ÇATALHÖYÜK 2009ARCHIVE REPORT

Çatalhöyük Research Project

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Cover – South Area excavations. Photo Jason Quinlan

2009 SEASON REVIEW

Upper stories at Çatalhöyük – Ian Hodder

Çatalhöyük is an important Neolithic site near Çumra, Konya. Indeed, the importance of the site has recently been recognized by the successful placing of the site on the Tentative List of UNESCO World Heritage sites and we are working closely with the Ministry of Culture and Tourism to get the site quickly onto the full list.

The aims of the excavation this year were to uncover some well-preserved burned buildings in the South Area of the site (Figure 1). We have been concentrating our work in this area in order to understand the development of the site through time. There is some evidence that the whole of the site underwent major change in Level VI, half way through the 1400 years of occupation. There is much burning of buildings in Level VI. There is also the appearance of public open areas, with public ovens and much digging of pits to obtain clay, and then re-use of the pits for rubbish. The occupation after Level VI is more dispersed, and the north part of the site starts to be evacuated. Many of the distinctive characteristics of Çatalhöyük such as the bull horns start to die out after Level VI. There are of course changes that lead up to Level VI, but the fires at the end of this phase seem to be associated with an important shift in the pattern of occupation.

Figure 1: General view of the excavations in the South Area at Çatalhöyük. Photo Jason Quinlan.

Some of the buildings burned in Level VI are very well preserved. The walls of some of these buildings have been found standing over 3m high. In one of the burned buildings, Building 79, we found a beautiful stone figurine of a bearded man (Figure 2) as well as another stone figurine.

But it is the architectural evidence from the burned buildings 79 and 80 that is most fascinating. One of the intriguing questions left by James Mellaart was how people moved around on the roofs of houses. Reconstructions of Çatalhöyük have always assumed very simple buildings, with flat roofs all joined together so that people could move around easily over the roof tops. On at least one occasion, Mellaart found evidence that did not really fit this hypothesis. For example, in his 'Shrine 10' in Level VI, he found a collapsed wall relief that seemed to be a splayed figure (which he interpreted as a goddess but which we now think was a bear). There was no room for this collapsed relief on the well preserved walls in 'Shrine

10’ and so Mellaart assumed there must have been an increase in the height of the walls and roof just to accommodate the relief. On the basis of the evidence we found in Buildings 79 and 80 in 2009, another interpretation is that the plaster relief adorned the walls of an upper storey.

Figure 2: Figurine, probably of a bearded man, from the burned fill of Building 79. Photo Jason Quinlan.

The first clue came from Building 79. This was found filled with burned brick and plaster (Figure 3). In the middle of the main room there was a collapsed wall that seemed to be attached to a floor – but not the floor of the main room. The plaster on the inside of the collapsed wall and floor was fairly coarse and much thicker than on the floor and walls of the room itself. The collapsed wall and floor were too massive to have moved far – the only possible explanation was that they had fallen down from an upper storey.

Colloborating evidence came from burned Building 80 (Figure 4). Here we found much too much collapsed walling to be explained by the simple architecture that we had always presumed. Most buildings at Çatalhöyük were not burned on abandonment. Rather, they were carefully cleaned and dismantled so that no trace of any upper storey, if it had existed, survived. We had begun to suspect that upper storeys might exist because when we built a replica of a typical Çatalhöyük house it was clear that there was no need for the timber posts that are always found in the main rooms of buildings. A single storey building made of mudbrick in this area stands up perfectly well without huge wooden posts. It seemed, as Marion Cutting suggested, that the posts might hold up an upper storey, but we had never found any evidence of this in the unburned buildings. But burned buildings preserve the traces of the upper parts of buildings, the post mouldings, the corners, the bricks. And here in Building 80 it was clear that there were many different sizes of bricks, and too many of them for a simple one-story building. Also in Building 80 we found fallen pieces of very large wooden beams with plastered floors attached – and these plastered floors were clearly internal, not external, floors.

Figure 3:View of the western part of Building 79, with some room fill visible to the right. One of the pillow-shaped pillar capitals can be seen to the right. Photo Jason Quinlan.

Figure 4: The north (right) and east (left) walls in Building 80, with fill still remaining in the lower part of the room. A deep slot is visible on the north wall. Photo Jason Quinlan.

Figure 5: Close-up of the pillow-shaped capital in Building 79. Photo Jason Quinlan

So we have two storey buildings. But is it even possible to contemplate a third storey (see Figure 24)? It is too early to be sure but there is some tantalizing evidence. Some of the upright posts on the walls of the main room in Building 79 ended in plaster capitals (Figure 5), as had been noted by Mellaart. But what was surprising was that these pillow-shaped capitals were at the top of posts that did not extend to the top of what we had assumed were the walls. They stopped below a wall overhang. Above the capitals was a deep groove in the plaster walls. This deep groove was found in both Buildings 79 and 80. What was its purpose? In both cases the walls above the groove stepped inwards into the room, producing a slight overhang. Mellaart had interpreted the evidence to suggest that a wooden beam filled the slot and held up the upper wall. The stepped-in upper wall above the beam was just part of a decorative scheme. But another interpretation is that the deep slots above the plaster capitals held a wooden floor or loft. We certainly could see traces of quite substantial beams that could have supported such a floor or loft. Whether there were two (as seems most likely) or three storeys at Çatalhöyük, the architecture at the site has suddenly got a lot more complex and sophisticated than we had believed.

The season's work

The 2009 season ran from 10th June to 2nd October. We had again a large team at Çatalhöyük this summer, – 160 researchers and students of 15 different nationalities worked at the site along with 20 locals. We were also joined by 25 visitors throughout the season. As well as the usual Stanford-UK team, and the existing team from Poland (led by Arek Marciniak and Lech Czerniak), a team of Selcuk University students worked with the project and a new long-term agreement was signed with Selcuk University. Working on the

Chalcolithic levels on the West Mound were two teams – one from SUNY Buffalo and the Free University of Berlin (led by Peter Biehl and Eva Rosenstock) and the other from the University of Thrace at Edirne (led by Burçin Erdoğu).

Excavations on the West Mound have continued to uncover buildings with large internal buttresses, and in the case of the Edirne team, a large red-painted floor has been found slumped into the cavity below the floor – this is clear evidence that the tradition of multi-storey houses continued into the Chalcolithic.

In the one and a half months before the excavation season in 2009, the team worked on post-excavation analyses in preparation for the publication of four new volumes covering the excavations from 2000 to 2008. These publications are planned for 2012, and so this season excavation reports were written and animal bones were scrutinized, and samples were taken. A group of international scholars in the disciplines of archaeology, anthropology, philosophy and religious studies met at the site for a week to contribute to the interpretive process. They will continue to work with the team over the next 3 years as we approach publication.

OTHER ACTIVITIES – Shahina Farid

On site Storage Depots

By the end of the 2008 season the second of a planned 4 storage depots was completed (Archive Report 2008). One of the first tasks this season was to move in. This was carried out by our local team of workmen who very diligently followed instructions on measuring and marking out rows and following the numerical order of the crates. The fantastic space (Figure 6) was quickly filled. The crates are stored by material by a material specific running list of numbers (Figure 7). All material within the crates is listed by unit numbers which is entered on to the crate database, this is also linked to the Lab. teams artefact recording sheet . This means that at any given time we can put our hands on any material by unit number – well this is the theory but the practice is always being tested as a backlog of material has to be checked against crate numbers and allowances for numerical mistakes taken into account (see Finds Lab Report – this report). One of the major issues is keeping the records up to date if material is moved from one crate to another. The facility to change crate location is implemented on the database and it is the responsibility of individuals to make sure basic housekeeping is kept up to date.

Figure 6: Interior of the storage depot very quickly filled. Photo Jason Quinlan.

Figure 7: Rows or crates in the new storage depot ordered by material. Photo Jason Quinlan

Our newly installed wireless network (see IT Report, this report) allowed database work to be carried out on the store depots, which is a huge advantage to having to constantly shift crates around the dig compound. However, there are still drawbacks and one major issue is Health and Safety. Crates can be very heavy and stacked high to make the most of space. To address this we are in the process of changing to smaller crates for certain materials and limiting the stack height. But this means that we run out of space more quickly. More space requires more storage facilities and more storage facilities requires more funds – an on going universal problem to archaeological excavations.

TV Crews & Photographers

We were filmed twice this season both for British TV. Of great excitement, especially to the British team, was the arrival of Blue Peter (Blue Peter is a long-running BBC factual programme for children intended to be a voyage of adventure and discovery). We were part of their summer travel special programme to Turkey, introducing their audience to a cross section of life, travel and events. Past and present, our work represented the past. It was a fully packed two days of filming on site and in the labs but the highlight was the challenge the three presenters were set which was to spend a night in the experimental house on site, after having cooked an authentic Neolithic meal in our experimental oven. This was no mean feat as we still experiment with making a fire in the experimental house without being smoked out within 2 minutes. We had conducted an experimental fire prior to Blue Peter's arrival (see Harrison, This report), but despite adapting the oven to house a chimney flue, the presenters were smoked out after a couple of hours. Much fun was had though and the house looked very cosy. The programme was broadcasted on the 6th October 2009.

Figure 8: (left) The Blue Peter van on site and (right) the presenters in their Neolithic costume. Photos Jason Quinlan.

The second crew from Wildfire TV came to film for a documentary about how changes in climate affected humans throughout history. Çatalhöyük was featured as one of the earliest sites that people settled and how the climate changes paved the way for adaptation to domestication of plant crops. The first of the 4 part series "Man on Earth", was broadcast on 7th Dec 2009.

Photographer Vince Musi and his Turkish assistant Aydin Kudu visited site at the end of the season for a photo shoot for National Geographic Magazine.

Küçükköy School playground

The project was approached by the Muchtar (headman) of Küçükköy**,** our nearest village and from where most of our local work team come from, for support for a school playground (Figure 9). Coordinated by Gulay Sert who runs the Children's Summer School Programme (see this Report), the project made a donation towards this venture that was also supported by Konya Cimento.

Figure 9: School children playing on their new sports ground. Photo Jason Quinlan.

Templeton Project II

We held our annual seminar involving a group of international scholars in the disciplines of archaeology, anthropology, philosophy and religious studies at the site for a week to contribute to the interpretive process. This is the start of a second project with a grant from the John Templeton Foundation. These seminars have proved very successful for the interpretation of the site. The questions that are being addressed at Çatalhöyük are based on the relationship between belief and other symbolism and the control of production. We are addressing whether there is secure evidence that important symbolic and belief objects were handed down in houses, and preferentially in 'history houses' and how does the 'history house' system change, and whether there is evidence that religion is related to power and property elsewhere in the emergence of civilization in the Neolithic of the Middle East?

A publication from the first series of seminars, "Religion in the emergence of civilization. Çatalhöyük as a case study" Edited by Ian Hodder is in prep.

Other Events

As every year we enjoyed an evening hosted by our friends and supporters at Karavan, a kilim shop in Konya. We enjoy traditional Konya kebab, which is slow oven cooked lamb and rice in the courtyard followed by a Sema or Whirling Dervish presentation on the terrace of the dig house (Figure 10).

Figure 10: An evening of traditional Konya kebab followed by a whirling dervish presentation hosted by "Karavan" of Konya. Photos Scott Haddow.

Finally, we held an afternoon of presentations to the Director and curators from the Konya Archaeological Museums. We presented our latest data on a number of on going research projects on various materials that had been facilitated by the museum staff.

ACKNOWLEDGEMENTS

An international team now based in London University (UK) and Stanford University (USA) has undertaken archaeological research at Çatalhöyük since 1993, with a permit granted by the Ministry of Culture, and under the auspices of the British Institute of Archaeology at Ankara. We are especially grateful to the General Director of Monuments and Museums, and to our temsilci Lütfi Önel.

The main sponsors of the project are Yapı Kredi and Boeing. Another sponsor is Shell.

Funding for the project in 2009 has also been received from the British Institute at Ankara, Stanford University, the Global Heritage Fund, University College London, the Turkish Cultural Foundation, the University of Poznan, the University of Gdansk, SUNY Buffalo, the Humboldt Foundation, the Templeton Foundation and an anonymous donor.

The institutional partners of the project are Selcuk University, Stanford University, University College London, Adam Mickiewicz University, Istanbul University.

FIELD TEAM 2009

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West Mound, Trenches 5:	Peter Biehl, Eva Rosenstock, Tom Birch, Jennifer Byrns, Ingmar Franz, Eva Maria Mihan, David Orton, Sonia Ostaptchouk, Jana Rogasch, Sam Wakeford, Owen Vince, Patrick Willett.
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Conservation:	Liz Pye, Duygu Çamurcuoğlu, Graeme McArthur, Amanda Watts, Daniela Pedroza, Kelly Caldwell, Sanaz Mehran.
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Micromorpholgy Team:	Beth Harley, Lisa-Marie Shillito.
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Starch Analysis:	Karen Hardy, Renee VD Locht.
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Bead technology:	Karen Wright, Roseleen Bains.
Ceramics:	Nurcan Yalman, Hilal Gültekin.
Figurines & Miniature Clay Objects:	Lynn Meskell & Carolyn Nakamura, Louise Martin.
Clay Stamps:	Ali Turkcan.
Clay Balls & Geometric Shapes:	Sonya Atalay, Sheena Ketchum.
Clay materiality & sourcing:	Chris Doherty, Jeffrey Aviss.
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Research Projects:	Beliz Terceli, Tera Pruitt, Melania Savino, Colleen Morgan.
Camp Manager:	Levent Özer.
Site Assistant:	Yildiz Dirmit.
Site Custodians:	Mustafa Tokyağsun, Hasan Tokyağsun, İbrahim Eken.
House Staff:	İsmail Salmancı, Nevriye Şener, Gülsüm Eken, Elmas Motuk.
Site Workers:	Mevlut Sivas, Mustafa Yaşlı, İsmail Yaşlı Hüseyin Yaşlı, Numan Buluç, Mustafa Yaşlı, Hasan Yaşlı , Mehmet Ali Motuk, Mahmut Celik, İsmail Buluç.
Residue Sorters:	Saliha Sivas, Hatice Yaşlı, Rabia Yaşlı, Senay Yaşlı, Tulin Yaşlı, Esra Şener, Hatice Çelik, Elmas Şener.

Figure 11: Some of the team 2009. Photo Jason Quinlan.

EXCAVATIONS

Introduction to the Excavation Areas 2009– Shahina Farid

As the 2009 season was primarily a study season excavations took place in three areas only in the South Area on the Neolithic East Mound and Trenches 5 and 8 on the West Chalcolithic Mound (Figure 12).

The study season ran from 15th June until the end of July during which time teams worked on post-excavation analyses in preparation for the publication of four new volumes covering the excavations in the 4040 Area, South Area, TP Area and IST Area excavated from 2000 to 2008. The aim of the phase of work in preparation for publication addressed the social geography of the settlement and larger community structure. We targetted questions on: how were production, social relations and art organised beyond the domestic unit? How did this organisation develop over time? Does the social geography of Çatalhöyük involve groups of houses clustered around dominant houses or is all social and economic life decentralised and based on equivalent domestic units of production?

In order to address these questions we moved away from detailed analyses of individual buildings, their construction, occupation and closure, which were the focus of the previous 5-year phase of work (1995-99, see published volumes), and we concentrated on large 'neighbourhood' areas. These publications are planned for 2012.

The second half of the season excavations were conducted over a six week period with specific aims and research questions as outlined below.

South Area

Under direction of the Project, the excavation team in the South Areas comprise professional excavators assisted by members of field schools from collaborative universities and international students. The aim is for students to work along side professional excavators to gain a good and thorough grounding in excavation skills, recording and integrated interpretation. Excavation teams are therefore grouped based on experience with specific aims for the seasons work.

The research aims in the South Area are to explore more fully the temporal processes that produce phases of settlement because the buildings remaining from the Mellaart and our excavations occur at different levels. Thus it is possible to examine the chronological development of houses in relation to each other from the very base of the mound. We also work towards expanding the area where we reached natural lake marl in 1999. This requires strategic planning of where and to what depth to excavate in order to achieve this in a safe and coherent manner. The trench where natural was reached in 1999 falls in the centre of the South Area. In order to extend this trench we need to excavate surrounding structures in a stepped manner. Therefore, in order to reach our 'natural' target we have first to move further away from that focal point, but whilst doing so we will be fulfilling the aim of excavating a temporal sequence.

West Mound

Excavations took place on the West mound between 1998 – 2003 under the direction of Drs. Jonathan Last and Catriona Gibson. Their aim had been to locate and reassess the 1960s trenches and to conduct excavation in so far as to establish the potential of the site. The results, in preparation for publication, have produced exciting and important data in terms of the transition of the Neolithic to Chalcolithic at Çatalhöyük. The gap of c.800 years between the last Neolithic activity on the East mound and the occupation of the West mound as had been interpreted in the 1960s has already been closed to c.200 years based on the data collected from the West Mound excavations and the TP Area on the East mound. It is probable that we will find a seamless continuity between the two mounds.

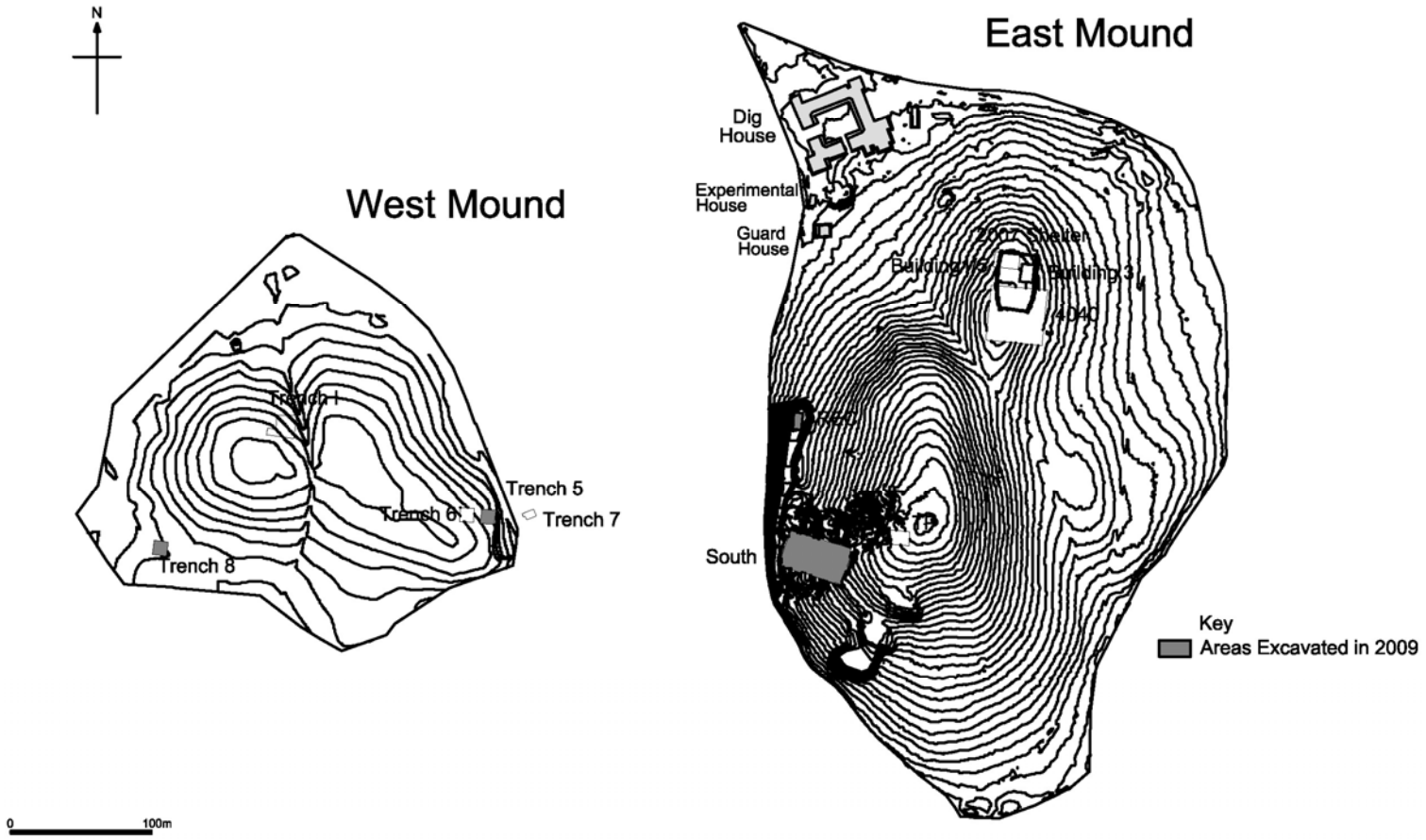

Figure 12: Areas of excavation 2009 season. Plan Cordelia Hall.

In 2006 a joint team under the leadership of Dr. Peter Biehl from the University of Cambridge and Dr Burçin Erdogu from the University of Thrace began excavations in two trenches (T5 and T6) on the eastern slope.

The results of the 2006 season defined a new three-fold research approach for the West Mound excavations. It was decided that the new excavations would approach a two fold Chalcolithic research agenda and the third would excavate the Classical and later periods.

Trenches 5, 6 and 7

Led by Dr. Peter Biehl, SUNY Buffalo & Dr. Eva Rosenstock, Free University, the aim in Trenches 5, 6 and 7, located on the SE slope of the mound, is to excavate a series of step trenches down to natural in order to assess a full sequence of occupation on the West Chalcolithic mound. Continuing from Trs. 5 and 6 opened in 2006, Tr. 7 was opened on the same alignment but as a machine cut trench in the side of a ditch that runs along the eastern edge of the West Mound. This was opened to afford a quick view into the depth and nature of the stratigraphy.

The results combined with those from the TP Area on the East mound will inform on the nature of transition from Late Neolithic on the East Mound to Early Chalcolithic on the West Mound or, illustrate that the two sites were at some stage occupied concurrently.

Trench 8

The team led by Dr Burçin Erdogu, University of Thrace is investigating an area to the southwest of the mound where later surface collections of pottery indicated ECII activity in order to correlate occupation sequences on Çatalhöyük West to Can Hasan.

When Çatalhöyük West mound was first excavated in two small trial trenches (I and II) in the 1960s, on the basis of the pottery the occupation sequence was divided into two phases - Early Chalcolithic I (EC I) and Early Chalcolithic II (ECII). EC II was represented by a series of pits in trench II on the southwest part of the site and pottery similar to EC II was noted as Can Hasan I, phase 2B. The aim is to investigate the EC II occupation at Catalhöyük West, to explore how EC II occupation developed after the end of EC I occupation, and how to contextualize the transition from EC I (c.a. 6000-5700 cal BC) to EC II (c.a. 5700-5500 cal BC).

South Area 2009

Introduction – Shahina Farid

In the South Area the aim was to excavate Building 80, a burnt building that has been visible in section since the onset of current excavations in 1993. This building was overlain by a continuous succession of buildings excavated as the B.10-B.44-B.56-B.65 and B.75 sequence since 2003, and reported on in previous reports. The walls of B.80 could be seen standing to 2.4m in section. Structures to the north and east were also excavated; B.79 to the east and B.86 to the north (Figure 13). To the west of B.80 further structures were excavated to link this sequence stratigraphically with previously excavated structures along the southern ledge of the South Area. These included the basal remains of B.76.which was first excavated in the 1960s. To it's west lay Space 132/370 and Building 87 both of which underlie a sequence of buildings excavated in previous years. These areas also link to the 1995 – 1999 excavated buildings and thus produces a single stratigraphic strand of structures from natural to the top in this location of the mound.

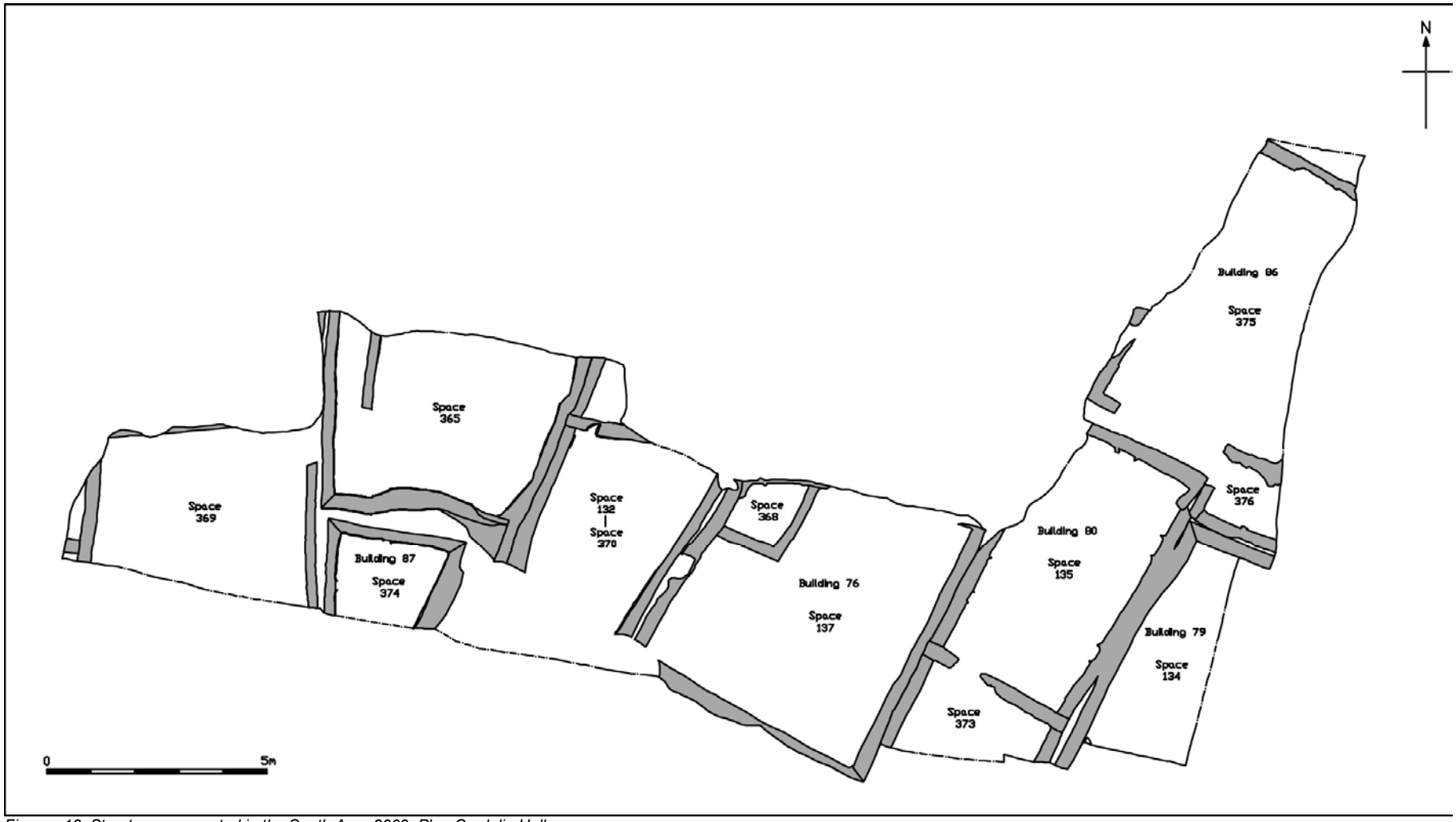

Figure : 13. Structures excavated in the South Area 2009. Plan Cordelia Hall.

Building 80 - Spaces 135 & Sp.373, Building 86 - Spaces 375 & Sp.376, external areas Space 344, Sp.367, Sp.329 and Building 75 - Space 140 – Roddy Regan & James Taylor

Supervisors: Roddy Regan* & James Taylor*
Assistants: Christopher Atkinson (1), John Holston (2), Graham Isted (3), Hakki Uncu (4), Yasemin Özarslan (4), Kelly Nguyen (5), Laura Buccieri (5), Maroles Sijstermans (5), Mitchell Scott (5), Ramazan Gündüz (6), Önur Yüksel (6),Mustafa Cessur (6)

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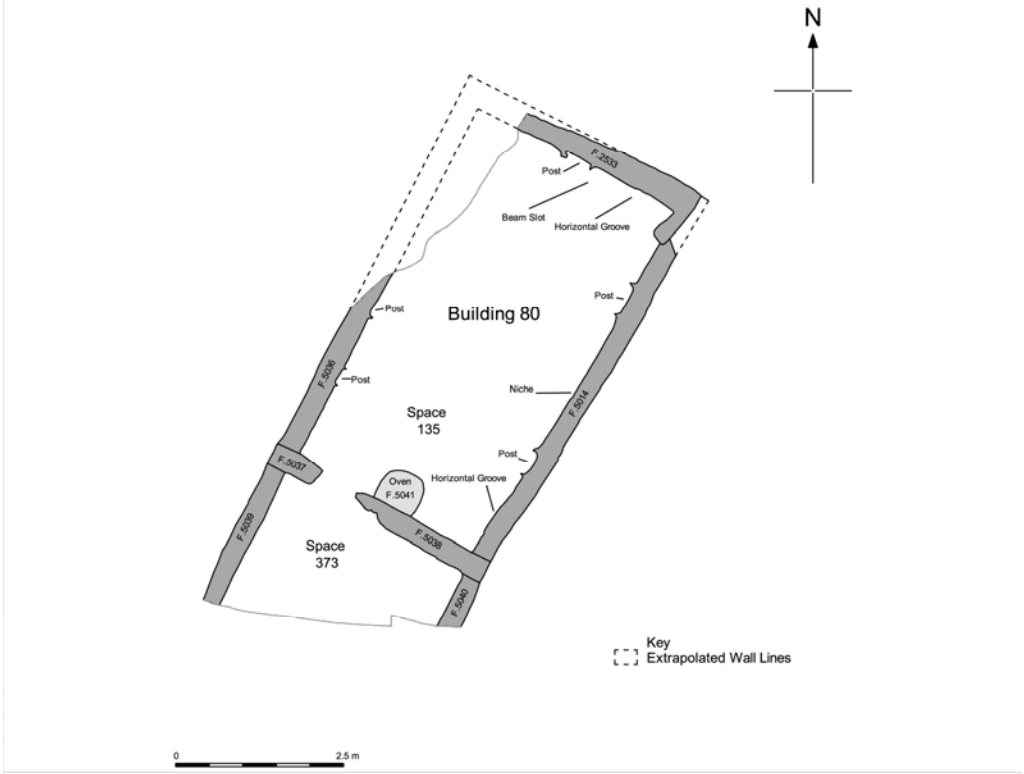

Figure 14: Plan of Building 80. Plan Cordelia Hall.

Introduction

This years excavation continued with the removal of the deposits within open area Space 344 that overlay burnt buildings B.79 and B.80, these outlined in last years excavation. These open area deposits also continued to the north of these buildings and sealed another structure, Building 86, of which only part of its southern wall was revealed last year. In order to define this open area and the underling lower building a series of deposits within the north of the site had to be removed that had been left in situ beyond the previous limit of excavation (LOE). Extending the excavation area beyond our previous LOE also established a more secure relationship between the construction of Building 75 and the open area deposits to the east of it. This led to some of the upper deposits previously allocated to Space 329 in last years Archive Report, as being relocated to Space 371.

Building 80, Spaces 135 and Sp.373

The exposed section that until now has defined our excavation area has always suggested that Building 80 had been partially burnt, collapsed and been subsequently backfilled. This year we have been able to test these assumptions with the excavation of the upper deposits within the structure.

Figure 15: Overview of Building 80. Rectangular building divided into two rooms. Photo Jason Quinlan.

Removing the deposits within the building clearly defined the southern walls of the structure not seen last year. The building itself was roughly rectangular in shape and is divided into two rooms Space 135 at the north and Space 373 at the south, these linked by an access hole (Figures 14 & 15). The southern wall and part of the eastern wall of the southern room lie beyond the present LOE. The southern end of the building appears to have suffered more severely from the effects of fire than the northern end.

The Northern Room Space 135

This room is delineated by wall F.2533 at the north, F.5014 at the east, F.5036 at the west with walls F.5037 and F.5038 forming the southern side, these lying either side of a crawl-hole into the southern room Space 373. The northern wall of the building, F.2533, is particularly well preserved, standing over 2.1m in height consisting of at least 18 courses of mudbrick. This contrasts with the less well preserved walls towards the south of the building and also with the western wall whose upper extent appears to have been lost to erosion, post Mellaart's excavation. All the walls of the northern room show multiple layers of white plaster, with traces of red pigment apparent within some plaster layers on the eastern wall. Some internal features within the building have also revealed themselves. Lying against the southern wall of the northern room there is what appears to be the top of an oven, F.5041. Pairs of posts in the form of post scars line the eastern and western walls, while the top of another pillar lies in the centre of the northern wall. Other exposed features within the building are a series of decorative horizontal grooves running horizontally between the post settings on the northern and eastern walls of the northern room. There is also a small, deep-set oval niche within the eastern wall (Figure 16). The relatively well preserved northern wall also preserves what may be the remnants of a horizontal beam-slot (containing charred timber remnant (18502)), running above the central post. While not as yet wholly clear it is likely that this slot held a timber or timbers that supported of a second floor. Perhaps indicative of this is the fact that the plaster on the walls directly above and below the slot lip out, possibly indicating the presence of a floor/roof.

Within the northern room the earliest deposits reached this year was wall collapse/demolition (18594) that consisted of 13 courses of wall collapse, that likely came from the southern end of the building. This was sealed by the burnt collapse (18576/18580) of what appears to be a combination of wall and floor collapse, this in turn was sealed by a dump of mixed material (18578). These deposits surrounded what appears to be the top two rows of collapsed and partially carbonised timbers ((18581)-(18591)), parts of some decomposed timbers are seen as voids. The carbonised wood and voids indicated that the original were angled downwards

towards the centre of the building and it is likely they represent the remains of roof or first floor supports.

Figure 16: Plastered north and east walls with post scars, decorative horizontal grooves and the possible beam slot in the north wall. Looking NE. Photo Jason Quinlan

The collapsed timbers were then sealed by a series of alternate wall collapse or demolition deposits and backfill deposits. The collapsed or demolition deposits consist of a series of accumulations that derive from the building, these being sections of wall or plaster collapse: (18580), (18576), (18561), (18552), (18540), (18532), (18531) (18526), and (17364). As several of the collapsed wall deposits lay over and are successively sealed by dumped deposits it suggests the building was being levelled while also being backfilled. Several of the deposits (18576) and (18580) in particular, are of some interest as they contained what appear to be the remnants of plastered upper floors and mudbrick/plaster impressions of timbers that may have supported such a floor. As mentioned above while the building was being demolished it was also being backfilled with deposits that appear to derive from outside the building, i.e. brought in from elsewhere: (18578), (18564), (18560), (18558), (18554), (18549), (18544), (18543), (18541), (18538), (18522), (18521), (18519), (18518), (17392), (17389), (17365), (17361) and (17342). At some point during the backfilling of the building a pit (18563), was cut through the accumulations into the NE corner of the building. The purpose of this cut would appear to be deliberate removal of some unknown feature from the north wall, the pit respecting a scar within the otherwise relatively undisturbed wall plaster. A horncore was found within the fill of the pit (18560) and its possible this came from the presumed installation, although this showed no signs of adhering plaster on its surface.

The Southern Room Space 373

This space shares walls F.5037 and F.5038 that divide this southern room from Space 135. Walls F.5039 and F.5040 respectively form the western and eastern walls.

The southern room does not appear to have been plastered to the same extent as the northern room, or has no plaster on the presently exposed walls, however, there is possible evidence for collapsed render/plaster lying against the walls, suggesting any possible covering may have fallen off the wall, possibly due to the effects of fire.

The southern room of the building in contrast to the northern room was filled with a relatively homogenous deposit (18555) that would appear to represent a well sorted dump or roomfill, rather than consisting of any collapsed building material.

Building 86, Spaces 375 and 376.

This building abutted both buildings 79 and B.80 at the north (Figure 13) and appeared to consist of two rooms or spaces Space 375 at the north and Space 376 at the south. The eastern limits of the building appear to lie beyond our present eastern LOE (Figure 17 & 17a).

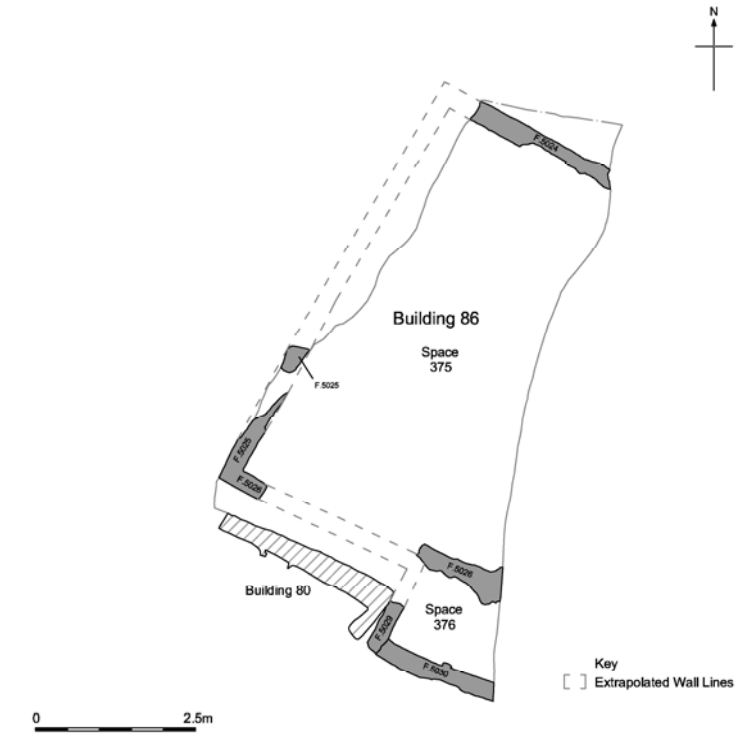

Figure 17: Plan Building 86. Plan Cordelia Hall

Figure 17a: Overview of B.86. (N to top). Photo Jason Quinlan.

The northern wall, F.5024, demarcated the present northern edge of excavation. Part of the upper edge of the western wall, F.5025, was truncated but the SW extent of the wall was revealed, this abutting / adjoining southern return wall F.5026. Part of this southern wall would appear to have collapsed as indicated part of leaning section of the wall seen at the E edge of excavation. A small room may also exist to the south of this wall as suggested by wall returns F.5029 and F.5030, these forming Space 376. The exposed wall lengths suggest that the northern room is plastered, although, this appears to be in one or two renders only with no suggestion as yet of multiple layers as seen in Buildings 79 and B.80 to the south. From the exposed Mellaart section this building would appear to have been partially backfilled with compact mudbrick-like material (18537), this only partially excavated this year in order to delineate the south wall of the building. The abandoned building as with buildings B.79 and B.80 then becomes part of an open area Space 344.

Open Area, Space 344

After the abandonment of Buildings 79, B.80 and B.86 the area appeared to have been left open, and utilised as an external area, Space 344. This space was largely characterised by levelling and midden dumping, perhaps reflecting the need to remodel the area (or landscape it) after the fire that destroyed the earlier Buildings (B.76, B.79 & B.80).

Notably however the sequence began with the construction of an oven, F.5018, which highlighted the sharp change in function of the area since the oven was partially founded on its northern side upon the recently demolished dividing wall of Building 80 (F.5038) and to the south on the infill of the former Space 373. Oven construction began with a small foundation deposit, (18517), consisting primarily of burnt brick. The material was focused upon what was to be the central floor of the oven structure (despite being clearly laid before the oven superstructure) and although it may simply have served as aggregate for levelling the floors and walls, it may also be that the burnt brick may have been deliberately placed to facilitate even heat retention.

Sealing this make-up was the oven superstructure, (17372), which formed a typical horseshoe shape 1.30m long by 0.95m wide (orientated northeast-southwest with an opening to the southwest). The walls themselves averaged 0.20m wide and the whole structure survived to a height of up to 0.24m particularly toward the rear (northeastern) end. Notably the superstructure appeared to be constructed ad hoc using a mixture of moulded clay and reused brick or building material. The oven was then internally plastered with a 20mm coat of pale creamy brown fine clay. This clearly showed discolouration due to scorching. This clay rendering appeared to be the only coating of the oven as no further rendering events were apparent on the inside of the oven, this primary plaster serving through all subsequent floors and infill.

Stratigraphically sealing the plaster of the oven, although apparently unrelated functionally, was a clay-rich yellow-brown dump, (18503), which spread southwest from the mouth of the oven. However it remains possible that this deposit may have served as an external surface associated with the oven. Inside the oven a 60mm thick ash-rich silt deposit was laid, (18501), which appeared to have served as the primary surface (indicated by very heavy scorching). This sealed another compacted burnt clay-silt floor, (17395) surviving only along the southeastern side of the structure. This second floor may simply represent repair, rather than remodelling, since there was no evidence for another major flooring event inside the oven.

Sealing the later oven floor on the southeastern side of the structure was a small dump of yellow clay-silt, (17393), which may have represented the first signs of degradation of the superstructure (Figure 18). This was immediately sealed by a thick silty-ash, (17371), which itself included some collapsed plaster, perhaps from the upper part of the superstructure. This was finally filled with an 80mm thick band of brick rich mid-yellowish brown clay silt fill, (17387) which marked the collapse of the oven superstructure.

Figure 18: Oven F.5018 during excavation of (17371). Photo James Taylor.

The remaining depression at the centre of the oven was finally sealed by an ash deposit, (17382), which corresponded to the ashy material outside of the oven structure at this stratigraphic level (see (17370) below).

Outside of the oven the southwestern corner of Space 344 began to develop in a way that characterised most of the deposition within the space, throughout its lifespan. This was essentially a sequence of dump, either more clayey or ashy silts variously, some of which were almost certainly used as external surfaces. It is notable that the demolition and backfill of the underlying architecture in Building 80, caused the space to slope from the northeast to the southwest, which might account not only for the orientation of the oven structure (with the mouth down-slope, perhaps

to facilitate cleaning and rake-out), but also for the heavy dumping to the southwest of the space.

The earliest of these dumps were all clearly mixed yellowish clay rich dumps, (18513), (18511) and (18507), in close proximity to the oven structure itself. In fact it remains possible that they were residual building material from the construction of the oven itself, since they were very similar to the moulded clay in the oven superstructure and all contained brick like debris. It is possible that this material was used to level the area around the oven, perhaps serving as a sequence of rough external surfaces.

Sealing this sequence on the west side of the oven was a loose dark ashy dump, (18506), perhaps representing rake-out from the oven itself. This in turn was sealed to the north by another light grey-brown clay dump, (17398) which may have also been utilised as a surface. To the southwestern side of the oven a compact mid-dark grey ash spread (18500), similar to (18506) above, was situated in front of its mouth. Stratigraphically this deposit was contiguous with the primary oven floor, and was almost certainly associated with its use (rake-out?). The sequence continued in this fashion with clay-rich dumps (17391) and (17376), possibly laid deliberately as rough external working surfaces and interspersed stratigraphically with further ash layers (17381) and (17370).

Relatively large deposits of laminated dumps, (17366)/(17377) sealed Building 79 and a similar deposit (17362) sealed Building 80, these consisting of interdigitated ash and clay lenses. These deposits were essentially the same thing, separated by the still upstanding walls of the underlying buildings. They also finally sealed, the by now disused, oven F.5018, and marked the beginning of an extensive space-wide dumped sequence, which gradually levelled out the area. It is perhaps notable that with the final disuse of the oven, this corner of the space began to show sign of more ad hoc pyrotechnology, including fire pits (17360) ((17359) fill), (17356) ((17353), (17352) fills), (17363), possible fire scoops (17351) ((17350) fill), (17358), ((17357) fill) and fire spot (17354) reflecting a trend seen throughout the overlying midden sequences in this and subsequent phases. This sequencing was also evidenced to the north of the excavated area where there were two other fire spots (18548) and (18551).

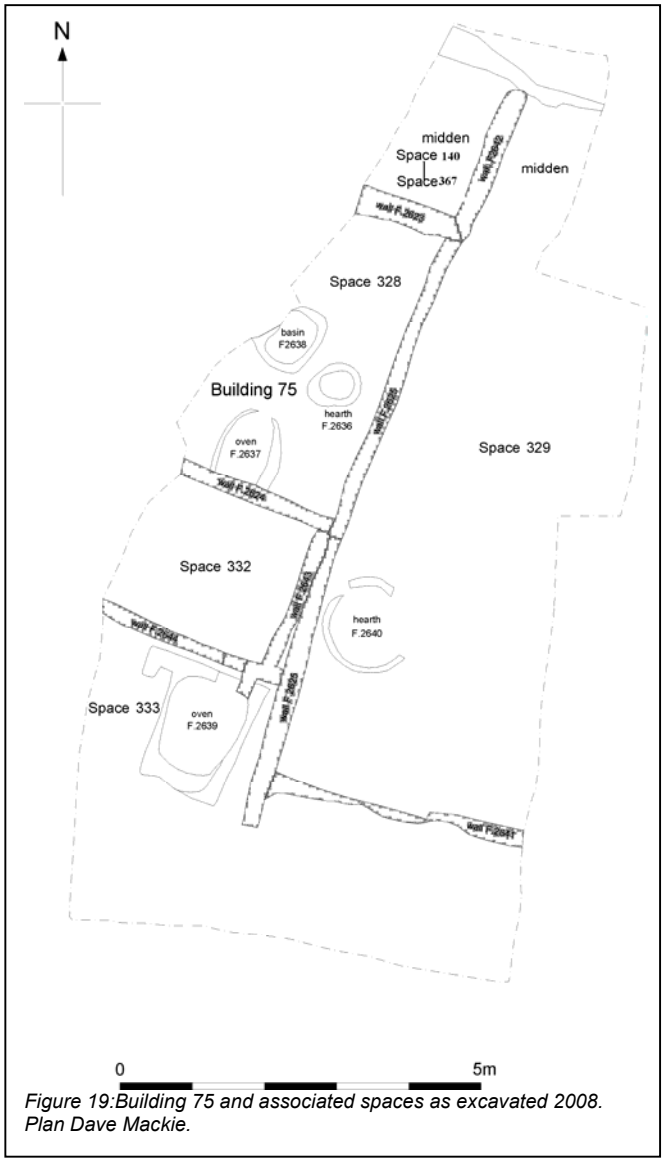

Figure 19:Building 75 and associated spaces as excavated 2008. Plan Dave Mackie.

A slightly different sequence of events was seen within this open space at the north of the excavation area. Here two fire spots (18548) and (18551) were respectively cut by two quarry pits (18547) and (18553). The function of these pits remains unclear

although it is possible, as they were cut into the fairly compacted roomfill of Building 86, that the compacted soil was what was being quarried. Whatever the function of the pits their location coincides with the later wall F.5008, this in turn underlying the foundation of Building 75. It is possible the pits are the first in a sequence of events aim to this space. that reinforce the use of this particular location and might suggest some degree of 'ownership' or cl

The fills of the quarry pits are then sealed by midden-like deposit (18530) this in turn sealed by deposit (17333) that covered most of the excavated area. This deposit at the north of the excavated area contained the remnants of a child's skull (18524). This deposit was sealed by (17331) and (17321) excavated last year.

Space 367
This space was defined by a mudbrick and mortar revetting wall F.5008 (18515/18516) and thus formed the north western boundary of Space 329 (Figure 19). The wall sat within cut (18525) and enclosed an area of roughly 4.60m north-south by 1.0m east west although its western extent had been truncated by Mellaarts excavation. Rather unusually the wall curved at its southern end its line corresponding to an area of previous quarry pitting. The wall appeared to have acted as a retaining wall for a levelling or consolidation deposits (17388) and (18528) and had no internal features or floors were associated with it. Its location, overlying the former quarry and underlying Building 75, perhaps suggests both wall and levelling deposit were ground preparation for the construction of Building 75.

Space 329
A series of mixed midden-like and surface laminated dumps were removed from this area of the site along with several fire spots. The lowest deposit was a large laminated dump sequence recorded as (18510). This was successively sealed by laminated and midden-like dumps (17397), (17394), (17384) and (17374). Interspersed between these deposits were fire spots (18512)/(18514), (18505), (18509) and (17396). The area was sealed by deposit (16225 -Figure 20) that was partially excavated last year and was truncated by the foundation of Building 75.

Figure 20: 16225.H1. Small clay face with traces red pigment in eye found in external Space 329. Photo Jason Quinlan

Building 75 Space 140
This was the truncated remains of a SW/NE aligned wall F.2642 that was keyed into the north wall of Space 328 and may represent a northern room of Building 75, although any northern wall to this room appears to have been truncated. As with the other walls of this building the mudbrick and mortar walls (17355) /(17356) sat within construction cut (17318) separated by a compacted foundation fill (17367).

