Assembling Çatalhöyük

Edited by Ian Hodder and Arkadiusz Marciniak

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Cover image(s): *Left*: Ochre hand prints on the north wall of Building 77; *Middle*: Bucrania and horned bench associated with the northeast platform of Building 77 (both taken from Taylor pp. 127–50, this volume); *Right*: The incised panel above burial 327 in TP Area (taken from Marciniak et al., pp. 151–66, this volume).

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CHAPTER 9

The Architecture of Neolithic Çatalhöyük as a Process

Complexity in Apparent Simplicity

MAREK Z. BARAŃSKI, AROA GARCÍA-SUÁREZ, ARKADIUSZ KLIMOWICZ, SERENA LOVE AND KAMILLA PAWŁOWSKA

INTRODUCTION

Understanding the processes that led to the construction, use, abandonment, and demolition of a building is critical to the reconstruction and interpretation of the spatial organization of any settlement. The Neolithic site of Çatalhöyük in central Anatolia (7300–5950 cal BC) with its well-preserved architecture, dramatic wall paintings, and reliefs has been the heart of discussions of prehistoric lifeways for a few decades (Balter, 2004; Hodder, 2006). While it is widely recognized that one of the most impressive characteristics of Çatalhöyük are mud-brick houses that were built one upon another in a uniform manner, previous attempts at reconstruction have tended to simplify and blur the architecture and its image. Despite recent investigations (e.g. Düring, 2001; Farid, 2008; Hodder, 2013) our understanding of site-wide stratigraphy and relationships between particular buildings still needs to be advanced. Results from the ongoing Bayesian radiocarbon dating project (Bayliss et al., 2013) may resolve some of these issues but, at the same time, more thorough research is necessary, focusing on architectural form and settlement organization, which seem to be noticeably complex in their simplicity.

We would like to argue that a key to make architecture speak is to describe it temporally, spatially, and socially across traditionally separate fields, specifically architecture, archaeology, soil science, and geology. Our research into building archaeology has involved a multidisciplinary team of experts with complementary methods of investigation, all of which form the basis of the current Çatalhöyük Research Project. Most importantly, architecture has to be described as relatively opposed to a set of static and generalized models based on plans of single buildings and simple descriptive analysis (e.g. Allison, 1999; Souvatzi, 2008). Consequently, we would like to evaluate architecture as a complex process in which the experience and technical skills of Çatalhöyük inhabitants had coexisted with environmental conditions as well as rites and principles of socio-cultural nature. Each of these issues may be analysed separately, but it was the built structure itself that unified and brought them together in such a way that they interacted and took on special meaning. Till (n.d.) notes that 'architecture exceeds the building as object, just as art exceeds the painting as object'. Buildings indeed function in a number of independent but interactive ways; they are structural entities, they act as environmental modifiers, and they function socially, culturally, and economically (Love, 2013b).

Three case studies are presented to illustrate life cycles of buildings at Çatalhöyük. They are representative of different excavation areas and different occupational phases of the Neolithic settlement (Figure 1). Utmost attention is paid to specific and sometimes neglected issues including foundation of buildings, wall construction, premises of ceiling or roof structures as well as architectural deformations. All these contexts are described using architectural terminology and are argued to be an important source of information on stratigraphy, building materials, techniques and strategies, stability, and risk from natural hazards, as well as symbolic behaviour and ecology. Hence, they are valuable for any reconstruction of social dynamics within the Çatalhöyük community.

SOUTH AREA: SPACE 492—SPACE 470—SPACE 487

The first building sequence is known as 'the shrine 8 annex sequence' (Taylor, 2012: 56–60) and is arbitrarily associated to Levels South.L-M (Farid, 2013: 101–06). These small-sized spaces include Sp.492-Sp.470-Sp.487 (Figure 2). They were all situated immediately to the south of B.7 and B.20 which were excavated in the 1960s and catalogued as shrines E.

Figure 1. *Overall plan of Çatalhöyük showing locations of the case study sequences.*
Figure created for the Çatalhöyük Research Project by Camilla Mazzucato.

VIII.8 and E.VII.8, respectively (Mellaart, 1964: 50–52, 70). Both these buildings have been re-defined as history houses as they endured for generations and underwent numerous rebuilding phases, with noticeable continuity of the internal layout and elaborate character of the architectural features (Hodder & Pels, 2010). It is believed that Sp.492, Sp.470, and Sp.487 had been temporally associated with B.7 and B.20, respectively, functioning as the southern annexes of these buildings (Taylor, 2012: 56–60).

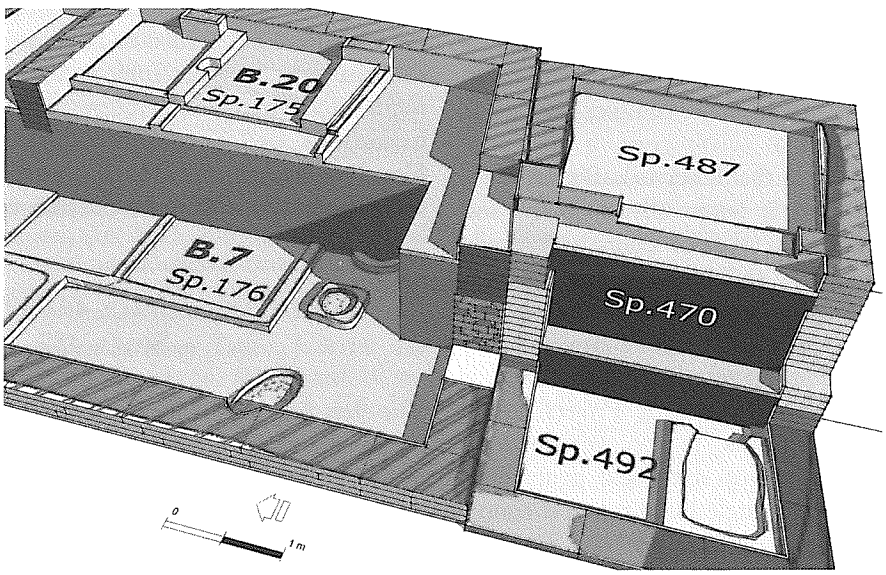

Figure 2. *Simplified model of the South Area sequence.*

Constructional phases

The South sequence includes individual built structures which were subsequently constructed on top of each other and seemed to be adjacent, from all sides, to other buildings. The overall layout of these spaces tightly respected the one of the predating built structure, as the remnants of the walls of earlier spaces were used as foundation for the erected walls of new buildings.

All the spaces covered a usable area of *c.* 8 m^2 and were defined by simple and thick walls (*c.* 0.3 m) that were preserved up to 1 m. There seems to be no similarity between the bricks of these built structures, which, as in the case of the history houses, falls into the pattern of 'temporal discontinuity' (Love, 2013a). For example, walls of Sp.492 were made up of very distinctive yellowish brown mud-bricks of sandy clay bound by light grey and pale brown mortar (Love, 2013a). The architectural features of Sp.470 were made up of greyish mud-bricks of sandy silt bound by yellowish brown mortar. It seems that same building techniques and strategies were applied with regard to building construction but probably different sources of clay have been used. The walls were extensively covered with patchy layers of plaster, which made the measurements of individual bricks impossible or incomplete.

The relationship between Sp.492 and B.7, as well Sp.487 and B.20, were marked by a crawl hole cut into the respective walls of both these pairs of buildings. On the contrary, Sp.470, situated in the middle of the sequence, marks a departure from this spatial and functional arrangement as its construction resulted in blocking the wall opening in the southern wall of B.7 and dissociation of the two built structures. Interestingly enough, there was no evidence of any entrance into Sp.470 in any of the walls that defined its interior, as well as no traces of ladder emplacement.

Neither history houses nor corresponding annexes were likely to have been built at the same time, as the walls of these built structures were not bonded with each other. Additionally, the floors of the functionally connected buildings have different elevations, which may be an indication of terraces or a slope of the mound. However, the differences in the excavation methods conducted in the 1960s and those of the current project pose a significant challenge when comparing and interpreting the spatial data.

Occupational phases

Sp.492 and Sp.470 were single-spaced rooms, whereas Sp.487, excavated in the 1960s and documented in a cursory manner, seems to have consisted of two small-sized rooms divided by a partition wall with a wide opening (Mellaart, 1964: fig. 11). The recognized occupational phases of Sp.492 and Sp.487 have cooking- or heating-related activities, based on the internal arrangement of architectural features, namely relatively big ovens and proper lime floors. On the contrary, Sp.470 lacked common architectural features, as only a bench and a beaten earth floor were recorded. As it was incomprehensible, this floor underwent micromorphological analysis (Figure 3), the results of which have shed light into the physical structure of the deposit and the range of activities that took place within this space. The occupation surface was made of a clayish sediment rich in charred inclusions of woods and grasses, with randomly dispersed plant remains found in association with sulphidic and ferruginous aggregates, indicating localized organic decomposition under wet and reduced conditions (Mees & Stoops, 2010). The heterogeneous nature of this deposit and the poor sorting of its components point to a coarse, roughly made occupation surface, in marked contrast with the fine plasters found inside most buildings at Çatalhöyük.

