

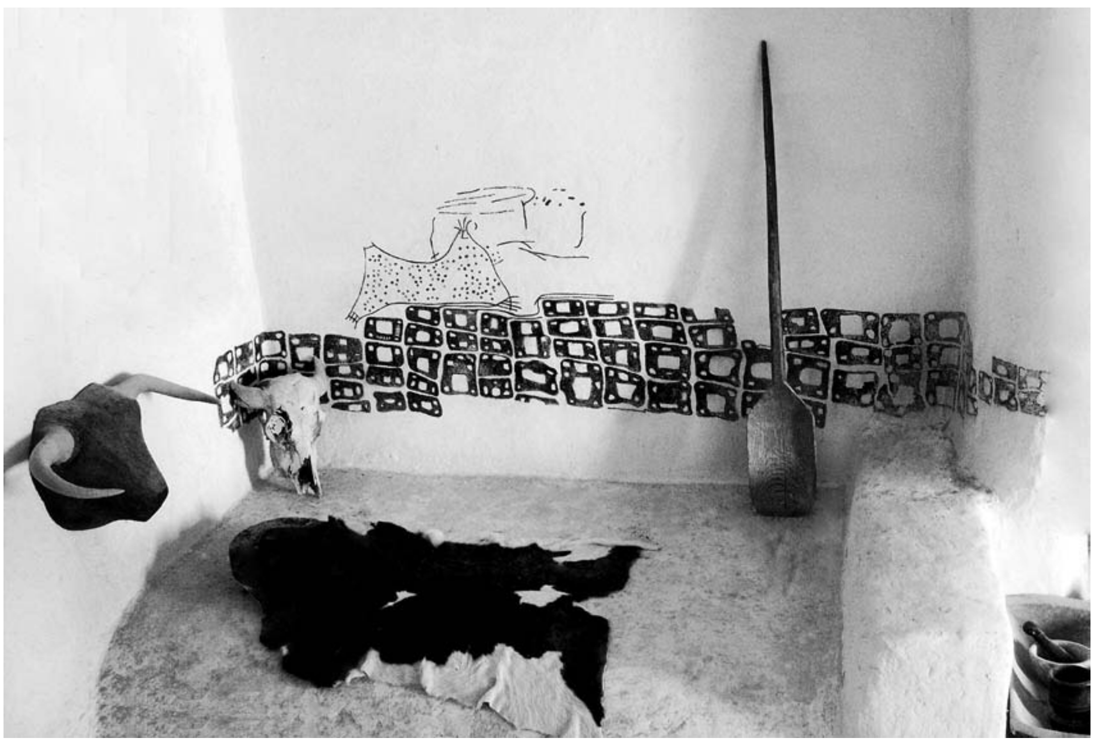

Figure 23.4. Replica of the Volcano/City Plan mural in the Replica House (100-0133).

Plan design at a 1:1 scale in the SOUTH Area of the site where the original mural was excavated (Figure 23.1). Details of the replica projects and how they relate to the study of the murals are presented later in the chapter.

Interdisciplinary Research Context

Research takes place in an intersection of the conservation of several materials: wall plaster, earthen architecture, and wall paintings. Although the murals of Çatalhöyük are wall paintings, the conservation investigation has taken place largely in the context of the substrates of the paintings—that is, within archaeological mud-brick and mud-plaster conservation. This approach is different from what one typically finds in the literature on wall paintings, which is addressed primarily to substrates of slaked lime and gypsum but is only partially applicable to the type of material found at Çatalhöyük (Mora et al. 1984).

The substrates of the paintings to be conserved at Çatalhöyük are comprised of clays. In general, all clays are thin plates of silicon dioxide (SiO_2) and aluminium dioxide

(Al_2O_3) with various amounts of water, iron, alkali metals, and alkali earth metals (Cornell and Schwertmann 1996; Gribble 1988:412–413). For specific data, see Chapter 7 and Matthews 2005b.

Murals made from clays are far more vulnerable during conservation than those made in the fresco technique. Fresco refers to the technology of a slaked lime or gypsum-based substrate over which the pigments are applied while the surface is wet. The resulting bonds of the ground and paint layers are resilient. In cross sections of fresco paintings, plaster and paint layers are integrated rather than discrete in appearance. Fresco requires a complex preparation of lime involving burning using a high volume of fuel, followed by slaking. The technical skill and labor required for fresco are much more intensive than for murals of unfired and slaked clay (Mora et al. 1984:36–54). It is important to recognize the unique properties and distinguishing features of this material and to treat clay murals separately from archaeological artifacts in general, and from wall paintings made with other technologies (Montero 1987:100).

"All things considered, what is interesting in developing solutions for the wall paintings at Çatalhöyük is the cumulative knowledge gained during the wall painting conservation campaigns. One of the current goals must be to utilize this knowledge well" (Myers 1999:11). The conservation of mud brick and mud plaster poses specific conservation problems. There is a body of literature on adobe architecture conservation that supports the research, yet plastered paintings within this type of architecture are limited. An interdisciplinary study is required to accomplish the preservation goals set for the unique material at Çatalhöyük.

Preservation of Clay on Mud Brick

The difficulties of conserving mud brick impact mural conservation directly. In the conservation of both materials, salts cause problems. Once structures have been excavated, the salts that have leached into buried mud brick through rain and groundwater expand and contract with changes in relative humidity. These fluctuations in volume cause instability in the fabric of the structure (French 1987:78). Exposed mud brick is notoriously difficult to preserve and has been a problem for archaeologists and conservators for decades (Matero and Moss 2004; Torraca 1971:47).

Plaster and Pigment Technology

How Pigment and Plaster Layers Are Constructed

Mud-brick walls at Çatalhöyük were plastered with fine, particulate clay containing a high percentage of calcium carbonate which occurred in different shades of white. Marls and soft limes served as the substrate of the paintings. Initially, the mud-brick wall was plastered with a coarse, buff-colored ground layer that had a high percentage of organic matter (Chapters 6, 22). Next, a finer, finishing layer of white clay was applied to give a smooth, white finish. This process was repeated over the life of the structure in the same pairs of ground/finish layering. In the case of Building 3, over 100 layers were observed in section (Chapter 6). When seen in section, the technological precision with which the layers were executed is impressive (see Figure 22.27). The parallel layers are perfectly uniform and straight. The mud-plaster platform and plinth features inside the Neolithic houses were also shaped at right angles and, like the walls, built up in successive ground/finishing layers (Matthews 2005b:Figure 19.2). Exactly which tools were used to create such precise work is still unknown.

Most painting fragments found on the site remain unexposed, observed only between plaster layers rather than on the topmost, visible layer (Hodder 2006a; Matthews 2005b). As has been established by other authors, several paintings were often found, one on top of the other, on the same wall (see Figure 22.27) (Matthews 2005b). There seems not to be a single, straightforward pattern to the layers of plaster between pigments or the number of paintings on walls. Interpretations of why walls were painted include the association with burials, as in the case of three burials under three paintings in Phase B3.4A of Building 3 (Chapter 6). This pattern of intermittent painted layers varies between buildings and levels. The inconsistent frequency of the paintings indicates that the social role the paintings played is not consistent throughout the building or over the site as a whole. Rather, their role is complex and most likely changed over the life of the site.

The layers of plaster and pigment tend to cleave preferentially at the pigmented layers. This characteristic was exploited heavily in exposing paintings in large numbers during the 1963 and 1965 seasons (Todd 1976:35). This quite useful process in the exposure of painted surfaces was rediscovered at the end of the 2003 season, when site manager Shahina Farid found the most recent painting. While cleaning an area with plaster that had been exposed for several years, the top layers cleaved off and revealed the underlying painted surface (Figure 23.1). The most recent conservation campaign exploited this property to reveal paintings (Pye and Cleere 2008).

Plaster from Theory to Application

Clay-based renderings used in building material are renowned for their property of shrinkage upon drying. Most mixtures, both modern and ancient, require added components to combat this problem (Mora et al. 1984:38). Classifications for plaster mixture additives used in antiquity include aggregates, adhesives and fibers, and modifiers. These components, each chosen to impart a needed quality to the composition, were used in various proportions to create an effective material. Effectiveness, in the case of plaster, would include pliability, a working time appropriate for its function, and a resistance to the propagation of cracks (Broderick 1998:9). Ratios of mortar and plaster compositions can vary to a significant degree. Effective renderings are observed in archaeological and modern ethnographic contexts from a variety of material proportions when skillfully employed (Crosby 1983, as cited in Chapter 6; Kemp 2000:80).

Mud plasters at Çatalhöyük had components that fulfilled each of these functions. The composition of the aggregates has been researched, and evidence of vegetal materials has been found (Chapter 6). In the case of organic adhesives and modifiers, however, exactly which materials were used is still unknown. My research task during the 2003–2005 seasons was to take what was known about the mud-plaster composition and apply it to the efforts of building the Replica Neolithic House. Findings from this practical research are not analytical but provided valuable empirical observations for materials used in the mud-plaster and pigment layers of the murals. The work of previous team members and valuable research contained in their unpublished reports provided a starting point. In addition to written reports by conservators who had previously worked on-site, Pamela French, Cassie Myers, and Kent Severson generously made themselves available for consultation and advice.

What Is Known about the Mural Materials

Pigments

The range of colors reported in the 1960s excavations included "all shades of red and brown, buff and yellow, pink and orange, mauve, grey and black, and blue. Blue occurs in one noted example of an undocumented cow painting in Shrine VII.1" (Mellaart 1967:149; Todd 1976:36). I was doubtful of the report of blue pigment until it was seen in Space 100 in the 2005 season (13.7.2004SHL, unit 7913). Additional sources report a wide variety of pigments, such as azurite, cinnabar, galena, and malachite (Mora et al. 1984: 73; Turton 1998:17). Direct observation and pigment identification with SEM-EDX and PLM have found iron oxides, carbonaceous black, and cinnabar (French 1974a, 1974b; Mortimore 2004:1179; Turton 1998:58).

Based on accounts of Mellaart and Todd, the most common color found on the paintings is red (Mellaart 1967: 149; Todd 1976:36). As red is the most prevalent, it appears to be of primary importance and symbolically relevant. Red earth pigments are one of a number of common oxides. The crystals of iron oxide and blood not only have a similar color, but also an identical underlying structure that lends the color. This similarity stems from the same valence state of the iron atom. Another similarity is etymological; the root word for the mineral is αίμα (*haema*), the Greek word for "blood" (Cotteril 1985: 110) The similarity in iron structure and linguistic derivation provide evidence for symbolic associations of red with blood. While both iron oxides and cinnabar are vein-forming minerals found in volcanic contexts, cinnabar is more rare. Optically, it is exceptional, with a type of polarization similar to quartz, only 15 times greater, giving it its brilliant appearance (King 2002:199). Sources for cinnabar known to Mellaart are located about 18 miles north of Konya (Mellaart 1967:27–28, Figure 1).

Clay Composition

Geological data in conservation reports draw from the region surrounding Çatalhöyük and identify montmorillonite ($[Al_4\ (Si_6Al_2O_{20})\ (OH)_4]^{2}$-$nH_2O$), a type of smectite, as the predominant clay in the region (Turton 1998:60). Analysis of plasters from the site revealed 50–60 percent calcium carbonate, 40–47 percent clays and silts, and 3–10 percent sand (Turton 1998:59). Sand is often observed in plasters and mortars, as it helps bind the finer clay particles by inhibiting shrinkage upon drying. Dry-sieving archaeological clay material from the site showed a very small proportion of sand. Other binding mechanisms most likely were present to cohere the plasters together (Turton 1998:59).

Binding Materials

Clues to what material might be binding the plasters come from what was seen in cross sections. Black inclusions seen in the compacted ground and finishing layers were observed (Turton 1998:37–41). These are most likely volcanic minerals, which would be consistent with the obsidian chips found in plaster floors of Building 3 (Chapter 22). Lacunae were visible in plaster cross sections, indicating the presence of a grassy or similar vegetal-type material. Chaff and grass would have served much the same binding function as sand in the mud plaster. The presence of other organic binders in the clay and pigment layers is discussed below.

Experimental Conservation

The role of the Replica Neolithic House at Çatalhöyük was to allow archaeologists to investigate how the Neolithic houses were constructed and how their interior features, such as ovens, ladders, and doorways, were used (Chapter 22). The Replica House also served for "experimental conservation," to test theories of the technology and materials of the paintings from a conservation perspective. There is no laboratory that can reproduce the climatic, geological, and material conditions of the site better than locally derived materials from the site itself.

The construction and initial plastering of the house interior was conducted by Mirjana Stevanović, and this work is discussed in detail in Chapter 22 of this volume. Under her supervision, the first set of replica paintings on these plaster walls were painted with a naturally occurring, red iron-oxide dry pigment that the Neolithic people would have used. The question of whether Çatalhöyük people used an organic binder in their wall paintings was prominent in our on-site discussions. In 2002, we conducted an experiment using a milk protein binder with the iron oxide pigment in a replica of a design of circles.

This experiment proved valuable, showing this was not a viable binder. Within one year, paintings created with milk protein binder had begun to fail. The paint layers had cupped into flakes and were partially or completely delaminated. Areas with thicker paint layers detached more readily than thinner layers, which retained some adherence to the substrate. The organic, hygrophobic nature of the paint film did not bond with the inorganic, hygroscopic mud-plaster clay. Also, the paint film resisted having plaster applied over the surface. As a result, it was decided that this could not have been how the Neolithic plasterers produced the layered structure of plaster over pigment layers seen in original material from the site, and that further experiments were needed. Also, an organic binder present in both plaster and paint layers may have been used.

The Replica House Recipe

The recipe we used in the second set of wall plasters for the Replica House included the known aggregates—locally derived montmorillonite clays, water, and fibrous grassy and chaff material. The first step taken was to gauge the working properties of the clay, which was diluted into a paste with water (Figure 23.5). The clay paste did crack; and the lower the viscosity of the paste (more water in the paste lowered the viscosity), the more severe was the cracking that appeared. It was valuable to experience firsthand what happens when the portion of the paste occupied by water molecules collapses and leaves unworkable clay that cracks as it dries, resulting in friable surfaces. This was an excellent illustration of how freshly excavated plaster behaves post-excavation when moisture, previously bound in the matrix by the seal of overlying soil, evaporates and weakens the material.

Experimenting with the role of grass and chaff in the plastering mixture helped us understand how these materials improve the working properties of the clay. A mixture using only montmorillonite clay, grass, chaff, and water was effective for plastering the walls. A successful mixture entailed not only using the right materials but also preparing each appropriately and applying it with an effective method. For example, the grass put into the mixture reduced cracking best when it had been finely ground and left in the mixture for at least two days before use.

Plaster Application

The wall plaster application method was prescribed by the cross-sectional analysis and prior experience of clay materials. Cross sections of original material revealed extremely compacted layers of parallel clay plates.

In plastering the Replica Neolithic House, continuous and thorough pressure was needed for successful adherence during the application process. To achieve this, the mud plaster was continuously burnished for up to half an hour after it was applied (see Figure 22.34). Various burnishing

Figure 23.5. Detail of sifting plaster through a sieve.

Figure 23.6. Burnishing plaster layers with a grass brush.

techniques were tested (by hand, with a stone, and with a brush). All application methods that produced a very polished finish created a problem in resisting the following applications of plaster. Experimental burnishing of the wall plaster with a flat stone was not effective; this technique broke particles into a disordered layer. Areas compressed with a stone adhered to underlying plaster and occasionally flaked off, taking the underlying plaster layers with it. Using a grass brush was more successful in creating a smooth plaster surface (Figures 23.6, 23.7). However, the broom application did not smooth the plates throughout the thickness of the plaster layer, nor did it compact the layers very well. This resulted in subsurface cracking. Burnishing by hand smoothed the layers throughout the thickness of the plaster layer and incurred the least cracking. In the end, using two methods in conjunction was found to be the most effective process, a combination of hand and broom (Figure 23.7). This compressed the whole layer down to the substrate. The material was compressed by hand until the surface was leather hard. The surface was then roughened with a grass broom to allow for better mechanical keying of later plaster applications.

After effective materials and methods were found, the entire house was replastered. When help was needed to work on plastering the whole Replica House, 15 members of the archaeological teams readily volunteered their time (see Figure 22.33). This also turned out to be an effective way to involve other teams in the work of conservation and more fully communicate the work conducted by archaeological conservators.

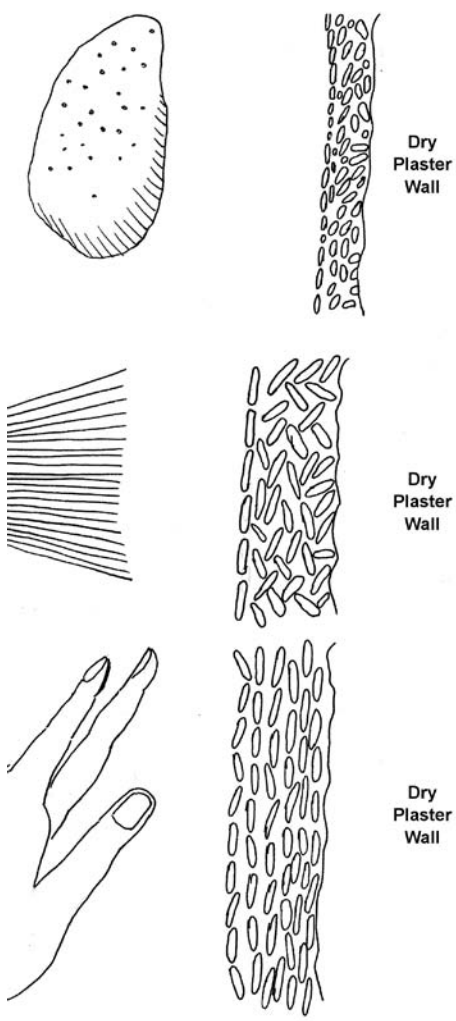

Figure 23.7. Schematic drawing of the effect of different burnishing tools on clay plates.

Re-creating Neolithic Art

Conserving these wall paintings—from the analysis of their materials to the tangible and active experience of painting the replicas—remains one of the most fulfilling and powerful experiences of my career. The entire team chose, by popular vote, to replicate the "Volcano/City Plan" design out of 10 possible options. This image is an imaginative and unique composition, the earliest known example of a landscape depiction in ancient art (Laing and Laing 1993: 119). Decisions about color, dimensions, and placement on the wall of the replica painting were reached in consultation with Ian Hodder and Mirjana Stevanović (Figure 23.4; see also Figures 22.35, 22.38). Original site records, Mellaart's notebooks, and the original paintings exhibited in the Museum of Anatolian Civilizations in Ankara were all consulted to ensure the accuracy of the replica. The Volcano/City Plan mural was painted by using red iron-oxide dry pigment, without a binder, ground and mixed in a water vehicle only (Figures 23.4, 23.8, 23.9). The expectation was that clay with iron oxide would adhere well to the plastered substrate but would have a low resistance to abrasion.

Figure 23.8. Pigment grinding.

Figure 23.9. Painting the Volcano/City replica.

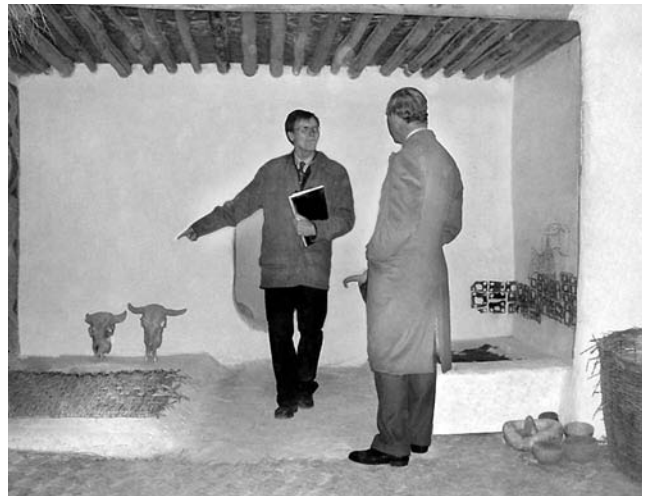

Figure 23.10. HRH Prince Charles visits the Replica House in November 2007.

On the opposite (west) wall of the Replica House, a large replica painting with geometric motifs was undertaken (Mellaart 1967:Figures 31, 32) (Figures 23.2, 23.3). The pigments used were hematite, umber, and white clay, again in an aqueous solution.

The second replica of the Volcano/City Plan seen in Figure 23.1 in the South Area was executed in modern materials: acrylic ground and red iron oxide in an acrylic medium for resilience. The panel on which it was painted was exposed on-site. It was built to withstand exposure to the elements to serve its purpose for display and presentation.

The Visual Interpretation of Evidence with Image Style

The replica of the Volcano/City Plan mural was painted in a pointillist style (Figure 23.9) rather than in simple, solid lines. The original, as documented by Mellaart's photography, showed only the middle section. The outer sections of the composition overlapped onto adjacent walls and were not documented in the photographs (Mellaart 1967:Figures 59, 60). In order to replicate this situation, the edges of the composition were painted in a lighter, less solid manner to indicate the speculative interpretation of those areas.

The Value of the Experimental Process

After completion, the newly plastered Replica House, with its replica wall paintings, was well received by visitors, the most notable being HRH Prince Charles in 2007 (Figure 23.10). The process of making the replica undoubtedly increased researchers' knowledge of the Neolithic processes. Among the archaeologists and visitors who watched the experimental conservation projects, there was an encouraging amount of interest in the conservation of the artwork on the site.

Experiments ruled out several questions about mural technology and created several more, as they tend to do. The question of organic binders and the possibilities of combinations were opened up. The interplay between theory and practice illuminated both aspects of the artworks.

Acknowledgments

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I would also like to acknowledge the continued encouragement and support of my family, especially that of Hugh E. and Linda Ledbetter and Billie Dixon. Additional thanks to all of my parents and Matthew.

Chapter 24

An Archaeology of Vision: Seeing Present and Past in Çatalhöyük

Michael Ashley

Studying Vision in Our Presence

> In the mansion called literature, I would have the eaves deep and the walls dark, I would push back into the shadows the things that come forward too clearly, I would strip away the useless decoration. I do not ask that this be done everywhere, but perhaps we may be allowed at least one mansion where we can turn off the electric lights and see what it is like without them.
>
> Jun'ichiro Tanizaki (Tanizaki 1977)

Imagine you are in a room of a prehistoric house. Close your eyes and imagine this room at night, firelight provided from a hearth, perhaps a few stone lamps or even torches. The light is alive, as are the shadows. As time passes, your eyes adjust to the light, your night vision comes in after about 20 minutes, and details that were lost in the shadows begin to reveal themselves. Within 40 minutes, the entire room is visible, the darkest shadows now less so. The color of the firelight brightens reds and mutes blues, bringing to life red wall paintings and casting any bluish object deeper into darkness, appearing almost black, but a deep, rich black. The smoke from the hearth and the lamps fills the room with a gentle haze, thickest near the roof portal where the smoke exhausts. Light seems to hang in midair, appearing to brighten the entire room (Figure 24.1).

I am in a room of a prehistoric house. It is July 2001, a beautiful morning after a rare, soft rain. I have escaped the lab and am sitting in the BACH excavation tent at the Neolithic site of Çatalhöyük, Turkey. It is about 75 °F (24 °C) and breezy, the entire team is up and furiously working, good music is playing, and I see mostly smiles all around. The tent, a white, plastic, house-shaped canopy, provides shelter from the burning hot sun and afternoon windstorms. It creates its own light, low contrast and virtually without shadow, slightly yellow/warm from the buildup of dust, especially in morning when the east-facing wall is fully lit, as it is right now. I have lived in this house every summer for four years. While I never tire looking at it, photographing it, envisioning it 8,500 years ago when it was a living dwelling, I long to "have the eaves deep and the walls dark," to see it as it was, under hearth light and lamplight, instead of this omnipresent flat and artificial tent light. Is it possible that this tent, built to preserve the archaeology and to shelter the archaeologists who work here, is providing a disservice as well, by creating an environment where the light never changes, blinding us to our own visual imaginations and perhaps even making it more difficult to excavate than it need be (Figure 24.2)?

Philosophers and scientists alike tell us it is probably impossible to separate oneself from one's own vision. We tend to take seeing for granted unless our eyes are giving us undue trouble. It is worth the effort to try to understand what we are looking at, because this can lead us to think about what we cannot see, what we are missing. A documentation strategy for vision in the field may provide us with a sense of the real-world conditions under which visual decision-making is made.

An applied methodology for studying what is called the "present viewing triangle" (see section "Toward an Archaeology of Vision" below) in archaeology should embody all aspects of the viewing situation, yet must be flexible enough to be applicable to a wide range of viewing environments. For example, at the site of Çatalhöyük, researchers work under a variety of conditions, from specially constructed shelters and furnished labs with fluorescent lighting to fully exposed sun and makeshift tents. The materials being investigated range from massive mud-brick walls to microscopic seeds. The people who work and visit here include trained archaeologists, students, conservators,

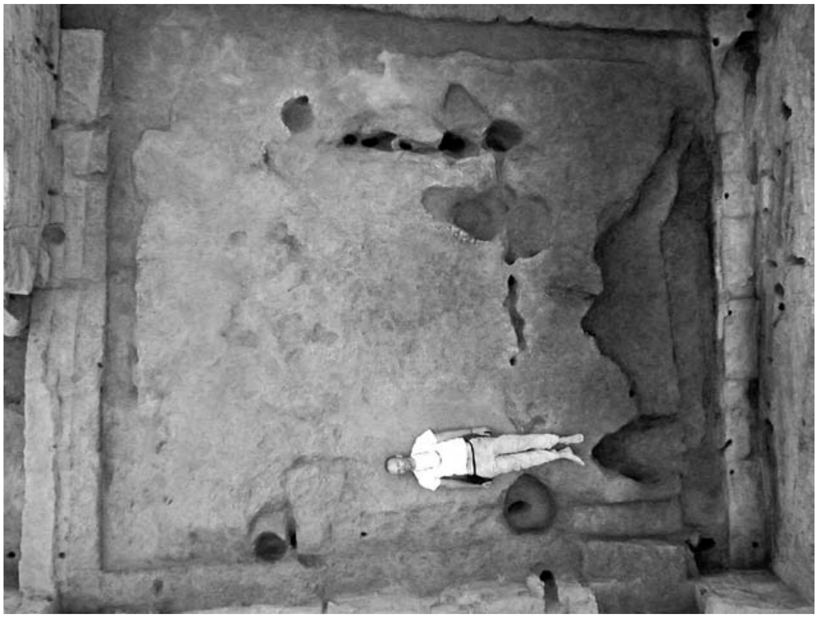

Figure 24.1. Building 3, a prehistoric house as seen in our present. This image is the final aerial overview of Building 3 in 2003. Jason Quinlan provides a living scale.

Figure 24.2. The Replica House is a useful place to dwell and build new memories to feed our archaeological imagination. In 2002, Çatalhöyük team members experienced first-hand an oven fire and the smoke that comes with it.

local workers, guards, and tourists. There can be no "one-eye-fits-all" discussion of seeing here, either in the present or past.

An interesting parallel can be drawn between vision and archaeology, because a core concept to both is what it means to be human. In seven years of fieldwork at Çatalhöyük, I have observed firsthand our fascination with the world of material remains in archaeology, only to conclude that the physical remains are only one factor in the absence of people and place—present viewed objects, clues to a past viewed world. The more we focus on them out of the context of real people in real places, the more we are blinded to the relationship they had in their original context, for it is through the relationship of things to people in a particular place and time that meaning is made (Cresswell 2004; Hubbard et al. 2008; Tuan 2001).

A Viewing Triangle of People, Places, and Things

This research emphasizes human vision—the physical and physiological aspects rather than the phenomenological or perceptive qualities of seeing. Vision is the foundation of phenomenology, agency, and corporeal and sensorial archaeology (Backhaus et al. 1998; Jones and MacGregor 2002; Kryder-Reid 1998; Thomas 2008; Witmore 2006). From this perspective, vision is defined as a relationship among the viewer, the viewed, and the environment—a viewing triangle (Ashley 2004a; Fraenkel et al. 1973; O'Connor and Robertson 2004; Parks 2004). Vision is an active, constructive process undertaken by people as they look at things in real places in the world (Palmer 1999). Vision is not the simple reception of visual information through the eye; rather, it is a heuristic process in which unconscious inferences are made about the most likely environmental condition that could have produced the image being presented to the retina (Gordon 2004).The underlying inferential assumptions based on memory and genetics—the sum of our visual experiences as individual human beings—are sometimes wrong and lead to erroneous conclusions, but for the most part, our image of the world closely matches reality, at least in terms of our capacity for sensing light and shadow, shape and substance (Gibson 1986; Palmer 1999).

There is room for improvement in archaeological vision. Augmentation—field glasses, shelters, special lighting—can all benefit archaeologists in the field. The impact is more than superficial, for it cannot be denied that a major component in archaeological fieldwork is visual assessment. Ergonomically, augmentation can reduce eyestrain and headaches and generally promote improved eye health. But careful consideration of vision in archaeology has benefits that go beyond comfort and safety.

Seven seasons of vision testing, field assessments, light studies, and interviews in the field at Çatalhöyük have led to one major conclusion. If you read no further but you work in the field, know that the most detrimental condition affecting field vision is glare. Whether under shelter or exposed sun, side glare is the leading cause of "field blindness." Minimizing glare dramatically improves contrast sensitivity, the prime requisite for seeing subtle changes of soil matrices in the field. Glare sensitivity is age dependent, getting much worse as we get older (Nadler et al. 1990). Fortunately, glare is generally controllable, either through augmentation (glasses, umbrellas, shelters) or by working under alternative lighting conditions (night, cloudy days, anytime when the sun is not working against you). You can't move the sun, but you can choose when and where you work under it.

Introduction to An Archaeology of Vision

In her book *Fixing My Gaze*, neurobiologist Susan Barry shares her incredible and personal journey on vision, mind, and human experience (Barry 2009). Barry was strabismic—cross-eyed—and lived most of her life without stereovision. It was not until she took a class on vision in college that she came face to face with the reality that she saw the world differently than most people, and would likely never see in 3D because in the *critical period* of visual development in early childhood (3–8 months for binocular vision), we are hardwired to see in a particular way (Almli and Finger 1987). Or so conventional medicine and science led her to believe.

Up until 1999, fewer than 60 cases of vision restoration after long-term blindness had been recorded in human history, with most cases leading to severe emotional trauma or rejection of the new visual capabilities altogether (Kurson 2007). Active training is the key to success. Barry was introduced to vision therapy (or vision training) for strabismus at the age of 48 and today has perfect stereovision. Remarkably, we can unwire our minds to see differently. We continue to learn how to see throughout our lives; and through vision training, we can literally change our minds (Figure 24.3).

These recent breakthroughs challenge our hardwired ideas of human vision, and there are direct implications for any of us engaged with the visual in anthropology and archaeology. Archaeology is a "sensual" field practice, employing the senses of sight, touch, and hearing—sometimes smell and taste too—to bear on the problem at hand, be it excavation, survey, or lab research. The visual archaeological environment is a place caught between present and past, experienced in the real world by the archaeologist who is investigating it, an ever-changing viewscape. What comprises this visual environment, and what factors are important to define an archaeology of vision? What aspects of this environment actually hinder our ability to perform archaeology or understand vision in prehistory? Are there ways of augmenting or changing our visual conditions in order to make them more conducive to archaeological fieldwork?

Cresswell (2004) summarizes a view of place, incorporating remembered or imagined fragments of practice

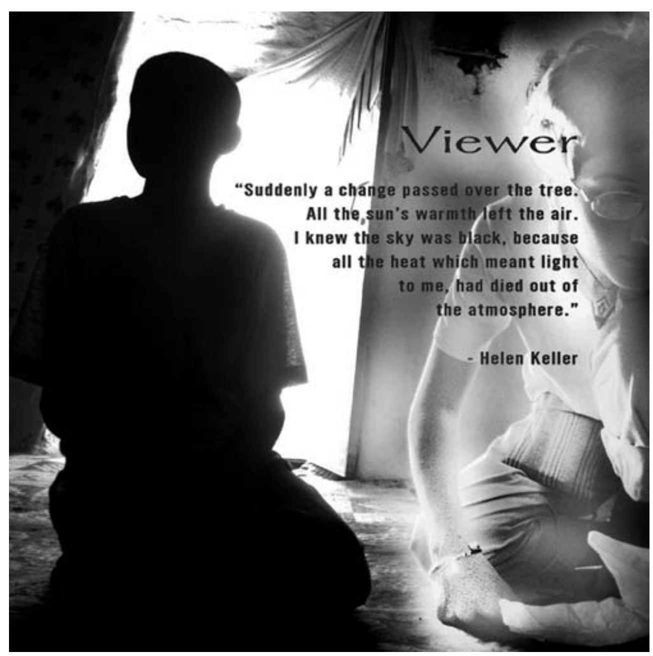

Figure 24.3. The Viewer. Quote from *Story of My Life* by Helen Keller.

and events that are triggered through movement, sound, and visual media, a view that is very different from the traditional "visualizing" of past places by archaeologists. Gibson (1968) makes a connection between place and the senses that has also been made by a number of writers (Ingold 2000; Merleau-Ponty 2003; Porteous 1990; Rodaway 1994; Tuan 1993). Gibson's (1968) theory of ecological optics defines the "informational basis of visual perception (as) the dynamic structure of ambient light that is reflected into the eye from surfaces as an active organism explores its environment" (Palmer 1999). Working backward from Gibson's "dynamic ambient optical array," one theoretically can locate the observer by following the structures to their ultimate positions (Braund 2008).

Using Çatalhöyük as a case study, I seek to reexamine the archaeological record for vision clues, using the proposed viewer-centered framework. A future archaeology of vision requires strategies for planning fieldwork to produce deeper, more meaningful explorations of vision in archaeology, including evaluation protocols for present and past viewers, environments, and objects of investigation. My aim for this work is to suggest a framework for discussing vision in archaeology, specifically the vision of present viewers (archaeologists) and past viewers (our subjects). The model I propose emphasizes the human subjectivity built into seeing.

SEEING ON-SITE: PARTICIPATION IN THE VISUAL PRESENT

Çatalhöyük now is much more than an archaeological site. It is a living place where people interact with an ancient past while reconfiguring the present site through practice, remediation, and architectural retransformation, on- and off-mound. Given the circumstances, the present-day site can be seen as a microcosm of archaeological fieldwork environments, an exceptional place to reckon with human vision under a variety of conditions. I describe some of the features of present Çatalhöyük here, but I encourage readers to take a look at Tringham's "Sensing the Place of Çatalhöyük: The Rhythms of Daily Life" in this volume (Chapter 26).

Çatalhöyük is not a single *site* but a collection of *places* stretching across many acres on a modern, agricultural landscape. What we call the Neolithic mound—the East Mound—was also occupied during Roman and Byzantine times and is now occupied once more, this time by archaeologists, researchers, locals, and international visitors. In these terms, the East and West Mounds have much more in common, for although the West Mound is a later occupation (Chalcolithic), it too had exceptional Roman and Byzantine burials and structures and is now a subject of our present-day investigations (see Figure 1.4). We speak of the occupations of Çatalhöyük as past events when, in fact, the Çatalhöyük research team and our affiliates are the most recent occupiers of the site. Seasonal inhabitants we are, for we work and live at the site a few months each year, but inhabitants or occupiers nevertheless.

Connecting East and West Mounds is the "dighouse," our summer home and research center (Figures 24.4, 24.5; see also Figures 2.15, 25.7–25.9; Chapters 25, 26). The dighouse, with its labs, dormitories, visitor center, and dining hall, is aptly nicknamed the "compound." Perceptions of this place range from deeming it the "Hilton of Archaeology" on one end to "Stalag Çatal" on the other. Yet no one can argue that for a field project located in rural Turkey, Çatalhöyük is an exceptional place to work. Solar panels provide hot showers, we have a reasonable computer network, the local villagers provide for us through their efforts

Figure 24.4. Thursday night barbecue in the veranda.

Figure 24.5. The terrace after a rare rain. Çatalhöyük team members witnessing a remarkable double rainbow over the mound (shown in Figure 24.24).

in cooking, cleaning, sorting, hauling, and building, and the project provides exceptional management and leadership. Our meals are cooked, toilets are cleaned, laundry is washed. It is not perfect by any means, and we occasionally run out of food or water or power or patience, but I would consider our situation more Hilton than Stalag.