Building 79, Space 134 – Daniel Eddisford

Supervisor: Daniel Eddisford*
Assistants: Tiffany Cain (1), Colleen Morgan (2), Graham Isted (3), Menna Bell (3),

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Building 79 (Figures 21 & 22) is located directly to the east of Building 80, and extends beyond the limit of the current excavations to the east and south. Building 79 was heavily burnt, and much of the material filling the building appears to been deposited during this burning event. The northwest area of the building was excavated to the latest occupation horizon. The floors of Building 79 were exposed in an area measuring approximately 5.30m by 2.30m. Platforms in the northwest and southwest corners of the building were exposed. At the northern extent of the building the walls survived to a height of 1.90m. An oven, extending beyond the limit excavation, was identified in the south of the building. Two large ground stones on the southern platform may be associated with food preparation in this area. A beam

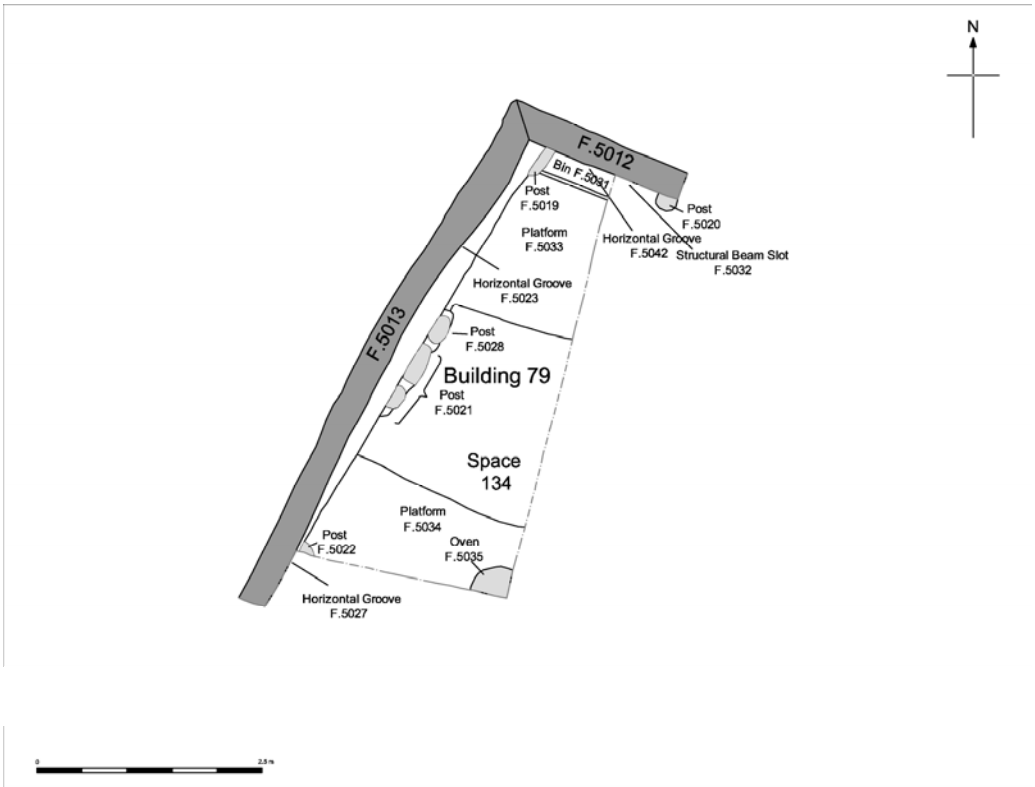

Figure 21: Plan of Building 79. Plan Cordelia Hall.

slot in the northern wall of the building and evidence of large cross beams suggest the building may have had a wooden second story. The building was filled by burnt collapse that contained two seated male marble figurines, large quern stones, and number of smaller ground stone artefacts. After Building 79 was destroyed by fire it was abandoned. Building 80, and possibly Building 76 both lying to the west, appear to have been destroyed at the same time; after the fire this area of the site then became an external activity area, Space 344.

Figure 22: View of B.79 facing W. Photo Jason Quinlan.

Walls F.5012 and F.5013

Building 79 was defined by a northern wall, F.5012, and a western wall F.5013. Both walls were constructed of mudbricks measuring 0.30m wide, 0.08m tall and over 1.00m in length. Both walls extend beyond the limit of excavation, and so their true dimensions are unknown. The western wall contained two decorative horizontal grooves, F.5023 and F.5027. The northern wall contained an identical groove F.5042 (Figure 23). These niches measured approximately 1.45m long and up to 0.10m high. They were recessed into the walls 40mm and were between 0.70 and 0.80m from the floor. The grooves were plastered with white marl, however below this latest plastering event all three niches were painted red. These features appeared to be purely decorative, with no obvious structural function. In addition the northern wall contained a number of areas of moulded plaster, which formed wavy ridges on the lower part of the wall.

Figure 23: Detail of plaster on N wall with red horizontal groove and carbonized post to left (F.5019). Photo Jason Quinlan.

Engaged pillars

Two engaged pillars on the northern wall, F.5019 and F.5020, consisted of the heavily plastered wooden uprights. Both engaged pillars had rounded plastered capitals on top of them, recorded as units (18527) and (18574). These consisted of a wooded core that had been repeatedly replastered on all sides, including the capitals. Both the engaged pillars and the capitals appeared to have be purely decorative features. Engaged pillars F.5019 was located in the northwest corner of the building (Figures 22 - 24), and F.5020 was located 1.70m to the east. This second engaged pillar is probably located in the centre of the northern wall, suggesting the true width of the building is approximately 3.40m Three more engaged pillars, F.5021, F.5022 and F.5028, were associated with the western wall of Building 79 (see Figures 21 & 22). Engaged post F.5028 consisted of a single upright timber, which had been repeatedly plastered. Directly to the south of this post three vertical timbers were recorded as F.5021. This was originally thought to be an engaged panel, possibly associated with the type of elaborate moulded decoration Mellaart found in many of the buildings he excavated in this area of the site. However, although the wall plaster lipped up over the northern and southern extent of this feature there was no evidence that the vertical posts were ever covered in plaster. It is therefore possible that the wood was left exposed, and it is possible to speculate that the wood itself may have had a carved decoration. Directly above this set of three posts a deposit of pale yellow marl (18575) contained the clear impressions of large timber cross beams. These structural supports are discussed below, and it seems likely that the vertical posts associated with F.5021 had a structural function. A final engaged pillar, F.5022, was located in the southwest corner of the trench, and extended beyond the limit of excavation to the south. This feature consisted of a vertical timber post, which appeared to have been entirely plastered with white marl.

South platform

A southern platform, F.5034, extended beyond the limit of excavation to the east and south (see Figures 21 & 22). The northwest edge of the platform was demarked by a small kerb. In the southeast corner of the excavation area the edge of a sub-circular feature, F.5035, probably represents an oven. Set into the platform, to the west of the oven two grinding stones appear to have been in situ, and may have been associated with food preparation activities. The surface of this platform, the central floor, and the northern platform were heavily burnt and discoloured.

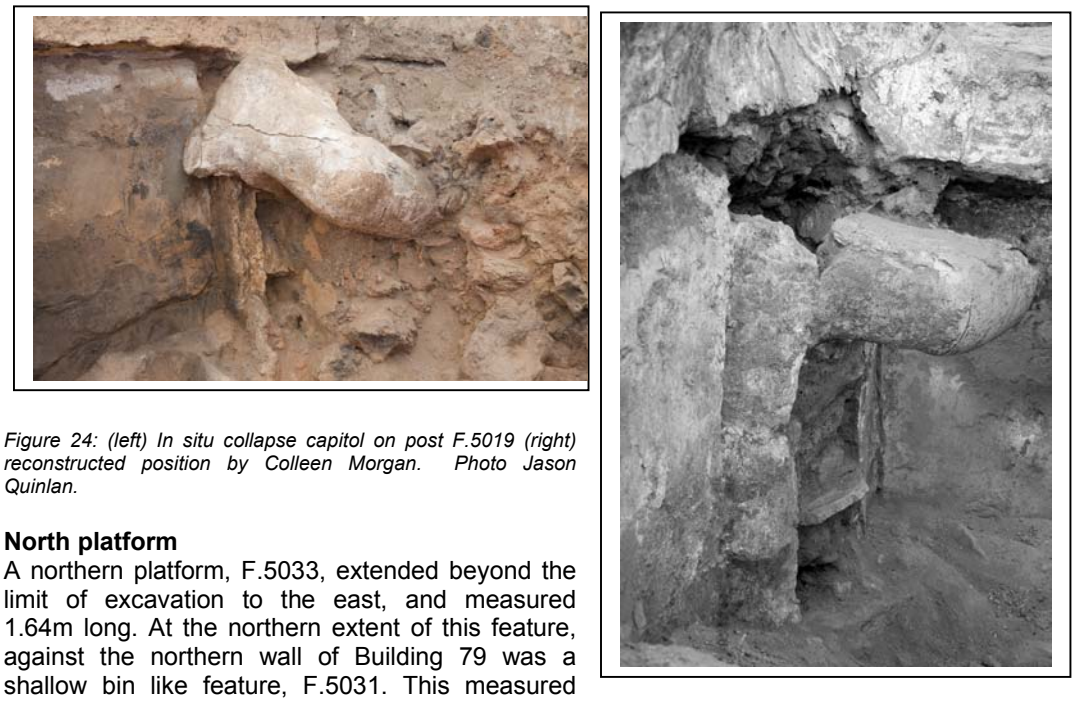

Figure 24: (left) In situ collapse capitol on post F.5019 (right) reconstructed position by Colleen Morgan. Photo Jason Quinlan.

North platform

A northern platform, F.5033, extended beyond the limit of excavation to the east, and measured 1.64m long. At the northern extent of this feature, against the northern wall of Building 79 was a shallow bin like feature, F.5031. This measured 0.31m wide and was defined by a clay southern ridge, measuring 0.12m high. The function of this feature was unclear; if this feature was used as a bin its location on the northern wall is very unusual.

Structural elements

A horizontal beam slot, F.5032, was cut into the northern wall, approximately 1.60m above the floor level. This slot measured 50mm tall and 100mm deep. Combined with the evidence of large cross beams resting on the western wall this suggests the presence of an elaborate timber structure within the building. Similar beam slots and slight overhanging walls, discovered in earlier phases of excavation, were interpreted as a stepped wall profiles intended to reduce the length of timber beams required to span the roof (Todd 1976).

The evidence from Building 79 suggests that the northern beam slot was used to secure a wooden planked floor. These timber planks would have run north-south, along the length of the building, and rested on several large cross beams. The suspended floor was therefore supported by a combination of cross beams and the mudbrick walls of the building. The floor may have extended across most of the building, or may have been restricted to the northern area of the building, over the northern platforms. Such a timber structure could have had any of a number of functions, from storage and drying of foodstuffs to providing a warm sleeping platform.

The presence of an internal wooden structure within the building also helps explain the ease to which Building 79, and the surrounding buildings, burnt at very high temperatures. Such an internal superstructure would have provided ample fuel for the patterns of burning seen in this seasons excavations.

Destruction Phase

The earliest destruction/abandonment deposits associated with Building 79 consist of a layer of grain, preserved by charring in fire, in northern area of the building. This deposit was found in the northern bin F.5031, (18598), and across the northern platform F.5033, (18596). The location of the charred grain directly over the floor is intriguing. There is no evidence that the northern bin was truncated in the fire, or that the grain spilled from a storage location here. It is possible that the grain was stored in a perishable container and spilled during the fire. However, its location directly over the floors and below any burnt debris suggests it may have been deliberately dumped here prior to the buildings destruction.

This burnt grain was sealed by a layer of charcoal rich burnt debris and ash, (18595) and (18597). This deposit contained the charred remains of planks as well as grinding stones (18595.x1), (18595.x3) and a quern stone (18595.x2). This deposit was sealed by burnt brick rubble collapse (18593), which contained a highly polished grinding or polishing stone (18593.x1). At the southern end of the building a similar deposit of burnt building collapse (18592) contained crushed mudbrick and plaster fragments. This deposit also contained two grinding stones (18592.x1) and (18592.x4), the remains of a burnt and crushed buccrania (18592.x2), and a pressure flaked obsidian tool (18592.x3). These two deposits appear to represent roof collapse that sealed the underlying deposits, cutting off the oxygen to them and allowing the preservation of charred organic material.

These deposits were sealed by a highly burnt mixed room fill (18579), which contained frequent large fragments of burnt brick and large pieces of baked clay with wood impressions. These mudbricks contained heavily burnt mudbricks with high quantities of vegetal/chaff temper. This deposit appears to represent further roof collapse, and contained a single grinding stone (18579.x1). This was overlain by further burnt collapse (18577), which contained clearly laminated plaster and clay floor surfaces. These surfaces were relatively thick and coarse in appearance, quiet different to the floor and platform deposits normally encountered in the houses. These surfaces were very similar in appearance to (18542), and appear to represent surfaces from the roof of Building 79 collapsing in during the fire. This unit was sealed by highly burnt demolition debris (18545). This unit contained burnt friable brick collapse, moulded plaster and clay, a highly burnt stone seated male figurine (18545.x1 see Figure 123 Conservation, This Report), and large grinding stone (18545.x2).

Over this deposit a layer of highly baked mid brown to pale grey crushed clay with wood impressions (18562) would originally have been packed around the rafters in the ceiling of the building. An initial interpretation of the wood impressions present suggests the presence of large wooden rafters and smaller poles/cross timbers. Built on this surface, on the roof of the building, was a mudbrick wall (18529). The inner face of this wall was heavily plastered with multiple layers of coarse plaster. This plaster was different in appearance to the wall plaster normally found in the houses. The earliest plaster on the wall was a thick render with frequent organic inclusions, of the later re-plasterings at least layer was yellow stained – or painted? The outer face of the wall was also plastered, but with single course thick layer of plaster.
A 0.1m thick deposit of highly laminated thick coarsely laid floors (18542) abutted the eastern side of wall (18529). These floor deposits consisted of a homogenous make-up layer of very hard baked clay, overlain by red brown clay and occasional plaster marl floor deposits. These deposits were clearly not associated with wall plasters, but were floor deposits that had collapsed into Building 79 during its destruction by fire. Therefore it seems that these floor deposits must be associated with an upper story, which stood higher than the surviving walls.

A deposit of burnt brick collapse (18539), located in the southeast corner of the excavation area, extended beyond the limit of excavation to the east and south. The deposited consisted of narrow bricks, measuring 0.15m wide. And 0.45m long. These bricks are clearly of very different dimensions to those used in the surviving walls of Building 79. A number of bricks were bonded together as part of a collapsed plastered wall. These bricks may represent part of the upper story to the building, or structures built on the roof of the building. The remains of a collapsed plastered architectural feature or instillation (18534) may have been part of a moulding that divided two wall panels. One of these panels was painted/stained yellow and the other white. The stratigraphic location of this unit, and the fact it is so dissimilar to the surviving internal architecture of the building suggest it originated on the roof, or upper story, of the building.

This unit was sealed by burnt room fill (18523), which consisted of extensive brick and plaster collapse along west side of building. Some of the moulded plaster in this deposit may have originated at the junction of walls and ceiling of the building. Pieces of wall collapse were at least four bricks high, and the wall of Building 79 must have originally been at least four courses taller. Many of the bricks in this deposit were large in size and matched the ones in the surviving northern and western walls. This deposit contained a stone seated male figurine (18523.x1 (see Figure 2), grinding stone (18523.x2), and an obsidian tool (18523.x3). These

artefacts appear to have fallen into the building with the associated burnt collapse, and must have originally been stored in the upper stories of the building.

This was sealed by further heavily burnt room fill (18508). This deposit contained a human cranium (18520) at its northern extent. This cranium may have been attached to the northern wall, or may have fallen from higher up in the building. This deposit also contained a small fragment of a clay figurine (18508.x1) and the pelvis of a large animal (18508.x2).

Post-destruction activity Phase
In the southeast corner of the excavation area, and extending beyond the limit of excavation, was a sub-circular pit (17379). This feature may be associated with the removal of burnt room fill for reuse, or the robbing/removal of a feature from the burnt fill of Building 79. This feature contained highly laminated fill (17378). This layered fill was similar in appearance to the overlying midden and trample surfaces in Space 344. The fill appears to have accumulated slowly, suggesting the pit was left open for a considerable period of time.

A series of deposits of burnt building material appear to represent levelling activity, undertaken directly after Building 79 was destroyed. A layer of burnt collapse and brick crush (17397) was overlain by a similar layer of mixed brick and plaster (17390). Both these deposits represent the levelling/collapse of the north and west walls of Building 79. A final layer of building fill, (17383), consisted of burnt crushed mudbrick and contained a significant quantity of unburnt animal bone. This represents the final levelling of this area, and the demolition of the upper surviving courses of the walls of Building 79. This area of the site then became an open activity area, Space 344.

References
Todd, I.A. (1976). Çatal Hüyük in Perspective. California: Cummings Publishing Company

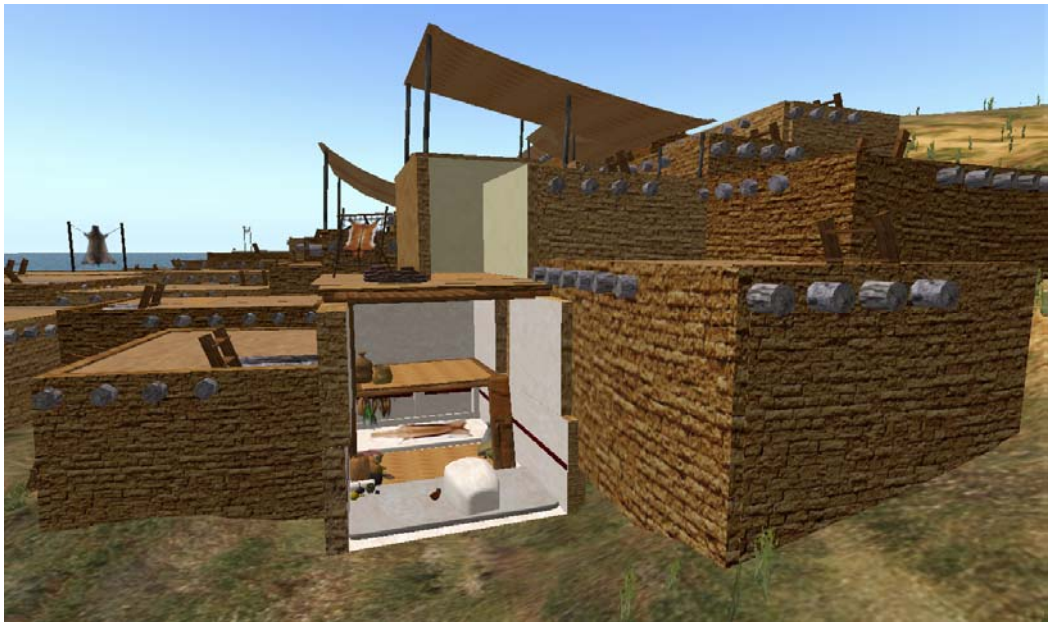

Figure 25: A proposed reconstruction of a multi storied building at Çatalhöyük . Image created by Colleen Morgan in collaboration with Daniel Eddisford. For more similar reconstructions visit second life: ***http://slurl.com/secondlife/Okapi/128/128*** *.*

Building 76 - Space 137 & Space 368. Michael House

Supervisor: Michael House*

Assistants: Yasemin Özarslan (1), Elizabeth Wessells (2), Numan Arslan (3), Onur Yüksel (3)

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Introduction

The aim of the 2009 season was to excavate B.76 in its entirety and try to get the floor plan of the building below. B.76 was originally exposed the 1960s excavations but which is not marked on any published plans from the period, and was exposed at the end of the 2008 season after the removal erosion. The building was in a very poor condition due to a fire that marked its end with most of the surfaces turning to a fine powdery clay, as a result it was initially believed that very few stratigraphic association would be able to be made or extrapolated.

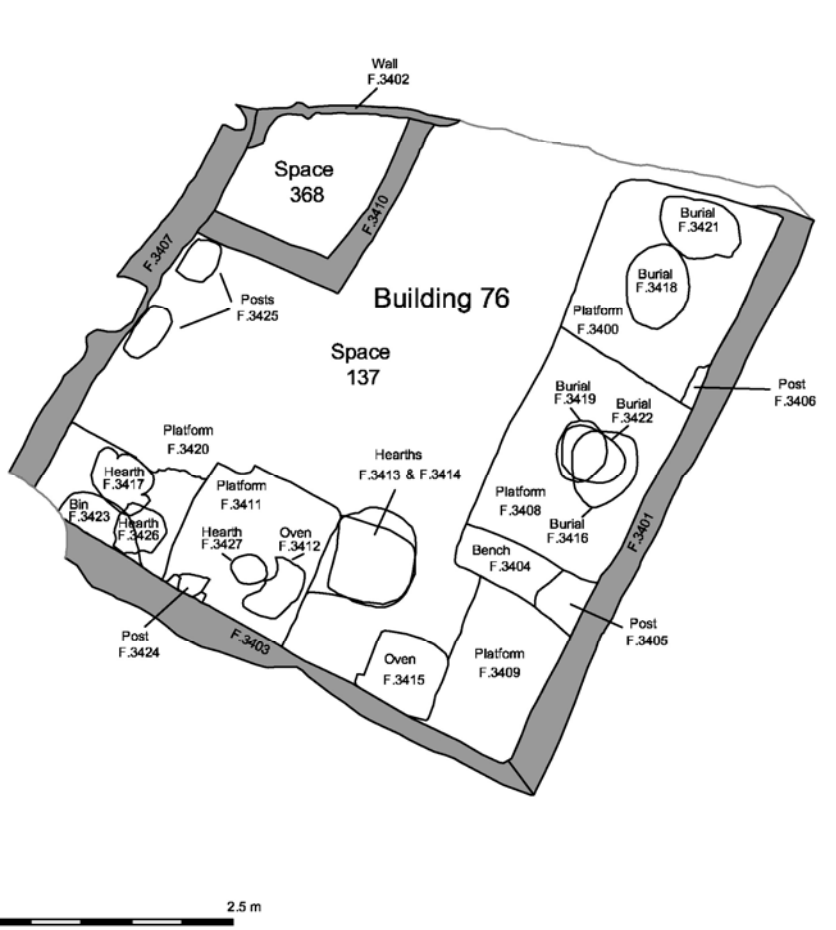

Figure 26: Plan of Building 76. Plan Cordelia Hall.

The building is located between two buildings (Figure 13); B.80 to the east appears to be broadly contemporary whilst to the west, Space 370 which B.76 abuts but would appear to be slightly earlier, this space is most likely contemporary with the building below B.76. The SW corner of the building was truncated by pitting in Sp.132. To the north of B.76 Mellaart

excavated two buildings E.VIA..32 & E.VIAB.27 and most likely broadly contemporary with B.76.

The main body of the structure was trapezoid shape in plan with the eastern wall extending slightly further at 6.0m than the western at 4.5m, the room being between 5.0m-5.5m wide. The northern and western walls were flush or almost flush with the floors, and Mellaart's latter excavations also heavily truncated the northern wall. The eastern and southern walls had limited height survival to a maximum of 0.8m. The internal space was divided into a small square room in the northwest corner Sp.368, 1.9m (N-S) x 1.5m (E-W) with no visible entrance or formal floors and most likely a small storage room (Figures 26 & 27) . Features that survived in the larger L-shaped room Space 137, contained three platforms and a bench against the eastern wall and two platforms against the southern wall, two ovens, one F.3415 below the ladder in the SE corner and a second F.3412 just to the west on platform F.3411 of which only the base survived.

Construction

The walls were constructed on a prepared surface or construction horizon consisting of the partially demolished walls of the building below (18778). The walls of B.76 followed the plan form of the building below (the walls were left unexcavated due to time constraints). Next in the sequence came the introduction of the engaged pillars and the roughing out of the platforms and features, all varied slightly in construction.

Figure 27: Overview of Building 76 showing extent of the fire. East to top. Photo Jason Quinlan

One of the first features constructed was the southern pillar on the east wall F.3405 constructed using a split log (half circle). The ash filled void that formed since the burning of the post formed a half circle within the heavy un-tempered clay superstructure (18777). This post was unusual for not cutting into the building infill below. Above this was built F.3404 the bench core (18772) once again formed from heavy pure un-tempered clay, which may be the reason for the absence of a post hole cut. Laid to the north was the foundation core or levelling deposit of brick rubble crush (18761) for the eastern (F.3408) and northeastern (F.3400) platforms. Above this and against the bench was the core of F.3408 which was then cut by (18767), the post hole for the northern engaged pillar F.3406. This contained the carbonised post (18764). This pillar, unlike F.3405 was constructed using a boxed timber (18764) rectangular in shape with a light heavily chaff tempered superstructure (18763). Sealing this was a compacted mud brick crush forming the foundation core (18760) for the NE platform F.3400.

Roughly central to the southern wall was engaged pillar F.3424 constructed using a similar method to F.3406. The post was cut into the construction horizon (18778) and a boxed timber placed in the cut and rendered by a light well-tempered clay mix (18752). Above this was constructed a mud brick and mortar kerb (18728/18731) forming the outline of the SW platform F.3420. Any stratigraphic link between this kerb and that of the south central platform F.3411 was truncated by the addition a later structural post (18426).

Finally against the western wall were two pillars close together (less than 0.5m apart) with a small remnant clay superstructure (18762) between them. The function of this feature F.3425 is unclear, the two posts holes (18774) & (18773) vary greatly in depth from 0.25m to 0.07m respectively and both are at least 10cm from the wall. The post pipe voids left from the burnt timbers were very similar in size approximately 0.3m x 0.1m. It's function may have been decorative rather than for structural support, however due to the poor preservation it is hard to interpret, a comparable structure may be found against the western wall of the building below if the plan layout is similar.

The SE platform F.3409 was also constructed after the bench but like the bench the method of construction utilised a heavy shaped clay core.

Floors

The floors were heavily damaged by the fire particularly at the center of the building and at the edge of platform F.3411. Floors discussed below are free of feature association. Built on the infill of the building below (18778) was (18724) a patchy floor in the SW corner in front of platform F.3420, a large leveling deposit (18768) between the NE platform and the internal walls forming Space 368. Above this was (18495) which covered most of the central area of Sp.137 and respecting established features. The floor in the SE corner was heavily degraded however there was more floor survival of later phases in this which is discussed below.

The earliest floor and make up in the SE sequence was (18708) followed by (18706) & (18494) located between the SE platform F.3409 and the south central platform F.3411. The sequence ends with surface (18484), which extended across the entire southern portion of the building covering all three southern platforms.

Northeast platform F.3400

This platform measuring 2.m x 1.m x 0.15m was located in the northeast corner of Sp.137 and saw many structural remodelling events during its life. After the core (18760) was established the platform was coated in it's first surface (18759/18756) which only survived on the southern and western limits of the platform, above which was a clay repair (18758) on the northern edge of the engaged pillar F.3406. The platform then under went some serious restructuring, with a mud brick kerb ((18748) brick (18749) mortar) being constructed on the neighbouring platform to the south (F.3408), and one (18751) along the western limit of the platform, this effectively enlarged the platform both in height and width. The mud brick kerbs were designed to retain the brick crush core (18745) at its centre.

Figure 28: Adult skeleton (18496) F.3421 in a crouched position.The radiating heat from the fire had penetrated through the grave fill and discoloured the bones to black/brown. Photo Jason Quinlan.

The east wall was then plastered (18740) with a fine white plaster that also covered the platform but heavily damaged by the fire and then erosion since the 1960s. Then, (18735) a mid white and grey floor and make up layer covered most of the upper surface up to the western edge where 0.2m of exposed core was visible with surface (18755) only surviving on the west facing elevation of the platform. This was sealed by (18495) one of the early major flooring events.

Cutting the above sequence was the first burial F.3421. This single adult skeleton (18496) was buried in the northern half of the platform in grave cut (18497) in a crouched position on its left side facing northeast (Figure 28). The radiating heat from the fire had penetrated

Figure 29: Carbonised remains in the skull cavity of Sk (18496) – brain tissue? Photo Jason Quinlan

through the grave fill (18489/18491) and discoloured the bones to black/brown. Of particular note is the presence of burnt organics within the cranial vault (Figure 29 - brain tissue?) this was found in all the burials in B.76. A single flint tool was found at the feet (18489.x1). The burial was sealed with a succession of floors and make up layers removed as a single unit (18486) up to 4cm thick, all heat effected and varied in colour from light grey to dark brown. This surface was cut by (18455) the second and final burial in the NE platform. The burial F.3418 consisting of a single small adult (18457) tightly flexed on its left side facing south, as with the earlier skeleton the bones were blackened, although in this case the bones were consistently black due to its proximity to the surface. The burial was capped with plaster (18438) but due to later subsidence was levelled with (18432).

A further series of surfaces over (18486) were (18476) (18467) & (18417) on platform F.3408 lipping up on F.3400's southern face or in the case of (18417) covering both.

Restricted to the western section and stratigraphically truncated from the rest of the platform sequence was (18474) a number of floor and make up layers removed as a single unit. These lay above the early floor and make up layer (18495) over the whole of Sp.137 and were sealed by another major flooring event (18431). Above this was another sequence of floor and make up layers (18434) consisting of four grey floors and reddish brown make up layers 4cm thick, once again these were separated from the main stratigraphic sequence. These were finally sealed below (18429) a large area of flooring just west of the platform.

East platform F.3408

At the end of its use the east platform measured 2.0m x 1.5m x 0.14m however modifications to both the NE platform and the bench to the south had reduced its original length by some 0.5m. Three burials were interred in this platform.

Overlying the platform core (18757) was a surface of two white to grey floors with mid brown make up layers (18725). The platform at this time measured 2.5m x 1.5m x 0.08m however this appears to have been short lived and an addition of a mud brick kerb to the north (see F.3400) and alterations to the bench to the south (see F.3404) were made.

Due to truncations from later burials it is difficult to phase the cut (18703) of the first burial, however compression of the stratigraphic sequence most likely means it was cut into one of the early layers of (18725). This first burial F.3422 consisted of an adult skeleton (18701) flexed on the right side with the skull and mandible displace which was found within the cut of the later burial F.3419. As with all the skeletons buried within B.76 the bones to a lesser extent were scorched, the upper body blackened (knees, upper ribs and vertebrae), the lower body scorched orange. The skull case found in the cut above also contained carbonized organics (brains?).

After the modifications to the south bench and NE platform were a series of re-plastering events of three or four renders as (18722). This was then cut by (18466) the grave cut of burial F.3419. The skeleton (18464) was that of a young adult or late adolescent. Within this was also the re-deposited skull from the burial below. The skeleton was flexed on its left side, burnt with carbonised material in the skull case. By the shoulder within the fill (18465) was a small figurine 18465.X1 of a headless seated female. It is unclear whether this was re-deposited as part of the grave fill or a burial item.

This burial was in turn cut by the last interment in the sequence burial F.3416, a juvenile (18447) that was flexed on its right side with its head to the SW. The skull was highly

fragmented and blackened with carbonised organics within (brains?); the teeth were also partially shattered. Some organic material (18442) was found within the grave fill (18428) this was sampled but dose not appear to be in direct association with the body. Slumping into the depression made by the subsidence of the burial fill was a detached patch of flooring (18433) and (18427). These and (18417) a layer on both F.3400 and F.3408 were in turn sealed by (18418) the last surface in the platforms sequence.

(NB/ A note on the carbonised remains within B.76 human skulls: if the deposit is carbonised brain tissue it indicates that that there was relatively little time between this group of burials for the organic matter to have decomposed at nearly the same rate, which may suggest a relatively short lived house?. Alternatively Mellaart wrote "*In one unusual burial in shrine VI I, the brain tissue had been removed from the skull and a wad of fine cloth substituted. As the building above was desptroyed by fire the action of the heat was sufficient to ensure carbonization of the material*." (Plate 94, Mellaart 1967). It must be noted however, that in the case of the B.76 burials there is no indication that foreign matter has been introduced into the skull cavity – nor does the material look woven. Shahina Farid)

Bench F.3404
By the end of its use this bench measured 1.5m x 0.0m x 0.1 -0.14m. It was constructed with a heavy clay core in unison with the engaged pillar F.3405. The bench appears to have been modified early in the buildings development by an extension to the north over the floors on platform F.3408. This coincided with two rebuilds (18747) & (18744) effectively raising the platform by 0.1m and moving it 0.1m to the north with a new core, which was plastered with (18746) that only survived on the south and west facing sides. This covered (18743) a clay repair around the engaged pillar most likely associated with the bench modifications.

Southeast platform F.3409
The SE platform (1.6m x 1.0m x 0.29m) was constructed over a small patch of primary floor and make up located in the SE corner only. This may represent a trample horizon connected to the construction of the building but if it represents an early floor it phases the construction of this platform later in the sequence..
The core was constructed in two phases using slightly different materials (possibly different days building?). (18719) was the primary core in the very SE corner & (18707) containing higher quantities of clay extended the platform up to the bench, both contained plaster and charcoal flecks. Although not covering the platform floors (18706) respects the core construction. Over these was a silty clay kerb designed to give the platform a well defined western edge. These modifications may also have related to the introduction of a ladder, as at this stage an additional layer (18490) was added as a raising make up layer or repair to the platform. It formed around a hole interpreted as a ladder emplacement (18437), which was thick to the west and shallow to the east. Sealing this core/repair was a render of plaster (18742) on the eastern wall.

Next in the sequence came an extensive resurfacing of all three southern platforms with (18484) 5.34m x 1.50m x1-4cm thick, on platform F.3409. This included a thick make up layer. The platform was then covered twice by two successive flooring events in the SE corner (18462) & (18443) both laid in connection to the development of hearth F.3414 and oven F.3415. The final phase of development associated with the SW platform all appear related to adjustments to the ladder placement or repair interspersed with resurfacing. This included (18439) a repair to the western edge of the platform and (18430) a sequence of greasy (dirty) flooring; these were sealed below (18422) another sequence of dirty/greasy floors and make up layers, which in turn was below (18475) a repair around the ladder.

Oven F.3415
The oven appears late in the occupation phase built on and slightly cuts floors (18462). It is positioned against the southern wall in the SE corner abutting the SE platform F.3409. The oven was in poor condition with only the base surviving except against the wall where some of the superstructure survived to a height of 0.28m. This damage may have occurred post 1960s excavation, as higher in the sequence large chunks of burnt oven like material are present. The oven was square 0.8m x 0.78m with rounded corners. It was levelled and insulated with (18460) a chaff tempered clay. Above this was the shaped clay superstructure

0.1cm thick also tempered with chaff leaving burnt voids. Finally a well-compacted floor/surface was laid in the oven (18459) within which at least two phases of resurfacing are visible.

Oven/hearth F.3412
This feature is located on the southern half of platform F.3411 where only the very base survived. It is square on three sides and curved on the forth (most likely the front of the feature). It sits flush with the southern wall and the eastern limit of the platform and measures 0.9m x 0.9m. Strangely cut into the oven superstructure (18420) is a small hearth or lined scoop (18412) 0.5m x 0.36m x 0.11m deep, containing within its fill (18405) a cluster (18411) of two grind stones. Sealing this was the oven surface (18402). The placement of this small hearth or scoop within the oven/hearth is curious and it appears to replace an earlier version F.3427 cut into the platform below (discussed below). Both have been recorded as small hearths but they maybe small clay lined scoops that due to the end of the house fire have taken on similar characteristics to hearths.

Hearth F.3414
This fire instillation was another late feature which was shaped as an elongated D-shape, measured 0.9m x 0.8m and built in a cut (18472). This large hearth cut floors (18473) clipping the edge of platform F.3411, yet still respected its presence. Then the hearth rim was built using clean un-tempered clay some relic floors (18471) and ash (18456) remained at the center. The hearth was then remodelled with (18451) as another solid clay surround structure followed by a second lining or re-surfacing (18449). The hearth may well have been abandoned prior to the building burning as a small patch of possible flooring (18444) sealed the feature although, this flooring was very ephemeral and may have been collapse of trample post abandonment.

South Platform F.3411 & Small Hearth F.3427
At closure this platform measured 1.6m x 1.3m. The development of this the southern platform and the SW platform F.3420 share many of the same construction elements developing alongside each other. The platform was constructed using a simple mud brick and mortar kerb (18729/18734) within which was a thick (5cm) redeposited layer of ash (18726) containing small fragments of animal bone and fired clay. This most likely represents some oven or hearth rake out being discarded prior to the platform being formally established with (18723), a leveling deposit of brick crush between the kerbs and the clay surface being laid (18737/18711). Cutting the surface was a post or stake hole (18717) which appears to be part of a group of four (ranging in diameter from 0.12m- 0.17m with a depth of between 7-15cm), the other three being located just to the east of the platform, two (18718 & 18721) cutting the primary floor and make up layer (18708) and the fourth (18716) cut into the building infill (18778).

The platform then appears to have gone through several minor adjustments the addition of a clay kerb (18499) and three phases of resurfacing (18700), (18498), and a levelling deposit (18488) to raise the platform to the same level as the SW platform F.3420 prior to the two platforms being resurfaced together with unit (18484). The platform at this point was utilized as a cooking platform with the construction of a small lined hearth F.3427. The cut (18483) measured 0.51m x 0.31m x 50mm and was lined with clean un-tempered clay and finally back filled with (18479) a mixture of ash and small fragments of burnt mud brick, the fill is the indicator of the features function.

The platform at this stage is cut back and repaired (possibly due to damage from the hearth) with a new flooring sequence (18450) prior to the construction of a larger more formal hearth/oven F.3412.

Southwest Platform F.3420, Bin/Basin F.3423 & Hearths F.3417 & F.3426
This feature did not start out as a platform as the kerbs initially marked or separated an area more than likely for storage or food preparation 1.54m x 1.4m (brick size 420 mm x 180 mm x 60 mm). Within this space was a small bin or basin (0.76m x 0.4m) F.3423 constructed on a patch of floor (18739) with two grind stones set into it (west of the bin), in the SW corner. The D-shaped bin was positioned at the centre of the space created by the brick kerbs, against

the back (south) wall. The bin's clay structure (18732) was sequentially floored by (18738) & (18730), before the space was abandoned and filled in with (18727), the brick crush core of the newly created platform F.3420, then plastered over with (18710) which also covered the neighbouring platform F.3411.

Constructed on this surface against the southern wall at the centre of the platform was a small possible hearth F.3426 of which only the very base (18492) survived. This could also be the base of a bin or basin but the burning throughout the building makes interpretation very difficult although the composition of the material and the radial burn pattern have lead to its identification as a fire installation of some kind. Above, yet respecting the heath was (18487) a 40 mm make up layer and a patchy floor (18485). After this the hearth on the platform goes out of use and the platform (also covering platforms F.3411 & F.3409) is resurfaced with (18484).

Next in the platforms sequence is a rectangular cut (18482) 0.72m x 0.45m x 50 mm the function of which is unknown although possibly the removal of a feature in the SW corner. This cut is then back filled with (18480) a charcoal rich brick crush containing frequent animal bone fragments including cattle mandible and scapula. Above this was built another small hearth F.3417 (0.64m E-W x 0.4m N-S x 0.1m wide ridge). This ovoid hearth was truncated to the north, likely by half, it consisted of a clay base and rim (18454) and a single burnt lining (18453).

Phase 3 – Abandonment/Closure
Little can be noted about the infill of the building due to the removal of most of the infill in the 1960s, however based on other burnt buildings either completely or partially excavated such as B.77, B.80 and B.79 the infill most likely consisted of burnt diagnostic structural material from the building's collapse and subsequent abandonment and demolition. Evidence of this material was only present within two of the engaged pillars F.3405 that was filled by (18736), a soft loose ash and remnant of the burnt timber and (18733) which was collapse into the void of the post. The southern pillar F.3424 however, was filled with collapse from the structural surround of the pillar (18750) & (18752). The post abandonment phase also saw the western side of the structure particularly in the SW corner, being cut by a sequence of Neolithic pitting (18408) & (18518) (see Sp.132, This Report)

Phase 4 - Post 1960s
Several layers that were removed prior to excavation of the building were most certainly deposited or collapsed post 1960s excavations. This unfortunately included a large quantity of burnt clay superstructure almost certainly associated with oven F.3415, several sections of collapsed plaster from the eastern wall and collapsed degraded and trampled mud brick along the southern wall covering platforms F.3411 and F.3420.

Conclusion/Summary.
Due to the building already being excavated down to the floors in the 1960s lack of surface finds makes it difficult to make any valued judgments about the nature of the fire, be it intentional as part of a closure or purging event or accidental. The fire damage was extensive even scorching the burials below, a fire such as this if serving, as a function of closure would almost certainly have affected neighbouring structures, leading me to believe that the fire was not part of a closure ceremony.

The end of the season saw the removal of all internal features and surfaces as well as about 0.3m of the infill of the building below enough to see that its floor plan is what influenced and dictated the size and layout of B.76.

Reference
Mellaart, J., 1967. Çatal Hüyük: A Neolithic Town in Anatolia. London: Thames & Hudson.

Building 87, Building 85, external areas Spaces 365, Sp.370, Sp.132 & Sp.369 – Lisa Yeomans & Freya Sadarangani

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Located to the west of B.76 a series of structures were targeted for excavation to release a building (B.87), partially excavated in the 1960s either as House E.VIB.28 or House E.VII.11, which ties in the stratigraphy from this upper ledge to buildings excavated between 1995 – 1999 (see Figure 13)

Space 365

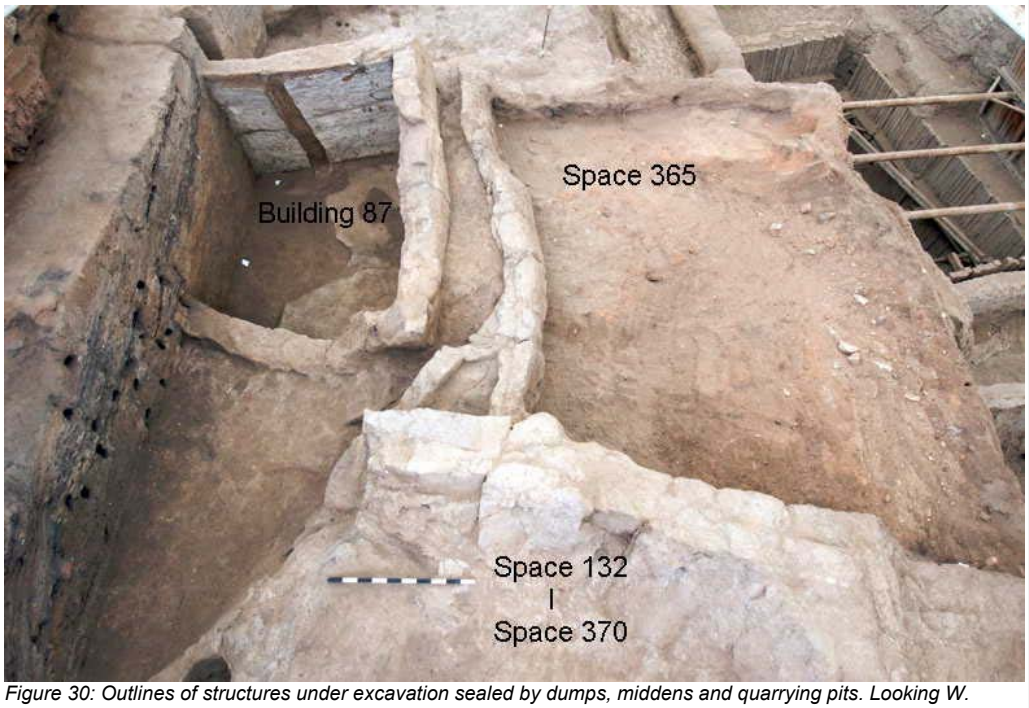

Figure 30: Outlines of structures under excavation sealed by dumps, middens and quarrying pits. Looking W. Photo Jason Quinlan.

Located directly to the north of B.87 (Figure 30) is the main room of a building that was partially excavated in the 1960s with enclosed dimensions of 5.3m (E-W) by 3.82m surviving from north to south. Minimal excavation was conducted within the space as, although it was physically released from the stratigraphic sequence to the south, stratigraphically it is earlier than B.87. The tops of the walls of the entire space were exposed in the 1960s but only the very northern room was excavated as either House 11 or House 28, although this needs to be examined further as the building is exposed and its relationship with the surrounding buildings is understood. Only the upper layer of infill was removed in 2009 to define the walls of the space. This infill deposit (18135) comprised of mid orange grey sandy silt with a moderate quantity of collapsed wall plaster fragments and occasional burnt mudbrick fragments. The presence of in situ burnt plaster on the walls in the northeast and southwest corner of the space indicates that the building itself was burnt rather than just filled with burnt rubble from the adjacent burnt buildings. The thickness (up to 80mm) of the wall plaster within the collapse suggests that that the building was in use for a long time before it was put out of use by the fire. Minimal evidence of the layout of the space can be discerned after the removal of just the upper room-fill. However, the three surviving walls (F.4086-western wall, F.4087-southern wall and F.4088-eastern wall) were all plastered and post-scars are visible towards

the western side of F.4087 and towards the southern and northern ends of F.4088. Somewhat unusually the external face of F.4087 was also plastered.

The phasing of the building is tentative at present until the relationship of the walls of the buildings is understood though excavation. However, Sp.365 has an abutting relationship with Sp.370 to the southeast whose construction is earlier than B.76. Sp.365 could have been in occupation at the same time as B.76 and this brings into question whether the fire that destroyed B.76 was the same fire as that which destroyed Sp.365. Between the two buildings is Sp.370 that shows no evidence of being affected by the fire. It is possible that the fire spread via the buildings to the north that was excavated in the 1960s and to Sp.365 passing through those burnt buildings. It may also be possible that Sp.370 had already gone out of use by the time of the fire (see Sp.370) and therefore the infill protected the lower portion of the building that survives. More will be understood about the burning of the building after its excavation and the direction of spread of the fire is known.

Space 370

The outline (see Figure 13) of a building positioned between Sp.365 and the building below B.76 was exposed in 2009 but not excavated as it still remains stratigraphically sealed to the south by inter-cutting pits from Sp.132. The walls of the space enclose an internal area with dimensions of 5.m (N-S) by 3.1m (E-W). The three (northern, eastern and western) walls of the building are thickly (30mm – 40mm) plastered with the finely laminated wall plaster. This plaster continues around a niche in the northern wall. From what is visible in plan, there appears to be a storage room located to the north of the space that has been heavily truncated by the 1960s excavation, although this remains to be examined by excavation.

A later pit (18161) truncates the central portion of the room-fill that consists of un-burnt brick collapse. Along the northern and western side the room-fill consisted of walling that had fallen as a slab into the space. Above this unexcavated room-fill were two deposits of burnt brick rubble (18187) underlying (18163). The upper deposit was comprised of c.30% burnt mudbrick fragments and moderate wall plaster lumps and strips. These burnt demolition deposits probably derived from the burnt buildings surrounding Sp.370. As they seal the un-burnt room-fill of Sp.370, it is therefore possible that Sp.370 had gone out of use by the time of the fire or fires that destroyed the adjacent buildings.

Building 87

Only the northern part of Building 87 has been exposed with the rest of the building beyond the southern limit of excavation (Figure 30). This building comprised of a narrow main room (Sp.374) and no side rooms are present within the excavation area. At its maximum the width of the space measures 2.52m adjacent to the northern wall and at the southern limit of excavation the space has narrowed to 2.1m. The restriction in width of the building is not related to lack of space as open areas surrounded the building to both the east and west. Only the northern 1.82m of the building is within the excavation area (Figures 31 & 32). The walls of the building survived to a substantial height (c1.4m exposed to floor level) with the exception of the eastern wall which had been truncated by later quarrying (see Sp.132). Taking into consideration a collapsed segment of walling lying above the room-fill, the walls of the building must have stood at least 1.82m high and together with evidence from other buildings excavated in 2009, this would seem to suggest an upper storey to the building.

Unlike the finely laminated wall plaster found in many of the buildings, all the exposed walls in B.87 had been plastered with one and in places two coats of a thicker (3-4mm) plaster. The lack of repeated plastering of the walls accentuated the unevenness of the underlying mudbricks and mortar as the plaster followed the contours of the coursing in the brickwork. In addition to these unintentional ripples in the plaster, several plastered horizontal grooves were located on the western and northern walls. These would have been built into the underlying wall and then plastered within to form horizontal grooves that may have been decorative or may have functioned to contain small items during the occupation of the building. Where similar grooves have been found in other buildings (e.g. B.79) they probably had, at least partially, a decorative purpose as they were found to be painted. There were no traces of paint at all in B.87 either within the grooves in the walls or in the plaster collapse excavated from the room-fill.

Figure 31: Space 374 of B.87 as excavated showing removed posts, scoured floors, & horizontal grroves. Looking N. Photo Jason Quinlan.

In the northeast corner of the space was a raised platform (F.4084). In the southern part of the exposed area of the space was a dark grey clay general central floor in the eastern side that had been truncated by scouring/damage (18624) to the west at the time of abandonment.

Construction

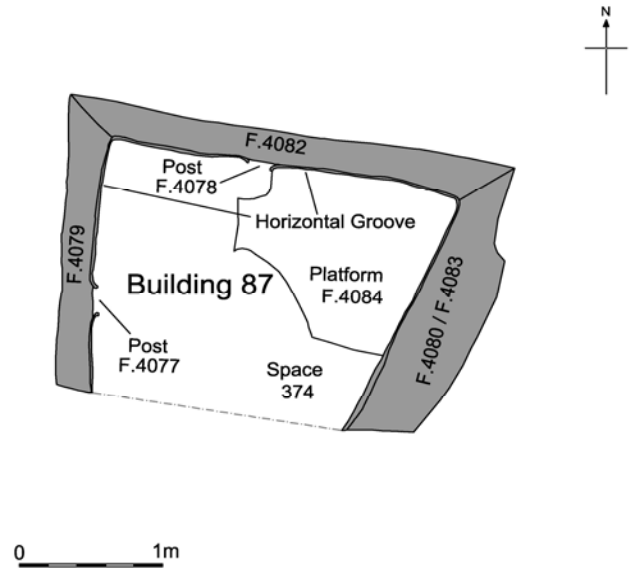

Figure 32: Plan of excavated B.87 and features. Plan Cordelia Hall.