On top of this floor, several superimposed micro-laminations of dung have been identified. These are rich in partially digested plant remains, found in association with thin and highly compacted undulating layers, which suggests substantial animal trampling. Low occurrence of spherulites can be explained by the accumulation of urine, which increases sediment acidity (Shahack-Gross, 2011). Whether this space was roofed remains uncertain, as naturally deposited wind or water-laid particles would have been largely reworked. Although other cases of dung accumulations within other built structures have been documented (Matthews et al., 1996; Matthews, 2005), these show thicker, more continuous sequences accumulated in a cyclical fashion. In contrast, the modest deposit of faecal matter in Sp.470 points to its short-lived use as an animal pen.

Overlying this penning deposit is another thin floor immediately with an extensive layer of well-preserved phytoliths. These phytoliths were interpreted as de-husking waste from wheat and wild grasses (Ryan, 2012: 179). Post-harvesting activities of this kind preceded food preparation and consumption (Peña-Chocarro & Zapata, 2003: 3, 6–7; Wright, 2014: 25) and seem to have been performed regularly in this space, as indicated by the compressed multi-laminated composition and wide extent of the plant remains covering the floor.

Abandonment phases

Reasons for abandoning and demolishing these spaces are unclear. It could have been related to the ritual re-building of the history houses which, together with

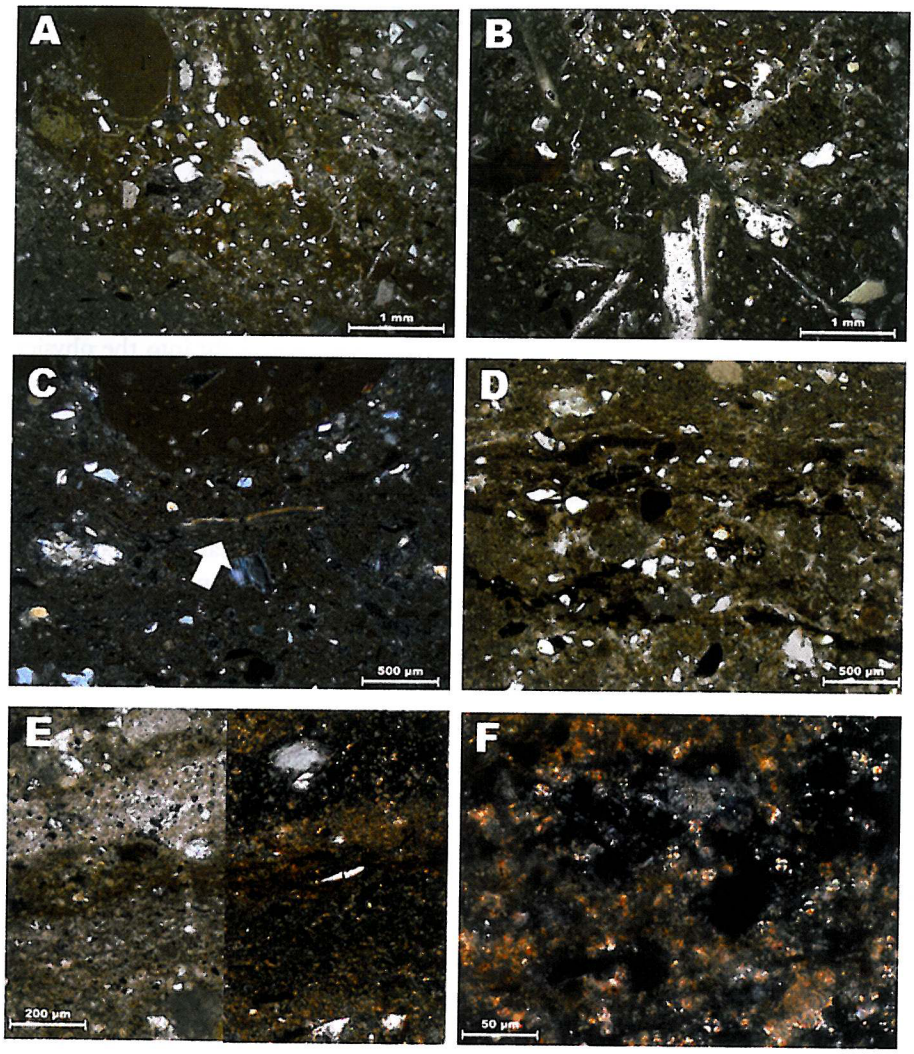

Figure 3. *Microscopic components of floor within Sp.470: (a) fabric of coarse floor comprising alluvial aggregates, basaltic rock fragments and lime plaster, PPL; (b) fragment of plaster with plant-pseudomorphic voids, PPL; (c) break within eggshell fragment, caused by trampling, XPL; (d) iron (hydr)oxide impregnated groundmass, formed through organic matter decay and fluctuating water tables, PPL; (e) dung lenses separated by iron-impregnated sediment, PPL (left) & XPL (right); (f) calcareous spherulites within faecal matter, XPL.*

the annexes, formed building compounds. However, the supposed location of these spaces on a slope and the exposure to static and dynamic loads during their life cycles might have been of some importance (Figure 4). The unfavourable ground conditions may be confirmed by not only cracks in the walls and floor surface but also wall tilting. The observed damage to the structural features, however, might have as well occurred when these spaces were no longer occupied.

Whatever the case the abandonment phases, at least with regard to Sp.492 and Sp.487, were demarcated by special deposits, partial destruction of the external walls and features as well as intentional room-filling.

There were extensive assemblages of artefacts found dispersed across the floor surfaces. In the case of Sp.492, this cluster included clay balls, animal bones, ground stones, and pebbles and has been interpreted as an abandonment deposit (Taylor, 2012: 57). The placement of an artefact cluster containing another set of clay balls, ground stones, as well as a bovid horn core and an antler symbolically ended the use of Sp.470. A complete auroch scapula was also found within the room-fill in close proximity to the floor surface (Figure 5a). It has modified cranial and dorsal edges, as well as the spine, that seems to have been chopped off at the base. This scapula had not been long exposed, as indicated by the moderate surface condition. It might have been related to the cluster mentioned and all together could be interpreted as an abandonment deposit. Interestingly enough, this kind of artefacts clusters are usually found at Çatalhöyük within domestic interiors. Therefore, the case of the special deposit within Sp.470, exploited as the area of pastoral and arable activities, is a telling one.

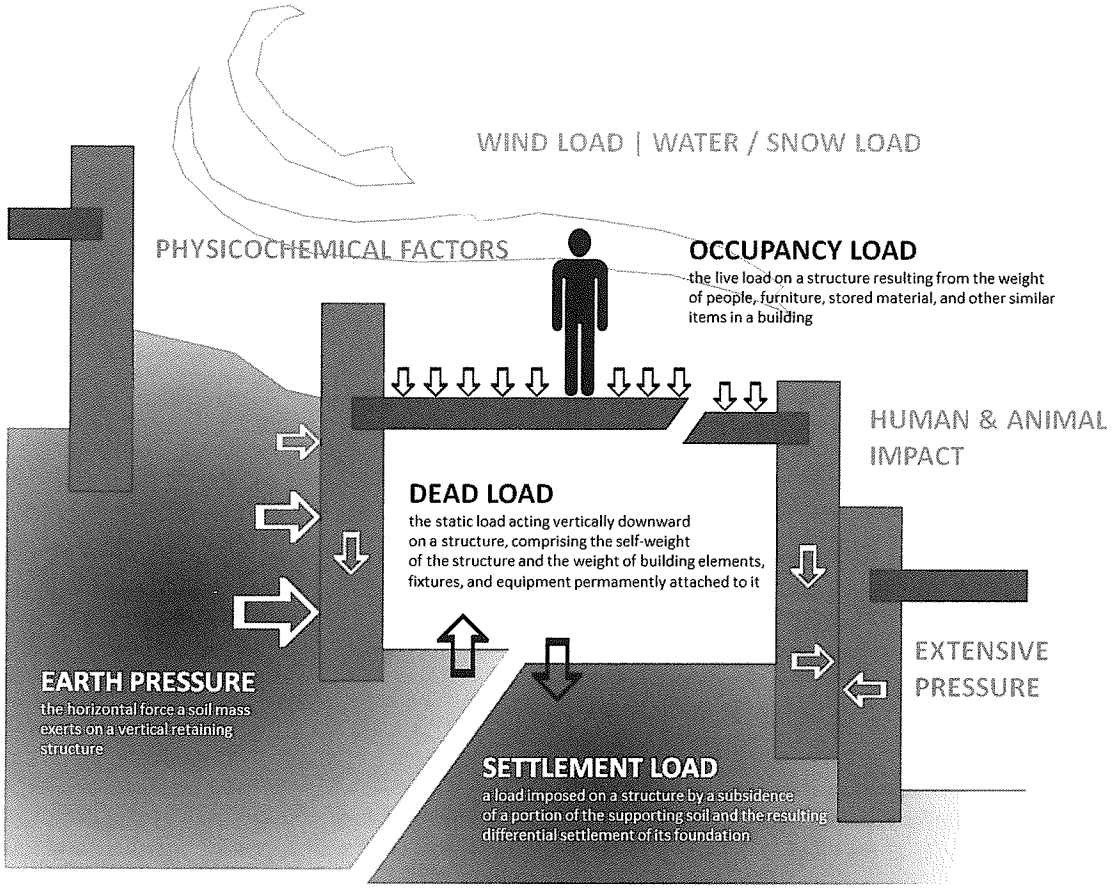

Figure 4. *Scheme of static and dynamic loads that may cause damage and deformation of architectural features.*