The present viewed world of Çatalhöyük is ever changing. Since work began here again in 1993, every corner of the present viewing triangle has gone through a multitude of transformations. The dighouse was designed, built, and continues to be expanded to keep up with the needs of the project and public. The aesthetic of the dighouse was chosen to reflect the vernacular architecture of the region—low, slanted roofs, textured walls in yellowish white, and wooden posts to hold up the awnings that cover our central courtyard. Lab space is almost always crowded, but we get along. Researchers and excavators find tables, chairs, and places to plug in lamps and laptops, and we manage to make things work pretty well.

During the workday, 7 am–7 pm with breaks, people work indoors under windowed daylight; rarely does anyone turn on the overhead fluorescents. Instead, work is pulled out into the courtyard—bone, obsidian, and other materials are washed, finds are photographed, seeds are sorted, cigarettes are smoked, discussions take place. During morning tea, the team members filter into the dining room, queue up for bread, olives, cheese, tomatoes, and eggs (sometimes), grab glasses of tea, and then sit either in the inside or on the veranda, heat and exhaustion and desire to smoke or talk help with the decision of where. The courtyard is the center of dighouse life, day and night (Figure 24.4).

Privacy is at a premium when a hundred or so people decide to cohabitate the site at the peak of the season. Many team members will put up tents, opting for a bit of solitude in exchange for the inconvenience of unzipping tent flaps to use the toilet and not having a flop spot for siesta time (by 10 am it is too hot to be in a tent). Finding a place to sit and talk or read, or make out, can be next to impossible while living in a fishbowl on the Konya Plain. At night, the lab lights burn brightly, fluorescent bulbs revealing all of our activities to anyone interested, be it other team members or a passing pastoralist who is heading home after a long day in the fields. Some of us find solace on the terrace that overlooks the mound. Built in 2002, the terrace offers darkness, starlight, a hammock or two, and the occasional impromptu party or low-key gathering. In the 2004 season, we had a "Terrace Cinema Presents" showing *Fahrenheit 9/11*, the Michael Moore film about the Bush administration and Iraq. About 70 of us showed up to watch this bootleg DVD, picked up on the streets of Konya for less than four dollars (Figure 24.5).

Another escape from the throng of researchers can be had by taking a walk around the mound. This ritual usually commences after dinner, around sunset. There are rules of engagement, however. No one is allowed to walk alone, and women especially are encouraged to wear proper attire—long pants and shirts that cover shoulders. Walkers habitually walk around the mound counterclockwise, from south and west to north and east. Walking the other way sparks comments like "subversive" and "you are walking the wrong way," as if there were a right way to walk around the mound. Interestingly, by season's end, the predominant direction for walks can switch to clockwise. The iconoclasts become the followers until they, too, switch directions and attempt to walk "the wrong way" around.

I have described the living and working quarters as they exist on the periphery, not on the mound itself. These places are very important in the context of this story; for many materials specialists and workers, the world I describe is their primary plane of existence. Although the mound itself is just meters from the dighouse and labs, visits by the lab specialists are limited to the weekly site tour on Thursdays around 2 pm, or the "priority tours" that take place three times a week at 10 am (see also Chapter 2):

> Every two days representatives from all the lab teams toured the site and discussed the individual excavation areas with the digging team. . . . Each deposit was discussed and decisions made about whether it should be prioritised. Prioritised units would be those that would be studied by all specialist staff (bones, seeds, lithics, etc.) during the post-excavation process. . . . In this way we could ensure that information from one type of analysis could be compared with another type of analysis. . . . During that tour the results of the preliminary analyses would be discussed and the overall interpretation of the deposit discussed with the digging staff. In this way immediate feedback could be provided for the digging staff, and further digging and sampling could be adjusted accordingly. (Hodder 1997b).

Why limit exposure to the excavation for this group of researchers? The justification is rational and reasonable if you think of the excavators as specialists in their own right. With the ambitious goals of the project and the relatively short workdays, distractions need to be minimized wherever possible. Public tours happen throughout each day and create their own disruptions beyond the business of archaeology—excavating, survey, unit sheet recording, drawing, and photography. Thus, there is a population split at the site, with "on-mounders" (excavators) and "off-mounders" (specialists) each spending a disproportionate amount of time in specific places where the others generally would not.

Excavators, while spending the majority of their workday on-mound, are generally fixed into a place that they will become intimate with throughout the course of the season. They will work a unit or a set of units in a specific space and seldom venture from it. Some excavators will return to their space year after year, depending on the goals of the team and the needs of the archaeology in that area, while others will move from place to place. The East Mound is divided into areas—NORTH, BACH, 4040, SOUTH, SUMMIT, and TP—with each area further divided into spaces or rooms, and then features and units. Team leaders are responsible for their space or set of spaces, their team members responsible for their assigned unit or units (see also Chapter 2). Like the specialists, excavators might see another area and the rest of the site only on Thursdays at 2 pm.

The overview of the site directors—Ian Hodder and Shahina Farid—affords them the opportunity and the requirement of seeing the site as a whole organism, visiting all of the areas daily or several times per day. Although privileged in the sense that they can wander from place to place, even their view is limited, for although they can take in the bigger picture, they must rely on the team leaders and unit excavators for the nitty-gritty details of each space/feature/unit.

One group of specialists is free of these constraints. The media team specialists—Jason Quinlan currently, myself and Jason in years past—will be called to visit every space and area on-site by season's end. We are responsible for the visual documentation of the site and take our job very seriously. We are limited, however, due to our lack of digging experience and expertise. We must rely on the excavators to tell us what they see, to direct our gaze to the important bits of their trench so that we may record not only what they ask for but what they see. Like most things at Çatalhöyük, photography is a dialogue, a negotiated and multi-authored act shared by photographer, excavator, and the present viewed material world.

What is apparent is that the present viewers at Çatalhöyük each have their own views of the site, views that are both privileged and limited in some ways that impact their visual experience of this place (Chapter 26; Tringham et al. 2007). Excavators who work in the 4040 Area, for example, are excited by the possibilities of exposing a large area and revealing a Neolithic neighborhood (Figure 24.6). Those who work in the SOUTH Area are coming on and

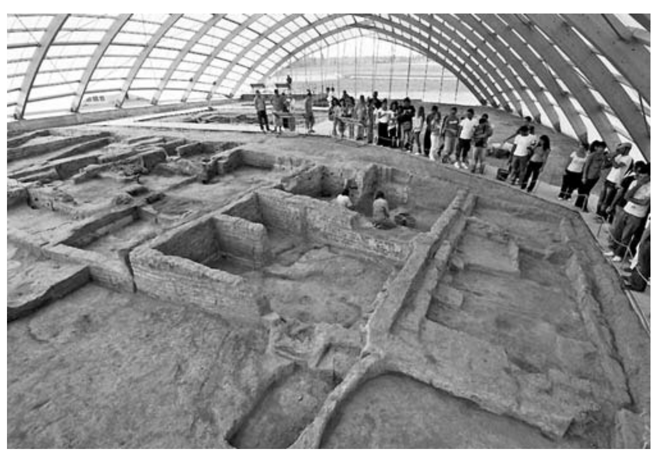

Figure 24.6. Turkish tourists visiting the 4040 Area under the NORTH shelter.

through the houses and spaces first excavated by Mellaart in the 1960s. They have an opportunity to rewrite Çatalhöyük's archaeological interpretation. Specialists can look deeply into a specific material problem and give the excavators a richer understanding of the deposits they are digging, without stepping into the trenches themselves. Shahina Farid's vast experience and living continuity (she has been with the project since the beginning) provide exceptional guidance and a critical eye when things are confusing and nonsensical, a common occurrence with archaeology of this complexity. The photographers and illustrators share the burden and the pleasure of showing the team and the public Çatalhöyük as it is and, through interpretation and imagination, how it may have been.

COVERING THE UNEARTHED—SHELTERS OF ALL SHAPES AND SIZES

Since the excavations were reopened in 1993, the team has put up shelters of varying shapes and sizes to work under, protecting the archaeology and the archaeologists from the brutal Anatolian sun. The most prominent object on the plain for miles in any direction, Çatalhöyük as an earthen mound is monumental, an icon of lives that were lived then, a mystery for those who call this place home. Put shelters on the mound and suddenly shelters dominate the landscape. We cannot separate figure (mound) from ground (shelter). Squint your eyes how you might, the shelters are what we see dominantly. We say, "look at Çatalhöyük. Something is going on here, something is alive and present and now." We transcend the Neolithic and are blinded to witnessing the mound as a past viewed object. We are now transfixed in the present viewed world (Figure 24.7).

Shelters are present viewed objects, but they are also present viewed environments, providing necessary shade from an otherwise exceptionally bright and blinding situation. At our site, shelters come in all shapes and sizes, from umbrellas to the new SOUTH shelter, which looks like a space-age airport. Shelters are a fact of life at Çatalhöyük, a necessary evil, perhaps, but a welcome alternative to 100 °F sunlight. Their impact on archaeological practice, visitor experience, and how we perceive the site itself is nothing less than transformative.

A History of the BACH Tent

The surface scraping in 1995 across the northern area of the East Mound revealed a complex of agglutinated structures, the top edges of walls and other features, including what would be named Buildings 1 and 3. Excavation of Building 1 began in 1995, while other excavations were conducted in the MELLAART and SUMMIT Areas to the south. Over Building 1, a temporary "shanty" shelter was erected out of wood timbers and a green tarp to offer some protection from the brilliant Anatolian sun. In the course of the 1996 season, the shelter would be re-covered by an off-white cloth, the tarp moved to shroud the flotation area over another shanty-shelter, where it would stay in place until 1999. Until the BACH tent was put up in 1997, the shelter in the NORTH Area would be the only place on-mound where excavators would work without constant sun exposure during the seven-hour workday (Figure 24.8).

Friends of Çatalhöyük, a nonprofit organization based in Istanbul, raised the $8,000 to purchase the BACH shelter (see Figure 25.2; Chapter 26). The decision to have the Berkeley team excavate under the shelter was due in part to Ruth Tringham's experience of digging in the SOUTH Area in direct sun and then in the NORTH Area in Building 1 under the protective covering of the shanty-shelter. While the shanty-shelter over Building 1 was suboptimal, plans were in place to build a permanent visitor center over it, or what would become revealed as Buildings 1/5, the following year. The Friends of Çatalhöyük were keen to have their shelter prominently placed, and Building 3 is at the highest

Figure 24.7. The 4040 shelter just after completion.

Figure 24.8. NORTH Area of the East Mound in 1996, before the BACH tent. Image retouched to remove the North shelter.

point of the NORTH Area, close to the surface, an ideal location. The shelter was offered up to Ruth and her co-director, Mirjana Stevanović, who were grateful for it.

The plan was to have the shelter up in time for the beginning of the 1997 season, a short season for the small Berkeley team, just four weeks. But it turned out that putting up large shelters is a tricky business. The area encompassing Building 3 and the neighboring Spaces 87, 88, and 89 was first leveled. No further excavation could proceed until the tent was in place, however, for the workers who were putting it up would need to bring in ladders and scaffolding in order to finish its construction. Time was passing quickly for the team members, who were dispersed across the mound and in the specialists' labs while they waited for the shelter to be completed. Nearly half the season would pass before excavation could begin in earnest.

By August 5, the level ground was ringed with large metal drums filled with concrete, anchors to support the tent. Dozens of sugar and flour sacks (*çuval* in Turkish) were filled with dry-sieved soil from the 1995–1996 surface scraping to form foundation edges both inside and outside the tent perimeter. The metal frame components were brought up to the site, and the first attempt to raise the shelter was made. Team members were directed to help hold up the vertical posts so that the crossbeams could be pushed and bolted together, but the structure proved to be too heavy and dangerous to be assembled manually. Heavy machinery was brought onto the mound, and a crane was deployed to lift the massive beams into place. On August 9, the structure finally came together, after which construction proceeded quickly. The plastic skin of the tent was on by afternoon's end.

The following day, darkened clouds edged the horizon, as a rare late summer rainstorm threatened to drench the mound at any moment. The christening of what would become the BACH tent was planned and would not be prevented by a little rain. Around 5 pm on August 10, the Çatalhöyük research team gathered in the new, white tent as the sky opened, turning the fine powdery surface of the NORTH Area to thick mud. Ruth Tringham and Peter Andrews presided over the event, serving whisky out of a handmade, "mother goddess"–shaped bottle and baklava delivered from Konya. Offerings were made to this new "Goddess Pavilion" on the makeshift altar in the southwest corner of the tent. Spirits were high and laughter filled the shelter until drowned out by thunder from the lightning directly overhead. The "last house on the hill" was a metal structure covered thinly by plastic and was now the tallest structure on the plain. Concerns for safety soon took over the jovial atmosphere, and the crowd ran off the mound for the cover of the dighouse. Building 3 had a roof once more, and the mound of Çatalhöyük had its first permanent structure since perhaps Roman times (Figure 24.9).

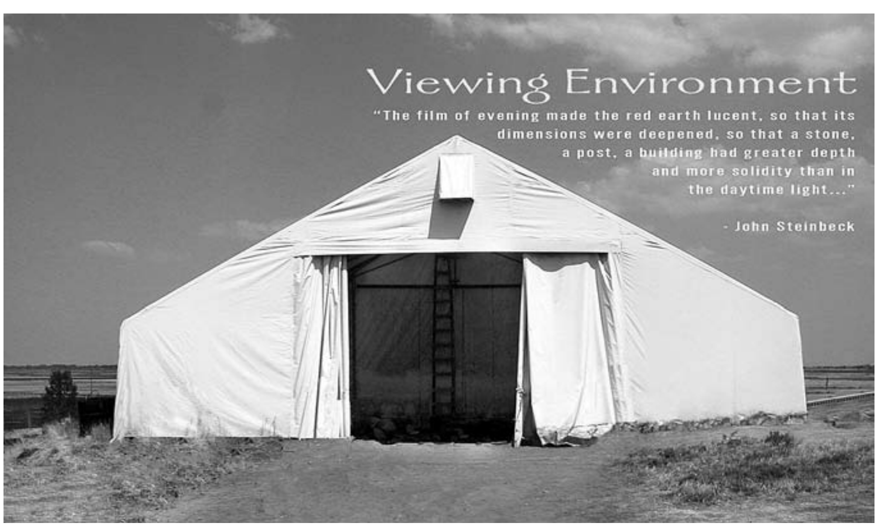

Figure 24.9. Viewing Environment, the BACH tent. Quote from *The Grapes of Wrath* by John Steinbeck.

The Study—Seeing in Situ

For my research, I conducted a systematic vision-testing program of members of the Çatalhöyük teams, including archaeologists, lab workers, and local villagers who worked both in the field and in sorting flotation and heavy-residue deposits, under the guidance of Gunilla Haegerstrom-Portnoy, a leading expert in vision science and the effects of environment and aging on vision (Haegerstrom-Portnoy 2010; Pelli et al. 1988). Tests were conducted over a series of days and at several times each day, under different lighting conditions. Particular attention was paid to the changing lighting conditions, as well as to the field conditions and disposition of the team members. Additionally, some members were interviewed about their ideas on vision in archaeology, present and past. All told, about 50 individuals were tested, for a total of 450 times.

The objective was to reveal what conditions, if any, affect the archaeologists' ability to use their eyes as investigative tools and to explore ways to improve the viewing conditions at the site. Experimental glasses were employed, and testing took place both under the existing shelters and under full sun and cloudy conditions (Figure 24.10). Preliminary results revealed that there are several simple, cheap, and effective ways to improve field vision in fieldwork. Far more fascinating is the potential for visual training; we learn to see better if we are trained what to look for (Barry 2009).

Figure 24.10. Serdar Cengiz tries out UV blocking "archaeo-specs" while excavating in the SOUTH Area.

I focused my study on six areas of the site (Figure 24.11):

(a) The Berkeley Archaeologists at Çatalhöyük (BACH) tent: A permanent structure, the tent is an aluminum frame covered in white PVC plastic (Figure 24.12).

(b) The research team from Poznan, Poland, worked on the summit south of the BACH shelter. Their area was covered in 2002 in what I call a semipermanent "shanty"-shelter (Figure 24.13).

Figure 24.11. Vision-testing study areas.

Figure 24.12. BACH tent interior, with Mirjana Stevanović writing up notes.

Figure 24.13. TP—Team Poznan—"shanty"-shelter at sunset.

(c) The SOUTH Area was excavated to provide the foundation footing of the new SOUTH shelter, constructed the following year in 2003. The members I tested here all worked in full sun throughout the 2002 season (Figure 24.14).

(d) Flotation is a process whereby soil is processed through water in order to separate out plant and other materials. The flotation area was covered by a temporary blue tarp throughout the testing period (Figure 24.15).

(e) Local villagers from Küçükköy, all women, work each season as seed and plant sorters with the heavy residues from flotation. They were set up under the shade of the veranda in the central courtyard of the dighouse. Additional shade from side glare was provided with sheets that were hung horizontally (see Figure 2.5).

(f) Most members were also tested in the NORTH shelter at the same time of day (around 2 pm) to provide a "control" condition. The NORTH shelter, a permanent shelter covered in plastic and muslin, had what I consider to be the best lighting on the site from an ergonomic perspective. With its soft, diffused light and virtually no glare, due to its fabric underskin, this shelter is also ideal for photography and conservation (Figure 24.16).

All told, about 50 members were tested, three times per session—left eye, right eye, and both eyes—and for an average of three sessions, approximately 450 times, using the Pelli-Robson contrast sensitivity (PRCS) test (Pelli et al. 1988). This test is a poster made up of triplets of letters that gradually change from black letters on white (high

Figure 24.14. Serdar Cengiz and Meral Atasagun take the Pelli-Robson contrast sensitivity (PRCS) test in the SOUTH Area under changing lighting conditions.

Figure 24.15. Flotation area. Katy Killackey takes PRCS test.

contrast) to very light gray letters on white (low contrast). Under controlled, clinical viewing conditions, this test is used to diagnose certain eye diseases and degrading contrast sensitivity in individuals (Figure 24.17).

Contrast sensitivity is a good marker for assessing vision in archaeology, due to the repetitive nature of the work. Prolonged periods of working under the same lighting conditions while looking at a similar color matrix leads to a desensitization to the stimulus through adaptation. In other words, people become less sensitive to subtle differences in the viewed material, whether under bright sunlight or shelter (Warner 2004).

The PRCS test takes less than five minutes to administer on both eyes. As I was testing individuals from English-speaking countries (U.K., U.S.A.) but also from Turkey, Poland, and Serbia, the test needed to be equally understandable by all test-takers.

Under exposed sun conditions, members were tested with their naked eyes several times per day. Members were also tested wearing one of two pairs of glasses. These glasses block 100 percent ultraviolet (UV) rays, dramatically reducing glare and a large amount of ambient light. One pair was tinted amber (warm), and the other was gray (cool). Members would wear the glasses for a minimum of 10

Figure 24.16. The NORTH shelter.

Figure 24.17. Pelli-Robson contrast sensitivity chart.

minutes to allow their eyes to adjust, and then the test was readministered (see Figure 24.10).

Members who worked under shelters, whether in the BACH shelter, the flotation, or the sorting area, were tested under normal working conditions, again at several times per day. Members who worked in exposed sun conditions (TP and SOUTH Areas) were tested under full sun as well as cloudy conditions, and also at several times during the workday (Figure 24.18).

Results

Preliminary results met commonsense expectations: members performed best when the viewing conditions were optimal for the test. Optimal viewing conditions varied from person to person, but all members benefited from the reduced glare and UV and ambient light protection provided by the glasses, in many cases significantly. Even when the member reported that it was apparently easier to see without the glasses—these particular pairs were quite dark and strongly tinted—they still performed the test better while wearing them, almost without exception.

The BACH tent appeared to be the least pleasant area in visual terms. Members consistently performed worse than when tested in the NORTH tent and as a group did not perform as well as other members who were tested under exposed, bright sun conditions. This is a result of the shelter, not the members' abilities, for many of the BACH members were tested outdoors and/or with the glasses and performed as well as anyone on-site. BACH team members consistently reported that it was "clearer" and "more comfortable" in the NORTH shelter than in the BACH tent. I attribute this both to the material of the tent (white plastic vs. muslin, which breaks up the ambient glare) and the open side flaps, which place a bright glare spot in the peripheral vision of people working in the tent.

In the TP Area, members generally performed well with the glasses and when tested in the NORTH shelter, and did worse under bright, exposed sun conditions. All members reported (not surprisingly) that it was more com-

Figure 24.18. Michael Ashley administers PRCS test to Ruth Tringham in the BACH tent.

fortable to work under the NORTH shelter than under the direct sun. Near the end of the season, a temporary shelter was constructed over the TP Area. All members of the TP team reported that it was easier to see under the temporary shelter, yet in spite of this, they consistently performed worse when tested under the shelter than under exposed conditions. As with the BACH tent, the side glare seems to have been the culprit.

In the SOUTH Area, members were tested under direct sun, with glasses and in mixed lighting to overcast conditions. As in the TP Area, members performed best with the glasses and the worst under flat, overcast conditions. Some members had strong preferences for one pair of glasses over the other, reporting a distinct favorite but not always for purely "visual" reasons. One member found that the amber glasses made her feel even "hotter" than normal, while another found the same pair made her feel more "happy." All members performed better with them than without them.

During the 2002 season, the flotation area was covered with a blue plastic tarp. In the past, the flotation area had been covered with a green plastic tarp, white cloth tarp, or not at all. Members of the flotation team were tested under the tarp, under direct sun, and with the glasses. All members performed better with the glasses under full sun than under the shelter. All members also performed better under full sun without glasses than under the shelter, but none would prefer to work without it.

The sorting area for heavy residue was located on the porch in the veranda, under shelter from the permanent awning. Sorting is a highly focused, repetitive task where performance is improved with experience. In the past, members of the sorting team would wear magnifying-glass headgear to help them see the small seeds and charcoal bits, but with practice all chose to forgo this tool and preferred their naked eyes. As a group, the sorting team (women) had outstanding contrast sensitivity when tested in the work area. There was quite a lot of side glare coming off the gravel floor of the compound, and when the sorting area was shrouded from this glare, the members performed exceptionally better on the test.

Exposed Visual Conditions at Çatalhöyük

The Konya Plain is an extremely bright place. Team members who work under the exposed sun complain regularly that it is difficult and sometimes impossible to discern archaeological features in these conditions. Glasses that reduce UV glare and provide higher contrast, especially if matched to the materials that are the subject of investigation, can only improve the visual experience for archaeologists. We know that prolonged exposure to harsh sunlight can lead to cataracts and macular degeneration (Warner 2004). And yet, there is an attitude toward wearing sunglasses in archaeology that prevents most people in the field from doing so. With a certain degree of machismo, my testing was met with exceptional skepticism until the glasses were put on and people were allowed to "see for themselves" the difference these "archaeo-specs" could make for their visual experience. It makes sense: human vision is best at much lower light levels than direct sunlight—closer to indoor lighting than even outdoor shade.

Sheltered Visual Conditions at Çatalhöyük

Shelters are another story altogether. Nobody I spoke with would prefer to work under exposed sun instead of a proper shelter, but the exception was the BACH tent. Many people complained that it was more difficult to see in the tent than in the direct sun, and the testing corroborated that sentiment. It seems that it is not merely that shelters are good and sun is bad, but the material, shape, and type of shelter are very important factors. Shelters that block side glare, provide even and soft lighting, and reduce UV are excellent.

The NORTH shelter is exemplary in all of these respects. Because archaeologists work in trenches, our eyes tend to be at surface level. Thus, shelters that provide only overhead coverage reduce the brutal contrast of the work area overall but do nothing to reduce side glare. The side glare is not only distracting, but exhausting as well. Members reported tired, dry eyes across the site, but in almost all cases found the lighting in the NORTH shelter to be comfortable, if not downright contemplative.

Implications

Moving beyond comfort, health, and safety, there are good reasons to improve the visual situation in archaeology. We tend to find what we are looking for, meaning that the research questions that drive our investigations into the past are the blinders we wear to keep us focused on the task at hand. But there simply is no excuse for not attempting to provide the best visual environment we can in fieldwork. Since a large component of archaeology is visual, we must consider our own capacities for seeing and do what we can to improve our practice whenever possible.

Hodder suggests that we need be "suspicious of our assumptions and sensitive to radical differences we find" as we think about the past (Hodder 2006a). Indeed, we need be cognizant of our assumptions in the present as well. My research demonstrates that different viewing environments have direct and sometimes deleterious impacts on our ability to see during fieldwork. While working under full shelter, partial shelter, or direct sun, and with or without protective eyewear, the myriad of viewing configurations transform not only our capacity to see but also our attitudes toward vision. In testing, the scene produced by wearing dark, bluish glasses reduced eyestrain, enhanced contrast sensitivity, and evoked a sense of coolness and relaxed emotion in the subject. A dirty, yellow tent shelter, no longer white due to years of dust and sun exposure, dramatically reduced contrast and increased visual fatigue (Backhaus et al. 1998), desensitizing the viewer to subtle shifts in color that would be easier to discern in bright sun while wearing appropriate glasses (Ashley 2004a).

Contrast sensitivity is the leading factor that defines how well we see and how well we can discern one object from another (Barten 1999). As we age, our contrast sensitivity is reduced and is more susceptible to the effects of glare and low-contrast lighting (Shapley and Lam 1993). Older viewers should be outperformed by younger viewers. Yet, the evidence from my testing points to the contrary: experience with seeing archaeology trumps the effects of age.

Subjects with the most visual experience performed better than their less-experienced, often younger counterparts. For example, one senior archaeologist tested under non-ideal low-contrast, high-glare conditions had greater contrast sensitivity than fellow excavators, and this was pre–cataract surgery. Local women from the nearby village of Kuçükköy, working on sorting heavy-residue deposits under ideal lighting conditions, performed the nonlinguistic contrast tests significantly better than any of the 50 subjects in over 400 tests. Something of significance is going on.

We are seeing evidence for neural plasticity in archaeological vision, an improvement of contrast sensitivity through training. As I've discussed, while it has been generally assumed that adults cannot overcome the visual programming that occurs in early childhood during the "critical period," relatively new advances in neurobiology are demonstrating that training can significantly improve our vision (Polat et al. 2004). Recent studies have demonstrated that visual training through video games may become a useful complement to typical interventions for eyesight improvement, such as glasses, contacts, or surgery (Li et al. 2009).

The implications for vision training on our treatment of past viewers is equally nontrivial. We speculate that the ancestors of Çatalhöyük ritualized construction of floors, hearths, and burial placement in order to teach the next generation about important daily practices and societal norms (Hodder 2006a). But what did the choices of plaster, wall colors, physical size of platforms, and the positioning of the hearth and roof hole teach people about "how" to see? How can a deeper working knowledge of vision, physiology, and psychophysics help us to understand what seeing was like for viewers of varying age and experience in the past?

Toward an Archaeology of Vision

As noted earlier, archaeology demands that its practicitioners employ their senses of sight, touch, and hearing—and sometimes smell and taste—during excavation, survey, and lab work. Yet our focus in archaeology on the material often makes it difficult to see the immaterial, the ephemeral, and the invisible. Can we reconstitute the past by studying physical remains that are out of the context of time and place without giving equal consideration to what is *not* left behind—namely, the people and the environmental conditions in which they lived and interacted?

"Seeing is already a creative operation, one that demands an effort," exclaimed artist Henri Matisse (Honour and Fleming 1995). Seeing happens not in the eye but in the brain of the observer (some might argue for a soul here). In vision-science terms, human vision is defined in terms of a relationship among the observer, objects, and viewing environments—people in places, looking at things. This relationship is indivisible; there is no way to factor out subject, object, or light and still be discussing vision.

An archaeology of vision calls for a shift in focus, a restructuring of the visual and invisible in order to make our interpretations meaningful. Clear definitions of the many relationships among viewer, viewed, and viewing environment are needed—what I call the "viewing triangle." By keeping these relationships multidimensional, we see that a study of vision in archaeology requires us to define what exactly we are looking at and for. Who is doing the looking? What are they looking at? Under what viewing conditions? It becomes readily apparent that it is we who are doing the looking, at present remains, under a very different visual situation than originally experienced by the observers in the past.

Myopia—Focusing on Sight at a Site

The real challenge for studying vision in archaeology comes in connecting the present viewing triangle with the past. Imagine our present viewing triangle as it articulates to the past viewing triangle as an hourglass in which the apex, where the two opposing triangles meet, forms the focal point of discussion (see Figure 24.19). If we remain cognizant of the fact that we are looking at present viewed objects under current conditions that are likely much different from those under which our subjects (past viewers) viewed them, it becomes clear how impossible it is for us to perceive the past viewed triangle in its entirety, no matter how hard we try. In archaeological research, we tend to take on one corner at a time, studying the palaeoenvironment (viewing), or the figurine found on the plaster floor (viewed), or the flexed juvenile burial wrapped with rope across arms and feet (viewer). We emphasize the material preferentially over the ephemeral, in part because the evidence is more secure and in part because, at the end of the day, archaeology is the study of past materiality. What is called for to study vision is a shift from a material-centered focus to a viewer-centered one, where we work to articulate present and past viewers, turn archaeological objects into subjects, and turn environments into places.

Present Viewing Triangle

We cannot escape the present moment. We must accept the fact that beyond the physical interaction of photons entering our eyes and causing cascades of activities in our retinas and brains, vision is memory. Vision is personal, subjective, and, ultimately, private to each of us. What we share in common as human viewers is our ability to communicate, to the best of our knowledge, what it is we think we are seeing right now and what we think we saw just a moment ago, last week, last year.

Past Viewing Triangle

While the viewing triangle may be well understood and definable, the triangle collapses rapidly if we dig too deeply beneath the surface of the observer. Vision is not just about the possibilities of what light may reach the eye, but what one chooses to see, either consciously or unconsciously. So much of visual processing occurs in the mind's eye and has little if nothing to do with the visual organ. Once the signals are pushed up the optic nerve, the human mind must decide how to articulate this information with what it knows about the visual world from memory and experience. As we decide unconsciously what to see, we are also choosing what to ignore. We may also consciously decide to ignore the scene completely by closing our eyes, averting our gaze, or staring into space. The point here is that it is not enough to define the viewing triangle if we want to have a meaningful discussion of human vision: we must peer into the minds of the viewers and ask what they might be looking at and why—and what they may be choosing *not* to see.

Çatalhöyük is famous for its architecture, spectacular wall paintings, profusion of in situ burials, and lack of evidence for doors and windows in houses. Incredibly, extensive analysis of the archaeological record can give us a sense of Neolithic life to within a seasonal time frame (Fairbairn, Asouti, et al. 2005). In fact, we now have sufficient evidence to go further and begin to define acts of seeing for individuals in human vision terms. Here are a few examples.

Hearths in houses are normally found associated with evidence of ladder scars on walls, as the smoke would need to exhaust through the roof hole that is assumed to have existed at the top of the ladder. This localized hole/hearth light source helps us to situate past viewers in time and place, evidenced by the disproportionately higher distribution of worked materials—flaked stone and bone, faunal and floral remains—found near the hearth and stair (Chapter 5; Andrews et al. 2005; Hodder and Cessford 2004). Inhabitants needed light to work by, and there is evidence they spent sufficient time near this spot to produce smoke damage on ribs (carbon buildup on rib bones), especially in older people (Chapter 13; Andrews et al. 2005; Hodder and Cessford 2004), like the layers of soot on the plaster walls (Matthews 2005b). The Çatalhöyük inhabitants made their fires with wood of all sorts (over 24 species identified) and animal dung (Asouti 2005b; Asouti et al. 1999). Heavy exposure to wood and dung smoke has been shown to be an important risk factor in age-dependent cataracts generally, and eye irritation especially in women (Saha et al. 2005).

Micromorphological evidence suggests that soot accumulates on plaster walls only in some winter months, and hearths were likely used on roofs in the rest of the year when days were longer and warmer (Andrews et al. 2005). Episodes of wall and floor replastering took place seasonally, sometimes hundreds of times throughout the lifetime of a house (Matthews 2005b). Certain walls were painted white or red, with bright white plastered floors on the ends of the houses farthest from the hearth and roof opening.

It makes practical sense that wall paintings would be typically located away from the hearth/hole, in order to protect them from smoke and light damage. Under the flickering hearth light, the distance would also allow for a greater appreciation of the depictions, a wider view. Red wall paintings on white walls would appear in high contrast, transformed to black or dark red under firelight, due to a visual phenomenon called the Purkinje effect (Frisby 1980). Moreover, painting entire walls red would actually make seeing easier in low-light conditions and rooms appear to be brighter, due to a lower impact on night vision (dark adaptation) of red reflected light vs. white reflected light (Osterberg 1935).

Hourglass

As we look closely at the relationships among persons, places, and things archaeologically, it becomes clear that we are actually interacting with two different sets of visual situations—the present and the past, the now and the archaeological. In each case, there is a viewer, something to be viewed, and the environment in which the viewing occurs. An archaeology of vision must find a set of approaches to accommodate the complex relationship between these two seemingly isolated worlds.

I prefer to think of the relationship between these two visual worlds as occurring at the apex of an hourglass, where the alignment of viewing maintains the multi-dimensionality of the past and present viewing situations. For example, when the present-day archaeologist is excavating, she or he is actively engaging with the materials of the past in an environment that is completely alien to its original viewing context, the present day. The focus of the investigation is present/viewer – past/viewed; the environment and the viewer in the past are secondary to the task at hand—namely, articulating the object (Figure 24.19).

How one defines the viewing relationship between present and past clarifies and personalizes the constituents in the scene and yields a starting point where meaningful dialogue can occur. For example, from the perspective of a present viewer, I may look at an object sitting on the floor of the excavated trench and attempt to puzzle out its reason for being there, before lifting, bagging, and tagging it. The role of the object in this context is past viewed, for, through archaeological inquiry, I am trying to articulate its situation in the past, in its original context. I must look beyond the present archaeological one in which the object now rests.

Articulating the Hourglass

Rotating either the present or past viewed triangles, we can articulate nine contexts, each with a particular focus. Combined, they form the four-dimensional hourglass that embodies an archaeology of vision. The articulations provide us with a metaphor in which to think about our relationship to the past viewed triangle in its entirety, as an object of investigation that maintains its complexity. It clarifies what exactly we are looking at and is a useful model for digging under the iceberg of subjectivity without pretending to replace the present viewed set with the past. After three years

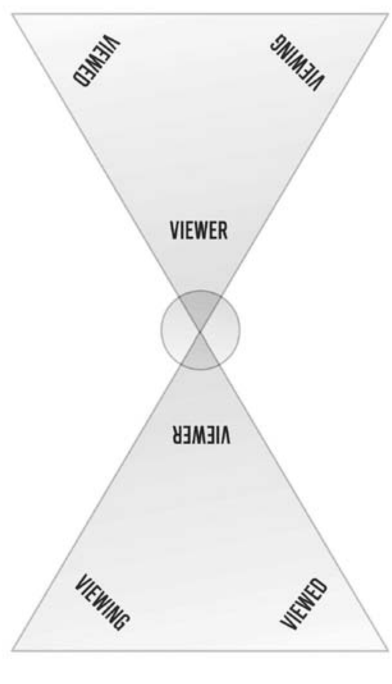

Figure 24.19. Hourglass of an archaeology of vision.

of thinking about it, I still feel as if I am only beginning to see possibilities, so what I offer here are some initial thoughts on what I believe is becoming a lifelong pursuit.

Present Viewer/Past Viewed—Archaeological Fieldwork

Archaeology is an attempt to understand situations in the past by studying material objects in their present archaeological context. There is no direct connection between the past viewed objects and the objects we find in the ground. The past viewed objects ceased to exist when they became archaeological, falling out of memory for the past viewers. As we dig out the object from the earth, we attempt to define it, not as a present viewed object but as a past viewed thing. We do this by carefully thinking about the context in which it is found, by investigating its surrounding soil matrix, and reconstructing the archaeological and natural processes that have brought it to this moment, perhaps thousands of years after it was last seen by human eyes. This is the moment that is so exciting for many archaeologists, the moment of "discovery" or, at least, of unveiling (see Figure 3.10).

Present Viewed/Past Viewed—Archaeological Imagination

Viewing a past viewed object as it was, but in the present, requires interpretation. In our reconstruction, augmentation, illustration, or modeling, we imagine the object as it was, tacking between the archaeological (present viewed) and some ideal. In our hands or on the table is a present viewed object, but the job of the illustrator or interpreter is to provide us with a view of the object as it was, in the context of the past viewing triangle. Often this is done without attempting to reconstruct the past viewed environment or in consideration of the past viewer. Put the object on a black background and look at it as it was. Put back on the head that is missing from the figurine, the color that is missing from the wall, the flesh that is missing from the burial. All of these processes require imagination. We feed our imagination with the evidence of archaeology, ethnography, history, and human experience.