B.87 was constructed in an open space to the south of Sp.365, which pre-existed B.87. As the building was only excavated down to its abandonment phase, minimal information can be given on the construction sequence. However, it appears that soon after the construction of the walls and the initial plastering of at least parts of the building, an inner thin wall was added to the eastern side of the building to straighten the original bowing wall. This was added before the platform was constructed in the northeast corner of the building.

Externally, between the northeast corner of B.87 and the southern wall of Sp.365 an additional buttressing wall F.4089 was added. This suggests that, although B.87 was later than Sp.365, there was a period of overlap in the occupation of the two structures as an effort had been made to reinforce the southern wall of Sp.365 with a buttress that respected the limits of B.87.

Abandonment
Two post-scars and associated retrieval pits were exposed in the centre of the northern wall and against the western wall. From the width of the scars in the plaster where the posts were taken after the abandonment of the building, the timbers used to support the roof were narrow (0.2-0.25m) and this may be related to the overall diminutive size of the building in comparison to other buildings. The post-retrieval pits were not excavated in 2009 but they show are large scars in the floor plaster.

The only evidence of artefacts left on the floor at the abandonment of the building was a large red deer antler tine (18607x3). This was located in the northwest corner of the space lying directly on the floor. When the antler was lifted the phytolith remains of several complete ears of wheat/barley (?) were visible on the underside of the antler indicating that the antler lay on cluster of these plant remains.

The infill (18607) of the building was almost solid clay deriving from the walls of the building. As the area where the building stood became an external space, evidently it was not necessary to knock the walls down to the extent that a level area was created for the foundation of new building. At the top of the sequence of infilling, visible in the section at the southern limit of excavation, was a whole 0.42m high segment of wall that had collapsed in on top of the infill suggesting that the western wall stood at 1.82m high for a while as room-fill accumulated.

Space 132
Space 132 is defined as the external space after the abandonment of B.87 and before the construction of B.85. It is characterised by a sequence of quarrying pits, midden deposition, fire-spots and inter-cutting pits within the midden sequence. The base of the external sequence has not been reached where the sequence of inter-cutting pits truncates the southern limit of Sp.370. To the southwest of Sp.370, the base of the sequence was reached were the deposits overlay B.87 and Sp.369 to the west.

Overlaying the western wall of B.87 was an external dump deposit (18179) that extended to the west to seal external deposits that accumulated to the west of B.87 (Sp.369) during its occupation. This deposit (18179) was a thick (0.3m) accumulation of demolished building materials mixed with dumped animal bone and other materials. A human skull (18182) that articulated with a mandible found within the dump (18179) were found spatially separated and had been redeposited within the layer.


Figure 33: Deposit of building debris and midde (18604), cut by quarry pit (18628). North to top. Photo Jason Quinlan.

Spatially to the eastern side of B.87 a similar dump deposit accumulated (18604) which contained a high concentration of demolished building materials. The collapse (18604) sealed by a shallow, horizontally truncated pit, (18628), containing midden. After the accumulation of the dump layer (18604), a large quarry pit (18603) was dug through the layer and into the underlying walls and building infill. The quarry pit (18603) cut into the wall collapse (18604), the clay-rich infill (18607) of B.87 as well as the eastern wall of the building and was evidently for the extraction of clay for use as a building material. The quarry pit had been in-filled with a sequence of finely laminated midden deposits

(18605)/(18602). Within the area of Sp.370 an earlier pit (18631) was also cut by the quarry pit and was the lowest of a sequence of inter-cutting pits. This pit was not bottomed next to the southern limit of excavation due to health and safety reasons and containing a redeposited fill comprising of broken-up building materials and midden.

The midden deposits (18605)/(18602) infilling the base of the quarry pit were separated from additional midden formation by fire-spot (18199). Above this fire-spot were a further midden deposit (19198), fire-spot (18197) and midden deposit (18192). This upper midden (18192) overlay the dump deposit (18179) extending into external Sp.369 and was sealed by a sequence by fire-spots within the same location (18194) and (18176) as well as two inter-cutting pits (18601) and (18195) containing finely laminated midden. To the north the midden (18192) was overlain by an external dump (18193) rich in building materials and a deposit of burnt mudbricks (18191). This deposit was cut by the foundation cut for B.85.

Building 85, Space 366

Building 85 is an extremely remnant building, truncated on all sides by pitting associated with the use of Space 132. All that was left of Building 85 was a 1.20m long wall and a block of plaster surfaces 0.14m wide by 0.72m long. Building 85 is located in the south central portion of the South Shelter. Any contemporary, adjacent buildings or external space had been entirely obliterated by the subsequent phase of use – Space 132, a space and phase of inter-cutting pits and repeat dumping.

Building 85 represents a hiatus in the use of this area as a dumping, quarrying, and pitting ground. A phase of inter-cutting pits and dumping precedes Building 85, (Space 372), as well as proceeding it (Space 132). This interspersal of buildings with phases of large open areas is also repeated higher in the sequence, where external open area Space 132 is sealed by the construction of Building 53, which in turn, is sealed by a further phase of open, external area (Space 260), prior to the construction of Building 42.

A relatively deep construction cut was recorded for Building 85's single surviving wall (18171), which truncated a deposit of burnt building debris in underlying Space 372. The wall was composed of light to mid grey slightly sandy silty clay mudbricks, (18170) and a grey mortar (18177), F.4075. Wall (18177) survived to a height of 0.32m and measured 1.36m (N-S) by 0.22m (E-W); its western face was not plastered, suggesting that it either bordered an external space or a back room space to the west. On the east face of wall F.4075 a spread of preparation wall plaster had been applied (18188), prior to the laying down of surfaces, (18155). Floor unit (18155) comprised white plaster and grey surfaces with mid greyish brown make-up. A total of twelve surfaces were recorded in a severely truncated block, 0.72m (N-S) by 0.14m (E-W) by 0.18m (thick), which also lipped up the east face of wall F.4074 to form wall plaster. The closure of the building was represented by a 0.12m thick deposit of sandy silt building infill, (18147), which sealed the floor sequence. Once again, the infill was almost entirely truncated in all directions.

In summary, the use of the external Space 132 between the abandonment of B.87 and the construction of B.85 was mixed. At times the area was used to cook/process materials resulting in the fire-spots. At other times the occupants dug into the open area to extract clay as a source of building material and the space was also used for the dumping of the fine ash-rich waste from daily activities as well as demolished building materials.

Space 369

Space 369 is an external space located in the south central portion of the South Shelter, to the west of Building 87 and to the southwest of Space 365. Compact dumps, possible trodden surfaces, fire spots and retaining walls characterise the space's depositional sequence. Excavation of Space 369 was not completed, but much of the islanded stratigraphy – created by the 1960s excavation – had been excavated.

As exposed, Space 369 measures 3.8m (N-S) by 4.7m (E-W); it continues southward beyond the limit of excavation, is bordered to the north and west by walls belonging to 1960s sequence F.4093, F.4094, and is bordered to the east by the western walls of Space 365 (F.4086) and Building 87 (F.4079)

Excavation stopped on exposure of a compact clay rich dump deposit that had the 'greasy' appearance of a trodden surface. To the east, a north-south retaining/revetment wall, F.4085, was exposed, adjacent to Space 365 and Building 87's western walls, with a gap of 0.05-0.20m fill between. Wall F.4085 did not continue the full width of Space 369, just falling short at its northern end, and as such, wall F.4085 was mainly banked up against the west wall of Building 87. A further retaining/revetment wall, F.4081, was directly founded on wall F.4085, which again, only just exceeded the northern end of Building 87's western wall. Wall F.4081 was composed of at least four different brick types – from mid brown sandy clay bricks, to mid brown slightly clayey sand bricks (18628) – bonded together with thick dark brown clay mortar (18629). A loose attempt had been made to course the wall, but it still had the appearance of being relatively rough and ad hoc. In places wall F.4081 actually faced the underlying wall, F.4085. Wall F.4081 survived to a height of 0.56m; at its northern end, where it passed the northwest corner of Building 87, it was stacked higher. A compact fill, with frequent inclusions of mortar (18629) like material, filled the 0.20m – 0.30m gap between wall F.4081 and western walls F.4086 and F.4079, as well as the gap between the northern wall of Building 87 (F.4082) and the southern wall of Space 365 (F.4087). Both wall F.4081 and underlying wall F.4085 seemed to fulfil a structural support role, aiding in the severe subsidence issues suffered by Building 87, as well as further protecting this building by holding back Space 369's midden.

Furthermore, as part of this concern for Building 87, a linear cut was made approximately 1.50m west of retaining/revetment wall F.4081, (18618). Although this had the appearance and stratigraphic location of a construction cut for wall F.4081, its extreme width is peculiar. The fact that cut (18618) truncated compact, dense, clay dumps to the west, and was then filled with extremely loose ashy material, (18616), which respected the west face of the new retaining/revetment build (F.4081), suggests that the cut may have been intended to alleviate the pressure on both wall F.4081 and Building 87's adjacent wall (F.4079).

Fill (18616) was then sealed by a sequence of compact dump deposits, interspersed with fire spots. The first of these was dump (18615), which only partially sealed fill (18616), but fell short of revetment wall F.4081. This was sealed by a small area of scorching, located centrally with the islanded portion of the space, (18614), and a 0.2m thick spread of building debris, interspersed with midden lensing (18612). This building debris was isolated to the eastern end of the space, respecting the west face of revetment wall F.4081, and may represent the gradual decay of both wall F.4081 and Building 87's eastern wall. This was sealed by 0.1m thick, layered spread of laminated midden deposits, (18611) which in turn was sealed by dump, (18609), which also directly sealed revetment wall F.4081. A concentrated area of phytoliths was contained within dump (18609) and recorded as cluster (18610). The phytolith cluster was located near to the western wall of Building 87, in a 1.95m by 0.94m by 10mm (thick) spread. No pattern or form in the phytolths was discernable. Dump (18609) was sealed by two fire spots; the first, (18608) was located in the same area as underlying firespot (18614), and the second, was recorded a little to the south east (18181). A further compact dump deposit, (18606), sealed firespot, (18608), and was in turn, sealed by a larger firespot, located in the northwest corner of the islanded area.

WEST MOUND

West Mound Trench 5 - Peter F. Biehl & Eva Rosenstock with a contribution by Ingmar Franz

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Introduction

The excavation in Trench 5 (Tr 5) on the Çatalhöyük West Mound was continued in 2009 in a four-week field season with a team of 10. In order to reach floors or surfaces of the most likely five buildings (Biehl/Rosenstock 2008) we focused the excavation on the Spaces 342, 343 and 310 (Fig 34). The sequence of architecture and the nature of the fills and surfaces retrieved so far display certain similarities with the Neolithic of the preceding East Mound, but also innovations of the so called Early Chalcolithic (EC I) and connecting it to contemporary settlements in the Konya Plain and the Lake District.

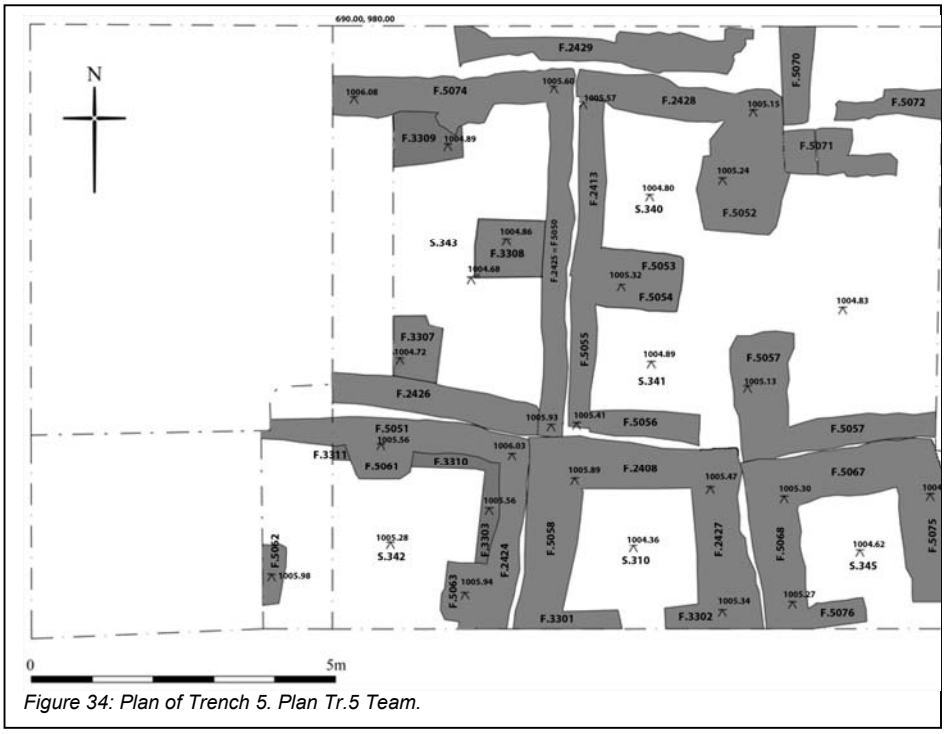

Figure 34: Plan of Trench 5. Plan Tr.5 Team.

Description

In 2009, only Space 310 has yielded evidence for a 'trampled' surface of fill beginning at the end level of the wall plaster of the space; this coincides with the end level of two possible buttresses at the S of the space as well as with the plaster on the E, N and W walls (F.2427, F.2408, F.5058). In Space 310, we further excavated the fill below this 'trampled' surface and exposed the un-plastered part of the walls. The densely packed deposits of large potshards unearthed last year continued to the level of a line of splaying plaster (Figure 35). It is still unclear how this plaster line connects to a possible clay installation, which we partly excavated at the end of the field season. This structure is extremely interesting since – beside other evidence – it indicates that Space 310 had at least two phases, and consequently that the buttresses F.3301 and F.3302 belong to the later phase of the space. In addition to this, an extraordinary miniature clay 'bucranium' was found close to the structure (Figure 53c). Next year, an extension of Tr 5 towards the S is necessary in order to clarify the architectural

layout of the building and to better understand and date the different phase of the building and its spaces.
In Space 342, roomfill was removed in three units ((16896) dug in 2008 and (18309), (18311) and (18328) dug this year). Shard fittings between these spits and the interpretation of the S section corroborate the view that the changes in soil consistency we encountered between these units did not represent lenses of infill. Its deposition must have been rather rapid, as it is indicated by the low degree of fragmentation of the potshards found and by the presence of unusually well-preserved animal bones with the articulated unfused epi- and diaphyses of juvenile bones (see this report, cf. I. Franz on pottery and Fauna West Mound Tr 5). The fill covered a feature (F.3303), which was constructed from grey mudbrick and white mortar similar to the space's walls (F.5051 and F.2424) (Figure 36). As the feature resembles the benches found by David French in Can Hasan I 2B (French 1998) we currently interpret the internal installation in Space 342 also as a bench. As the plaster on wall F.5051 continues behind F.3303, the bench seems to be a later addition to the space.


Figure 35: Space 310 with feature F.3315. Photo Peter Biehl.


Figure 36: Bench F. 3303 in Space 342. Photo Peter Biehl.

Figure 37: Neonate skeleton (18333) in front of buttress F.5061 in Space 342. Photo Peter Biehl.

Below (18328) we excavated a surface of compacted roomfill material (18341) marked by phytoliths, obsidian and other numerous X-finds at its interface to the next unit. On this surface, a neonate skeleton (this report, (18333); cf. Human Remains Report J. Byrnes) was placed with its head in the W in a contracted ventral position (Figure 37). Its right arm was closely abutting buttress F.5061 and no traces of a grave cut or basket etc. could be detected. The situation closely resembles skeleton (16835) that was uncovered last year placed on top of the bench F.3303. The deposition of neonates seems to be part of the rapid infill episodes, thus similar to the nature of the infill encountered in Hacılar I, which was, according to Mellart's interpretation "filled with pottery, objects and the burnt skeletons of slain victims, especially children" (Mellaart 1959, 54). An ashy spot (18345) on this surface was surrounded by several potstands 18328.X17, 18328.X19, 18328.X20 and 18341.X19) (Figure

38) and might indicate a short-term use of a fireplace on this surface. As we have not yet reached the base levels of the walls surrounding the space, excavation has to be continued next year in order to better understand the exact phasing of the building.

The upper part of Space 343 still contained a considerable amount of late disturbances and intrusions. With (18314), however, a very homogenous fill that yielded almost no finds was excavated. We were able to separate two different kinds of walls which seem to sit exactly on top of each other: more compact and greyer mudbricks and mortar, and a wall with yellow-brown crumbly mudbricks and orange mortar (F.5074, F.5050=F.2425 and F.2426) and two buttresses (F.3307, F.3308, F.3309), which do not directly underlie the very poorly preserved remains of the buttress of wall F.5074 (Figure 39). Moreover, the base level of the upper phase changes and therefore indicates that the earlier phase of the wall was cut back to provide a secure foundation for the later/upper phase. Consequently, we interpret the earlier/lower walls (F.3304, F.3305, F.3306) as an older phase of Space 343 rather than a lift within the walls. Whereas any surface that belonged to the upper phase has most likely been destroyed by the later intrusions, we hope to reach surfaces that belong to the lower phase next year.

In Space 345, the removal of roomfill enabled us to define two buttresses enclosing the space, which is therefore part of a larger building extending beyond the E and S section of the trench.

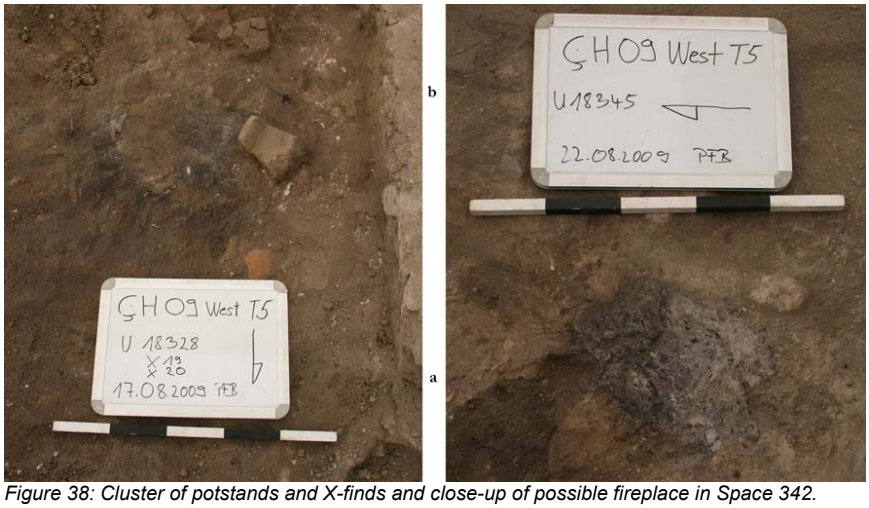

Figure 38: Cluster of potstands and X-finds and close-up of possible fireplace in Space 342. Photo Peter Biehl.

The roomfill yielded a complete cowrie shell 18337.X8 on a 'trampled' surface (18347) (Figure 40) as well as the remains of a charred branch (18338) of a deciduous tree, most likely oak.

Figure 39: Two phases of wall construction (upper phase F.2425/F.5050 and lower phase F.3305 with buttress F.3308) in Space 343. Photo Peter Biehl.

General observations

Until the removal of the upper phases of the walls of Spaces 343 and Sp.310, it is impossible to establish their relative chronology and exact building phases. However, it is worth noting that the base level of F.5074, F.5050=F.2425 and F.2426 (varying between ca. 1004.90 and 1005.30 m ASL) is lower than the surfaces in Space 342 (at ca. 1005.35 (18346) and 1005.45 (18341). In addition, the buttresses of Space 342 have different dimensions than those of the earlier/lower phase of Space 343. The same is true for the buttresses in Spaces 340, Sp.341 and Sp.345 suggesting that the structures exposed in Space 342 represent the latest architectural phase of Tr 5.

We would like to highlight and elaborate on the fact that phases of spaces which sit directly on top of each other is not only a common trait in the EC of Can Hasan I 2B and 2A, but also in the preceding Late Neolithic of Can Hasan I 3 (French 1998). Such architectural continuity can be interpreted both in terms of practicability and functionality as well as meaningfulness and symbolism. The reuse of preceding phases of spaces both provides more stable foundations and simply “happens” once the complete area of a settlement is built on and new structures have to respect neighboring buildings that are still in use. But it also represents symbolically the time-depth of the individual building.

Figure 40: Complete cowrie shell on a ‘trampled’ surface in Space 345. Photo Peter Biehl.

With the exception of Space 310 and the probably later Space 342, Spaces 343, Sp. 340/341 and Sp.345 all seem to form roughly square buildings with a massive internal buttress protruding midway from each wall, thus closely resembling the buildings in Can Hasan I 2B (French 1998). While the fill in the lower phase of Space 343 contained almost no finds, Space 342 and Sp.310 produced large amounts of animal bones, potshards and

small finds. Butchering practices seem to be different from the East Mound, and the deposition or filling in of these spaces seems to have taken place very quickly, i.e. within at best a few months. So far, there is no evidence for open or not built-up space from the excavations on the West Mound. The same is true for contemporary sites such as Can Hasan I 2B and 2A (cf. French 1998), Kuruçay 7 (cf. Duru 1994), and Hacılar I (cf. Mellaart 1970; see Rosenstock in press for a discussion of the ambiguous evidence for a central open space). It raises the question of the existence of midden areas, which are so common on the East Mound. It seems likely that abandoned and decaying buildings were used in fact as middens. If the fills in Space 310 and Sp.342 are indeed middens, the absence of ash makes them still different from the middens on the East Mound. Another difference to the East Mound regarding refusel are the mudbricks, which have a grey color and a high silt content (Space 310 and Sp.342), and may point to a recycling of the fine-grained particles of refuse as well as lumps of burnt mudbrick, bones and other reused material. Only the dismantling of later phases of the walls will provide sample material to prove this assumption next year.

Trench 5-7 pottery - Ingmar Franz

In this excavation season the sorting, weighing, counting and refitting of excavated material continued. After finding fragments of unfired pottery and red pigments during last year excavation the lab work focused on searching for more evidence for pottery production on the West Mound (Franz 2008) and I will present and discuss some new finds at the end of this report.

Quantitative pottery analysis in numbers

Firstly, the missing Table 3 (Table 1) from last year's report must be added here:

year of excavation	total units	undiagnostic shards				diagnostic shards			
		processed units	weight in g	amount	max. diam. in cm	processed units	weight in g	amount	max. diam. in cm
2006	73	3	1 780	107	128	3	955	29	114
2007	87	24	35 505	1 477	214	19	24 790	657	265
2008	53	45	107 176	5 797	236	32	54 830	1 304	272

Table 1. Weighed and counted pottery units 2008 (last years Tab. 3)

This year, 28 new units have been processed, which adds up to 241 currently processed units with a total weight of ca. 330 kg and a total shard amount of 14 270 pieces (Table 2).

	number of units	weight of units in g	amount of shards
undiagnostic	241	181 433	10 581
diagnostic		148 585	3 689

Table 2. Weighed and counted pottery units until 2009.

Vessels or shard complexes

The refitting and defining of vessels yielded 22 new shard complexes which all (except Vessel 46) were from undisturbed prehistoric room fills of Trench 5 (Tr 5). Together with last year's vessels, a total of 59 vessel types could be defined. Most of them are from Tr 5 where Space 342 and Sp.310 provided 14 and eight vessels in the latter. Space 340, Sp.341 and Sp.345 each produced two vessels and Space 343 four. In most cases, there doesn't seem to be a real slip on the vessel body. All bowls are burnished on both surfaces. Only the jars and deep bowls V1, V4, V8, V14, V15, V54 (Figure 41a), V56 (Figure 41b) and V57 and the miniature jars V17, V18 and V52 are not burnished on the inside. The unfired vessels V58 (Figure 42a) and V59 (Figure 42b) are completely unburnished and could be interpreted as semi-finished products or a potter's 'training pieces'. The majority of the vessels fit into the "EC I"-scheme defined by Mellaart in 1965 (Mellaart 1965) and consists of bowls, which can be divided into the two main types: carinated bowls with S-profile (Figure 43) and bowls with C- or straight profile (Figure 44). For 33 vessels, the primary function is serving food (liquid or none-liquid), for 12 vessels it is storage or transport, and for nine food preparation (food or intermediates of some production process). For five vessels the function is unclear but they could have been

used for training purposes, and possibly four other vessels look like models or prototypes. It is important to highlight that only two vessels could have been used for cooking (Table 3).

Figure 41: Burnished ware (a - deep bowl V54; b - deep bowl V56). Image Ingmar Franz

vessel code	unit number	provenance (Trench / Space)	Description	possible function
V1	15119	7 / -	weathered restricted carinated jar (part of vessel cluster in T7, see AR 2007)	storage / transport
V2	15102	7 / -	weathered unrestricted oval bowl with S-profile	serving
V3	15104	7 / -	painted unrestricted carinated oval bowl with standring	serving / preparation
V4	15117	7 / -	weathered painted restricted deep bowl with C-profile (part of vessel cluster in T7, see AR 2007)	storage / transport
V5	15104 / 15106 / 15107	7 / -	a cluster of LN cut & prick-ornamented shards	serving
V6	16923	7 / -	weathered burnished and painted unrestricted oval bowl with 1-2 handles	serving
V7	15104	7 / -	not described yet	
V8	16880	5 / 340	burnished oval base of a vessel	cooking / preparation
V9	17213	5 / -	painted slightly restricted carinated bowl with 1-4 vertical loops beneath the rim	storage / transport
V10	13843	6 / -	burnished and red wiped unrestricted oval carinated bowl with S-profile	serving / preparation
V11	15105	7 / -	burnished unrestricted oval carinated bowl with S-profile	serving / preparation
V12	15308	5 / 342	carinated-unrestricted bowl with S-profile, slightly vaulted base and burnished surfaces	serving / preparation
V13	16806	5 / -	sliped and red wiped unrestricted bowl with staight profile	storage / transport
V14	16832	5 / 345	red painted necked jar or basket handled vessel with oval base and burnished surfaces	storage / transport
V15	15104 / 15107	7 / -	red painted necked carinated jar with oval base (part of vessel cluster in T7, see AR 2007)	storage / transport
V16	15104 / 15116	7 / -	painted EC1 necked jar with 2 horizontal handles (part of vessel cluster in T7, see AR 2007)	storage / transport
V17	14287	5 / 342	necked mini-jar with to horizontal handles and S-profile	storage /

			(only burnished on the outside)	transport
V18	14213	5 / 343	painted necked mini-jar (only burnished on the outside)	storage / transport
V19	13801	6 / -	small burnished and painted slightly restricted oval bowl with 4 feet	serving
V20	13700	Surface	small well-burnished and painted unrestricted rectangular bowl	serving
V21	14210	5 / -	small well-burnished and painted unrestricted oval carinated bowl with S-profile and 2-4 knoblets	serving
V22	13824	6 / -	small burnished and painted unrestricted oval bowl with C-profile and 2-4 horizontal loops	serving
V23	15105	7 / -	not described yet	
V24	14213	5 / 343	small burnished and painted unrestricted oval bowl with C-profile	serving
V25	13702	5 / -	small burnished restricted oval bowl with C-profile	serving
V26	13864	6 / -	small burnished and painted unrestricted oval bowl with flat C-profile	serving
V27	13731	5 / -	small burnished and painted unrestricted oval bowl with flat C-profile	serving
V28	15104	7 / -	painted basket handled vessel (part of vessel cluster in T7, see AR 2007)	storage/ transport
V29	17208	5 / 310	well-burnished painted, carinated-restricted bowl with C-profile	serving
V30	16889	5 / 342	small burnished painted restricted carinated oval bowl with vaulted base	serving
V31	16886	5 / 343	small burnished carinated oval bowl with standring and S-profile	serving
V32	16859	5 / 341	burnished unrestricted bowl with straight profile	preparation
V33	16884	5 / -	burnished and double-sided painted restricted bowl with C-profile	serving
V34	13801	6 / -	small double-sided painted unrestricted bowl with C-profile	serving
V35	15105	7 / -	small double-sided painted unrestricted bowl with C-profile and 1-4 vertical handles	serving
V36	13800	6 / -	small double-sided painted unrestricted carinated bowl with S-profile	serving
V37	17208	5 / 310	small slightly restricted carinated bowl with S-profile and 3-4 feet	serving / training / model
V38-V41	16896	5 / 342	not described yet	
V42	16896	5 / 342	double-sided painted carinated slightly restricted oval bowl with S-profile	serving
V43+V44	16896	5 / 342	not described yet	
V45	16800	5 / -	not described yet	
V46	13801	6 / -	not described yet	
V47	16896	5 / 342	double-sided painted unrestricted bowl with C-profile and painted human representation on the inside	serving
V48	18328	5 / 342	double-sided painted heavily restricted carinated bowl with S-profile	serving
V49	18343	5 / 310	small restricted carinated bowl with S-profile	serving / training / model
V50	18343	5 / 310	double-sided painted unrestricted bowl with C-profile	serving
V51	18343	5 / 310	double-sided painted unrestricted bowl with C-profile	serving
V52	16896	5 / 342	miniature restricted jar with standring (only burnished on the outside)	training / model

V53	18337	5 / 345	restricted carinated circular bowl with S-profile	serving / preparation
V54	18320	5 / 310	painted jar with 2 horizontal handles	storage / transport
V55	18343	5 / 310	double-sided painted oval restricted bowl with S-profile and standring	serving / preparation
V56	18328	5 / 342	painted jar with S-profile	serving / storage / transport
V57	18314	5 / 343	circular base of a coarse vessel	cooking / preparation
V58	18323	5 / 310	unfired bulky vessel (unburnished)	training
V59	18313	5 / 340+341	unfired restricted miniature jar base (unburnished)	serving / training / model

Table 3. Defined vessels or shard complexes from Trench 5-7 until 2009.

Pottery production and elements of a chaîne opératoire

Figure 42: Unfired vessels (a - V58; b - V59; c 18311). Image Ingmar Franz

Since last year's discoveries (Franz 2008) it was clear that more finds and evidence for possible pottery production processes could be expected from this year's excavation. Indeed, many unfired pottery fragments were found and often belong to clusters or even to whole vessel parts (e.g. (18311), (18313), (18323) (Figure 42). The painted rim part from (18311) in Space 342 is the most impressive example for an unfired pottery cluster from the West Mound so far (Figure 42c). Altogether they prove that the painted "EC I/II-Ware" was definitely produced on site, which represents an extraordinarily rare archaeological situation. Since last year, 21 units revealed pieces of unfired pottery. Alone in Space 310 seven units contained unfired pottery, four Units in Space 342, three in Space 345 and two in Space 340, Sp.341 and Sp.343 each.

unit number	provenance (Trench / Space)	description	unit number	provenance (Trench / Space)	description
16832	5 / 345	pieces	18303	5 / 310	pieces
16859	5 / 341	pieces	18311	5 / 342	cluster + pieces
16880	5 / 340	pieces	18313	5 / 340+341	V59, unfired miniature jar base
16882	5 / -	pieces	18314	5 / 343	handle fragment
16886	5 / 343	pieces	18318	5 / 310	cluster (18318/s.9) + pieces
16889	5 / -	pieces	18323	5 / 310	V58 bulky vessel (18323/X.2) + pieces
16896	5 / 342	pieces	18328	5 / 342	cluster?
16898	5 / 310	pieces	18331	5 / 345	2 clusters? + pieces
16899	5 / 342	pieces	18337	5 / 345	cluster?
17208	5 / 310	pieces	18343	5 / 310	cluster
17214	5 / 310	pieces			

Table 4. Unfired pottery from Trench 5.

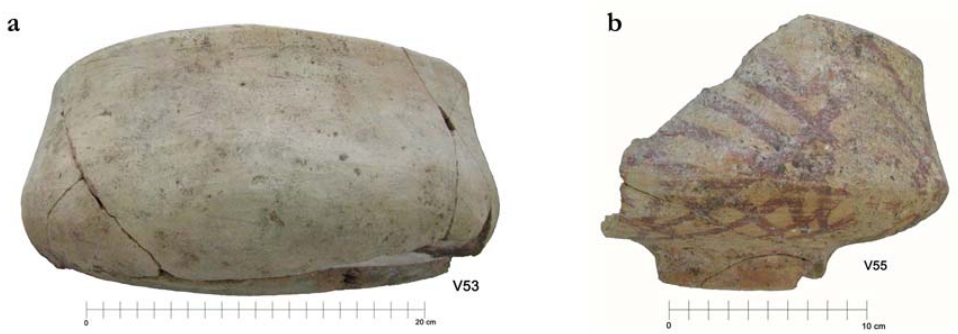

Figure 43: Carinated bowls with S-profile. Image Ingmar Franz

As last year, pieces of red pigment were found in addition to unfired pottery. Altogether there are six pieces: three from Space 310 ((17214), (18323), (18343)), one from Space 342 (18328), one from Space 343 (16886) and one from (16889) (Figure 45). Thanks to Tristan Carter we were able to undertake an analysis with a Bruker TRACeR III XRF-gun that showed that the pigment pieces from (17214), (16889) and (16886) consist of iron oxide. It is important to note that all samples of painted pottery (16896) and unfired painted pottery (16896) contained iron oxide as pigment (Table 5).

Figure 44: Bowls with C-or straight profile. Image Ingmar Franz

Unit number	sample description	results
16896	red slipped rim shard	iron based slip
16896	painted figure on bowl	iron based paint
17214	used red stone piece	iron oxide/copper/arsenic
16889	red ochre	iron oxide
16896	unbaked pottery shard	iron oxide/arsenic based paint
16886	red ochre	iron oxide

Table 5. Pigment samples analyzed with a Bruker TRACeR III XRF-gun by Tristan Carter.

Additionally, some pieces of white raw material were discovered. This white material (lime or gypsum) was probably used as a pigment for a light colored pottery slip or building wall plaster ((18318), (18328) & (18339)). It could have also been used as temper as the majority of the vessels shows white inclusions inside the fabric. In fact, lime as temper in pottery pastes works as some sort of flux. This would allow the vessels to be fired with lower temperatures though producing the same qualitative result as with pottery fired with higher temperatures without lime temper. In order to find more pieces of the operational sequence bone and stone artefacts from Tr 5 and Tr 7 (2006-2009) have been studied. Four categories of stone artefacts possibly used in the pottery production have been identified: hammer stones (Figure 46), grinding stones (Figure 47), grinding platters (Figure 48) and burnishing stones (Figure 49). All of these artefacts - except the burnishing stones - show traces of red pigment in at least some surface depressions and some tools are completely covered with red pigment (grinding stones 18341.X1 & 18343.X18).

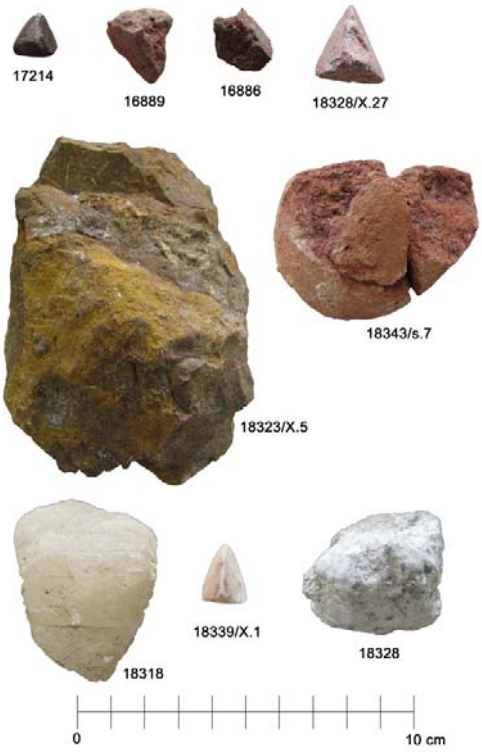

Figure 45: Raw materials and pigment stones. Image Ingmar Franz

It is interesting to note that a similar basalt grinding platter fragment with pigment from Space 310 (Figure 51) was found in Trench 8 (find 15588.X7). Three types of possible potter's bone tools were identified (Figure 50). They all show traces of use and a have specific tool shape. They could have been used as a scraper or paddle ((18328) & (18343)), or for burnishing (17225.X2, 18323.X4, 18323.X10 & 18343.X5). Also the so-called shard tools can be included in this production sequence and have either geometric shapes like rectangles or hexagons (Franz 2007, fig 88) or curved triangles (Fig 18, (18303)). A possible use could have been as stencils for applying the painted decoration on the pottery. Others could have been used as scrapers or paddles (Franz 2007, fig. 88, (18316)) or as burnishers (16896), (18328), 18343).

Figure 46: Hammer stones. Image Ingmar Franz

Figure 47: Grinding stones. Image Ingmar Franz

Figure 48: Grinding platter. Image Ingmar Franz

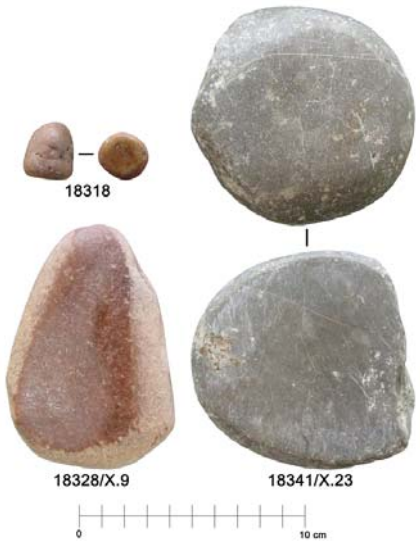

Figure 49: Burnishing stones. Image Ingmar Franz

In addition to the finds from Tr 5 and Tr 7 Jonathan Last's Archive Reports for Trench 1 were studied in order to find comparable materials. To summarize, lumps of red pigment was found in Spaces 189-Sp.193 in 2000 ("In the central and southern row of spaces [Sp.189-Sp.193]...layered spreads of material appear to represent informal or truncated occupation. These consisted of scatters of large potsherds, animal bones, groundstone tools and pieces of red ochre" (Last 2000)). In 1998, unfired pottery vessels were found in (2952) belonging to an artefacts cluster consisting of twelve potstands ("The objects include twelve objects which can loosely be termed 'potstands', two miniature unfired clay vessels, some animal bone fragments, and a large shard of a pottery vessel with an unusual grey burnished surface (Last 1998))." ...the unfired pots both appear to be flat-based with a cylindrical profile and around 50 mm in diameter" (Last 1998)). In conclusion, since also Trench 1 revealed remains of pottery production this seems to be typical feature for the West Mound.

Figure 50: Bone tools for pottery production. Image Ingmar Franz

The fact that some room fills (e.g. in Space 310, Space 342 & Space 345) were full of pottery shards (typically with "sharp breaks" and having sometimes large shard sizes), shard clusters with shard complexes (vessels) which are dominated by food serving ware (only 2 vessels could be related to cooking) and different kinds of finds, which can be linked with pottery production (e.g. raw materials, pigments, unfired pottery, tools) suggests that they could been dumping areas of a pottery workshops. If so, this workshop be too far away and could be in just next to the building with Space 310 and Sp.342. If there is a workshop there must have been a firing place, which might be traceable with a geomagnetic survey.

Figure 51: Ceramic tools for pottery production. Image Ingmar Franz

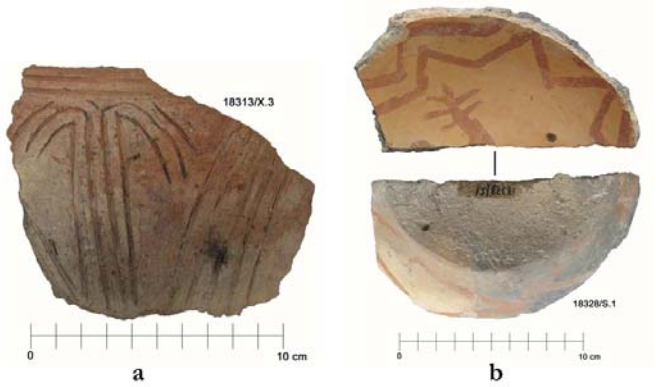

Figure 52: a – incised potshard with 'palm-tree' decoration; b – bowl with human representation. Image Ingmar Franz

Special finds

Here are some special pottery finds from the 2009 field season: a large incised shard with an unusual "palm-tree like" decoration (Space 340, (18313)) (Fig 52a). A painted base shard of a bowl with a possible human representation (hand and arm) (Space 342, (18328)) (Fig52). An earthen spoon (Space 342, (16896) & (18341)). Two anthropomorphic figurines (Space 340/341 (18313) and Space 345 (18331) (Fig 53a). A small fragment of a stamp seal (Space 343, (18314)) (Fig 53b) and a very appealing miniature cattle head of clay figurine which was perforated (Space 310, (18343) (Fig 53c).

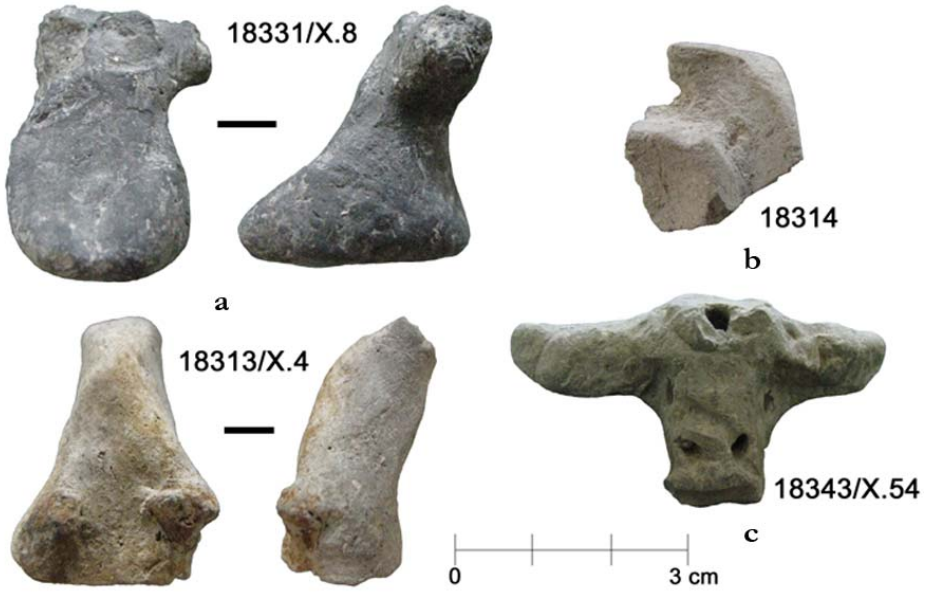

Figure 53: a – two anthropomorphic clay figurines; b – fragment of a stamp seal; c – miniature clay 'bucranium'. Image Ingmar Franz

Acknowledgments
Peter Biehl and Eva Rosenstock would like to thank the University at Buffalo, the Free University of Berlin and the Alexander von Humboldt Foundation and all the team members, specialists and the Çatalhöyük Project for their support.

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References:

Biehl-Rosenstock 2008
Biehl, P.F. – Rosenstock, E. 2008: West Mound. Çatalhöyük 2008 Archive Report, 90-103.

Biehl– Rosenstock2009
Biehl, P. F. – Rosenstock, E. 2009: Von Çatalhöyük Ost nach Çatalhöyük West. Kulturelle Umbrüche an der Schwelle vom 7. zum 6. Jt. v. Chr. in Zentralanatolien. In: Löhr, H. et al. (eds.), Zurück zum Gegenstand. Festschrift für Andreas Furtwängler. Beier & Beran: Langenweißbach. Schriften des Zentrums für Archäologie und Kulturgeschichte des Schwarzmeerraumes Vol. 16, 471-482.

Duru 1994
Duru, R. 1994: Kuruçay Höyük I. 1978 - 1988 kazılarının sonuçları. Neolitik ve erken kalkolitik çag yerleşmeleri (=Türk Tarih Kurumu yayınları 5/44). Ankara.

Franz 2007
Franz, I. 2007: West Mound Excavations – Pottery. In: Çatalhöyük 2007, Archive Report, 129-131.

Franz 2008
Franz, I. 2008: Trench 5-7 Pottery. In: Çatalhöyük 2008 Archive Report, 97-100.

French 1998
French, D. 1998: Canhasan sites 1. Canhasan I: Stratigraphy and structures. Hertford.

Last 1998
Last, J. 1998: Excavations on the West Mound at Çatalhöyük 1998. Methodology and Results – Trench I. In: Çatalhöyük 1998 Archive Report.
Last 2000
Last, J. 2000: Excavations at Çatalhöyük West – The Excavations. The Chalcolithic Architecture. In: Çatalhöyük 2000 Archive Report.

Mellaart 1959
Mellaart, J. 1959: Excavations at Hacılar. Second Preliminary Report. Anatolian Studies 9, 51-65.

Mellaart 1970
Mellaart, J. 1970: Excavations at Hacılar. Edinburgh.

Rosenstock in press
Rosenstock, E. in press: Die “Festung” von Hacılar I. Ein Dekonstruktionsversuch. In: P. Kalábková – B. Kovár – P. Pavúk – J. Šuteková, Festschrift für Juraj Pavúk. Bratislava.

West Mound Trench 8 - Burçin Erdoğu

Supervisors: Burçin Erdoğu* & Nejat Yücel*
Site Assistants: Gülay Yılankaya-Erdoğu*, Melek Kuş*, Abdurrahman Sönmez*, Nuray Kaygaz & Onur Özbek (2)

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Three weeks of excavation in Trench 8 of the West Mound began to clarify a number of issues relating to the architectural development and stratigraphy of the Early Chalcolithic settlement.

Figure 54: Building 78. Looking South-West. Image Tr.8 Team

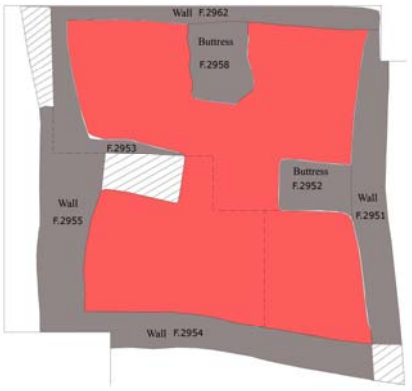

Figure 55: Plan of Building 78. Plan Tr.8 Team

First, the discovery of the architectural remains in the southern part of the trench provides the first evidence of the ECII occupation. Until now no architectural remains of EC II have been found on Çatalhöyük West. ECII materials had been only come from some pits in the southwestern part of the mound. In Trench 8, EC II is represented by partial architectural remains and heavily disturbed fill due to present-day surface activities. A domed oval oven F.2966 with its mouth to the south was found. It was a disturbed oven measureing 1.4 x 0.8m with only one oven floor. A partition wall (?)of at least 5 single mud-bricks lies north of the oven. The mud bricks measure 0.7-0.8 x 0.3 m in size and 0.15 m in thick. To the southern side of the oven was a deposit containing lots of burnt construction materials with frequent EC II pottery and animal bones. Noteowrthy objects from this deposit are two vessels with painted human figures, a stone vessel with a carved crayfish figure and a spondylus bracelet. A stone bowl was also found on the west side of the oven (Figure 56).

Second, it is now clear after three excavation seasons that Building 78 is quadrangular in plan with two storeys and 3 internal buttresses (Figures 54 & 55). Building 78 is a relatively large sized special building of c. 8m across. Floors of the first and the second storey as well as plastered walls of the second storey were painted in red. The red paint was kindly analysed by T. Carter with X-Ray Fluoresence, and was found to be ochre.

Figure 56: Stone bowl. Photo N.Yucel.

This season, the Northwestern and Southeastern quadrants of Building 78 were excavated in order to understand the first floor level of the building. The northern wall F.2962 and Northeastern half of the building had been partially excavated in the previous season (see Erdoğu 2008) therefore only the second floor level in the southwestern half of the building was still present. The first floor of the building is very hard and compact with a thin layer of red paint. Traces of phytoliths were observed on the floor of the Northwestern part of

the building. The first floor of the building was found to be collapsed into an underlying building (see below). Again several fragments of flooring with different heights were found. The floor surface yielded only a few finds. No features such as oven and hearth were evident on neither floors, but circular features, measuring up to 0.8m in diameter and attached to the northern wall, may have been a fire place. The sloped collapse around the northern buttress was completely removed this season. The northern buttress F.2958 had collapsed together with floor and was therefore scattered. It measured 1.5x1.0 m., and its surface was heavily plastered.

Figure 57: Bowl decorated with a human figure. Photo B. Erdogu

Third, in order to investigate the strata below Building 78, an excavation was conducted below the floor of building. We opened an area measuring c 2 x 2.5 m against the southeastern corner, revealing mud-brick walls and room fill of an underlying building (Space 363). The room fill was particularly rich in burnt debris and lots of burnt construction materials with pottery sherds, animal bone and obsidian implements. The room fill also contained numerous small fragments of hard white lime plaster with traces of red paint. The material assemblage was notable including 3 polished stone axe heads, 5 clay balls, 6 worked and unworked horns and antlers, 4 bone awls, a potstand, a malachite piece and a shell bead native to the Mediterranean Sea. The floor sequence was not excavated. Room fill below B.78 is probably stratigraphically contemporary with the building that was excavated by J. Mallaart in 1961 in Trench II (Mellaart 1965).

Small Finds

One of the most exciting objects found this this season was a spondylus bracelet. It is the spiny oyster native to the Aegean Sea. Clearly objects from spondylus were highly prized and probably endowed with symbolic significance. The distribution of Aegean spondylus in the Balkans and Central Europe is considered one of the most spectacular indications of large scale prehistoric European trade. There can be no doubt that this first spondylus object from the Chacolithic Çatalhöyük West was an important find for the development of prehistoric trade.