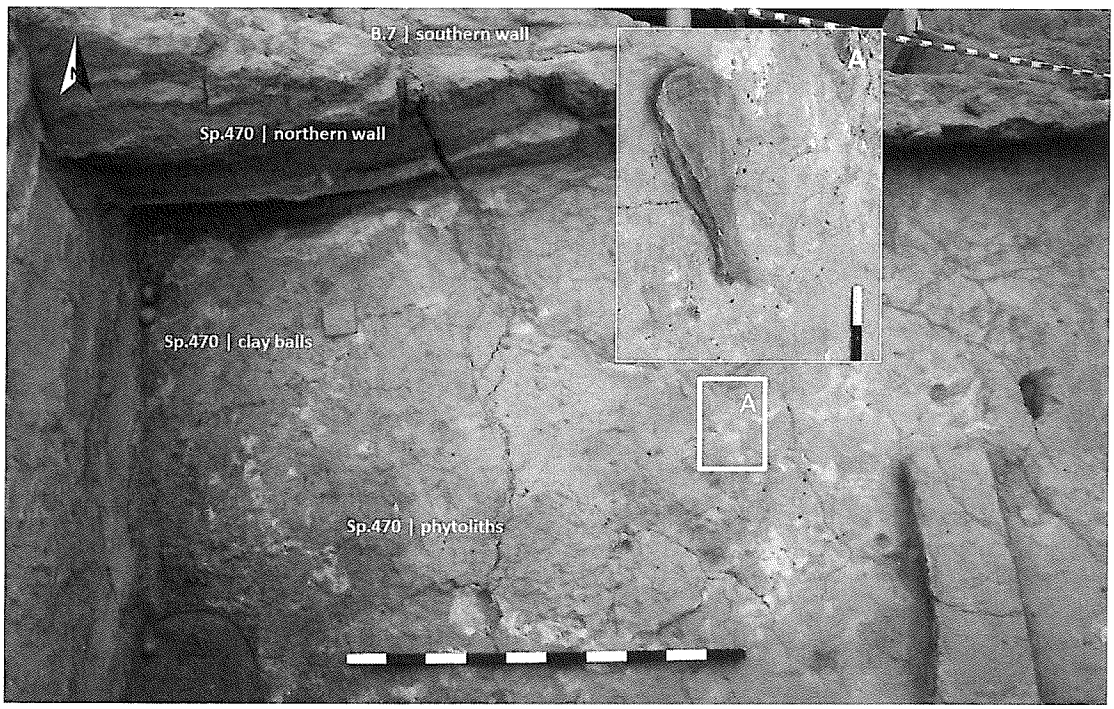

Figure 5. *Close-up view of Sp.470 and location of the related special deposits: (a) auroch scapula.* Photograph by Arkadiusz Klimowicz.

All the aforementioned artefacts were sealed by dense packing material that consisted of carefully crushed mud-bricks, mortar, and plaster that most probably originated from the upper parts of the walls defining each space. These highly compact and homogenous room-fills seemed to be deliberately formed to improve the stability of the surrounding or subsequent built structures. Surprisingly, in the case of Sp.470, the packing deposit of the kind included additional number of special finds, namely ground stones, a bone point, a clay object, and a figurine (Meskell et al., 2012: 189; Taylor, 2012: 59).

North Area: Space 511—Space 488/Space 489—Building 108

Sp.511-Sp.488/Sp.489-B.108 constitutes a complex sequence in between the large and elaborate buildings that is crucial for understanding stratigraphic relationships in the North Area (Figure 6). This sequence, arbitrary assigned to Levels North F-G, was cross-sectioned and only its eastern part was excavated (Tung, 2012: 9–35; Tung & Klimowicz, 2013: 35–42).

The earliest built structure uncovered in this sequence was Sp.511. It is believed to have served as a southern annex of a main room of the exceptionally large B.132, which has not yet been excavated (Hodder, 2014: 8–9). The succeeding Sp.488/Sp.489 represents an open space enclosed by walls of surrounding buildings and consisted of midden deposits. Also around this time B.77 was erected within the large part of the main room of B.132. Then B.108, the latest in the sequence, was revealed just below the ground surface as a result of which it was heavily affected by post-depositional processes.

Constructional phases

Sp.511 and B.108 were defined by walls of simple construction, nonetheless the way they were erected as well as the building materials they were made up of seemed to vary considerably. For example, the walls of the annex are *c.* 0.5 m wide and are constituted with greyish mud-bricks with increased amount of organic temper. These bricks are bound by orangish mortar, coated with fine-layered plaster (Tung & Klimowicz, 2013: 36).

On the contrary, the poorly preserved walls of B.108 were *c.* 0.3 m wide and were made of re-used mud-bricks of various characters. It is significant that these structures were situated within foundation ditches up to 1.6 m deep, so that they can be interpreted as foundation walls. The steep-sided basal boundary of the foundation cut allows us to argue that this building was dug into the midden deposits making up a pre-existing open area Sp.488/Sp.489 and rising to the south-west. It also should be mentioned that the foundation walls of B.108 were not based on the remnants of the walls of B.132.

There were a few finds situated within the foundation cut of B.108. The first find is a cattle bucranium with only a part of the skull and an incomplete horn core found in association with a dog's metatarsal (Figure 7a). This could be a part of a dismantled installation placed in order to commemorate the building construction. The second find is an equid scapula, which is meaningful as the only ecofact found within the compact and homogeneous fill of the foundation ditch (Figure 7b). This find could be another kind of foundation deposit; however, it is unclear why the building construction was commemorated multiple times.