Present Viewing /Past Viewed—Archaeological Context

If we turn our attention to our current viewing situation in the field, we can look at the past viewed objects in terms of the present archaeological situation. We may consider issues of conservation for the materials and ergonomics for the field researchers. What is the present viewing environment? How does it affect our potential for envisioning the past? We stand in a shelter in the year 2004 and look down at a Neolithic platform and see the object for what it is, a past viewed thing in a present viewing environment. The shelter provides protection from the sun but does little to help us see the object or the house as it may have been viewed in the past. To do this, we need to work on bridging the gap between the present and past viewing conditions.

Present Viewer/Past Viewer—Who Is the Past Viewer?

Who is the past viewer? Where are they? Could they have been standing where you are, in the same spot, looking northwest at the corner of Building 3? How tall are they, how old are they, woman or man or child, color-blind, blind, nearsighted, hyperopic? What would they see if they stood where you stand? What are they really looking at? Would they give such careful scrutiny to the individual layers of red and white painted plaster as you are? Would they see a forest or a tree? The hourglass of archaeological vision prevents us from ignoring the past viewer, but I will not advocate a phenomenological exercise of putting ourselves into the mind's eye of past viewers. Instead, I think it is useful to enter into conversations with our proposed past viewers in much the same way we enter into discussions with our friends and colleagues in the present. Ask this person, what are you looking at? What do you see? What is important to you about this room? How do you feel as a viewer? I cannot know what you see unless you tell me. Archaeologically, we are at a loss when it comes to the past viewers, for they are dead, defleshed, and in the case of the Neolithic at Çatalhöyük, they have left us few clues to work with about who they were as viewers.

Present Viewed/Past Viewer—What Is the Viewer Looking At?

Where do we go for lines of evidence or sources for our archaeological imagination when it comes to the broken relationship between the present viewed situation and the past viewer? We seek guidance from analogy, ethnoarchaeology, and experimentation (Figure 24.20). We invite guests to our site and hope they will tell us what we should look at, what the past viewer would choose to see. They look past the archaeological and see the scene as it was or, at least, as they envision it might have been. We take careful notes or listen thoughtfully, hanging on each word in hope that some spark will kindle in us a new way of seeing the past. We must always remember that the past viewer does not exist except in memory, even if the witness is alive, for the present viewed is not the past. Present viewers look at the present viewed and try to remember it as it was, but their envisioning is agglutinated, a hybrid of their new observations and their past remembrances.

Archaeological excavations begin with the situation as it is, and then as time goes forward, we dig up the past and try to bring the material world into focus as it was. In other words, the more we excavate, the more the arrow of time proceeds, the closer we are getting to seeing the present viewed through the filter of the past viewer. This remains for me one of the most profound realities of archaeological fieldwork. Through this curtain, we look forward to the past.

Present Viewing/Past Viewer—Where Is the Viewer?

Many assumptions about the viewer have to be made—position (standing, kneeling, sitting, slouching, leaning), size (grown adult, child), visual function (healthy binocular vision or defective), to name a few. By envisioning the past viewer moving through the present archaeological context, we can constrain the possibilities of what might have been possible to see. The present viewing environment reminds us that we are corporeal, that the past viewers were people with bodies and eyes and did not have X-ray vision and were not that different from us. By studying the present viewing environment from the perspective of a past viewer, we can start to look at the archaeological context as a place bound by physical walls and space. We see that there are spots in the room where the light from a fire installation cannot reach, dark corners or brightly lit platforms. The material remains of the present viewing environment are a guide to thinking about the past as a real place.

Present Viewer/Past Viewing—What Was the Viewing Environment?

Before we can envision what was seeable in the past, we need to conceptualize what the past viewing environment was like. On the exterior, what was the palaeoecology? Using viewshed analysis and making assumptions about the topography as it was, we can begin to construct the viewing conditions on a macro-scale. Moving inside the dwellings, we need to reconstruct the visual environment as fully as possible—light sources, wall heights and colors, reflective or dull surfaces, seasonality, day vs. night, glare and blind spots. Once the built environment is in place in our imagination, we can move through this world and envision what past viewed objects may have looked like—to us.

There is a reason why archaeological reconstructions are not compelling to me, no matter how realistic they may be drawn or animated. There is no way to escape the fact that we are present viewers looking at the past viewing environment in the now. The focus on reconstituting a past viewing environment moves us no closer to empathizing with the people who populated the world we reconstruct. We need to be mindful of the fact that what we are creating when we envision the past viewing environment is only one corner of the triangle. We need to remind our audiences of this fact, especially as our technologies move us toward the hyperrealism of Hollywood.

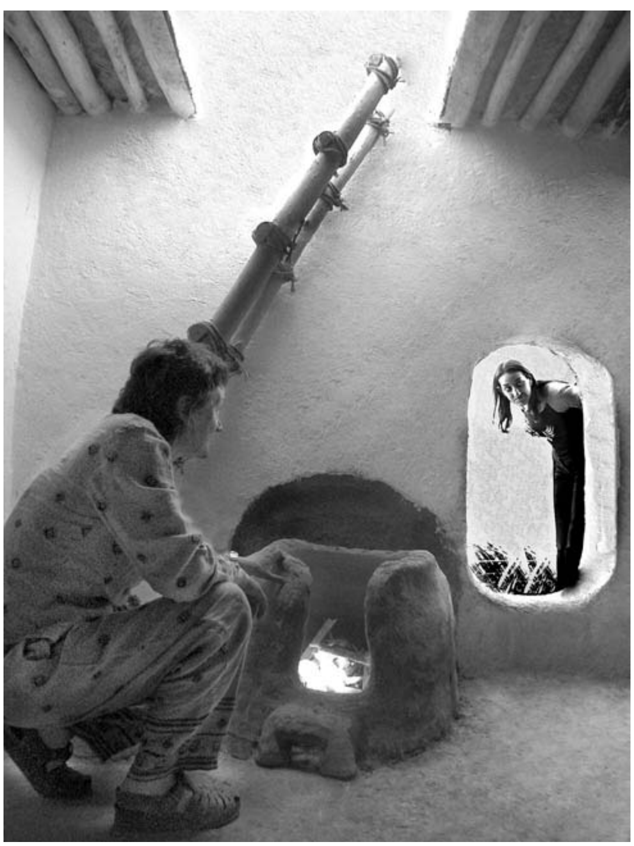

Figure 24.20. Mirjana Stevanović lights the first fire in the Replica House. Meltem Ağcabay peers inside.

Present Viewed/Past Viewing—Environmental Context

Take the perspective of objects in their archaeological context, as we found them. Build up the past environment and you have a museum, a diorama, a juxtaposition of past and present. This is a valuable view, for it provides a framework for the archaeological imagination, without filling in the picture entirely. The objects are viewed as they are, our imaginations visualize them as they might have been. Leaving the bits and heads and skin off of the things we find gives the audience a chance to push their own perspectives of the past into center stage. We provide them and ourselves the opportunity to engage with past viewers in conversation about what the object might have looked like in this place, a past viewing environment. Practically speaking, there are many ways to attempt this, from experimental archaeological reconstruction to simple lighting tricks and photography. I find the possibilities of creating past viewing environments far more interesting than trying to reconstruct past viewed objects in the present viewed world of black velvet or museum boxes.

Present Viewing/Past Viewing—Augmented and Virtual Reality

In many ways, the great lesson for all of us is the stark difference between present and past viewing environments. It is hard to fathom why we do so little to augment the present viewing situation of archaeological fieldwork, if for no other reason than ergonomics or health and safety. We do it for the tourists but we seldom do it for ourselves. Remaining vigilant about the disparities of these two worlds is crucial if we want to get any closer to understanding vision in the past.

The Holy Grail of computer reconstruction is something like the Halo-Deck of *Star Trek: The Next Generation*. The attempt is to make a place so real that when we step into it, we are transported into another world, be it the present viewed world of the Serengeti or a past viewed place like Çatalhöyük (Figure 24.21). But real to whom, us or idealized past viewers? Better to be honest with ourselves and our audiences and accept our fate. While it is fun to dream about the world as it once was, I think it is dangerous and dishonest to try to approach visualizing the past from the perspective that the more realistic you make it look, the closer we get to actually reconstructing the past viewing environment in the present. Alan Chalmers is leading extremely novel work at the Warwick labs in the United Kingdom in the development of "there reality," producing multidimensional experiences that are based on the empirical evidence of the past, as experienced through human vision (Chalmers 2009).

However, I think that there is merit in experimenting with augmenting our present viewing environment with conjectured past viewing environments. The juxtaposition of present and past can feed our archaeological imaginations viscerally in ways that reconstructing past viewed objects or dabbling in palaeopsychology cannot. I long for a day when a visitor can come to Çatalhöyük, walk into the SOUTH shelter, and participate in a thought experiment with other present viewers as we blot out the Anatolian sun, darken the shelter walls, relight the fire installations

Figure 24.21. Çatalhöyük model on Okapi Island in Second Life.

in Building 17, and imagine what this place might have looked like 9,000 years ago (Figure 24.20).

INTERSTITIAL: ENVISIONING A VIEWER-CENTERED ARCHAEOLOGY

> I've seen things you people wouldn't believe. . . . All those moments will be lost in time, like tears in the rain. . . . Time to die. (Batty to Deckard in *Bladerunner*) (Fancher 1981)

"You should have been here yesterday," Jason Quinlan told me. "They moved the tent. And yes, of course, I took lots of pictures." One of the "permanent" shelters, the so-called BACH tent, had been dismantled and relocated to another spot on the mound (Figure 24.22). For seven years almost to the day (it is now 2004), the tent, a large rectangular structure made of aluminum framing and white plastic, stood vigilantly on the top of the northern summit of the East Mound. With its removal came the reflection that, prior to 1993, the mound lay naked as a naturalistic landmark. Looking to the north while standing just south of where the tent was, the village of Kuçükköy, the home of many of the local workers, was clearly visible from the top of the mound. This meant that the mound was clearly visible from the village. The BACH tent removed, now you could see the 4040 Area, covered with its semipermanent shroud. This off-white tapestry would also be removed—is removed by now—put to bed for the winter, leaving in its stead the exposed skeleton of steel beams and posts demarcating the section excavated this (2004) season. Upon closer observation, you could see the sugar sacks, the çuval, carefully placed as backfill to protect the buildings underneath from the harsh weather to come[1] (see Figure 1.8).

The filled spot to the north, where the BACH tent had been, now a rectangular patch of grayish brown soil, was silent and dead. Building 3 was razed—memories, photographs, video, drawings, diaries, logsheets, were all that remained. The inhabitants of Building 3 were safely tucked away in boxes in the crate depot, waiting to be studied by the human remains team, perhaps as early as the next (2005) season. It was strange to stand here and look at nothing, remembering the something that was the BACH tent and all of the activities that bustled beneath its plastic canopy (Figures 1.8, 1.9). Looking to the south, you could see the tent in its new home over the TP Area (Figure 24.22). The team from Poznan would be jubilant, I was sure, for they had worked the last three years under shanty-shelters or no shelter at all.

I looked back down, scratched the earth with my sandaled foot, and allowed a bit of emotion to creep into my chest. Witness the present viewing triangle and accept its fate. The "last house on the hill" was no more, but Ruth told me that in 1996, as she stood in that same spot and tried to ground-truth the surface scraping diagram, searching the soil for the edges of Spaces 86–89, she could hardly make out the tops of the walls that she would spend the excavating. Now it was 2004 and the plaster walls weren't there to find, but the mound had been restored somewhat to its pre-1997 state, at least visually. I could put up my left hand and block out the shelter to the west that covered Building 5 and imagine Ruth as she planned her excavation strategy. I could close my eyes and remember my own memories of the red wall, or swinging from the rafters on ropes for yet another aerial photo, or listening to the Chemical Brothers with Jason at lunchtime as we "digiplanned" the northern face of the south wall of Space 201 for the

Figure 24.22. The BACH tent in its final resting place over the TP Area before it was blown off the mound and dismantled.

[1] This is the new permanent NORTH shelter put up in 2008.

nth time. Mostly, I thought about the people who called Building 3 their home, and I hoped that our work here was worth the disturbance we caused when we decided to eviscerate this house in order to understand its history. I believe that in the end it will be.

Future Directions for Research

In the years since I originally wrote this, we have seen imaging techniques enter into our field that had been available only to computer scientists or to movie studios with large budgets. Digital flash X-ray, for example, a technology that can freeze a bullet in flight at the point of impact, holds exceptional promise for emergency rooms. Imagine a small, handheld device that can be passed over a potentially broken arm and show us instantly if there is a fracture or a sprain. The technology that is now being used to assess the explosive impact of munitions for the Department of Defense could be used for subsurface reconnaissance in archaeology, giving us an opportunity to see burials underneath platforms in situ, before excavation. Combined with advanced imaging software, 3D representations of the burials can be created, much like 3D CT scans are produced for medical research today.

The same techniques used for creating the exceptional photorealism in movies such as *The Matrix* are now available to archaeologists, architects, and documenters of heritage at a fraction of the cost. Researchers at the Catholic University in Leuven, Belgium, have devised software that can auto-rectify uncalibrated digital photographs taken without tripod, scale, or bubble level. The result is a three-dimensional model complete with high-resolution textures with remarkable accuracy (Van Gool et al. 2004). The potential for this technique is incredible, especially for recording excavations as they happen, in real time. With as few as six pictures per series, the process of excavation could be recorded in 3D, slices of time peeled back or reskinned, giving us textural imaging that is spatially located and far more useful than still, two-dimensional photographs alone.

More recently, a company called Cultural Heritage Imaging and international colleagues have led huge breakthroughs in reflection transformation imaging (RTI), which produces results with no data loss from shadows and specular highlights, and high-resolution sample densities up to 20,500 per square millimeter (Mudge et al. 2007). These *digital surrogates* can be relit from any angle and are spectacular representations of reality (Mudge et al. 2006) (Figure 24.23).

It is not hard to imagine how subsurface and advanced imaging techniques such as these will affect archaeological recording strategies, but I see them also as two ends of a spectrum for a viewer-centered archaeology. Subsurface technologies will never replace excavation, but if the grain of resolution were fine enough to give us a clear picture of what lay below a platform before we cut it open, and we were to combine this view with photorealistic imagery of the platform itself, I could imagine developing holistic juxtapositions that could push us a bit further under the iceberg of the past viewed triangle. I long for a day when we can make decisions about excavating a feature that are based on our research questions only and not on conjecture about what may lie beneath the surface. But more profoundly, I would like to see our field pushed into facing alternatives to excavation techniques such as these make us think about.

The future for the ergonomics of archaeological vision is bright indeed. There is much room for improvement, starting with getting archaeologists to give up their macho attitudes about sunglasses and shelters. If improved vision and more comfortable viewing experiences are not incentive enough, I hope that raising awareness about cataracts and age-related macular degeneration will raise eyebrows and open minds in our field. I am excited to see the attention being given to shelter design at Çatalhöyük and hope to see future shelters that are not only good for archaeological conservation but for our eyes as well. So long as I am part of the project, I will remain vigilant about vision and push for its sensible consideration, both in the present and the past.

I have a newfound exuberance for an archaeology of vision, or more specifically, for a viewer-centered archaeology. I do not consider the hourglass metaphor for vision to be novel, new, or particularly innovative. On the contrary,

Figure 24.23. Reflectance transformation image (RTI) of goat petroglyph, Parque Archeologico do Vale do Coa.

Figure 24.24. Double rainbow over Çatalhöyük East Mound.

I see it as a tool for structuring archaeological research that is already implicit in what we do. By unfolding our thinking from the myopic, point-specific, and materially driven, object-oriented way we normally conduct business to one with a viewer-centered sensibility, we would likely find an archaeology that is not only more human, but more interesting. A viewer-centered archaeology is one that keeps us from losing sight of the fact that while archaeology may be the "scientific study of ancient cultures through the examination of their material remains," it is indeed our most vital way of looking for past viewers and what it means to be human (Figure 24.24).

Chapter 25

The Public Face of Archaeology at Çatalhöyük

Ruth Tringham

There is a large body of literature already available on the preservation, conservation, management, interpretation, and presentation of prehistoric places as part of global, national, and regional heritage and as a means of incorporating the broader public into the enterprise, beyond the professional discourse. Beyond reference to a couple of my current favorite studies on this huge and important topic (Bender and Winer 2001; Fowler 2004; Herzfeld 1991; Lowenthal 1998; Smith 2006), I will not launch into a discussion of the broader issues. My purpose in this chapter is to set the efforts that we have taken to give the BACH project a public face within the context of some of the work of the Çatalhöyük Research Project, which itself is set in the broader enterprise of cultural heritage and public archaeology (Bartu 2000; Bartu-Candan 2005; Hodder 1998; Hodder and Doughty 2007; Shankland 2005).

The Broader Context of Presenting Çatalhöyük to the Public

Public Archaeology or Cultural Heritage?

The Society for American Archaeology (SAA) has created a section of their website for a project entitled "Archaeology for the Public,"[1] which is designed for both "the public" and professional archaeologists. The project is focused on "public archaeology" as an ambiguous umbrella that covers such broadly defined topics as Community Archaeology, Heritage, Public Education, Politics and Archaeology, Media and Archaeology, Performance, Museums, Tourism, Civic Engagement, and Cultural Resource Management. They are quick to point out, however, that "much recent conversation about public archaeological practice reveals a certain ambiguity about what the term 'public archaeology' means." For example, some cultural resource management (CRM) professionals see "public archaeology" as a subset of their activities, rather than the other way around, as suggested by the SAA.

The SAA makes two other important points. One of these is that there are different national and regional styles of doing what they call "public archaeology." The term "cultural heritage" has been broadly used in the United Kingdom and Europe, as well as in Australia, to the exclusion of such terms as "cultural resource management" and "public archaeology." This difference in terminology is more than a transatlantic or transpacific whim of nomenclature; it actually points to some significant differences in attitude toward, and expectations of, the past and past places, as well as of their management and the organization of work. Recently the idea of "cultural heritage" has begun to make its way into mainstream U.S. public archaeology through issues of descendant involvement, ethics of cultural property, and cultural tourism associated with global heritage.

The other point made in the SAA project is that, in spite of the ambiguity inherent in its definition, "public archaeology," like "cultural heritage" in Europe, has (for the most part) gone far beyond practical considerations of how to engage the public. Management and interpretive plans of past places and landscapes are based now on theoretical and comparative studies of their long- and short-term implications for social, political, educational, and economic change at multiple scales.

A recent (2008) discussion on the World Archaeological Congress (WAC) on-line forum has focused on the definition of "cultural heritage." The discussion thread started with a cry of need from anti-evolutionist and author of *Forbidden Archeology*, Michael Cremo, for a "comprehensive statement or definition" of cultural heritage. There was a surprisingly energetic and well-thought-out response from a number of WAC members around the world. Many

[1] *http://www.saa.org/public/home/home.html* (accessed 5 September 2011).

of the writers were reluctant—for different reasons—to offer a fixed definition, perhaps best represented by Carol McDavid (2002), and echoing her earlier definitions.

> It strikes me that all such "definitions" are (and should be) contingent, context-sensitive, and fluid. Trying to nail down what cultural heritage "is" is totally beside the point and ultimately self-defeating. Instead I think we should focus on understanding how "it" works in whatever historically/culturally situated set of circumstances we find ourselves in. Only then will "it" have any meaning to the stakeholders who count. (Carol McDavid, WAC list email communication, Nov. 2008)

Recently, the issue of defining heritage has been enriched by the idea that heritage can be divided into tangible and intangible heritage. The idea of intangible heritage, as recommended in the recently (October 2008) internationally ratified ICOMOS Ename Charter for the Interpretation and Presentation of Cultural Heritage Sites, includes a site's "cultural and spiritual traditions, stories, music, dance, theater, literature, visual arts, local customs and culinary heritage."[2] The charter—perhaps for the first time in the institutional context of heritage management—recommended that such intangible elements should be considered in a site's interpretation.

The WAC list discussion and a survey of the literature on paper and on the Web reveal that, among the many strands of the definition of cultural heritage, there are two important—and contrasting—sets of value systems. These are also identified by Laurajane Smith in her book, *The Uses of Heritage* (2006) as the traditional or "The Authorized Heritage Discourse" (AHD), on the one hand, and a practice-based discourse of heritage, on the other. She begins her book by drawing attention to the hegemony of the traditional discourse based on a commonsense identification of "heritage as 'old', monumental, grand, and aesthetically pleasing sites, buildings, places and artifacts" (Smith 2006:11).

Smith (2006) refers to AHD, quite critically, as an idea of "heritage" that

- Promotes a set of Western elite values as universally applicable;
- Privileges monumentality and a large spatial scale of interpretation;
- Privileges the "naturalization" of the site- and artifact-centered nature of heritage;
- Privileges time depth (origins) and uniqueness;
- Takes its cue from technical expertise and aesthetic expert judgment;
- Takes its interpretive cue from the grand narratives of nation, class, and globalization;
- Privileges fixed social consensus and permanence of an authoritative interpretation;
- Is institutionalized in state agencies (global and regional) which define its priorities as management, conservation, and visitation (tourism), rather than the interpretive process;
- Creates an economic resource out of the Other;
- And, most importantly, obscures social and cultural practices of heritage at work.

The other half of Smith's (2006) volume constructs an alternative heritage discourse that seems more in line with many of the comments on the World Archaeological Congress forum and is very different from that described above as AHD. According to this discourse, heritage is cultural *practice* involved in the construction and regulation of a set of values and understandings. However many ways heritage can be meaningful—through memory (real or imagined, communal or individual), emotions, or identity construction—it always results in practice. Thus, heritage is about much more than objects and sites and landscapes, although these play a role in creating the contexts of practice; it is about the cultural and social processes and performances of management, conservation/preservation, interpretation, and commemoration.

The Ename Heritage Center has suggested that

> the intellectual frame of reference will soon no longer be exclusively determined by the West. Heritage not only relates a community to its past, it also determines a community's relationship toward the other. Therefore, heritage helps in reflecting about who we are and about how we should go about in a person to person relationship within the context of a globalised world.[3]

Laurajane Smith takes this argument into a much more radical realm by suggesting that "we are actually engaging with a set of values and meanings (emotions, memories, cultural knowledge and experiences, identities [what she and social geographers refer to as "affects"]) that are symbolized and represented at heritage sites by cultural practices" (Smith 2006:56). Following Smith's logic, all heritage is inherently intangible and ephemeral, since practice and "affect" themselves are ephemeral phenomena. Their representation may be tangible or intangible.

The Sustainability of Cultural Heritage

Since I am starting from the premise in this chapter that heritage comprises social and political practice, it is im-

[2] *http://www.enamecharter.org/index.html* (accessed 5 September 2011).

[3] Ename Center: Heritage in the World of Today: *http://www.enamecenter.org/en/en/info/heritage-today* (accessed 5 September 2011).

portant to think through the social and political context of Çatalhöyük as a heritage place. Such a discussion is not only about strategies of heritage management, interpretation, and presentation, but also about where the heritage at Çatalhöyük stands in terms of accessibility to global or regional funds. Is it a funding priority? How could it become a funding priority? Obviously, these important questions are a little beyond the scope of this volume. However, there are issues that have relevance to the strategies that were chosen in creating the public face of the BACH project. One of these is the issue of sustainability.

The "sustainability of heritage," whether tangible, intangible, or digital, has become a common buzzword in the twenty-first century in funding proposals and websites of the heritage industry.[4] Common use of the term "sustainability" began with the 1987 publication of the United Nations World Commission on Environment and Development report, "Our Common Future," known as The Brundtland Report. Its most memorable quote is the definition of sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." This concept of sustainability marries two important themes: that stewardship of the environment does not preclude economic development, and that economic development must be ecologically viable now and in the long run.

There are two intertwining issues in this discussion of sustainability that need to be discussed. One is the issue of what, in heritage, counts as a renewable resource, and what is nonrenewable. There is almost a consensus that the physical context and symbols of heritage—historic buildings, archaeological sites, and artifacts—are nonrenewable. They are most at risk and in need of efforts to prevent their disappearance.

The second related issue is longevity of heritage. For many, the term "sustainability" is synonymous with "longevity." Longevity—prolonging the life—in this case, of a building, a place, or an artifact—is indeed achieved through sustainable strategies of development. However, not all aims at longevity in heritage practice have used sustainable strategies. For example, a strategy of irreversible preservation, such as setting Stonehenge in concrete, is probably the least viable in terms of sustainability. Moreover, its longevity is an illusion. As the Ename/ICOMOS Charter for the Interpretation and Presentation of Cultural Heritage Sites has mentioned, the values and meaning of places and their history are not guaranteed to last forever. In their concrete bedding, the stones of Stonehenge may last for many generations. But their meaning and value will certainly change, so that the stones may drop into oblivion or—heaven forbid—be uprooted!

To achieve sustainable longevity, a heritage place needs to be designed, managed, and presented in a way that promises flexibility in meeting the challenge of changing social and cultural trends, values, and practices. Longevity is not, in fact, achieved by irreversibly preserving a place or a tradition, or locking it away in a museum or digital vault, but by bringing the idea and its tangible, intangible, and/or digital manifestation into everyday practice, so that the place or the digital document can be accessed, visited, used, and built upon (metaphorically) by many generations in the future. Digital databases, on-line, however beautiful or well organized, are not sustainable if they cannot be easily accessed and made the users' own, easy to search, easy to download, and easy to mix into whatever creative knowledge-making is in process. In the same way, a heritage place is only sustainable if it exists not only in the minds of users but is also possible to visit, to make meaning through practice, and to engage in acts of multisensorial performance.

What, then, are the challenges to sustainability (and longevity) of heritage, whether represented virtually or in the "real" world? What sparks a response to set some stones in concrete? The greatest of these are, I believe, entropy and ephemerality. By the principles of entropy—the second law of thermodynamics—a system will experience an inevitable loss of energy and disintegrate unless it is renewed or replaced. This applies most obviously to buildings, landscapes, and living organisms—the food of archaeology. But human minds and objects of investigation are subject to the same process by the entropy of the experts (that is, meaning provided by experts lasts only as long as the experts or their publications) and the trends that drive the media and popular culture, especially in Western cultural practice.

In addition, intangible heritage (which, according to Smith, *is* heritage—that is, the meaning, performance, and practice of heritage) is inherently ephemeral, which makes it particularly hard to grasp, document, and transform into a sustainable form. Likewise, even objects of investigation and values are relatively ephemeral. For example, in the 1970s–1990s the main risk to heritage was perceived as being industrial and urban development, whereas in the twenty-first century, it is perceived to be from climate change.

Responses to challenges of sustainability and longevity have depended on the cultural practices and attitudes that deal with the past and history. These are what determine the priorities as well as the strategies to sustain or destroy heritage and the past. We tend to forget that decisions relating to the past are not a modern phenomenon, but have

[4] For example, the theme of the 9th VAST International Symposium on Virtual Reality, Archaeology, and Cultural Heritage in Braga, Portugal, 2008, was "Towards Sustainability: Integrated Technological Practices for Human Heritage and Cultural Memory."

been around for thousands of years. In fact, much of the recent investigation of prehistoric and ancient places has been about the continuity and memory of place and the house through multiple generations (Hodder and Cessford 2004; Tringham 2000a). Settlement mounds, such as the East Mound at Çatalhöyük, have accumulated because of practices in which new houses were built using the foundations of old, in some cases spanning several hundred years, to the extent that Ian Hodder has started to use the term "history or ancestral house" for such houses of long duration (Hodder 2006a:141). Mirjana Stevanović and I have contrasted this strategy for preserving a sense of continuity with that practiced in the Southeast European Neolithic, the latter involving the use of fire and deliberate burning of houses to create a permanent marker on the landscape (Stevanović and Tringham 1998; Tringham 2000a, 2005).

The "null strategy" is to destroy all signs of the past, as a prelude to rewriting history (ethnic cleansing, destruction of languages and belief systems) or to make room for new development, as noted in Douglas Porteous's concept of "domicide" (Porteous and Smith 2001). We are always reminded that archaeological excavation is a form of destruction of heritage, although ironically its aim is to create knowledge about the past. Without detailed documentation, it would indeed be destructive. Archaeology's current format of documentation—including that of the BACH project—is predominantly digital (Chapter 3). Thus, although the cleansing of digital servers and drives may seem less political than the destruction of tangible or intangible heritage, it can result in equally devastating destruction of past heritage and knowledge.

Just as there are subtle but important distinctions between sustainability and longevity, the distinction between the strategies of "preservation" and "conservation" is significant. The preservation of a building, a landscape, or a traditional practice has the idea of fixing or freezing the process of entropy at a certain point to prevent further decay. Fixing Stonehenge in concrete is a classic example of this; preserving Australian aboriginal rock paintings while denying access to them by the descendants of the original painters (Smith 2006:54) is another. There are examples of preserving traditional places to act as tourist destinations, and even attempts to freeze a language in the face of attempts to change it. Digital preservation, in this same sense of preventing change to the integrity of the original, is frequently the aim of locking data into an inaccessible vault with their authenticity protected by "all rights reserved" copyright.

Conservation is the most inclusive of the strategies and can be seen as the overall process of caring for the natural and/or cultural significance of a place. It may, according to circumstance, include a site's maintenance, repair, restoration, rebuilding, reconstruction, preservation, and use, commonly a combination of more than one of these. However, the significance of conservation as a strategy of sustainability is that it includes various strategies to lift the place of the past into relevance for the social practice of the present, including designing with flexibility to sustain that relevance into the future. These are the same strategies that keep digital data alive and usable for the long term, including repurposing, recontextualizing, remixing, and recycling for and by the local, regional, and global community.[5]

STRATEGIES OF GOOD PRACTICE AND SUSTAINABILITY

Digital Documentation Leads in Sustainability for the Long-Term

Michael Ashley has recently drawn attention to a parallel concern with longevity and sustainability with regard to digital knowledge and digital heritage (Ashley 2008b; see also Chapter 3). Digital documents and heritage are subject to the same kind of peril as heritage in the world outside the computer: that is, being forgotten and becoming part of the archaeological record. Ashley (2008b) stresses the need to preserve not only the physical media of digital data, but also their meaning, and—an often disregarded step of conservation strategies—the processes and practices through which the digital product was originally created, including all the steps in its modification since its initial creation. These efforts need to be designed not just for a future of 100 years, but of 10,000 years. We should not forget that an ever-increasing portion of our documentation of heritage places, their management and meaningfulness, is in a digital format (for example, the documentation of the BACH project as described in Chapter 3, this volume).

Digital (Not Necessarily Virtual) Heritage

"Digital (not necessarily virtual) heritage" is an inclusive term that embraces the digital representation of heritage (photographs, videos, as well as immersive 3D models of heritage places, and virtual worlds such as Second Life), digital surrogates of heritage (analyzable data such as geographic information systems [GIS] and reflectance transformation imaging [RTI]),[6] and other formats of digitized

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[5] The heritage industry leans toward a mixed conservation strategy. For example, the Center for Sustainable Heritage designs "sustainable strategies for conservation and re-use of 'tangible' heritage and re-focuses the balance between traditional preservation and conservation approaches and use." Kars (Global Heritage Fund movie): *http://www.youtube.com/watch?v=CUgxRIQStUY* (accessed 5 September 2011).

[6] *http://www.culturalheritageimaging.org* (accessed 5 September 2011).

heritage knowledge, including databases and digital libraries and their public interfaces. Digital technologies go far beyond the representation and storage of information about the tangible of "traditional AHD heritage"; they enable the "capture" of much of what is traditionally regarded as intangible, through the documentation of processes, practices, performances, and affects of heritage, and are thus important in the expression of Smith's "post-AHD" definition of heritage. Moreover, as I show a little later, digital formats can contribute significantly to the means by which emotions and affects of heritage—those things that Smith regards as "real" heritage—can be symbolically embodied in social practice and make heritage a sustainable enterprise.

Some of these digital formats are discussed by Michael Ashley and myself in Chapter 3 of this volume. In addition, there is a vast literature from numerous conferences and journals on this topic.[7] In this chapter, I limit myself to exploring a couple of the recommendations for the sustainability of digital heritage that are especially relevant to the projects at Çatalhöyük described below. The Archaeology Data Service of the United Kingdom (Richards 2002) makes a very important recommendation tucked away in its website's best practices Q&A:

> The single most useful thing you can do to ensure the long-term preservation of your data is to plan for it to be re-used. Imagining it being re-used by someone else who has never met you and who never will meet you, will cause you to approach the creation and design of your data in a new light. Moreover, studies show that re-use of data is the single surest way of maintaining the integrity of data and tracking errors and problems with it. In short, always plan for re-use.[8]

A second recent recommendation is for the creation of digital documents that are "born archival"—that is, that are created with longevity factors built into their content and formats (Ashley 2008b; Mudge et al. 2008; Smith and Nelson 2008). "Born-archival" content is fully accessible and preservable at every stage, throughout the life cycle of these data, from birth through prerelease to publication, revision, relative disuse, and later revival. Data that are born archival can remain viable in the long term at significantly reduced preservation cost.

In summary, what we can take away from the lessons learned by digital archivists and preservationists is the need for steps to ensure physical accessibility and readability (in the broadest sense of the word) of the content and to ensure the public's ability to understand and use and reuse it, by making transparent, through embedded metadata (including the authorship of each step), the process of its production and modification and reuse. In this way, the authenticity issue does not hold up the continued use and reuse of the content.

Implications for the Public Presentation of Heritage

What are the implications of these sustainability issues of heritage and its digital documentation for the public presentation of heritage? I have discussed Laurajane Smith's ideas that tangible heritage places and things are symbolically embodied and imbued with values, meanings, and "affects." The social practices of managing, interpreting, and presenting heritage (traditionally termed "intangible") through different formats of performance and communication are equally acts of embodied meaning and affect. Smith's important idea that all heritage is intangible, with its focus on practice and performance in heritage contexts, has two implications for the way that sustainable projects around heritage are selected, planned, and put into practice. In this chapter, I am especially interested in focusing on the interface of these practices with the so-called public and their many faces.

The first implication is that, as pointed out in the Ename/ICOMOS Charter for the Interpretation and Presentation of Cultural Heritage Sites, the link between the community and its heritage needs to be forefronted, "since they guarantee the long-term protection of the immovable heritage (monuments, landscapes, archaeological sites)."[9] Through this effort, the notion of value and meaning to more than experts is becoming mainstream.

It is key, I believe, to think of the audience of a heritage presentation in terms of multiples. We must assume that visitors do not walk passively through a park, an archaeological site, or a museum. All people create meaning out of what they see and hear, depending on their lives, knowledge base, and experiences at the time. Thus, the audience is not a group entity waiting to be filled with information. Guidance and scaffolding is better at encouraging active participation and sustained use by visitors than is structured information transmission (Conkey and Tringham 1996; Freire 1970). When we consider the diversity of the audiences (by gender, age, class, education, ethnicity, and/or nationality, culture, and language)—all with their different viewpoints—the task of satisfying everyone may seem daunting, especially when we recognize that this multicultural audience is diverse also chronologically, with constantly changing expectations in

[7] Just peruse, for example, the publications in the EPOCH series (including the VAST conferences) at *http://www.epoch-net.org/index.php?option=com_content&task=view&id=196&Itemi* (accessed 5 September 2011).

[8] *http://archaeologydataservice.ac.uk/advice/preservation* (accessed 6 September 2011). Some guidelines for reuse may be found at: *http://ads.ahds.ac.uk/project/goodguides/excavation/sect13.html* (accessed 5 September 2011).

[9] *http://www.enamecharter.org/* (accessed 5 September 2011).

terms of both content and style. Thus, flexibility and the use of multiple formats of presentation and engagement will lead to sustainable longevity.

This conclusion leads into the second implication of the sustainability issues mentioned above. Through Smith's alternative definition of heritage, it has become acceptable to bring into play innovative strategies based on the creative uses of digital technology and on less fixed, less tangible (resource inexpensive) manifestations of heritage interpretation. Such strategies focus on ephemeral alternatives to permanent and intrusive changes to places (the latter including interpretive markers whose meaning may not "hold" for future generations) and the use of flexible interpretive aids based on wireless technology, satellite networking, pervasive computing, and changeable interfaces of fixed computers. Digitally based and event-based presentations are seductive and engaging—they are also powerful ways of reaching many publics—but they are ephemeral social practices, and their meaning and engagement may not last. This puts a certain responsibility on the designers and managers of heritage places to be aware of emerging formats and interests and to maintain the heritage place as a focus of their attention, rather than to think of their design as a finite project.