A broken ashtray-like stone vessel with incised decoration is unique. It contained traces of ochre on its interior surface, and a crayfish figure can be seen on its exterior surface (Figure 66). Up until recently crayfish were plentiful in fresh water lakes of Hotamış and Mamasın in Central Anatolia (Erdemli 1987).

One of the most interesting finds was a deep bowl decorated with a human figure (Figure 57) with upraised arms painted on the interior base of the bowl. The lower part of the figure seems to indicate that it is robed in a kind of skirt. It has short legs and long pointed feet that give the impression that the figure is wearing shoes. The figure has a long neck, and at first sight looks like a headless human figure, but the tiny head is probably relatively unimportant, instead stress is on the body.

We will continue our investigation in future season in order to expose the underlying building of B.78 to understand the ECII occupation at the site.

A Preliminary Analysis of Ground Stone Tools And Vessels From Trench 8, West Mound Çatalhöyük: 2009 Report - Onur ÖZBEK

Introduction

During the 2009 season I had the opportunity to join the Tr.8 West Mound excavations under the directorship of Dr. Burçin Erdoğu to study the ground stone assemblage. The same excavation season, I tried to be present on the mound during the excavation whenever I was able to. This was important for me as I would observe the situation and the preservation conditions of the ground stone material unearthed from the trenches.

The studied material in 2009 comes from different deposits starting from (15509) to (18205) (12 Units totally). The raw material of these artefacts is usually of volcanic origin. For instance, querns are mostly produced from porous volcanic rocks. In stricto sensu some were produced from basaltic rocks. More than half of the grinding stone pieces found during the excavations were incomplete and could not be fitted with any other piece found in this state. There were also andesite origin querns. What is interesting is that some lower parts of the quern finds and one stone vessel had red pigment residues on their surfaces. The pigment residue finds on ground stone tools in West Çatal Höyük was already been remarked by Adnan Baysal in his "Çatalhöyük 1998 Archive Report". In this report, he had observed it on a pestle (2910) only (See Baysal 1998, 1999, 2000, Baysal and Wright 2005, Wright and Baysal 2005 for the previous analysis on ground stone tools from Çatalhöyük).

Typologically, four main groups of objects were identified among the studied items in 2009 (Table 6). These are grinding stones (querns in the studied case), axes, pestles and stone vessels. The following part comprises a catalogue and a summary of the observations on these objects.

ÇATALHOYUK (WEST) GROUND STONES (O. Ozbek 2009)

No	Units	Object	Detail	Fragmen-tation	Length mm	Widht mm	Thickness mm	Weight gr	Raw material	Other info
1	15509	quern (1)	lower part	frag.	86	68	41	276	andezite	
2	15513	quern (2)	lower part	frag.	86	61	33		porous basaltic rock	
3	15513	quern (3)	lower part	intact	122	81	36		porous basaltic rock	
4	15527	pestle	fragment	frag.	78	74	55	448	volcanic rock	feldspath inclusion
5	15529	quern (4)	lower part	frag.	82	66	21		middle grain size	red pigment
6	15538	quern (5)	lower part	frag.	160	275	42		andezite	
7	15561	axe (x2)		intact	54	32	17	34,2	diabase ?	
8	15577	quern (6)	lower part	frag.	162	146	59		porous volcanic rock	
9	15578	stone	amorphous	intact	70	47	28		limestone	river rolled
10	15584	quern (7)	lower part	intact ?	185	170	50		porous basaltic rock	red pigment
11	15588	stone vessel	corner	frag.	98	70	34		volcanic	red pigment
12	15590	axe (x11)		intact	90	40	27	197	metamorphic	fire alteration
13	15590	axe (x12)		intact	102	44	22	228	metamorphic	fire alteration
14	18205	axe (x4)		intact	82	42	22		metamorphic	

Table 6. General inventory of the studied West Mound material in 2009.

Grinding Stones and Pestles

The grinding tools examined constitute seven lower parts of querns in different size and shape. Raw material preference for the production of the querns seems to be of porous volcanic rocks. According to macroscopic analysis, the texture of these volcanic rocks is composed of feldspath inclusions.

Quern 1 (ÇH07 West 8, (15509)) is a fragment of the lower part of a grinding tool with a regular rounded shape (L: 86, W: 68, T: 41). There is no

Figure 58: Lower part of a grnding stone Tr.8 West broken into half. Photo O. Özbek.

indication of pigment residue. The tool produced from andesite seems to be broken from its centre. (Figure 58)

Quern 2 (ÇH07 West 8, (15513)) is a lower fragment of a grinding tool (L: 86, W: 61, T: 33) which is produced from a very porous basalt. (Figure 59)

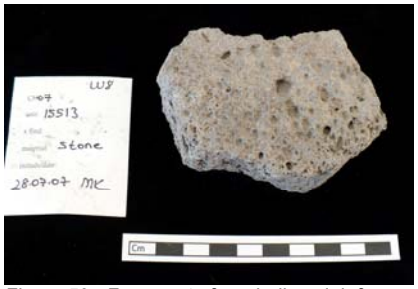

Figure 59: Fragment of a grinding slab from Tr.8 West. Photo O. Özbek

Quern 3 (ÇH07 West 8, (15513)) is an intact lower part of a grinding stone (L: 122, W: 81, T: 36) made of fine porous basalt (Figure 60). It is particular in the way we see the notches deliberately worked on its two lateral concave surface (inner surface). The aim of such a detail on the lateral borders of a stone tool would be to improve its friction power during the grinding process.


Figure 60: A complete lower part of a grinding stone from Tr.8 West. Photo O. Özbek

Quern 4 (ÇH 07 West 8, (15529)) is a fragment of a lower part grinding slab (L: 82, W: 66, T: 21). This piece is thin when compared to other grinding slabs and this may be an indication of other function than food production. The concave surface contains a red pigment residue which could be iron oxide.(Figure 61)

Quern 5 (ÇH 07 West 8, (15538)) is another fragment of a large grinding slab made of andesite broken nearly into half (L: 160, W: 275, T: 42). (Figure 62)

Figure 61: Fragment of lower part of a grinding stone from Tr.8 West. Photo O. Özbek

Quern 6 (ÇH 08 West 8, (15577)) is a lower fragment of a small grinding slab made of large grained volcanic rock broken nearly into half (L: 162, W: 146, T: 59). Its original form should have been a regular elliptical before it was broken. (Figure 63).

Quern 7 (ÇH 08 West, (15584 8)) is a regular quadrangular shaped grinding slab broken possibly into half (L: 185, W: 170, T: 50). It is made of porous basaltic rock and on the concave surface, there is still trace of a reddish pigment (Figure 64).

Figure 62: Lower part of a grinding stone Tr.8 West broken nearly into half. Photo O. Özbek

Pestle 1 (ÇH 07 West 8, (15527)) is the proximal extremity (the butt end) of a pestle (L: 78, W: 74, T: 55). The fragment has also pecking traces on its lateral sides. The proximal end has use marks that have been left during its second use may be as a hammer stone. The A and B sides of the artefact has not only friction but polishing traces, as well. It is made of a volcanic rock with feldspath inclusions however, the natural texture and patina was altered due to fire. The overall section form is very regular ellipsoid (Figure 65).

Stone vessels

Stone vessel 1 (ÇH 09 West 8, (15588)) is a unique find found in 2009 (L: 98, W: 70, T: 34) (Figures 66 & 67). The find is a corner fragment of a rectangular stone vessel. The artefact had red pigment residue on the inner surface. During 2009 studies in Çatalhöyük, we owe our thanks to Dr. Tristan Carter who kindly helped us for X-ray fluorescence analysis . According

to the XRF results, the vessel had iron oxide (ochre) residue. The most important characteristic of this artefact is the incised decorations on the sides. The longest side of the vessel has a crayfish presentation. The inhabitants of modern villages around Çatalhöyük in Konya, indicate that crayfish could be found abundantly from Hotamış Lake and the streams connected to this lake. The shortest side of the vessel has also another incised schematic description rather of such an animal or has a geometric decoration; however, it is early to suggest what it is (Figure 66). The depiction of the crayfish is nearly 80mm in length and its tail section is incised in great detail. The vessel has a keel part like a boat broken from nearly middle part. The artefact should have two parallel keel parts prior to its fracture. The craftship effort in the production of such a piece should have been great when the difficulty in shaping the porous frail raw material of this basaltic rock is considered.

Figure 63: Fragment of lower part of a grinding stone Tr. 8 West. Photo O. Özbek.


Figure 64: Lower part of a grinding stone Tr. 8 West broken nearly into half. Photo O. Özbek.

Polished stone axes

Axe 1 (ÇH 08 West 8 15561.x2 is a small diabase stone axe and it seems that the original piece was a transported material (secondary source) found in a river bed near the settlement (L: 54, W: 32, T: 17). The small cavity which could not be totally ground or polished on face B is an indication of its origin (Figure 68). About the production stages we can deduce the fact that the stone was directly polished and than only some limited part was pecked (Face B). As this pecking work is not observed on the lateral or proximal parts, the intention should not have been increase of the friction for the handle, if it was used with it. According to the general symmetry of the distal extremity from profile and its overall section at the same part of the tool, in typological sense we can say that it is an axe.


Figure 65: Fragment of a pestle from Tr. 8 West Photo O. Özbek.

Axe 2 (ÇH 09 West 8 15590.x11)(L: 90, W: 40, T: 27) had distinct fire alteration marks like Axe 3 when it was found (x12). The tool is made of a very fine grained metamorphic rock but it is hard to tell the type because of the heavy alteration and colour loss (Figure 69). The only mineral identified was feldspath. The pecking operation after polishing is absent on the A and B surfaces of the distal extremity. The distal part was quite sharp and apparently there is no use trace. However, on the both lateral parts and A and B faces, intense pecking is observed. Another detail on Axe 2 is the polishing attempt on the pecked surface which is not very common for a functional, usual everyday implement. The proximal extremity (butt) is smoothly worked and rounded. The

Figure 66: Ashtray-like stone vessel with crayfish figure. Photo O. Özbek.

overall morphology of the axe is very symmetric. Axe 2 and 3 was found 0.2 m away from each other in horizontal position in a building which had fire traces.

Axe 3 (ÇH 09 West 8 15590.x12 is different from Axe 2 only in length (L: 102, W: 44, T: 22). The artefact resembles morphologically to Axe 2, in general (Figure 70). Other difference is that there is less pecking spots on Axe 3 than Axe 2. Although no use-wear traces are observed on Axe 2, Axe 3 has some chipping marks on the A face of the blade. The B face is also notched slightly. In general, it seems that the artefact is in its final production stage and no re-sharpening traces are observed on the distal extremity.

Axe 4 (ÇH 09 West 8 18205.x4) is close to Axe 2 in general form (L: 82, W: 42, T: 22). This artefact has more pecking traces on it's A and B surfaces (Figure 71). Although most of the surface is covered by pecking, the distal extremity is left smoothly polished. The proximal extremity is carefully rounded. There is fine chipping marks but it is difficult to distinguish from use wear. This artefact too, can be called as axe in morphological sense.

In summary, the artefacts Axe 2 and 3 merit our attention because of their depositional context. They were both found horizontally, only 0.2m away from each other with similar posing directions towards North (Figure 72). In terms of raw material, both were produced from similar metamorphic rocks: metabasites, possibly. They are not very different in general morphology although there is little difference in size. Both had fire alteration traces and found near carbonized objects. Our first impression was that they were put together with different items made of wood. Another hypothesis is that they might have been put into wooden box as these carbonized residues were found in a linear position but irregularly. One thing definite for us was that these two axe blades were placed here without their handles whether of wood

Figure 67: Corner piece of the ashtry-like stone vessel fragment with decorations on its borders. Bottom view: the carinated (keel) part. Photo O. Özbek.

Figure 68: Polished stone axe 15561.x2. Left photo face A, right photo section. Photo O. Özbek.

Figure 69: Polished stone axe 15590.x11. Photo O. Özbek.

Figure 70: Polished stone axe 15590.x12. Photo O. Özbek.

or other material. The reason is that although there were unambiguous traces of carbonized wood only some few centimeters away from these axes, there was no carbon evidence on the artefacts.

Figure 71: Polished stone axe 18205.x4. Photo O. Özbek.

Final remarks of a preliminary study

Although, the total number of artefacts analysed is far from contributing statistically for the moment, preliminary analysis of ground stones unearthed from Tr.8 West Mound of Çatalhöyük between 2007 and 2009, provide us some supplementary details about the everyday life of the Early Chalcolithic populations in Central Anatolia.


Figure 72: Axe 2 and 3 when found at U15590 in relation with carbonized residues. (Photo O. Özbek.

Firstly, instead of presenting some overview statements on tool groups, it is better to discuss the most important ones as the crayfish (Astacus leptodactylus) depicted stone vessel and the two axe blades found together. As far as I know, a crayfish representation on a stone vessel is a unique event and should be discussed in terms of Late Holocene nutrition strategies of Central Anatolian human populations. This artefact should have been nearly half part of a stone tray of 10 x 15 cm size. The missing part on one rim of this piece which the incision on the stone is uncertain: some compelled imagination might indicate representations of crayfish hunt with these geometric drawings.

Secondly, the two axe blades found together with unambiguous evidence that they were deposited and reserved for a certain purpose in the future whether functional or exchange, merit further debate. This initial analysis will be developed in the forthcoming studies about Tr.8 Çatalhöyük West.

Acknowledgements

This research has been possible with the warm welcome and support of the Çatalhöyük Research Project which is directed by Professor Ian Hodder and Shahina Farid who I am deeply indebted. I would like to thank and acknowledge Dr. Burçin Erdoğu who helped for logistic and planning of the laboratory study period in 2009. I am indebted to Dr. Tristan Carter and Christopher Doherty for their help in XRF analysis on three stone artefact samples unearthed from Tr.8Çatalhöyük West.

Petrographic analysis of two Trench 8 mudbricks - Christopher Doherty

The large greyish mudbricks of the West Mound's Trench 8 are very different from those of the East Mound, and are not of a type made in the area today. This raises several questions, for example: 1) what are these Trench 8 mudbricks made of? 2) where were their raw materials sourced from? 3) how representative are they of West Mound bricks in general? 4) why is there such a shift in mudbrick materials from the East to the West Mounds?

A preliminary petrographic analysis was made on two randomly chosen Trench 8 mudbricks. The results identify the type raw materials used and where they probably came from.

Two typical mudbricks were selected: these will be referred to as Tr.8 A (trench 8 mudbrick "A") and Tr.8 B. Tr.8 A (CH09 West 17300.S1 brick) is light grey where Tr.8 B (CH09 West

1700.S2 brick) is a mid-grey. The grey colour suggests that these are marl-based bricks, although there could also be greyish cultural components such recycled plaster or ashy midden.

Combined low-powered binocular microscopy and polarised light microscopy confirmed that both bricks are made of marl-derived raw materials. The light-coloured Tr.8 A appears to have been made of weathered marl or soil developed on a marl. This has very few mineral or rock inclusions (estimated at less than 0.5 percent), mainly fine quartz grains, marl flakes, orange radiolarite and anoccasional weathered biotite mica. There are no conspicuous volcanic inclusions. Large (up to 1cm) molds indicate that chopped plant material (probably reeds) were added during mudbrick-making. But there are also many smaller (<2mm) tubular molds suggesting the former presence of roots. These frequently have yellowish areas adjacent to them, a feature we have seen in present day subsoils developed on marl near the mounds and identify as oxidation mottles forming next to root cavities.

Tr.8 B is noticeably darker-coloured, suggesting either a higher clay content or more organic matter or both. Optical microscopy confirms that there is much more organic matter than in Tr.8 A. This is mostly very finely divided (less than 0.5mm) carbonised plant fragments, and these are uniformly distributed throughout the marl matrix. Tr.8 B also has slightly more fine sand inclusions than Tr.8 A, and has the occasional coarse (1mm) grains. Similar chopped plant material is present in about the same quantities as for Tr.8 A, but small plant root channels are more conspicuous. This sample also has a significant amount of gypsum, but this is a secondary feature and relates more to post-burial processes, especially proximity to a midden.

A quick semi-quantitative chemical analysis (by scanning electron microscope with an energy dispersive analyser) was made on both samples to check the relative clay contents and to relate these mudbricks to other marl-based materials at Catalhoyuk. The results show both samples to be more or less identical, confirming that the darker colour of Tr.8 B is mainly due to it's higher organic matter. The analysis also show that the West Mound Trench 8 mudbricks have the same composition as the buff coloured floor plasters and wall base layers used in the 4040 Area of East Mound.

It would be useful to determine how representative these greyish bricks are of the West Mound overall. Mudbricks in the lower level of Trench 7 appear to be similar but these would need to be tested. Trench 7 does show evidence of quarrying, but here the pits stay in the fine sands and do not cut into the underlying marl. Nonetheless, upslope quarrying of marl may be indicated by layers of marl rubble which overlay the sands pitted in Trench 7. It is likely that the Trench 8 mudbricks are being quarried from similar deposits near to the present western perimeter of West Mound, as the 2009 coring identified a lower marl surface (core 2009/8) which could be related to quarrying.

Interestingly, these mudbricks do not contain any cultural inclusion as had been originally thought, although a larger number of bricks should be tested to confirm this. The grey bricks of the West Mound do not then simply reflect the opportunistic use of grayish colluvial deposits. The very fine carbonsied plant remains are uniformly mixed throughout the bricks, which argues against them being added. Instead the carbonised plant material, plant rootlets and yellow (oxidised) areas identify these raw materials as sub-horizon of soils developing on exposed marl surfaces. The implication is that sizeable areas of marl were still exposed near the West Mound at the time of it's occupation. These marl exposures were not buried by appreciable thickness of alluvium, at least not in the vicinity of Trench 8.

Just why the West Mound used marl for mudbricks instead of the alluvium and colluvium favoured for the East Mound's houses is the next question. These marl-based bricks were relatively weak and so had to be quite large to work, yet in spite of their poorer quality, they were still favoured. Was this simply because suitable quantities of marl were easier to procure than alluvium or colluvium at the West Mound?

References
Baysal, A. 1998. “Provisional report on geological surveys in relation to ground stone study - Çatalhöyük 1998”. Çatalhöyük Archive Report 1998: http://catal.arch.cam.ac.uk/catal/Archive_rep98/baysalstone98.html.

Baysal, A. 1999. “Ground stones”. Çatalhöyük Archive Report 1999: http://catal.arch.cam.ac.uk/catal/Archive_rep99/baysal99.html.

Baysal, A. 2000. “Ground stones”. Çatalhöyük Archive Report 2000: http://catal.arch.cam.ac.uk/catal/Archive_rep00/baysal00.html

Baysal, A. & Wright, K. I. 2005. “Cooking, crafts and curation: the ground stone artefacts from Çatalhöyük, 1995-1999”. In I. Hodder & Members of the Çatalhöyük Teams (Eds.), Excavations at Çatalhöyük, Volume 5. Changing Materialities at Çatalhöyük: reports from the 1995-1999 seasons: Cambridge and London: Monographs of the McDonald Institute for Archaeological Research, University of Cambridge; British Institute for Archaeology at Ankara: 307-324.

Bolat, Y., and Aksoylar, M.Y. 2003. “Egirdir Gölü kerevitleri (Astacus leptodactylus Esch., 1823)’nin uzunluk–agırlık ile karapaks boyu-total boy iliskileri ve kabuk degistirme periyodunun saptanması”. Egirdir Su Ürünleri Fakültesi Dergisi. 2 (10), 26-31.

Erdemli, A.Ü., 1987. “A comparative research on the Freshwater Crayfish populations of Hotamış Lake and Mamasın Dam Lake”, (in Turkish). Doga TU Zooloji Dergisi 11(1): 17-23.

Erdoğu, B., 2008. “West Mound: Trench 8“, Catalhoyuk 2008 Archive Report: 105-109.

Harlıoglu, M., M., 2000. “Comparison of the chelipeds of two crayfish species”, Astacus leptodactylus Eschscholtz and Pacifastacus leniusculus (Dana). Ege Üniversitesi Su Ürünleri Dergisi, 17(1-2): 47-56.

Köksal, G., 1988. Astacus leptodactylus in Europa. In: Freshwater Crayfish: biology, management and exploitation (Holdich D.M. & Lowery R.S., eds), Chapman & Hall, London: 83-113.

Mellaart, J. 1965. “Çatal Hüyük West”, Anatolian Studies 15: 135-56.

Wright, K., and Baysal, A. 2005. “Ground stone studies at Catalhoyuk, summer 2005”. Catalhoyuk Archive Reports 2005 http://www.catalhoyuk.com/archive_reports/2005/ 2005

Team Poznań 2009 Study Season Report - Lech Czerniak, Arkadiusz Marciniak

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Abstract
Following eight years of excavation of upper levels at Çatalhöyük East in the years 2001-2008, the Team Poznań undertook its first study season. The team made of twelve archaeologists and other specialists as well as students of Institute of Prehistory, University of Poznań and Department of Archaeology, University of Gdańsk worked on a number of intertwined issues of the Byzantine, Roman and Hellenistic as well as Neolithic sequence from the TP Area. These comprised in particular analysis of Hellenistic ceramics (by Shannan Stewart), animal bone (by Kamilla Pawłowska and Haskel Greenfield), lithics (by Marcin Wąs), and human remains (Tomasz Kozłowski). More detailed informatio University of Gdańsk n about these subjects are reported in other archive reports from the 2009 season. Special attention was

focused upon detailed analysis of the TP stratigraphy. A Harris matrix of the entire sequence was also produced (by Marek Barański with help and advise from Alex Bayliss). The team also agreed upon a format of both publications.

The team members who will participate in the publication of two volumes from the TP area undertook a study season this year at Çatalhöyük. Work commenced on June 24 and was completed on July 22. This first study season had a number of intertwined objectives. Its major aim was to study details of the TP stratigraphic sequence, in particular to re-define major episodes of occupation encountered in the area, both in the Neolithic and in later periods. A number of specialists present at the site undertook the analyses of the TP recorded materials that will be included in the final publication. These included the analyses of Hellenistic ceramics (by Shannan Stewart), animal bone (by Kamilla Pawłowska and Haskel Greenfield), lithics (by Marcin Wąs), and human remains (Tomasz Kozłowski). It was decided to publish two volumes of monograph: the first including Hellenistic/ Roman/Byzantine materials and the second covering the Neolithic sequence.
As a result of eight excavation seasons in the trench 10 x 20 m, a large number of data have been discovered and recorded. These comprised 1 973 units, 345 features, and 17 buildings in addition to a vast quantity of a wide range of artefactual and ecofactual evidence. As a result of the detailed stratigraphic analysis, it proved possible to distinguish a number of additional spaces by collating individual units of similar stratigraphic position and similar depositional history. It total, 46 spaces were recorded in the TP Area. Detailed analysis of the TP sequence stratigraphy led to distinguishing a number of well defined depositional events, mainly spaces and buildings of precisely established stratigraphic position and each composed of a distinct number of units. Accordingly, a list of units was produced, which serves as a basis for analysis of a range of materials. It was then discussed in detail with specialists making sure that all artefacts and ecofacts from these units are properly studied. Such approach will secure a comparability of results from all levels of occupation and make sure that all available evidence recovered in them are properly used.

An important achievement of this year study season comprised a completion of a Harris Matrix (Barański 2009). Considering a large number of c. two thousand units, it provided the only possibility to carry out a detailed stratigraphic analysis of the TP stratigraphic sequence. After a thorough evaluation of available software, it was decided to use Stratify 1.5 package. The work was completed in a number of stages. Its first step comprised the digitisation of all drawings making possible comprehensive analysis of the available data, in particular the two- or three-dimensional visualizing the selected features or buildings. The next step comprised a complete and advanced vectorization of all drawings using WiseImage Pro package. It is the process of a conversion of raster graphics into the vector form improving quality of all scanned documents. It made possible to assign the properties such as e.g. coordinates, type and thickness of line, colour, or allocation to the defined layer to each identifiable element. As a result of this complicated and time consuming work, we are now in a possession of extended relational database of vector drawings and a complete Harris matrix being a graphic representation of relations between individuals units and features.

Stratigraphic analysis, as presented above, aims to produce a more refined chronology for the last phase of the East mound occupation as well as contribute to a better understanding of the post-Neolithic phase of the mound occupation. Consequently, it will make possible to reveal the pace and dynamism of multiscalar changes in the last three-four centuries of the East mound occupation as revealed during all eight excavation seasons in the TP Area.

These works form also an integral element of a new dating program at Çatalhöyük (see Bayliss, Farid 2008). It is undertaken using AMS radiocarbon dating and Bayesian statistical modelling making possible to integrate the excavated sequence of levels and archaeological phases with the radiocarbon dates. Following completion of the Harris matrix, a number of samples from carefully selected contexts have been taken for radiocarbon dating. They should be dated in the coming months which, in addition to already existing dates, implies that the chronology of the entire TP sequence will be available by the 2010 field season.

A major part of the 2009 study season related to non-Neolithic sequence comprised analysis of Hellenistic ceramics by Shannan Stewart. Altogether, 125 unit with Hellenistic pottery was

examined. The Hellenistic pottery at Çatalhöyük represents a full domestic assemblage, with all functional categories present. It would have facilitated such domestic activities as storage (jars), food preparation (utility basins), cooking (deep cookpots), dining (bowls and dishes), service (platters), and drinking (hemispherical bowls). Therefore, the pits that yielded this pottery most likely represent the trash from nearby Hellenistic-period houses. Its fine fabric is orange to light brown with very small light and dark inclusions and voids. It is thoroughly fired and it occurs in a wide range of table shapes. It is most likely that this fabric was produced locally or at least regionally.

Important work was also completed by Tomasz Kozłowski of the human remains team. They focused upon careful examination of human remains from the Late Neolithic Space 327. All data were recorded in the form of detailed database. In particular, the work comprised re-examination of the initial bone identification, bone taphonomy, palaeopatology and measurements. Age and sex of all individuals buried in Space 327 were also established. Human remains recovered in this space were largely disarticulated and originated from c. 10 individuals. They are represented by children and adults of both sexes. A minimum number of individuals was calculated based upon standard diagnostic cranial and post-cranial elements. Not a single complete skeleton was recovered. A vast majority of bones were disarticulated. Particular efforts were made to make individual fragments allocated to the preserved articulated fragments of skeletons. A number of pathologies was also recognized including incisor fracture as well as cribra orbitalia and porotic hyperostosis caused more probably by anaemia.

Kamilla Pawłowska of the faunal team continued her work on recording fauna from selected units from the TP Area. Considering a timetable of the two TP volume publication, work in the 2009 season focused mostly upon Hellenistic/Roman material. Fauna from two special Neolithic deposits in Spaces 346 and Sp.327 was also studied. The remaining target Neolithic units of animal bone will be recorded next year. In total 32 units and 6011 animal bones were recorded from the TP Area in 2009 (see Animal Bones Report 2009).

An integral element of faunal analysis in the 2009 season comprised works of Haskel Greenfield examining the animal bones with cut marks from the TP Area. Its major objective was to reconstruct the nature of butchering technology and process. Remains from the entire TP sequence were sampled to ensure the temporal dimension was adequately covered. The bones were then examined and analysed by eye and under a light optical microscope. Silicone molds were made of selected samples of bones with high quality slices or other evidence of cultural modification. The molds were transported back to the Anthropology Laboratory at University of Manitoba for later analysis in the SEM. A total of 234 bones were selected for analysis since they initially appeared to have cut marks on them. However, 38 bones have marks as a result of other agents (gnawing, scratching, etc.) or were too damaged to yield reliable results. As a result, the final sample was composed of 196 specimens. Preliminary analysis implies that the Neolithic animal remains were butchered with very fine obsidian stone tools. The width of tools is far smaller than in other sites, where obsidian is rare or absent.

Next year season will be focused upon completion of study of all categories of material from the units selected for analysis. Plans for 2010 also involves a series of discussions with lab specialists including fauna, lithics, ceramics, palaeobotany, human remains, heavy residue, etc. A two day long discussion session on the TP sequence with a range of specialists and excavators of other areas is also planned.

References

Barański, M. 2009. Stratygrafia wykopu TP na stanowisku Çatalhöyük (Turcja). MA manuscript (in Polish).

Bayliss, A. & S. Farid. 2008. Interpreting Chronology at Çatalhöyük. Çatalhöyük 2007 Archive Report: 390-92.

CULTURAL AND ENVIRONMENTAL MATERIALS REPORTS

Çatalhöyük Animal Bones 2009 - Nerissa Russell, Katheryn Twiss, David Orton, and Kamilla Pawłowska

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Introduction

During the 2009 season, the Çatalhöyük faunal team recorded its millionth bone: the database now contains information on 1,000,042 specimens. This was accomplished by recording well over 100,000 bones, a record amount enabled by an experienced and hard-working team. Since 2009 was primarily a study season, most of our work was devoted to recording material from previous excavation seasons, with the emphasis on the South, 4040, and TP Areas. In addition, we studied bones from the ongoing excavation in Trench 5 on the West Mound, and a few special items from the 2009 excavations in the South Area. Most of the 2009 South material, however, awaits later study in future years. Our aim was to complete recording of all in situ deposits from the buildings and as many midden units as possible from the 4040 and South Areas, at least through phase 1 assessment. We did not fully achieve this ambitious goal, especially for the bone-rich middens, but we have recorded a very substantial sample that will enable us to examine trends throughout the sequences excavated in these two areas.

South Area

The majority of our 2009 efforts in regards to South Area fauna went towards recording. However, in light of the ongoing rephasing of the site ("Hodder Phases": see Farid, Archive Report 2008), and the remarkably deep occupational sequence available in South, we also decided to investigate this area's macrofaunal taxonomic proportions through time. This analysis is based on almost a quarter-million individual bone fragments, or nearly 2400 diagnostic zones (Russell and Martin 2005). (See Table 7). Please note that as units are still being assigned to Hodder Phases, this analysis is preliminary.

Table 7: South Area macrofaunal remains by Hodder phase.

Hodder Phase	NISP	Diagnostic Zones
South.G	166,275	748.8
South.H	10,104	39.9
South.I	5148	82.7
South.J	6818	19
South.K	12,999	105.2
South.L	9320	33.3
South.P	5303	349
South.Q	19,605	674.5
South.R	1171	44.4
South.S	4964	216.6
South.T	979	83
Total	242,686	2396.4

Macromammalian taxonomic NISP (number of identified specimens) and DZs (diagnostic zones) through time are presented in Tables 8 and 9. When presented in relatively accessible graphic form, what stands out most about the South Area animal economy through time is its sheer consistency. Taxonomic proportions vary only slightly through time, and never directionally: what variability we see is plausibly attributable to differential sample sizes and deposit types. From the South Area's earliest deposits through its latest caprines overwhelmingly dominate the site meat diet (Figure 73). Furthermore, these caprines are always mostly sheep (Figure 74): goats, while consistently present, never constitute more than a small proportion of the remains. While these results are interesting and probably reasonably accurate, we plan a more refined analysis of diachronic animal management strategies at Çatalhöyük as we move into 2010's discussion and publication phase.

Table 8: South Area macromammal NISP by Hodder phase.

Taxon	G	H	I	J	K	L	P	Q	R	S	T
Indeterminate	110245	6682	3103	5053	6893	6642	23	2848	36	462	2
Hare-size (rabbit to medium dog)	825	56	10	42	46	95	41	194	48	20	1
Sheep-size (medium dog to medium sheep)	42438	2442	556	1456	4529	2066	3683	10167	842	2643	528
Medium dog to wild boar	9	28			5	4		3			
Pig-size	343		11	1	889	10	73	480	4	26	2
Medium sheep to medium cattle	25				1			5			
Cow-size (cattle/red deer/horse)	6455	608	478	159		291	320	1465	35	635	149
Medium artiodactyl	2	1						6		1	
Large artiodactyl	4			1				5		2	1
Ovis/Capra	4304	168	926	67	402	123	738	3385	144	623	168
Ovis	280	11	5	3	20	12	162	403	35	140	32
Capra	65	2	1	1	6	3	32	58	2	11	11
Bos sp.	552	55	39	24	59	18	139	418	14	355	57
Small cervid	1								2		
Large cervid	22	4	5	3		14	7	4	3	1	
Capreolus capreolus	3										
Cervus elaphus	24		1		2	3	7	5	3	1	1
Dama dama	2		3				2				
Sus scrofa	195	9	4		15	6	13	26	1	9	2
Small-medium equid	74	12			3	1	23	28			
Large equid	9						4	18			
Equus sp.	83	6	3	2	12	1	2	4			8
Equus hemionus	7	1					3	8			
Equus caballus	5	1						1		2	
Equus hydruntinus	37	4				1	7	7			
Small carnivore	43				8	2		4			
Medium carnivore	24		2		2	3		4			1
Felis silvestris	3	1									
Small mustelid	2			1			1				
Large mustelid	6				1						
Martes	2										3
Meles meles	5				17	5		1			

Small canid	1	1					1	4			
Medium canid	6					1	3	10		1	
Canis sp.					52						
Canis familiaris	78	1			20	6	7	7			
Canis lupus	1							3		12	
Vulpes vulpes	47	6			2		2	18	1	2	8
Erinaceus europaeus	4		1	1							
Lepus	20	1		2	4		4	2	1	3	5
Homo	17	3		1	9	11	6	11		11	
Total	**166268**	**10103**	**5148**	**6817**	**12997**	**9318**	**5303**	**19602**	**1171**	**4960**	**979**

Table 9:South Area macromammal Diagnostic Zones by Hodder Phase.

Taxon	**G**	H	I	J	K	L	P	Q	R	S	T
Ovis/Capra	378	14	65.5	9.5	50.5	13	119.5	334	18	71.5	27
Ovis	151.5	6.5	3	1.5	5	6.5	118.5	229	21.5	100.5	24.5
Capra	22.5	1		1	2.5	1	23	17.5	1	6	6.5
Bos sp.	42.5	8	8	4	6.5	3	42.5	34	2.5	23	14
Large cervid	0						1				
Capreolus capreolus	1										
Cervus elaphus	5.5		0				2.5	1			0.5
Dama dama	1.5										
Sus scrofa	22.5	1	1		1	2	8	7.5	1	2	1.5
Small-medium equid	16.5	6			2	1	15	11.5			
Large equid	1						4	5			
Equus sp.	11	0	3	0	1		1	1			4
Equus caballus	1										
Equus hydruntinus	0	0				0					
Small carnivore	3				0.4	1					
Medium carnivore	1		0.2		0.2						
Felis silvestris	2.2	0.2									
Small mustelid				1			1				
Large mustelid	1										

Meles meles	2				7	3		1			
Small canid		0						0.2			
Medium canid							3	4			
Canis sp.					15.6						
Canis familiaris	21.2				6.2	1.4	6	2			
Canis lupus	1							0.2		2.6	
Vulpes vulpes	21.4	1.2						10.4	0.2		1
Erinaceus europaeus	3		0								
Lepus	8	1		1	2.2		3	1.2	0.2	3	4
Homo	1.6				0.6		1	1		3	
Total	**719.9**	**38.9**	**80.7**	**18**	**100.7**	**31.9**	**349**	**660.5**	**44.4**	**211.6**	**83**

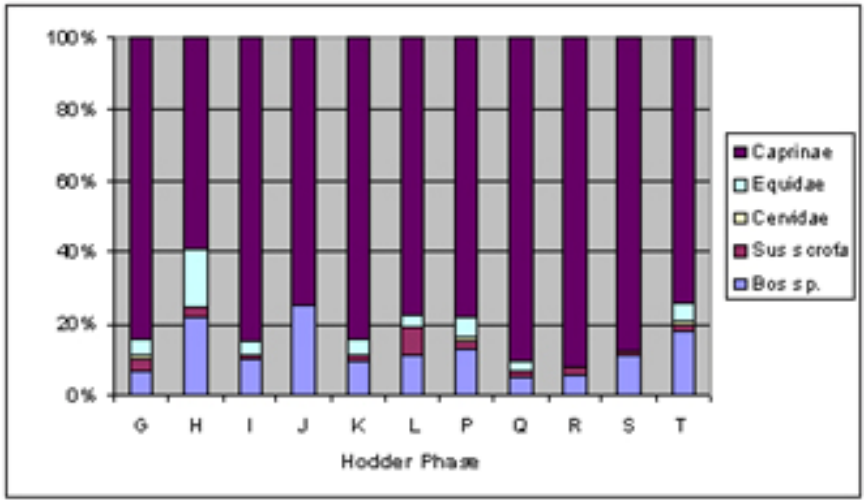

Figure 73: Major food taxa through time (by DZs).

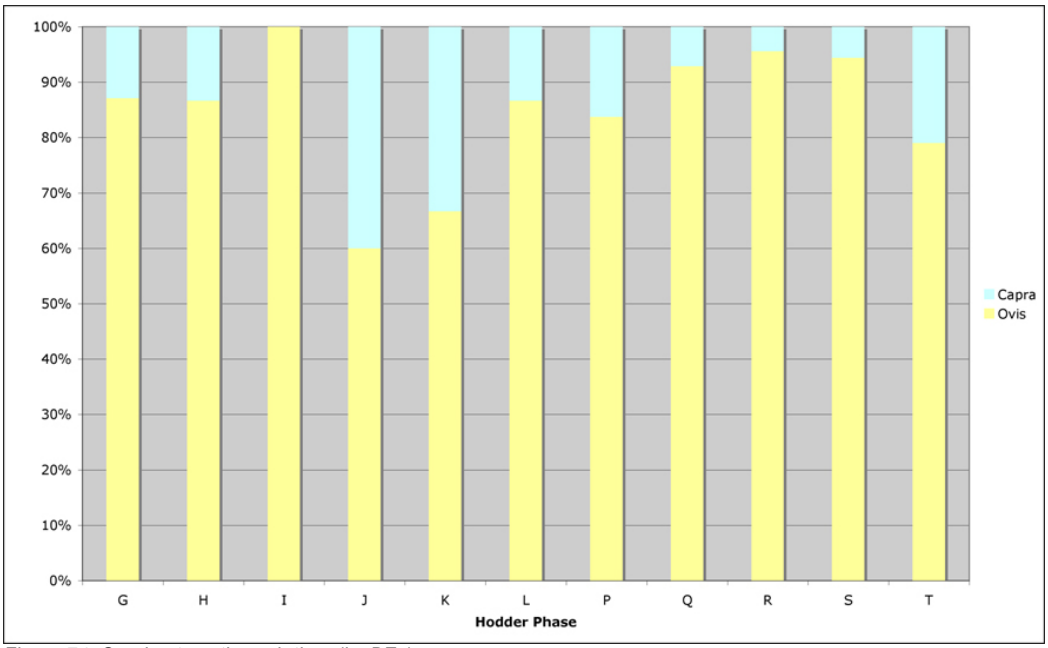

Figure 74: Caprine taxa through time (by DZs).

4040 Area

As in the South Area, it seems useful to examine the faunal remains according to the new Hodder phase system. However, the results here are more problematic since there is less time depth in this excavation area, and fewer units have so far been assigned to Hodder phases. Of the three phases in the 4040 Area, we have recorded animal bone from only two, and most of the material we have recorded from the area is not currently phased. We therefore include the bone from currently unphased middens as comparison to the phased material, which is mostly from houses and includes a number of special deposits (see Tables 10-12).

Allowing for the small sample size from Hodder Phase 4040.F, there is no dramatic difference in major taxa between the phases (see Figure 75). The higher proportion of cattle in phase F may reflect contextual differences, since these units are virtually all from inside buildings. Very small sample size in phase F again renders the sheep/goat ratios essentially indistinguishable in phases F and G (see Figure 76).

Table 10: 4040 Area macrofaunal remains by Hodder phase.

Hodder Phase	NISP	Diagnostic Zones
4040.F	2360	38.7
4040.G	26,427	676.8
Other Middens	68,969	1185.5
Total	**97,756**	**1901**

Table 11: 4040 Area macromammal NISP by Hodder phase.

Taxon	F	G	Other Middens
Indeterminate	823	9295	15,900
Hare-size (rabbit to medium dog)	57	102	616
Sheep-size (medium dog to medium sheep)	1194	4139	38,472
Medium dog to wild boar		183	2
Pig-size	6	84	627
Medium sheep to medium cattle			10
Cow-size (cattle/red deer/horse)	76	734	2943
Medium artiodactyl	1	9	18

Large artiodactyl			5
Ovis/Capra	108	826	8484
Ovis	8	459	818
Capra	3	95	162
Bos sp.	12	9690	546
Small cervid			3
Large cervid		51	9
Capreolus capreolus			1
Cervus elaphus		10	20
Dama dama			1
Sus scrofa	15	555	44
Small-medium equid		8	37
Large equid	1	4	31
Equus sp.	3	2	19
Equus hemionus			3
Equus caballus			2
Equus hydruntinus			10
Small carnivore	1	1	6
Medium carnivore			11
Felis silvestris		2	
Small mustelid			1
Large mustelid			2
Meles meles			8
Small canid		2	10
Medium canid	3	2	25
Large canid			3
Canis sp.			19
Canis familiaris	35	136	8
Canis lupus			3
Vulpes vulpes		5	59
Ursus arctos			1
Erinaceus europaeus		2	
Lepus		24	14
Homo	14	7	16
Total	**2360**	**26,427**	**68,969**

Table 12: 4040 Area macromammal Diagnostic Zones by Hodder Phase.

Taxon	F	G	Other middens
Indeterminate			4
Hare-size (rabbit to medium dog)			2
Sheep-size (medium dog to medium sheep)		3	13
Pig-size			1
Cow-size (cattle/red deer/horse)		2	
Medium artiodactyl		1	4
Ovis/Capra	7.5	161	586.5
Ovis	6	362	380
Capra	2	37.5	53
Bos sp.	6	61.5	47.5
Capreolus capreolus			1
Cervus elaphus			9
Dama dama			1
Sus scrofa	2	10	3.5
Small-medium equid		4	12
Large equid		1	6

Equus sp.	1		2
Equus hemionus			1
Small carnivore		.2	
Medium carnivore			.2
Felis silvestris		1.2	
Large mustelid			1
Meles meles			5
Small canid			2.4
Medium canid	1		8.4
Canis sp.	13		3
Canis familiaris		19	6.2
Canis lupus			.2
Vulpes vulpes		3.2	23.6
Erinaceus europaeus		1	
Lepus		8.2	9
Homo	.2	1	
Total	**38.7**	**676.8**	**1185.5**

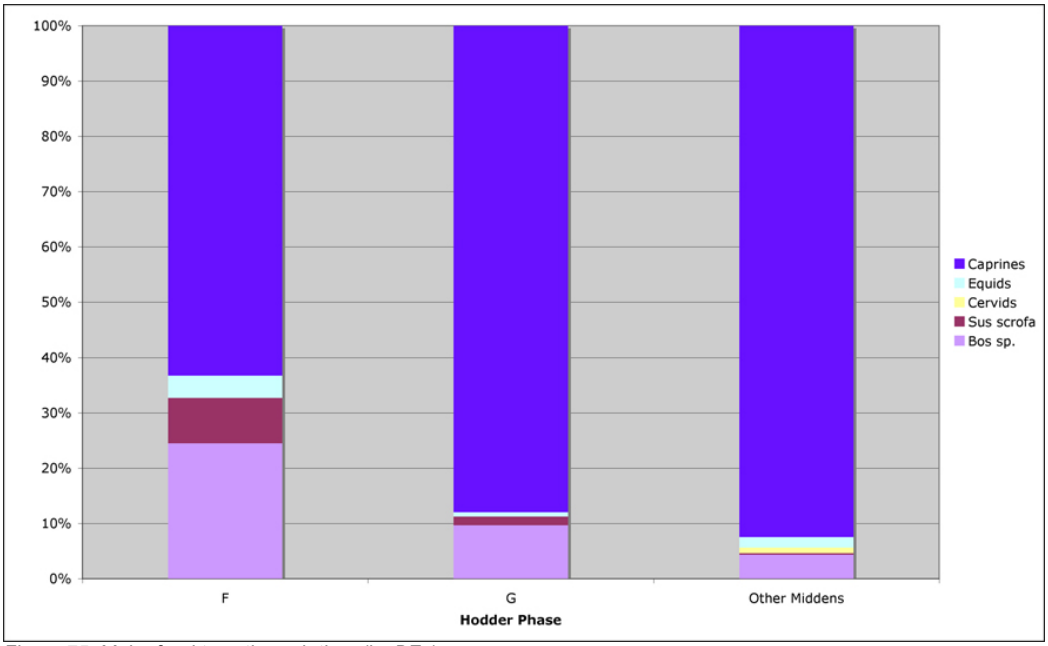

Figure 75: Major food taxa through time (by DZs).

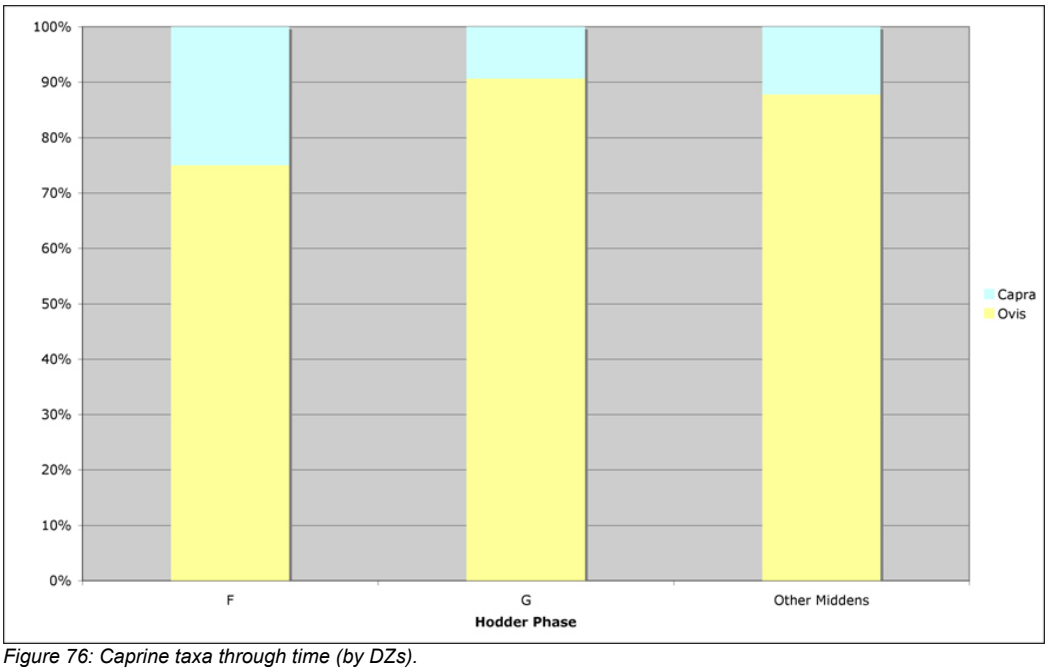

Figure 76: Caprine taxa through time (by DZs).

TP Area – Kamilla Pawłowska

The publication with results of investigations from TP area is planned to appear soon, with recording to be completed in 2010. In relation to this, units were chosen for study. Some of these were recorded in 2009, which was a study season for the TP team. The focus was on Hellenistic/Roman material, due to be published first.

The remaining target units of animal bone (Neolithic) will be recorded next year. This is connected with two volumes of monograph: the first including the study of Hellenistic/ Roman materials and the second covering the Neolithic.

In total 32 units and 6011 animal bones were recorded from the TP Area in 2009.

Hellenistic/ Roman

Twenty-three Hellenistic/Roman units and 1324 animal bones were recorded. Among them: (7125) - a compact floor layer, but the animal bones with mixed surface conditions suggest multiple origins, like infill or construction material; (7337) – a rake-out area, with the material deriving from a single event; (8960) - a layer of floor, with material that looks like dirty infill; (8936) – a burnt layer in the southeast corner of an extension, with material that looks like infill but represents a variety of sources (burnt and unburnt bones, mixed surface condition and color, some pieces with calcium concretions); (8952) – a burnt layer in the southern part of an extension, which was associated with the construction of kiln (inner layer of wall (7852)), with material that looks like infill but represents a variety of sources; (8955) - an outer layer of the kiln's wall with one human phalanx (young individual); (8965) – a burnt layer; (8966) – another burnt layer; (10988) – a floor layer in the northern part of an extension, with a bone deposit of multiple origins; (11555) – floor, with a bone deposit of multiple origins; (10925) – a layer in the southern part of an extension, with material that looks like dirty infill.

The Hellenistic/ Roman deposits were unusually interesting. The bones mainly came from kiln infill (with a large number of pottery sherds, spindle whorls and animal bones) but they are also appeared in deposits (8967, 10919, 10902, 10920) surrounding the kilns.

The animal bone deposits are different from the two constructional types of kilns. In kilns with perforated bases and two walls (7066, 7132, 7131, 7133), material looks like infill (2-3 cm long shaft splinters, pieces in generally good condition, sharp edges, trampled pieces) but represents a variety of sources (burnt and unburnt bones, pieces with root marks, some pieces covered with calcium concretion, some reworked pieces). A complex of four kilns of

this type was located in the northern part of the excavated area. Animal bones from units (7066) and (7132) look more or less the same because both have little material. However, units (7131) and (7133) have more material and they are more similar to each other. Sheep/goat and bird bones predominate in (7066, 7131, 7133) and additionally dog (7133) and human (7131) in two cases. Among the indeterminate bones were sheep-size fragments. Moreover, worked bone was found in every infill of the described kilns: four knucklebones made from sheep astragali, a bone point- 7066.X26, a complete sheep metacarpus with one side polished was probably used for polishing ceramics (7132), and likewise a highly polished sheep femur shaft from (7131). It is also worth mentioning that spindle whorls were recovered from each of these contexts, totalling 43 pieces. The question now is whether the presence of worked bone and spindle whorls in these contexts is accidental or intentional.