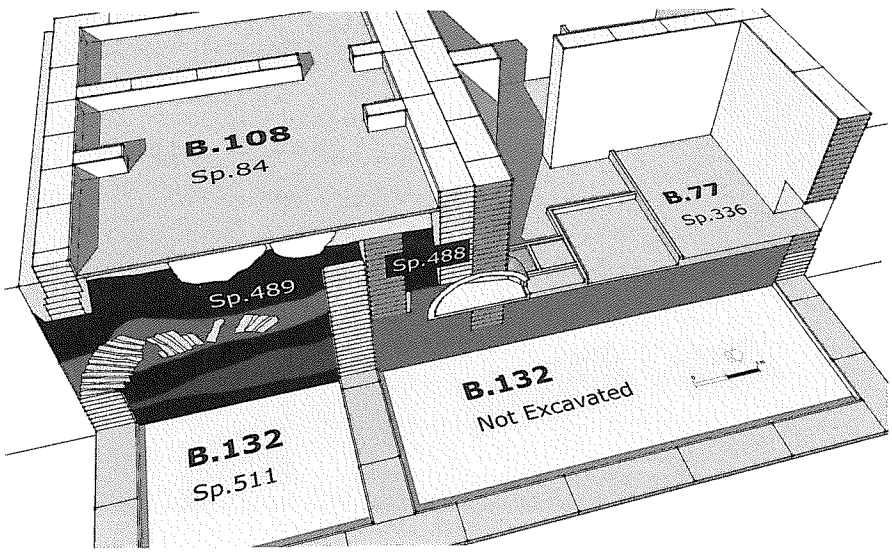

Figure 6. *Simplified model of the North Area sequence.*

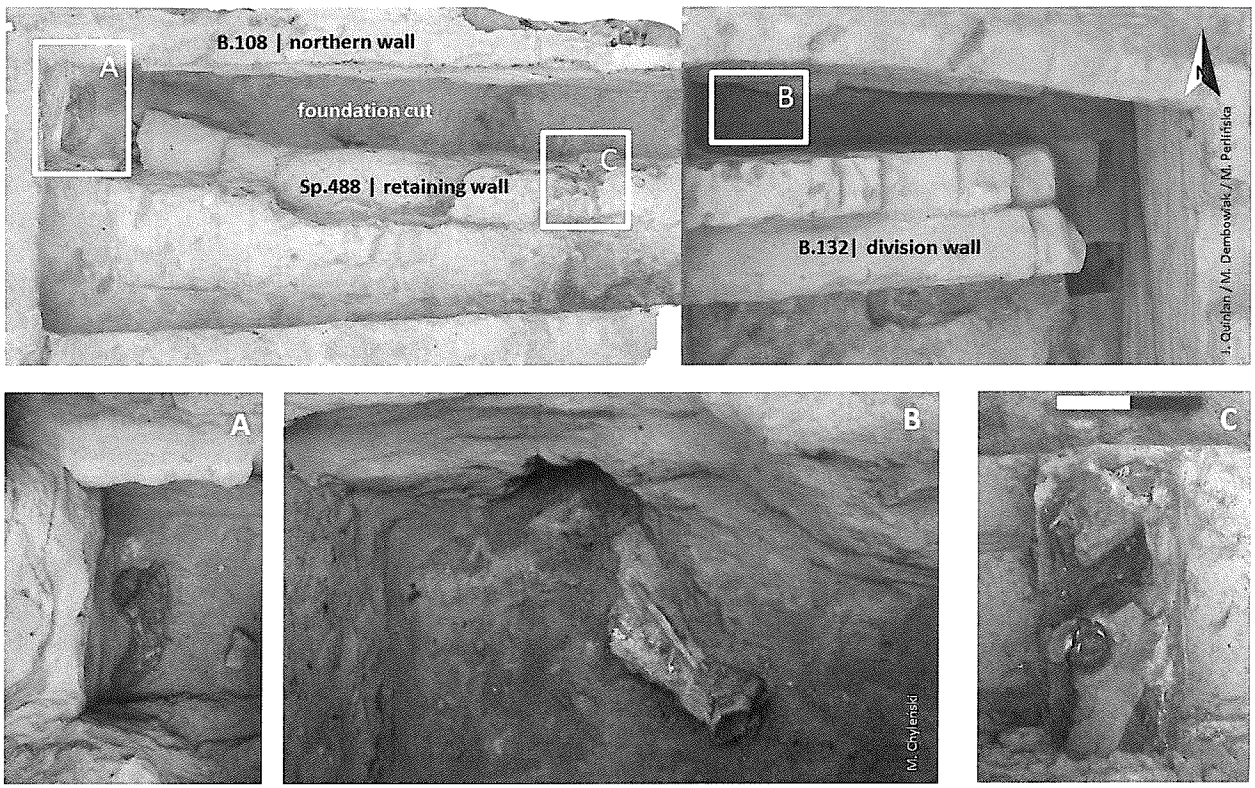

Figure 7. *Close-up view of Sp.488 and location of the related special deposits: (a) cattle bucranium, (b) equid scapula, and (c) pelvis and radius of an auroch.*
Photographs by Mateusz Dembowiak, Maciej Chyleński, Arkadiusz Klimowicz, and Jason Quinlan.

This is even more interesting as the construction phase of B.108 is also demarcated by human burials which comprised juvenile skeletons and an infant skull. Unlike other human remains revealed close to the ground surface and assigned to B.108 (Hager & Boz, 2008: 133–34), these features were not associated with any burial cuts and were sealed with a packing-like deposit that most probably served as a make-up for the floor of the building (Carter et al., 2015). Therefore, both features may be interpreted as another special deposit which would add to the elaboration of B.108.

More examples of ritual practices at the time of construction come from Sp.488. There was a cluster of bones found within the mortar of the lower courses of mud-bricks that constituted a wall abutting on the north the preserved division wall of B.132. This deposit, among other finds, contained an auroch pelvis and radius bone which may be feasting remains associated with the construction of the wall (Figure 7c). Hence, it can be interpreted as a foundation deposit.

The wall itself had simple construction and was made up of orangish mud-bricks of silty clay of varying sizes. It was situated within a foundation ditch and was based on a layer that comprised crushed building materials. It seems that as the midden deposits accumulated within Sp.489, so the preserved northern wall of Sp.511 gradually leant to the north under lateral pressure. This might explain why this architectural feature was reinforced and abutted by the retaining wall. However, the need to create terracing which would assure safe passage from two different levels as well as to enlarge the appropriate occupation surface and keep the midden deposits on the southern side in stability might have been of some importance.

Occupational phases

Sp.511 seems to have originally covered a total usable area of *c.* 25 m^2 and served as an integral part of the north-south oriented building. The overlaying B.108 covered a similar area, though it was oriented east-west, composed of a main room and a western annex (Tung, 2012: 23–24).

The internal arrangement and characteristics of architectural features within Sp.511 and B.108 implied domestic and use-intensive activities during the recognized occupation phases. Additional information with regard to functional and spatial arrangement of B.132 and its importance to understanding roof activities were provided by re-deposited large slabs of stratified sediment uncovered within room-fill of Sp.511. These

remains were very similar to those interpreted as collapsed roofing in another building previously excavated in the North Area (Matthews, 2012: 207) and were sampled for microstratigraphic analyses (Figure 8).

The sequences studied show frequently plastered surfaces on which virtually no debris was allowed to accumulate. A predominant part of the deposit analysed comprises floors of variable quality that consist of heterogeneous packing deposits, silty clay make-up layers, and thin finishing coats of lime plaster (Figure 9). These floors are considerably thicker than those within main room spaces, probably to prevent weathering and abrasion from both natural elements and trampling.

All floors were stabilized with plant material, as attested by plant impressions and voids. They also include charred wood and grass remains, especially abundant in the coarse packing deposits and probably incorporated to the sediments in the source area or during manufacture. This high concentration of charred plant flecks and grassy temper would have made these deposits considerably lighter, a desirable characteristic for flat earth-made roofs, which can weigh as much as 300 kg/m^2 (Houben & Guillaud, 1994).

The top deposits in one of the sampled sequences include alternating layers of oven/heart rake-out containing charred cereal, deciduous woods, and burnt bones (Figure 10). It allows us to argue that cooking-related activities were performed on the uppermost part of the building. The increased accumulation of swept deposits towards the end of this sequence points to a devolution in the maintenance of this area or perhaps to a change in the division of space and activity areas within the roof at this time.

The floor sequences in these samples appear devoid of water-laid crusts, which, together with the evidence for matting, could indicate that these multiple layers of plaster had been laid in an upper storey room that was itself roofed, or at least partially sheltered with awning.

Nonetheless, the collapsed wall was originally constructed with different building materials which might be also indicative of a second storey. The rubble closer to the preserved wall was comprised of greyish mud-bricks, whereas its most distant part consisted of orangish brown mud-bricks (Tung & Klimowicz, 2013: 37–38).

Abandonment phases

The abandonment phase can only be characterized with regard to Sp.511 within which ground stones and fragments of clay balls were scattered on the floor surface. There was also a complete aurochs scapula found in close proximity to the floor (Figure 8a) (Tung & Klimowicz, 2013: 37). It is worth mentioning that the scapula was deposited with substantial soft tissue still present, as indicated by the nature of the distal edge and the crest of the spine. This may explain the absence

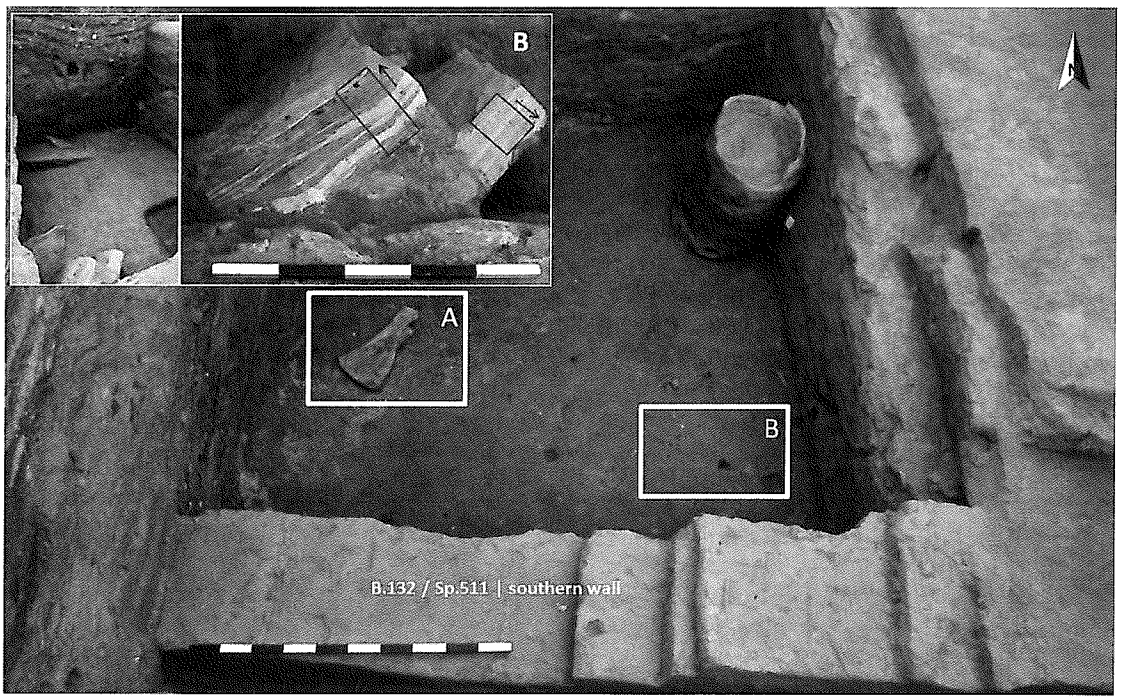

Figure 8. *Close-up view of Sp.511 and location of the related special deposit and the collapsed remains: (a) auroch scapula, and (b) collapsed roofing (the arrows point at the original top of each sequence as defined through micromorphology).*
Photographs by Aroa García-Suárez and Arkadiusz Klimowicz.