In fact, the maintenance of a heritage place is not only the responsibility of the designers and managers of heritage. Remembering, commemorating, and forgetting the past is an active cultural—and political—process. The idea of all heritage being "intangible" brings to the forefront the role of memory, stories, experience, and "affect" of social practice in places, creating a large intellectual space for heritage visitors and practitioners to participate in the construction of history through the creation of multiple and multivocal narratives that provide a healthy contrast to a single set of facts received by "consensual agreement" from the authoritative story of the past.

In the last 10 years, digital technologies have aided in the capture, dissemination, and archiving of a multitude of such narratives of memory—for example, when an oral history becomes a digital story, enhanced by additional imagery or sound; or a one-day reenactment is recorded on film.[10] Some of these examples are discussed further below, but in general I would say that the use of digital technology with a view to long-term sustainability of memories is very much in its infancy.

[10] For example, the reenactment of the Battle of Oudenaarde between the English and the French in Belgium, which the Ename Center helped to organize; see *http://www.enamecenter.org/en/projects/oudenaarde1708* (accessed 5 September 2011); see also an amateur movie of the event in which hundreds of members of the public participated: *http://www.youtube.com/watch?v=WvhttmQd8KI&NR=1* (accessed 5 September 2011).

Çatalhöyük as a Heritage Site

The East Mound at Çatalhöyük, in spite of its obvious first-millennium A.D. activity, is essentially a prehistoric site. As such, it presents specific challenges as a heritage site in the world of global heritage management politics and Smith's Authorized Heritage Discourse (AHD) standards. These challenges have been clearly pointed out by Doughty and Hodder (2007) in their introduction to the report on the TEMPER Project (see "Çatalhöyük and K–Gray Education," below). Most importantly, prehistory tends to be excluded from the construction of a national past. One important reason for its exclusion is the feeling that prehistoric places seem anonymous and lacking in a personal, ethnic, or cultural connection to the present inhabitants, caused by the absence of written records. In areas where oral traditions have kept the construction and memory of history alive (for example, in Australia and Native North America), the connection to prehistory is much stronger.

Second, the nature of the physical remains—being less visible, especially since prehistoric sites are generally only revealed through archaeology and tend to lack standing architecture—creates difficulty and confusion in making the heritage places meaningful to visitors, the media, and the modern inhabitants of the region (see Figure 2.14). Moreover, these same conditions of the physical remains create expensive challenges—with sometimes compromising implications—in the planning of conservation and display of the archaeological remains.

One result of these challenges has been that prehistoric sites tend to be viewed in a broader context of continental or global geographic scale and long-term chronological changes. Çatalhöyük has "stood for" the early prehistory of Central Anatolia, the "crossroads between Asia and Europe in the spread of the Neolithic Revolution," the "First City in the World," the "birthplace of goddess worship" and "Old Europe," the "birthplace of architecture," and a number of other claims (Chapter 1). The point is that the site has been easily appropriated and given significance by researchers across the world. The current Çatalhöyük Research Project has gone very far to problematize and frequently challenge these claims, and bring the research aims into a more multiscalar focus. However, the claims have certainly helped to attract the attention of the number of global corporate and private funding organizations (most recently the Global Heritage Fund)[11] as well as visitors. In 2006, the project received a significant grant from the Templeton Foundation entitled "Spirituality and Religious Ritual in the Emergence

[11] Global Heritage Fund at *http://www.globalheritagefund.org* (accessed 5 September 2011).

of Civilization,"[12] to support excavations as well as international seminars on this theme. Thus, if we look back to the beginning of this chapter, it is clear that Çatalhöyük has been incorporated into Smith's Authorized Heritage Discourse (AHD) by heritage professionals, state and regional institutions, and many of the publics, as pointed out by both Ayfer Bartu-Candan and David Shankland (Bartu 2000; Bartu-Candan 2005; Shankland 2000, 2005).

And yet, both these authors, social anthropologists who have worked in and around Çatalhöyük for many years, as well as Ian Hodder, are at pains in their writing to point toward the complexity and entanglement of the archaeological research at Çatalhöyük in the social practices of multiple publics. The entanglements stretch from the nearby village of Küçükköy and the local administration of Çumra, to the regional government of Konya, and beyond to the national political identities of Ankara and Istanbul and the European Union, and all across the world through visitors and researchers to the site and through the globalizing connections of the Internet (Bartu 2000; Bartu-Candan 2005; Hodder 1999a, 2006a; Shankland 2000, 2005).

Multiple Categories of On-Site Publics

Bartu-Candan (2005) has identified a number of different categories of visitors to the Çatalhöyük archaeological site, referring to this experience as entanglements, encounters, and engagements. Starting in 1997, her observations of the visitors have produced a multi-sited ethnography in which she focuses on tourists from all over the world as well as from big cities in Turkey, as far away as Istanbul, and from small local villages (Figure 25.1). Some visitors have come on a pilgrimage, to sit and perform on the hallowed ground where the Goddess was born. Others are making their way back to their home from success in the big city of Istanbul. Other sites of entanglement are the visits and encounters of local government representatives from Konya and Çumra at Çatalhöyük and their hosting of Çatalhöyük events in their home locations. Bartu-Candan mentions the industrial arts (fashion, carpets) and their practitioners' awareness of sources of inspiration for their designs at Çatalhöyük. An important site for her (as it is for David Shankland) is the village of Küçükköy, from which many of the local workers at Çatalhöyük—both men and women—are drawn (see Figure 2.5).

What expectations do visitors have when they visit Çatalhöyük? What makes them come to this place that is so hard to reach? Why would they ever return? These are some of the questions that Bartu-Candan posed in a survey of visitors to the site. As she has pointed out, it is a mistake to think that Çatalhöyük has a unified meaning and meaningfulness for members of the same "visitor categories," let alone of different categories. The question becomes, how do we as archaeologists deal with this fact in the presentation of Çatalhöyük, and, moreover, how do we harness the energies of a thinking and interested public?

The visitors are no more varied in their interests and life experiences and aspirations than the participants in the project. By the time the BACH project had finished fieldwork, the Çatalhöyük Research Project had been active for 10 years, every summer for at least six weeks and sometimes, as in 1999, much longer. The combined teams grew to over 100 members; the quality and quantity of living and working quarters, water, food, and communication with the outside world changed during that time. More importantly, the excavation and specialist teams also changed, not only in their demographics and composition, but also in the personalities and interests (as well as liaisons) of the individual participants. Thus—in a true example of the household cycle of growth and decline—while the BACH team was winding down in 2003, a new energy was growing next door in the 4040 Area, whereas in the old Building 1/5 area there was an entirely different dynamic.

There are other groups of participants in the Çatalhöyük Research Project whose presence impacts the meaning of Çatalhöyük, even if only for a short time. They create narratives about the site, which can make their way to visitors' consciousness. One such group is made up of

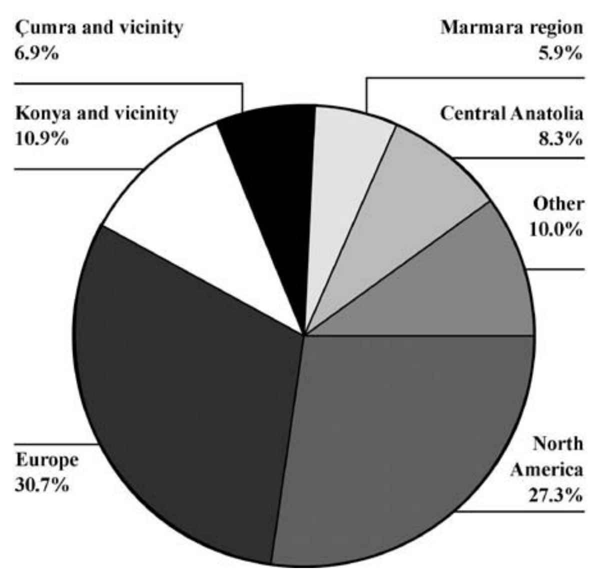

Figure 25.1. Chart of visitor categories to Çatalhöyük (from Bartu-Candan 2005:Figure 3.1).

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[12] *http://www.templeton.org/what-we-fund/grants/religion-as-the-basis-for-power-and-property-in-the-first-civilizations-analysis* (accessed 5 September 2011).

the independent researchers who work on the periphery of the project each year. They are not allowed to work in the excavation areas or the laboratories but can participate in discussions and walk on the mound without an escort. Such artists-in-residence include authors of two of the books that I discuss below, Michael Balter and Rob Swigart.

I should remark at this point that my previous experience in Southeast Europe had not prepared me for this on-site articulation with the public. My experience with such communication had been through teaching and through digital presentations. The sites where I had previously worked (Selevac, Opovo, and Podgoritsa) were even less accessible than Çatalhöyük, and more importantly, unlike Çatalhöyük, they had no existing narrative that had brought them into the public view even before the project started. However, as I became used to the practice of "reflexive methodology" at Çatalhöyük (Chapters 1, 2; Hodder 1999a; Hodder, ed. 2000), the idea of listening to multiple voices and standpoints in the construction of the prehistory of the site, and the idea that the site of Çatalhöyük is viewed through many windows and that it is "multi-sited," were easily put into practice. But Bartu-Candan gives us a useful caveat with which to temper our enthusiasm:

> It might be deceptive to depict a "public" as a homogeneous entity, sharing the same interests and concerns, an entity with which an archaeologist should always affiliate with under any circumstances. Given the multiple and shifting contexts of any archaeological practice, and the various publics of archaeology, with their own power struggles and hierarchies, I think it is more apt to describe the role of the archaeologist as a guerilla, in the sense of having specific projects and agendas, yet being constantly mobile, critical and reflexive. (Bartu-Candan 2005:38)

The strategies that were used to engage the multiple publics and create an awareness of their entanglements are discussed in the remaining part of this chapter, with reference especially to the BACH project.

On-Site Installations and the Idea of Excavation as Live Performance

The social practice that surrounds the management and research of heritage sites has frequently been described as "performance," and this certainly includes archaeological investigative practices of survey, excavation, and laboratory work (Hodder 2006b; Pearson and Shanks 2001; Shanks 2004; Tilley 1989). It is no wonder, then, that visitors are much more engaged by a place where active fieldwork is in progress than places that are empty of any such performance. I could generalize this even more by suggesting that on-site as well as on-line, nonspecialist visitors of all ages and most levels of interest are attracted as much (if not more) by the practice of heritage work and the heritage workers themselves as by the results of their work.

Moreover, our reflexive methodology, in making transparent the archaeological processes of investigation and interpretation (including dealing with the ambiguities of the archaeological record), is very much in keeping with the guidelines, mentioned above and in Chapter 3 of this volume, for the sustainability of digital heritage. Transparency is expressed in filling out the unit sheets for later analysis, but also in communications with visitors to the excavation. All locations of the Çatalhöyük Research Project are characterized by a great deal of verbal discussion, and the BACH Area was no exception.

The BACH Shelter

Every year, the excavation season of the Çatalhöyük Research Project attracted repeat participants who incorporated the project into their annual and seasonal routines. But there was nothing routine about the stream of events that happened at the site, which perhaps contributed to the participants' willingness to endure the heat and dust and relative discomforts of living and working at the site (Chapter 26). Events that broke up the weekly and daily routines for the participants included visits by the media, government officials, professional specialists, tourists in large and small groups, and large groups of small schoolchildren.

The BACH shelter was always an attractive stop for visitors on their guided tours around the site, offering a place in the shade to watch archaeology in action and even converse with the archaeologists (Figure 25.2; see also Chapter 24). It offered good lighting conditions for photography and video (see Figures 24.9, 24.12). And we always had good music playing and exciting events such as photographers swinging in the rafters like trapeze artists! Moreover, both Mirjana Stevanović and I (and many others of the BACH team) were often happy to share our creative interpretations with visitors. I have remarked that sharing our workplace with the public in this way sometimes seemed more like a zoo with glass walls than a really interactive place. Michael Ashley, Jason Quinlan, and I made this ambivalence about our communication with the public in the shelter a focus of our performance of RAVE (see "Real Audiences, Virtual Excavations" below).

The BACH Area was one station among an increasing number of places for visitors to experience archaeological excavation in action. Others included (after the close and disappearance of the BACH shelter) the 4040 Area, which since 2008 has been covered by its own magnificent shelter that embraces also the NORTH and former BACH Areas (Figure 1.9); the TP or Polish excavation area on the south-

Figure 25.2. Visitors taking advantage of the shade and the action in the BACH shelter.

ern summit of the East Mound, which has finally been provided with a shelter, but one that is difficult to accommodate visitors; and the SOUTH Area, where a large rigid shelter now covers the extensive old Mellaart excavation area and its more recent excavations, where visitors can stand in the humid shade but at a distance from the activity (see Chapter 24). Other excavation areas with limited space under their temporary shelters included IST (the Istanbul team's area), and two excavation areas on the West Mound.

Demonstration Houses

Building 3 in the BACH Area was excavated entirely down to the midden underlying its earliest foundations, including removal of its walls (Figure 6.1). Building 1 in the neighboring NORTH Area was also entirely excavated to reveal the underlying Building 5. Building 5, however, was excavated only as far as the exposure of its final phase of occupation. By 1999, it was preserved for display under its own semipermanent shelter, with a wooden platform and walkway with extensive informational panels, to show visitors what a Neolithic Çatalhöyük building looked like as archaeological remains (Figure 25.3; see also Figure 24.16). For many years until 2007, it served a valuable purpose as an informational stop on the guided route for visitors (without the "distraction" of excavators). In 2007, its shelter was dismantled, and in 2008 it was incorporated into the much larger demonstration of a Çatalhöyük neighborhood that included the 4040 Area, many buildings of which were also excavated only to their latest occupation phase. This larger area has been covered by the newest of the shelters on the East Mound (see Figure 24.7) (Hodder 2008). The invisible former BACH Area is also under this same shelter (Figure 25.4; see also Figures 1.9, 24.6).

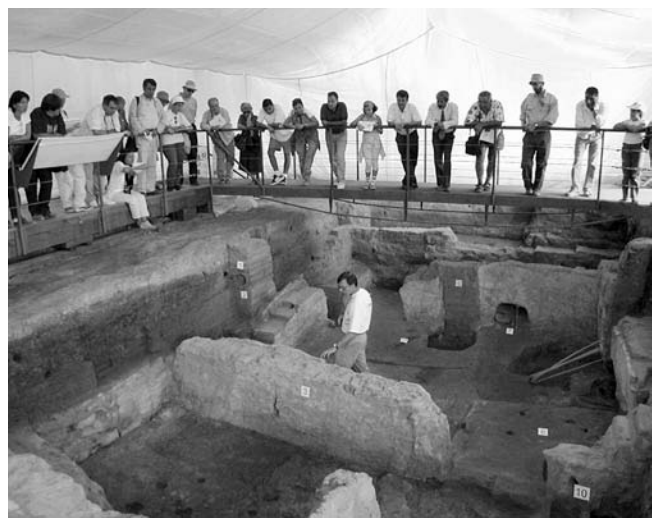

Figure 25.3. Building 5 under its own shelter from 1999 to 2006.

The Visitor or Interpretive Center

The Visitor or Interpretive Center, built in 1998, is where most visits to the site begin. It is located in the southwest corner of the main compound and comprises a single large, high-ceilinged room without windows (Figure 25.5). Here the visitor can view an introductory eight-minute film that was made in 2004 by UC Berkeley student Ona Johnson and Stanford University student Karis Eklund.[13] For security reasons, there are few original objects on display, but the walls are covered with colorful display panels and images in English and Turkish about the project; these were newly

[13] This movie can be watched at *http://www.archaeologychannel.org/content/video/catalhoyuk.html* (accessed on 5 September 2011).

Figure 25.4. Building 5, the invisible (ghost-inhabited) BACH Area and the 4040 Area under the new (since 2008) shelter.

Figure 25.5. Inside the Visitor or Interpretive Center at Çatalhöyük.

created in 2005 (Merriman 2005). An additional display was created by Ayfer Bartu-Candan with some of the women from Küçükköy about the meaning of Çatalhöyük for them (Bartu 2000:105). Sonya Atalay continued this collaboration with the community in 2006 (Atalay 2006).

The Visitor Center may be seen as the precursor to the planned Museum of Çatalhöyük to be set up at a location still to be determined in the immediate region of the site. A design was presented in 2005, with further discussion in 2007, that, on the one hand, "captures the spirit of the site and would be made out of mud brick" (Hodder and Farid 2005) and, on the other, fulfills "the ethos and practice of the project vision. It is by no means a traditional museum design but rather a Neolithic experience of reconstruction houses and interactive facilities, not necessarily a primary place for original objects" (Hodder and Farid 2007:8).

The Replica House

The Replica House, located immediately on the left as you enter the site, is often the first stop for visitors if they recognize it for what it represents (Figure 25.6). The project to construct a replica of a Neolithic house was started in 1997 under the direction of Mirjana Stevanović (and is described by her in detail in Chapter 22; see also Figure 2.13). Initially, the BACH project funded this enterprise as a means of carrying out experimental research into the construction of houses on the East Mound (Chapter 6). As it was gradually completed, with decorated plastered interior wall surfaces, platforms, movable items, storage rooms and containers, and an entry ladder, the replica became an important vehicle for the multisensorial experience of a Neolithic house, both for project participants (Chapter 26) and for visitors (see Figure 23.10). It was even used in 2004 as the location for a Discovery Channel TV docudrama with reenactments of Neolithic life.

The Compound

I include the compound in this section about on-site visits, since this is one of the areas whose access, as mentioned in Chapter 2 of this volume, is restricted for visitors. When I first visited the site in 1996, the compound was virtually L-shaped, with only its northern and eastern perimeters built up and a small room in the southeast corner. Subsequently, the complete perimeter has been built up, broken only by narrow access gaps on its south and west sides (Figure 25.7; see also Figures 2.15, 24.4, 24.5, 26.1). Now, as visitors walk along the ramp into the public access at the Visitor Center, the barred windows of the south perimeter of the compound present themselves, perhaps extending the zoological park analogy to the performance of laboratory work. The visitors can see and run into glimpses of life in the compound—house management activities, washing finds, banging doors, the quiet murmur of the heavy-residue sorting table; excavators running down from the mound to a lab or their bedrooms, mysterious people who are allowed to rest in the middle of the day in the shade of the veranda, or people who walk purposefully from one side of the compound to the other holding a tray of coffee—but the visitors are definitely excluded as outsiders from these tantalizing fragments (Figure 25.8; see also Figure 24.4, Chapters 24, 26).

On-Site Self-Guided Tours

Only project participants and independent registered researchers may walk around the East Mound without a guide (and even for participants, it is not allowed after working hours without permission from the government representative). The guides acting as escorts for visitors are usually one of the site guards (Figure 25.9). The knowledge of the latter about the site (and in languages other than Turkish) is quite limited but always developing. I discuss below the memoirs of one of the guards. Many of the visitors already know something about the site from Internet resources, print publications, or TV programs. Three forms of self-guided tours have been devised for visitors to enrich their experience of visiting the site. These are especially useful for those who come outside of the fieldworking season.

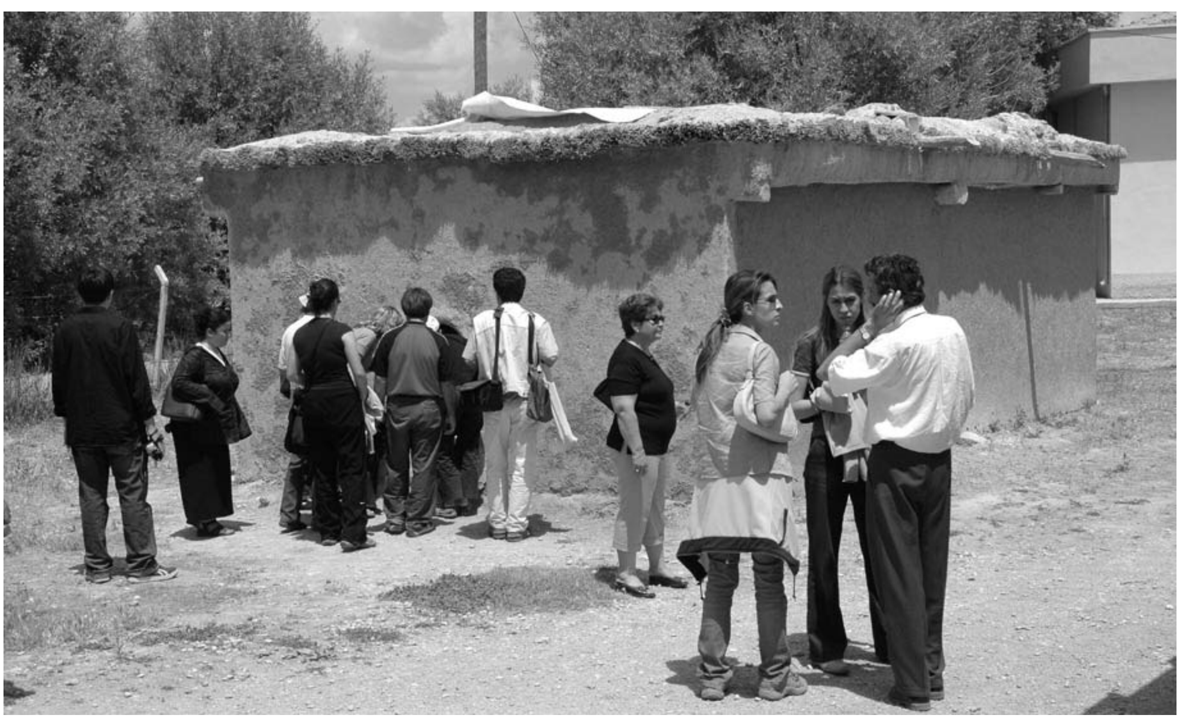

Figure 25.6. The Replica House as a tourist magnet at Çatalhöyük.

Figure 25.7. A collage showing the growing project compound at Çatalhöyük, 1996–2007.

Figure 25.8. Tantalizing views of the compound interior from its public (southwest) corner, photographed during a time-lapse video series.

Display panels at the demonstration buildings offer a static, readable (in English and Turkish) guide to what visitors see in front of them. These were first set up in 1999 (Building 5 in NORTH) and 2003 (in SOUTH) (Figure 25.10). In 2008, with the completion of the shelter over the 4040 and NORTH Areas, the former Building 5 wooden walkway and new (from 2005) display panels were enhanced by a raised wooden walkway, complete with display panels "at strategic points," which guides visitors around the various houses of the neighborhood (Figure 25.11). "Low roped sides keep visitors from straying off the path" (Hodder and Farid 2008:6).

An audio guide was produced in English and Turkish in 2005 by a museum studies group from University College London (Merriman 2005:273). Their aim in creating this for visitors while they walk around the site was "to develop a coordinated experience for visitors" (Merriman 2005). The audio guide has 10 clips, recorded in English by Ian Hodder and translated into Turkish, which focus on nodes of interest such as demonstration houses and ongoing excavations, but also provide information for some of the walks between nodes. The clips are designed to be played on MP3 players.

Videowalks: The Remediated Places Project[14] had rather different aims from the above-mentioned audio walking guides. Begun by myself with Steve Mills (University of Cardiff) and Michael Ashley in 2005, the Remediated Places Project, though involved in the tactile sensation of walking across the mound, is more interested in what Ingold refers

[14] *http://chimeraspider.wordpress.com/* (accessed 5 September 2011).

Figure 25.9. The entrance to Çatalhöyük seen from the East Mound, with the guardhouse on the left and the Replica House and Visitor Center on the right.

to as "wayfaring," in contrast to the audio guide, which encourages a more goal-oriented tour using Ingold's "transport mode" of movement (Ingold 2007:75). In addition, the Remediated Places Project places a heavy emphasis on watching video while you walk—yes, actually looking at a video image while walking. This would seem to be contraindicated or, at best, dangerous; *how* and *why*, you may well ask, should one look at a video clip while looking at and walking across the real thing? The answer is that, as with artist Janet Cardiff's videowalks in museums,[15] the aim is not to interrupt the experience of the immediacy of being at the place, but to confuse—and thus, Cardiff argues, to enhance—that experience by adding visions of another time or place and to heighten the multisensorial experience of the East Mound (see also Chapters 24, 26; Tringham et al. 2007). During the field seasons of 2005 and 2007, we created walks between and around nodes of activity on the East and West Mounds (Figure 25.12), which could be followed with a mobile viewing medium such as an iPod, iPhone, or Blackberry on-site. I discuss the on-line version and experience below (see "Remediated Places Project" section, below).

Unlike the informative audio guide described above, Remediated Places encourages users to spend some time walking along the paths *between* the excavation nodes, where there is less distraction from the intense activity; to muse while listening to and viewing a thematic selection of commentaries, videos, ambient sounds, and diaries that guide visitors toward creative lateral thinking and the use of

Figure 25.10. Display panels in the SOUTH Area; on the right, a display showing the former position of the "Volcano/City Plan" fresco can be seen.

Figure 25.11. The display panels and raised walkway in the new 4040 shelter.

[15] *http://www.thecanadianencyclopedia.com/index.cfm?PgNm=TCE&Params=A1ARTA0009772* (accessed 5 September 2011).

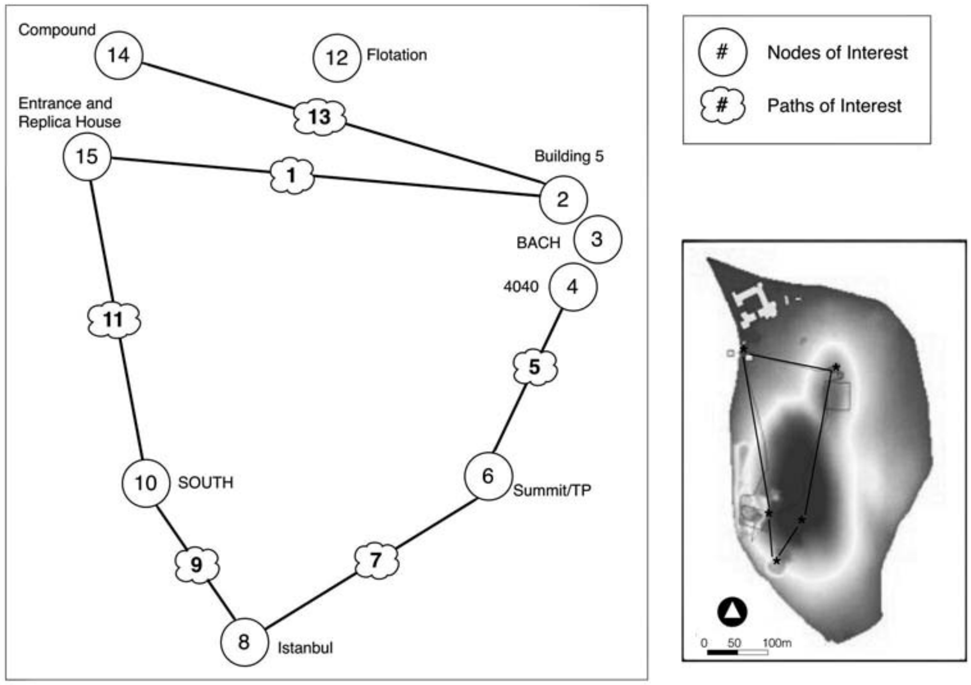

Figure 25.12. The videowalks across the East Mound designed as part of the Remediated Places Project.

imagination about the videowalk that they are following. The audiovisual resources presented—all of which are drawn from work at Çatalhöyük—have been tagged with themes: Life Histories of People, Places, and Things (incorporating memory), the Senses of Place (incorporating the sensorial experience), Viewing the Past at Multiple Scales (incorporating traditional information about the present and the past), and Communicating and Collaborating with the Public (Tringham et al. 2007; Tringham and Mills 2007).

One of the most emotionally powerful walks for me is one that takes visitors to the bare patch where the invisible—and perhaps forgotten—BACH Area lies (see Figures 1.8, 1.9, 25.4) and suggests they watch a video of Mirjana Stevanović walking through Building 3 as she imagines it was walked through in the past. Another strongly resonant walk is for the visitor to sit or walk in the Replica House and watch a video of 18 people crammed in there in 2002 while the inaugural fire is lit in the oven and the room fills with smoke as the side-door is closed[16] (Figures 24.20, 25.13).

Figure 25.13. Screenshot of the Remediated Places videowalk to the BACH Area.

Press Day

One on-site performance that should not be forgotten in the routine of the Çatalhöyük field season is the annual Press Day, when Turkish and international media representatives are invited to view the project in action. In spite of it being an annual event, each year Press Day has seemed to have a different character, depending perhaps on where the most drama was happening on the site and which media representatives showed up (Figure 25.14). The press were given information packages, a public lecture or two, a tour of excavations and display houses, often a nice meal, and interviews with specific participants. On this day, the media are allowed into the compound, but in quite tightly controlled groups. The day is often combined with the visit of local and regional government officials. In general, it is a day of excitement and intensive activity and performance by the team. In the BACH Area, our most notable Press Day event was our first in 1997, when Mirjana Stevanović

[16] These movies can be downloaded from the *Remixing Çatalhöyük* website at *http://okapi.dreamhosters.com/remixing/mainpage.html* (accessed 5 September 2011); they will also be accessible from the digital mirror of this volume (*http://www.codifi.info/projects/last-house-on-the-hill).*

Figure 25.14. Press Day 2002 in the BACH Area: enthusiasm over the Space 87 burials.

discovered the spectacular flint dagger and its carved bone handle (cover photo) almost under the nose of the Governor of Konya and Ian Hodder (Figure 25.15).

Off-Site Performance

Presentations and performances about the research and the interpretations of the Çatalhöyük Research Project to the public and/or professional audiences are expected and routine events, especially between field seasons, at professional meetings, universities, schools, public societies, and so on. Here I discuss just a few of the more unusual events that presented the BACH materials.

Real Audiences, Virtual Excavations

The field season of 2001 was an important year for media in the BACH Area; Jason Quinlan, who had worked with us on multimedia projects at UC Berkeley MACTiA, joined the team. Jason brought his own mini-DV camcorder to the site that began our transformation to digital video; he and Michael Ashley rigged up the mountaineering trapeze that enabled them to take vertical images of the excavation; and finally, this was the year that we relied entirely on digital photography for our photo record (Chapter 3). The result was that still images and video clips were quickly and easily available for remixing and recontextualizing into a new kind of presentation that combined multimedia with live performance, which we called Real Audiences, Virtual Excavations (RAVE). It was created and "performed" by Michael Ashley, Jason Quinlan, and myself in several venues. The first was in September 2001 at the 7th international conference of the Society on Virtual Systems and MultiMedia (VSMM); in December 2001 we gave a smoother show at UC Berkeley; and in September 2002 we performed for a packed audience at the annual meeting of the European Association of Archaeologists in Thessaloniki, Greece.

The aims of RAVE were (1) to show that archaeology is carried out at multiple scales; (2) to draw attention to the distance that separates—often inadvertently—visitors from Çatalhöyük Research Project team members, creating

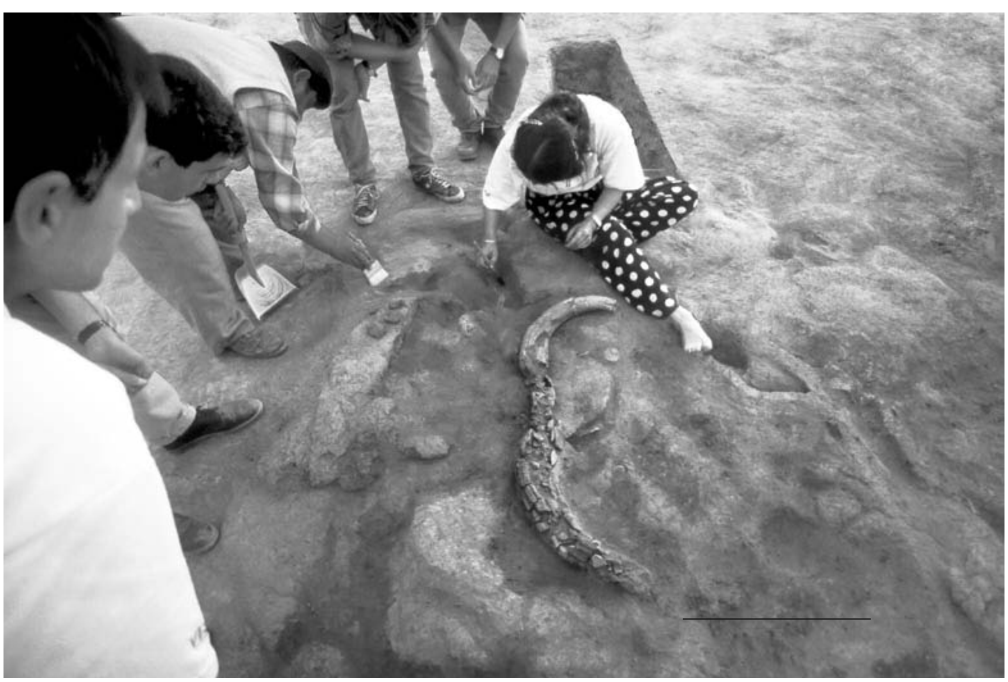

Figure 25.15. Press Day 1997 in the BACH Area: discovery of "the dagger."

the feeling of visitors as "the other"; and (3) to show the life of team members themselves sometimes as visitors, sometimes as insiders. These performances were not recorded, but a digital relic of the show exists on the Web[17] (Figure 25.16). In March 2003, we presented a modified version of RAVE to the annual meeting of the Society of California Archaeology, which brought us abruptly face to face with the issue of sensitivity in showing images of human remains, something we had not considered in our other "performances." In the latter, much of the presentation had been focused on the burials below the floors, and this caused a stir in California in the face of NAGPRA[18] and other ethical considerations.

Mysteries of Çatalhöyük Exhibit

In September 2001, the Science Museum of Minnesota—which had already been taking a lead role in popularizing the new investigations at Çatalhöyük (see below)—opened its exhibit named, like their website, "Mysteries of Çatalhöyük." This exhibit took as its focus not the finds and features excavated at Çatalhöyük, but the processes of investigation through excavation and laboratory work and the lives of archaeologists at the site. The centerpiece of the exhibit was the life-size model of a corner of the veranda in the compound, which is indeed a center of social life on the project. A path took the visitor through a number of hands-on activities and colorful displays to help share vicariously the experience of visiting the site itself and entering the compound, which is normally off-limits to visitors (Figure 25.17). Many of us acted as consultants with

Figure 25.16. The website remnant of the Real Audiences, Virtual Excavation (RAVE) performance.

the Minnesota team on the design of the exhibit, as well as helping with the content by our interviews. The exhibit attracted a large number of visitors of all ages, but unfortunately was not designed for the long-term. The DVD and CD that resulted from the exhibit and the website are all that survived.

Senses of Place

"Senses of Place" was a performance of the Remediated Places Project (see "On-Site Self-Guided Tours," above) given by Michael Ashley and myself in the Beyond E-Text symposium at the annual meeting of the American Anthropological Association in November 2006. It was a combination of live performance by "visitors" to Çatalhöyük, who are introduced to various formats of visitation, shown with the help of PowerPoint presentation on a screen nearby. The format we focused on comprised the structured choices of videos, images, and sounds being loaded onto an iPod that we have described as the Remediated Places Project. The technical reality of this format being available for visitors is still beyond our capacity at Çatalhöyük, but, as I describe below, not out of the question. The 20-minute performance was recorded and is available as an on-line publication[19] (Tringham et al. 2007).

Media Popularization, Popular Culture

Çatalhöyük has been an object in the popular awareness of the origins of art, civilization, and architecture, and of the worship and power of the Goddess, since the publication of James Mellaart's popular monograph (Gadon 1989: 25–38; Kostof 1985; Mellaart 1967). The expanse of exposed architecture, wall painting, and sculptures from James Mellaart's 1960s excavation has continued to provide the source of both professional and popular reiterations of Çatalhöyük. The new Çatalhöyük Research Project, however, began to have an impact from 2000, seven or more years after its beginning, an impact that drew the public's attention to the practice of archaeology as much as to the findings of the project.

I have already discussed the excellent work of the Science Museum of Minnesota in this regard, and there are numerous articles in popular magazines in Turkey, Europe, and the United States that draw attention to the new research. In this section, however, I focus on four relatively recent books that illustrate the variety of authorship and genres that are involved in the popularization of the Çatalhöyük and the CRP (Figure 25.18).

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[17] *http://diva.berkeley.edu/projects/bach/rave/default.html* (accessed 5 September 2011).

[18] *http://www.nps.gov/history/nagpra/* (accessed 5 September 2011).

[19] *http://chimeraspider.wordpress.com/about/remediated-places-on-youtube/* (accessed 5 September 2011).