Most of the bone in this type of kiln infill is burnt (generally with mixed high and low temperature) and has good surface condition. The rest is not burnt. This suggests that the material does not derive from a single event. It is possible that the material comes from two distinct layers that were collected together. The unburnt bones would derive from the upper layer (mid-brown and dark yellow) and the black, burnt ones from the lower layer. Then the burnt deposit can be connected with the use of the kiln, while the unburnt one only with filling it up. This means two forms of activity.

Infills in the second type of kiln (without walls, surrounded with floors) - (8968, 10969, 10913) are the same as the infills of the pits (10915) in which they were placed. In addition the layers surrounding the kilns have the same character (8967, 10919, 10902, 10920) and they have the characteristics of infill. Interestingly, human bone has been noted in each infill of these kilns, mostly metacarpus or metatarsus. The infills also have a different character.

A dark layer (8967) in the southern part of an extension around a kiln (8968) consisted of two layers: the upper one lighter in colour, the lower one darker and looking like dirty infill. However, both units (8968) and (10969) (an infill of a pit, in which an oven was placed) give the impression of clean infill. The material consists of human bone and some indeterminate sheep-size pieces. The material was rapidly covered, deriving from a single event with no marks of burning. The infills of the kiln (10913) and a pit (10915) in which was placed are the same. The mixed surface condition of the bones suggests multiple origins for these infills. In the first a human third metatarsal and metacarpals of juvenile individuals were identified, and a fifth metatarsal in the second. A rake out area of a kiln situated in the northeast corner of an extension (infill (10913)) in a pit (infill (10915)) consists of two layers: upper - multicolour and lower - darker in the eastern part of the area. Material from these contexts is burnt (the pottery, all recorded animal bone).

Neolithic

In this study season 9 Neolithic units (12212, 13046, 13069, 13092, 15226, 15800, 15880, 17809, 17812) were recorded. The most important are those from Spaces 346 and Sp.327.

Space 346 - special deposit

A big concentration of animal bones (17809) was one of the recorded deposits. Placed in the southeast corner of Space 346, directly east of the platform (17813), and south of the oven (17821). It contained a large number of animal elements, mainly cattle. Some of them were destroyed by an installation that most probably fell from the wall. The unit was badly damaged by rodents, resulting in the displacement of some bones. The bones represent a kind of special deposit, probably an abandonment deposit. The moderate weathering stage of the so-far-recorded bones suggests this special deposit was exposed for some time. The bones are strongly weathered, particularly from one side, and they have gnawing marks. There are marks of dismembering on one piece. This indicates that the bones in Space 346 are not in primary context. They became used again in this described deposit. The elements so far recorded were well preserved in the conservation lab (bucranium, scapula, pelves). The rest of the X-finds will be recorded in 2010.

A fragmentary bucranium (X17) is moderately weathered. The frontal, occipital, lacrimal, temporal, and zygomatic bones and just the base of the horn cores were preserved. Both horn cores are incompletely preserved, the right one with an old break. The surface of the

horn core indicates adult age. Several measurements were taken (preserved length= 60mm on the right horn core, ca. 120mm on the left horn core; length of the outer curvature of the right horn core = 60mm, on the left horn core ca. 120mm; length of the interior curvature of the right horn core = 100mm, of left horn core = ca. 160mm; greatest diameter of the horn core base = ca. 94.2mm on the right horn core, ca. 94.1mm on the left horn core; least breadth between the bases of the horn cores = ca. 280 mm; least frontal breadth = 203 mm; greatest frontal breadth = 257 mm; greatest inner length of the right orbit = 60.4mm and greatest inner height of the right orbit = 77mm; preserved length of frontal bone=237.4mm).

The distal shaft of a left cattle scapula (X11) was incomplete (with an old break). The preserved length amounts to 405 mm. In the middle of length of shaft (in the fossa infraspinata) is a hole with unclear edges, but probably connected with hunting. The edge of the hole has old breaks. The estimated diameter of the hole is 11.2 mm. The edge of the upper part of the tuber spinae scapulae and the anterior edge (upper part of margo cranialis) were broken. Several measurements were taken (smallest length of the collum scapulae =81.7 mm; greatest length of the processus articularis = 102.3 mm; length of glenoid cavity = 86mm; breadth of the glenoid cavity = ca 55.8 mm; minimum height of neck = ca 64.1mm; diagonal height = ca 405 mm).

The right pelvis (X2) of an adult male cattle is moderately weathered with gnawing marks. The edges of the pelvis (ischium, ilium, especially pubis) were broken. Several measurements were taken (length of acetabulum including the lip = 86.2 mm; breadth of acetabulum = 74.6 mm; smallest height of the shaft of ilium = ca. 54.5 mm; smallest breadth of the shaft of ilium = ca. 31.5 mm; smallest circumference of the shaft of ilium = ca. 142 mm). The medial part of the pubis and ischium is covered with calcium concretion.

Another right cattle pelvis (X1) is also moderately weathered. Some gnaw marks were observed on the edges. One of them is slightly polished. There are dismemberment marks on the shaft of ilium. Several measurements were taken (smallest height of the shaft of ilium = 53.6 mm; smallest breadth of the shaft of ilium = 31.9 mm; smallest circumference of the shaft of ilium = 142 mm). The facies auricularis was covered with calcium concretion.

Space 327- a cluster of animal and human bones

A cluster of animal and human bones (17832) was found in Space 327. This cluster was placed within an infill layer (17812). Its southern and eastern limits were defined by two walls (17810 and 17811) and its northern and western limits were defined arbitrarily. The basal boundary of the infill layer in the eastern part was very sharp and flat, and in the western part was defined arbitrarily. A cluster of animal and human bones was possibly the same kind of foundation deposit associated with the erection of tomb (F.6000). They were located in the very centre of the tomb, directly underneath the floor (17808). Human bones, which were anatomically selected (especially small compact bones such as the patella, carpals, tarsals, phalanges and also ribs, one tooth, vertebrae, etc.), will be recorded in the next season. The animal bones are few, containing the same amount of diagnostics (sheep/ goat and cattle, dog, one tooth of bear - rare at Çatalhöyük) and indeterminate (sheep, pig, and cattle-size, especially long bone shafts). Bird bones (very young and huge, they may come from one individual) and worked bone (astragalus, rib) are also present. The body part distribution in this unit is fairly even.

The animal bones look like an infill deposit, because the surface condition is variable, tending to the worn, and the tiny pieces are mostly rolled little bits; the range of fragment size is 1-6cm, mostly 3cm. Long bones are smashed into shaft splinters but teeth, phalanx, carpal, astragalus are complete. Diagnostic fragments are represented mostly by one end (heavy gnawed) and shaft. Some bones have cut marks (filleting, dismembering) on the surface. 10% of sample is burnt at low temperatures (carbonized) with some at high temperatures. It was possible to define the age in some cases (sheep/goat femur representing the infantile/ juvenile stage and the bird bones come from young individual). Bones were not exposed very long because they have very slight or slight weathering (except a moderately weathered cattle horn core) and very few of them are gnawed or digested.

West Mound Trench 5 – David Orton

During the 2009 season excavation continued in several spaces defined in 2008, with analysis of faunal material concentrated mainly on Space 342. Although only one unit has so far been recorded in full, diagnostic zones were counted for all assessed units. Comparison with Building 25 (Gibson et al. 2004) shows that taxonomic composition is fairly consistent between these two West Mound areas, although sheep and goats – of which the majority are sheep – dominate even more clearly in Trench 5.

Table 13: Diagnostic Zone (DZ) counts for Trench 5, compared with figures for Building 25 (Gibson et al. 2004).

	Trench 5		Building 25	
	DZ	%DZ	DZ	%DZ
Sheep/goat	315.5	*94.2*	1432.5	*91.2*
Cattle	8	*2.4*	77	*4.9*
Pig	0	*0.0*	2.5	*0.2*
Equid	7	*2.1*	32	*2.0*
Roe deer	0	*0.0*	4	*0.3*
Red deer	0	*0.0*	4.5	*0.3*
Dog	2.2	*0.7*	13	*0.8*
Fox	2.2	*0.7*	3.5	*0.2*
Badger	0	*0.0*	1	*0.1*
TOTAL	334.9	*100*	1570	*100*

Space 342

A sequence of fill units (16896, 18309, 18311, 18328, 18341) was excavated within the main part of this space, in the southwest corner of Trench 5. Of these, (16896), (18309) and (18311) are now assumed to represent a single stratigraphic layer, while pottery refits identified between (16896) and (18328) suggest that the entire upper fill accumulated over a relatively restricted period of time.

Unit (16896) was recorded in full and the next three units in the sequence (18309, 18311, 18328) were assessed. All of these units are characterised by extremely good preservation, with high coherence and very little sign of postdepositional disturbance or carnivore ravaging. There are several complete caprine long bones and numerous intact articular ends, even from the most porous elements and from immature individuals, indicating that the material was buried rapidly. Articulations are very common, strongly suggesting that the units represent primary deposits: final deposition must have taken place before the soft tissues were completely decomposed, with minimal subsequent disturbance. In the case of (18328) careful bagging of in situ bone groups by the excavator revealed that the great majority of articulating specimens were indeed together in the ground, and this seems likely also to have been the case in the subsequent fill. Articulations include unfused epiphyses and carpals/tarsals, but also several groups of vertebrae. All four units are heavily dominated by caprines (see Table 13).

These units do not fall easily into any of the conventional categories of room-fill, midden, feasting deposit and so on, although these have in any case yet to be clearly defined for the West Mound. The fill of Space 342 studied thus far resembles a succession of dumps of post-consumption waste, but appears to have formed much more rapidly than the classic idea of a midden would imply. The material is also much less heavily processed than might be expected. These units could perhaps relate to a series of unusual episodes of consumption and subsequent deposition, perhaps akin to the East Mound feasting deposits but dominated by caprines rather than cattle. Any such interpretation is, of course, highly tentative in the absence of a solid frame of reference for West Mound faunal units, but the presence of such deposits within a space fill would have intriguing implications for changing depositional practices between the two mounds.

Other spaces

Unit (16898) represents the uppermost more-or-less secure fill within Space 310. A portion of this unit was assessed in 2008, but the majority of the material did not reach the faunal

laboratory until the 2009 season, and the unit was re-assessed accordingly. Compared to the units from Space 342 this material is much closer to the expected appearance of room fill. Variability in fragmentation, colouring, and surface condition points to a general lack of integrity in the unit, the bulk of which is presumably redeposited. There is, however, a relatively large amount of material, and fragmentation is not especially severe. By contrast, the fill of Space 343 is almost sterile, with a very low density of bone and other material. The main fill unit within this space (18341) has yet to be assessed formally, but appears to consist primarily of very small bone fragments in poor condition. Study of material from Spaces 310 and Sp.343 is a priority for 2010 in order to allow comparison with Space 342 and thus to build up a frame of reference for deposit types on the West Mound.

Summary

Comparing the taxa in the South and 4040 Areas according to the new phasing suggests that the 4040 Area may have somewhat more sheep/goat than most levels of the South Area, and a lower representation of other taxa aside from cattle. However, we will need to explore this patterning further in the upcoming analysis. It will be particularly important to examine the effects of context.

The TP and West Areas have both yielded assemblages that extend the range of animal bone deposits previously encountered. Further excavation and analysis will elucidate how different these areas are from earlier periods on the East Mound.

References

Gibson, Catriona, Jonathan Last, Sheelagh Frame, and Tiffany Raszick
2004 West Mound. Çatalhöyük Research Project, Archive Report No. http://www.catalhoyuk.com/archive_reports/2004/ar04_29.html.

Russell, Nerissa, and Louise Martin
2005 The Çatalhöyük mammal remains. In Inhabiting Çatalhöyük: Reports from the 1995-1999 Seasons. I. Hodder, ed. Pp. 33-98. McDonald Institute Monographs. Cambridge: McDonald Institute for Archaeological Research.

2009 Çatalhöyük Human Remains - Lori D. Hager & Scott D. Haddow with contributions by Emmy Bocaege and Jennifer Byrnes

Team Leaders: Simon Hillson (1), Clark Larsen (2).
Team: Başak Boz (3), Lori Hager (4), Kimberly Christenson (1), Emmy Bocaege (1), Scott Haddow (3), Josh Sadvari (2), Evan Garofalo (2), Sabrina Agarwal (5), Bonnie Glencross (5), Marin Pilloud (2).

(1) Institute of Archaeology, UCL. (2) Ohio State University, (3) Çatalhöyük Research Project, (4) Pacific Legacy, Inc., (5) UC Berkeley

Introduction

As with the other Çatalhöyük 2009 teams, the human remains team maintained a schedule of 6 weeks of study season and 6 weeks of excavation. The first 6 weeks were mostly taken up with databases, spreadsheets, checklists, and updates on the collection as a means of organizing the human remains burial data for publication purposes. Graduate students Kimberly Christenson and Emmy Bocaege contributed significantly to this endeavour. In addition, we were fortunate to bring back the skeletons recovered from Mellaart's 1960s excavation to Çatalhöyük for further analysis and for use in radiocarbon dating of the site. Graduate student Scott Haddow was tasked with organizing the Mellaart collection and he was responsible for getting the radiocarbon samples prepared for analysis.

Several research efforts continued on the human remains collections during the 2009 season including studies on the health and diet of the Çatalhöyük people through an examination of their dentition by Simon Hillson and Başak Boz (development and dental health) and enamel hypoplasia by graduate student Emmy Bocaege. Other signs of physiological stress such as those indicating anemia were studied by Lori Hager. Clark Larsen continued his study with collaborator Christopher Ruff on activity patterns through cross-sectional geometry of the long

bones. Graduate student Evan Garofalo, doing similar research for the juvenile sample from Çatalhöyük for her Ph.D., was able to conduct data collection this season in part using a portable X-ray machine. Sabrina Agarwal and Bonnie Glencross continued their earlier work on bone quality, bone fractures, and trauma of the adults and juveniles from the site. Marin Pilloud presented her thesis on the potential genetic relatedness of the Çatalhöyük people based on dental morphology as well as helping with the organization of the collection. A pilot study was undertaken by graduate student Josh Sadvari on trauma, degenerative joint disease, and infectious disease at the site. Başak Boz and Lori Hager were able to work with the various lab teams and excavators in their study of burial practices with an in-depth look at the interment of the numerous individuals in single and multiple contexts within the houses of Çatalhöyük.

During the excavation season, 11 new skeletons, some complete and some partial, required our attention. Three of these were isolated crania and 8 were primary inhumations. The 3 skulls were found in the South Area in various contexts. Five of the primary interments were found in Building 76, also in the South Area, which had burned during Neolithic times. The five skeletons were under the east and northeast platforms while the fire burned above. The bones were differentially altered by fire depending on their proximity to the hottest part of the fire. The skulls for all five individuals were scorched to a black-brown and, in one instance, the entire skeleton was blackened. One neonate was found at the lowest level of Building 53, a building in the South last excavated in 2006. In the 4040 Area, a young child's skeleton was recovered from the northwest platform of Building 49, the earliest individual to be interred in the house. Finally, similar to last year, the West Mound found a neonate in Chalcolithic deposits in Trench 5.

South Area

Building 76, Space 137

A fire in Building 76 left its impact on the plastered east and northeast platforms and their contents. The western parts of the platforms were closer to the source of the fire, and presumably the highest heat, than were the eastern parts of the platforms. Not surprisingly, grave cuts were better visible in the less fire damaged eastern plaster floors relative to the highly fire-damaged western platform floors. As the fire blazed above, the skeletons below were being baked as if they were in an oven. When the skeletons residing in the platforms were excavated, it was immediately evident that the bones had been differentially fire altered based on their location in the platform. The bones to the south and west were baked a brown-black due to their proximity to the high heat source while the bones to the east and north were a light brown with the cancellous bone orange. These bones were friable and in poor condition. The position and orientation of the 5 individuals from the 2 platforms had the heads to the south, southwest or west, all under the hottest part of the fire. With the exception of the skeleton (18457) which was completely blackened, the heads, mandibles and any part of the flexed body of the other 4 individuals located to the west were baked to a brown-black while the

Figure 77: Early adolescent F. 3416, Sk (18447) in East Platform of B 76. Note blackened and fractured skull. The blackened mandible of Sk (18701) is visible next to the skull of Sk (18447). View north. Photo Human Remains Team.

post-cranial elements to the east were fire altered but not blackened. The depth of the skeleton within the platform may also have been a factor in the state of the baked bones. Moreover, all five skulls had carbonized organic material found endocranially. The potentially baked brain tissue was sampled for testing in each instance. The presence of the carbonized materials strongly suggests the skeletons were partially defleshed at the time of the fire.

Of the 5 individuals, associated grave materials were directly found with only one individual (18701) in the east platform. The materials associated with the adult male (18701) included 8 faux red deer teeth found at the waist and a possible string of beads found at the right shoulder. These artefacts had been baked. In addition, a small clay figurine (18465.x1) was found next to the shoulder of another skeleton (18464). The figurine may have been directly or indirectly related to the individual.

East Platform (F.3408)
Three individuals were interred in the east platform of Building 76. They were placed in similar positions and orientations and within close proximity to one another both horizontally and vertically. The skeletons were differentially baked as described above: heads and mandibles and other skeletal elements found in the western grave pit baked a brown-black while the rest of the skeleton from the east less intensely baked. These 3 individuals were of different ages, ranging from an early adolescent of approximately 12 years to an adolescent of 15 years to an older adult male of 30 years plus.

F. 3416, Sk (18447), Fill (18428) Cut (18448)
The individual was a young adolescent of ~ 12 years of age at the time of death. The grave cut was distinct in the platform floor. The body was oriented with the head to the southwest and the main axis of the body southwest-northeast (Figure 77). The east-west length of the grave was constrained relative to the length of the body, resulting in a tight fit within the grave. The flexed feet extended up the wall of the grave as the body's highest point. Consequently, some of the distal foot phalanges were carbonized due to their proximity to the surface of the platform. Likewise, the head and upper neck/shoulder area were baked brown-black due to their proximity to the hottest part of the fire. All the bones were highly fragmented but the skull bones were particularly fractured due to the heat. Many of the teeth were shattered. The post-cranial bones were fire altered but not blackened.

The mandible of another individual, Sk (18701), was located adjacent to the head of Sk (18447) (see Figure 77). This shows that the interment of Sk (18447) disturbed the mandible of Sk (18701).

F. 3419, Sk (18464), Fill (18465), Cut (18466)

Figure 78: Adolescent F. 3419, Sk (18464) from East Platform of B. 76. Note fragmented and blackened skull and upper body. Some distal phalanges of the foot were also carbonized. The skull of Sk (18701) is next to the skull of Sk (18464). View north. Photo Human Remains Team.

Located directly under Sk (18447) in the east Platform of B.76, Sk (18464) was an adolescent of ~15 years at the time of death. Dental development and eruption patterns in addition to the state of the epiphyseal union of several bones suggest an age of late adolescence. Sex is indeterminate.

The flexed body was on its left side with the head to the southwest (Figure 78). The head was facing east, also on its left side. The right arm crossed the chest, interlaced between the legs. The left arm was extended towards the feet. The feet were up against the wall in a

flexed position. Some of the distal foot phalanges were carbonized. A small clay figurine (18465.x1) was found next to the cervical vertebrae. The figurine may or may not have been directly related to the skeleton.

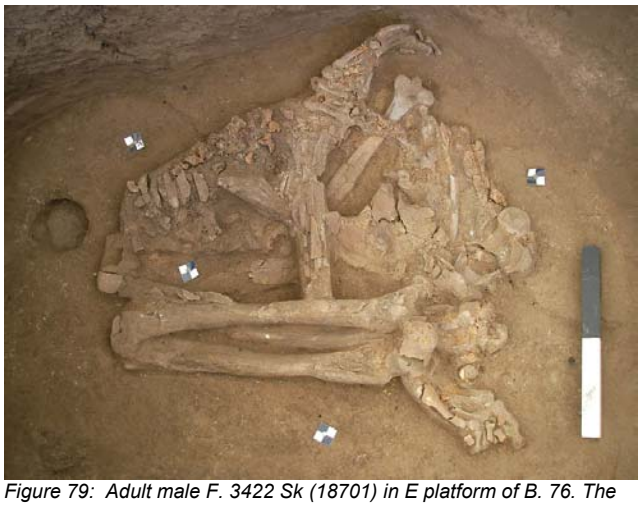

Figure 79: Adult male F. 3422 Sk (18701) in E platform of B. 76. The displaced cranium was found with F.3419 Sk (18464) in the level above while the displaced mandible was found with F. 3416,Sk (18447) in the uppermost level. View N. Photo Human Remains Team.

Sk (18464) has unerupted permanent maxillary canines, a condition found in two other skeletons from the same house, Sk (18457) and Sk (18447). The trait may suggest a familial relationship between these three individuals.

F. 3422 Sk (18701), Fill (18702), Cut (18703)

An adult male of ~30-40 years was recovered from the multiple grave pit in the east platform in Building 76. The interment of this individual occurred earliest in the sequence relative to the other 2 skeletons found above it. The grave cut was in the centre of the grave pit and therefore not clearly defined due to the later interments. The head and mandible had been displaced such that they were found alongside the 2 individuals above it: the skull of Sk (18701) next to cranium of Sk (18464) immediately above it and the mandible of Sk (18701) next to the cranium of Sk (18447) at the top of the sequence. Given the propensity of the Neolithic people to retrieve ancestral bones during later interments, it is of some interest that both the mandible and cranium of the earliest individual in the east platform were moved in the grave pit but not taken.

The body of Sk (18701) was flexed on its right side with the inferred head position to the west and the feet to the east (Figure 79). The position and orientation of this individual closely matched the position and orientation of the two upper individuals ((18447) and (18464)). The right shoulder may have also been displaced given that it was slightly out of anatomical position. The right arm was under the skeleton, bent slightly at the elbow with the hand extended under the pelvis. The left arm was extended on top of the left femur, bent acutely at the elbow with the lower arm crossing the abdomen and the hand extended along the northern section of the grave pit. The legs were tightly flexed at the hip and knees with the knees near the chin. The feet were extended in the southern part of the pit.

The skull, mandible, knees, and upper ribs and vertebrae were baked and blackened by the heat of the fire in the building. The lower body was fire altered in the same manner as the other 2 individuals above it: the bones were friable and in poor condition with the cancellous bone orange. Like all of the B.76 skeletons, carbonized organic materials, possibly brain tissue, were found inside the cranium of this individual.

Several beads (18701.x1) were found in the right shoulder region, possibly originally from the neck region. These beads were baked and friable. Near the right waist region atop the right arm there were 8 “faux” red deer teeth (18701.x2). These worked bones may have been in a pouch at the waist.

Sequence of Burial Events

Earliest:	F. 3422, Sk (18701); cranium and mandible displaced by later interments
Middle:	F. 3419, Sk (18464); disturbs (18701), displacing head and mandible
Latest:	F. 3416, Sk (18447); disturbs mandible of (18701), moving it upward

Sk (18701) was disturbed twice: once during the interment of (18464) whereby its skull and mandible were moved, and once again when the mandible, disturbed earlier, was again disturbed and ended up being placed next to the head of (18447).

NE Platform (F. 3400)
Two individuals were buried in the NE platform (F.3400). The later skeleton (18457), which was buried in the upper level of the platform, was more fully blackened than the earlier, lower skeleton (18496), which was only partially blackened by the fire in the building. The position, orientation, and depth of the two bodies were the major factors in the differential burning given the location of the fire in the house and the relative positions of the two bodies in the platform. Carbonized organic materials were recovered from inside both crania.

F.3418, Sk (18457), Cut (18455), Fill (18441)
F.3418 is a Neolithic primary grave under the northeast platform of Building 76 containing a single adult female skeleton (18457) (Figure 80). Assessment of sex is based primarily on cranial and mandibular morphology as the pelvis is in poor condition. The sciatic notch, however, does appear morphologically female. All epiphyses are fused. Based on the pattern of occlusal dental wear the age of this individual can be placed between 25 and 35 years.

The bones of this skeleton have been baked a dark colour as a result of the fire that consumed Building 76. Some parts of the skeleton, like the hands and feet, cervical vertebrae and the skull are very black. The parts of the skeleton farther from the heat source (e.g., left limbs) are dark brown. The body may still have been at least partially fleshed when the burning event took place, as certain parts of the skeleton that would have been insulated from the fire by soft tissue (e.g., lumbar and thoracic vertebrae, elbow joints, etc.) show the least amount of darkening. Blackened organic material recovered from inside the cranium may be carbonized brain tissue. If this does turn out to be brain tissue, it strengthens the argument that the body was still at least partially fleshed when the fire took place, as the brain tissue would have decomposed completely in the absence of fire.

Pathological lesions include an unusual tunnel-like lesion through the right scaphoid with a smoothed out/remodelled inner surface. Dentally, the mandibular left second molar crown appears to have been obliterated by a large carious lesion (only the root survives), while the mandibular right second molar has been lost antemortem. The maxillary permanent canines remain unerupted (i.e., still inside alveolar crypts). Two skeletons recovered from the east platform of Building 76 Sk (18464) and Sk (18447) also have unerupted permanent maxillary canines. This may indicate a familial link between these three individuals. Agenesis of the maxillary and mandibular third molars is also observed. Finally, there is unusual occlusal wear on the anterior teeth and chipping on the maxillary left central incisor, which may indicate the use of the dentition as tools (e.g., hide processing, etc.). Post-cranially, the presence of a small accessory facet on the anterior articular border of the distal right tibia and a corresponding facet on the neck of the talus is indicative of squatting activities, although such facets are not observable on the left side (antimere).

Figure 80: Young adult female F. 3418, Sk (18457) from NE Platform in B. 76. Note the extent of the blackening to the skeleton. View east. Photo Human Remains Team.

Figure 81: Young adult male F.3421, Sk (18496) from NE Platform in B. 76. Note the blackened skull and the carbonized organic material endocranially. View north. Photo Jason Quinlan.

F.3421, Sk (18496), Fill (18465), Cut (18497)

Interred in the northern part of the northeast platform of B.76, Sk (18496) was a young adult male of 20-30 years of age. Due to the fire in the house, the grave cut in the east was more apparent than the grave cut in the west. The grave pit was relatively small for the size of the length of the body, therefore resulting in a tight fit of the body into the space.

Placed on its back with the legs tightly flexed, the body was oriented with the head to the west and the feet to the east (Figure 81). The head was bent towards the northwest, possibly as a result of the abbreviated east-west length of the grave relative to the size of the body. The head was on its left side, facing east. Fragmented and blackened, the cranium had a large amount of the carbonized organic material, possible brain tissue, which was found in the other 4 skulls from B.76 (Figure 82). Both arms were extended with the elbows bent slightly and the hands at the pelvis. The knees were laterally placed to the left and right of the chest region, respectfully. The feet were together at the northeast edge of the grave pit. The post-cranial skeleton was in poor condition. A worked flint tool (18465.x1) was found near the feet.

Figure 82: Close-up of the inside of the blackened skull of F.3421, Sk (18496) showing carbonized organic material in situ. Photo Jason Quinlan.

Sequence of Burial Events
Earlier: Sk 18496, undisturbed
Later: Sk 18457, undisturbed

Building 53, Space 272
F.4076, Sk (14818)
A neonatal skeleton (14818) was found eroding out of the North wall of Building 53 (Figure 83). Given the amount of erosion this area has experienced since the skeleton was first noted in 2007, a surprisingly large amount of the skeleton remained intact. The flexed skeleton was placed on its left side with the head to the north, facing east. Phytolith remains were found above and below the legs, lower back and skull, suggesting that the baby was placed in a covered basket for interment. Cause of death was indeterminate. No grave goods were found.

Figure 83: A neonate, F. 4076, Sk (14818), in a lidded basket placed in the lower level of B. 53, view southeast. Note the thick layer of phytoliths. Photo Human Remains Team.

Isolated Crania: Sk (18520, 18182+18179, 18524)
Three instances of crania without their postcranial elements were found. Two of these crania (18182) and (18524) were found in midden deposits in a manner which did not appear intentional. For instance, the mandible which articulated with one of the crania (18182) was found 2 meters away from the skull, suggesting disturbance of the cranium at an early date. The context of one cranium (18520) from Building 79 was more suggestive of intentionality than were the other two skulls.

Building 79, Space 134

Sk (18520)

An incomplete and fragmented skull was found in B.79 at the base of a plaster installation along the north wall of the house (Figure 84). The solitary skull was in the room fill of the burnt and collapsed house. No grave cut was evident. The skull may have been part of the installation or simply placed in this area during the life of the house. The skull was found in the room fill surrounding the plaster installation so that it could also be reasonably argued that it is part of the room fill rather than something that has fallen from the wall.

Figure 84: An incomplete partial skull of an adult, Sk 18520, next to a plaster installation on the north wall of B. 79, view northeast. Photo Human Remains Team.

Space 344

Sk (18524)

The disarticulated skull of an adult was found in the midden deposits of Space 344. The incomplete skull was on its right side with the apex of the skull to the north. There was no evidence of a grave cut. The bones were thick but porous, suggesting potential physiological stress during the life of the adult.

Space 369

Sk (18182) (skull) and (18179) (mandible)

A partial skull and mandible were found in Space 369. The adult skull was disarticulated, on its right side, facing north. No grave cut was evident. The mandible which articulated with the skull was found ~ 2 meters away from the partial skull in similar deposits.

4040 Area

Building 49, Space 100

F.4028, Sk (17939), Cut (17940), Fill (17938)

F.4028 is a Neolithic primary burial under the northwest platform of Building 49 containing the complete, well-preserved skeleton of a child aged 2 years (+/- 8 months). Assessment of age for this individual is based on dental development and eruption. This burial was the earliest burial in the NW platform (F.1651) sequence. Not only was the child stratigraphically the deepest of the interments but it was also undisturbed by the placement of later burials.

Figure 85: F. 4028, Sk (17939), a ~2 year old child skeleton, the earliest burial in the NW platform of B. 49. The shell (17938.x1) in the foreground contained red pigment. View S. Photo Human Remains Team.

Figure 86: Right humerus of F. 4028, Sk (17939) showing thick layers of phytoliths. Photo Human Remains Team.

The skeleton was tightly flexed on its left side and oriented with its head to the south and feet to the north (Figure 85). The child was likely placed in a reed basket, as there are thick phytolith remains, some with traces of the basket weave, directly underneath the skeleton (Figure 86), as well as at the sides of the cut. Phytolith remains were also found on the cranium. A large shell (17938.x1) containing red pigment on the inner surface was placed above the feet/ankles of the skeleton.

West Mound, Trench 5, Space 342 – Jennifer Byrnes

F. 3300, Sk (18333), Fill (18336), Cut (18334)

One Chalcolithic burial (18333) was found this year from the West Mound in Trench 5. The complete and fully articulated skeleton of a neonate was found next to a wall buttress (F.5061) in the northern part of Space 342 (Figure 87). The neonate was positioned on its stomach in a flexed position with the head to the west and feet to the east (Figure 88). There is no apparent cut or distinguishing fill in association with the neonate, suggesting the burial was included as part of the room fill in this space. Remnants of phytoliths were found over the body and were taken for a sample. The presence of the phytoliths indicates that the neonate had been placed in a basket at the time of interment.

Figure 87: A neonatal skeleton, F. 3300, Sk (18333), from the Chalcolithic of the West Mound, Trench 5, view north. Photo Peter Biehl.

Figure 88: Close-up of neonatal skeleton, F. 3300, Sk (18333), view north. Photo Peter Biehl.

Acknowledgements

We extend our thanks to the many students who assisted the human remains team in the field and in the lab during the 2009 season. In addition the Project would like to thank Pacific Legacy, Inc. for their generous support of Lori D. Hager on the human remains team.

Macro Botanical Remains - Catherine Longford, Garrett Boyd & Danielle De Carle

Team leaders: Amy Bogaard (1), Mike Charles (2) (absent due to maternity/paternity leave)
Team: Catherine Longford (2), Danielle de Carle (2), Garrett Boyd (2), Alexandra Livarda (3), Muge Ergun (4), Tudur Davies (2).
Flotation workers: Mevlüt Sivas (5), Hüseyin Yaşlı (5)

(1) University of Oxford (2) University of Sheffield (3) Çatalhöyük Research Project, (4) Istanbul University, (5) Kücükköy,

Preliminary archaeobotanical results for 2009

The flotation team processed 331 samples (c. 6,633 litres of soil) during the 2009 season. As in previous years, at least 30 litres (where available) were processed from each deposit; average sample size was c. 20 litres in 2009. In total we received 312 samples generated from this season's excavations in the South Area, three from the 4040 Area (both on the East mound) and 16 from West mound.

Since the 2009 Çatal season was primarily a study season with limited excavations, the archaeobotany team focused on consolidating previous seasons' work. We completed level 1

assessment on the backlog of samples from the 2008 excavations in the 4040 Area, South Area and West Mound. Level 1 assessment consists of identification and counting of crop and wild plant remains in a random subsample of the >1 mm flot fraction, plus scanning of the >4 mm flot fraction (see 2005 Archive Report for methodology). We also carried out level 1 assessment on samples from the 2009 excavations in the South and 4040 areas of the East mound, and from the West mound. A small backlog of material remains for assessment in 2010.

In the 2009 excavation season, no units were designated as priorities for specialist feedback. Overall, the samples analysed were consistent with the archaeobotanical taxa found previously at Çatal and were dominated by the usual 'waste' components (glume wheat chaff, seeds of wild plants including sedges, dung, tubers) (see Archive Report 2004). Glume wheat grain was the most common cereal grain, with free threshing wheat and hulled barley also present in some samples. Glume wheat chaff tended to outnumber glume wheat grain and was ubiquitous across all contexts (midden, room fill, oven fill, fire spots) showing the chaff's usefulness as a fuel, fodder, and temper after grain dehusking. Pulses and hackberries were found in low numbers in several samples.

In the South Area, samples assessed from Building 76 are characterised by a low density of plant remains and are primarily dominated by modern plant material. A paucity of carbonised plant remains was noted on floor and platform surfaces, including those with phytolith traces, and in fire installations. This lack of archaeobotanical material may be due to an intense fire event that reduced the plant material to ash or intentional clearing of the space prior to the building burning. The fill (18428) of the burial in platform F.3408 included glume wheat chaff, cereal grain, reed culm and wild plant seeds including sedges. The material from Building 80 that was analysed this season derived from the upper layers of room fill and wall debris and contained a high proportion of glume wheat chaff, wild plant seeds including sedges and some glume wheat grain, barley grain and rachis. Fire spots, hearths and oven fills (such as F.5018 in Space 344) were dominated by glume wheat chaff, wild plant seeds including sedges and dung fragments, further indicating the importance of dung fuel.

From Trench 5 of the West mound, samples assessed have the same archaeobotanical waste assemblage found in the East mound, dominated by glume wheat chaff, wild plant seeds including sedges and occasional glume wheat grain and pulses. One sample from unit (18322) (Space 342) may represent a small pocket of processed grain, containing only glume wheat grain and inclusions of wild plant seeds.

Phytolith Analysis 2009 - Philippa Ryan

Abstract
Phytolith analysis during summer 2009 focused upon analysing sediment samples taken during 2008 from Buildings 77 and B.49. Additionally, further samples were taken from basketry, matting and cordage, as well as from a small number of burnt mud-bricks.

Introduction
Phytolith analysis during summer 2009 (22 July – 3 August) focused upon analysing sediment samples taken during 2008 from Buildings 77 and B.49. Additionally, further samples were taken from basketry, matting and cordage, as well as from a small number of burnt mud-bricks. For samples analysed whilst on site, I used field analysis methods previously described in earlier archive reports (see Ryan 2007, 2008). Results from selected samples are described below.

Samples analysed
16673.s2, 4040 Area, B.49
Visible lens of phytoliths in basin beneath ground-stone. Phytoliths present were from wheat (Triticum sp.) and barley (Hordeum sp.) husks. Wheat husk phytoliths by a grinding-stone may indicate final de-husking of glume wheats. The interpretation of the barley phytoliths is more complicated however, as naked barley does not require de-husking – the barley may come from weedy forms. Alternatively, it is also possible, since these remains are visible (i.e.

whole plant parts left in situ) that these remains are from whole ears of cereals which have been deliberately left along with the grinding stone.

16631.s3, 4040 Area, B.49
Visible phytolith lens found across the whole platform - phytoliths were from wheat (Triticum sp.) husk silica skeletons, possible indicating cereal processing debris.

16492.x14, 4040 Area, B.77, Sp.336
Visible lines of phytoliths on top of grinding-stone - phytoliths were from monocot leaves/stems, possibly unconnected with the use of the grinding-stone. Further samples were taken from the grinding stone by pipetting distilled water on to the surface of the stone to extract phytoliths possibly associated with the use of the grinding-stone. The water was left for 5 minutes and then pipetted off again. No phytoliths from cereals were present indicating this grinding stone was probably not used in cereal production.

17509.s1, 17509.2, 17509.3, 4040 Area, B.77, Sp.336
Phytoliths beneath quern-stones - phytoliths present were from monocot leaves/stems. These findings, like grinding stone (16492) B.77, suggest that these grinding stones were not associated with food processing activities.

17547.s1, B.77, Sp.336
Deposit on top of grinding stone – no diagnostic phytoliths were present.

16478.s3, B.77, Sp.337
Ashy deposits directly onto bin room floor - a low amount of monocot leaf/stem phytoliths are present and do not indicate any thing particular about this deposit

16497.s4, B.77, Sp.337
Bin fill - There was an extremely low phytolith content, and the assemblage is comparable to other sterile fill deposits

17502.s3, B.77, Sp.337
Bin fill - There is an extremely low phytolith content and the assemblage is comparable to other sterile fill deposits

17528.s3, B.77, Sp.336
Carbonised basket – no identifiable phytoliths present.

16686.s3, B.49, Sp.100
Phytolith lens on platform – phytoliths present were from Cyperaceae (sedge) leaves/stems.

Bricks analysed from B.77
(16425) - One brick analysed from this unit contained impressions of thin leaves or stems. Phytoliths from two samples analysed were from Cyperaceae leaves/stems.

(16408) - Bricks in this unit had lots of plant impressions, but not enough visible phytoliths for sampling.

(16402) - Phytoliths from stems and glumes were taken for analysis in the UK.

(16469) - A brick analysed contained reed (Phragmites) impressions, and additionally visible phytoliths from one grass husk were present, but was too fragmentary to be sampled effectively.

Samples from visible remains in burial contexts taken for further analysis in the UK include from units (17485), (16637), (16698), (17456), and (17415). Further samples were also taken from priority units from previous excavation seasons.

Starch - Renée van de Locht (1) & Karen Hardy (2)

(1) MSc at the IGBA VU University Amsterdam, (2) ICREA at Universidad Autonoma de Barcelona, Spain

Introduction

Starch-based foods today constitute about one third of the global dietary food intake. Evidence in the form of a combination of archaeological remains and ethnographic records suggest that starchy food had an important role in past human diet. All major domesticated plant species are sources of starch: cereals, rice, tubers and maize (Hardy, Çatalhöyük Archive Report 2007).

Starch is a carbohydrate and occurs in different plant parts as a form of energy storage. Starch is composed of a mixture of two polymers - amylase and amylopectin – which together form discrete granules (Radley, 1968). The packing of the amylase and amylopectin layers promotes stability, forming a semi-crystalline structure, however, they are easily decomposed by enzymes to water soluble sugars (Hardy, Çatalhöyük Archive Report 2007). Despite this, starch has been found in greatly varying burial environments and from archaeological contexts as old as 180,000 years (Van Peer et al. 2003).

As starch granules occur in all green plants it is important to establish that starch found within archaeological features on a site, is a genuine signal of human activity linked to plant use, as opposed to contamination from the local vegetation.

Summary of previous results

From the samples collected in 2006 and 2007 seasons starch granules were recovered from different archaeological contexts. We analysed samples from: features within Building 65 in the South Area, from a cross section of a midden deposit in the 4040 Area and from a profile on the West Mound. Starch was retrieved from a large number of samples (51). From the recovered starch granules a morphological classification based on shape, size and other characteristics has been generated (Table 14). Seven main categories and two sub-categories have been described. Ultimately the morphological appearance of starch granules has led to the recognition of a cereal species and a tuber species. The cereal starches are probably from wheat or barley and the tuber starches are at this time classified as unknown tuber.

Table 14. Morphological classification of starch granules from Çatalhöyük.

type	description	comments
1	angular; hexagonal, rectangualr, triangular, ≤ 15 µm.	mostly very well preserved, often with visible central hilum.
2	oval/Elipsoid/Bean shaped 10-30 µm.	
3	elongated, average 40 µm.	possibly a tuber species, eccentric hilum
3b	elongated, small, 10-20 µm.	eccentric hilum
4	round, roundisch, 5-15 µm.	often well preserved, high birefringence, central hilum.
4b	round, large, 20-30 µm.	often diminshed birerefringence/blueish, faded appearance
5	round, bimodel distribution of size (A- and B- type grains) large grains average 20 µm, small grains 2-3 µm.	possibly a cereal species
6	large group of very small starches, 1 µm.	cloud of very small starches
7	very small, roundish, ≤ 5 µm.	individual small grains

Distribution patterns of starch granules

Starch granules have survived in relatively high numbers (up to 100 granules per 0.02-0.05 gram of sample) in features connected to food preparation and/or storage, such as fire installations/ovens and bins. By contrast samples from burials, walls and floors contained very small amounts of starch granules (0-10 granules per 0.02-0.05 gram of sample).

The pattern of distribution seen in the features related to food preparation and/or storage as opposed to background samples has been attributed to two facts: 1) starches have preserved in these features because they were present in great numbers when entering the archaeological record due to activities related to food preparation and storage, and

accumulation over time, 2) they have been preserved here in greater numbers because of good preservation conditions.

Point one underlines the fact that we have recorded an authentic signal of human activity related to plant use, and not a random environmental signal contaminating the site. The second point is related to human activities such as cooking and the effect of micro environmental protection on organics, through for example, soil clay aggregates which have been recorded by archaeologists in and surrounding the bins in Building 65, South Area (Çatalhöyük database).

In addition to their survival in large numbers, the starch granules were relatively well preserved, especially in features connected to fire. Heating and charring of starch through for example cooking may help starch preservation (Hardy et al 2008).

The background samples from the walls of Building 65, the midden, and the West Mound profile showed starch granules which were often highly degraded. The susceptibility of starch granules to enzymatic attack depends on several factors: the structure of the crystalline areas in the granules, the amylase content, the enzymes in question, the length of time of the attack and granule size (Bhat et al. 1983; Franco & Ciacco, 1992; Gallant et al. 1992; Baker and Woo, 1992). Baker and Woo (1992) found that large granules are more susceptible to enzymatic attack then small granules. The background samples contain mainly small starch granules, which concurs with the findings of Bake and Woo (1992).

Aims for 2009

The aims of the starch analysis from the 2009 samples were:

a) to gain insight in the preservation and distribution patterns of starch within buildings and their corresponding finds (for example pottery, clay balls, grinding stones and baskets)
b) to determine the influence of fire on preservation of starch granules within buildings
c) to determine the level of environmental background signal of starch in Çatalhöyük
d) to create a modern reference database for starch

Fieldwork: sampling strategy

On site and from archive samples

In August-September 2009 we undertook systematic collection of samples from Buildings 56 and B.65 from the South Area. We sub-sampled archive samples from all features in these houses, (e.g. floors, platform floors, bins, fire installations and walls), residues from clay balls, grinding stones and pottery, with the aim of creating an absolute distribution pattern of starch granules within these buildings. Since these buildings represent successive building phases, this could add to the understanding of starchy plant use through time at Çatalhöyük.

In addition, we sampled burned Building 77 in the 4040 Area. We sampled in a grid of 0.5 by 0.5 metres across the floors of the building (Figure 89). Sampling was done by cork bore in order to avoid contamination of surface areas by external factors. We also sub-sampled archive samples from walls, residues from clay balls and grinding stone, and bin fills. We hope to create a distribution pattern of starch granules throughout the building. We also hope to gain an understanding of the influence of fire on the preservation of starch by comparing distribution patterns of this burned building to non-burned building B.56 and B.65. As was suggested by previous results, heating and charring for cooking purposes can lead to more resistant starch granules. However, it is not known if an intensive destruction by fire within a building will either help starches preserve or destroy them entirely.

We also took sub-samples from phytolith samples of basket impressions from three burials, a room infill and a basin. This is part of a pilot study for the potential for starch analysis on basket impressions.

Offsite

As starch occurs in all green plants it is essential to determine the background signal to better understand the contamination issues on site. In 2007 a section in the West Mound was

sampled, which suggestively attained the natural soil. However, archaeology was apparent throughout most layers and a real 'clean' sedimentary horizon was difficult to discern.
Therefore we sampled geological section 5 (units (18800)-(18808)) in 2009 on an offsite location (with Tudur Davies). This section showed several sedimentary horizons of clay and silty clay with the lower layer showing the Pleistocene lake marl. Every natural layer was sampled for starch analysis. The upper layers were not sampled because this contained recently disturbed material from the drainage channel in which the section is situated.

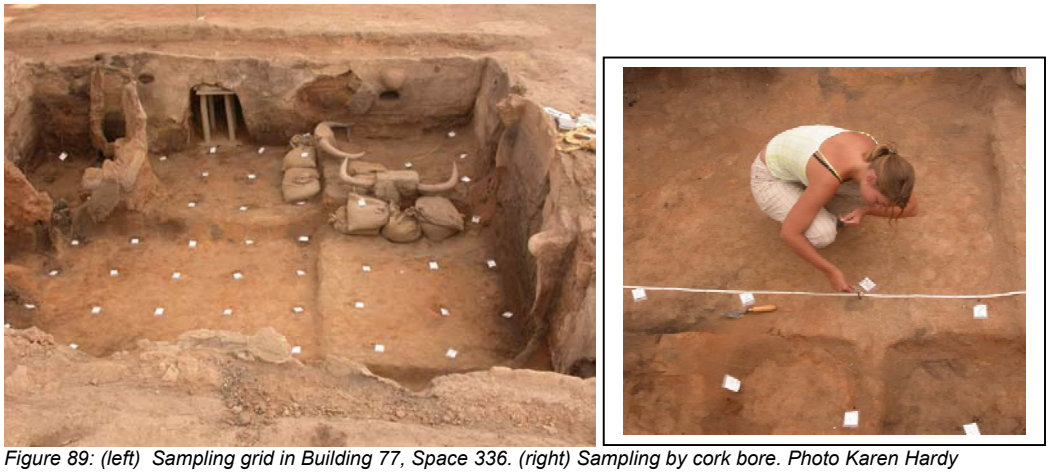

Figure 89: (left) Sampling grid in Building 77, Space 336. (right) Sampling by cork bore. Photo Karen Hardy

Modern reference collection
Identification of the starches requires an extensive reference collection of both domesticated and wild plants. By collecting modern starch from local endemic plants we will be able to determine the plant genus of the starches we find at Çatalhöyük. This will reveal valuable information on starchy plant use in the past. From archaeobotanical evidence it appears that, at Çatalhöyük, the use of edible tubers was inferior to the use of cereals. However, tuber collection provides people with a ready source of carbohydrates.

A project is currently underway with Dr Osman Tugay of Selçuk University, Konya, to create a reference collection of local starchy plants. These will be collected three times over one year, to identify the differing concentrations of starches, and therefore their edibility, during different seasons. During the 2009 season , collecting was undertaken in the Seydişehir lake/marsh area (Sugla lake).

Sample analysis
We collected approximately 300 samples. They will be analysed using the following methods. Starch is isolated from the samples by heavy liquid separation. Starch has a density of 1.55, by using a liquid with a density of 1.7, a wide margin for error is allowed to lose none of the sample.

A small amount (0.02-0.05 g) of sample was placed in centrifuge tubes with 1.0 ml of Sodium Polytungstate (density 1.7). The tubes are centrifuged at 1000 r.p.m for 15 minutes. The starch is then extracted from the surface and washed three times in ultra pure water followed by two rinses with acetone. Samples are then dried. For rehydration and storage a drop of 70% ethanol is added. Samples can then be placed on microscope slides and mounted in Karo corn syrup (2006 samples) or glycerine (2007 samples) for optical observation. The slides are fixed with transparent nail polish to avoid any contact with the atmosphere after slide mounting.

The slides are then visually analysed by light microscopy. Every starch granule is recorded and all morphologically distinct granules are photographed.

Although microscopic characteristics give a good indication whether a granule is indeed starch, it is not 'fool proof'. Birefringence is a characteristic found in materials with crystalline

layers arranged in a concentric pattern (Hardy et al. 2008). Certain materials can exhibit rotating extinction crosses, which are known as a characteristic of starch granules. The only safe way to determine whether a granule is actually starch is to degrade it with alpha amylase, an enzyme that is specific for linkages contained in starch (Hardy et al. 2008). Tests with alpha amylase (B lichenoformus) injected to microscope slides with starch granules from Çatalhöyük samples of previous seasons, showed that the material was indeed unaltered starch (Hardy, Çatalhöyük Archive Report 2007). However, it is important to continue such tests throughout the new data set to assure genuine results.