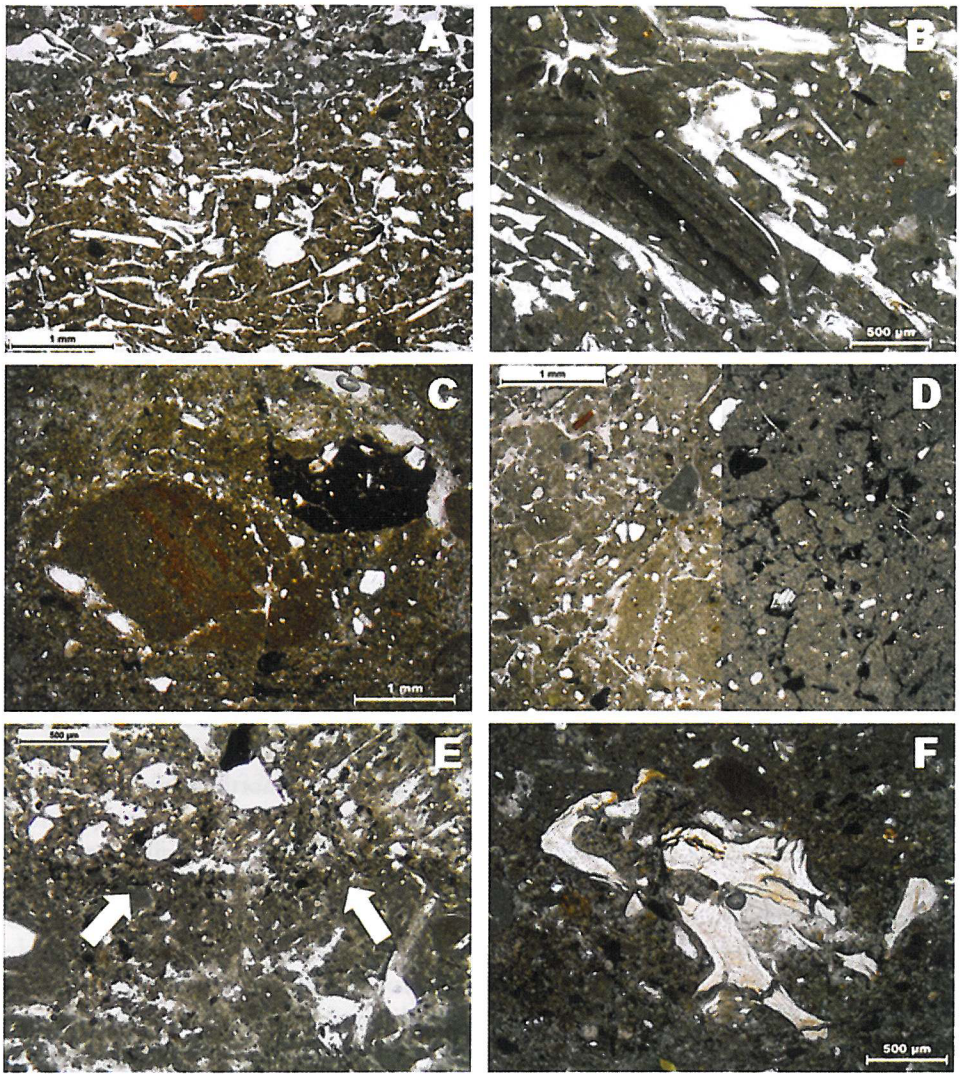

Figure 9. *Microscopic components of floor sequences present in the collapsed materials of Sp.511: (a) heavily tempered floor make-up (bottom), and finishing coat (top), PPL; (b) re-used fragment of wall plaster, PPL; (c) unworked alluvial aggregate showing original layering, PPL; (d) silty clay packing with moderately developed platy microstructure due to shrinking and dilation caused by water and frost action, PPL (left) and XPL (right); (e) soot accumulation on top of plaster floor, notice the regularly wavy boundary left by matting impressions, PPL; (f) trampled bone, PPL.*

of any modifications, which are usually seen on such parts of scapulae at Çatalhöyük (Russell & Griffitts, 2013: 290). It is clear that this bone comes from an animal relatively recently obtained in relation to placing it as a possible part of a special deposit, buried fairly quickly, as shown by its good surface condition.

After this artefact assemblage was deposited, the interior was sealed with debris of diverse nature, each

Figure 10. *Microscopic features of ashy layers towards the top of roof/upper storey sequence: (a) charred seed, PPL; (b) charcoal-rich ashy microlayer on top of a poorly preserved fine plaster floor, PPL; (c) fragment of elm charcoal, PPL.*

over a metre in thickness, comprising mostly crashed building materials. As part of this heterogeneous infill, several slabs of stratified sediment were uncovered.

The abandonment and destruction phase of Sp.511 was demarcated by a series of events culminating in the collapse of the upper part of the southern wall. Whether this damage was caused by natural hazards or human activity remains unclear. Overlying the rubble from the collapsed wall are midden deposits, which reached the depth of *c.* 1.6 m. These layers comprised mainly rake-out ashes mixed with miscellaneous organic waste and contained a large number of inclusions (Best et al., 2012: 167–68; Tung, 2012: 25–26; Pawłowska, 2014: 7). The midden deposits had accumulated gradually in multiple short-lived discard events as distinctive layers of various thicknesses and contents could be easily observed.

TP (Team Poznań) Area: Building 81—Space 420—Building 74

B.81—Sp.420—B.74 is a Late Neolithic sequence situated close to the southern eminence of the mound (Figure 11). It has been assigned to Levels TP.M-N (Marciniak & Czerniak, 2012).

B.81 is the oldest built structure within the TP Area and was not well-identified since it has only been partly exposed and not excavated (Marciniak et al., 2015: 169). It was sealed with midden deposits within Sp.420 which appear to mark a considerable change in the spatial organization of the excavated area. This led to a general discontinuation in the direct use of the layout of B.81 as template for succeeding B.74. As a part of this process new building techniques and strategies were applied.

Constructional phases

B.81 and B.74 are characterized by two different types of construction. The simple walls of B.81 are relatively wide (*c.* 0.6 m) and consist of greyish mud-bricks of silty clay. This building is east-west oriented and most probably covers a usable area of *c.* 60 m^2.

In contrast, B.74 is defined by compound walls which were characterized by *c.* 0.9 m width due to alternating courses of stretchers and headers (Barański, 2014: 197). Hence, the mud-bricks of brown yellowish colour and clayish content had standardized dimensions. B.74 was the first in a sequence of buildings of compound construction revealed within the TP Area. Interestingly, it is compositionally distinct from later houses on the basis of organic content. The other variables are the same, which implies that the same source of materials was being used but the production differed. Unlike its predecessor, B.74 was north-south oriented and covered a usable area of *c.* 41 m^2; however its northern part continued beyond the limit of excavation (Marciniak et al., 2015: 169–71).

In a few cases the lower part of the one-brick-thick walls of B.74 were deliberately cut in a series of steps. They were situated within foundation ditches, the bottoms of which were layered with fragments of mud-bricks to provide better footing performance. Interestingly, a cluster of artefacts, found directly underneath the rubble, suggests that it may represent foundation deposit. This assemblage is remarkable,

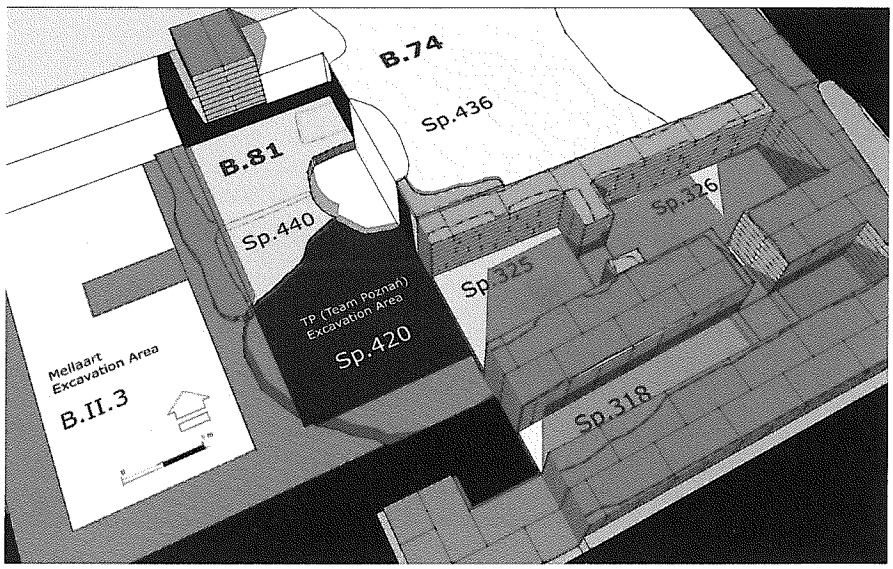

Figure 11. *Simplified model of the TP Area sequence.*

containing mostly cattle bones, but also fox, elements of sheep or goat, an astragalus, and a mandible of a wild boar as well as knucklebones, worked stones, and a pendant.