Michael Balter is a science journalist, originally from Los Angeles but now based in Paris. He wrote his book *The Goddess and the Bull* after intensive, probing interviews with almost every member of the CRP team and some of the BACH team during 2000 and 2002–04 (Balter 2005). He is labeled by his publisher as the "excavation's official biographer." His book and the research behind it on the history of archaeological investigation at Çatalhöyük comprise an oral history project; as with many such projects, the investigator/author (Balter), who did indeed have training as an oral historian, is invisible in the text. Nevertheless, he tells an absorbing tale which I believe is much more complex than the publishers' marketing statement that "Balter reveals the true story behind modern archaeology—the thrill of history-making scientific discovery as well as the crushing disappointments, the community and friendship, the love affairs, and the often bitter rivalries between warring camps of archaeologists." The "truth" is Balter's, which he has arrived at after sifting through a huge amount of audio interview material. In keeping with what I discuss below about allowing the public access to the primary data, it would be fascinating—even valuable—to see what other

Figure 25.17. The Science Museum of Minnesota exhibit "Mysteries of Çatalhöyük" in 2001; John Swogger (insert) visits his real-life model sitting on the veranda of the compound.

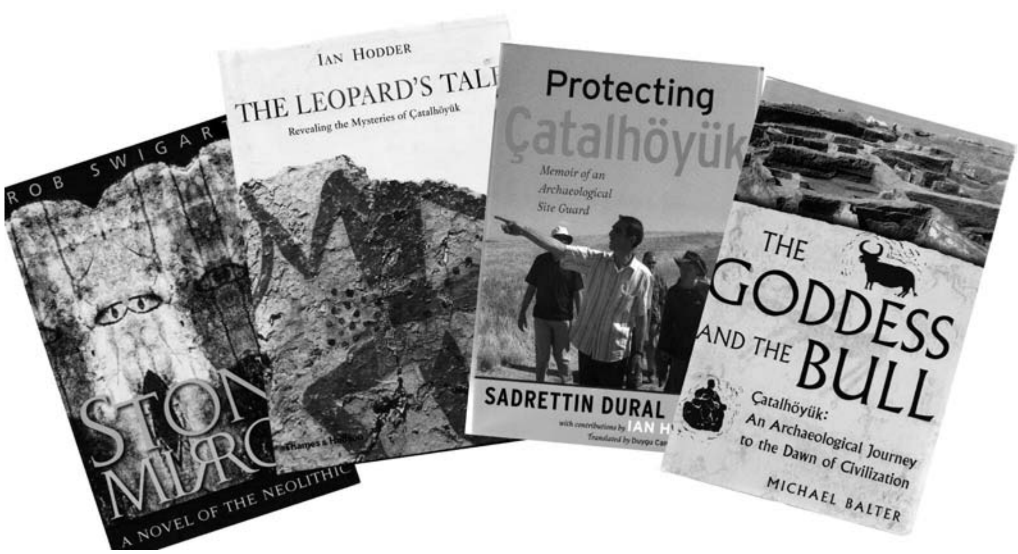

Figure 25.18. Collage of four popular books about Çatalhöyük.

histories could be "remixed" from other readings of the interviews. I hope dearly that Michael Balter will make sure that these materials are archived for the long term.

The Leopard's Tale by Ian Hodder is a very interesting genre of archaeological writing and is designed to engage the public (and the professional) in the investigative process by guiding them through an in-depth—and relatively transparent—journey of encounters with archaeological data that starts with pictorial depictions of leopards and ends finally with the discovery of the first physical evidence of the leopard itself (Hodder 2006a). In disentangling the tangles and connections between the excavated materials that will lead to unraveling this puzzle of why there are no leopard remains at Çatalhöyük, one interpretation leading to another and another, Hodder takes the reader on an exploration of all of the different scales and aspects of life that made up the world of Çatalhöyük. If there is a downside to this book, it is that the journey is so neatly written, that the reader might be seduced (as by a beautiful visualization by artist John Swogger or a 3D model) into forgetting that this too is just one person's construction of history and that another journey might have created a very different narrative—which is not a bad thing.

The personal narrative or memoir *Protecting Çatalhöyük*, by a former guard at the site, Sadrettin Dural, is yet another unusual genre in archaeological writing (Dural 2007). He writes what has been described by one reviewer as a stream of consciousness—almost a diary—about his life as a guard at Çatalhöyük, starting a few months before the new project began and then during the early years of the CRP Project (until 1999). The text is sometimes a challenge to follow as a linear narrative, but Sadrettin represents a voice that is almost never heard—certainly not by the public in a published medium. For that very reason, I find it somehow jarring to read the explanation and explication in the foreword, the notes, and interviewed afterword with Ian Hodder. I would be interested to know the response of other readers.

It was inevitable that Rob Swigart, with his long experience and engagement with computer gaming, interactive fiction (hypertext), and software development would write his fictional work inspired by Çatalhöyük in an unusual genre. In his conventionally formatted linear book *Stone Mirror*, he switches back and forth from a narrative about the archaeological research at a fictional Neolithic site near Çatalhöyük to its mirror narrative about the place as lived 9,000 years ago (Swigart 2007). The modern archaeological context is clearly modeled on the Çatalhöyük Research Project, which Rob Swigart experienced for several weeks as an independent researcher in 2005. I personally think that his narrative would not have lost any interest or value by more closely mirroring the actual practice and negotiations of archaeological investigation. By contrast, the prehistoric narrative is built magnificently out of the excavated data, and I found it quite inspirational for my own hypermedia works.[20] The book is definitely a "good read," although, as Swigart points out in his preface, his aim is to "write fiction about archaeology that is scientifically accurate and contemporary enough for use as a textbook" (Swigart 2007:9).

On-Line Sharing: Çatalhöyük's Digital Heritage

When the Çatalhöyük Research Project began in 1993, the Internet and World Wide Web were in their infancy (Okin 2004, 2005; Tringham 2010). Even by 1999, when Anja Wolle and I submitted our article to the second Çatalhöyük volume, high-speed Internet access was still a luxury, creating a very different context in which to access the online world (Wolle and Tringham 2000). Thus, the project's history has run in a parallel trajectory with the development of digital heritage, so that the digital offerings about the project should be seen in that context. With the rapid rate at which communications technology and creative applications are changing, it is difficult to imagine what the potential will be in the future. The one constant we can be sure of is that unless we follow the steps for sustainability recommended above and in Chapter 3 of this volume, the knowledge, creative efforts, and project documentation will become archaeological themselves.

Conventional (Web 1.0) Websites and Portals

A number of Web 1.0 sites about Çatalhöyük exist on the Internet in a more or less active state. In Web 1.0, a webmaster/webmistress designs and/or maintains the site and alone has access to its contents on a server, thus controlling the input of content and the look and feel of the site. These sites are useful as official portals to archaeological projects but are strictly information-only. They vary in terms of the control of content sharing—that is, in how much or how easily content may be downloaded to public users' own computers (Figure 25.19).

The official portal to the Çatalhöyük Research Project was created in fall 1996 by Anja Wolle, who remained as the dedicated webmistress until 2005 (Wolle and Tringham 2000:207–211). Wolle came to the project with a research focus on the use of hypermedia formats as a way of integrating the data and documents of an archaeological project. The website she designed forms the basis of the current website.[21] Its greatest value is as a portal to the digital pub-

[20] *Dead Women Do Tell Tales* (in process): *http://www.ruthtringham.com/Ruth_Tringham/Dead_Women_Do_Tell_Tales.html* (accessed 1 March 2012).

[21] *http://www.catalhoyuk.com/* (accessed 5 September 2011).

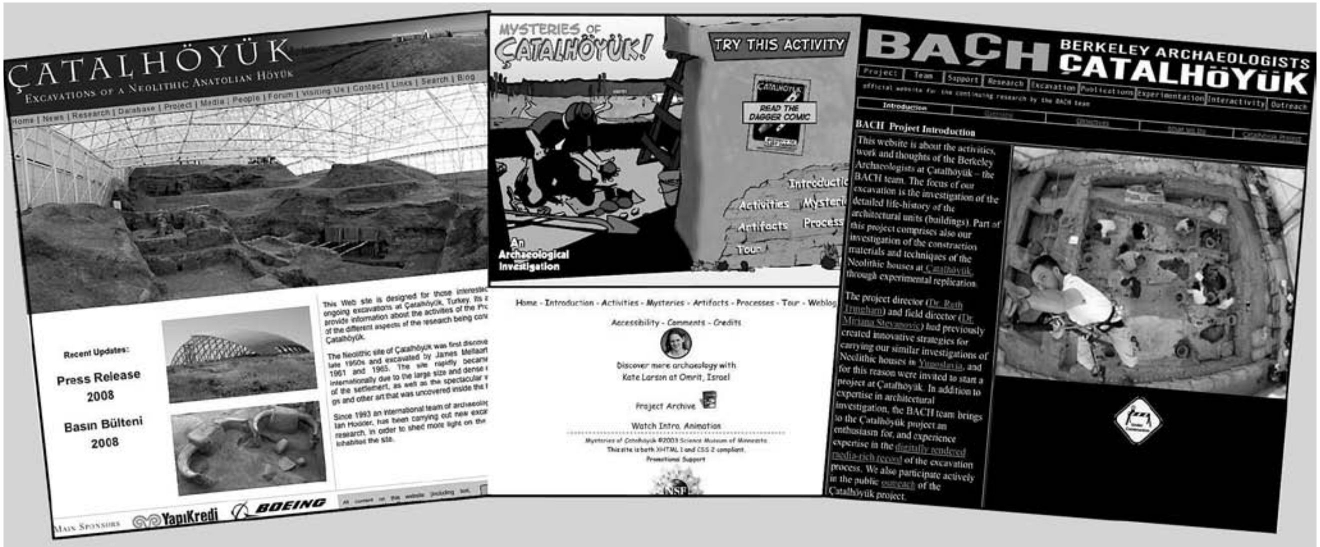

Figure 25.19. Collage of Web 1.0 websites about Çatalhöyük: the official CRP website, the SMM "Mysteries of Çatalhöyük" website, and the BACH website.

lications of the project: the newsletters and annual reports, information about other publications, media assets, and, of course, the on-line database (see below).

The BACH team itself created a website in November 2001, which was designed to present details of the BACH project and to help in fundraising efforts.[22] Unfortunately, it was never linked from the official Çatalhöyük website, and I suspect we rarely received visits. The lack of regular maintenance and content updates would have also contributed to its low visibility. The website for the Real Audiences, Virtual Excavations "performance" (see "Real Audiences, Virtual Excavations," above) received more visitors, although likewise, it had no link from the official Çatalhöyük site.[23] The RAVE site offers videos (always a popular form of content) that can be viewed and downloaded, on the one hand, and is a finite publication, on the other, so that it carries no expectation of updates (and no disappointment at their lack).

The "Mysteries of Çatalhöyük" website was created and maintained by the Science Museum of Minnesota as part of the project, funded by NSF and NEH, along with the exhibit in the same museum (see "Mysteries of Çatalhöyük Exhibit," above). Both website and exhibit launched officially in September 2001, but a prototype of the Web 1.0 website was available in 1999 (Wolle and Tringham 2000:211). Until 2001, the team that created the website and exhibit, led by Don Pohlman and including Natalie Rusk, Joshua Seaver, Keith Braafladt, Leslie Kratz, Orrin Shane, and Tim Ready, came out to Çatalhöyük each season to gather content, including video footage and images. The focus of the website, as with the exhibit, was on the process of investigation rather than the discoveries of the investigators. Thus, like the exhibit, this website was unusual for sites about archaeological projects, but a significant one for expressing the reflexive methodology in archaeology. It was aimed at a younger audience, but we have found it a valuable asset in higher education and public outreach. The project closed in 2003, so that by definition this website has been published as a finite enterprise and is no longer being updated.

Interestingly, however, a few members of the team that had worked so hard on the "Mysteries of Çatalhöyük" continued to develop audience participation about Çatalhöyük. In late 2004, Josh Seaver, for example, established a blog through the SMM Learning Technologies Center, in which he used an open source 3D modeling software, Blender, to build models of Neolithic house exteriors and interiors and artifacts; he provided a gallery of models and tutorials on how to model in Blender and then encouraged the public to upload their models to his blog and the gallery.[24] I don't know if anyone ever contributed; the site has been inactive since 2005. The concept was remarkable and one that would be worth revitalizing in the on-line edition of this volume.

[22] *http://diva.berkeley.edu/projects/bach/catal/default1.html* (accessed 12 June 2012).

[23] *http://diva.berkeley.edu/projects/bach/rave/default.html* (accessed 5 September 2011).

[24] *http://ltc.smm.org/visualize/* (accessed 5 September 2011).

Democratization of Technology: Public Participation, Professional Networking, Web 2.0

"The term 'Web 2.0' refers to a perceived second generation of web development and design, that aims to facilitate communication, secure information sharing, interoperability, and collaboration on the World Wide Web." Web 2.0 concepts have led to the development and evolution of "web-based communities, hosted services, and applications such as social-networking sites, video-sharing sites, wikis, blogs, and folksonomies."[25] By contrast with the Web 1.0 websites, Web 2.0 places are characterized by the ability of the content provider to update and modify their content without having to go through a webmaster/mistress. Since the early 2000s, many conventional websites have incorporated such community-building and social-networking options into their menus. The official Çatalhöyük website was no exception; it originally had both a blog (communal diary) and a forum (multiple discussion groups) tab in its menu.

It has been argued that one of the downsides of the Web 1.0 style of website is that the person tasked with updating the site is frequently not the same person who provides the content—a disconnect that can easily lead to websites not being updated, even to the point of becoming archaeological themselves. Constant updating is required, especially since websites are being used increasingly as essential sources of current information. The Web 2.0 style in which content providers are able to upload and update their content is to a certain extent the solution to this dilemma. But, as can be seen from the demise of the Çatalhöyük blog and forum, as well as Josh Seaver's Blender blog, the sustainability of any Web content, whether uploaded by webmaster or user, depends on the sustainability of the energy and motivation of the creator and maintainer, the human fallibility factor. As I have said elsewhere in this chapter and we have repeated in Chapter 3 of this volume, content sustainability also depends on being put on the Web in a format and form suitable for long-term conservation and usability.

That said, there are a number of Web 2.0 contexts in which the materials of the Çatalhöyük Research Project (including the BACH project) occur. Notably, there is a Çatalhöyük Team group on the social networking site Facebook,[26] and a selection of photographs are uploaded to the Çatalhöyük photo stream on Flickr,[27] a Web 2.0 site that allows users to upload and share photos. A similar site for uploading and sharing short videos—YouTube[28]—also has a large number of videos by Çatalhöyük team members and visitors, including our movies about the Remediated Places Project and Remixing Çatalhöyük (Figure 25.20).

An excellent example of Web 2.0 software in use as a way of creating a community around an archaeological excavation may be seen in the commercial project of Prescot Street in London.[29] Team members upload content, and registered users can post comments; no webmaster is involved. The materials are uploaded according to standardized formats, each piece of content being tagged to keep track of it. A former Çatalhöyük team member, Anies Hassan, created a video blog in which the story of the excavation in 2008 has been told in 10 episodes.

Sharing Digital Databases with the Public

At the heart of both Web 1.0 and Web 2.0 sites is the issue of sharing information, ideas, and data. I refer to "sharing" as an issue, because the term is not as simple and altruistic as it seems (rather like the word "freedom") (see also the section "Sharing and Reusing the Archive" in Chapter 3). For example, the degree to which the creator/publisher of the content has (or wishes to have) control over what happens to that content after its publication on the Web has a profound effect on the life and sustainability of that content. This applies equally to content in a website interface and that embedded in a database.

An on-line entity that can be shared by viewing or listening only (by emailing a link to content, bookmarking, or downloading for use in a "view only" context) is one whose creator/publisher has prohibited the original content from being recontextualized or modified unless express permission is given; this is in keeping with the default "all rights reserved" copyright law. Some users, however, would like to be able to create new works on the basis of published original works, and so organizations such as Creative Commons have offered alternative "some rights reserved" licensing for new works. These new license agreements have certain limitations, such as requiring attribution of the original work, requiring each user down the line to permit sharing of the new work with the same "share-alike" license, or prohibiting a new work from being used for commercial purposes.[30]

In 2005, the Çatalhöyük Research Project team as a community made the momentous agreement to share their data (including images and video) with the world under a

[25] With caution I have used these two quotations from Wikipedia, the anonymously authored Internet encyclopedia: *http://en.wikipedia.org/wiki/Web_2.0* (accessed 5 September 2011).
[26] *http://www.facebook.com/*.
[27] *http://www.flickr.com/photos/catalhoyuk/* (accessed 5 September 2011).
[28] *http://www.youtube.com/*.
[29] *http://www.lparchaeology.com/prescot/* (accessed 5 September 2011).
[30] *http://creativecommons.org/* (accessed 5 September 2011).

Figure 25.20. Collage of Web 2.0 sites about Çatalhöyük: YouTube, Facebook, and Flickr.

Creative Commons 2.0 license. (The paper publications, however, are still restricted [or protected] by an "all rights reserved" copyright). In this decision, the team was following examples encouraged on Flickr and many other Web 2.0 sites. They were also following a growing trend of sharing knowledge in a more active way[31]—that is, allowing others to engage with primary data by recontextualizing, remixing, and redistributing it in secondary, tertiary, and infinitely modified products. In the section "The BACH Shelter" above, I mentioned that among its best practices, the Archaeology Data Service of the U.K. recognized that licensing others to download and reuse content from archaeological projects was an essential strategy for its long-term sustainability. It is also at the heart of Open Knowledge and the Public Interest (OKAPI), a collaboratory at UC Berkeley that has sponsored a number of the database narratives described below (*Remixing Çatalhöyük* and *Okapi Island*), created out of the BACH data, as well as the recently formed Center for Digital Archaeology (CoDA).[32]

The sustainability of the official excavation database of the Çatalhöyük Research Project, therefore, is guaranteed from the viewpoint of the accessibility and reuse of its content. In the section above, "Digital Documentation Leads in Sustainability for the Long-Term," however, I refer to the idea that metadata—data about the data—is also an essential requirement for the long-term sustainability of documentation. This is discussed in greater detail in Chapter 3 of this volume, with reference to the CRP database and media databases, as well as the BACH databases that form part of the on-line version of this volume.

Outerfacing the Çatalhöyük and BACH Databases: Database Narratives

"Rich (deeply layered), well-researched, content presented in multiple formats is as important (if not more so) in Public and New Media expressions of heritage as the technology used in building it, however attractive and seductive the latter may be" (Tringham and Praetzellis 2008). The content produced by an archaeological project, whether in the form of a relational database or a catalog, forms the scaffold from which we can draw a web of narratives that may be about interpreting a micromorphological thin-section, describing an event such as the burning of a room or the analysis of a collection of mud bricks, or imagining the social negotiation surrounding the burial of a dead child. The richer the detail and the more informed the documented content, the more interesting the narratives will be.

One of the biggest challenges in archaeology is to take a database beyond the boundaries of the merely accessible and reusable to the realms of engagement by people outside the inner circle of the "team." With colleagues since the early 1990s I have addressed this challenge of creating an engaging "outerface" (Shahina Farid's term, personal communication) for the excavation database that would encourage outsiders to explore it and make it their own place. The public expectations of the late 2000s are for more than simple access to images or videos; there are expectations of participation, dialogue, feedback, and creativity.

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[31] Active institutions in cultural heritage, education, and creative arts include the Open Knowledge Foundation, the Open Content Alliance (*http://www.opencontentalliance.org/*, accessed 5 September 2011), the Alexandria Archive Institute (AAI) (*http://www.alexandriaarchive.org/*, accessed 5 September 2011). These institutions mirror the Open Source movement in computer software development.

[32] *http://www.codamatic.org* (accessed 15 May 2012).

The Dig OpChat Project

The Dig OpChat Project was a pilot with the UC Berkeley Interactive University, whose aim was the open knowledge sharing of faculty research with the public through the development of "learning objects" (Tringham 2004b). The Dig OpChat learning objects were based on my research at Çatalhöyük and Opovo in Serbia. My personal aim in this project was to develop a way to encourage the public to access the primary databases of these two projects, building on the Chimera Web Project of the 1990s (Joyce and Tringham 2007). In 2002, I started with the development of a series of vignettes, since at that time the most pressing problem seemed to me how to create engaging interfaces for public presentations of what we do. A "vignette" was defined as a "Web-based presentation" or "learning object," comprising a one- to two-minute nonlinear narrative of media plus text to illustrate a point, a concept, a lesson; each vignette was linked to other vignettes around a theme. The vignettes comprise an interpretive expression that is built from assets (various forms of media), texts, and numerical data that reside within the Dig OpChats database.

However, the old problem emerged again: how in practice was I going to link this interface to the database? At this point, I realized that rather than developing interfaces or vignettes that would be "linked" to the databases, they needed to *grow out of a* database architecture that I needed to design for them, that would act as a bridge to the archaeological project databases, or even grow directly out of the latter. Alongside this effort, another of the team members, Raymond Yee, was developing the Scholars' Box, which would enable users to download and recontextualize objects from the vignettes and/or database (Figure 25.21).

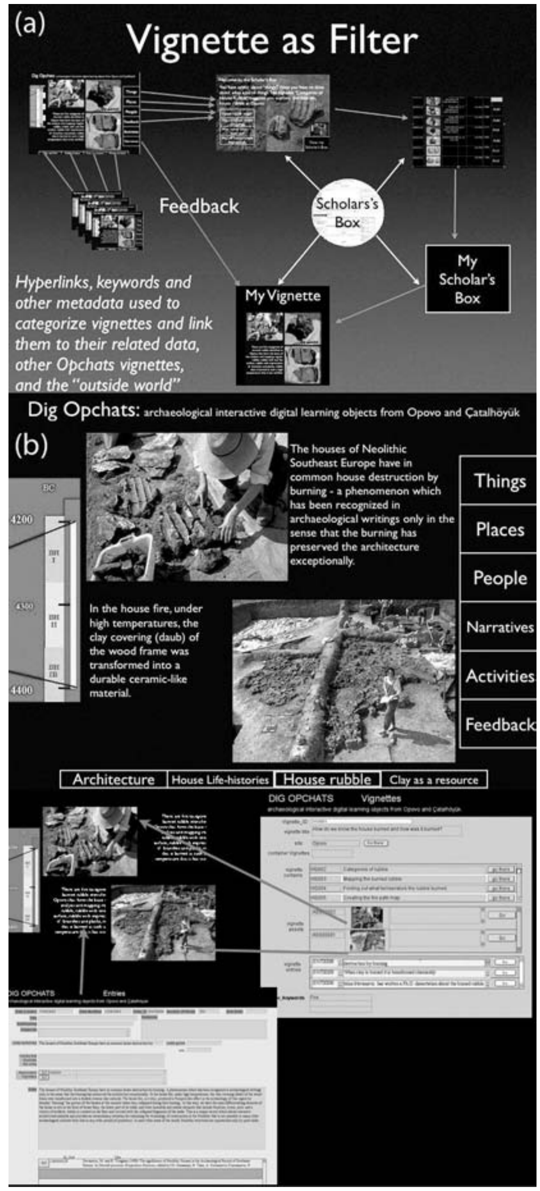

Figure 25.21. The Dig OpChats project: (a) the structure of the project showing the vignette as portal and guide to searching and selecting items from the database, and the Scholars' Box as a personal location for uploading, downloading, and storing items; (b) vignette about the study of burned rubble, showing the source of images and text in the archived database.

Remixing Çatalhöyük

Remixing Çatalhöyük is the second generation of the Dig OpChat Project, resulting from a Federal U.S. Department of Education (FIPSE) grant. The product, Remixing Çatalhöyük,[33] has been variously described as a database narrative, a multimedia exhibition, and a research archive. It was launched on the Internet in October 2007 and features the investigations and media of the Çatalhöyük Research Project, especially that of the Berkeley Archaeologists at Çatalhöyük (BACH) (Figure 25.22). The aim of the website is to engage the public of all ages in the exploration of primary research data through four themed collections that are selected from the research database. These are the same themes as in the Remediated Places Project (see above). One theme, on the Life History of People, Places, and Things, also includes a K–12 activity module. The public is invited to download media items that are licensed with a Creative Commons 3.0 license, and—with guidance provided in tutorials—to create and upload their own original "remixes" about Çatalhöyük. The aim was to put into practice a multivocal approach to history, where the global, online community is invited to participate in the dialogue alongside the physical, local community. A Turk-

[33] *http://okapi.dreamhosters.com/remixing/mainpage.html* (accessed 5 September 2011).

Figure 25.22. The portal into the English version of Remixing Çatalhöyük.

ish version of the entire site is easily accessed by a toggle button.

Okapi Island in Second Life

Okapi Island in Second Life is a mirror of the East Mound at Çatalhöyük, as it exists today, and as it may have looked in the past, where we share the research of the archaeological project and its interpretation in this 3D virtual world[34] (see Figure 24.21) (Morgan 2009). We have used archaeological evidence, and a bit of poetic license, to construct the mound itself, along with excavation areas, reconstructed houses, and multimedia exhibits. The same team (OKAPI) that developed Remixing Çatalhöyük, led by Noah Wittman and myself, with the help of undergraduate research apprentices, started developing Okapi Island early in 2007. The CRP and BACH data (including images and video) were uploaded and used in building and furnishing the island. By November 2007, we were able to hold an international Remixing Çatalhöyük Day on the island, with events such as tours, a public lecture, film festival, "chat-with-the-archaeologist," and videowalks (based on the Remediated Places videowalks). Around a campfire—mirroring the real thing—we were able to communicate with our visitors from around the world, who included our archaeological colleagues as well as people who had heard about the event through Facebook and our blog.[35] As with the physical heritage site of Çatalhöyük itself, Okapi Island is not a finite published object but is constantly being modified and visited. In November 2008, we held a house-burning event and dancing that again drew international visitors (Figure 25.23).

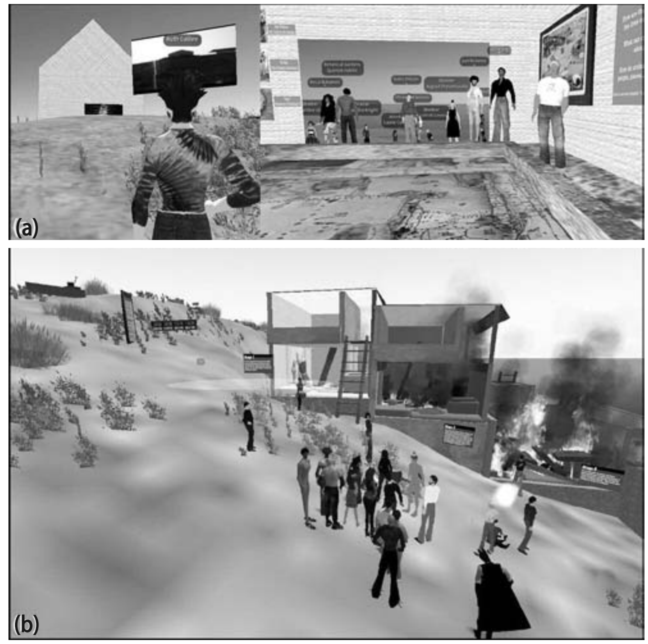

Figure 25.23. Okapi Island—a mirror of Çatalhöyük—in the virtual world Second Life. (a) Two views on Remixing Çatalhöyük Day (November 2007): the videowalk to the BACH shelter and inside the BACH shelter; (b) burning houses modeled on the SOUTH Area in December 2008.

The aim of any Second Life place is to avoid the demise of becoming a ghost-site through lack of care and attention. We use the site every semester for teaching and experimentation purposes, and invite the public to join us in the island's "sandbox." As with a physical heritage site, the key to sustainability in Second Life, I believe, is to *use* the place regularly and often, especially for events such as a group visit, where the public can meet a professional archaeologist, even if this is through the medium of an avatar (which is really the virtual equivalent of a ventriloquist's puppet). The voice behind the avatar is real; the place is surreal, but based on the actual mound. The sense of place that a virtual visitor to Çatalhöyük can feel in Okapi Island is much greater than through a flat website portal to the project or even a QuickTime Virtual Reality (QTVR) tour.

Remediated Places Project

The Remediated Places Project is mentioned here again because it is another example of narratives derived directly from on-line media and other data of the BACH project. In addition, specific media, especially video and audio files, were created in 2004–2007 at the East and West Mounds of Çatalhöyük specifically for this project and have been added

[34] Okapi Island could formerly be visited at *http://slurl.com/secondlife/Okapi/ 128/128/0* (accessed 23 February 2009). Other information about Okapi Island is found at *http://okapi.wordpress.com/projects/okapi-island-in-second-life/* (accessed 5 September 2011) and *http://www.ruthtringham. com/Ruth_Tringham/Okapi_Island.html* (accessed 2 February 2012). Unfortunately, due to the doubling of land rent on Second Life, Okapi Island itself has become archaeological as of February 2012.
[35] A movie of Remixing Çatalhöyük Day may be viewed at *http://okapi.dreamhosters.com/video/sl_short.mov* (accessed 5 September 2011).

to the on-line BACH database. The principles and theoretical background of the project have already been described above (see "On-Site Self-Guided Tours"; also Tringham et al. 2007). Media in this database are "tagged" to express their relevance to themes that we consider significant for our understanding of the past and our practice in the present.

Earlier I described the on-site and live performance contexts of the project. We imagined that a visitor might also visit the project website on the Internet from anywhere in the world (with a good network connection!). In this version, the user is invited to select a walk and a theme, which act as filters for preset[36] or optional[37] "screens" that can be added, in which images, sounds, and other videos enhance the virtual experience.[38] Although the options mirror the on-site version of the project, in the Web-based version the visual additions are more easily viewed, and you have the choice of jumping to the excavation nodes without the physical necessity of walking the several hundred yards between (Figure 25.24). In our design of these interfaces, we wanted to make the multisensorial experience of visiting Çatalhöyük richer than could be had with the more conventional fly-through or walkthrough of, for example, QuickTime Virtual Reality. A premise embedded in our interface design is that

> a key to sharing a multisensory approach of place through on-screen media lies in the relationship filtered through social practice and cultural diversity between the immediate sensory experience and its metaphorical extrapolation. . . . Thus we would use the audiovisual cues of the Remediated Places videos to trigger a metaphorical response in the user; for example sweat dripping off an excavator's forehead triggers a feeling or memory of heat in the user; a close-up of hands excavating will trigger through their rhythm the memory of a song or a dance. (Tringham et al. 2007)

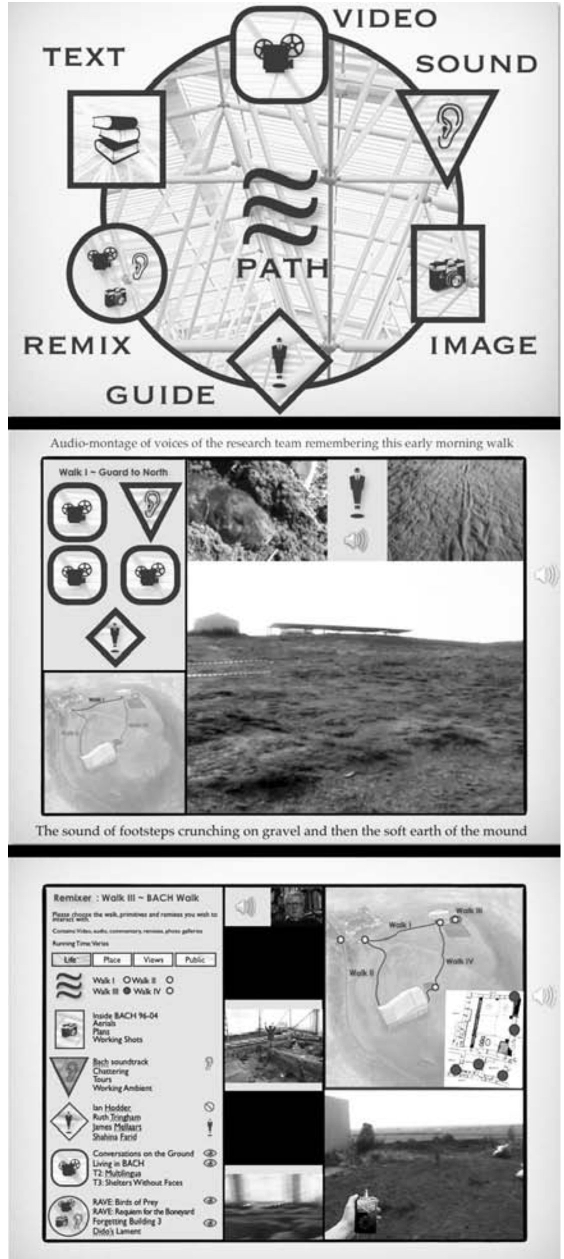

Figure 25.24. Interfaces designed for the Remediated Places Project: (top) the icons; (middle) Ruth Tringham's choice of items for Walk 1; (bottom) user options and build for Walk 1.

In the reflexive methodology, the line between data and narrative is deliberately fluid (Hodder 1997a), making the concept of database narratives (Manovich 2001:225–228) especially challenging but also very satisfying. Our aim in the on-line edition of this volume and beyond is to create a web of narratives—fragments, really—about the data (the documentation of excavation and analysis) describing their collection, the process of their interpretation at multiple scales and with alternative scenarios, a web spun into the recombinant history of the place we call the BACH Area (Anderson 2011; Domike et al. 2002).

Çatalhöyük and K-Gray Education

In the section "Çatalhöyük as a Heritage Site" (above), I drew attention to the challenges of attracting visitors to and sustaining Çatalhöyük as a heritage site, due to many of the same factors that apply to prehistoric sites in general: lack of

[36] *http://www.youtube.com/watch?v=7m_PYV5XpWc&feature=related* (accessed 5 September 2011).
[37] *http://www.youtube.com/watch?v=aM-vSEgjfdM&feature=channel* (accessed 5 September 2011).
[38] *http://www.youtube.com/watch?v=k2BFsCpUDMU* (accessed 5 September 2011).

monumentality and clear visibility of building remains, problems of preservation, and the fragmentary nature of the remains. All of these were pointed out by Louise Doughty and Ian Hodder in their introduction to the TEMPER Project (2007), a large part of which pertains to the education of future generations of heritage visitors and practitioners. In her conclusion to the same volume, Doughty reiterates the challenges for prehistoric heritage places, pointing out that the problem of prehistory's invisibility starts with the official structures of school education about prehistory and archaeology (Doughty 2007). Unless an argument is made for relating the "mute" prehistoric populations to the earliest literate and identifiable populations and from there to some kind of continuity with the current population, or unless the prehistoric people create some aesthetically pleasing objects and/or buildings, they will be noted in school curricula with little more than an anonymous, irrelevant "other" designation that is taught because it forms a bookend of knowledge for what comes later.

There is no better example of this than in the educational system of California. Although the way of teaching constructivist history is quite enlightened, prehistoric populations other than those of North America are taught in one month at the beginning of the sixth-grade curriculum (11- to 12-year-olds) for social studies and history. The rest of the school year is devoted to "ancient civilizations" throughout the world (except North America), starting with six weeks for Mesopotamia, which—in spite of heavy critique (Bahrani 1998)—is still regarded as the birthplace of Western Civilization, and ending with the Inca of South America. During the five weeks devoted to prehistory, Çatalhöyük often features in the one or two weeks spent covering the Neolithic. With this in mind, in 1999, as part of my first collaboration with the UC Berkeley Interactive University (before the Dig OpChat [see above]), I directed a project in which graduate students and I created modules that could be used in teaching the prehistory part of the sixth-grade curriculum. Two of the modules were about Çatalhöyük and, rather than use the traditional—more spectacular—images from James Mellaart's 1960s excavation, we based the modules on the BACH team's current research and media.[39] During fall 1999, the graduate students took their modules to the sixth-grade classes of our partner school, Roosevelt Middle School in Oakland, and helped the teachers to use them. The modules were well received by both children and teachers, but I believe their use has fallen by the wayside, and the website where they are disseminated needs some updating and dynamism to be useful to the teachers. In 2007, as part of the Remixing Çatalhöyük Project (see above), a more specifically on-line sixth-grade module about the BACH project was designed by UC Berkeley anthropology student Ona Johnson. In addition, this module is bilingual in Turkish and English, so it may have some impact in Turkey.

Figure 25.25. TEMPER children excavating the dump from the 1960s excavations.