Dental calculus

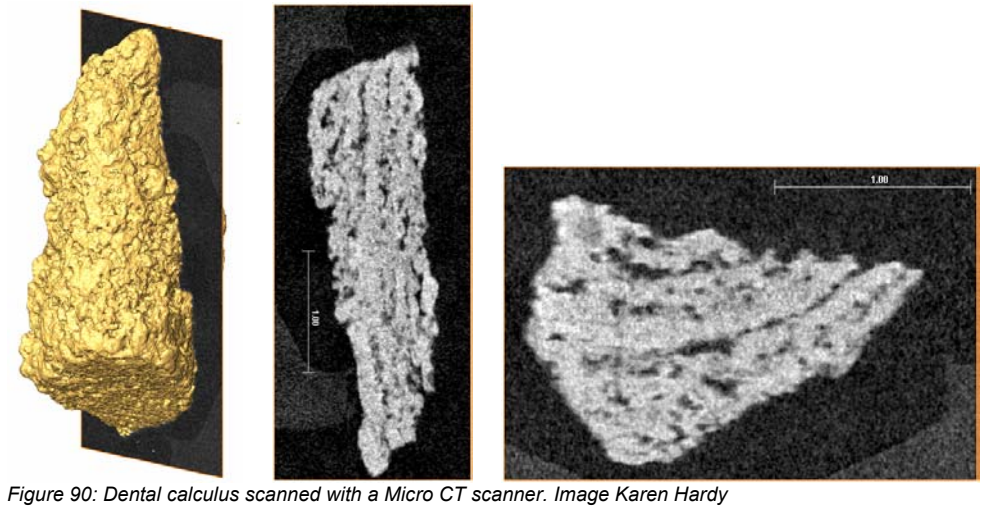

Figure 90: Dental calculus scanned with a Micro CT scanner. Image Karen Hardy

Two samples of human dental calculus were analysed to investigate the presence of starches. In the first instance, the samples were scanned with a Micro CT scanner to create a detailed record of the samples and to see if any starch could be detected (Figure 90). The images demonstrate the way that the calculus builds up in layers. However it did not detect any microfossils. The samples were then cleaned, ground up and placed in low concentration HCl (O,6M) for two hours.

Starch was found in both samples. Close identification of the starches will need to wait until the reference collection is complete.

Several samples of cow and sheep starches were examined for starches but no starches were found to be present. Further samples will be examined over the coming year.

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Many thanks to Ian Hodder for welcoming us at Çatalhöyük and to Shahina Farid for her help in organizing the trip. The members of the Çatalhöyük team of 2009 are greatly thanked for roviding samples and specifically Lisa Guerre for her help in tackling the archives. We are indebted to Dr. Osman Tugay for his invaluable help in collecting wild edible plants in the country side surrounding Konya. Prof. Michael Fagan and Dr, Neil Curtis, Dept of Engineering, University of Hull conducted the Micro CT scanning.

References
Baker, J.W. and Woo, S.M., 1992. Digestion of starch granules by alpha amylase. Insect Biochemistry and Molecular Biology. 22: 529-37.

Bhat, U.R., Paramahans, S.V. and Tharanathan, R.M., 1983. Scanning electron microscopy of enzyme-digested starch granules. Starch/Stärke 35: 261-65.

Franco, C.M.L., Ciacco, C.F. and Tavares, D.Q., 1998. The structure of waxy corn starch: effect of granule size. Starch/Stärke 50: 193.

Gallant, D.J., Bouchet, B., Buléon, A. and Pérez, S., 1992. Physical characteristics of starch granules and susceptibility to enzymatic degradation. European Journal ofClinical Nutrition. 46: S3-S16.

Hardy, K., 2007. Cultural and environmental materials reports: starch. Çatalhöyük Archive Report 2007: 214-21.

Hardy, K., Blakeney, T., Copeland, L., Kirkham, J., and Collins, M., 2008. Starch granules, dental calculus and new perspectives on ancient diet. Journal of Archaeological Science. In press.

Leach, H.W. and Schoch, T.J., 1961. Structure of the starch granule. Cereal Chemistry 38: 34-46.

Radley, J.A., 1968. Starch and Its Derivations. London: Chapman and Hall.
Van de Locht, R., 2008. Ancient Starch in Çatalhöyük and Kaman Kalehöyük, Turkey. Morphology, distribution patterns and preservation of starch granules in archaeological features and soils. IGBA Report 2008-09.

Van Peer, P., Fullagar, R., Stokes, S., Bailey, R.M., Moeyersons, J., Steenhoudt, F., Geerts, A., Vanderbeken, T., De Dapper, M. and Geus, F., 2003. The Early Middle Stone Age transition and the emergence of modern human behaviour at site 8-B-11, Sai Island, Sudan. Journal of Human Evolution 45: 187-93.

Shell Archive Report 2009

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Part I: Marine, fossil, and freshwater artefacts - Daniella E. Bar-Yosef Mayer

The second season of the shell studying at Çatalhöyük made it clear that there were three sources of artifacts made of shell: the Mediterranean sea, fossil from the Taurus mountains, and local freshwater river bivalves (Unio). It should be noted that to date there is no evidence of Red Sea shells present at Çatalhöyük. This year was devoted to verifying the identification of the fossil shells that were initially identified during the first season (2008), in collaboration with Dr. Yeşim İslamoğlu of the Geological Research Department, Turkish Institute for Mineral Research and Exploration (MTA) in Ankara. In addition we identified a few new marine species not previously discovered at Çatalhöyük (Table 15). Many of the marine species that were reported previously by Reese (2005) were now entered to the database.

Most of our attention was dedicated to freshwater molluscs from the vicinity of the site. Those include gastropods (snails) and bivalves. The majority of shells were small specimens of either small bivalves and gastropods (under 4 mm), or juveniles of large species in the same size range (see part II below). In addition, mature Unio bivalves were studied: Unio shells that are presumed to have served as a food source were sampled from thoughout the Neolithic sequence of Çatalhöyük for isotopic study. Those were sent to NERC Isotope Geosciences Laboratory of the British Geological Survey in Nottingham. We are awaiting results of ∂18O that might provide insight into past climatic conditions at the vicinity of the site.

Artifacts made of the freshwater Unio were studied in more detail. We can now distinguish two common types of artifacts produced from Unio: holed pendants and serrated artifacts. We

assume that the holed pendants were used as personal ornaments. The presence of a group of them in the context of a burial supports this. Most pendants had one hole, but others had two, and in one case there were three holes (n=108). We also found a number of "blanks" that had the same general squarish contour and dimensions but were not perforated. Many of these pendants were cut from the thicker part of the shell near its margin, and the pallial line is clearly visible on them. Many of the holes were perforated on the pallial line or slightly above it (Figure 91 left), usually from the inside nacreous surface of the shell outwards. The serrated artifacts (n=7) were usually cut from the margin of the bivalve, and the serrations were incised about 1-2 mm apart. Some are worn as a result of use (Figure 91 right). Those could have been used for pottery decoration, but similar artifacts, it has been suggested, could have been "fish scalers" (MacDonald 1932).

Table 15: Marine species represented at Çatalhöyük

	species	origin	NISP 2008	NISP 2009
Gastropod	Strombus	fossil	1	1
	Terebralia bidentata	fossil	1	0
	Archimediella bicarinata percingulellata	fossil	1	0
	Athleta ficulina	fossil	6	0
	Clavatula calcarata	fossil	6	0
	Conus berghausi semisulcata	fossil	1	0
	Osilinus turbinatus	Mediterranean	8	0
	Turitella spp.	Mediterranean	3	0
	Cypraea sp.	Mediterranean	5	0
	Phalium	Mediterranean	1	0
	Muricidae	Mediterranean	1	3
	Columbella rustica	Mediterranean	25	59
	Pisania striata	Mediterranean	0	2
	Nassarius gibbosulus	Mediterranean	9	21
	Conus mediterraneus	Mediterranean	10	11
Bivalvia	Anadara turoniensis	fossil	2	0
	Glycymeris	fossil	1	0
	Ostrea	fossil?	2	0
	Arca noae	Mediterranean	1	0
	Glycymeris insubrica	Mediterranean	0	1
	Chlamys	Mediterranean	0	1
	Spondylus	Mediterranean	0	1
	Cardiidae	Mediterranean	1	3
	Unio artifacts	local freshwater	64	63
Scaphopoda	Dentalium	fossil	8	176
	Antalis dentalis group	Mediterranean	3	120
	scaphopoda	unknown	18	4
TOTAL			178	466

To date we recorded a total of 517 Mediterranean and fossil shells. In addition, 127 artifacts made of the local freshwater Unio were studied. Of the total of 644 shell artifacts, only 130, or 20%, were assigned a startigraphic unit, therefore we find it premature to discuss any changes through time based on this sample.

References:

MacDonald, E. 1932, Prehistoric Fara. In: W.M.F. Petrie (ed.) Beth Pelet II. London: British school of archaeology in Egypt.

Reese, D.S. 2005, The Çatalhöyük shells. In: I. Hodder (ed), Inhabiting Çatalhöyük: Reports from the 1995-99 Seasons. McDonald Institute for Archaeological Research, Cambridge, pp. 123-127.

Figure 91: (left) Pendants made of Unio shells. Note the natural pallial line (right) Serrated artifacts made of Unio shells. Photo Jason Quinlan.

Part II: The Freshwater and Terrestrial Mollusc Fauna of Çatalhöyük - Burçin A. Gümüş

The second research season of the mollusc team was carried out between the 3rd of July and the 28th of August, 2009. During this season mollusc species, some land snails and other originating in freshwater, were identified, and included two bivalve, four prosobranch and two pulmonate species were identified for the first time at the site. Those join the previously identified species (Archive report 2008). In total we have now identified 20 mollusc species, three bivalve, six prosobranch and 11 pulmonate (six basommatophoran and five stylommatophoran). These are presented in Table 16 and listed below along with their geographical and ecological distribution. This information will serve us in the next step of our research for reconstructing the past environement of the site.

A) BIVALVIA (Freshwater)
Bivalvia, Eulamellibranchiata, Unionoida
Family: Unionidae
Genus: *Unio* PHILIPSSON, 1788

1) *Unio pictorum* (LINNAEUS, 1758)

Distribution: Central and Northern Europe, Russia, Transcaucasia, Northern Caucasus.
Habitat: The freshwater river systems.

Bivalvia, Eulamellibranchiata, Veneroida
Family: Sphaeriidae
Genus: *Pisidium* C. PFEIFFER, 1821

2) *Pisidium amnicum* (O. F. MÜLLER, 1774)

Distribution: From the North Africa through the whole of Europe and northern Asia, the Amur basin and Turkey.
Habitat: Slightly silted river bottoms, floodplain water bodies and lakes.

Bivalvia, Eulamellibranchiata, Veneroida
Family: Dreissenidae
Genus: *Dreissena* VAN BENDEN, 1835

3) *Dreissena* sp.

B) GASTROPODA (Freshwater & Land)
B.1. PROSOBRANCHIA
B.1.1. Archaeogastropoda
Family: Neritidae
Genus: *Theodoxus* MONTFORD, 1810

4) *Theodoxus fluviatilis* (LINNAEUS, 1758)

Distribution: The Marmara, the Aegean and the mediterranean regions of Turkey, Russia, Baltic Basin, Black Sea Basins, Italy, England, Sweden, Finland
Habitat: Rivers, brooks, lakes, usually on a stony bottom.

Table 16: Terrestrial molluscs (land and freshwater) from the vicinity of the site

	species	origin	NISP 2008	NISP 2009	Total
Gastropoda	*Theodoxus fluviatilis*	Freshwater rivers and lakes	87	318	405
	Viviparus viviparus	Freshwater rivers and lakes	435	346	781
	Bythinella dunkeri	Freshwater springs (calcium poor)	0	8	8
	Bithynia leachi	Freshwater rivers	0	15	15
	Valvata piscinalis	Freshwater rivers, lakes and ponds	0	859	859
	Fagotia esperi	Freshwater rivers	0	26	26
	Lymnaea stagnalis	Freshwater shallow	1	3	4
	Stagnicola palustris	Freshwater shallow	32	24	56
	Radix auricularia	brackish water	1	11	12
	Planorbis carinatus	Freshwater lakes	4	37	41
	Gyraulus albus	Freshwater lakes	143	180	323
	Planorbarius corneus	Freshwater shallow	29	126	155
	Vallonia pulchella	land	1	1	2
	Borlumastus yildirimi	land	2	0	2
	Cecilioides sp.	land	0	2	2
	Monacha (Paratheba) rothii	land	35	1	36
	Xeropicta derbentina	land	70	1	71
	unidentified landsnails	land	43	4	47
	Melanoides sp.	Freshwater	1	0	1
Bivalvia*	*Unio pictorum*	Freshwater rivers	987	1727	2714
	Pisidium amnicum	Freshwater rivers and lakes	0	11	11
	Dreissena sp.	Freshwater rivers,lakes and the less saline parts of the inland seas	16	107	123
TOTAL			1887	3807	5694

*values of bivalves are MNI, not NISP

B.1.2. Mesogastropoda

Family: Viviparidae
Genus: *Viviparus* MONTFORD, 1810
Viviparus viviparus

5) (LINNAEUS, 1758)
Distribution: The Marmara and the Black Sea regions of Turkey, Europe, Caucasia, Crimea, Ukraine.
Habitat: Rivers, river channels, floodplain lakes, larger floodplain ponds.

Family: Hydrobiidae
Genus: *Bythinella* MOQUIN-TANDON,1856

6) *Bythinella dunkeri* (VON FRAUENFELD, 1857)
Distribution: Turkey, western Germany.
Habitat: Calcium poor springs, frequently occurring on the water surface.

Family: Bithyniidae
Genus: *Bithynia* LEACH, 1818

7) *Bithynia leachi* (SHEPPARD, 1823)
Distribution: Europe, Turkey, northern Asia.
Habitat: This species inhabits the rivers and some river floodplains. It is particularly abundant in temporary floodplain pools. It serves as intermediate host to the trematode *Opisthorchosis felineus*, agent of the grave liver disease opisthorchiasis.

Family: Valvatidae
Genus: *Valvata* O. F. MÜLLER, 1774

8) *Valvata piscinalis* (O. F. MÜLLER, 1774)
Distribution: Europe, Turkey, northern, central, Middle and western Asia.
Habitat: Rivers, lakes and ponds.

Family: Melanopsidae
Genus: *Fagotia* O. F. MÜLLER, 1774

9) *Fagotia esperi* (FÉRUSSAC, 1823)
Distribution: Rivers of the Black Sea basin.
Habitat: Rivers.

B.2. PULMONATA

B.2.1. Basommatophora (Freshwater)

Family: Lymnaeidae
Genus: *Lymnaea* LAMARCK, 1799

10) *Lymnaea stagnalis* (LINNAEUS, 1758)
Distribution: The Aegean, the Mediterranean, the Central Anatolia, the Black Sea regions of Turkey, North Africa, Eorpe, Russia, West Siberia, North America, Tasmania, New Zeland.
Habitat: The marginal strip of the standing and slowly running waters, temporary water bodies.

Genus: *Stagnicola* JEFFREYS, 1830

11) *Stagnicola palustris* (O. F. MÜLLER, 1774)
Distribution: The Marmara, the Aegean, the Mediterranean, the Central Anatolia, the Black Sea regions of Turkey, Europe, Northwest Africa, Northern and Western Asia, North America.
Habitat: Shallow water bodies, lake littorals.

Genus: *Radix* MONTFORD, 1810

12) *Radix auricularia* (LINNAEUS, 1758)
Distribution: The Mediterranean, the Central Anatolia, the Black Sea, the Southeastern Anatolia regions of Turkey, Europe, Asia, North America, North Africa.
Habitat: The marginal zone of a large variety of the water bodies, from ponds, lakes to the rivers and brooks. The brackish lakes with an influx of salt water.

Family: Planorbiidae
Genus: *Planorbis* O. F. MÜLLER, 1774

13) *Planorbis carinatus* O. F. MÜLLER, 1774

Distribution: The Mediterranean, the Central Anatolia regions of Turkey, Europe, Siberia, Asia.
Habitat: A lake dweller.

Genus: *Gyraulus* CHARPENTIER, 1837

14) *Gyraulus albus* O. F. MÜLLER, 1774

Distribution: The Aegean, the Mediterranean, the Central Anatolia regions of Turkey, Transcaucasia, Northern Caucasus, Crimea, Ukranian, Europe, Western and Northern Asia, Japan, North America.
Habitat: Lakes, ponds, and the littoral zone of the sluggish rivers.

Genus: *Planorbarius* FRORIEP, 1806

15) *Planorbarius corneus* (LINNAEUS, 1758)

Distribution: The Aegean, the Mediterranean, the Central Anatolia regions of Turkey, Europe, Transcaucasia, Northern Caucasus, Crimea, the West and the East of Siberia, Asia.
Habitat: Marginal strips of the standing waters.

B.2.2. Stylommatophora (Terrestrial)

Family: Valloniidae
Genus: *Vallonia* RISSO, 1826

16) *Vallonia* pulchella (O. F. MÜLLER, 1774)

Distribution: Holarctic (In Turkey, İstanbul, Çanakkale, Bolu, Sinop, Samsun, Erzurum, İzmir, Muğla, Antalya, Konya-Beyşehir Lake, Adana, Mardin).
Habitat: Calcareous substratum, marshes, river-mouths, meadows, at the roots of the grass in moist fields, under stones, and on shaddy walls, seldom in dry habitats.

Family: Enidae
Genus: *Borlumastus* ÖRSTAN & YILDIRIM, 2004

17) *Borlumastus yildirimi* (SCHÜTT, 1995)?

Distribution: Endemic to the Lakes region (around Isparta) of Turkey.
Habitat: On limestone rocks and screes, calcareous soil.

Family: Ferussaciidae
Genus: *Cecilioides* FÉRUSSAC, 1814

18) *Cecilioides* sp.?

Distribution: There are five *Cecilioides* species (C*. acicula, C. minuta, C. raddei, C. subsaxana* and *C. tumulorum*) recorded from Turkey, all of which are Palaearctic.
Habitat: Subterranean biotopes.
Family: Hygromiidae
Genus: *Monacha* FITZINGER, 1833
Subgenus: *Paratheba* HESSE, 1914

19) *Monacha (*Paratheba*) rothii* (L. PFEIFFER, 1841)

Distribution: İzmir, Çanakkale (Turkey) and the Aegean Islands.
Habitat: Shaddy habitats in hot localities influenced by marine climate.

Genus: *Xeropicta* MONTEROSATO, 1892

20) *Xeropicta derbentina* (KRYNICKI, 1836)

Distribution: Black Sea Basin, Central Anatolia.
Habitat: Habitats of all nature and types, except extremely damp or wet sites, limestone soil preferred.

Ecological information of the shells

The shells identified and recorded are dominated by freshwater molluscs. The most abundant bivalves are Unio that were collected as a food source, but also served secondarily as raw material for producing ornaments. The gastropods and the small bivalves (Pisidium sp. and Dreissena sp.) were primarily species that were included in the sediments that were brought

into the site for construction purposes (Gümüş and Bar-Yosef Mayer, in preparation). The species discussed below were found to be intriguing and are still under investigation.

● Dreissena sp.

To date we have not identified the Dreissena shells from the site to species level. The Dreissena species reported from Turkey are listed below;
D. polymorpha (PALLAS, 1771): The Marmara, the Aegean and the Mediterranean regions of Turkey, Europe and western Kazakhstan. It inhabits the freshwater systems.
D. bourguignati (LOCARD, 1893): The Mediterranean region of Turkey. It inhabits the freshwater systems.
D. siouffi (LOCARD, 1883): Euphrates river system from Bagdad to Turkey. It inhabits the freshwater systems.
D. blanci WESTERLUND, 1890: The western parts of Turkey, Greece, the islands on the Aegean Sea. It inhabits the freshwater systems.
D. bouldourensis FISCHER, 1866: Burdur Lake, Burdur. It inhabits the freshwater systems.
D. iconica SCHÜTT, 1991: Ereğli, Konya. Recorded as fossil in Schütt, 2001 but Mienis & Çevik, 2009 reported recent specimens from Seyhan Lake.
D. diluvii (ABICH, 1859): Aras river. Recorded as fossil in Schütt, 2001.
D. caputlacus SCHÜTT, 1993: Adıyaman.
D. rostriformis (DESHAYES, 1838): Gelibolu, Çanakkale; Gemlik, İznik, Bursa (D. r. bugensis in Schütt & Şeşen, 2007).

We are not sure if the Dreissena specimens recorded from the excavation belong to one of the above. They might also be a new species or a fossil species.

● Borlumastus yildirimi (Schütt, 1995)

The unidentified broken shells which were thought to be a Chondrula species during the 2008 season turned out to be Borlumastus yildirimi (Schütt, 1995). This endemic species was only reported from the type locality (Senirkent, Keçiborlu, Isparta). Thus Çatalhöyük will be the second locality of this species. More specimens from the excavation are needed to make the identification more clear. In addition, the environment surrounding the site have to be surveyed for any recent specimens belonging to this species.

● Cecilioides sp.

Owing to the broken aperture, it was not possible to identify the specimen at species level. The Blind Snails (Ferussaciidae) are usually found in subterranean environment and they feed on fungi, molds, algae and decaying organisms.

Future Aims are to complete the identifying of the specimens collected from the site and to enter the informations into the shell database, as well as to use them for environenmental reconstruction. Unfortunately, very few landsnails were discovered at the site and the reason is as yet unknown. One possible interpretation could be that, the houses made of mudbricks did not allow the humidity to penetrate, thus making them an unattractive habitat for the landsnails. Alternatively, landsnails were moved out of the site by the settlers of Çatalhöyük in order to keep the houses clean.
The rest of the mollusc fauna inhabit freshwater systems prefering the slowly running water, the floodplains of the rivers, the lakes or the ponds. The recent habitat information together with the excavation information (context and stratigraphy) of the freshwater molluscs are under evaluation in order to reconstruct the environment along with the information coming from the landscape coring. Those will provide information on site formation processes and human behaviour.

References:
Claassen, C., 1998. Shells. Cambridge University Pres, 266 p., Cambridge.

Demirsoy, A., 1999. Genel ve Türkiye Zoocoğrafyası “Hayvan Zoocoğrafyası”. Meteksan A. Ş., Üçüncü Baskı, 965 s., Maltepe-Ankara.

Glöer, P., Meier-Brook, C., 1998. Süsswassermollusken, Ein Bestimmungsschlüssel für die Bundesrepublik Deutschland. 12. Erweiterte Auflage, Neustadt.

Gümüş, B.A. 2006. A Look at the Malacofauna of Çanakkale (Mollusca: Gastropoda: Pulmonata: Stylommatophora) from the Gelibolu Peninsula. International Congress of Çanakkale, The Foundation of Çanakkale, University of Onsekiz Mart The Municipality of İstanbul, (17–19 March 2006), İstanbul, Turkey (Congress book, p:513-523).

Hausdorf, B., 2000. The genus Monacha in Turkey (Gastropoda: Pulmonata: Hygromiidae). Arch. Molluskenkunde, 128 (1/2): 61–151, Frankfurt am Main.
Likharev, I. M.-Rammelmeier, E. S., 1962. Terrestrial Molluscs of the Fauna of the U.S.S.R. Second Impression, Israel Prog. Sci. Translations, 574 p., Jarusalem.

Mienis, H., 1992. Landsnails in a human skull from Khirbet Amarit, ısrael. The Papustyla, 6 (4): 46.

Mienis, H., Hadas, G., 2005. Archaeomalacological Finds in the Vicinity of 'En Gedi', 4. Molluscs in an Oven Dating to the 1st Century CE. Triton 11: 11.

Mienis, H., Çevik, C., 2009. How Many Dreissena species are Living in the Seyhan Lake Near Balcalı- Adna, Turkey? Tentacle No. 17, January 2009, 25–26.

Schütt, H., 1991. Fosilse Mollusken dreier anatolischer Ovas. Archiv fur Molluskenkunde, 120: 131-147.

Schütt, H., 1993. Die Gattung Dreissena im Quartär Anatoliens (Bivalvia: Eulamellibranchiata: Dreissenacea). Archiv fur Molluskenkunde, 122: 323–333.

Schütt, H., 2005. Turkish Land Snails 1758-2005. 4th, revised and enlarged edition, Verlag Natur & Wissenschaft Solingen, 559 p.

Schütt, H., Şeşen, R., 2007. The Freshwater Mussel Dreissena siouffi (Locard) in the River Euphrates.Triton, Journal of The Israel Malacological Society, No 16, September 2007, p. 1-4.

Yıldırım, M. Z., 1999. Türkiye Prosobranchia (Gastropoda: Mollusca) Türleri ve Zoocoğrafik Yayılışları, 1. Tatlı ve Acı Sular. Turkish Journal of Zoology, Volume 23 (1999), Ek Sayı 3, 877–900, Ankara.

Yıldırım, M.Z., Gümüş, B.A., Kebapçı, U. & Koca, S.B. 2006. The Basommatophoran pulmonate species (Mollusca: Gastropoda) of Turkey. Turkish Journal of Zoology 30: 445–458.

Zhadin, V. I., 1965. Mollusks of Fresh and Brackish Waters of the U. S. S. R. Israel Programme for Scientific Translations, 368 p., Jerusalem.

2009 POTTERY ARCHIVE REPORT - Nurcan Yalman

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In the 2009 summer season, various research and evaluations were conducted on the Neolithic pottery recovered between 2002-2008. During the winter of 2009 work focused on pottery found in 2002, in the South shelter foundation trenches. In that study, we have discovered several "recently noticed" ware group that were not seen in excavated areas in 2003-2008 within the buildings and spaces so far. The reason for that might be because of these recently noticed ware groups were not conspicuous in number in stratigraphic contexts. Therefore, the summer season was a good opportunity to re-check some of the buildings and

spaces. The buildings checked were B. 58, B.54, B.47 and B.45 and Spaces Sp.226, Sp.227, Sp.237, Sp.238, Sp.264, Sp.279, Sp.1000, Sp.1002.

The reason for re-checking B.47 before all else because of the possibility of this building presenting the latest phase (Mellaart Level III-IV) on the east mound and B.45 is seen as it is representing the preceding one of B.47 in sequence (Mellaart Level V-IV). After these buildings the middens were also checked because of their large amount of pottery. We also planned to re-check South midden sequence to be able to ascertain the stratigraphic location of these ware groups during 2009 autumn study in Istanbul. These "recently noticed ware groups" are thought to be representing a transitional (Neo-Chalco) period in Neolithic pottery sequence of the East Mound and for the moment they are named as Tr (for Transitional) to detect them easily among other ware groups. These groups are described briefly down below.

This season, the pottery database is refined and many terms unified and entries (such as typing mistakes etc.) corrected. Two complete vessels in the museum which are not registered in the database from 2002 were also studied in Konya and recorded (described, photos taken and drawn) (14533.X4 and 5417.X1).

The preliminary results of samples which were exported in 2008 for thin section, phytolith and organic residue (see Sharmini Pitter Report) analysis also evaluated and these first results led us to select a new series of samples to be analysed.

The other study that has been done in the summer season is an experimental study for volume measurement. In this study, we have selected various sizes of complete and almost complete vessels to measure their volume capacity as container. As a first step for this study we collaborated with conservation lab to temporarily complete broken parts of some vessels with wax and plaster. The summary of results of that study is given down below. The reason of doing that study was to estimate the volume of various possible contents of vessels assuming they might be used as container within spaces. This study will bear very interesting results when it is combined with the results of EVE (Estimated Vessel Equivalence) measurements.

In addition to these works mentioned above, representative sherds and vessels were selected to be drawn and handed over to illustrators.

The "Transitional" Ware Groups:
Although the characteristics of already described (see previous Archive Reports) "Dark" and "Light" Wares can be seen among 2002 pottery finds, there are some wares which has some different attributes in paste and forms.

TrDMF – Transitional Dark Mineral Feldspar Ware:
The general characteristics of this group is similar to Dark Ware. But the paste contain feldspar mineral. The feldspar can be seen in the sherd section in various sizes even in the thin walled ones. Therefore the sherds of this group gives the feeling of being brittle and hard. Most of them are fine ware and have fine work in and external surfaces, small bowl like forms are dominant forms and they have red or reddish slips.

TrDM-sh – Transitional Dark Mineral Shell Like Ware:
The difference of this group from previously known DMS-sh (Dark Mineral Standard Shell Like) Ware is, these sherds are clearly friable like biscuits. The inclusions in the paste are bigger than DMS-sh.

TrCMD – Transitional Cream Mineral Dense Ware:
The paste is calcerious or a mixture of marl and silt wich gives a powdery effect just like previously known Cream Ware group. The Cream Ware can easily separated from the others with homogenious paste the light and spongy feeling. But the compactness gives a feeling of density and heaviness of TrCMD sherds. The other difference is the outside colours, they are usually dark. The forms are also closer to the dark ware forms which are deep cooking pots rather than bowls and open forms of classical Cream Mineral Ware.

TrCML – Transitional Cream Mineral Loose Ware:
The calcite inclusion makes these sherds porous. They are coarser than TrCMD. Their firing also seem to be quite poor.

TrST – Transitional Shell Tempered Ware:
The general paste is closer to light ware groups rather than the dark ware because it is quite silty. The characterization of that group is the plenty amount of shell inclusion. Although the name of this group is "Shell Tempered", actually it is a natural inclusion of clay collected from backwater which contains land snails in it (personal conversation with shell specialists).
Re - evaluation of Spaces 226, Sp.227, Sp.237, Sp.238, Sp.264, Sp.279

4040 Sp.226
Midden area between zones of buildings. Bounded by B.47 to north dated to IV - III and B.45 to south dated to V – IV (from excavation database).

The re-checked units of midden yielded large amount of pottery, 580 body sherds and 164 of them are diagnostics. The utilization of the midden seem to be quite long and it has been disturbed in many occupation level by taking soil opening pits and then by filling them with new discard. Therefore it is easy to assume that the material found in that midden is mixed and stratigraphic location is incomprehensible. However, the units (8864), (8869), (8870), (8877) and (8882) show that there is still Mellaarts Level VI-V material with Dark Ware and Deep Jar domination but to do more accurate interpretation we need to evaluate the overall midden units (Figure 92)

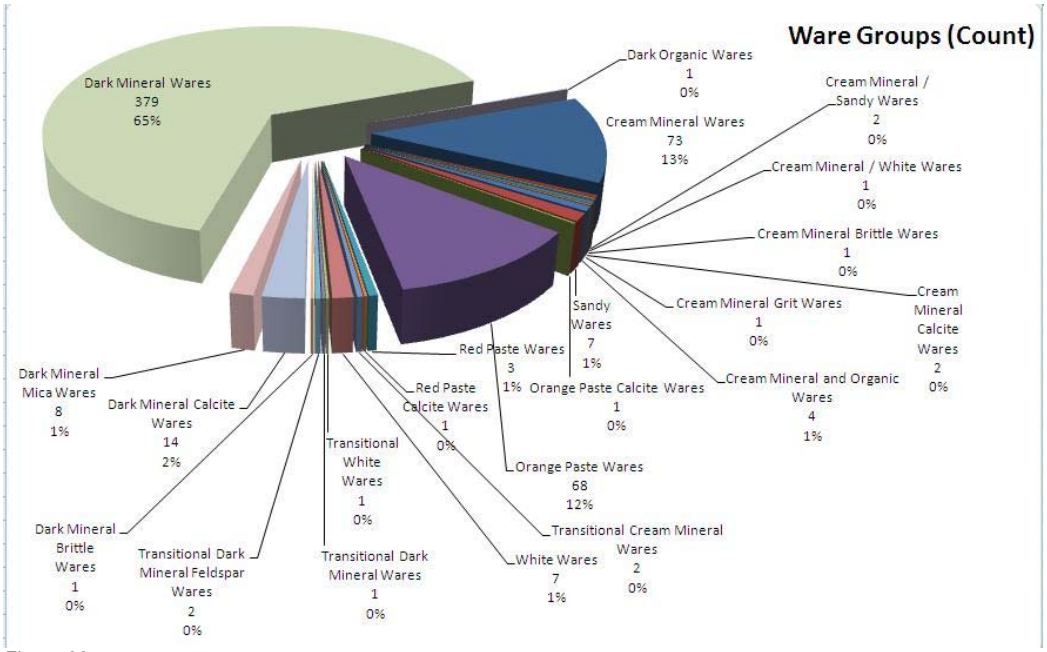


Figure 92:

4040 Building 47 Sp.237
The units rechecked are from relatively safe contexts:
(10203): demolished layer –but we have one insitu pot base
(10231): wall+platform
(10232): bricks/wall
(10234): fill of bin[F.1554]
(10236): plaster floors
(10238): fill of bin
(10243):floor
(10240):hearth fill [F.1555]
(10247):fill of circular cut –dog bone box [F.1556]

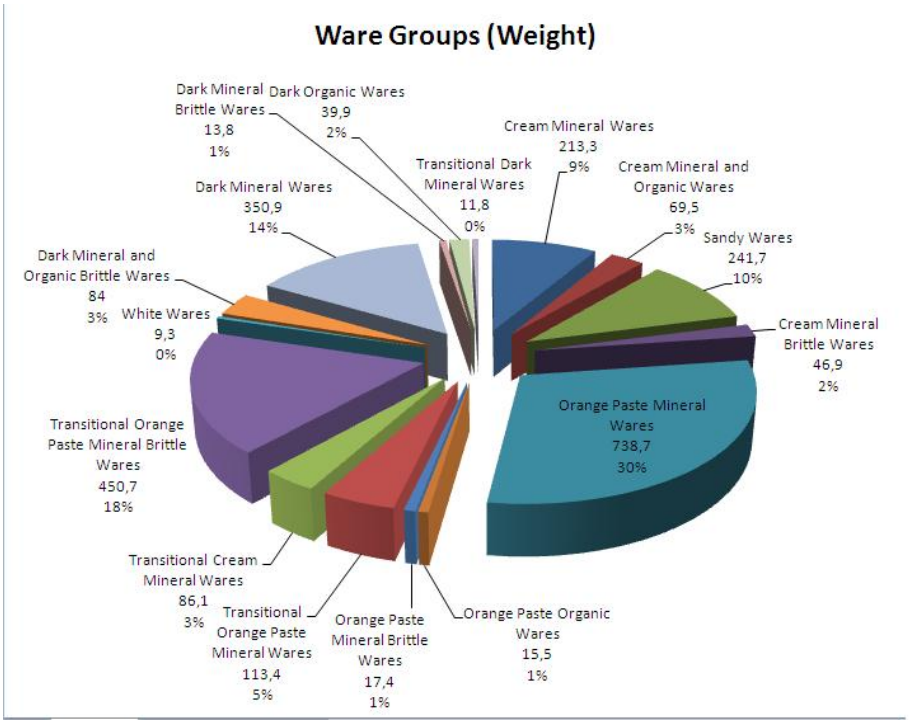


Figure 93:

Total amount of sherds from Sp 237 is 81 and 20 of them are diagnostic but most of them are very fragmented, base sherds are slightly bigger pieces than the other diagnostics.

As we mentioned above, Building 47 is the latest structure in the area , post dating all the other features and structures.

When we checked Sp.237 for Tr groups the stratigraphic location seen clearer. Tr groups are seen in relatively high in proportion (17%-count and 28% - weight) in that space, but standard Neolithic ware still exists in dominant.

The DMS (Dark Mineral Standard) ware percentage seem to be decreased. They are represented in 25% (weight) and 27% (count). Beside that situation, DMO (Dark Mineral Organic) ware became visible with % 3 (weight) and % 6 (count). According to these, it is possible to assume that Sp.237 might be located around and above Mellaarts Level III . The existence of “S” profiled rim sherds and collared jar forms also confirm both architectural and ware group stratigraphic location. (Figures 93 & 94)

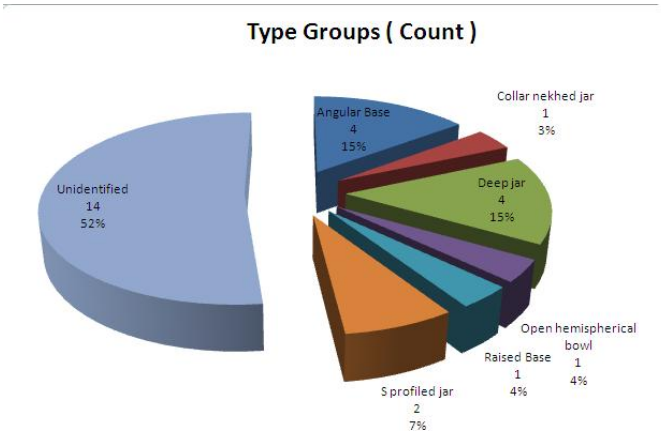


Figure 94:

4040 Building 45 Sp.238
The rechecked units for this space are mostly building fills (10051), (10061), (10084) and two from floors (10086), (10106).

Total amount of sherds is 45, 14 of them are diagnostics. The DMS ware group is still high in proportune (38%) but the dominant ware is OPB (Orange Paste Brittle) ware (42%). The reason for that situation might be the contexts were generally burnt building fills. The orange colour and the brittleness might be a result of secondary firing of the pot sherds within the context they belong. Nevertheless, the dark group is slightly decreasing in B.45 units. However, although we did not include DMgi (Dark Mineral Grit Ware) in to Transitional Groups, DMgi shows itself generally in upper levels but never in high proportions. For now, it is not easy to determine its stratigraphical location.

When we look to the type groups we see closed hemispherical bowls in most (45%) and the closest follower is open hemispherical bowls (40%). The deep jars percentage, the common type group of middle levels (e.g. Mell VII-VI and V), is only 2%. That result should be checked in general percentages of B.45 units to estimate better stratigraphical location.

4040 Building 54 Sp 264
The only unit rechecked is (11924), because of the amount of sherds is relatively larger. Although it is described as erosion layer, but we thought it is still a room fill and the general distribution of ware and type groups may give us a general sense about the stratigraphic location.

The total amount of sherds is 163 and 5347 gr. Only 25 of them are diagnostic.
The dominant ware group is clearly the Dark Ware ; DMS 34%(Dark Mineral Standard), DMM 29% (Dark Mineral Mica), DMB 28% (Dark Mineral Brittle). But these groups have also indicative for determining the stratigraphic location and they seem to be quite mixed in that unit. Because we also see TrDM 4% (Transitional Dark Mineral) and DMC 1% (Dark Mineral Calcite) in small proportions. The light ware is in small quantities.

It is not only the dominance of Dark Standard Ware but also the type group , the deep jars which goes with it also high in proportion 24%. It is important to check the general statistics to estimate the startigraphic location. The increasing number of Dark Mineral Mica (DMM) 29% and Dark Mineral Brittle (DMB) 28% wares might be an indication of new technology or its experiment stage. The existence of mica as an inclusion is common at Catalhoyuk but towards upper levels (Mell Level III-II) the density of mica is increasing in the clay paste (Figures 95 & 96).

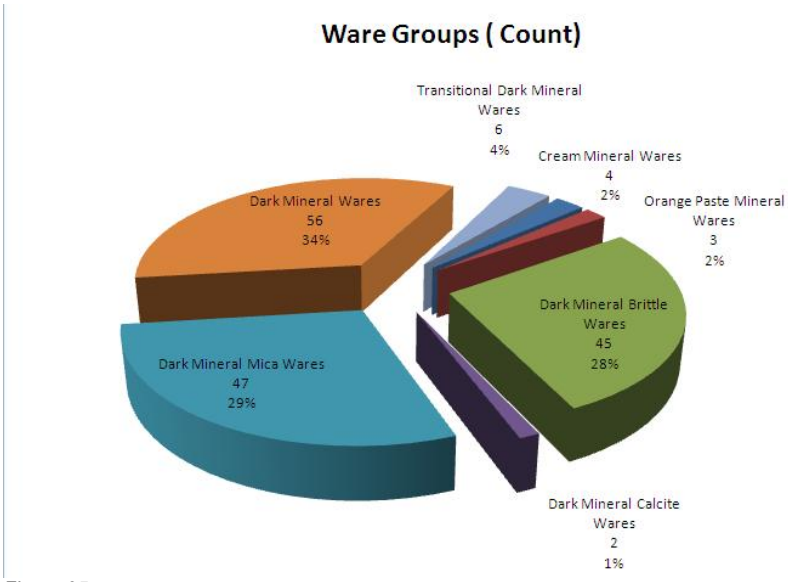


Figure 95:

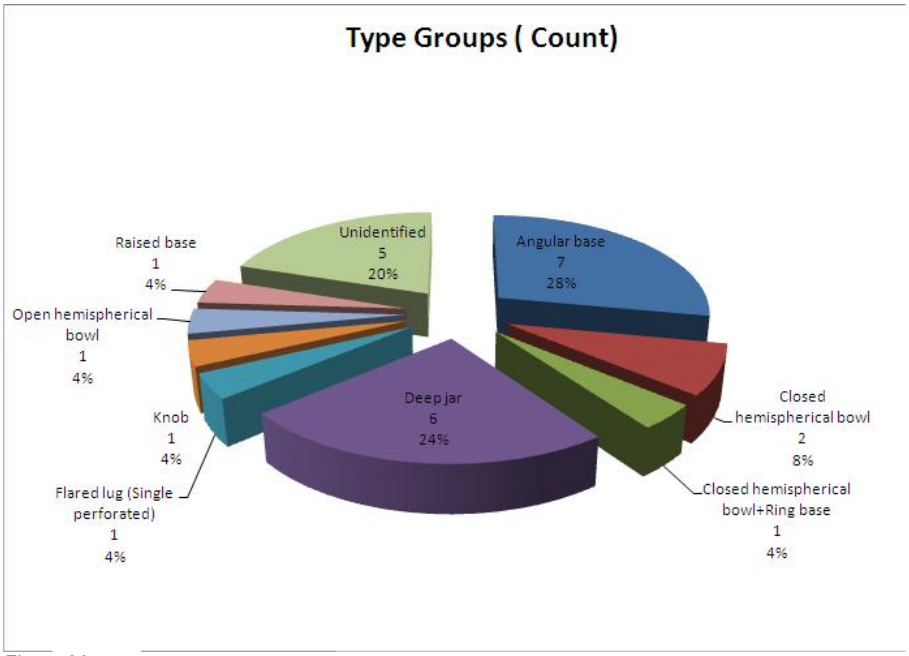


Figure 96:

4040 Midden Sp 279

The re-checked units for this midden are; (12971), (12972), (12980), (12988), (13103), (13127), (13140). The total amount of sherds from these units; 1209 sherds (336 of them are diagnoctics) and total weight is 21,849 gr. Although some of the transitional groups exist in these units, the domination of Dark Ware (66% in weight) and the type group of deep jars and closed forms (30% in weight) which always seen together with that ware group is clear. That situation shows that the midden is still in Mell VI-V levels in characteristics. The existence of grooved decoration, “S” profile rim sherds, one twin lug, a collar necked bowl sherd a couple of miniature bowls probably indicate the mixture of several levels in small quantities.

An Experimental Study For Estimating The Vessel Capacity

The vessel forms at Çatalhöyük do not have a standard shape or even running. Therefore it is not easy to measure their internal volume. This season we tried to develop a method to measure them relatively accurate. At Çatalhöyük the pottery is taken mostly as an indicator to understand temporal changes. The need to understand pottery vessels as container directed us to do an experimental work. For that purpose, we have selected six various sizes complete or substantially complete vessels and they are completed temporarily with the help of conservation lab .

This operation started by completing missing parts of vessels and then filling the gaps and holes with silicone material after the edges of the application area were covered with masking tape and then plaster applied (Figure 97)

The completed vessels were filled with sand up to 2cm left to the rim. The sand measured with a scaled cup.

The results of that measurement will be applied to various stored food material found at Çatalhöyük in cooperation with animal bone lab and botany lab and also some liquids such as milk, water.

Figure 97: Restoration for experiment for vessel capacity. Photo Pot Team.

West Mound Trench 8 Pottery Analysis - Ozan Özbudak

In the July of 2009 season, I worked for 10 days on pottery material from the West Mound Trench 8 identified as ECII by Mellaart pottery. Trench 8 is located to the southwest of Mellaart's old trench. This trench represents two different phases. The main phase includes arthitectural remains with abundant pottery(ECI).The second phase of Trench 8 which is the focus of my study, represented destruction fills and midden pits. I decided to start with ECAII material because of it's discreet collection that could be studied in a resrtricted time period to identify general features of the material. Firstly, I detected all units (15560), (15558), (15528),(15529),(15537), (15545), (15588) from the later phases and associated all the ECAII pottery together. I determined 26 different ware groups including typologies of paste, inclusion, firing and surface treatments . These groups contamplated exhaustively and every single detail considered. Thus, they can be correlated to the East Mound pottery classification easily such as DMS, DMSop etc. All of the material is handmade. The majority of the pottery was burnished and painted on slipped surface; the dark faced, coarse wares relatively infrequent. Quartz and limestone represent the most frequent tempering matter; organic temper is rare. According to Chris Doherty, there is also cultural soil in the pottery tempers. Typological classification has not been conducted yet. But it seems to have a restricted shape repertoire.

Organic Residue Analysis - Sharmini Pitter

Twenty-five samples were analysed via gas chromatography (GC) in a preliminary study of fatty acid residues present in ceramic and non-ceramic materials at Çatalhöyük. The primary goal of this project was to determine whether further GC and gas chromatography-mass spectrometry (GC/MS) analysis would be beneficial to the site. Of the twenty-five samples studied, nineteen were pottery sherds, two were clay balls, three were part of an oven lining and one was an unidentified non-fired clay object. Ten of the sherds and one of the oven lining samples yielded significant amounts of residue present, all of which are most likely derived from animal fats. Further analysis is needed in order to determine whether these fatty acids originate from adipose or dairy fat from ruminant or non-ruminant animals. The clay balls continued to not yield any detectable amounts of fatty acid residue. Analysis will recommence in November of 2009 at the University of Bristol under the guidance of Professor Richard P. Evershed.

Figurine Archive Report 2009 - Lynn Meskell (Stanford University) & Carolyn Nakamura (Stanford University)

Assisted by Jeff Aviss – Oxford University

This season we had a number of objectives, primary of which was preparing the figurine chapter for the upcoming site publication. Other priorities were conducting a more micro-scale analysis of clay composition in conjunction with Chris Doherty and Jeff Avis from Oxford University; investigating the possibilities of using XRF analysis to determine composition and firing; updating our previously published work on site-wide densities and embarking on comparative analysis with other Neolithic sites in the Middle East and Balkans where figurine studies have been conducted. While this is a study season and the numerous figurines from excavations this year are not being analyzed in full, though all finds have been examined on a

daily basis, we thought it important to record two notable stone pieces in more detail and publish them here.

Figurine 18523.X1 (Figure 98) was located in house fill in Building 79. It is a free-standing limestone figure of bearded man, with important parallels from Mellaart's excavations. Its basic shape is a triangular seated or reclining form that is moderately carved or possibly unfinished. The face is largely comprised of a protruding nose and lightly marked holes for eyes. The distinguishing feature is the hair and beard such as Ankara examples 79-457-65 and 79-191-65. The closest parallel is Ankara 79-455-65, which is almost identical in terms of decoration, size, and shape. There is a band around the forehead that extends to the back, possibly a headband. There is also a groove extending from the front to back of the head. Below the bead and directly onto the chest area is a deeply incised V, similar to the images carved at Göbekli and Nevai Çori. Only the block form indicates a body shape and the stomach area was not delineated. The arms are incised and shortened, facing front with fingers roughly indicated. A deep incised line runs under the arms but not all the way around to the back. The legs are indicated by a frontal groove resembling the legs of 79-801-65 in Ankara; they are thin and not naturalistic. From the back the figurine appears as simply a head and column shaped body. Its dimensions are 12.02 cm high, 10.44 cm wide and 4.5cm n thickness, weighing 152 grams.

Figure 98: Figurine 18523.X1—limestone figure of bearded man located in house fill of B.79. Photo Jason Quinlan.

Significantly, 18545.X1 (Figure 99) also comes from Building 79 house fill. It is a seated figure on base with small animal head protruding between the legs, carved from limestone. The human portion has an overly large and disproportionate head. Facial features are minimal and there is damage, however, the ears are pronounced. There may be evidence of a carved nose and a slit for the right eye. This was harder to tell after consolidation. The chest area is concave and the figure leans to the right. Arms on either side are outlined and the sit upon the thin, carved legs. The left arm appears longer than the right. Neither hands nor feet are carved. At the front one can clearly see the animal head and outlined body between the legs, lending a phallic quality to the piece. Before conservation the eyes of this animal head were more visible. To the sides and back you can see the shaping of the buttocks and legs, whereas the head and back are not detailed and form one simple column. Given the helmet like shape of the head, the view from the side is rather phallic. From the back one can see the ears sticking out. There is a slight nick in the base of the figure at the front to designate the overlap of the legs and the animal body or base that the figure sits upon.

The head of the human portion looks similar to that

Figure 99: 18545.X1—a tall marble figure (21.8 cm) seated on a base. Photo Jason Quinlan

of 10264.X1 that is almost Cycladic in shape: the emphasis is upon the nose. The head area is the least naturalistically worked and is too large for the body. Parallels from prior excavation in the 1960s include animal riders like 79-167-65 and 79-457-65. The closest parallel in shape and design, albeit much larger, is 79-801-65, a tall marble figure (21.8 cm) seated on a base. While it has no animal head protruding it does have a detailed, raised and whitened area between the legs, which may indicate a penis? There is no evidence of paint on 18545.X1. The overall effect is of a lumpy, disproportionately carved figurine. It may have been modified from a selected stone that already had some suggestive shape.