Occupational phases

B.81 consists most presumably of the main room and the western annex, although the character of the latter remains unclear due to the 1960s excavation. The main room had a distinct pebble floor area that appeared sunken in relation to surrounding architectural features. It seemed to have been a central zone of activity, with a sequence of raised platforms to the east, as well as a cooking and a production area to the south. The boundaries between the clean and dirty parts of this room were marked by red painted ridges formed in plaster. There were also some traces of paint on the walls which add to the elaboration of B.81 (Czerniak & Marciniak, 2008: 80–82).

B.74 most probably consisted originally of the main room and the southern annex. At one point, as a part of the re-building phase, Sp.325/Sp.326 were built into the southern part of the initial main room and dug into the ground out to the depth of at least 0.9 m. That is why pebble floors within Sp.325/Sp.326 had different elevations when compared to the assumed, though poorly preserved, floor of the main room. This, however, may also relate to the fact that B.74 was built on the terrain rising slightly to the north-west, though closely situated to the eminence of the mound of that time.

Sp.325/Sp.326, separated by a division wall, covered the total usable area of *c.* 5 m^2. They were connected through a crawl hole and were defined from the north, east, and west by newly built simple walls made up of diversified and re-used building materials. The earlier compound wall, separating the initial main room from the annex, constituted the southern wall of these spaces, with the difference that a wall opening was cut in it and lead to Sp.318. This doorway was preceded from the south by a threshold (Marciniak & Czerniak, 2007: 121–22) on which the ladder feet might have sat firmly since the space is reminiscent of structures interpreted as stairways.

There were no traces of wall plaster found on either of the walls of B.74, which puts into question the original finishing of internal surfaces, as well as the function of the spaces defined by these structures. Additionally, there were no internal architectural features in general characteristic for the earlier building-levels. All this allow us to speculate that the compound walls were in fact foundation walls, which defined internal and at least partially subterranean spaces as indicated by Sp.325/Sp.326. Might B.74 have been originally partly cellared or a multi-storey building?

Abandonment phases

The walls of the buildings under discussion were in general barely preserved beyond the height of the floor surface. Therefore, they must have been deliberately dismantled following the house abandonment, probably in order to gain building material. This practice seems to be additionally supported by a large pit that cut the south-western part of B.81 (Marciniak & Czerniak, 2008: 80–82).

As with examples coming from other excavation areas, so in the case of Sp.325/Sp.326 clusters of artefacts were found scattered within both interiors (Marciniak & Czerniak, 2007: 116–17; Twiss et al., 2007).

For example, the first of these assemblages was constituted by a cattle skull with horns, cattle mandibles, a cattle femur, cattle scapulae, a cattle-size rib, a horn core of a wild sheep, and a fox canine (Figure 12a–d). The cattle skull parts, found in poor state of preservation, may constitute a part of a dismantled installation. Then the most numerous elements are in the form of cattle mandibles indicate that they derive from three animals. Both scapulae have no traces of working or use, and their dorsal edges and spines are sufficiently well preserved, which may mean that there were no later disturbances.

The deliberate placement of this deposit close to the floor surface and the coexistence of numerous other finds, such as stone balls, ground stones, and clay objects (some of them broken and burnt) allows us to interpret them all together as items spread throughout the space interior in an abandonment process (Marciniak & Czerniak, 2007: 116–17; Twiss et al., 2007). Additionally, the composition of the artefacts implies that it was a ritualized deposit. The sheep horn core was placed in a shallow hole on the floor, and the rest was found within the infill in close proximity to the floor. This may suggest a different practice of placing abandonment deposits inside buildings, namely not directly on the floor.

The second revealed cluster of artefacts included a cattle maxilla, a cattle skull, a cervid antler, and bone points found in the infill, in the same manner as stated above (Twiss et al., 2007). A piece of raw material in the form of an antler beam, crushed by the weight of the overlying sediment, shows traces of cutting-and-breaking at the broad end. The pieces of cattle maxilla and skull should not be given undue importance in this case, as they may be part of the infill. On the other hand, if intentionally placed, the fragment of antler may reflect abandonment behaviour.

It is argued that B.74 was occupied for up to three decades (Marciniak et al., 2015: 169) which is a considerably short time bearing in mind the compound construction of the building. It seems that the

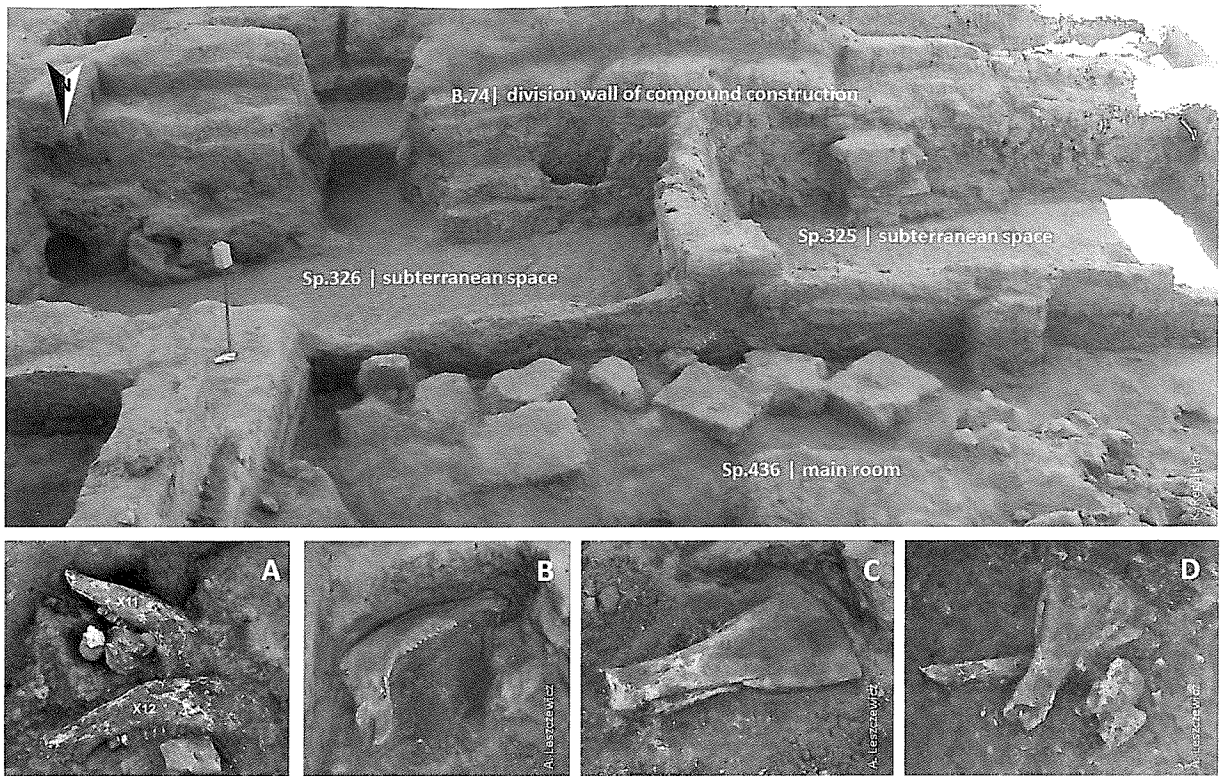

Figure 12. *Close-up view of Sp.325/Sp.326 and the related special deposits: (a) cattle mandibles and femur, (b) cattle mandible, (c) cattle scapula, and (d) cattle scapula and cattle-size rib.*
Photographs by Andrzej Leszczewicz and Katarzyna Regulska.

occupation time was to a greater extent conditioned by social aspects as the technical life of the building could have been systematically prolonged, had it been deemed important for its inhabitants. However, stratigraphic and architectural analyses suggest that the abandonment of B.74 was also influenced by practical reasons and external factors. There were unfavourable changes of ground conditions observed directly to the east of the building. These were characteristic of landslides that might have led to failures and construction disasters. The attempts to repair the eastern wall of B.74 might come as result of the inclination of the ground level outside the building and/or the instability of underlying midden deposits.