As Doughty (2007) points out, however, the greatest educational impact of cultural heritage on children of this age is through active participation and engagement with the physical place and material remains. This was one of the recommendations of the TEMPER Project and has been put into practice at Çatalhöyük. Each day during the field seasons, 20 children of roughly U.S. middle school ages from all over Turkey, but especially from the Konya region, are bused to the site to spend the whole day doing activities related to the archaeology of the site, such as replicating the wall paintings, making replica models of the Neolithic houses, and excavating in the previously excavated soil matrix of James Mellaart's 1960s dump (which is itself a small mound!) (Figure 25.25).[40]

The investigations of the Çatalhöyük Research Project, especially the media assets of the BACH project, have also been used heavily and have made a great impact in our higher education at UC Berkeley. In the spring of 1998 (a few months after the first season of the BACH project), Meg Conkey and I (with the help of Michael Ashley) established the Multimedia Authoring Center for Teaching in Anthropology (MACTiA), a studio of 15 Macintosh workstations, where we taught regular courses, such as Prehistoric Europe and Anatolia, Landscape Archaeology, Cultural Heritage in the Digital Age, and even Introduction to Archaeology, with a heavy multimedia component.[41] As a

[39] *http://diva.berkeley.edu/projects/tringham/aop/html/mod1.html* (accessed 12 September 2012).

[40] *http://www.catalhoyuk.com/newsletters/09/temper.html* (accessed 5 September 2011).

[41] *http://www.ruthtringham.com/Ruth_Tringham/Pedagogical_Philosophy.html* (accessed 29 February 2012).

rich body of readily accessible, shareable, and reusable images and videos, the Çatalhöyük media formed the most valuable media resource for the students and were heavily used in their projects. In the MACTiA, students learned not only to create new works on the basis of existing media but also how to do this legally and respecting the wishes of the original creators.

A further step in the process of learning about digital resources and the documentation of heritage sites was to practice documentation in the field. The intergenerational training in digital documentation that we brought to Çatalhöyük in the BACH project aimed to ensure that future generations would understand, agree to, and know how to maintain the standards of digital sustainability that are mentioned above under "Digital Documentation Leads in Sustainability for the Long-Term" and in Chapter 3 of this volume. To this end, in 2004 we brought a small cohort of students to Çatalhöyük whose purpose was primarily to be trained in and practice documentation procedures in the field (Figure 25.26). The Çatalhöyük Research Project had never been conceived as a training project. Quite the contrary: students were not accepted as team members without previous experience or special skills, such as photography. The same principle held true for the BACH project. In 2004, after the end of the field component of the BACH project, the Çatalhöyük Research Project relaxed this principle and opened to small teams of inexperienced undergraduates in "field schools," including the one described above from UC Berkeley, and one from Stanford University. Since then, other training teams have participated in the combined CRP excavations. Two formats of such field schools have been tried; one might be termed the "traditional field school" format, in which the trainees work as a group together in one space or building, which becomes a training location; the second format follows more of an apprenticeship model, in which the trainee follows the practice of a skilled student or professional in a regular research location. I personally have always found the second format more successful.

Future Plans and Dreams

The success and sustainability of heritage practice at Çatalhöyük is dependent, I believe, on the fact that on-site as well as on-line nonspecialist visitors of all ages and most levels of interest will continue to be attracted as much (if not more) by the practice of heritage work and the heritage workers themselves as by the results of their work.

I have described some of the steps in which we have begun (but need to maintain and develop) the harnessing of this attraction, by making the interpretive process transparent, starting with a thorough digital documentation of sources, both tangibles and intangibles, which are archived in such a way as to be easily disseminated, shared, and accessed by the public. Furthermore, we have begun (but have a long way to go) to make transparent the process of how we discover and draw conclusions from the data, without simplifying it or "dumbing it down," and definitely without mystification. We are trying to encourage the public to embrace (as we do) the ambiguities in the interpretation of data, uncertainties that remain our constant companions in dealing with narratives about the past. Visualization and immersive 3D models expressing multiple interpretations and transparency of associated metadata have only just begun to be created and shared with nonprofessionals (Pescarin et al. 2008).

Judging by the trends in cultural heritage practice as demonstrated in current offerings of conference presentations, the gap between on-site and on-line (or rather on-satellite) presentation and practice of cultural heritage for both the public and professionals will close quite quickly (Pletinckx 2007; Ryan et al. 2005). The Remediated Places Project—perhaps the true spawn of the BACH project—is poised to contribute to this merger through incorporating geolocational (GPS) technology and context-aware (also called "pervasive" or "ubiquitous") computation using satellite and/or wireless networking to enhance the experience of visiting a place or museum. As a user walks across a site,

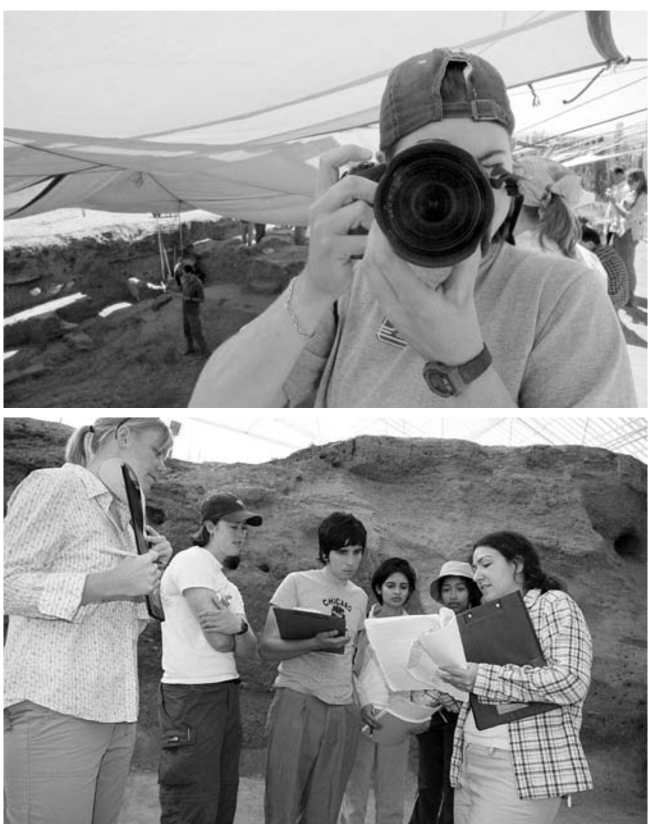

Figure 25.26. UC Berkeley students attending the 2004 Field School as digital documentation apprentices.

Figure 25.27. Steve Mills using (hypothetically) a wireless iPod to view a Remediated Places videowalk in the Replica House.

or through a museum, or takes part in a community event, she or he is connected to geolocated and contextualized narratives, on-line digital media, maps, information, instructions, or scavenger hunts that have relevance, however indirectly, to the user's location or context (Figure 25.27) (Epstein and Vergani 2007; Hight 2003; Roffia et al. 2005).[42]

What makes Çatalhöyük an example of sustainable heritage is the flexibility to create multiple, new, meaningful presentations and contexts for engaging with heritage that can be maintained as part of a continuous social practice. If these relatively ephemeral practices are based on and supported by a rich, deeply layered, long-lasting, well-archived digital content, then the place—however its presentation changes—will last for centuries (it is still difficult for me to imagine millennia)

[42] Examples include Urban Interactive (*http://urban-interactive.com/*, accessed 5 September 2011); Bath, UK, a World Heritage Site (The Cityware Project (now defunct): *http://www.technovelgy.com/ct/Science-Fiction-News.asp?NewsNum=1781*); San Diego, California (34 North 118 West project: *http://34n118w.net/34N/*, accessed 5 September 2011); London, UK (Urban Tapestries: *http://urbantapestries.net/*, accessed 5 September 2011); Bologna Smart, Italy, made with the iPhone app Map2App (*http://itunes.apple.com/en/app/bologna-smart/id443170765*, accessed 29 February 2012).

Chapter 26

Sensing the Place of Çatalhöyük: The Rhythms of Daily Life

Ruth Tringham

Light and Shadow, Sound and Song, Taste and Smell, Texture and Movement

After the final field season of the BACH excavations in 2003, I was again at Çatalhöyük to participate in the 2004 excavation season. My intention was to participate in the 4040 excavation, especially focusing on a possible path feature (Tringham 2004a) as well as a study season of the BACH materials. Three things happened to expand these modest horizons and research aims. In 2001, I had experienced and been inspired by artist Janet Cardiff's videowalk "Telephone Call" in the San Francisco Museum of Modern Art.[1] In 2001–2002, with Michael Ashley and Jason Quinlan, I had performed RAVE (Real Audiences, Virtual Excavations), a mixed-media piece that recontextualized media from the BACH excavation to express the different experiences that the archaeological team has from those of visitors (Chapter 25). Finally, in 2004, the BACH excavation area was closed—an emotional process in which the large hole that had been Building 3 and its three adjacent spaces was filled in, the shelter that had been our home for seven seasons was moved to the Polish (TP) Area (see Figure 24.22), and the BACH Area disappeared from view (see Figures 1.8, 2.22).

All of these events inspired me to step back and think about how we created and experienced this place at the two mounds of Çatalhöyük, a place that dominated our attention for months and years and brought us many thousands of miles for repeated visits. I had read a number of works about the construction of place through everyday practice (de Certeau 1984; Massey 1997; Pred 1984) and was especially attracted by the concept of "taskscape-landscape" that is central to Ingold's (2000) perception of place. Each actor's place is created through an embodied multisensorial experience, as part of her/his rhythmic repetition of sets of movement and activities. We call these "tasks" and participate in them (consciously or subconsciously) every minute of our waking day, alongside and aware of other people in our social group (Hodder 2006a:126). As Ingold and Hodder and others are at pains to point out, such participation in the taskscape-landscape fabric occurs at multiple temporal and spatial scales.

It seems to me, nevertheless, that the concept of rhythms and repeated practices creates an anchor (albeit a fluid one) to which can be tied the construction and multisensorial experience of place by the multiple actors of the present and the past at Çatalhöyük. In this chapter, I explore this path, focusing first on the "now" of the everyday experience of the Çatalhöyük Research Project. Before proceeding to look through this window into the past rhythms and sensing of place, I take a step backward to consider the theoretical foundations and implications of creating such a window. Then I embark on a tentative exploration of the multisensorial experiences at Çatalhöyük 9,000 years ago and the construction of what would certainly have been very different and unfamiliar places for us modern archaeologists. I then bring together the "then" and the "now"[2] in a discussion of the multisensorial experience, focusing on each of the five senses in turn. Michael Ashley journeys on a similar exploration in Chapter 24 of this volume, writing from the point of view of a photographer of archaeology and a media specialist with a focus on the poetics of vision.

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[1] *http://www.cardiffmiller.com/artworks/walks/telephonecall.html* (accessed 5 September 2011).

[2] I have borrowed these shortcut (I think more poetic) titles for modern and prehistoric Çatalhöyük from Rob Swigart's (2007) *Stone Mirror.*

Finally, as a bridge from this final chapter of the printed monograph to its digital "mirror" (on-line), I discuss the advantages and disadvantages of sharing the multisensorial experience and construction of the places at Çatalhöyük using digital technology.

Experiencing the Place of Çatalhöyük Now

Capturing the Taskscapes of Çatalhöyük

The archaeological project at Çatalhöyük is a large and complex operation involving up to 100 participants from a large variety of social contexts around the globe and, during its excavation season, which usually lasts two or three months, a large variety of activities and tasks. Capturing the experience of this place has been achieved through only a small sample of the participants, who, with a couple of exceptions, are team members, some only for a couple of seasons. Our source for their experiences is spoken interviews, some at the site itself, some as memories after a few months. These interviews were started in 2004 and continue currently, as part of the Remediated Places Project[3] (Chapter 25). The full video version is available in the on-line edition of this monograph. Obviously, these interviews were recorded after the final field season of the BACH project. For the BACH project itself, I have relied on memories and field diaries as sources of information. In this chapter, I have extracted a few statements to represent the variability of experiences and to decrease their otherwise generic nature.

An essential caveat of this project is that there is no attempt in this in-depth analysis to capture the standpoint of the person who experiences Çatalhöyük but is not a team member: the visitor, the tourist, the local schoolchild and teacher, the government official, or even the government representative. This has been captured by Ayfer Bartu-Candan in her analysis, which is discussed in Chapter 25 in this volume (see Figure 25.1; also Bartu-Candan 2005). And the sharp contrast between the experiences and perceptions of those "inside" and those "outside" the project was the focus of the RAVE performances (Chapter 25).

I have found that one way to grasp the multisensorial experience of different team members at Çatalhöyük is to extend the concept of the temporality of practice and identify different sets of taskscapes or rhythms (Ingold 2000). At Çatalhöyük, there are Digging Days (Saturday–Wednesday) when the time slots are identical, although the activities and personal taskscapes are different. The daily time slots revolve around food—feeding-time (if I were braver, I would make this a global generalization!). Thursday is also a Digging Day, with the important exception that it is the day before Friday. Friday is a free day, with a very different rhythm.

Within the daily rhythms, there are important individual variations depending on the main locus of activity, whether this is the mound and excavation areas, or the lab, or the flotation area. Beyond the daily rhythms are the differences in annual rhythms. Thus, a taskscape described in one year—something as mundane as breakfast—may be very different in another year, caused by changes in excavation areas and configuration, changes in the configuration of the compound, and changes in the team composition, in addition to a myriad of personal changes to body and psyche (see also Chapter 25).

The Rhythm of Digging Days

The Digging Day is divided into very specific time slots that apply to all team members, whether they are part of the laboratory team or the excavation team. I am not including here the private researchers who are actually free of the strict timing of the slots, but they are affected by the fact that all slots and breaks between them involve feeding:

Until 7 am: At dawn, the müezzin calls the faithful to prayer from the mosque in Küçükköy. In summer, when the team is there, this happens around 5 am. When we first arrive, our precious sleep time will be cut short by the call, but gradually with time, the habituated voice of the müezzin recedes into the background, just another ambient sound that the sleeping subconscious ignores. So, it is usually the alarm clock of the first riser in the room that wakes the sleepers. The time of actual rising varies from 5:30 to 6:45, depending on the night before, the need for breakfast, delight in having the communal bathroom to yourself, and so on. Michael Balter describes how Shahina Farid, the site director, got up at 6 am; "She went into the kitchen and made herself a mug of black coffee, and then sat down on the edge of the veranda, as far as possible from everyone else" (Balter 2005:143). The world is divided into those who are bright and talkative from the moment they wake and those who are not. I'm with Shahina on this, and the art of social survival is being able to recognize who belongs to which category as a team of 100+ prepares for the day. For some, breakfast is a cigarette, perhaps a piece of old bread or a "Marie" biscuit. For others, it includes fruit, yogurt, even muesli. Around the little kitchen, there is a complex and increasingly frenzied choreography of movement (body-ballets) as 100 people hover around the sink and burners to pour tea or make coffee before the 7 am deadline. For the excavators, with so little time it is

[3] Remediated Places Project at *http://chimeraspider.wordpress.com/* (accessed 5 September 2011).

Nescafe, but at least it's hot. The lab workers have a little more time to indulge in making their espressos and café pressé. It can be cold in the morning at 3,000 feet above sea level. The arrival of the workers' car and moto at 6:50 triggers a change of rhythm and noise—the veranda is suddenly empty, as shadowy figures slink into excavation labs for paper, binders, cameras, EDM, or to the toolshed behind the compound for heavier tools.

7–9:30 am: The first excavation session of the day begins quietly as a whole. The team walks up the mound, each by his/her own path, some quiet, some chatting, some by themselves, others in groups—quiet morning greetings in many languages. As we walk up to the BACH shelter, the rising sun shines full in our faces. All the little creatures, who had been enjoying the privacy of the mound as their own world, quickly disappear in the face of the two-legged invaders. The owl takes off from his/her perch on the shelter; the morning chorus of other birds, by contrast, is deafening; the gophers stand up and then disappear down the nearest hole. The smell of night-dampened dry grass takes me right back to childhood seaside holidays. The BACH team gathers in the shelter. This is a time of reflection; tasks are handed out by Mirjana, quiet music is turned out—something appropriate to the delicate morning air like "Tous les Matins du Monde" (this was my choice of music as the director; only in the subsequent interviews did I hear dissenting voices and alternative desires). This is a good time to do the daily video diary. This is the time when the excavation goes quickly; people surprise themselves by being sharp, especially in the second hour, in spite of it being so early. The light is good for excavating, less so for photography. There are no visitors and no specialist visits to distract, so that concentration is high. Until breakfast rumbles start.

9:30–10 am: Second breakfast: Many interviewees (including myself) describe this as their favorite meal; it is certainly the one where I ate the most food: sausage, egg, fresh bread, tomato, potato, and, of course, Marmite. Often quite significant conversations would start up with your random neighbor sitting at one of the long, uncomfortable benches. The smokers sit on the veranda. The rest of us join them with tea. This blissful pause is all too short.

10 am–12 noon: After "second breakfast," the more communal part of the day begins. The sun is now high, everyone is wide awake, and it's a good time for photography. Excavation—including documentation on unit sheets—progresses energetically, sounds of scraping dominate, with music (less ethereal and chamber now, more into rock) in the background. The team is in a constant chatter, murmurs around us in at least three different languages, which sound to me like chickens clucking and remarking in a steady stream of vocalization. Visits to the BACH shelter are common throughout this episode of the day: the Turkish government representative makes his or her rounds; representatives from each specialist lab visit on their "priority tour" of each excavation area and spend up to an hour in discussion (Chapter 2). Most of the tourists come at this time to avoid the hottest part of the day; other visitors also arrive now, more as a result of their travel arrangements than timing for heat. This segment of time always passed the most quickly for me.

12 noon–1 pm: It's only a couple of hours since I ate a big meal, so I am never hungry at lunchtime. When we hear the bell for lunch, my steps into the dining room are less vigorous than for breakfast. In addition, it is by now quite hot, we've been working hard, and I am more interested in drinking water and other liquids, like the cold cucumber-yogurt soup, which tastes so good at this time of day. I even relish the sweet, rich red watermelon that under other conditions I would not choose to eat. There are other things to eat that people around me seem to enjoy—börek, for example. After lunch there is time to rest while the smokers do their thing, to chat or to read, lounging on the veranda like so many sea lions. Not really enough time to sleep.

1–3 pm: The bell disturbs the soporific atmosphere and gets everyone up for the final excavation segment of the day. The light is now very bright. In the BACH shelter there is shade, but it is nevertheless hot and sweaty inside. We open the side flaps and hope for no wind. However, often the wind rises at this time of day; in the BACH shelter, we are protected to a certain extent from the dust that accompanies the wind; but in a bad wind, the shelter can create a vortex and dump dust on cleaned features and ourselves. Photography in the afternoons is always a problem, especially on the west side of the BACH Area, where the sunlight pours through the opening, however much we try to close it, and weakens all color from the archaeological remains. In this segment, excavation slows down; discussions are frequent, trips to the lab necessary, diary writing and form filling and finds sorting are all favorite (and necessary) tasks, before excavation finishes promptly at 3 pm.

3–5 pm: By now, all the excavators are hot and sweaty and dusty and itchy, in contrast to the lab workers. The latter have been told to have their showers well before 3 pm to allow time for the solar heaters to warm up the water for the excavators. But there is a struggle for the showers, which eased considerably once the new bathrooms were built in 2002. As an alternative to an immediate shower, however, we could go dirty into the dining room and eat fruit—sweet peaches or cherries. I learn the art of siesta sleeping at Çatalhöyük in this slot of time. Many of the team—especially from the U.S.—do not. Or maybe they just don't need it. So they play ping-pong or chat and bang doors. I crave chocolate in this slot, something I rarely eat normally.

5–7 pm: No bell sounds to disturb the siesta, but we all are in the lab at 5 pm—unless we are making an espresso first, with coffee brought from Peets in San Francisco. The excavating team has their lab tasks: data entry, photo logging, report writing. It is a pleasure to sit on a chair after squatting, or kneeling, or in other contortions all day. We have had laptops from the beginning of this project. In 2002, however, the seminar room is built, changing many practices. This room becomes the excavation lab for all the different teams who, for the first time, now work together in different parts of the room. But the room is wired so that those of us with wireless possibilities in our laptops can communicate without appearing to. At first, this potential is realized mostly by the Mac-based BACH team, but then others join in. So, in this slot there is a hilarious instant messaging and music-sharing session while working other tasks. This is also a time when things can be checked by visiting the "specialist" lab teams. All around the quadrangle, there are activities with which I am less familiar (not part of my place ballet)—finds washing, flotation sorting, finds documentation, and storing.

7–8 pm: The bell sounds for dinner, and we are expected—by our Turkish cooks, Ismail and his team—to be there on time. Each of us now has to decide where to sit, with whom, bathed in the sunshine streaming through the big west windows of the dining room or in the shade. It isn't so hard, but it is definitely a social negotiation. We try to spread ourselves around, although the tendency in later years, especially with undergraduates participating, is to form national and age-group seating enclaves. The most important thing is to find someone with whom to share a dinnertime Efes beer. The food is delicious, but here's the strange thing: usually I eat everything on my plate, but at Çatalhöyük I barely touch the carbohydrates and eat only the protein. No wonder I regard this as a "fat-farm."

8 pm–bedtime: Dinner is finished long before 8 pm. Time for a walk around the mound before any evening organized activities (seminar, meeting, or—in later years—a film). Walk through wheat fields, along the drainage ditch, listen to frogs, in time to watch the sun set behind the mound with the BACH shelter silhouetted; the owl if we're lucky. Evening activities are low key, veranda-based: beer, smoking, reading, chatting, ping-pong, snacking, cooking. Team leaders can send emails from the computer that is connected by phone to the outside world.

The Rhythm of Thursdays

Thursday is different from the Digging Day, because it is the day before Friday, which is Free Day. In the morning, it is like any other Digging Day, but in the afternoon and evening, its experience is entirely different; it becomes, in effect, a different place.

1–2 pm: This time has a more hectic pace than normal. In addition to having only an hour to finish off for the day, we must prepare for the weekly tour.

2–3 pm: On Thursday, this time is set aside for the weekly tour of the site by the whole team, a kind of grand rounds. The site presenter is, in one instance, a performer and in the next, a member of the audience. Giving the ritualized description of what they have been doing all week can be quite a nerve-wracking experience for excavators who are shy and/or not used to performing. The BACH shelter is a very pleasant ambience for both presenter and audience, since it is out of the sun and has a place for an audience to sit on flour sacks filled with earth (they also act as the stabilizers for the shelter) surrounding the presenter and the excavation area. As an audience member, I can affirm that the other excavation areas have had their problems: the SOUTH shelter is terribly hot and has a glare that has given me a migraine on several occasions (see Chapter 24). The TP area was for a long time not covered, and there is a memorable occasion when Arek Marciniak gave his tour presentation with a gale-force wind howling, gobbling up his words and blowing stinging dust in our faces, so that we had to listen with our backs turned toward him.

3–7 pm: On Thursdays, there is no lab session. Instead there is frenzied preparation for the evening's festivities. There is always a party on Thursday night; it varies only in what the theme is, how well organized it is, and what there is to drink. The idea of fancy dress or costume party started very early in the project's history, probably with the 1999 "long season." The costume construction can be quite elaborate and take up at least the hours before dinner—and longer, I suspect, in the case of lab specialists. I usually relied on a paper bag over my head. Wood collection for the required bonfire is also another chore at this time, and a trip to Çumra or Konya for alcohol. And some enthusiasts do actually do lab work. . . .

7–8 pm: On Thursdays, there is guaranteed grilled meat by our cook Ismail; it is barbecue night, outside on the veranda. A long queue forms, and we receive a quarter of a loaf of bread and a long strip of kebab stuffed inside it from Mavili or Rükiye or Nevriye, and then around to the table we go for salad, potato, and other sundries; pick up a cold bottle of Efes beer (after signing for it, of course), find a place on the stoop somewhere, and we are in heaven—well sort of.

8 pm–late: A walk around the mound, or ping-pong, waiting for the dark at about 9 pm when the party will start. Music playing remotely through a laptop and later the iPod makes a great hit at parties; Jason or Michael spend many hours creating complex playlists. The bar and speakers are set up behind the compound next to the toolshed, the old "chicken shed" that was one of the original buildings at the base of the mound, and was used as a dormitory in the early years. This area was "domesticated" during the "long season" of 1999, and became the party/bar area. The party starts with the bar being set up and the bonfire lit. I can't say I ever experienced these tasks firsthand. Costume parties make me nervous—they always have—so I always go late when I hope no one will notice my entrance. But, of course, this place is just a big village—there is no escaping being noticed! The bonfire is huge and always very hot. But it has benches all around it and is a good place to be at the party. There's a carpet put down for a dance floor; it's hard to dance on it, but the dust of the bare ground would be worse. Lots of photography is going on here, but it's best not to think about where the pictures will end up. Mostly, Thursday night is a time to appreciate the blackness of the night on the Konya plateau, and the performance of the shooting stars and the Milky Way and the moon. And I cannot forget the hooting of working owls.

The Rhythm of Fridays

Friday is a free day. Everyone's rhythm is different, depending on their plans, and this varies from week to week. No meals are provided until dinnertime, so each person forages in the kitchen until then. Some act collaboratively. Almost everyone gets up late, some not until midday. A bus is organized to take people to Konya for shopping and swimming. A trip to an archaeological site may be organized. Those with their own cars have more free will in this. The Turkish team members go to their homes if they can. Since the Turkish staff and workers are away, there is a certain relaxation of the clothing rules—for example, shorts and sleeveless tops are allowed. Our Western desire for the sun on bare skin is something worth thinking about in terms of haptic sensual experience now and in the past (see "Touch and the Haptic Experience" section below). In the afternoon, the cooks arrive to prepare the evening meal. After the appearance of a portable LCD projector on-site, Friday evening is designated as "Movie Night."

The Rhythm of Different Years

For almost everyone who visits Çatalhöyük, even those who live nearby, their experience of the East Mound and the compound is a summer one or, at least, a warm summer-weather one. In a couple of years, such as 1999, the season started in May and continued to November, when changes in temperature and precipitation are noticeable. The weather in this part of Anatolia has been predictable from year to year, although some years have been wetter or more windy than others. For the most part, however, both project participants and visitors avoid the storms and snows of winter and spring. From many aspects, the place that we construct through our communal memories has changed remarkably from the beginning of the Çatalhöyük Research Project to now; the lifetime of the BACH project coincides with some important changes, especially in the landscape of the East Mound and the compound.

The East Mound

When the Çatalhöyük Research Project began in 1993, there was no compound, only the guards' house and the "chicken-shed." The main feature of the East Mound was the huge overgrown scar of the Mellaart 1960s excavations in its southwestern corner (see Figure 1.6). The first shelter to protect excavators and excavated areas was installed in the first excavation season in 1995 and comprised a canvas structure in the NORTH Area over Building 1 (Figure 24.8). It served to protect the excavation of both Buildings 1 and 5 and survived until 1999, when it was replaced by a new shelter, higher and larger, with a wooden floor and miniature seminar area that was designed to house the Building 5 demonstration house. Thus, after the completion of excavation in the NORTH Area in 1998, this area had become a location for presentation or display (Figure 24.16), different from the rhythm of everyday practice, as has been surmised for the later stages of life of some of the Neolithic houses we were excavating, such as Building 3. Michael Ashley has suggested that this shelter had the best lighting of all the shelters at that time in terms of eye comfort (Chapter 24). In 2007, this shelter was dismantled to enable the construction of the new 4040 shelter.

In contrast to the sequence of shelters ("houses"?) over the NORTH Area, the BACH Area shelter protected an active excavation area throughout its life (see Figures 1.1, 24.9, 24.12). It was made of stronger imported material and was provided with a shallow foundation.[4] It was removed in 2004 immediately after "closing" (infilling) the BACH Area. It was rather a shocking—almost disorienting—experience to see the now-flattened open area where not so long ago had been a vibrant taskscape of excavation. The BACH shelter had a short, ignominious revitalization over the TP (Polish) Area on the southern peak of the East Mound, where it was placed *inside* the excavated area since it was too small to fit outside and also had no proper foundations (see Figure 24.22). Not surprisingly, the noble former BACH shelter blew away in a winter storm in early 2005.

In 2008, a very interestingly designed shelter was constructed in more permanent foundation trenches that had been excavated in 2007, incorporating the 4040, NORTH, and the former BACH Areas (see Figure 24.7; also Chapter 25). The excavation of the foundation trenches provided the opportunity for a wide sample of buildings, burials, and middens in the whole of this larger neighborhood, including the area immediately to the east of Building 3 (Space 41).

This was not the first such excavation season that was devoted to foundation trenches for a shelter. In 2002, this was the focus of excavation in the SOUTH Area for the massive shelter that was completed in 2003. It has been an extraordinary experience to witness the changes in pathways in and around the excavation areas caused by these huge shelters, and changes in the auditory and visual environment as a result of their construction. Both shelters were designed successfully not to intrude on the visual effect of the mound, but they do successfully focus the eye and the walking feet away from the mound itself into the interior where the excavation is happening or has happened.

The Compound

The compound, or Dighouse as it is sometimes called, was begun in 1996. It was designed to grow into a fully formed quadrangle around a gravel square and interior veranda, with larger blocks at each corner (see Figures 2.15, 24.4, 24.5, 25.7–25.9). In 1996, the northern and eastern wings (including the northeast corner block [kitchen and dining area]) and the eastern part of the southern wing had been built, and in the following eight years, as funding became available, the quadrangle was completed (Chapter 25; Balter 2005). The transformation of the compound certainly greatly affected social practices and the senses of place for the Çatalhöyük Research Project team, especially since, as can be judged from the previous sections, everyday life during the project was intensely compound-centered.

In 1998, the southwest corner block and adjoining southern part of the west wing were built to house the Visitor Center (Chapter 25) and, most importantly for many team members, two European-style toilets and a pay phone, along with several smaller bedrooms for more "senior" members. In 2000, a quite unexpected and welcome addition to the compound was added in the form of Sadrettin Dural's ice cream shop just outside the main gate (Dural 2007) (see also Chapter 25). In 2001, the west part of the south wing was completed, adding a number of laboratories, which were assigned at first to excavation teams, including the BACH team.

By this time, the Replica House (Chapter 22) was providing yet another quiet place to escape from the omniscient eyes of the compound "village," as well as serving its more formal role in experimental research. In 2002, the northern part of the west wing was completed, along with the northwest corner block. This added more large dormitory bedrooms for the growing team and—very importantly—new bathrooms with toilets and gender-separated showers.

Finally in 2002, the southeast corner block was completed. This was first conceived as a library and large seminar room but in fact became the main lab for the excavation teams, thus allowing the growing specialist teams and storage areas to expand into the vacated labs around the interior of the quadrangle. The new block also provided space for seminars, as planned, as well as film shows. Its roof—as in Neolithic times—provided a very important and overlooked space, as a place for escape and/or sunbathing or quiet interviews during the day, and for social gatherings, including an outdoor cinema, even sleeping, after sunset (see Figure 24.5). In fact, from 2002 the roof or "terrace" drew people away from the crowded life of the veranda and was often chosen as the preferred venue for parties over the dusty bonfire area. However, the area at the chicken shed between the quadrangle and the flotation area, with its bonfire and carpeted dance area and funky bar, continued to be the main party place on Thursday evenings. The terrace acted as a spillover for those seeking a quieter, slightly less dusty, smoky place (Figure 26.1).

The Çatalhöyük Research Project Team

The Çatalhöyük Research Project team changed considerably in composition from year to year, contributing to a constantly changing place. And yet, there were consistencies—for example, our Turkish staff, including the cooks—so that arrival in the summer was like returning to a favorite vacation place, where there were many familiar faces and it

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[4] The BACH shelter was generously funded by the Turkish Friends of Çatalhöyük in Istanbul.

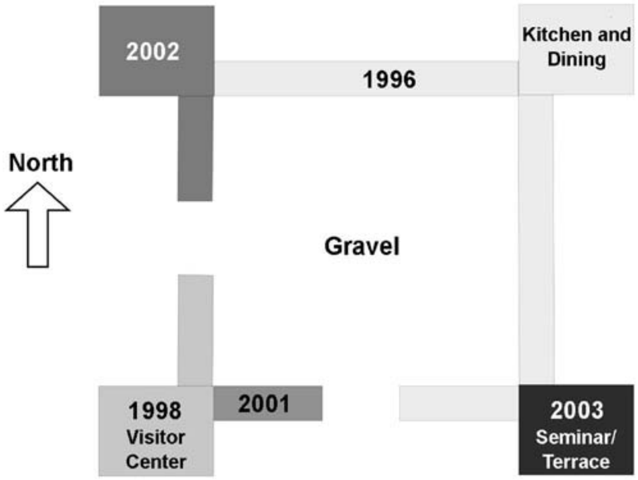

Figure 26.1. The changing configuration of the compound at Çatalhöyük.

was easy to slip back into familiar routines, friendships, and practices. Many members of the lab and excavation teams had spent much of their summers at the site for 15 years without a break. My first break came after 10 years! But there were some big changes also in personnel that affected the experience and construction of place. Many of these can be teased out from Michael Balter's *Goddess and the Bull* (2005). The change from predominantly academic excavation staff to predominantly professional excavators in 2004 was one; also, the change of conservation from one based in architecture and the United States to one based in archaeological conservation in London; the establishment of the U.K. palaeobotanical team from one earlier based in the United States and Australia; the introduction of the Polish team, the Istanbul team, the Konya team, and then the new West Mound teams; and, of course the establishment of the U.S. Berkeley-based team (long before the Stanford connection) with its large East European component. Each of these added a new dimension to the team demographic.

Individuals changed their roles (and status) from one season to another (many of these can also be followed in Balter 2005). The precedents for social practice during the long season of 1999, and the social event planning skills of certain team members (notably John Swogger), created great changes in the Thursday experience. The ways in which the changing demographics of a project team can alter the dynamics of a project and the experience of a place is worthy of a dissertation in its own right. But in my experience, as I have intimated above, the biggest change occurred after the end of the BACH project, with the establishment of "field schools" for undergraduate students at the site; this not only increased the size of the combined project team, creating new strategies such as staggered field seasons, but also changed the social dynamic of the project both on- and off-site.

What Color Is Çatalhöyük?

As part of the Remediated Places Project interviews, we asked team members what color they think of when they remember Çatalhöyük. Colleen Morgan continued to ask this question on-site in 2006.[5] The favorite answer: brown or beige, the color of the mud brick, the dust, and the dried grass. Others, however, remember it in more metaphorical terms. For example, for Shahina Farid, it is "deep purples and deep pinks—the intense colors of the Morning Glories"[6]—and occasionally the wondrous colors of a double rainbow (Figure 24.24).

Stepping Back: Considering the Sense and Senses of Place

Sensing Place through Practice

It is probably clear by now that the concept of place and its multisensorial experience as expressed in this chapter is very much in line with the practice-based concepts of place as expressed by cultural geographers such as Allan Pred (1990), Paul Rodaway (1994), Nigel Thrift (1996), Tim Cresswell (2004), and Doreen Massey (1994), as well as with *The Practice of Everyday Life* by Michel de Certeau (1984) and Smith's (2006) practice-based definition of cultural heritage (Chapter 25):

> Places are never established. They only operate through constant and iterative practice. . . . Place provides . . . an unstable stage for performance. Thinking of place as performed and practiced can help us think of place in radically open and nonessentialized ways where place is constantly struggled over and reimagined in practical ways. . . . Place provides the conditions of possibility for creative social practice. Place in this sense becomes an event rather than a secure ontological thing rooted in notions of the authentic. (discussed in Cresswell 2004:38)

In this paragraph, Cresswell summarizes a view of place, incorporating remembered or imagined fragments of practice and events that are triggered through movement, sound, and visual media, which is very different from the traditional "visualizing" of past places by archaeologists. The connection of place and senses has been made by a number of writers (Gibson 1968; Ingold 2000;

[5] The opinions have been brought together in a short movie by Colleen Morgan: *http://www.youtube.com/watch?v= IFN4avWdtkk&fmt=18* (accessed 5 September 2011).

[6] Recorded in Berkeley, California, November 2004.

Merleau-Ponty 2003; Porteous 1990; Rodaway 1994; Tuan 1993), some of whom follow the view of place described above as practice-based and ephemeral, others who view place as an "ontological thing" that can be experienced and/or sensually perceived. Geographer Paul Rodaway, in his book *Sensuous Geographies* (1994), pointed the way to a multisensorial approach to the social practice of past and present places:

> A "sensuous geography" may lay some claim to reasserting a return of geographical study to the fullness of a living world or everyday life as a multisensual and multidimensional situatedness in space and in relationship to places. (Rodaway 1994:4)

The potential of a "sensuous archaeology" is gaining momentum, pursued through exploring ideas of embodiment and landscape perspectives, by embracing phenomenology (e.g., Bender 1993; Bender et al. 2007; Joyce and Lopiparo 2005; Tilley 1994, 2008), and by more explicitly sensory studies—particularly of sound (e.g., Boivin 2004b; Boivin et al. 2007; Cummings 2002; Mills 2005; Scarre 2006). In our practice as archaeologists, however, we are also highly sensitive to touch; our discipline is inherently as tactile as it is visual. Even so, multisensory perception for us as archaeologists tends to be taken for granted, as it does in general (Paterson 2007).