Clay Composition: Çatalhöyük figurines are predominantly made from clay, although there are a few examples rendered in stone including marble, limestone, pebbles and speleothems. The figurines present particular difficulties for intensive clay fabric study, since the objects cannot be exported or be subjected to destructive analysis. Given the impossibility of petrographic analysis the best strategy for ascertaining the range of materials and treatments for clay figurine fabrics must derive from a good understanding of the local geology. Recent coring has produced a clearer picture of the alluvial landscape around the site. Doherty's findings (Doherty & Camizuli 2008: 257-8) with respect to the figurine clays demonstrates that the range of fabrics represented tend to be finer and more clay rich than those of other clay artefacts. This is consistent with the demands of these relatively small forms to cope with high curvatures across relatively small diameters. Both contemporary alluvial clays and the underlying Pleistocene lacustrine sediments were used, both being procured in the immediate vicinity of the mounds. None of the figurine clays are tempered; all are naturally fine sediments. Finally, figurines have not been fired to pottery-making temperatures, although some do appear to have been hardened through heat. The vast majority are best described as baked, whether directly sun baked or in association with ovens and hearths within buildings. Colour is also affected by heat exposure and further experimental study on local clays at different firing temperatures may allow us to approximate the levels of heat or baking that was required to produce the specific range of colours seen in figurine fabrics. It is likely that we do not have figurines that have been subjected to high firing given the features observed to date.

Most of the clay figurines could be described as manufactured from fine, naturally clean clays. People chose clays within close proximity to the site that were similarly the best fabric for crafting the expedient, small, well-smoothed, sturdy figural pieces. Fabric with more inclusions or a higher sand content would have required more effort (working, modelling, smoothing and heating) to achieve a similar end product. Building on this work, Jeff Avis examined the clay fabrics of some 250 figurines from 2007-8 in order to ascertain a range of common figurine fabrics and his new Clay Fabric recording system was directly integrated into the figurine database.

Figurine manufacture appears to have employed relatively simple techniques. Although we have not x-rayed any figurines to confirm the production techniques used, most figurines appear to be fashioned from a single piece of clay; this is certainly the case for abbreviated forms. Animal figurines also suggest modelling from a single piece of clay. If the limbs were added on to the torso as separately formed pieces, we might expect to see particular breakage patterns along the limb joins as these would be the weakest joins. To date, none have shown any evidence for this technique as breaks occur at various points along the limbs, and across the torso, neck and back. The one exception to this technique may be found with the horns. Some horns that are broken around the base to reveal slightly concave/irregular surfaces, suggest that these were attached to another piece, presumably a head. However, many animal heads still bear horns that were broken further up the shaft or are completely intact. The anthropomorphic examples also generally appear to manufactured from a single piece of clay, although there is at least one example on which the breasts and belly were applied separately (13103.X19).

Table 17: Clay Description section of the updated Figurine Database

The clay examples range from being fine to coarse manufactured. The majority of anthropomorphic forms are finely modelled, the abbreviated ones are predominantly fine to moderate and zoomorphic figurines are largely moderate in regard to modelling quality. In the anthropomorphic set, the finer examples often show well-proportioned if not realistic renderings of the human form. In the zoomorphic group, the finer examples are often quite small and sometimes suggest an attempt to depict a specific species of animal such as a sheep/goat, boar, ram or bear. When we discover horns as separate fragments they are typically fine or fine to moderate and this may be due to the clay fabric being particularly well-suited for rendering small, compact and simple forms. On the extreme of the coarse side, we have several quadrupeds that appear to have been made just for disfigurement as they were 'stabbed', deformed and broken while the clay was still fresh (see discussion below).

Table 18: Modeling Quality by Figurine Form (F = Fine, M = Moderate, C = Coarse)

Figurine Type	F	F-M	M	M-C	C	TOTAL
Anthropomorphic	65	33	42	8	13	161
Abbreviated	57	117	99	16	23	312
Zoomorphic	52	65	116	47	60	340
Horns	136	114	91	16	7	364
Total	310	329	348	87	103	1177

Given the recent interest in the application of XRF analysis to a broad swathe of materials, we attempted this year to apply this with a sample of figurines, both zoomorphic and anthropomorphic.

Representations: We were also fortunate enough to have the expertise of Professor Maurizio Forte (UC Merced) and Claudia Luizza (Stanford) who conducted 3D laser scans of numerous figurines with a portable object scanner (Figure 100). The aim of this work was to add another dimension to the visualization project that we have been interested in from the outset. Instead of focusing on 2D renderings, we have wanted to explore the material qualities of figurines for holding, handling, circulating and manipulating. Another benefit of the scanning technique is that viewers can view and rotate the figurine in all directions, as well as enlarging it, to ascertain aspects of manufacture and composition. The free Opensource software used was Meshlab (for Mac and PC) and we hope to make these scans available online through the Çatalhöyük project website and the Stanford Figurines project website.

Figure 100: 3D laser scans. Image Maurizio Forte & Claudia Luizza

We continued to work with the site illustrators to ensure a broadly representative sample of figurines are drawn for the upcoming publications and we discussed at length the types of reconstructions we felt would best capture the nature of figurine manufacture, use and deposition we have evidence for across the site. Our main concern was to reflect the mobility, circulation and variability of figural practice at Çatalhöyük. We have also started to look for patterns around possible items of clothing, decoration and head elements that we find in the corpus.

While depicting clothing was not a priority, there are indications of hair, head detail and some bodily decoration. From the 1930 examples in our database, only 6 (or 0.3%) have any evidence of clothing and those are largely from Mellaart's excavations. Eleven have indications of a hat or a pointed head and another 36 have a more ambiguous head element that could be a particular headgear or hairstyle (total 2.4%). Another 23 figurines (or 1.2%) show either parted hair or hair detail. Albeit a small percentage of the overall anthropomorphic and abbreviated corpus, there is a consistency of emphasis upon the head area. Notably many of the head elements, folded caps or pointed heads or hats occur on the abbreviated forms, reinforcing their human qualities and crossing over with the anthropomorphic category. Arguably, the area of the head is likely to indicate identity or difference (see Meskell 2008; Talalay 2004; Kuijt 2000; Hamilton 1996). These variables (elaborated head, hair, hat), plus those with facial features (45 or 18% of the 255 anthropomorphic examples) and the headless examples (or detachable heads) all draw attention to the head as a symbolic locus, possibly in performances at ancestral rituals, for social transactions or identity transformations.

Figurine Correlations: Given the new work on history houses, elaborated buildings and attention to houses with numerous burials, we have now begun to quantify the numbers of figurines and ascertain whether a pattern exists. Significantly, there does not seem to be a correlation between the presence of elaborated architectural features such as plastered bucrania (or more elaborate buildings in general) and the presence of figurines (Table 19), a pattern that also bears out in terms of larger buildings (Table 20) and buildings with many burials (Table 21).

Table 19 Number of Figurines by elaboration in Building

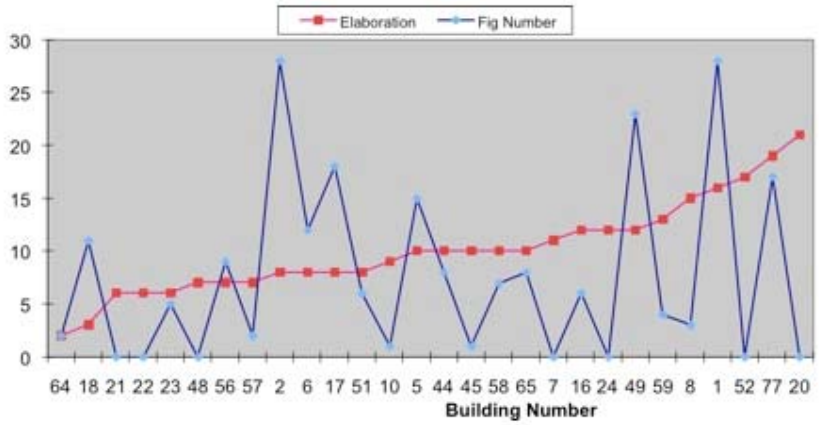


Table 20. Number of Figurines by Building size

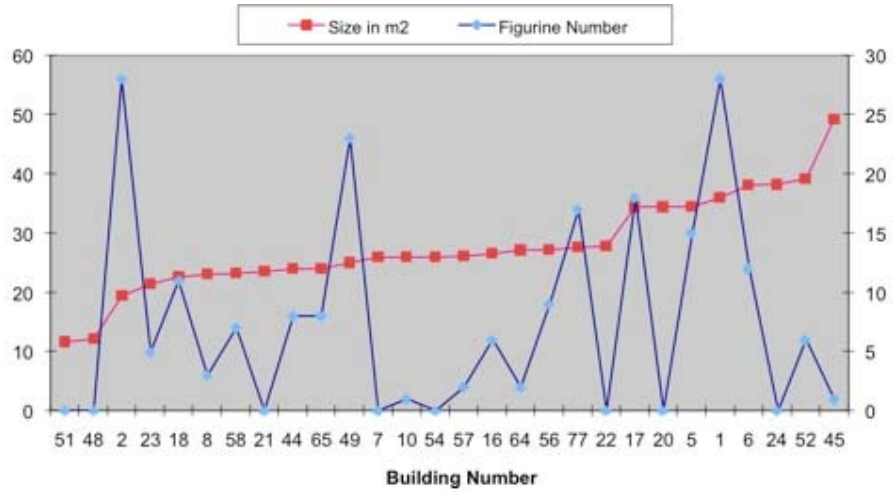
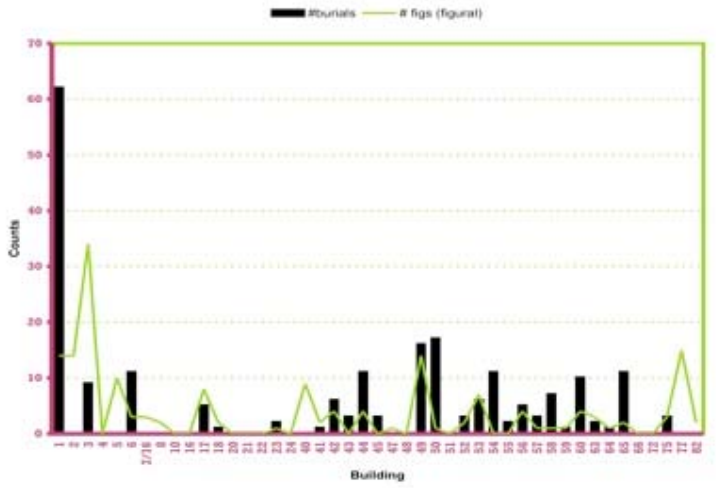


Table 21. Number of Figurines and Burials by Building



We should qualify the ideas of ubiquity and everydayness that we deploy for describing figurine practices at the site. Although our figurine corpus comprises nearly two thousand pieces, we should remember that the site presents around 1500 years of occupation. While the figurine numbers seems rather high compared to other contemporary sites, even the

unbaked clay figurines were quite durable and could have been in circulation or use for years or even generations. But different figurines also had different lifespans. Figurines were not a significant presence in burnt Building 52, which may have captured a building 'in use' as it were. Somewhat differently, B.77, also a burnt house, does indicate that figurines were kept and used in houses, as several were caught in the burning/collapse event. Figurine practices in houses clearly varied and there is no consistent correlation to ritually elaborate features and practices. The views offered by individual buildings then support our general view that figurine practices offered a very flexible technology.

We also examined other potential patterns and updated some of previously published charts. This includes analysis of deposition by location of certain types, numbers of different figural forms in total, counts by excavation area (TP, South, 4040), counts by specific context (midden, fill, external area) and density of finds. In terms of individual figurines we examined each one and determined modelling quality by figural form, breakage patterns by type, as well as the general degree of preservation. This work entailed a significant amount of database cleaning and where relevant reanalysis of finds.

There was also a productive discussion with Dr. Louise Martin (UCL) concerning future work on zoomorphic figurines, specifically understanding more fully the representation of quadrupeds at Çatalhöyük. Corresponding with this new program of study would be a substantial modification of the figurine database recording system. Her idea is to conduct more detailed examination of each figurine, assessing morphological features (such as head shape, horn shape, body type), zoning of damage or marking, sizing, breakage patterns and refitting. This enables a more transparent method of assigning categories by specialists. Significantly, this methodology targets the intentionality of figurine makers as well as non-discursive practices that lie behind representing and transacting animals across the settlement. This potentially sheds light on any standardization of the production and recognition of figurines by Neolithic makers, outlining an indigenous knowledge of the salient markers of animal species or types. She suggests looking at knowledge categories across levels, between neighbourhoods, or across the entire sequence. Since this entails re-examination of some 330 examples we plan to conduct this work jointly in 2010. If we extend the research to include all zoomorphic examples (mainly individual horns) we are looking at 935 examples in total. This is an exciting new program of work and fits well with what we have already undertaken for abbreviated and anthropomorphic types. It would also allow us to compare trends in the figurine assemblage with those same characteristics in the plastered features, installations and wall painting.

Comparative Analysis: It is often said that work at the site has been narrowly focused and should extend outwards to be more comparative. Previously we considered the site's imagery and symbolic practices within its larger regional context, specifically with reference to Göbekli (see Hodder & Meskell, and below). However, one important caveat is that comparison with other site publications is problematic since many projects have traditionally recorded and published visually notable finds, largely of anthropomorphic figurines. They have not been so focused on the range of figurines and fragments of figurines and so it is difficult to draw parallels across the entire figural corpus. It would therefore be difficult to compare the numbers of zoomorphic and indeterminate figures or parts thereof that are not readily available for analysis. One reason for the under representation of figurines and certain figurine types across Middle Eastern sites generally is excavation strategies: not all field projects sieve extensively or systematically, and many do not conduct heavy residue retrieval or analysis. The same was true of the 1960s site excavation by Mellaart and we have previously published numerous figurine finds, in comparatively high density, that have been re-excavated from his spoil heap (Meskell et al. 2008: 145).
The Çatalhöyük figural corpus is comprised of roughly 48% zoomorphic, 18% abbreviated, 14% anthropomorphic and 20% non-diagnostic examples. For the purposes of this report we consider figurines separately from examples of statues, plastered skulls, and so on, whereas other studies have worked across various media (e.g. Meskell 2008; Kuijt & Chesson 2005). Zoomorphic figurines predominate at many Neolithic sites in Anatolia and the Levant as at Çatalhöyük. At Nevali Çori there are some 416 figurines (including 179 standing male figures, 169 seated females, 29 zoomorphic, 39 abstract examples, (Morsch 2002). Es-Sifiya in Jordan has 215 zoomorphic and 23 anthropomorphic figurines, along with 78 geometrics and

9 indeterminate pieces (Mahasneh & Gebel 1998:106). Munhata in the southern Levant has 36 zoomorphic and 19 anthropomorphic in the PPNB and in the PN 24 zoomorphic and 21 anthropomorphic, cattle being the most frequently represented (Rollefson 2008: 397). In 'Ain Gazal the PPNB revealed about 150 animal figurines with cattle dominating the assemblage (Rollefson 2008: 399), some of which have been 'ritually killed.' There is a decrease in general figurine numbers into the PPNC and also the ratio of zoomorphic to anthropomorphic examples is less marked (Rollefson 2008: 403). Kuijt and Chesson similarly document the predominance of zoomorphic figurines across the MPPNB/LPPNB-C for the southern Levant, with an increase in ambiguous forms in the later phases (Kuijt & Chesson 2005: Table 8.3).

In the Greek Neolithic, Nanoglou (2005: 148) demonstrates that there was a preponderance of anthropomorphic rather than zoomorphic figurines, a situation that is the inverse of ours (Meskell et al. 2008). In Thessaly the ratio of humans to animals is a striking 10:1. His studies have shown differential treatment between species and regions: 'In Thessaly, humans stood alone, or nearly alone, as worthy or in need of representation. In the central Balkans, humans and animals, whatever their differences, were deemed similar enough to be included in the same discursive field' (Nanoglou 2008b: 8). From this broad patterning he suggests that settlements with both animal and human figurines (Central Balkan sites like Anza, Kovacevo, and Rakitovo as well as Çatalhöyük) evince a working through of the relationship with the world-out-there, a world populated by animals, peoples and others (Nanoglou 2008b: 9). Alternatively, Neolithic sites such as the Thessalian examples where largely human figures predominate may signify that people were more preoccupied with the world of the community and intra-site human relationships.

The kinds of animals and ratios represented in the faunal assemblage do not match those patterns across the figural repertoire, whether figurines, wall plasterings or wall paintings. The animals represented in the figurine corpus (when we can identify specific species), suggest that making figurines was not necessarily about guaranteeing food, or about animals as calorific reservoirs, or about dead animals for consumption, rather than live animals with associated meanings. This might go some way to understanding why species specificity was not always a priority, why categorical blurring was often enacted, why other sorts of evocative creatures, with qualities rather than naturalistic attributes, may have been fashioned. Such an approach also moves us away from the paralyzing bind of figurines being fashioned for hunting magic, that every beast is a wish figure for a future meal.

The pattern found at Çatalhöyük, where animal figurine ratios do not parallel faunal assemblages, is observable elsewhere. For example at Cayönu, Özdogan noted the absence of pig figurines during the Round and Grill building subphases while pigs featured so prominently in the faunal assemblage (Özdoğan 1999). Similarly, at 'Ain Ghazal, goats accounted approximately 50% of the animal bones during the MPPNB period, yet only a couple of animal figurines could be assigned to this category. As at Çatalhöyük, cattle figurines at 'Ain Ghaza dominated the corpus, significantly they were a wild species comprising some 8% of the faunal record (Rollefson 2008: 409).

There are some general figurine patterns across the Neolithic of the Middle East that are noteworthy. Rollefson notes that 'with the onset of the PPNB, animal figurines become ubiquitous in the Near East, although human figurines – both male and female – are also important, occasionally far outnumbering zoomorphs. Among the animal figurines, cattle are usually most numerous, although in places sheep/goats and birds are almost as frequent…In the ceramic Neolithic, females are clearly the most abundant, but numerous pebble figurines are unclear in terms of their connotations of sexual identity. Nevertheless, the absolute numbers of figurines remains relatively low' (Rollefson 2008: 403-5). While this provides a helpful backdrop, the situation is somewhat more complex at Çatalhöyük. First, evidence at Çatalhöyük already indicates that figurine manufacture and use were common daily practices that are reflected in the numbers of figurines recorded. As we have demonstrated (Meskell et al. 2008: Table 6), zoomorphic figurines tend to dominate throughout the history of the site, though it is true that we have recorded fewer anthropomorphic examples in the earliest levels of excavation. Zoomorphic examples were notable in the pre-XII levels of the site (29 examples) and continue throughout the sequence. He notes that female figurines are more numerous in the later phases while also noting that there are numerous ambiguously

gendered objects. Very broadly this could be applicable to our corpus as well, with more female figures from Level VII onwards. Voigt argues (2000: 290) that the Anatolian data show fairly equal representation in the PPNB moving to one of disproportionate representation of women and pregnancy.

If we look at macro patterning, with the caveat that few sites provide real quantification much less full spatial analysis, we can see a few general and significant trends. Rollefson argues that 'figurine use seems to crescendo in the MPPNB, perhaps signalling a peak in social tensions associated with population growth. The statuary is possibly associated with an emphasis on social identity based on corporate kinship groups' (Rollefson 2008: 405). From our perspective this is a collapse of time scales, conflating the momentary making of figurines and that long-lived tradition, with the potential of multiple meanings – with a long-term quasi-evolutionary schema that we have identified with the vantage of hindsight. Other scholars have similarly noted that during stressful shifting times with population increase, changing residential patterns, resource depletion, and the 'stress from living together in sedentary settlements' may have led to representational changes around the display of sexed bodies (Kuijt & Chesson 2005). Did people at Çatalhöyük experience the stress of population growth at a particular moment by rapidly increasing or changing their figural production? Is there evidence of such actions in cultures elsewhere? This has always struck us as an assumption that is far from causal and typically teleological.

We do not want to conduct an art historical analysis of figurine types across the Neolithic Middle East or the Balkans. However, we do want to stress that there is significant variation from site to site, and settlements often appear to have a particular local style. For instance, one look at the figurines from Çatalhöyük and those at Haçilar would demonstrate this tradition of locality. There are similarities of emphasis upon fleshy bodies at Hacilar (both sitting and reclining), but each site style is different with felines and children climbing over the bodies of adult females at Hacilar. The facial and bodily representations are notably different at each site. In fact there are examples from Hoyuçek that are much more similar to Hacilar than anything from Çatalhöyük. Looking at MPPNB Cayönü it is clear that anthropomorphic figurines dominate, with a smaller number of female figures and ambiguous examples. Cayönü has some fleshy, seated forms that are reminiscent of Çatalhöyük types. Publications by Voigt (2000) show a range of anthropomorphic forms from Gritille Hoyuk that would fit well within our own site materials.

Archaeologists at Cayönü classified some 20 'female figurines' that in fact look very similar to the abbreviated examples at Çatalhöyük. Abbreviated Çatalhöyük forms look similar to materials published from Es-Sifiye (Taf 18 in Hansen), Sarab (Taf. 27 Hansen), Asagi Pinar (Taf. 183) and Tell Aswad. It may also be the case that these styles have been classified as tokens or game pieces at other sites, since their conical appearance might lead to this interpretation. Convincing work has been done for Es-Sifiya demonstrating the uniformity and standardization of a large number of conical and spherical clay objects (Mahasneh & Gebel 1998: Figure 2), suggesting to the excavators their role in 'concrete events' or 'transactions.' These materials share some overlap with about 30 cones and spheres recorded form 'Ain Ghazal and a vast number (almost 1,600) from Tell Sabi Abyad (Verhoeven 2007: 177). While these examples bear some resemblance to our abbreviated forms, there are notable differences. At Çatalhöyük we have approximately a dozen conical forms with a high rate of variability and findspots in midden, house fills and so on. Our abbreviated forms typically show either anthropomorphic or zoomorphic traits (e.g. legs, noses, heads, headgear) and evince a wide range of individual styles.

Phallic forms, plus reclining figures with protuberances emanating from lower body at Mezraa Telielat (Özdogan 2001; Özdoğan 2003) appear very similar to a handful of our examples. The carved stone figurine with the phallic neck (10264.X1) is reminiscent in style to several other phallic figurines with elongated necks from the Cypriot Neolithic (see Knapp & Meskell), Teppes and Arkolies, Khirokitia, and Erimi.
There are a number of anthropomorphic figurines, typically fleshy forms, which are headless bodies with dowel holes (e.g. 12401.X7, 12420.H1, 14183.X11, 13140.H3), as outlined above. The current project has discovered approximately 15 of these and we have also noted a couple of heads that have corresponding dowel holes in the base for attachment to bodies. At

Hoyuçek we see similarly squat torsos with dowel heads (Hansen 2007L Tafel 69). Other examples at Hoyuçek have cylindrical heads, like Neolithic Acrolith figures in Greece (clay bodies with stone heads (Nanoglou 2008a: 321), which is a very different style to those we find on site.

Context is also a crucial dimension of study. Rollefson usefully states that figurines have not typically occurred as a common element in burials anywhere in the Near East (Rollefson 2008: 406). There is some evidence that they could be included in burials in the Balkans during the late Neolithic (Bailey 2005: 56-62), but the exact relationship between figural practice and burial remains unclear (Nanoglou 2008b: 4). And when we do have contextual data, clay figurines are almost always found in rubbish deposits. Unlike other sites that boast caches such as the several hundred figurines found in a single deposit at Es-Sifiya (Kuijt & Chesson 2005: 174), we do not have such dramatic and singular discrete finds at Çatalhöyük.

References

Bailey, D. W., 2005. Prehistoric Figurines: Representation and Corporeality in the Neolithic, London: Routledge.

Doherty, C. & E. Camizuli, (2008). Clay-Based Materials Report, in Archive Report on the Çatalhöyük Season 2008 www.catalhöyük.com.

Hamilton, N., (1996). Figurines, clay balls, small finds and burials, in On the Surface: Çatalhöyük 1993-1995, ed. I. Hodder Cambridge: McDonald Institute, 215-63.

Hansen, S., 2007. Bilder vom Menschen der Steinzeit, Mainz: Verlag Phalipp von Zabern.

Kuijt, I., (2000). Keeping the peace: ritual, skull caching, and community integration in the Levantine Neolithic, in Life in Neolithic Farming Communities: Social Organization, Identity, and Differentiation, ed. I. Kuijt Dordrecht: Kluwer Academic Publishers, 137-64.

Kuijt, I. & M. Chesson, (2005). Lumps of clay, pieces of stone: ambiguity, bodies and identity as portrayed in Neolithic figurines, in Archaeologies of the Middle East: Critical Perspectives, eds. S. Pollock & R. Bernbeck Oxford: Blackwells, 152-83.

Mahasneh, H. M. & H. G. K. Gebel, 1998. Geometric objects from LPPNB Es-Sifiya, Wadi Mujib, Jordan. Paleorient, 24(2), 105 - 10.

Meskell, L. M., 2008. The nature of the beast: curating animals and ancestors at Çatalhöyük. World Archaeology, 40(3), 373 - 89.

Meskell, L. M., C. Nakamura, R. King & S. Farid, 2008. Figured lifeworlds and depositional practices at Çatalhöyük Cambridge Archaeological Journal.

Morsch, M. G. F., (2002). Magic figurines? Some remarks about the clay objects of Nevali Çori, in Magic Practices and Ritual in the Near Eastern Neolithic, eds. H. G. K. Gebel, B. D. Hermansen & J. C. H Berlin: Ex Oriente, 145 - 62.

Nanoglou, S., 2005. Subjectivity and material culture in Thessaly, Greece: the case of Neolithic anthropomorphic imagery. Cambridge Archaeological Journal, 15(2), 141 - 56.

Nanoglou, S., 2008a. Qualities of humanness: material aspects of Greek Neolithic anthropomorphic imagery. Journal of Material Culture, 13(3), 311 - 34.

Nanoglou, S., 2008b. Representations of humans and animals in Greece and the Balkans during the Earlier Neolithic. Cambridge Archaeological Journal, 18(2), 1 - 13.

Özdoğan, A., (1999). Çayönü, in Neolithic in Turkey. The Cradle of Civilization, eds. M. Özdoğan & N. Basgelen Istanbul: Arkeoloji ve Sana Yayinlari, 35–63.

Özdogan, M., (2001). The Neolithic Deity: Male or Female, in Lux Orientis, Festschrift für Harald Hauptmann, eds. R. M. Boehmer & J. Maran Rahden: Verlag Marie Leidorf, 313-8.

Özdoğan, M., (2003). A group of Neolithic stone figurines from Mezraa-Teleilat, in From Village to Cities: Early Villages in the Near East, eds. M. Özdogan, H. Hauptmann & N. Basgelen Istanbul: Arkeoloji ve Sanat Yayinlari, 511-23.

Rollefson, G. O., (2008). Charming lives: Human and animal figurines in the Late Epipaleolithic and Early Neolithic periods in the greater Levant and Eastern Anatolia, in The Neolithic Demographic Transition and its Consequences, eds. J.-P. Bocquet-Appel & O. Bar-Yosef New York: Springer, 387-416.

Talalay, L., 2004. Heady business: skulls, heads and decapitation in Neolithic Anatolia and Greece. Journal of Mediterannean Archaeology, 17(2), 139 - 63.

Verhoeven, M., 2007. Losing one's head in the Neolithic: on the interpretation of headless figurines. Levant, 39, 175-83.

Voigt, M. M., (2000). Çatal Höyük in Context: Ritual at Early Neolithic Sites in Central and Eastern Turkey, in Life in Neolithic Farming Communities: Social Organization, Identity, and Differentiation, ed. I. Kuijt New York: Life in Neolithic Farming Communities: Social Organization, Identity, and Differentiation, 253-93.

Clay Balls and Fire Installations - Sonya Atalay (1)

Assisted by Sheena Ketchum (1)
(1) Indiana University

The 2009 field season focused on recording previously unstudied clay ball materials from the 2003-2008 seasons. To help with this effort, the clay ball team added a new member this season – Sheena Ketchum. Sheena is a graduate student in the Anthropology Department at Indiana University. She is interested in food practices during the Neolithic, and is part of the first cohort of doctoral students in Indiana University's new Food Studies PhD program. Since Sheena is considering conducting dissertation research at Çatalhöyük, she decided to spend the 2009 field season assisting in clay ball recording on site. While doing so, she became quite interested in two topics related to the clay balls – the first of these is the comparative oven and hearth project I initiated several years ago. Sheena decided to conduct some preliminary research on the ovens and hearths on site, and below is a brief report detailing her preliminary interest and future plans. The other area of interest to her involved some interesting findings on the geometric clay objects found in the site's early levels (predominantly Pre-level 13) and in the off-site Kopal area. Presentation and discussion of these geometric objects can be found in clay ball archive reports from 1999, 2000, and 2001 (Atalay 1999, 2000, 2001). In the closing weeks of the 2009 field season, Sheena worked with Chris Doherty, who has been investigating clay sources and the raw earth materials used by those living at Çatalhöyük. Together the pair noted some very interesting patterns to the geometric clay objects that indicate they were used as plaster working tools. Their observations and preliminary hypotheses about the geometric shapes are presented in the 'Kopal Objects' section below.

In previous field seasons, I completed recording at the phase 1 level (counts and weights) for the majority of materials from the 2003-early 2008 seasons. The goal of this field season was to record ALL clay ball material to the phase 2 level in preparation for analysis and publication in the upcoming series of site publications. Level 2 recording involves measuring and entering data on each individual piece of clay ball, including information on the following attributes: weight, elaboration, firing, level of wear, size and type of inclusions, colour, surface texture, pitting, percent and type of residue, and fragmentation. There are a total of 539 units excavated from 2002-2008 that have clay ball materials. With Sheena's diligent assistance, we were able to complete phase 1 and 2 level study of all units containing clay objects from 2004-2008 seasons. For the clay balls and objects from 2002-2003, all materials have been

studied to the phase 1 level. Selected items that were unique or representative of a certain feature were sent for photography and/or illustration.

Our team also performed a complete inventory of all clay ball crates stored on site, and updated the location of all units and x-finds on the finds database in the crate register. This was of critical importance since Sheena and I found that the crate database was not accurate as a result of many of the clay balls unit bags being moved from their initial crate and storage location by people studying the clay balls for various projects. The finds database now has an accurate record of the contents of each clay ball crate. What remains to be done (planned for 2010) is for further organization of the clay ball crates to take place in order to combine clay balls from each unit into the same crate. Currently, clay balls that were excavated from a single unit may be stored in separate crates. The goal is to re-integrate all clay balls from a single unit back together so that they can be stored in the same crate (or group of crates).

To further prepare for the 2010 study season, and the report we are preparing to write for site publication, we identified units of interest for further analysis and study. Below is a chart listing the units that are of particular interest to the clay ball team (Table 22) . It is our hope that other team members will conduct an in-depth study of their materials from these units so that we can learn more about the context from which these clay balls were derived.

Table 22: Noteworthy units

Unit #	Notes related to clay balls	Info on Unit
5478	clay ball cluster including whole cone	final midden fill
12519	whole ball unfired, poorly shaped and formed	2006 sp.261 South midden with multiple lenses and many interesting finds
14182	mini ball cluster similar to South area's 9 mini ball cluster	ash rich midden
14183	Mini ball cluster in 4040 with the child's upper and lower teeth impression	Dumps of midden and clay like material that possibly became temporary surfaces
14632	fired mini ball cluster	make up for overlying plaster floor
15656	12 grey mini balls similar to cluster in 4040 (Unit 14183)	2007 4040 sp.63 bricky midden
15743	2007 South Space 299 bldg 65	leveling deposit or surface
16240	cluseter in South area with over 300 minis	space 332 from 2007
16460	very nicely formed tiny mini ball	2008 brick from bldg 77 massive white/grey brick overlaying a charred red-clay wall. Clay ball found in wall matrix.
16523	small cluster of mini balls	South area from 2008 Bldg. 75 surface, possibly degraded plaster floor
17048	lumpy ball with multiple incised holes	external space fill. South 2008 sp. 329 yellow brown laminated fill

Ovens and hearths - Sheena Ketchum

The ovens and hearths at Çatalhöyük can provide significant insight into the food consumption and the social lives of the people who built and used them. What were the social aspects of the fire installations? Eventually I want to look at ideas of materiality, agency, meaning, gender, social aspects of the household/neighborhood, social organization, food preparation, food production, food consumption, sustainability, and everyday activities centred around the fire installations incorporated into daily life. The variation within Çatalhöyük across the site and through time is very dramatic, however the variation within ovens and hearths is much more limited, why?

I collected some preliminary data (prior to the 2009 excavations). 33 buildings contain one or more fire installations. Twenty-one buildings, however, have no fire installations but 15 of these buildings have zero features listed in the database. One of the first areas that I would like to pursue is to compare the types of fire installations, within buildings, across the site.
The terms fire installations, ovens, and hearths often seem to be used interchangeably. To reiterate: fire installations are the suite of features associated with fire: fire spots, ovens, and

hearths (for my purposes I will focus on ovens and hearths). "Ovens are built against a permanent fixture such as walls or posts, and were large domed structures either sub-circular or oval in plan with a variation of openings" (Farid 2007:57). Hearths, on the other hand, are "small free-standing circular structures …constructed in a similar fashion to ovens but without a roof" (Farid 2007:57).

Where are the fire installations located within the houses? Observation has led to the proposal that most of the fire installations are located on or near the southern wall of the houses. What are the patterns of the fire installations across the site in terms of design, size, structure, location, abandonment, food cooked within, and artefacts found in association with the fire installations? What about in the history houses, are the fire installations a unifying factor among the history houses? How do fire installations move within one house, across the site, and within the history houses over time? Why do the fire installations keep moving? Why does a single house often have multiple ovens and hearths through the house's life history? What did the fire installations mean? Why were they sometimes destroyed at the abandonment phase and other times filled in?

How did the fire installations work? Figuring out how the fire installations worked on a fundamental level can reveal great insight to the interpretations at Çatalhöyük. Every attempt to start a fire in the experimental house has ended in a smoke-out. The majority of the houses on the site have an oven and a hearth. Inference would suggest that the roof must have at least two holes, one above each fire installation. With two holes in the roof one could act as the air intake and the other as the smoke output. Fresh air must come in for the smoky air to leave the house. Further, the wall height and presence of windows (if any) would greatly affect the airflow in the house and alter the way that the fire installations worked. The houses at Çatalhöyük do not seem to contain doors and the walls have often collapsed so low that it is nearly impossible to determine if they contained any windows. Figuring out how the fire installations worked can help us develop models in which the fire installations would work, for each house, that estimated wall height, number of windows present (if any), and number of holes in the roof.

Further avenues of investigation for the fire installations to consider are: lipid analysis, micromorphology, paleobotany, PIXE analysis of ovens, isotopic analysis, x-ray fluorescence (a non-destructive determination of the chemical constituency of an object), GIS, enthography, and experimental archaeology.

I begin the preliminary steps for building a fire installation database that will include the following: unit, feature, space, building, level, Hodder phase, adjacent units, unit description, feature description, feature measurements, photo, building plan, finds (from, in, and around the FI), oven collapsed/infilled etc, location in house, samples (organic residue, botany, phytoliths, micromorphology, etc?), sample results, comments, photo, map of space/building.

References

Atalay, S.

1999 Clays, clay balls, and other clay objects. Çatalhöyük Archive Report.

http://www.catalhoyuk.com/archive_reports/1999/ar99_16.html

2000 Clay balls and objects. Çatalhöyük Archive Report.

http://www.catalhoyuk.com/archive_reports/2000/ar00_15.html

2001 BACH Area clay balls, mini balls and geometric objects.

http://www.catalhoyuk.com/archive_reports/2001/ar01_13.html

Farid, S.

2007 Introduction to the South Area Excavations. In Excavating Çatalhöyük : South, North and KOPAL area reports from the 1995-99 seasons, edited by I. Hodder, pp. 41-58. vol. 3. McDonald Institute for Archaeological Research, Cambridge.

Clay Materials - Chris Doherty (1)

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The study of clay materials received a major boost this year with the arrival of a suite of new microscopes. These have greatly expanded our ability to characterise clay-based materials on-site, giving continuity to the investigation, and allowing a much larger amount of material to be examined in the field.

Three high quality stereoscopic (binocular) microscopes allow the non-destructive examination of mudbricks, plasters, clay balls and related objects, pottery and pigments, and also of sediment samples from the coring survey. For more detailed work, a petrographic compound microscope system was also installed. This is mainly for the examination of "thin sections", but it is also ideal for making rapid preliminary petrographic examinations of small amounts of powdered material. Although such "grain mounts" do not provide information on microstructure, they do allow mineral and organic components to be broadly identified.
On-site microscopy now makes it possible to test new ideas during the field season, so reducing the need to export samples. A few of the microscope-based findings are reported here, including some of the laboratory observations made between seasons.

Mudbricks
The large size and friable nature of mudbricks makes laboratory analysis very slow and expensive, and their study ideally needs a reconnaissance method for use on site. The new microscopes provided an opportunity to trial such a method. Powders, taken from a range of mudbricks of different style and appearance, were examined petrographically and compared to sediments from cores taken near to the site. The results suggest that it should be possible to study many aspects mudbrick composition on site, without recourse to slow and expensive petrographic work in the laboratory.

The questions already being answered by this trial study are:

1) What controls mudbrick colour?
2) Which mudbricks contain cultural materials?
3) How are the different mudbrick types related to each other and to natural sediments?
4) How similar are mudbrick, clay ball and pottery fabrics?
5) Where did the mudbrick raw materials come from?
6) What is the relationship between mudbrick composition and shape?

The 2009 field observations are currently being verified by laboratory analysis, and this has been extended to also cover previously exported mudbrick samples.

Plaster
Microscopy was used to review some of the problematic aspects of Çatalhöyük plaster. The focus here was the nature of the plasters occurring in the lower levels of the East Mound. Observations by Mellaart (1963) that these were considerably harder, has led to the suggestion that they represented fired lime plaster. This implies an early tradition of true lime making, which was then abandoned and replaced by earthen plasters of unfired marl. However, from a purely practical viewpoint there are several problems in accepting this interpretation. These include:

1) the lack of any in situ archaeological evidence for lime production. The “lime burning” features recorded in the South Area are at odds with lime production and it's diagnostic waste materials.
2) the immediate lack of limestone for burning (marl cannot be used to produce white lime plaster).
3) the very high fuel (wood) requirement and the need to bring this to site.
4) the presence in Space 181 plasters of residual (primary) very fine silicate impurities and angular limestone fragments: these should not have survived high-firing.

5) the lack of (secondary) fired lime impurities (calc-silicates, glass, part-burnt limestone etc.) in these plasters. Such impurities are typical of most burnt lime plasters, especially those made by early inefficient, small-scale firings.
6) the fact that unfired marl was already being used for construction at this time (as mortar). This implies the coexistence two plaster traditions.
7) the fact that such fired-lime pyrotechnology would have required temperatures and soak times not seen again until the Chalcolithic.
8) that similar "lime burning" deposits are also recorded in the 4040 Area, despite the lack of any claim that lime was used at these later levels.

Of course, many of these points can be explained or accounted for, e.g. that lime was being made away from site so negating the problems of limestone and fuel supply. But taken together, they raise sufficient doubt to warrant a re-inspection of this material.

This year, a number of painted plaster fragments from Space 181 were examined under the microscope, being from the area containing the “hard” plaster described by Mellaart. However, these new observations found no textural or compositional evidence for true (fired) lime. Further, there is not just a single type of painted plaster represented in Space 181, but several types differing in their degree of whiteness. These are mainly marl plasters of varying purity, and are similar in this respect to the whiter marl floor plaster sequence described for the 4040 Area (Doherty, 2007). The difference is that Space 181 plasters do not contain organic inclusions and so are they are more compact, have suffered less salt degradation, and have retained some of their original hardness.

Field tests (using dilute hydrochloric acid) showed that some of the whiter painted plaster pieces from Space 181 are not marl but are made of very fine-grained calcium carbonate, and therefore similar in composition to an aged pure lime plaster. However, this match does not confirm a burnt-lime origin, as both compositionally and texturally these whiter plasters are identical to natural fine-grained Neogene softlimes, which occur within a few kilometres of the site (and are used as whitewash today).

Site observations have now been checked in the laboratory. Representative white and non-white painted plaster fragments from Space 181 were analysed using a Cameca SU30 scanning electron microscope (SEM) equipped with an energy dispersive analyser (EDA) at the Research Laboratory for Archaeology, Oxford University. The SEM work confirms that the off-white plaster is marl-based, whereas the pure white plaster has a high calcium carbonate content of between 85-100 weight percent. The impurities within the white plaster consist of very fine detrital mineral grains, which do not show evidence of having been fired, and which are identical to those seen in the field samples of softlime. So, microscope analysis does not support the claim for the use of fired lime plaster in the early levels of the East mound. Instead, a variety of unfired plaster materials were used. These included both marls and the much whiter soft limes, a tradition which continued throughout the Neolithic.

Pottery
The main aim this year was to begin to integrate fabric and form data. Starting in 2006, petrographic analysis has recorded fabrics from over 150 thin sections of pottery, mainly from the East Mound. Scanning electron microscopy and electron microprobe analysis has also provided additional mineralogical detail. The result is a fairly comprehensive fabric scheme, allowing different types of pottery clays to be identified, sourced, and compared to clays used for mudbricks, clay ball and figurines. Although minor revisions are expected as thin section numbers increase, this fabric scheme is now considered sufficiently complete to begin investigating aspects of East Mound pottery production.

All East Mound pottery is assigned a ware code by the pottery specialists, based on their visual assessment of the general fabric type. These codes offer a logical basis for studying changes in pottery raw materials. However, ware code fabrics will not necessarily match fabrics determined through detailed thin section work, and the degree of correspondence has first to be checked. When done, the ware codes can be used, within limits, to query the pottery database to return information about the distribution of the corresponding petrographic fabrics. These are more detailed and so can be compared with clays retrieved by the coring

program. Any resulting patterns of clay usage and provenance will now be identified using the entire pottery assemblage, rather than just the relatively small number of thin-sections.

Results from 2009 show that the correspondence between one major fabric type and ware group is reasonably good. This petrographic fabric chosen for this test, referred here to M-type, consists almost entirely of volcanic inclusions and is of particular importance as it indicates the use of a non-local clay (Doherty, 2007). Table 23 lists the correspondence between the DM ("dark mineral") ware codes assigned by the pottery specialists, and the M-type fabrics determined from thin sections of pottery samples chosen to span the early, mid and late levels of the East Mound. The correspondence is good in the sense that all DM ware codes are M-type fabrics. However, there are other examples of M-type fabric that do not have DM codes. Nearly all of these are of OP ware codes, and there are no instances where OP wares are not found to have M-type fabrics. This tells us that for provenance studies, DM and OP wares should be grouped together, as OP wares are largely finer grained versions the DM wares, in which the dark minerals cannot be easily seen by eye.

This one example successfully illustrates the potential for querying the pottery database for provenance studies using existing ware codes, with only a very small number of thin sections required for an initial verification. The approach is now being extended to include all of the ware codes and petrographic pottery fabrics.

Table 23

Unit	Area	Find No.	DM ware code	M-type fabric	Thin section ID
8892	4040	s.6		+	23
10213	4040	s.1	+	+	11
10518	South	s.3			6
11466	South	s.1	+	+	10
11862	IST	s.8	+	+	15
11862	IST	s.7		+	21
11874	IST	s.3	+	+	13
11915	4040	s.3			18
11924	4040	s.8	+	+	7
11924	4040	s.9	+	+	8
11924	4040	s.10	+	+	12
12448	IST	s.5			29
12448	IST	s.6		+	30
12448	IST	s.7		+	31
12448	IST	s.8	+	+	32
12980	4040	s.23	+	+	16
12988	4040	s.10			2
12988	4040	s.11	+	+	17
12988	4040	s.12		+	19
14183	4040	s.8			26
14183	4040	s.9			27
14183	4040	s.10		+	28
14186	4040	s.4		+	20
16261	South	s.3			33
16258	South	s.3	+	+	9
16258	South	s.4	+	+	22
16271	South	s.3			1

16534	South	s.3		+	3
16534	South	s.4			4
16534	South	s.6			5
16534	South	s.5	+	+	14
16534	South	s.7			24
16534	South	s.8			25
16552	South	s.3			36
E V111 2	MELL	s.1			35
EX1 29	MELL	s.2			36

Pigments

Microscopy has also been used to examine pigments. Usually, simple optical microscopy is sufficient for their characterisation, but in some cases a closer examination is required.

One example is a 5cm block of ochre from unit (14684) of the 4040 Area. As Figure 101a shows, this is a relatively thick piece that has a perfectly planar surface. Possibly this is a paint block; the planar edge suggesting that pigment might have been applied by directly rubbing this onto a plaster surface, or onto an intermediate tool. The pigment itself is iron ochre (haematite) but is not pure. On-site observations using a handlense showed that it has a high concentration of very fine and uniformly sized "sand" particles.

Such a composition is unusual, given the typical pathways of ochre formation, and so a more detailed examination was made using polarised light microscopy and scanning electron microscopy. Analysis identified the fine sand as a mixture of a volcanic glass of a rhyolitic composition (Figure 101b), with a smaller amount of quartz and potassium feldspar and secondary chalcedonic silica. It also showed that the white material forming the outer surface (Figure 101a) is not a simple mixture of marl plaster and gypsum as thought. Instead, this white material extends into the haematite matrix and consists of the two potassium sulphate minerals, alunite and jarosite.

So instead of being an ordinary ochre sample, microscopy has shown this to have an usual mineral assemblage that potentially allows it to be provenanced with a relatively high degree of certainty. The geological interpretation of this sample is that it represents a (rhyolitic) volcanic ash that has been altered to an alunite-jarosite-haematite-silica hydrothermal ore. This style of high-sulphate mineralisation occurs in an area to the south west of Konya, a region that was almost certainly the source of this and related red ochre pigments at Çatalhöyük . Interestingly, the region also has deposits of the red mercury salt, cinnabar, which this year was observed on the human skeletons excavated by Mellaart. Now, the non-local pottery fabrics are being checked to see whether any of these may also have come from this pigment source area.

(a) (b)

Figure 101: Red ochre block from the 4040 Area. The white outer layer (a) is not plaster but a mix of potassium sulphate minerals, and the ochre has fine impurities of volcanic ash (b). These features indicate a province to the south west of Konya.

Figurines

A detailed survey of figurine raw materials was undertaken this year by Jeff Aviss, using high-resolution stereoscopic microscopy. The results are presented in the Figurine section of this report.

Kopal Clay Objects - Sheena Ketchum and Chris Doherty

While displaying a number of clay objects and balls for this year's Templeton talks, we noticed some possible use-wear in a number of units from Kopal (1999). This we recorded after examining and photographing the objects surfaces using a stereoscopic microscope. The Kopal Area at Çatalhöyük contains a number of clay balls and non-round objects: cones, cylinders, and rectangles. The balls are thought to have been used for cooking (Atalay 2005); however the objects present a bit more of a mystery. It was previously thought that people were experimenting with shapes and materials in the earlier levels of the site and the off-site area before selecting a perfectly round ball made of a material rich in silts. This was evidenced by the many changes in the shape of the clay objects and material throughout the levels of the site until the ball becomes the most abundant. Now, taking a closer look at the non-round objects with the aid of a microscope, it appears that they may have another purpose than cooking. Several of the Kopal objects such as cones (figure 1) and rectangular forms (Figure 102), show signs of wear including flat surfaces, saddles, and possibly adhering plaster. The objects with possible wear have been identified in the following units: (6010), (6015), (6021), (6028), (6033), (6034), (6037), and (6038). Several units from Kopal containing the non-round objects still await re-inspection.

Most of these objects are made from coarse sandy or gritty material (Figure 102b). Coarse shell inclusions were found in some cases and were identified by the shell specialists as freshwater bi-valves. Two of the shells were positively identified as Unio and the third was positively identified as a freshwater bi-valve but it was impossible to determine the type.

The majority of clay objects have been fired, but none are fully oxidized. Instead, the oxidation layer is typically restricted to a few millimetres of the surface, and most have a darker core. In some pieces the wear is so deep that the oxidized surface has been partly worn away to reveal the darker non-oxidized interior. This is a particularly interesting observation as it indicates that firing took place before use. Unlike clay balls, these objects rarely show evidence of organic residues or fireclouding, suggesting that they were not used in contexts with food nor continuously reheated.

Many of the cones and oval objects have near-perfect flat bases, raising the question of whether this could have been acquired through use. This is likely for a cone from (6010)

(Figure 102c), which has an adhering layer of pale-grey sediment with grass impressions, caked on the flat surface (Figure 102d). Another cone, also from unit (6010), has pure white plaster embedded between the coarse grains. Here, the plaster does not appear to be post-depositional because it is embedded quite deeply and it is underneath a layer of light grey mud. Handling these cone and oval objects shows them to fit perfectly into the hand, and to have a good weighted balance. One possibility is that these were tools used in the preparation of plaster.

Figure 102. Cone-shaped KOPAL clay objects, showing typical gritty fabric (b), flat bases resulting from percussion and / or abrasion (b,c), and adhering clay-phytolith mix on the flat surface only (d).

Some of the rectangular objects may have been used as whetstones, as these show parallel wear lines on one or more sides (Figure 103b) often associated with a saddle or a central concave zone (Figure 103c). One variant has deep semi-circular grooves worn into the oxidized surface that are very smooth and contain parallel lines. A possibility, to be investigated by replication, is that these grooves are associated with smoothing or straightening bone or wooden forms.

A consideration of the raw materials used for these objects is quite interesting. Overall there does seem to be a preference for coarse sandy and gritty materials, which would be in agreement with the functions suggested here. Recent coring work has located similar gritty clays near the site. These are redeposited deltaic sands, which have an impure marl matrix, and are found interbedded with the Pleistocene marls. They would only have been accessible where sections of the marl were exposed through natural erosion, or by pitting through the marl such as is seen at KOPAL.