The abandoned and demolished B.81 and B.74 were not deliberately filled but became instead a place where domestic waste was dumped and rubble accumulated (Marciniak et al., 2015: 169). The midden sealed not only the interior of the building but also over and beyond the remnants of the walls. In the case of Sp.420, it formed a fine-layered sequence of deposits reaching the maximum thickness of *c.* 0.7 m. In contrast, the lower based Sp.325/Sp.326 were partly filled in with various deposits and, within time, transformed into a kind of a shelter with a roof supported by wooden posts in the perimeter. This temporarily built structure, which might have served as a place of non-domestic activities or even a temporal place for living, seemed to be functionally connected with an unroofed area that arose out of an abandoned and largely levelled Sp.436. It is worth mentioning that as a result of the growing number of open and enclosed spaces at around that time, the settlement was characterized by a gradually diminishing density of housing (e.g. Düring, 2001; Farid, 2013; Marciniak et al., 2015).

Discussion

The case studies presented above illustrate a certain amount of irregularities and diversification with regard to the apparent rigid spatial organization of Neolithic Çatalhöyük. In particular, this complexity in simplicity is manifested by differences in the way the built environment is modelled, in the aesthetics, materials, and constructional techniques used, as well as in the social occupation and environmental performance. The explanation of the mechanisms that lie behind some of the changes and differences are certainly not monocausal, involving several aspects of life. However, seeing the architecture as a process and striving to understand interactions across the structural, environmental, social, cultural, and economical functions of any built form

should enable us to explore how social processes are mapped into the built environment.

First, the frequency of the overlapping of the life cycles of neighbouring buildings and spaces allow us to argue that Çatalhöyük was not laid out in horizontally assigned building-levels but instead grew as a part of a more organic process regardless of space and time. Hence, one of the characteristic aspects of Çatalhöyük built environment is the constant interaction between strands of houses. The area covered by a building may be developed as there are built structures are added to buildings. The erection of new houses may cause the earlier and larger buildings to turn gradually but partly into midden areas. Additionally, there are examples of buildings situated on the slope or dug into the ground. These stratigraphic and architectural relationships can hardly be observed only in a plan, and therefore, producing visible archaeological sections is very essential. Otherwise, the recording of brick bond patterns, foundation ditches, as well as the investigation into the reasons of natural hazards and damage to structural features might be hindered or even impossible.

Second, overlying buildings, even though placed in a particular sequence or a strand, might have had a different size, orientation, construction, layout, and/or function. Therefore, it is likely that the supposed continuation of selected buildings at least in some cases resulted from the existing spatial arrangement limiting the area that could be covered by a new built structure rather than from a conscious strive for local building continuity. Buildings can have extremely different construction types and there is also much evidence of re-building and repairing practices of diverse nature. Perhaps even more importantly, household activity areas do not seem to have been, at least in some cases, limited to one building, as there are independently built spaces connected through secondary wall openings.

Third, the micromorphological analysis of building materials and features as well as room-fills allows us to further our knowledge on spatial organization and seasonality. The potential of micromorphology to reveal differences between contexts which are not obvious at the macroscale has been demonstrated in numerous studies (Matthews, 2005; Karkanas & Efstratiou, 2009; Milek & Roberts, 2013). Based on the microscopic study of undisturbed sediment blocks, micromorphological analysis has the ability to distinguish short-lived events and changes in the composition of occupation deposits over time, thus aiding in the identification of possible palimpsests that may have affected the composition of living spaces. Also intriguing is the issue involving practices of deliberate room filling and accumulation processes within abandoned built structures. Some spaces are filled with compact and single-event packing deposits whereas other function as a place where domestic waste is dumped.

Fourthly, the structural and geoarchaeological analysis of architectural features seems not only to be one of the key factors in the chronological identification of architectural features but also to represent a valuable contribution to the discussion on the upper storeys and roof/ceiling construction. The change in wall construction is the most conspicuous one. The width of these features increased with time and at least partial supersession of simple walls by compound walls can be observed in the late building-levels. In general, it seems also that mud-bricks got thicker and shorter through time. As regards to the geoarchaeology of mud-bricks, one of the primary research questions is to determine if building materials were spatially specific or if access to materials was restricted and/or controlled to use by particular groups. There is sometimes no similarity between the bricks of sequential buildings, which falls into the pattern of 'temporal discontinuity' (Love, 2013a).

Fifthly, ground conditions seem to have never been favourable on the mound, and in many cases (during the Late Neolithic in particular, as illustrated by the TP sequence) they had become highly problematic. These conditions, in which buildings were exposed to various dynamic and static loads, were most probably related to the overload of built structures and to changes in the stability of the ground they were based on. Since anthropological grounds of the tell-type are in general characterized by low strength parameters and large compliance, they make a weak load-bearing layer. Attempts to resolve these problems can be seen in the re-utilization of building material to form a compact packing within the interiors of abandoned houses, and/or the building of new houses upon the remnants of earlier buildings. At some point foundation ditches are dug and deformed walls are strengthen and abutted with other mud-brick structures. Finally, compound foundation walls, made up of alternating courses of bricks, are introduced. All these strategies changed through time; however, there seem to be examples of buildings hollowed into the ground, cut into the slope of the mound or built into the earlier buildings that are representative of different occupational phases of the settlement. Consequently, all this allows us to argue that Çatalhöyük inhabitants had some kind of a perception of natural risks with regard to ground stability and dedicated additional effort and energy to trying to prevent them.

Last but not least, there is strong evidence of the use of animal parts with regard to the elaborate procedures that accompanied the different life cycles of a building. Special deposits of animal bones at Çatalhöyük are well known and can be organized according to their chronological and spatial relationships with built structures into the following categories: building deposits, installations, ritual trash, grave goods,

abandonment deposits, and post retrieval pit deposits (Russell et al., 2009). The case studies presented here provide evidence of mainly abandonment and foundation deposits, in which aurochs and cervids play the most important role. In particular, scapulae, mandibles, and antler parts are the most frequently selected animal parts, and their occurrence in studied special deposits is recurrent. Both modified and unmodified scapulae were used in abandonment deposits. In the case of antlers, the beams which are a raw material were included in deposits within the abandonment process.

Conclusion

The study of specific case studies provides evidence of change through space and time, and as a result, of the complexity of the Çatalhöyük community. It also allows us to highlight the role of inherited and nurtured Neolithic traditions with regard to all phases of buildings life cycles. Furthermore, the dilemma of multiscale and changing spatial organization constitutes a major implement of the presented subject. Therefore, the chapter forms a revised approach to research, in which buildings and open spaces functioned in a number of independent, but simultaneously interactive ways.

In this context, the urge to extend the group of involved experts and establish a set of new methods and tools with regard to analysing data of architectural character should be emphasized. Some of them have been lately already introduced and implemented (Forte et al., 2015). Others, which would allow us to bring the data together in a more coherent way and proceed with analysis, are still being discussed. At the same time, further studies could focus on issues of building structural elements and foundation, location of the special deposits in relation to architectural features, inter-wall infills, and uppermost parts of a building, deformations, and damage of structural elements as informative of various aspects with regard to the spatial and social organization of the settlement.

The multidisciplinary architectural research enables not only thematic interpretations to emerge across traditionally separate fields but to assemble, compile, and oppose various data. This kind of collaboration allows us to significantly advance our understanding of the complex community that inhabited the settlement of Çatalhöyük for more than 1,300 years.

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References

Allison, P.M. ed. 1999. *The Archaeology of Household Activities*. London: Routledge.

Balter, M. 2004. *The Goddess and the Bull. Çatalhöyük: An Archaeological Journey to the Dawn of Civilization*. London: Free Press.

Barański, M.Z. 2014. Late Neolithic Architecture. *Çatalhöyük 2014 Archive Report* [online], pp. 194–202 [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2014.pdf

Bayliss, A., Farid, S. & Higham, T. 2013. Time Will Tell: Practicing Bayesian Chronological Modeling on the East Mound. In: I. Hodder, ed. *Çatalhöyük Excavations: The 2000–2008 Seasons. Çatalhöyük Research Project Series Volume 7*. Los Angeles: Cotsen Institute of Archaeology Press, pp. 53–89.

Best, J., Demirergi, A., Jones, J., Orton, D., Mulville, J., Pawłowska, K., Powell, A., Twiss, K. & Wolfhagen, J. 2012. Faunal Remains, 2012. *Çatalhöyük 2012 Archive Report* [online], pp. 155–176 [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2012.pdf

Carter, T., Haddow, S., Russell, N., Bogaard, E. & Tsoraki, Ch. 2015. Laying the Foundations: Creating Households at Neolithic Çatalhöyük. In: I. Hodder & A. Marciniak, eds. *Assembling Çatalhöyük*. EAA Monograph Series: Themes in Contemporary Archaeology, pp. 97–110.