Temporality and Rhythms of Practice

The idea of practice and social action is based ultimately in time-geography, a concept of the 1970s (Thrift and Pred 1981); temporality, events, and rhythms of bodily responses are essential elements of social practice, as are historical contingency and repetitive action (Bourdieu 1990; de Certeau 1984; Giddens 1979:201–210).

As archaeologists, there are a couple of aspects that I find especially constructive for creating rabbit-holes down which to move from present to past places (see also Tringham 2012b).

Learning, Apprenticeship, Familiarity

The first of these aspects is the process by which practices that start as new and unfamiliar experiences become familiar and "enactive knowledge." It is unusual for a practice to become familiar to a learner by its repetition in social isolation; it is more likely for observation of, communication with, and even instruction from, others who are further along the learning curve to provide the context of the growing familiarity. This process of familiarization or learning—as described, for example, by Jean Lave in her "apprenticeship" model (Lave and Wenger 1991) or by Lev Vygotsky in his "zone of proximal development" (Vygotsky 1978)—is the process of acquiring knowledge that is termed "enactive," "that is stored in bodily sensori-motor responses" rather than acquired through symbolic or iconic means (Bennett and O'Modhrain 2007).[7] We tend to apply this model of learning to childhood development, but I believe that it can be constructively applied to learning throughout a lifetime.

To think about how and why a practice becomes "embodied" or—as some think of it—"internalized" leads us beyond the practice itself to its historical contingency and to its entanglement in other practices. If I take the example, already introduced in Chapter 2 of this volume, of my own process of becoming familiar with excavating mud brick after a career built on excavating wattle-and-daub structures, the process was conditioned by the fact that I had internalized the manipulation of an English-style WHS trowel, but was not accustomed to the smooth texture of plaster that was easily destroyed by too heavy a hand. I have always resisted the use of an American Marshalltown trowel, with its convex profiled edge. This was lucky, since my "guides" used the same tool as I did, making the practice of learning from them that much smoother. In addition, my familiarity with their tool of choice provided a certain amount of cultural acceptability with my guides. So in 1996 and part of 1997, in effect I acted as an apprentice, on the periphery in terms of responsibility, observing and gaining confidence. In like manner, the trajectory of the BACH project itself shows a similar process of growing confidence as the entire team became familiar with the repetitive practices of excavating mud-brick walls and plaster floors, documenting single-context archaeology within the rules of the reflexive methodology. The entanglement of these practices with other practices with which we were more familiar and confident and less willing to change can be teased out from our discussions in Chapter 2 of this volume.

Let us consider the simple practice of getting water, in the 9,000-year-old Building 3 at Çatalhöyük. Imagine it is a younger person; at some point he or she must be shown the container, how to hold it to collect water, how to carry it filled with water, where to fill it (see below, under "Smell and Taste," that sources may be secret or hidden, or at least not obvious), and which is the best path by which to carry it. In most cases, we think of these skills as already learned, and not even objects for our investigation. But, in fact, each step in the task has to be learned by observation, discovery, copying, and demonstration, each of which is an important social practice, contributing to a multitude of experiences in an endless process of learning.

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[7] The idea of "enactive knowledge" leading to digital "enactive interfaces" has important implications for digitally sharing a multisensorial experience of place, which is discussed further in the final section of this chapter.

Body-Ballets, Place-Ballets, and Taskscapes

Movement, like learning, is an essential element of social practice and the construction of place, and, like learning, it tends to be taken for granted. Both Tim Ingold's (2000) "taskscapes" and David Seamon's (1980:157) "body-ballets" and "place-ballets," along with Merleau-Ponty's (2003) notion of "embodiment," draw attention to this idea. These concepts provide valuable frameworks for understanding everyday movement at multiple scales, from the twist of a little finger in making a strand of twine to a group procession across the mound (Tung 2008). A body-ballet is "a set of integrated behaviors which sustain a particular task or aim" (Seamon 1980:157). Body-ballets can fuse together as complex time-space routines that involve movement, repetition, and habituation. When such time-space routines of individuals fuse together into a larger space-time whole, Seamon terms it a "place-ballet."

Whereas Seamon's (1980) concept has been developed from time-space geography, Ingold's (2000) concept of "taskscape" has grown out of an interest in labor as social practice, whose value is measured in terms of time (hence temporality). Thus, a "task" is "any practical operation, carried out by a skilled agent in an environment as part of his or her normal business of life" (Ingold 2000:195). Moreover, "every task takes its meaning from its position within an ensemble of tasks, performed in series or in parallel, and usually by many people working together" (Ingold 2000: 195). This ensemble of mutually interlocking (entangled) tasks is what Ingold calls a "taskscape."

Each taskscape can be conceived as a place, but it is a place that is hard to grasp in the imagination and difficult to describe, since its nature is constantly changing. With repetition and habituation of tasks, some aspects may be grasped, but, as Ingold—following Merleau-Ponty (2003)—mentions, a taskscape by its very complex nature cannot be perceived but is to be participated in—that is, to be lived, to be experienced as a multisensorial, embodied social interaction. The challenge for an archaeologist trying to imagine taskscapes (places) of the past, then, seems insurmountable—but perhaps not quite.

Place and Sensual Memories

As I wrote in the section called "Strategies of Good Practice and Sustainability" in Chapter 25, I was relying for the most part on my own memory and those of others, separated by many miles and even several years from those ephemeral performances on the East Mound and at its base at Çatalhöyük. As I mentioned there, however, and as was reiterated by David Seamon (1980), those place-ballets from 1997 to 2007 provided us with a sense of continuity from year to year, of familiarity with the tasks to be carried out, and the social practice to be dwelled in. Much of this book has comprised piecing together the taskscapes and the performances (excavation and analysis) from our collective memories. But we cannot remember everything, partly because it is so habituated and embodied as to become forgettable. We tend to remember the memorable, the unique event, the challenging task, the masterful performance, or the emotionally heightened experience. But I feel we need to try harder to remember the everyday and the all too easily forgotten. In the same way, we need to exercise our imaginations harder to participate vicariously in the everyday taskscapes of 9,000 years ago. The anchor for our memories of our recent past experiences are diaries and documents,[8] photo images and videos, and for this I am grateful to our obsession, described in Chapter 3, to document not just the memorable, but the forgettable unit, the daily event, the mundane discussions of excavators, and the silly party scene.

Stepping into the Imagined and Constructed Then

Thousands of such experiences—events, ballets, and taskscapes—contributed to the growing of the East Mound at Çatalhöyük during the 1,000 years of its life 9,000 years ago. The key to constructing or imagining what these may have been is to anchor them, like the more recent memories, in the empirical remains of these ephemeral events and performances. Each archaeological unit that is excavated represents a depositional event in the life of a building or a neighborhood. Each depositional event can be related to others chronologically and spatially, represented, for example, in the Harris matrix (Chapters 2, 5). The "unit" comprises soil and/or building matrix and its associated materials and samples. From this foundation are built, through inferential and interpretive processes, the everyday repetitive practices—tasks, rhythms, and activities—that were carried out by the different actors. This exercise is made richer by the experiences of Çatalhöyük now, but also by using the ethnographic present for inspiration (Hodder 2006a:25).

As archaeologists, when engaged in this exercise we tend, by pressure from the material remains of the past, to forefront kinesthetic practice—the human body engaged with itself or other materials in a task that has some intentioned product and/or purpose and intentional or unintended result. Following Ingold's discussion of taskscapes as social practice, it seems that the task itself is but a fragment of the event of social action that was taking place (Joyce and Lopiparo 2005). Thus, the task of bringing water from the Çarşamba was, on some occasions, but a backdrop to the much more important event of meeting other girls

[8] *http://www.catalhoyuk.com/database/catal/diarybrowse.asp* (accessed 5 September 2011).

from the village to compare notes on secret assignations and, on another day, might be an excuse for solace away from a bad day in the village. As another example, we assume that the impact of painting the interior walls of the houses at Çatalhöyük was as dramatic visually for them as it is for us; but it is as likely that the performative effect of creating the paintings in emotionally heightened social contexts was much more dramatic than the visual effect of the finished product (Boivin 2004b).

How can we capture on paper the many such place-ballets and taskscapes that make up Neolithic Çatalhöyük? How can we select, simplify, and merge taskscapes without creating a generic series of repetitive practices that lose sight of the amazing richness of everyday life in Neolithic Çatalhöyük? One direction I follow in this chapter and in the on-line edition of this volume is the nonlinear, ephemeral, and fragmentary nature of memory (Berger 1980; MacDougall 1998; Stewart 1996; Tringham 2010) and the construction of history (Anderson 2011).

> Memory is often apparently incoherent, and a strange mixture of the sensory and the verbal. It offers us the past in flashes and fragments and in what seems a hodge-podge of mental "media." We seem to glimpse images, hear sounds, use unspoken words and re-experience such physical sensations as pressure and movement. (MacDougall 1998:231)

Thus, following Kathleen Stewart's (2007) event-based entanglements of *Ordinary Affects*, I build a narrative—a recombinant history—of fragmented, entangled "memories" of events and experiences and past taskscapes of Çatalhöyük, knowing that these windows into the past are glazed with modern glass. "Ordinary affects are the varied, surging capacities to affect and to be affected that give everyday life the quality of a continual motion of relations, scenes, contingencies and emergences" (Stewart 2007:2).

In the fragments that I present below, there will be little comparison with the rhythms of the Now at Çatalhöyük that I have considered earlier in this chapter; perhaps there will be glimpses of the daily rhythm swirling around feeding time and other bodily functions, such as the need for rest and drink, and crossing the mound and negotiating the Çarşamba River.

Walking across the East Mound

The discussion in this section completes one that was started in Chapter 2 of this volume and continued in Chapter 25. In Chapter 2 (under "Chronometric Dating of the BACH Area Buildings"), we discussed the lack of consensus whether the buildings excavated at the northern end of the East Mound in the BACH Area (B.3) and NORTH Area (B.1) represent the final buildings in their respective locations, or whether there were one or more above them that have been eroded away (Hodder 2007; Matthews 1996a). For the purposes of the discussion in this chapter, I am building the fragments of Neolithic taskscapes on the assumption that Building 3 was indeed the Last House on the Hill in its particular area and that the surface of the East Mound and the configuration at its northern end was probably very similar to what it is today, minus perhaps a meter of earth.[9]

The Remediated Places Project (see Chapter 25 for an introduction to this project; also Tringham et al. 2007) is all about an awareness of walking and movement, and the lateral thinking that occurs in the minds of the walkers (see Figure 25.24). To walk up the northern end of the mound on a path takes us four minutes. We are walking along a dusty path in the summer, one that rises at a steady rate. How different is this modern path in winter or spring with snow or rain? Currently, we change the path trajectory frequently to prevent erosion. Would they have had, 9,000 years ago, a clearly defined path? Would there have been grassy or weedy covered slopes on each side, or would there have been buildings in various stages of decay, construction, and occupation? Did the path rise gradually, as it does now, across the mound surface, or would it have wound its way along streets, rising in steps, similar to walking through the *plaka* on the slopes of the Athenian Acropolis? These are questions that we find not only fun to think about but are an essential part of imagining the taskscapes 9,000 years ago.

The BACH Area has neighboring excavated buildings in the NORTH Area and, more recently, in the 4040 Area, many of which are partially synchronous with Building 3 (Figures 26.2; see also Figures 24.6, 25.4). As a result of the excavations in the 4040 Area, Ian Hodder has suggested that the apparent densely packed buildings which in this area have been dated to Mellaart's Phases VI–VII may not only have been at different stages of their life histories at any one point in time, but that they were actually grouped in small neighborhoods or zones (Hodder 2006a:101, Figure 40) separated by alleyways such as that designated as Space 271. Thus, to travel from one zone to another, a walker would have been required to go down to ground level. And there are unexcavated buildings north and east of Building 3 that also might be included in what has been termed a "neighborhood" of households.

Movement from house to house within the neighborhood or residential "zone" may very well have been across the rooftops, as has been surmised by Mellaart and Hodder

[9] As mentioned in Chapter 2 of this volume, there is some disagreement as to the degree of erosion that the northern end of the East Mound suffered during the Neolithic, ranging from 0.5–1.0 m (Matthews 1996:83) to 2.5–5 m (Hodder 2007:35).

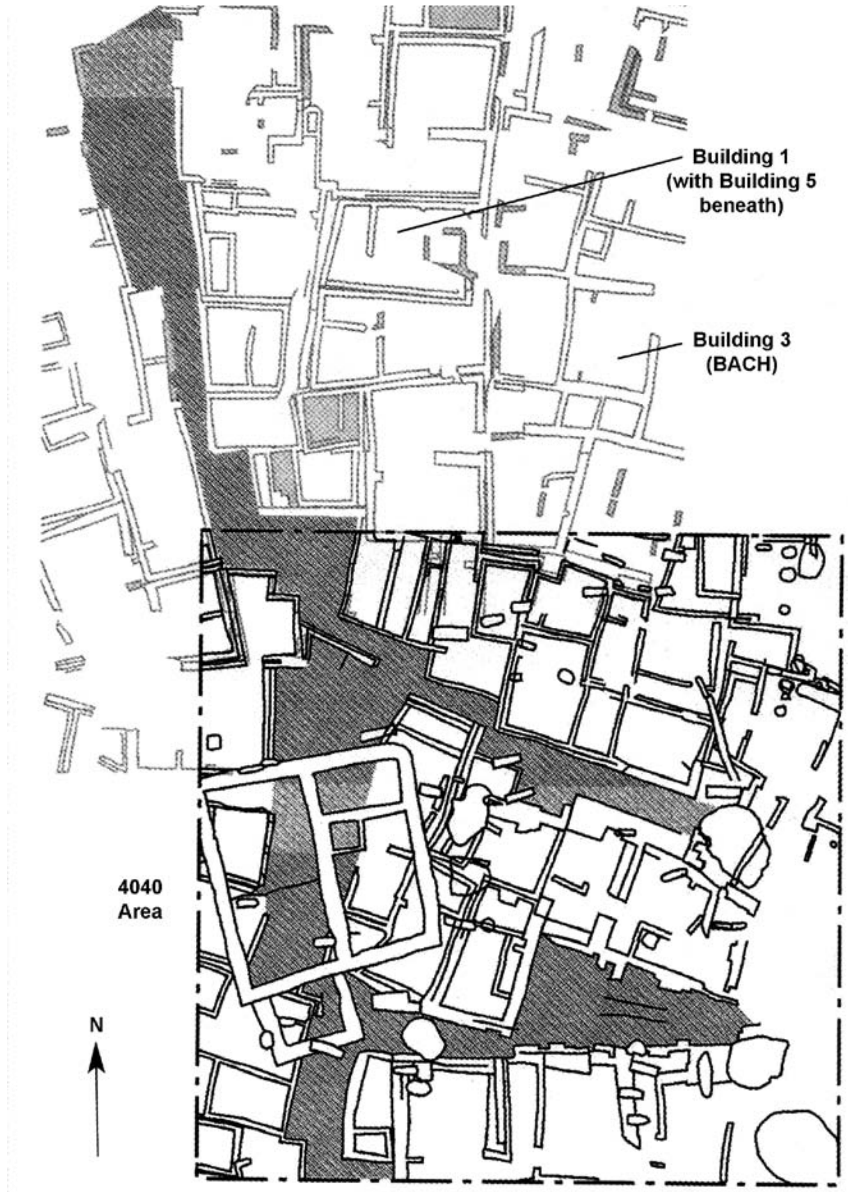

Figure 26.2. The neighborhood of the BACH Area.

and the majority of authors (see Figure 22.15). But we would be remiss not to imagine that alleyways between houses were accessed at ground level, at least from some of the buildings, and provided pathways, as I would like to suggest for Space 271. Hodder (2006a:101) and Matthews and others in the research team, however, have argued that the surfaces in these alleys do not show the fragmentation and trampling evidence that would indicate their use for walking or animal transport, but that they were more likely used for marking different residential zones within a neighborhood and for garbage disposal. This, of course, assumes (1) that the surface of the alley was hard enough to produce fragmentation on contact with feet; (2) that the tread surface of the walkers' feet was hard and heavy enough to create fragmentation; and (3) that walking across a garbage surface would not have been appropriate for passage. So, in my view, it is not unfeasible to imagine a soft-footed walker who doesn't mind or notice the smells, picking his or her way between the larger obstacles in order to escape the confines of his or her zone of rooftop access and to cross into another residential zone or even beyond the neighborhood.

At "ground level," openings in walls may have acted as doorways that allowed passage for humans (and animals). The opening in the northern part of the east wall of Building 3 (F.633) has been described in detail in Chapter 5 (see Figures 4.1, 5.6, 5.7). Such openings have been variously described as crawl holes and access holes, and occasionally doorways. For this discussion, it is interesting to speculate on whether the opening in the east wall of Building 3 gave access to another building at floor level (Space 41), or whether it, in fact, provided access onto a pathway between houses or zones, such as Space 271 (raising the possibility that at an early point in its history Building 3 was the easternmost building of its zone or neighborhood). In the latter interpretation, you would pass over the threshold of Feature 633 from the dark interior of Building 3 out into bright sunlight or the rising sun; in the former, you would pass into an equally dark interior of a neighboring building. It is easy to imagine the effect on the atmosphere inside Building 3—especially if Feature 633 had opened out onto the exterior—that would have been created when this opening was closed in the reconfiguration of the house in Phase B3.2.

All of this speculation becomes irrelevant if, as my colleague Colleen Morgan has mused (personal communication, March 2009), the outside walls of the Neolithic buildings were not exposed at all but were buried in the matrix of the mound with only their "roof and roof structures" showing above the surface.

James Mellaart imagined the whole East Mound at any one time as a continuous mosaic of occupied buildings (Mellaart 1967). The current excavations have demonstrated that many of the contiguous buildings were not occupied synchronously; on the contrary, a contiguous building may have lain in ruins, as a dump for garbage or human waste or a small vegetable garden or a beehive, while its neighbor was enjoying an active life. There still remains in the literature, however, the idea of Çatalhöyük as the earliest town, which the recent excavations of the CRP have gone far to problematize and critique (Hodder 2006a:Chapter 4; Tringham 2000a). The vital question, for thinking about walking and movement across the East Mound, concerns the formation process of the mound itself. If the East Mound is the archaeological result of the merging debris of two or even three distinct villages (Figure 26.3), as has been discussed in Chapter 2 of this volume and in the previous volumes of the Çatalhöyük Research Project (Hodder 2006a: 100), then walking from a village in SOUTH to one in NORTH would have been a totally different experience than if it were one continuous spread of buildings.

Taskscapes of Neolithic Çatalhöyük

In his book *The Leopard's Tale*, Ian Hodder (2006a) has carried out the exercise of imagining the everyday entanglements of tasks within a complex tapestry of domains of domestic, symbolic, and spiritual practices. Rob Swigart, in *Stone Mirror* (2007), has also imagined the daily routines (see Chapter 25). Rather than reiterate their excellent narratives here, I offer some fragments that will act as triggers for many questions and other narratives and vignettes in the on-line edition of this volume.

Rhythms of the Day

The daily routines almost always involve some kind of movement—walking and carrying. "'A woman carries three corners of the farm and helps her husband hold the fourth' is a saying often heard in Croatia," writes Eva Skold Westerlind at the beginning of her book *Carrying the Farm on Her Back* (1989). We archaeologists tend to carry heavy loads (e.g., flotation samples, finds) down the mound; they would have carried heavy loads up the mound (water, bricks, or building materials). They would have climbed up the mound at the weary end of the day, whereas we stagger down the mound at the end of probably a less tiring day.

Early morning rhythms are all about carrying: carrying water, carrying firewood or dung, carrying waste to its various dedicated places, carrying food to animals. And all these tasks are much harder in winter and in the rain.

Early morning first breakfast may have been a casual affair like ours on the site, each person foraging for him- or herself in the store. We can imagine they eat together or by themselves, they eat while on the move, they stop to eat, they eat at other houses, they drink while they eat, they talk while they eat, they eat with their hands, they eat solids or semi-liquids, they eat out of containers (baskets, bags, bowls of wood).

Fire creates continuity: we can imagine them in the morning, rejuvenating the fire in the oven inside the building; making or rejuvenating a fire on the roof; making seasonal fires (summer kitchen, winter kitchen, kitchen for feasts, kitchen for burials); sleeping by the fire; putting the fire to sleep; gathering dung for the fire, or wood for the fire; telling stories by the fire; having accidents with fire.

As for moving in the house interior, permitted pathways and destinations would have changed during the

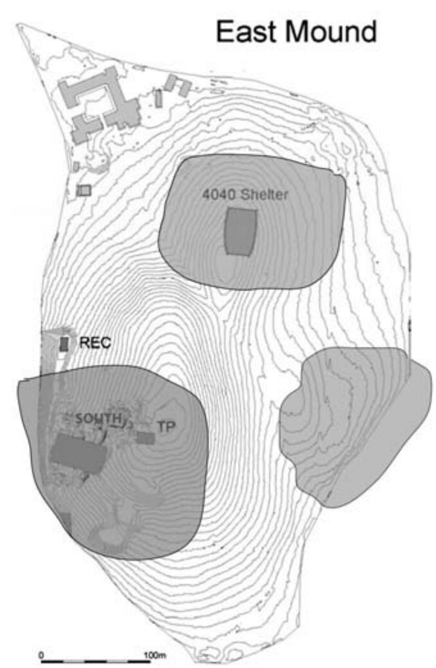

Figure 26.3. Hypothetical multiple villages at Çatalhöyük.

lifetime of a house and the lifetime of a man and or woman. We can envision someone moving around the fire; moving through crawl holes; moving in small spaces; crouch-walking; squatting for long hours; reaching into cramped storage areas; climbing the ladder (how high is the ceiling?). At certain points in a life cycle, it can be too hard to climb the ladder: is the person we imagine too young, too old, injured? Is the ladder too slippery, or broken? Is the roof level a hazard, falling down? Did "Dido" (see below) dislocate her hip and break her ribs by falling down the ladder?

As for walking beyond the house (Ingold and Vergunst 2008), I keep coming back to the multisensorial, whole-body experience of walking because I believe that, whether we think of their paths as taking place in Ingold's goal-oriented "transport" mode or his exploratory "wayfaring" mode, this was as essential a part of social practice as the traditional focus on sitting still (Ingold 2007). As they walked through the village or across the mound from one village to another, their attention may well have been on the immediate landscape of houses and people (as ours tends to be on the excavation). But they may also have been (much more so than us) in touch with life, views, and sounds beyond the mound. Where we see a boundary at the base of the mound and the compound, their boundary between the familiar and the unfamiliar may have been much farther away—perhaps even chronologically—so that walking at dawn in the surrounding marshland may have been familiar, whereas at night it was the realm of the unfamiliar. Walking to the fields, a short walk, is very different from a longer overnight adventure (10 km); how many stops along the way? I wonder if they hurried not to get caught walking back from the fields at night. It can be very dark at night in Central Anatolia, yet the stars are so numerous and so bright that your eye can adjust; and when the moon shines, it is enough (for us) to read by. Were they nervous in the dark?

Think about whether these are group walks or strolls in solitude. Think what they are talking about as they walk: "here and now" topics, or learning stories or memories, or just joking around? Think about what they are thinking (as in the Remediated Places Project): they might look but not see; they might hear but not listen; they might not even be aware of the wind or heat or wet or cold or tired feet (unless they hurt); but they see things in their memory and imagination. In this context, things happen when you walk and don't pay attention: falling, slipping, tripping, losing your way (Vergunst 2008); for example, how *did* the mature woman buried under platform F.162 and identified as "Dido" or F.634 dislocate her hip and break her ribs (Chapter 13)?

When did they walk with animals (sheep/goats)? I like to think that 9,000 years ago, they did what we see in the villages of Southeast Europe and Anatolia today: a couple of herders (varying ages and gender) gather the animals from each household for communal pasturing at dawn; dogs are taken along for herding or for guarding; they all move at a sheep or goat pace, time for self-amusement, meditation, time for alertness (Gooch 2008:72).

Back to carrying: Whole-body labor in the fields, marshes, and forests is always followed or accompanied by carrying stuff: carrying raw materials back to the village, including wood, reeds, dead animals, and plants for food and a multitude of other purposes every day. It is worth thinking about how these tasks could have been combined by a multitasking group who timed their efforts to coincide with the collection of several items, creating yet another enjoyable collaborative event.

Production and maintenance of tools and containers also happened every day, while walking, squatting, sitting, or standing, in solitude or in company. There are countless tasks involving the materials that are brought onto the mound that need to be done during the day every day: animal and plant food processing, food preparation, basket and bag making, reed matting, weaving textiles, molding clay into containers, balls, and figurines, making and mending tools of bone, antler, and wood, flaking obsidian and flint, grinding macrocrystalline rocks into tools, creating hafts, handles, and other appendages and bindings whose complexity we can only guess at.

Throughout this volume and in the previous Çatalhöyük volumes, we have formed some conclusions about the locations of such tasks. Repeating spatial patterns in the archaeological data point to the contexts where these tasks took place. The southern "dirty" end of the buildings, close to the ladder opening, seems—as in Building 3—to have been an important location. Obsidian, for example, was acquired from Cappadocia in the mountains to the northeast—many days' walk from Çatalhöyük—where it was reduced into workable pieces; its final reduction and maintenance was carried out in the interior of the buildings near an oven, away from the prying eyes of the village, and was often buried beneath the floors of the houses (Hodder 2006a:105). Bead manufacture occurred in the building interior in Building 3 (Chapter 21); cooking that involved the use of clay balls was also carried out in the interior of the houses, including what we would regard as "smelly" activities, such as grease rendering; but other cooking and food preparation may have occurred on the roof.

For most of the tasks, there is no repeating spatial pattern visible in the archaeological record, so that the location of the task has to be inferred from what spatial information is available, along with the locational requirements of the task. Winnowing of grain, for example, needed assistance from the wind so could not have been carried out inside. Many of the tasks could have been carried out in a number of contexts: inside the houses, on top of midden areas between and in abandoned houses, on the house roof, or at the edge of the settlement. Hodder has considered the context in terms of possible rules as to what could and could not be brought into the house, and what could and could not be introduced into the village (Hodder 2006a).

We can make the whole visualization of the rhythms of the taskscapes of prehistoric Çatalhöyük even more difficult to grasp by thinking of a specific spot being the location for many different tasks—for example, the midden to the west of Building 3 (Space 85) (see Figure 4.1). There are many scenarios we can conjecture about this spot: it was the favorite place for someone (or a group of people) to sit for all of his/her/their tasks; or it was the location for one group or individual at one point in the day, and for another group at a different time of day; or this was the designated place to do a specific task, for reasons of its special properties, such as an associated facility (heat source, storage source) or attribute (light source, shade, draft, lack of draft), in which case we would expect this to change with the seasons or during the day; or this spot was designated as the place for a specific task or a specific person or group for symbolic reasons (next to ancestor, below bucranium, next to oven, mother's platform).

Longer-Term Rhythms

Longer-term rhythms are seasonal, annual, or occasional. The idea of the life cycle of places, people, and things has drawn us to focus on the formation of the tell itself, on house life histories and human burials. House construction and maintenance (Chapters 6, 22) involve a good deal of walking and carrying from locations away from the mound: finding the clay, choosing the clay, walking to the clay and other construction materials, carrying the tools for digging, digging the clay, carrying the clay, carrying tools for cutting reeds and wood, and carrying reeds and the timber. From the base of the mound, things were made that had to be carried to the house site at the top of the mound: we can see mixing plaster, mixing mortar, mixing packing, making bricks, making the roof, carrying it all to the house site. These were complex tasks, involving organization and planning, and were unlikely to happen on a daily basis or when people were occupied with other tasks. It is likely, as has been argued by Mirjana Stevanović (Chapter 4), that these tasks were combined and collaborative, involving more than one household.

The communality of the tasks to gather the materials for building a house certainly extended to the tasks of construction itself and house maintenance. Replastering of the floor of Building 3 was carried out as a single event, meaning that for at least some of that time, the occupants would have had to live on the roof or in a neighboring house (Chapter 4). At the very least, the serial disruption of "maintenance season" would have impacted a zone or neighborhood.

Stevanović has suggested earlier in this volume (Chapter 4) that major reconfigurations of house interiors are likely to have accompanied the burial of the dead under the house. The tasks of burial are kinesthetically considerably less complicated than reconfiguring the house interior: dig or reopen the burial pit, deposit the skeleton (which may or may not have been already exposed and/or tied and/or placed in a basket), fill in the hole, cover it with a lid, plaster over the whole. But we can imagine that the entire process was emotionally intense, with the disruption of the living area, communal support and participation, the entanglement of special foods, spoken and sung words, and rhythmic audio stimulus.

The process that we refer to as "closing a house" involved stripping the plaster skin and relief carvings from the walls and digging out the timber supporting beams of the roof; cleaning the floor of superstructural debris such as ovens and bins; collapsing the roof and walls and filling the void with the dismantled building matrix to the level of the standing stubs of walls. The taskscape of closure must frequently (but not in the case of Building 3) have been followed by laying foundations for a new house to rise from the skeleton of the dead house. The whole process of death (and possibly rebirth) of the house must have been an equally emotionally intense experience, heightened by communal collaboration, feasting, and performance.

We assume that Çatalhöyük did not exist in a social vacuum (Asouti 2005a; Baird 2005). Visits to and by distant villages and relatives in the mountains, or at the seacoast, must have been at least an annual event. This may have involved walking to other villages where friends, allies, or relatives would have collected materials and offered them in exchange for friendship and alliance or Çatalhöyük honey. Such a movement has been demonstrated for obsidian (Carter et al. 2005) but is likely to have applied also to such materials as chert, special timbers, macrocrystalline rocks, and more exotic materials.

Finally, there are a number of annual phenomena that we have noticed during our short seasonal visits to Çatalhöyük. The storks arrive on their migration south in August. The night sky over the Anatolian plateau is very bright and clear, and in early August we have all remarked on the meteor showers that can be so vividly observed. These annual observations that fill us with a kind of yearning lest they disappear through the vagaries of pollution and environmental degradation must also have been observed 9,000 years ago.

The daily and annual rhythms and taskscapes that I have discussed above need to be seen against the longer rhythms of the life cycle of people and the village(s) whose debris creates the mound that we call a tell. This includes the demographics of an aging population in a building, accidents and illness that might occur at a crucial time in these rhythms to create change; what led a population to gradually abandon life on what we call the East Mound, to create other places on which to set their houses, even as close as across the river on what we call the West Mound. The buildings of the BACH Area were distant in time from these events, yet the occupants of Building 3 may have experienced some similar phenomenon at a smaller scale if, as we surmise, Building 3 was not built over.

The Multisensorial Experience of Çatalhöyük

A number of writers in anthropology and geography have argued for the need to understand the sense or meaning that is made of each sensation as part of a multisensorial experience (see, for example, summaries in Pink 2006; Rodaway 1994). These same advocates have drawn attention to the unremitting dominance of the visual sense in Western philosophical and epistemological values. For example, Sullivan and Gill go so far as to say that "sight paints a picture of life, but sound, touch, taste and smell are actually life itself" (Sullivan and Gill 1975:181). "Any classification of the senses is first and foremost an analytical device, a simplification and an abstraction" (Rodaway 1994:28). In this section of the chapter, I treat each of the "traditional" five basic senses—visual, auditory, olfactory-taste, and kinesthetic-haptic (touch)—as separate discussions, knowing that an experience as sensed through one system or medium will inevitably become entangled with other senses, since the processing of the information through the body's receptors involves a complex process of interpretation through social, cultural, and emotional filters.

It cannot be repeated enough that, for people 9,000 years ago (or 9,000 miles away), the meaning derived from a sensuous experience, and even the experience itself, will be very different from ours (Chapter 24; Classen 1993; Howes 2005). Pink (2006) and Stewart (1996) would argue it is different for each contingency and for each person. However hard we imagine, we of the Now situation are the filter through which we construct the rhythms and taskscapes of the Then situation; hence, the close attention paid above (under "Capturing the Taskscapes of Çatalhöyük") as to how we experience the East Mound now. In contradiction to what our intuitions tell us, it is only by being aware of our experiences of the Now that we can begin to find our way to the event-filled everyday of the prehistoric East Mound (see also Chapter 24).

Ian Hodder has drawn attention to an interesting idea in *The Leopard's Tale*: "In a way, the whole of Çatalhöyük seems to be about hiding and revealing" (Hodder 2006a: 169). One side of the process of revealing and hiding is secrecy, control, privacy; the other side is the excitement engendered by discovery, exposure, and surprise. In the fragments below, I explore this idea further by applying it to senses beyond vision, to hiding and revealing sounds, textures, smells, and even tastes.

Vision

The boundary of the East Mound is clear to us as archaeologists; for one thing, there is a fence around it that informs us. And yet as archaeologists, we know that the accumulation of domestic debris of the East Mound went well beyond and below the fence perimeter, at least on the northern side of the mound in the area called KOPAL (Roberts et al. 2007). The visual appearance of the village or villages on what is now called the East Mound may have straggled toward their perimeter and not presented the united walled front that most of the reconstructions suggest (Figure 26.4). I find it interesting to muse on whether the Neolithic inhabitants were aware of the growing mound and, if so, how important was it to be at the

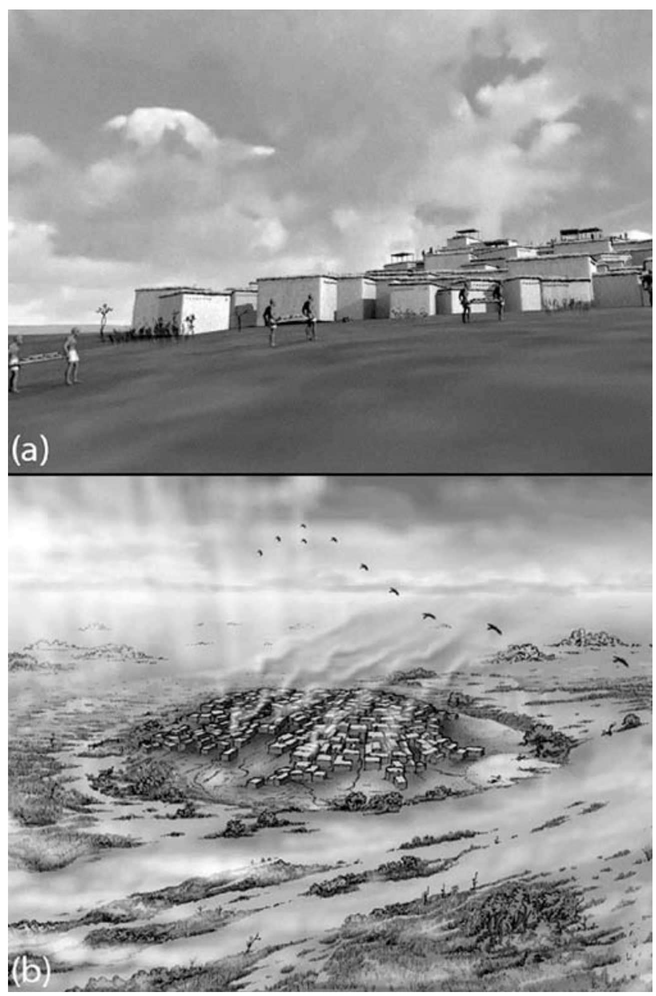

Figure 26.4. The view of Çatalhöyük from the outside: (a) solid vs. (b) straggling front (J. Swogger).

top of the mound. Or did they even intentionally "help" the formation of the mound (Evans 2005)? A number of archeologists, in discussing the formation and significance of tells, have suggested that to live at the top conferred social status (Bailey 1999).

Most authors have drawn attention to the fact that the interiors of the buildings at Çatalhöyük were hidden from view, but does "hidden" mean inaccessible to prying eyes or wandering feet? It seems likely that there were visible cues on the roof—like the bucranium on the roof of Building 3—to indicate who was allowed down which ladder to the hidden "basement" or "first floor." As archaeologists, we are unaware of any built superstructure on the roofs, but it seems logical that this area was active and less hidden, especially in the summer; and second stories definitely existed (Hodder 2008).

Hodder (2006a) has discussed the many instances of hiding and revealing in the interior of the houses (see Figure 4.7). In Building 3, the screen wall system, which became more elaborate during the life history of the building, hides from view the storage areas and the collapsing west wall of the building (see Figure 5.78; also Chapter 4). The burial lids, which are made of a lighter kind of packing and are plastered over, conceal the entrance to the pit and the ancestors, to be revealed on the occasion of new burials (except for the final burial in Building 3). The red wall plaster around the north-central platform (F.162) is covered by a final coat of white plaster; the perhaps annual replastering covers old plaster and old events with new plaster.

In the light of the perhaps secretive nature of the house interiors, the closure of the house and its abandonment and rebirth was indeed a dramatic and emotionally sensitive event, needing to be alleviated by ritual performance, since the process essentially reveals the house interior to the outside world. It is not surprising, then, that the interior walls are stripped of significant symbols and the floors and walls well plastered over, hiding burials, paintings, and obsidian from view. The traditional truncating of features in Çatalhöyük houses in this case may be seen not only as facilitating foundation building for the subsequent house-building but also as hiding the nature of the original interior house features. What is left on the abandoned floor of the house is the household's intentional selection of items to be viewed by everyone as symbolizing the household. For Building 3, this included (possibly) the wild animal scapulae, the two human skulls, and the oven and bucranium that had rested on the roof and would have always been visible anyway. The northern part of the building, under which lay the burial pits, was covered immediately by the (probably deliberately) collapsed roof. By contrast, the southern part of Building 3 seems to have stayed open to view long after its abandonment and was filled, and hidden, gradually by garbage and building materials, as it became forgotten.

During the day, light shines down the ladder hole (Hodder 2006a:136), enough to light up the interior or "first floor" of the buildings (see Figure 24.20)—enough to enable one to move about, but probably not enough to see colors; and it was probably much dimmer when the sun was not shining (see Chapter 24). At night, with the stars and the moon, it would have been lighter (and perhaps preferable in summer) on the roof, as we have found on the compound "terrace" since 2002. In the interior of the house, a "nightlight" of sorts may have been provided by the sleeping fire. I have thought about artificial sources of light, such as candles (made from wax taken from wild beehives at the same time as that mythical stolen honey; see below). In 2001, the photographer Reza, on assignment for *National Geographic*, lit up Building 3 at night with spotlights, which certainly added a dramatic effect to our rather mundane taskscape but is unlikely to have approached the flickering, less powerful light effect experienced 9,000 years ago.

Sounds and Soundscapes

Sound Barriers; Sound Carriers

In our experience in the BACH shelter, we were aware that not only were our actions visibly hidden but so too were our voices and our music and even the sounds of our trowels. To know what was going on in the BACH Area you had to go inside the shelter. On the other hand, we could never hear visitors coming unless they were talking. Walking across the soft earth surface of the mound entirely deadens the sound of footsteps, although presumably not in winter. This was different for unenclosed areas, such as the early days of excavation in the SOUTH or 4040 Areas, where the listener/voyeur could observe from a distance (Tringham and Mills 2007). From our experience in the Replica House (Chapter 22), voices and actions on the roof could be heard in the room below but not in the opposite direction. We infer, therefore, that in the Neolithic houses, the hiding of conversations, gossip, and information was easy to achieve—at least from non-family members—in the building interior. From the roof, voices would travel much farther, the distance (revealing and hiding) being modulated by projecting or lowering the voice.

Daily Rhythmic and Ambient Sounds

Another thing to consider is the cadence of language and emotion, and the context of the voices: communication among people in the everyday; ritualistic greetings accompanied by gestures or information exchange; communication between people and animals, such as the incessant commands given to people, dogs, and sheep and/or goats as they are moved along from one pasture to the next. Consider also the noise and rhythm of materials as they come into contact through tasks (chopping stone on wood or bone, digging stone or bone on earth, the archaeologists' contact sounds of trowels scraping plaster or shovels into loosened earth); to these rhythmic sounds can be added work songs (Ingold 2000:407–408; Mithen 2006:273).

There are ambient sounds of dogs, sheep, birds, insects, frogs, wind, rain, children, babies. Most people and animals and atmospheric phenomena make some kind of sound; it is up to us as archaeologists to construct the ephemeral or repetitious soundscapes (Mills 2005; Schafer 1993).

Event Sounds

Event sounds interrupt the repetition and regularity of daily rhythmic and ambient sounds—perhaps startling, like thunder or a sandstorm, and setting everything moving noisily; perhaps human cries raised in anguish or pain; perhaps the songs or rhythmic sounds that accompany house-building, burials, visits, feasts, and other events of the life cycle or longer-term rhythms. What did these songs sound like? Composer Simon Thorne, inspired by Stephen Mithen's *The Singing Neanderthals* (2006), created the piece *Neanderthal*,[10] in which he constructed, with the help of the chanting and vocalizations of four singers and percussion "stone instruments," an auditory backdrop for an exhibition entitled "Origins" in the National Museum of Wales. He writes about his composition: "It's a ridiculous notion to suggest we could ever know the precise role that music played in the lives of the Neanderthals, but imagining it has been a fascinating experience."[11] The on-line edition of this volume attempts some similar compositions for more recent Neolithic Çatalhöyük but tries to incorporate more ambient "noise" into the song than occurs in the very "clean" sound of Thorne's placeless compositions.

Acoustic Archaeology

Another approach to sound and auditory perception is to think about the acoustic context of the sounds that create changes in the ambience, causing the same voice or material contact to change its sound (Mills 2005). We have considered this in the difference between sounds outside a building and those inside, and the projection quality of some sounds over others. But would the interiors of different buildings at Çatalhöyük or buildings at different times in their lives have had different acoustics? The two short partitioning walls and then the screen wall of Building 3 would certainly have created such changes during its later life, and the overall acoustics would surely have been different from those of Building 1. The foundation of Building 3, on midden that built up over many years, would possibly have created a different resonance from that of Building 1, which was founded on the walls of Building 5 and the well-sorted matrix that filled its vacuum. And the change in acoustics as Building 3 was "cleaned" before its final abandonment would have been very obvious to the inhabitants.

The intentional manipulation of acoustic effects may have been part of the Çatalhöyük skill sets, but so far there has been no research on this (Scarre and Lawson 2006). However, the location of significant events in the interior of the house that seems to have had few openings through which sound could escape may well have enhanced the effect of such performances.

Much of the research on the acoustic signatures of past buildings has been limited to those in which some kind of roof cover is still in existence, including caves and megalithic tombs (Scarre and Lawson 2006). However, building on recent research termed "sonification,"[12] in which satellite signals from remote sensing have been translated into sounds, some archaeologists are attempting to create sounds from the cloud of data points captured during laser scanning of the archaeological remains of buildings (Adam Spring, personal communication, March 2009). Their success has been mixed in this endeavor, and I suspect that it is too late to attempt such a thing with the BACH Area buildings. But it is also a wonderful—if playful, in a science fiction or supernatural sense—to ponder on whether buildings retain the echo of sounds during their lives.

Smell and Taste

I am ashamed to say that my sense of smell is poorly developed. Although I am far from being anosmic, I am not aware of bad or dangerous smells until long after others in my company. I cannot put this down to evolution, since my mother had an incredibly sensitive nose to any new and potentially threatening smell: sour milk, burning toast. I only mention this because it means that this section is written in a more derivative sense than others.

Smell is the sense most strongly associated with the emotions (Ackerman 1990; Porteous 1990). Smells—as "chemical communication"—are carried on the air across small hairs in our nose every time we breathe. They are always present in varying intensity and duration. Smells trigger emotions of fear, danger, happiness, nostalgia, and security to an extent that is incomparably greater than any of the other senses. Smells can be carried to our brains by sources very close to us, even our own bodies, or from invisible sources quite far away with the wind. They [smells;

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[10] *http://www.simonthornemusic.co.uk/index2.htm* (accessed 5 September 2011).

[11] Thorne in BBC interview: *http://news.bbc.co.uk/2/hi/uk_news/wales/7874415.stm* (accessed 5 September 2011).

[12] "Sonification of data is the rendering of sound from data that contain no native acoustical signal": Craig Coburn, *http://people.uleth.ca/~craig.coburn/music.html#audio* (accessed 5 September 2011).

RET] penetrate the body and permeate the immediate environment, and thus one's response is much more likely to involve strong affect" (Porteous 1990:25). Odor memory is very long (Porteous 1990:37). Smell triggers memories that can reach back to an adult's childhood, and a different place. Diesel boat engines create for some an unpleasant smell, but for me they trigger memories of childhood vacations in fishing villages in Britain.

Smells that are familiar become easily dulled by habituation but are lodged very deep in memories, to be resurrected with startling effect when sensed in other contexts (Ackerman 1990; Porteous 1990; Rodaway 1994). The smells we are aware of are those that are unfamiliar, new, and, for the most part, unpleasant, until we get used to them. Consider the shock to the nose for us coming from non-smoking California of the pervasive smell of smoker odor at Çatalhöyük. By the end of the season, however, we are no longer aware of it (or have become smokers ourselves). This process of hiding a smell (at least for those who reside in its location or close proximity) comes from habituation, but it is a cultural process in that a smell that is not considered unpleasant will be more quickly hidden by familiarity. Culturally "bad" smells are difficult to conceal, however familiar they may become. They are difficult to block by physical barriers. The smell of a rotting carcass (or a dead human) can be blocked out by covering it with earth, especially if it is buried, or by masking it with another strong odor (very strong in this case). The odorific effect can be decreased by distancing yourself from the source, or by the wind carrying the unpleasant smell away from those experiencing it. These considerations can certainly help us to understand or construct some of the measures that were taken to conceal unpleasant smells. The challenge is to imagine which smells were "bad" and which were considered acceptable. On a farm in Western society, the smell of fresh cow dung is acceptable, even worthy of poetry, whereas the excretion of humans is definitely offensive to our noses. Was there a similar distinction between the acceptability of the smell of human vs. animal or plant waste in Neolithic Çatalhöyük?

We should remember that not all smells that are concealed need be "bad" smells. In Neolithic Çatalhöyük, there is evidence of storage in almost all the buildings; storage might also involve further processing, such as fermentation in which the container is capped so that both air and smells are trapped and "concealed" (Atalay and Hastorf 2005), to be revealed later with a stronger pungency that delights the taste buds via the nasal hairs.

The olfactory sense has been subject to the least empirical research of all the senses, and even now there is little consensus as to how it should be described or smells categorized (Porteous 1990; Rodaway 1994). Although we can recognize a specific smell—for example, coffee—it is difficult to categorize it according to Linnaeus as "aromatic" or Amoore (1970) as "ethereal." In fact, it is difficult to describe a smell except to name a source that it resembles: for example, coffee smells to some like sweat. Thus, in advance of the other senses we can recognize a smell and identify its source, especially if it is newly introduced to the "smellscape," and recognize it as dangerous as well as unpleasant, such as an unexpected burning or putrefaction. "Olfaction has an important warning function by drawing our attention to change in the environment" (Rodaway 1994:64).

To consider the smell (or olfactory) experience at Neolithic Çatalhöyük is a challenge from many points of view, but especially from being able to imagine the emotion that different smells would have triggered. But at least we can infer some of the strong olfactory sources that would have become dulled by habituation and stored in "odor memory" to trigger later emotions, or to have acted as warnings. Some of the everyday smells to which the residents of Building 3 would have become habituated include (Figure 26.5):

- Inside the enclosed buildings (seasonally varied): smoke of the dung-fueled fires, plaster, drying herbs, grasses, sweat and other body odors embedded in clothing and bedding, wet reed baskets, wet clay, wet hair, boiling plant and animal foods, fermenting plant foods, toasting nuts, seeds, or grains (Figure 24.2).
- On the roof (more wind action here): smoke of the dung-fueled fires, dried or wet grass, blossoms and wildflowers, human and general domestic waste, fresh animal dung, wet animal hair, drying animal skins, dried grain, drying chaff, wet clay and plaster, boiling plant and animal foods, boiling grease, fermenting plant foods, toasting nuts, seeds, or grains, rotting things from the midden, flowering fruit trees.

Smell is closely related to the sense of taste, in that it can intensify or dull the sense of taste and change the experience of taste. Yet taste has been categorized and studied in greater detail than smell. The poetic Diane Ackerman has called the mouth the "door to the body" (1990: 143). Our tongue is the central medium for sensing taste, especially its periphery, where 10,000 taste buds are ranged in four basic themes that we can identify by name: salt, sour, sweet, and bitter (Ackerman 1990:138).[13] The experience of taste, as anybody involved in selling or serving foods is aware, is also entangled with sensations of sound, vision, and touch (with the tongue, teeth, and even the fingers).

[13] I was amazed to learn from Ackerman (1990) that humans have fewer taste buds than cattle (25,000) or even rabbits (17,000)!

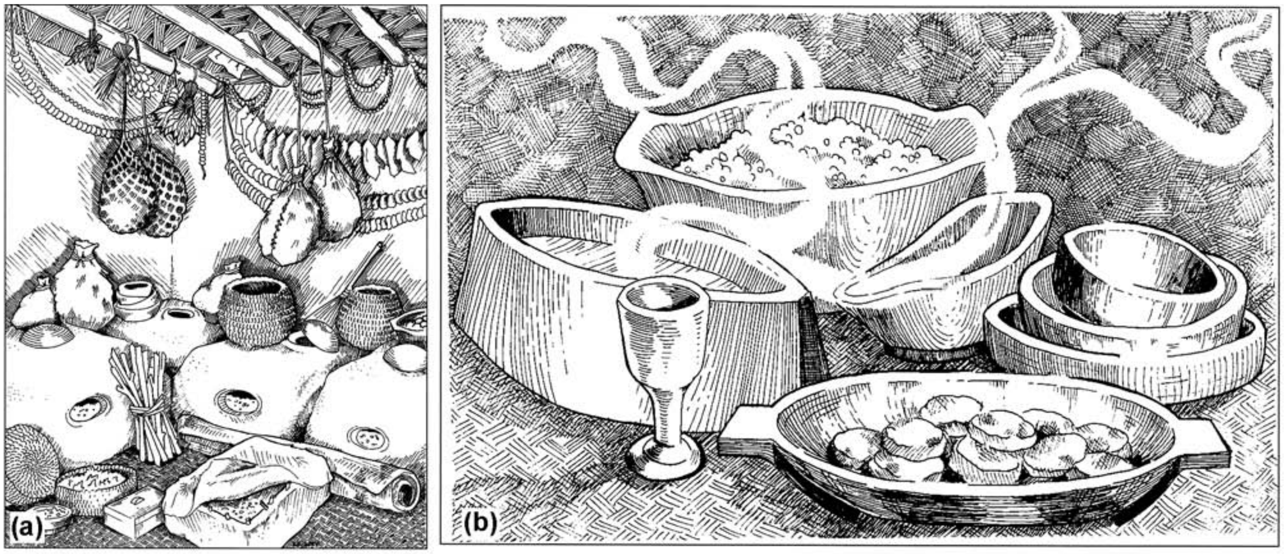

Figure 26.5. Visualizing the interior of buildings at Çatalhöyük (K. Killackey): (a) bin and ceiling storage; (b) a set of wooden bowls.

"How we taste things as well as [*and because of;* RET] the exact make-up of our saliva may be as individual as fingerprints" (Ackerman 1990:128). And yet the context in which we experience a sense of taste is most frequently a social one. The archaeological evidence and its interpretation for foodways at Çatalhöyük has been a favorite topic of research since the inception of the Çatalhöyük Research Project, possibly because faunal and botanical data provide a large bulk of the data for the project. Atalay and Hastorf (2005) have contributed a detailed discussion on food procurement, processing, and consumption that it would hardly be appropriate to add to here. From their text and the data in other chapters of this volume, I can point to some of the tantalizing possibilities by considering the taste sensations that might have been experienced 9,000 years ago.

In general, anything that is tasted as "bitter" is probably not beneficial to our health. The taste buds for bitter are at the back of the tongue, enabling the bad substance to be ejected if necessary. For modern populations, such substances include coffee, saccharin, and olives! For the Neo - lithic inhabitants of Building 3, they may have become used to and enjoyed the bitterness of pickled vegetables and meats. They may have titillated their tongues and enhanced their dishes with bitter tastes of certain dried herbs. The buds for sweetness lie at the tip of the tongue and could have been satisfied by many sources, including honey, ripe fruit, and other plant and animal substances in semi- or full fermentation. Much of what we call "ripe" and past its consume-by date would have delighted the inhabitants of Building 3 for this reason. I also like to imagine that their cravings for sweetness may have been satisfied by something that leaves no archaeological trace—wild honey collected in the surrounding woods (Crane 1983:19–34).

The buds for tasting saltiness lie across the surface of the front part of the tongue. Atalay and Hastorf (2005:114) suggest that salt was brought into Çatalhöyük to act as a preservative for meats and vegetables, as well as (presumably) a flavoring additive in meals. A possible source of the salt is the evaporated lake salts at Tüz Gölü (Salt Lake) 40 miles (65 km and perhaps six days' walk there and back) to the northeast of Çatalhöyük, roughly on the same route (but closer) to the obsidian sources. There may well have been closer sources of salt, but the Tüz Gölü deposits would have been deeper and richer and their effect more intense.

From the many delightful possible recipes offered up by Atalay and Hastorf as well as those in the Science Museum of Minnesota exhibit and website,[14] we can imagine a multitude of experiences to excite not only the taste buds but also the nasal hairs and texture sensors of the tongue and even the teeth (Atalay and Hastorf 2005). The inhabitants of Building 3 seem to have gathered and prepared the same food sources as those of their neighborhood, perhaps also making a distinction between the everyday meals of gruels, stews, and ground cereal cakes with snacks of roasted nuts and roasted seeds and the special-event meals involving the roasting of meat (Chapter 12).

Atalay and Hastorf (2005) mention drink, in terms of fermentation and brewing of fruits and cereals (and we

[14] *http://www.smm.org/catal/mysteries/what_were_they_eating/neolithic_kitchen/* (accessed 5 September 2011).

could add honey), but point out that there is no archaeological evidence for any such thing. But, as they say, such practices "could (and should) have been possible," which makes it a legitimate enterprise to think about them. I would add that it is also legitimate to think about how drinking water was regarded. Notwithstanding a fad a few years ago for "water bars" in the United States, the ability to taste good, better, best, and bad water for drinking is a skill in many parts of modern Turkey. Criteria for quality are clarity, smell (there should be none), taste (it should taste clean), mouth feel (it should feel light), and aftertaste (it should leave you thirsty for more), especially the latter.[15] We can consider where the drinking water for Neolithic Çatalhöyük came from rather than assuming the generic Çarşamba River, and whether there were qualitative differences between sources that might have been at a distance from the village and/or kept hidden.

Touch and the Haptic Experience

The tactile-kinesthetic sense is the most fundamental, immediate, intimate, and erotic of all the senses and is important in structuring space and thus in the interpretation of a person's relationship to other people and to the physical and built environment (Ackerman 1990; Classen 2005; Porteous 1990:6). Touch is far more than just fingers; it includes the whole skin surface (Montagu 1971). Porteous, following Gold (1980), refers to the tactile-kinesthetic sense as including the more obvious haptic sensations, such as surface, form, pressure, pain, temperature, and texture, in addition to—and most importantly for the purposes of our project—balance and the sense of movement in any part of the body (Porteous 1990:5). Touch can be approached in a number of ways: the internal effect of touch on the human skin (such as pain and pleasure); human-to-human touch contact; humans touching external materials; human-to-animal contact; the kinesthetics of such contact; and the touch of atmospheric and environmental features on the human body.

Since touch—after the smell-taste perception system—is regarded as the most intimate of senses, I start with the body itself and consider to what extent it was hidden beneath clothes and from whom and at what times of day and in what seasons. The covering of the body and the display of the second skin, as well as sharing it through touch with others, is tangled up in an enormous web of ideologies, messages (both hidden and explicit), rules, and negotiations. I should note here that the archaeologists, human remains specialists, and artists who have been involved in the valuable task of "refleshing" the burials from Çatalhöyük have assumed that the dead were buried without any covering, beyond baskets for the very young and matting and possible bindings for the adults (Chapter 13; Hawkes and Molleson 2000). In considering this web from the point of view of everyday events and tasks, I am overwhelmed by the endless questions that need to be asked and answered. Such questions must also occur to those who are given the task of illustrating the constructed past, such as John Swogger (2000) and Kathryn Killackey. We can imagine their skin and hair caked with dust and sweat for months on end in the summer, a protective layer against insects, the sun, dust, and wind, but we can equally imagine that they protected themselves by layers of clothing, as we do when excavating outside the shelters (some yearning all the time to bare their skin to the sun's rays). Did they wash themselves and/or their clothes in the river, or was this not regarded as a priority?

Cummings (2002), on the other hand, who has explored the haptic sense by considering the transformative texture of stones from rough to smooth at selected British Neolithic monuments during their construction and subsequent use, argues that transformations in texture of different materials, including stone and clay, were likely to have been fundamental physical and metaphoric qualities of the Neolithic world. Thus, Cummings demonstrates eloquently that aspects of the haptic sense, as potentially experienced in the past, can be alluded to through text; the challenge remains how to dynamically share those potential haptic sensations with wider (non-academic) audiences and in combination with other modes of sensory engagement.

In thinking about the sense of touch in prehistory, it is relatively straightforward to make inferences about texture from the artifactual materials that have survived archaeologically. We can share with the Neolithic residents of Building 3 the sensation of touching and—through experiment—working with clay, plaster, obsidian, flint, andesite, straw, bone, wood, reeds, grasses and other plant materials, live animals, dead animals, fire, and so on. We can also construct the kinesthetic details of smoothing, carving, and drilling, from tasks that require fine fiddly movements of the hand, such as beadmaking, to tasks that require movement of the whole body, such as threshing. What tends to be forgotten are the environmental haptic experiences, a sample of which, through our own field experience, we are very aware of at the site, such as the wind that carries stinging dust in the summer; however, we have almost no experience of the place at other seasons—for example, when snow lies on the ground. What did they wear on their feet? John Swogger in his visualizations—unintentionally, perhaps—tends not to depict people's feet, but visualizing footwear

[15] Criteria taken from the Berkeley Springs (West Virginia) International Water Tasting Festival at *http://www.berkeleysprings.com/water/about.htm* (accessed 2 March 2012).

has implications both for the haptic experience of paths and movement across the mound and beyond to the fields or salt lakes, and to hearing the presence of other people.

Human remains can tell us something about the positions of the body during repetitive tasks in the house interiors, where most activity went on at ground level (without chairs or stools), such as evidence of different preferred squatting positions (Molleson et al. 2005:288). During the excavation of the BACH Area, we also did not have the advantage of chairs, and team members could be observed in many positions for excavation, including lying down and sitting on the platforms, but rarely were we able to remain for long in a classic squatting position. The human remains also indicate that pain was probably a common haptic experience for the residents of Building 3 (Chapter 13), hopefully ameliorated by strong, good-tasting potions.

Sharing the Senses of Place: The Digital Revolution

This chapter ends with a discussion on the possibilities of sharing the multisensorial experience of place using digital technologies. A number of sensations can be vicariously experienced digitally, such as the interweaving of visual perception of objects and light with the aural perception and the manipulation and broadcasting of sound waves, and even movement and other haptic sensations. However, it is in the exploration and navigation through bodies of data, juxtapositioning different media and data, and the ability to handle and represent many different strands of data that digital technology really surpasses any other formats of representation to express the senses of place (Joyce and Tringham 2007; Pink 2006). Sharing a multisensory expression of place with others has been achieved in a number of textual statements, mentioned at the beginning of this chapter, and—for Çatalhöyük specifically—by critically aware print image representations (Leibhammer 2000; Swogger 2000, 2001). The lack of illustrations in this chapter is deliberate. It is an exercise both to reveal the power (or powerlessness) of the written word to share the senses of place and a challenge to the digital edition of this volume to use on-screen media to do better.

A key to sharing a multisensory approach to place through *on-screen* media lies in the relationship—filtered through social practice and cultural diversity—between the immediate sensory experience and its metaphorical extrapolation (Porteous 1990; Rodaway 1994:6). Thus, audiovisual cues in a video might trigger a haptic metaphorical response in the viewer—for example, sweat dripping off an excavator's forehead triggers a feeling or memory of heat in the viewer; a closeup of hands excavating will trigger through their rhythm the memory of a song or a dance. Smell is the strongest trigger (Ackerman 1990:6; Classen 1993; Porteous 1990:22; Rodaway 1994:71) for such metaphorical journeys, but until recently this was not an option for on-line audiences to share. However, Alan Chalmers has recently begun to respond to this challenge with his "Virtual Cocoon" (see below).[16]

It is easy to see that the digital technology used in digital movies, Internet websites, computer games, and so on creates a hyperreal experience of place whose effect is so fascinating and powerful that it will often dominate even direct encounters with the physical experience (Baudrillard 1983). But the complexity of many sensuous elements, including texture and smell, is lost and the visualizations and often the sounds themselves are clean, unambiguous, and "domesticated" (Emele 1998; Porteous 1990; Rodaway 1994:161), as I have noted above in regard to Simon Thorne's Neanderthal "music." I have argued elsewhere, however, that this is not an inevitable usage of digital visualizations, but the choice of the digital artist who may be (but more likely is not) an archaeologist (Joyce and Tringham 2007:340). Martin Emele, who was a member of the team that created the CD-ROM presentation *Çatal Höyük* (Detzler and Emele 1998) and himself is a skilled practitioner of new media, struggled with this problem in his visually impressive virtual reality reconstructions of Çatalhöyük:

> We did not want to predetermine the viewers' imagination. Where the world seen on the monitor becomes too concrete, the view of the possible is distorted. It is well known that a correspondence exists between the images which remain unseen and those which the brain (imagination) then produces. Digital visualization forces an on-screen situation where an off-screen element [e.g., a painting; RET] might be far more effective. (Emele 1998: 224–225)

The role, value, and authenticity of digital visualizations in archaeology are receiving increasing critical attention (Earl 2005; Gillings 2005; Morgan 2009). Here it is stressed that future directions, particularly with respect to virtual reality reconstructions, should lie not with a continued striving to improve visual correspondence or "photorealism" but with incorporating and engaging with elements of uncertainty and process. Only in this way can digital visualizations move beyond a sole concern with imitation and instead embrace issues of creativity and ambiguity that more fully engage and challenge audiences (Joyce and Tringham 2007). This critical thinking is echoed

[16] *http://digital.warwick.ac.uk/News/virtual-cocoon.html* (accessed 5 September 2011).

in reference to the incorporation of imagery (both still and moving) in the presentation of (pre)history in television documentaries by stressing the potential of visual strategies for furthering debate rather than being considered merely as décor (Schama 2004).

Alan Chalmers, director of the visualization team of the Digital Lab at University of Warwick in the United Kingdom, has come to this same conclusion: "The human eye is good, but it's not that good. When people look at an image, they aren't seeing the whole picture all at once: they are concentrating on parts of the image depending on what they are looking for. This means that we don't have to use valuable computing power to render whole images."[17] In making this statement, he has also drawn attention to the supporting information that is provided to visual perception from other senses, and the need for digital visualizations to be, on the one hand, drawn from real data and, on the other hand, multisensory.[18] Examples of his empirical foundation for virtual sensory conditions are experiments and calculations carried out on the changing light content of candles and the effect they might have had in the appearance of Mediaeval southern European frescoes. His argument is that candlelight is not only calculable but can be modeled digitally to create alternative ambience scenarios for light source and light effect in digital visualizations. This attention to detail in the digital re-creation of sensual perception provides an important way forward in visualizing the past, and takes us away from the more facile use of virtual (or real) generic, even, and static light sources seen in most interior re-creations of Çatalhöyük buildings.

Chalmers responds to the challenge of sharing a multisensory experience virtually by the development of his team's "Virtual Cocoon,"[19] which incorporates, in a helmet-like globe, outlets for smell and for haptic sensations such as heat, as well as the more straightforward auditory and visual triggers. Like other immersive technologies to create and share a virtual multisensorial experience, this one is expensive and probably would not be widely disseminated (that is, sharable). The recently emergent development of Enactive Interfaces, which build on embodied gestures and motor skills of enactive knowledge, holds promise for a broader dissemination of technologies that enable the sharing of multisensorial experience (Bennett and O'Modhrain 2007; Kenderdine et al. 2008).[20] However, they are all in their exploratory stages of development, using equipment and technology that perhaps will one day allow the rest of us to immerse ourselves in walking through and living in Neolithic Çatalhöyük.

Meanwhile, we can be content with the awkward virtuality of Çatalhöyük at Okapi Island in Second Life[21] (Chapter 25). Even the challenges of building and gesturing through the medium of an avatar, however, can set one on the path of using imagination to study questions relative to moving around a Neolithic village (Morgan 2009): Where entry is through the roof, what if the mound is covered in snow? How do you find home? What sounds were there? What if you find a stranger on a roof? There is no doubt, as is clear from the preceding section, that much is lost in a digital representation of Çatalhöyük without a way to express the more intimate sensual receptors of smell, taste, and touch (Classen 1993; Drobnick 2006; Paterson 2007).

But digital technologies do have the potential to share a multisensorial experience of place more subtly than print media—for example, in their ability to express the complex interweaving of multiple lines of evidence, multiple scales of interpretation, the ambiguity of meaning for multiple voices, with alternative scenarios, and—most importantly—to make these processes transparent and thus more engaging (Joyce and Tringham 2007; Kenderdine et al. 2008; Pink 2006; Wolle and Tringham 2000). What we show in the on-line edition of this monograph is that it is possible to share the multisensorial senses of place at Çatalhöyük, both Then and Now, without the engagement of complex, expensive technology or even black boxes of mystified knowledge. In creating the on-line edition, we maintain—as when teaching courses that involve the practice and use of digital technologies—that the strength of the message is in its content. This does not mean, however, that I will not be ready to embrace the means to create music out of the haptic experience of troweling prehistory, given the chance.

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[17] From an on-line profile of Alan Chalmers at *http://www2.warwick.ac.uk/fac/sci/wmg/about/people/profiles/achalmers* (accessed 5 September 2011).

[18] *http://digital.warwick.ac.uk/High-Fidelity-Virtual-Environments/Projects/* (accessed 5 September 2011).

[19] *http://digital.warwick.ac.uk/News/virtual-cocoon.html* (accessed 5 September 2011).

[20] A useful discussion of Enactive Interfaces for sharing on-line multisensorial experiences can be found at *http://www.enactivenetwork.org/index.php?9/enactive-interfaces* (accessed 5 September 2011).

[21] *http://okapi.wordpress.com/projects/okapi-island-in-second-life/* (accessed 5 September 2011) and *http://web.mac.com/chimeraspider/Ruth_Tringham/Okapi_Island.html* (accessed 5 September 2011). Due to the doubling of land rent on Second Life, Okapi Island itself became archaeological in early 2012.

AFTERWORD:

CREATING THE DIGITAL EDITION OF *LAST HOUSE ON THE HILL*

Ruth Tringham and Michael Ashley

By creating an on-line media- and data-rich edition of *Last House on the Hill*, we hope to keep alive, and open for critique and further elaboration, the narratives about the archaeology, history, cultural heritage, and memories of the BACH project. The physical monograph, as comprehensive as it strives to be, contains a small fraction of the BACH project's primary data and media. The digital edition of *Last House on the Hill* is available as a "Cloud"-based database running on your desktop and as an iPad application, which brings together digital versions of the published texts and authors' supplemental materials along with the full archaeological record. The on-line edition does much more than provide a digital presentation framework for publishing an archaeological monograph. Its ambition, one that we have long wished to satisfy, is to embed, interweave, entangle, and otherwise link the complete project database (including all media formats such as photographs, videos, maps, line drawings) with their interpretation and meaningful presentation in an open access, sharable platform. It is an open-ended data stream that can grow and—as long as it is well curated—can live for many decades.

Distinct from the print edition of *Last House on the Hill*, the on-line edition is a digital "multigraph," as we like to call it, whereby all the original data, media, analysis, and interpretation are interlinked with the final synthetic contents held in the monograph. We wish to provide access, transparency, and open-endedness to what is normally the closed and final process of monograph publication. Our attitude to sharing our knowledge with the public is, we feel, very close to that of the Çatalhöyük team as a whole, who have made all of their data and media accessible through Creative Commons licensing, without which our task would have been much more challenging (see Foreword and Chapter 25).

The requirements for this on-line, collections-based Web-publishing platform are formidable due to the complexity and sheer mass of data and media we wish to reconcile from the paper volume itself, let alone the complete alphanumeric, video, and image collections that contain millions of records and hundreds of tables, over 15,000 images, and hundreds of video clips. Furthermore, we do not want to build merely a repository of content, but an extensible framework through which researchers, visitors, and future scholars who make up the Çatalhöyük community can all make substantive contributions. To this end, we are working with several digital libraries, publishers, and application designers to assure that the on-line edition is a framework that will be sustainable, extensible, and serve as an engaging model for the digital publication of archaeological content.

The print edition *of Last House on the Hill* is but one collective work about Çatalhöyük. There are hundreds of thousands of web pages, over 40,000 images, hundreds of videos, projects, dissertations, articles, popular books, lesson plans, and databases already out there in the World Wide Web that relate to Çatalhöyük. One of our ambitious aims for the digital edition of *Last House on the Hill* is to find a way to link up the worlds of data within our project with the disparate universes of data already on the Internet, or in researchers' laptops. An essential information management challenge for a project of this magnitude is how to make sense of such an enormity of information and rich media. We believe that the mass of archaeological documentation gains its full significance for a study of the past if it is represented as the relationships among people, actions, tasks, and the contingencies of time and space, all of which contribute to the creation of the archaeological record (a more technical description of the project may be found in Ashley et al. 2012). Narratives that represent these relationships can be drawn out of the database through the filter of the alternating perspectives or standpoints of people, places, things, and media, thus enabling the recontextualization and remixing of the content that resides in the database. Thus, the ultimate aim of the digital edition of *Last House on the Hill* is to have both archaeologists and a broader public be inspired to explore the data and media in order to use them in creative and productive ways.

Now (2012) is a very exciting time to be embarking on such an enterprise. Just a few years ago, our ambitious goals would have been virtually impossible to achieve, given our far more modest time and financial budgets. In the age of mobile computing, iPads, and Android devices, there is an ever-increasing market pressure to provide easy-to-use and powerful tools for self-expression (publishing), coupled with robust digital asset management and archiving through "cloud" computing. We are optimistic that these market changes will continue to positively influence traditional archives and publishers to reconsider what it means to be "done" with an archaeological publication.

In the meantime, in the same spirit of so many collaborations and projects during the new excavations at Çatalhöyük, the digital edition of *Last House on the Hill* is a democratic, grassroots attempt to bring together hundreds and thousands of untold stories, media items, and data sets into a coherent, albeit loosely defined but well-curated digital retelling of the work presented in the print edition and our lives in the Berkeley Archaeologists at Çatalhöyük project. We hope you will enjoy it, and, moreover, we hope you will engage with it and us for years to come.

The website for the "Cloud"-based Last House on the Hill project is *http://www.codifi.info/projects/last-house-on-the-hill/*.

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Index of Last House Places

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Subject Index

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LAST HOUSE ON THE HILL
BACH AREA REPORTS FROM ÇATALHÖYÜK, TURKEY

EDITED BY

Ruth Tringham and Mirjana Stevanović

MONUMENTA ARCHAEOLOGICA 27

Occupied from around 7500 B.C. to 5700 B.C., the very large Neolithic and Chalcolithic settlement of Çatalhöyük in Anatolia is composed entirely of domestic buildings; no public buildings have been identified. First excavated in the late 1950s and early 1960s, the site was subsequently left untouched until 1993 when a large campaign was started. During the summers of 1997–2003, a team from the University of California at Berkeley (the BACH team) excavated Building 3 and Spaces 87, 88, and 89 in an area at the northern end of the East Mound of Çatalhöyük. The houses there date predominantly to the late Aceramic and early Ceramic Neolithic, around 7000 B.C.

The print edition of *Last House on the Hill* is the final report of the BACH excavations. As with previous reports on the Çatalhöyük Research Project, this volume comprises both interpretive chapters and empirical data from the excavations and their materials. The research of the BACH team focuses on the lives and life histories of houses and people, the use of digital technologies in documenting and sharing the archaeological process, the senses of place, and the nature of cultural heritage and our public responsibilities.

The print edition of *Last House on the Hill* is mirrored by an online media- and data-rich digital edition [*http://www.codifi.info/projects/last-house-on-the-hill*] that interlinks all the original data, media, analyses, and interpretation of the BACH project with the final synthetic contents presented in this monograph.

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