Düring, B.S. 2001. Social Dimensions in the Architecture of Neolithic Çatalhöyük. *Anatolian Studies*, 51:1–18.

Farid, S. 2008. A Review of the Mellaart Level System and the Introduction of a New Phasing System at Çatalhöyük 2008. *Çatalhöyük 2008 Archive Report* [online], pp. 15–28 [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2008.pdf

Farid, S. 2013. Timelines: Phasing Neolithic Çatalhöyük. In: I. Hodder, ed. *Çatalhöyük Excavations: The 2000–2008 Seasons*. Los Angeles: Cotsen Institute of Archaeology Press, pp. 91–129.

Forte, M., Dell'Unto, N., Haddow, S., Lercari, N. & Mazzucato, C. 2015. Interpretation Process at Çatalhöyük Using 3D. In: I. Hodder & A. Marciniak, eds. *Assembling Çatalhöyük*. EAA Monograph Series: Themes in Contemporary Archaeology, pp. 43–58.

Hager, L.D. & Boz, B. 2008. 2008 Human Remains. *Çatalhöyük 2008 Archive Report* [online], pp. 128–39

[Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2008.pdf

Hodder, I. 2006. *The Leopard's Tale: Revealing the Mysteries of Çatalhöyük.* London: Thames & Hudson.

Hodder, I. & Pels, P. 2010. History Houses: A New Interpretation of Architectural Elaboration at Çatalhöyük. In: I. Hodder, ed. *Religion in the Emergence of Civilization: Çatalhöyük as a Case Study.* Cambridge: Cambridge University Press, pp. 163–83.

Hodder, I. ed. 2013. *Çatalhöyük Excavations: The 2000–2008 Seasons.* Los Angeles: Cotsen Institute of Archaeology Press.

Hodder, I. 2014. 2014 Season Review. *Çatalhöyük 2014 Archive Report* [online], pp. 5–10 [Accessed 19 January 2015]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2014.pdf

Houben, H. & Guillaud, H. 1994. *Earth Construction: A Comprehensive Guide.* London: Intermediate Technology Publications.

Karkanas, P. & Efstratiou, N. 2009. Floor Sequences in Neolithic Makri, Greece: Micromorphology Reveals Cycles of Renovation. *Antiquity*, 83:955–967.

Love, S. 2013a. An Archaeology of Mudbrick Houses from Çatalhöyük. In: I. Hodder, ed. *Substantive Technologies at Çatalhöyük: Reports from the 2000—2008 Seasons.* Los Angeles: Cotsen Institute of Archaeology Press, pp. 81–96.

Love, S. 2013b. Architecture as Material Culture: Building Form and Materiality in the Pre-Pottery Neolithic of Anatolia and Levant. *Journal of Anthropological Archaeology*, 32:746–58.

Marciniak, A., Barański, M.Z., Bayliss, A., Czerniak, L., Goslar, T., Southon, J. & Taylor, R.E. 2015. Fragmenting Times: Interpreting a Bayesian Chronology for the Late Neolithic Occupation of Çatalhöyük East, Turkey. *Antiquity*, 89:154–76.

Marciniak, A. & Czerniak, L. 2007. TP Area. *Çatalhöyük 2007 Archive Report* [online], pp. 113–23 [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2007.pdf

Marciniak, A. & Czerniak, L. 2008. The Excavations of the TP (Team Poznań) Area in the 2008 Season. *Çatalhöyük 2008 Archive Report* [online], pp. 73–82 [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2008.pdf

Marciniak, A. & Czerniak, L. 2012. Çatalhöyük Unknown. The Late Sequence on the East Mound. In: R. Matthews & J. Curtis, eds. *Proceedings of the 7th International Congress on the Archaeology of the Ancient Near East. Volume 1: Mega-cities & Mega-sites. The Archaeology of Consumption & Disposal Landscape, Transport & Communication.* Wiesbaden: Harrassowitz Verlag, pp. 3–16.

Matthews, W. 2005. Micromorphological and Microstratigraphic Traces of Uses and Concepts of Space. In: I. Hodder, ed. *Inhabiting Çatalhöyük: Reports from the 1995–1999 Seasons.* Cambridge: McDonald Institute for Archaeological Research/British Institute of Archaeology at Ankara, pp. 355–98.

Matthews, W. 2012. Household Life-Histories and Boundaries: Microstratigraphy and Micromorphology of Architectural Surfaces in Building 3 of the BACH Area. In: R. Tringham & M. Stevanović, eds. *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey.* Los Angeles: Cotsen Institute of Archaeology Press, pp. 205–24.

Matthews, W., French, C.A.I., Lawrence, T. & Cutler, D. F. 1996. Multiple Surfaces: The Micromorphology. In: I. Hodder, ed. *On the Surface: Çatalhöyük 1993–1995.* Cambridge: McDonald Institute for Archaeological Research/British Institute of Archaeology at Ankara, pp. 301–42.

Mees, F. & Stoops, G. 2010. Sulphidic and Sulphuric Materials. In: G. Stoops, V. Marcelino & F. Mees, eds. *Interpretation of Micromorphological Features of Soils and Regoliths.* Oxford: Elsevier, pp. 543–568.

Mellaart, J. 1964. Excavations at Çatal Hüyük, 1963, Third Preliminary Report. *Anatolian Studies*, 14:39–119.

Meskell, L., Nakamura, C. & Der, L. 2012. Çatal Figurine Report 2012. *Çatalhöyük 2012 Archive Report* [online], pp. 189–94 [Accessed 19 January 2015]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2012.pdf

Milek, K.B. & Roberts, H.M. 2013. Integrated Geoarchaeological Methods for the Determination of Site Activity Areas: A Study of a Viking Age House in Reykjavik, Iceland. *Journal of Archaeological Science*, 40:1845–65.

Pawłowska, K. 2014. The Smells of Neolithic Çatalhöyük, Turkey: Time and Space of Human Activity. *Journal of Anthropological Archaeology*, 36:1–11.

Peña-Chocarro, L. & Zapata, L. 2003. Post-harvesting Processing of Hulled Wheat. An Ethnoarchaeological Approach. In: P.C. Anderson, L.S. Cummings, T. S. Schippers & B. Simonel, eds. *Le Traitement Des Récoltes: Un Regard Sur La Diversité, Du Néolithique au Présent. Actes Des XXIIIe Rencontres Internationales d'archéologie et d'histoire d'Antibes*, 17–19 octobre 2002. Antibes: Éditions APDCA, pp. 1–10.

Russell, N. & Griffitts, J.L. 2013. Çatalhöyük Worked Bone: South and 4040 Areas. In: I. Hodder, ed. *Substantive Technologies at Çatalhöyük: Reports from the 2000—2008 Seasons.* Los Angeles: Cotsen Institute of Archaeology Press, pp. 277–306.

Russell, N., Martin, L. & Twiss, K.C. 2009. Building Memories: Commemorative Deposits at Çatalhöyük. *Anthropozoologica*, 44(1):103–25.

Ryan, P. 2012. Preliminary Phytolith Results for 2012. *Çatalhöyük 2012 Archive Report* [online], pp. 178–83 [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2012.pdf

Shahack-Gross, B. 2011. Herbivorous Livestock Dung: Formation, Taphonomy, Methods for Identification, and Archaeological Significance. *Journal of Archaeological Science*, 38:205–18.

Souvatzi, S.G. 2008. *A Social Archaeology of Households in Neolithic Greece: An Anthropological Approach.* New York: Cambridge University Press.

Taylor, J. 2012. Building 7 and Associated Spaces The 'Shrine 8 Annex Sequence'. *Çatalhöyük 2012 Archive Report* [online], pp. 56–60 [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2012.pdf

Till, J. (n.d.) *What is architectural research?* [online] [Accessed 28 December 2014]. Available at: http://www.architecture.com/Files/RIBAProfessionalServices/ResearchAndDevelopment/WhatisArchitecturalResearch.pdf

Tung, B. 2012. Excavations in the North Area, 2012. *Çatalhöyük 2012 Archive Report* [online], pp. 9–35. [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2012.pdf

Tung, B. & Klimowicz, A. 2013. Excavations in the North Area, 2013. Space 511, Space 518, Space 488, Space 489, Space 490 and Space 84 (B.108). *Çatalhöyük 2013 Archive Report* [online], pp. 35–42 [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2013.pdf

Twiss, K., Demirergi, A., Russell, N., Martin, L., Frame, S., Pawłowska, K., Henton, E., Orton, D., Anderung, C. & Götherström, A. 2007. Çatalhöyük Animal Bones 2007. *Çatalhöyük 2007 Archive Report* [online], pp. 147–70 [Accessed 28 December 2014]. Available at: http://www.catalhoyuk.com/downloads/Archive_Report_2007.pdf

Wright, K.I. 2014. Domestication and Inequality? Households, Corporate Groups and Food Processing Tools at Neolithic Çatalhöyük. *Journal of Anthropological Archaeology*, 33:1–33.