In their raw state, these materials would have been soft and pliable. They would have hardened slightly on drying, but would still have been mechanically weak. However, the thin oxidation rims indicate a brief firing before use, and it is suggested that this may have been to increase the hardness of the working surfaces. Perhaps what we are seeing with the KOPAL objects is the selective use and fire-hardening of natural gritty clays to compensate for the absence of abrasive stone at the site.

Figure 103: Rectangular KOPAL clay object (a), showing a central saddle (b) which is worn though the thin oxidation layer, wear marks infilled with plaster (c) which are parallel to the long axis and saddle, and areas of adhering plaster, also with wear marks (d). Photographs (c) and (d) courtesy of Jason Quinlan.

References

Atalay, S. 2005 Domesticating Clay: the Role of Clay Balls, Mini Balls, and Geometric Objects in Daily Life at Catalhoyuk. In Changing Materialities at Catalhoyuk: reports from the 1995-99 seasons, edited by I. Hodder, pp. 139-168. vol. 5. McDonald Institute Monographs; British Institute of Archaeology at Ankara, Cambridge; London.

Doherty, C. 2007. Catalhoyuk 2007 Archive Report.

Mellaart, J. 1963.Excavations at Catal Huyuk, second preliminary report, 1962. Anatolian Studies, 13, 43-103.

Çatalhöyük 2009 Chipped Stone Report - Tristan Carter, Marina Milić & Sonia Ostaptchouk

Team Leader: Tristan Carter (1)
Team: Marina Milić (2), Sonia Ostaptchouk (3) Danica Mihailović (4)

(1) Department of Anthropology, McMaster University, Canada, (2) Institute of Archaeology, University College London, UK, (3) Muséum Nationale d'Histoire Naturelle, Paris / Université de Nanterre, Paris X, France

The 2009 season was spent studying the assemblages from the 4040 and South Areas in preparation for the upcoming volumes. Aside from completing the techno-typological analyses, data-base entries and a significant number of line drawings, our work also comprised a number of thematic research questions that we shall be developing more fully in our chapter.

- The organisation of production – this is obviously a long-term research question, first discussed in detail in our 2005 publication. It is quite apparent that there are a number of significant changes with regard to the procurement of raw materials, the location of production and the nature of technological practice within the Early Neolithic sequence at Çatalhöyük. Firstly, there is a major shift from using East Göllü Dağ obsidian, to the importation of Nenezi Dağ materials in various forms. Secondly, and what appears to be a related phenomenon, we have a major change in the organisation of production, moving from a situation where knapping debris is recovered from each building, to one where manufacturing is attested in

only a minority of structures. Moreover, hoards become much rarer (potentially correlating with only those buildings whose inhabitants are knapping) and technological practices become significantly more complex, with the 'old' in-house, low-skill percussive blade-like flake and biface manufacture being replaced by highly-skilled pressure-flaked blade technology.

• The pace and location of change – previously claims have been made as to the rapid pace of change with regard to the introduction of pressure-flaked blade technology (Conolly 1999) and the alleged associated shift from East Göllü Dağ to Nenezi Dağ obsidian (Carter et al 2006). Our new studies are returning to these issues in much finer detail, through the analysis of the South Area Buildings B.75 / B.65 / B.56 / B.44 sequence, and perhaps most importantly of all, a series of midden and building deposits in the 4040 Area (in particular the material from Spaces 60-271-232, 90 inter alia). Our new impression is that in fact the pace of change is not quite so rapid and moreover the shift in obsidian types is slightly more subtle. It remains now to integrate the spatial data (cf. Carter and Shackley 2007).

There are numerous other issues that will be detailed in the forthcoming volume and in 2010 we also intend to undertake a major refitting programme as a means of demonstrating inter-building relations, building / open space relations and the sequence of events within some of these structures.

Chipped Stone from the West Mound: Towards a Characterization of the Chalcolithic Lithic Production - Sonia Ostaptchouk

Last year clear Chalcolithic architecture was revealed in Trench 5, recorded as five different spaces, each of which produced chipped stone (Space 340, Sp.341, space at the East of Sp.341, Sp.342 and Space 310). The West Mound Tr.5 thus provides us with an exciting new opportunity to study and characterize the chipped stone technology of the Early Chalcolithic I-II periods in central Anatolia. Despite the different archaeological contexts, we demonstrated last year that the Trench 5 and Trench 7 material was very homogeneous, with regard to technological characteristics and the material's surface state (with the exception of the Non-

OBSIDIAN

blades	68
flakes	14
flakes with 50% natural surface	2
esquilles	5
débris	4
tablet	2 (+ 1?)

Tools

retouched blades	51
Pièces esquillées	21
retouched flakes	5
point (projectile)	1 (GD)

Total : 174

NOCS (Flint)

flake	3
chunk/core	1

Tools

retouched blade	1
retouched flake	1
burin on blade	1

Total : 7

Figure 104: Obsidian and NOCS from Trench 5, 2009 by technological category.

Obsidian Chipped Stone [NOCS], as discussed in the 2008 Archive Report). Obsidian was primarily worked in the production unipolar blades; indeed bipolar / opposed platform products are virtually absent, with only one large bipolar blade from Space 342. Amongst the unipolar obsidian products, two main technologies can be discerned: (a) pressure blades and (b) percussion blades (also see 2008 Report).

This season, the excavation focused on Trench 5, spaces Sp.342, Sp.341, Sp.310 and Sp.345. The material presented in this preliminary report includes only chipped stone from secure contexts. This material comprised a total of 181 pieces, of which 174 (96%) were obsidian and 7 (4%) were NOCS (Figure 104). On the basis of visual inspection alone, it appears that c. 65% of this year's obsidian comes from East Göllü Dağ and c. 35% from Nenezi Dağ. This relative proportion of southern Cappadocian obsidians is different to that noted amongst assemblages from Trenches 5 and 7 discussed in the 2008 Report, where these raw materials were represented almost equally. With regard to modified pieces, we have a more equal proportion (as in 2007 and 2008), with 56% of those blanks of East Göllü Dağ (n=44) and 44% of Nenezi Dağ (n=35) having been retouched In turn, 3 of the NOCS blanks were retouched).

Figure105: Cluster of obsidian from Space 342, unit 18325 (S. Ostaptchouk)

The difference in relative proportion of these raw materials through time is a focus on future study, not least with regard to the obsidian from the stratigraphic sequence of the Trench 7 sondage. Moreover, a brief study of c. 400 pieces from Building 25 (Gibson and Last excavations), reveals that most of this obsidian comes from East Göllü Dağ (c. 70%).

Space 342

It was within Space 342 that we had our most interesting finds, not least our first obsidian cluster ((18325) (Figures 105-106)). This assemblage comprises five unmodified and fragmentary blades of East Göllü Dağ obsidian; no refitting was possible (Not necessarily the same outcrops, with Types 1, 3 and 6 of the Kayacan-Milić visual typology represented (see 2008 Archive Report). The largest example measures 8.6 × 2.1 × 0.5 cm, while two of the distal pieces can be categorised as plunging blades from cores with square ends. In the same area of the cluster, near the baby skeleton (see Biehl and Rosenstock, this Archive Report), we found a large and rare bipolar blade (18328.X5) made of Nenezi Dağ obsidian measuring 9.7 × 2.7 × 1 cm (Figures 106-107). The bulb and nearby edge of this large blade has numerous macroscopic scratches indicating that it was almost certainly hafted (Figure 108), the piece likely being a dagger.

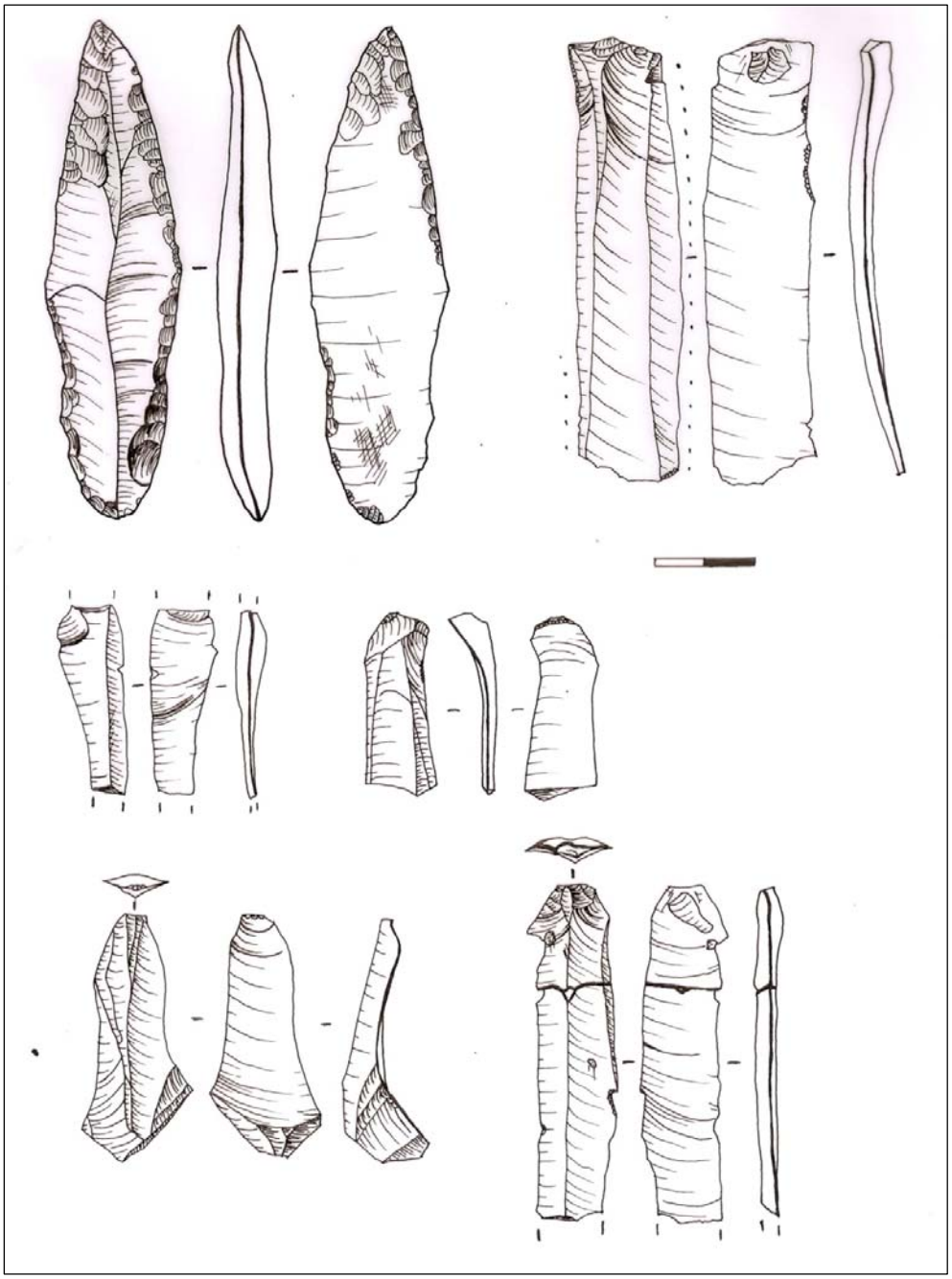

Figure 106: The large retouched blade of Nenezi Dağ obsidian (18328.X5) and the cluster of East Göllü Dağ obsidian blades from (18325), Space 342, Trench 5 (S. Ostaptchouk).

Figure 107: Large retouched blade 18328.X5 . S. Ostaptchouk

Figure 108: The scratched bulb on the large retouched blade 18328.X5 . S. Ostaptchouk.

This space also produced a broken projectile made on what appears to be East Göllü Dağ obsidian (18328.A13) measuring 6.4 × 1.7 × 0.7 cm (Figure 109); typologically it is similar to other points found in Trenches 5 and 7.

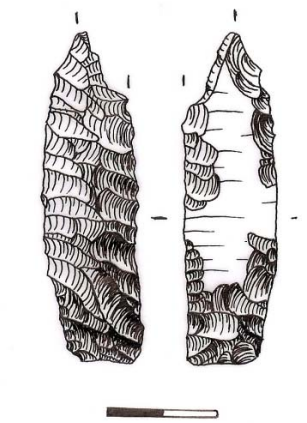

Figure 109: Obsidian projectile 18328.A13 from Space 342, Trench 5 . S. Ostaptchouk.

Space 341

Little chipped stone came from this space. Aside from a few flakes there was also a medial fragment of a retouched pressure-flaked blade of Nenezi Dağ obsidian (18313.A1).

Space 310

One notable find from Space 310 was a large chunk of 'flint' (18343.X7), weighing 5 kg it is dark brown and of poor knapping quality (Figure 110). There are 11 irregular flake scars around the chunk / core. Given the size, the presence of cortex and its poor quality it may follow that the raw material is local to the Konya Plain. It has a similar appearance to small cores found in Trench 8.

Space 345

Surprisingly little chipped stone came from Space 345, despite the large area exposed and quantity of soil removed. The material includes some pièces esquillées, and a blade fragment of light NOCS (18305.A1).

Aims for 2010

Next year, alongside the processing and study of finds from the continuing excavation of Trench 5, it is also intended to undertake a new study of the chipped stone from Building 25 to offer our new work a comparative assemblage. In turn, a major new study of the West Mound NOCS will be initiated, involving mineral characterization by Infrared Spectroscopy at the Muséum National d'Histoire Naturelle, Paris. Finally, it is hoped to gain access to the chipped stone from Can Hasan I as another important comparative study.

Obsidian Characterisation
During the 2009 season we were able to undertake a large (>100) number of non-destructive elemental analyses as a means of characterising and then provenancing the obsidian used to

Figure 110: Large (5 kg) chunk of flint 18343.X7, Space 310, Trench 5 . S. Ostaptchouk.

make our artefacts. For the first time this work was actually done at Çatalhöyük, through the use of a portable X-ray fluorescence [PXRF] spectrometer, specifically a Bruker Tracer III V, that was graciously leant to T. Carter by Bruker's Bruce Kaiser. We are currently processing this large amount of data (normalising spectra etc) and will publish the results in due course. The major benefit of having the instrument with us on site is that it enabled us to characterise those large and special artefacts that (a) are not allowed to be exported for analysis, (b) are often too thick to provide us with the edge translucency that we usually rely on to make visual source assignations (Figure 111).

Team Productivity 2008-09
While a quieter year than previously, aspects of our work was presented at an international conference and within a peer-review journal:

Conferences
Annual Meeting, Geological Society of America, Portland Geological Society of America '09, Portland, October 2009 – 50 Years of Obsidian Sourcing Studies: Successes, Failures and Future Directions (T. Carter).

Team Publications
Hancock, R.G.V. & Carter, T. (2010), 'How reliable are our archaeometric data? Effects of analytical techniques through time on the elemental analysis of obsidian', Journal of Archaeological Science 37(2): 243-250.

Figure 111: Elemental analysis of a large obsidian blade core from the surface of the West Mound using the Bruker Tracer III V portable X-ray fluorescence [PXRF] spectrometer . Photo Scott Haddow.

Acknowledgements
We gratefully acknowledge the work of Danica Mihailović, not only with regard to illustration, but also for her work on refitting and general intellectual input.

Elemental Characterization of Neolithic Artefacts Using Portable X-Ray Fluorescence [PXRF] - Tristan Carter

Thanks to the generosity of Bruce Kaiser, Chief Scientist of Bruker AXS, we were able to borrow his company's Bruker Tracer III-V portable X-Ray Fluorescence [PXRF] spectrometer for the on-site elemental analysis of a wide range of artefacts. This relatively new archaeometric technique has been employed elsewhere with great success to variously analyse obsidian (Phillips and Speakman 2009), metalwork (Aldenderfer et al 2008), pottery (Morgenstein and Redmount 2005) and mudbrick (Emery and Morgenstein 2007).

At Çatalhöyük we analysed upon a relatively wide range of media, focusing on those artefacts / materials for which it is difficult, if not impossible, to export for analysis and/or remove sub-samples. These included a range of painted and plastered skulls, plus other skeletal material (in conjunction with D. Çamurcuoğlu, S. Haddow and L. Hager), pigments and paints (with D. Çamurcuoğlu), a large quantity of obsidian (working with M. Milić, N. Kayacan and S. Ostaptchouk), together with various finds from the West Mound excavations of Biehl and Rosenstock (in conjunction with Ingmar Franz), plus those of Erdoğu.

While most of the raw data requires normalisation and further manipulation, a brief précis can be given here of two of the most important analyses and their results.

Skeletal Material

Figure 112: PXRF analysis of the plastered skull (11330) from Building 42, South Area, in Konya Museum. Photo Nurcan Yalman.

Plastered skull (11330) – from Building 42 in the South Area, excavated in 2004 (Boz and Hager 2004), is plastered from forehead to chin, with a background of white plaster painted with a red pigment. The skull has been on display in Konya Museum since 2004 and has never previously been analysed. With full permission from the curator we were allowed to use the PXRF to elementally characterise the red pigment in the gallery (Figure 112). The analyses were conducted at 40 keV, 5 mA, using a 0.076-mm copper filter and 0.0305 aluminum filter in the X-ray path for a 100 second live-time count. Firstly we analysed an unpainted surface of the skull to gain a background 'natural' reading of the skeletal composition against which we could contrast that produced by the painted surface (Figure 113). The results indicate that the pigment is iron-based, i.e. an ochre.

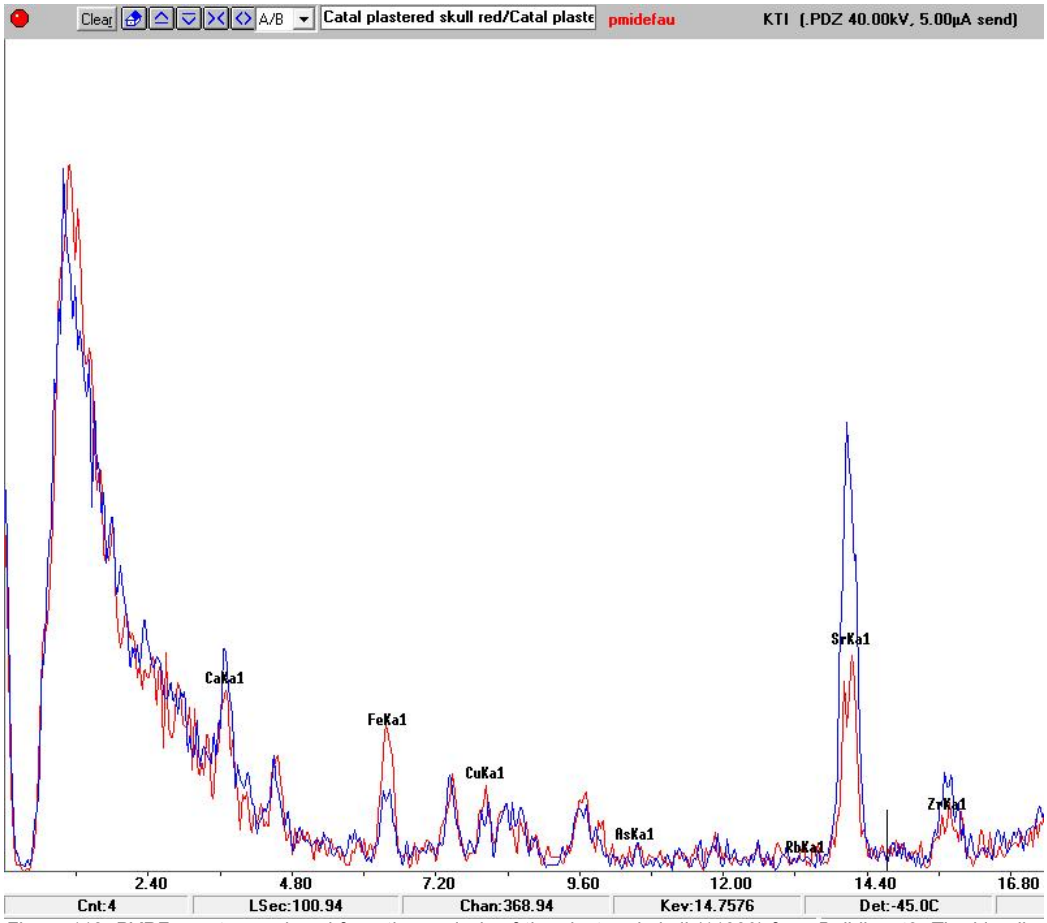

Figure 113: PXRF spectra produced from the analysis of the plastered skull (11330) from Building 42. The blue line represents the elemental composition of the natural bone, the red represents the elemental composition of the red pigment – note the significantly higher Iron (FeKa1) peak for the latter.

Painted skull (E VI, 20) – we also analysed a number of the renowned red-painted skulls from the 1960's excavations, including one from Level VI that had large frontal areas of a bright red pigment (Figure 114). The PXRF analysis, using the same method detailed above, confirmed clearly Mellaart's original claim that this vibrant colorant was the highly toxic cinnabar (HgS), a mercuric sulphide.

A number of other skulls and other human bones from the 1960's excavations and our own were also shown to have been coloured with cinnabar; full details of these artefacts and their elemental data will be produced in due course.

Figure 114: Painted skull (E VI, 20) being analysed by the PXRF. Photo Scott Haddow.

References
Aldenderfer, M.S., Craig, N., Speakman, R.J. and Popelka-Filcoff, R.S. (2008), 'Four-thousand- year-old gold artifacts from the Lake Titicaca basin, southern Peru', Proceedings of the National Academy of Sciences 105 (13): 5002–5005.

Emery, V.L. and Morgenstein, M. (2007), 'Portable EDXRF analysis of a mud brick necropolis enclosure: evidence of work organization, El Hibeh, Middle Egypt', Journal of Archaeological Science 34: 111–122.

Morgenstein, M. and Redmout, C.A. (2005), 'Using portable energy dispersive X-ray fluorescence (EDXRF) analysis for on-site study of ceramic sherds at El Hibeh, Egypt', Journal of Archaeological Science 32(11): 1613-1623.

Phillips, C. and Speakman, R.J. (2009), 'Initial source evaluation of archaeological obsidian from the Kuril Islands of the Russian Far East using portable XRF', Journal of Archaeological Science 36(6): 1256-1263.

Çatalhöyük Speleothem Project - Gülgün Gürcan & Burçin Erdoğu

Speleothems are one of the most extraordinary assemblages of prehistoric artifacts in Çatalhöyük. A new project was initiated by the Archaeology Department of Trakya University, Edirne, with the principal aim of investigating Speleothems of Çatalhöyük in detail. The project also sought to link these Speleothems with the caves around Çatalhöyük. The research was made possible by generously grants from the TUBITAK -108K436.

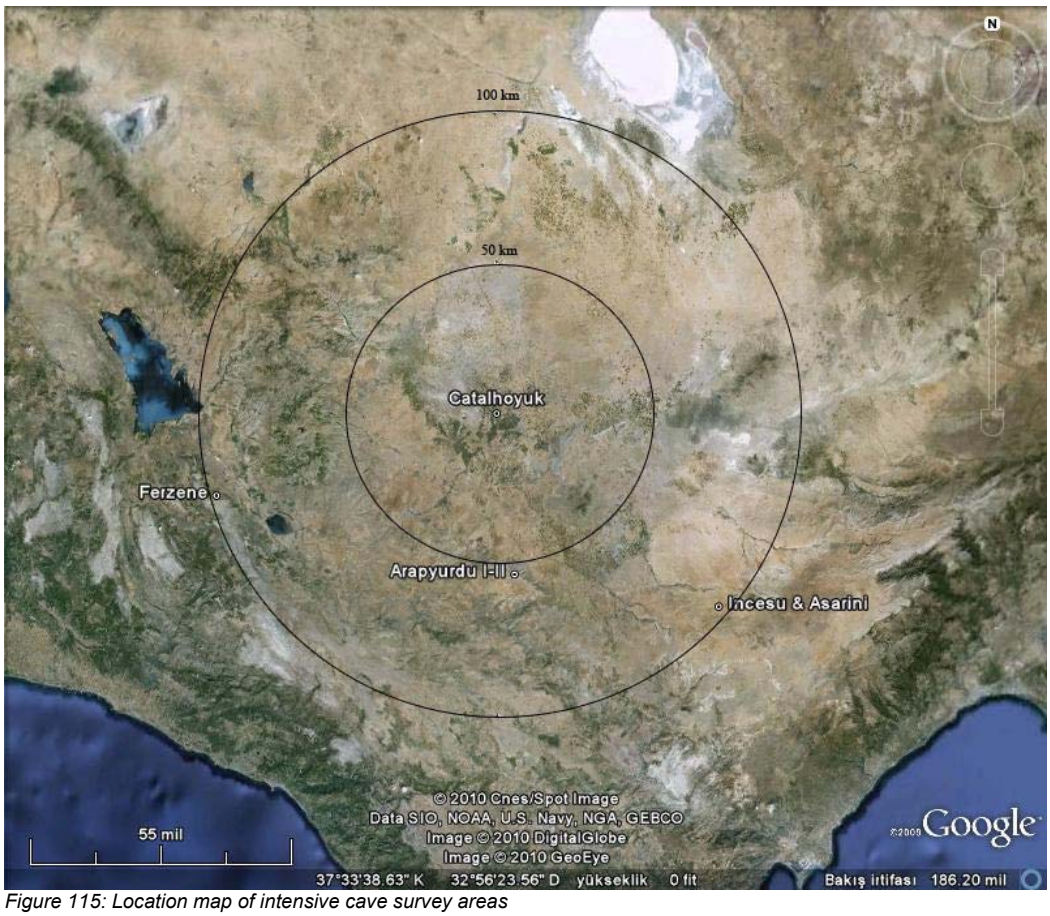

Figure 115: Location map of intensive cave survey areas

The project consists of 3 phases. 1. The documantation of Speleothems at Çatalhöyük, 2. Intensive cave survey around Çatalhöyük, and 3. Laboratory analysis on Speleothem samples. A short-term cave survey has been carried out mainly in the southern part of

Çatalhöyük, and total of 6 caves – Arapyurdu I, İncikini, Divle Obruk, Peynir İni, Damlataş & Sızma - in c. 200 km radius have been investigated (Figures 115 &116). Samples from four caves have been collected for analysis. Survey team consists of Dr. Onur Özbek, Gülgün Gürcan (MA), Tamar Taşdelen (MA) and İnci X.

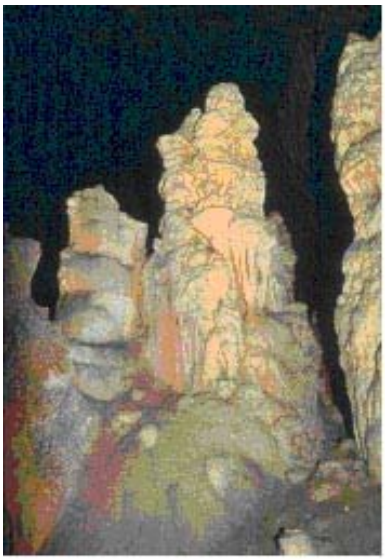

Figure 116: (left) A view of Incikini Cave (right) a view of Damlataş Cave

An inventory study on Çatalhöyük's Speleothems has also been carried out, and total of 6 Speleothem samples have been documented as follows;

1-x.find number (16253), South, 16,08 gr. 4,60x2,10cm, stalactite. (Figure 117a)
2-x.find number (17600), T.P., 74,92 gr. 7,82 x 3,69 cm, stalactite. (Figure 117b)
3-x.find number (12357), 4040, 41,58 gr. 7,1 x 3,7cm, flow stone.
4-x.find number (13342), South, 44,93 gr. 5 x 3cm, dog-tooth spar.
5-x.find number (13405), 4040, 85,30 gr. 5,60 x 3,3 cm, stalagmite.
6-x.find number (16253), South, 16,08gr. 4,60 x 2,10 cm, dog-tooth spar.

Figure 117: (left (a)) (right (b)). Stalactite samples from Çatalhöyük. Photo Onur Özbek

ICP-MS analysis has also been done in 6 samples- 3 from Çatalhöyük and 3 from Ferzene, Arapyurdu and İncesu Caves. 45 elements were determined in samples at the Acmelabs, Canada. Graphics (Figure 118) shows the comparison of Çatalhöyük samples vs. Cave samples.

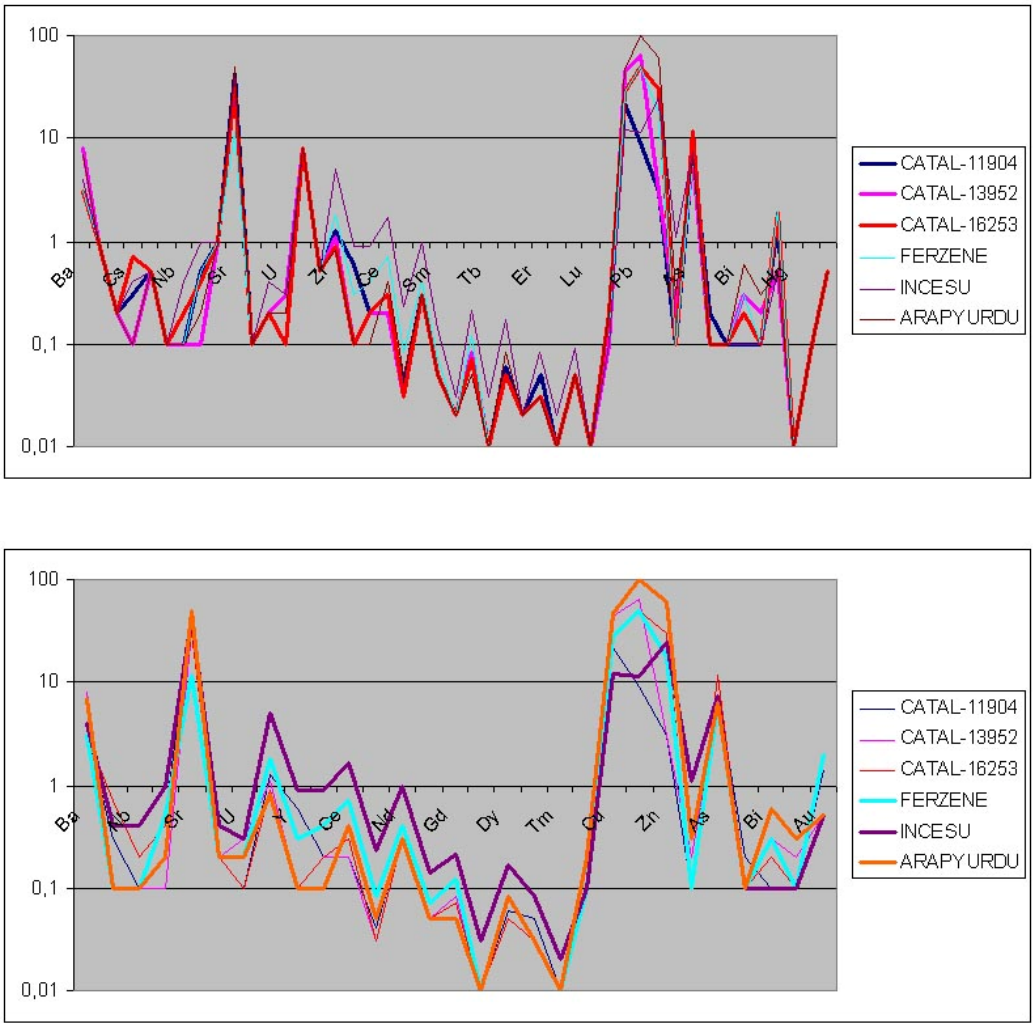

Figure 118: Graphics of ICP-MS results

According to the graphics the following elements can be accepted as finger print elements: Cu, Pb, As, Rb, Sr, Zr and La. Results show that elements of speleothem sample from B.52, Space 93 match with Incesu Cave, Taşkale, and elements of speleothem samples from midden in South Area match with the Ferzene and Arapyurdu Caves. More intensive cave surveys and more, analysis are needed in the future.

SUPPORT TEAMS

Çatalhöyük IT Archive Report 2009 - *Richard May,*Sarah Jones

*Çatalhöyük Research Project

Abstract
The project benefitted from a new server and much improved IT infrastructure this year. This aided the heavy computer usage on site with the database, GIS and drawing packages being important tools during the first study season of this publication cycle. Changes were made to the databases to help the data entry push and there was great emphasis on data cleaning and querying.

IT Infrastructure Setup - Richard May
The 2009 season saw the first major improvements to the ICT setup on site since the introduction of the IBM server in 2004. As well as the replacement of the server major upgrades were made to both the wired and wireless networking setup throughout the site labs. These improvements, which were setup at the start of the season, hopefully led to a much more reliable IT infrastructure on site in 2009.

Server
A new Dell PowerEdge 2900 Server was installed to replace the previous site server. The new server was installed using the latest release of the Microsoft Windows Server Operating System, Server 2008. It provides up to 2Tb total storage capacity; an increase by over 10 times over the previous device and also with considerably greater improvement in memory and processor capability. This allowed for the transfer of the Photo Catalogue Database (Portfolio) onto the main server system. The use of Microsoft Hyper-V Virtual Server technology also allowed for the separation of the main database system onto its own dedicated and discrete area of hard drive, memory and processor use.

A basic backup system was introduced for the first time as well using a couple of external hard drives that can be used to copy all core data and stored away from the server system elsewhere within the compound.

Wired Networking
New network switches were purchased to replace all previously existing devices throughout the network. To this end 1 new 48 port Netgear GS748T switch was installed to provide the core networking facilities within the IT Lab/Office area. 6 additional mini Netgear GS105 desktop switches were procured for deployment around the labs where sufficient wired networking points do not currently exist.

All new switches operate at 1Gb network speed, providing the capability for computers to make network connections to the server at 10 times the previously available speed thus further utilising the increased performance capability of the new server.

It should be noted that, despite the improvements to the wireless networking (see below) these new wired network switches do allow for connections that are over 18 times faster than the maximum possible wireless connection.

Wired networking connections operate such that each connected computer gets a dedicated connection at 1Gb (1000Mb). Wirelessly connected devices share the available network capacity between all devices connecting via the same wireless access point (WAP). As an example, a lab with 5 laptops connecting to the network wirelessly will share that lab's 54Mb wireless network connection between them. This means that each computer will likely only gain an effective network speed or 5.4Mb compared to 1000Mb available if connected on the wired network. It is therefore strongly advised that, wherever possible, all staff members requiring network access do use the wired network points when possible.

Wireless Networking
Along with the improvements to the wired networking throughout the labs, a major investment was made in the provision of wireless networking.

A new Netgear WFS709TP wireless controller and 12 Netgear WGL102 access points were procured and installed. Access points were installed in most of the labs (multiple devices were installed in some rooms; including the seminar room).

The wireless controller manages all of the 12 access points to ensure that as good a wireless signal as possible is available and adjusts the remote access points accordingly due to atmospheric conditions and use.

Although, as outlined in the Wired Networking section, it always remains preferable to use a wired connection point whenever possible; the introduction of the new wireless system should have provided a much improved system over previous years.

Miscellaneous Work
Additional work was undertaken on the network to improve the availability of anti virus software to all project owned computers.

Work was undertaken to improve the semi-automated scripts designed to assist users to connect their devices to the network - with a particular emphasis on users of Windows Vista (Windows 7 compatibility will be introduced on site in 2010).

7 new Dell Latitude E5500 laptops were purchased in Turkey and installed at the start of the season.

A new scanner/copier/colour printer was also purchased due to the demise of the old one after good service.

Infra-structure throughout the season - Sarah Jones
The arrival of the new server, with its new operating system and network hardware proved invaluable this year. Rich did his usual excellent job of setting up all the systems and I did my very best to keep the systems running smoothly.

It was wonderful not having to monitor disk space every day and the new server performed very well. The changes in set-up did prove ‘challenging’ when things went wrong as I had never encountered the issues before or ever used this operating system. The most major situation occurred when the virtual server where the database was running ran out of disk space and could not resume or be backed up. Thankfully due emergency calls and contacts with Neil Davies and Rich in the UK it was sorted out and nothing lost.

It was situations like these along with network connection problems and continual printing issues that made me admit that the IT role has grown into two separate strands that one person alone does not have the time to manage. I would like to thank the team for their patience with me over the support problems, and their understanding that I am a database developer and I am not trained nor experienced in hardware and software support. With this in mind we hope to recruit more IT support next season. I would also like all team members to please ensure that if they do bring their own computers to site, which we are grateful to them that they do, they have all the latest patches for their software and have virus checked them arrival. We do not have the resources to support anyone like a fully fledged IT department can and so if, for instance, you don’t know how to work your wireless connection its pretty certain we won’t either!

Databases -Sarah Jones
The database performed very well this season on the new server. It was generally agreed to be faster and more stable. Some users did experience problems but I think these were down to software issues, a lot related to Office 2007 on Vista. Post season research indicates this might be fixed by a service pack (thanks Pottery team).

General maintenance work was carried out on all the systems but the focus of work was on getting the Ceramics database up and running in its new structure, tweaking the Human Remains database and cleaning/improving the excavation and finds databases.

Database Work by Team
Archaeobotany – minor tweaks

Chipped Stone – minor tweaks. Phase 2 data to be uploaded over the winter and the structure adapted to support it.

Conservation – minor tweaks including relinking in the images from Portfolio (re-coded due to a structural change in the new version of that software).

Clay Balls - no changes but help given in querying

Excavation – structural changes made over the winter were tested and proved successful. One major change was the removal of two tables Units in Buildings and Features In Buildings, these tables duplicated information that should only be obtained via the Space and which in the past could get out of synch. These tables were removed and replaced by queries simulating the same data - no-one noticed this so it was successful! Another interesting winter change was the alteration of the query 'Exca: Unit Sheet with relationships' in to a generated table. This presents each unit number along with its relationship details (Building number, Space number etc), i.e. it unnormalises related unit information for presentation and quick look up purposes. It proved very useful in all the lab team systems, to present information for a unit. In 2008 I noticed this query ran slowly on site, due to the nature of the heavy processing it was doing. This year I set this up as a table that is refreshed every 3 hours. The downside of this was that it was slightly out of synch with the live excavation database however the performance benefit was incredible making it worth keeping.

Other winter additions such as the reports and a small query builder were rewarded by people using them even before I told them they were there!

A large amount effort was put into data cleaning by the excavation and GIS teams, Shahina and myself. The excavators checked relationships and did a huge amount of volume cleaning (plus a lot more besides, many thanks to them), the GIS team and Shahina also did vast swathes of work to correct entries and fill in gaps. Ian requested a big push on volume values and a lot has been achieved but it is a task that will carry on and on. I undertook as many global updates as possible where patterns emerged, and got firmly bogged down in cleaning sample amounts where users had been able to input free text – 'small bag' and 'a little bit'- not being particularly helpful when trying to convert these into numeric values. Little by little we are able to tighten the database to stop problems like this occurring but it is so evident from this that everyone must remember on site which seems so obvious off-site without the stress, that you might know now what you mean but we don't, and nor will posterity!

Work also focused on phasing, both in terms of Settlement phase (i.e Mellaart Level and Hodder Phase) and Occupation Phase (i.e phase within building or space). Over the winter the Hodder Phase was introduced and the space sheet adapted for it. We also had many discussions about how to improve and extended the 'Phase In Building' field to accommodate phasing of external spaces. The system now supports the one to many relationship of the latter.

Faunal - no major development work this year just a few tweaks on locking the GID once entered and translating some FMP scripts into VBA to update some post-excavation fields that have been made visible.

Figurines – this was the second season running the centralized figurines database and it ran very well. Some new fields were added for clay composition. There is still work that needs to be done on this database to make it easier to take local copies and to update over the winter as remotely the FMP – SQL Server connection did not function consistently but this is on-going.

Finds – there is never enough time in the season to get all the work done on the finds database as is required but with Julie and Lisa providing guidance, testing and help each year we edge gradually towards the type of finds system that we currently need. Like the excavation database this system has evolved to the different requirements of the teams using it over the years. In previous seasons we have re-named, spilt and added new fields but to check data was converted correctly a lot of old fields were left behind the scenes, now redundant. With more querying taking place under the covers we archived off these fields to leave only those that are used and useful.

The state of the crate register has been of concern for some years and since the initial centralization we have expanded and changed it. We now felt it was functionally at a point where its use had to be pushed more firmly onto the lab teams, although appearing 'Big Brotherly' it is essential that we all use the same system and keep it up to date centrally and this was generally accepted by everyone. Please all remember that we will grow and adapt the system as our needs evolve so we will need everyone's help, input and patience in doing this.

GIS – the GIS team did fantastic things this year, thanks to Cord, Dave, Camilla and Michele. It was a beneficial exercise for us all, learning about different systems. The team decided that taking the relevant data into a GIS system was the fastest way to use it within that environment so we set up a routine to upload fresh data from the database to the GIS at the touch of a button. I would like to extend this to schedule a regular automatic update. The GIS work proved a valuable tool to help identify areas of data cleaning and it shows the potential of mapping as an analysis tool for the next publication, it makes the data come alive.

Heavy Residue - no major development work was done but querying was extensive and there are a few outstanding issues for the winter.

Human Remains – this was the first year this database went live. Simon and family had done a huge amount of data entry over the winter and the team checked over this. In doing so we found a few bugs and functionality issues but overall we were very pleased with the way the system has developed. In the last few days of my time on site we created an MNI generator. This was based on a large amount of work creating the queries required which was done by Başak (and moral support from the whole team), we then coded them together, ironed out a few glitches and then amazingly had version 1 of the generator which came up with pretty good results. I'm sure there will be improvements and tightening of this procedure but we really were rather pleased with ourselves!

Photos – as a new version of Portfolio had introduced some structural changes to the location of where images were stored I had to re-work the code that links in the photos to the excavation and conversation databases. Once done, this facility worked very well and it was nice to see people using it. We also extended the functionality to show related photos on the Building, Space and Feature sheets this year.

Pottery – there was major work on the pottery database before the season began. The long awaited re-design actually occurred and the existing data was translated into the new normalized structure. There were a few data issues to sort out in the structural translation but given the number of records it was pretty smooth.

The new interface was developed quickly and I would like to revisit it and improve it. The team coped very well as we ironed out problems and tweaked it with extra requirements. The new structure should make searching quicker and more accurate.

Thanks to the pottery team for all their help and patience this season. There is more work to do over the winter to optimize and improve the system ready for next season.

Shell – Danny and Burcin continued to populate their database with tremendous amounts of information. There was no major development work on this system this season but small tweaks to show, for instance, more fields from the excavation database. Most of my work

revolved around query guidance and I appreciated Danny's feedback on my preliminary querying documentation.

Querying
Each season the teams become more active in querying the database and this year I was busier than ever helping give guidance on how to do this. Over the winter I produced a table/field guide to the main databases along with entity relationship models. These, although still a work in progress, proved useful and discussions on site gave me insight into how to improve them for next year. I also received valuable feedback on my preliminary querying documentation.

Certainly one of the most interesting angles of the database work here is that as a developer you use the structure of the relational database to speed up your data retrieval, knowing you have the power of programming to produce the data in any format a client requires. Here we allow our users to query raw data themselves and therefore navigate the complexities of a relational structure. Producing pre-made queries and tools to aid this process is getting more and more important hence the need to free up my time (or who ever is in the database role) to focus on this and not the IT support side of work on site.

Data On-line via the web
There was very little work done on this since the last report. New fields have been added and the figurine images linked in, plus sketch plans for units made available. A review of this part of the website is well over due.

Conclusion
The new server definitely gives us the flexibility to continue to grow and improve our site database. Two major databases were bedded down this season (Pottery and Human Remains) and the continued cycle of improvements enhanced the functionality of the core work horse systems excavation and finds to match the current requirements of the project.

A renewed push to centralize other datasets is now required, more documentation and querying templates are needed and all the presentation of data on the website must be re-visited. It is getting more critical that we consider moving forward to a newer version of SQL Server but the testing overhead and concerns over the migration of the current DTS packages make it a huge step, which at such a data critical time of the publication cycle might make it too big a risk to undertake for now.

Data cleaning will be on-going, and it always will be, but there are definite inroads into this and each year we tighten up the database to prevent future problems. It is vital every one takes part in this – not just flagging up problems as they appear but also entering data carefully and thoroughly. In the heat, dust and exhaustion of the excavation season errors are always going to occur but as we all use the database to run our queries it brings home the importance of this now more than ever.

One final point. How unique is Çatalhöyük in the way its data is used so quickly and in such a raw form by the lab teams? This season saw the excavators undertaking their post excavation work at the same time as the lab teams wanted it to work on for their own analysis. The team collaborations are invaluable and interesting but as an unbiased observer can I just remind everyone that the database is a tool that must be used with thought and patience, the data out is only as good as the data that goes in, always question it, and remember very soon someone is going to want your data too!

2009 Finds Lab Archive Report - Julie Cassidy (1) & Lisa Guerre (2)

(1) Çatalhöyük Research Project / (Portable Antiquities Scheme, UK), (2) Çatalhöyük Research Project / URS Corporation, USA.

The 2009 season began with a 6 week study season, with only a small team excavating West Trench 8. This gave the finds lab the ideal opportunity to resolve some long-standing issues

regarding crate inventories on the database and the development of the database structure, which were not possible during the previous full excavation seasons.

Finds Guidance Notes
As noted in the 2006 Archive Report, a large turn over of finds lab staff over the duration of the excavation has lead to differences in approach to recording and storage. Since 2005 there has been a programme of standardization of the finds system as a whole, from storage of objects to the set terminologies used in the database. Finds Guidance notes were handed out to each lab outlining the procedures regarding the storage and packaging of objects, how to export samples, how to write finds labels, health and safety within the finds depots and what the crate and artefact codes represent. This Guidance was handed out with the intention that feedback is given and the notes be revised in 2010, leading to a static and strictly applied set of Guidelines to be followed by Lab Teams and future finds managers from 2010 onwards.

Neolithic Finds Crib Sheet
Unlike Roman and Medieval excavations, which have a range of detailed finds volumes published after an excavation, the Neolithic finds discovered at Çatalhöyük do not have easily accessible published volumes which can be used as a reference and identification tool by those working on site. This type of guide would be particularly useful to those new to this type of site, and especially to the large number of students who arrive on site and are new to archaeology.

Work on 'A Guide to Neolithic Finds From Catalhoyuk' was started early in 2009 and is intended to be a basic guide to the type of finds frequently discovered at this site. This is a work in progress to be completed in 2010 with cooperation between the Finds Officers and the Conservation Team; the two teams who have the most experience with the wide range of artefact types found on site. In this document, finds will be represented by either an illustration or photograph and include a brief description of each artefact. For example, some one on site may discover and identify a figurine, but may be unaware that the Figurine Team would further identify it as an Abbreviated Humanoid, or may discover a worked bone but would benefit from knowing its function, i.e., a point, a tool, a pendant, etc.; the document would facilitate more specific classification of finds at the point of excavation.

'A Guide to Neolithic Finds From Catalhoyuk' is intended as a reference for use by people working on site, and will not be published outside the excavation. However, given the lack of such a standard document, it maybe a useful starting point for future publication. Further discussions with regard to this will be held in 2010.

Crate inventories
An excavation of this importance, duration, and size produces thousands of artefacts each season. The frequent movement of finds during and after study over the years, particularly in those years before the database was used regularly and its importance understood, has meant that the exact location of every find has become unclear.

A sustained programme of crate inventories was undertaken throughout the 2009 season. This process has been ongoing since 2005, but the study season enabled the inventory and data entry of several large datasets, which included Organic Residue (OR), Archive Sample (AS), Clay Ball (CB), Shell (S), Phytolith (PH) and Figurine (FG) crates. This was a huge undertaking and made a significant difference to the number of finds and X-finds recorded on the database. Where before a crate may have been labelled "Units 7700-7900", the exact units represented are now known. Equally, where X-finds were not individually recorded in the Location Register, their location can now be traced and shown on their individual Finds Register record. This programme will continue into 2010 with the goal of having the most complete, up-to-date inventory of all material.

This effort will require a great deal of man power and hours; students will be essential in the completion of this task. Additionally, the addition of a dedicated Finds Intern for the 2010 has been discussed; Lisa Guerre will be heading up this effort. The Finds Intern will be expected to be an archaeology student with a demonstrated interest in and understanding of collections

management and the maintenance of the archaeological record. Applicants will be evaluated through an essay and academic references.

Database
Various changes were made to the Finds Database to make it more functional for both those doing data entry as well as those using it as a tool to identify and study its contents.

Finds Sheet
All X-finds are recorded in detail onto the Finds Sheet by the Finds Officer after which they are then passed on to the relevant lab teams. Links to the excavation, conservation, and material databases provide a narrative of the finds from the site to the specialist. The report by the finds manager is useful for several reasons. First, it acts as a proof that the finds has been taken down from the site and has been seen by the finds lab. Second, if the relevant specialist is not present on site, it acts as a preliminary report for those interested in the context or material type. Third, if the excavators are mistaken about its identification, i.e., it may be clay rather than stone, we are able to trace the movement of the artefact and follow its pattern of identification amongst the various specialists.

Location Register
The Location Register provides a complete and current inventory of all finds and records their location. The accurate recording of finds and locations on this Register makes the study of the objects easier. As described above, a sustained programme of crate inventories has meant that we can now be confident that the locations recorded on the Register for the majority of the datasets. This process should be completed in 2010.

A meeting with the Heads of Labs was held at the end of July explaining the changes that have been made by Mia Ridge, Sarah Jones, Julie Cassidy, and Lisa Guerre in consultation with Shahina Farid since 2005. The database is now fully functioning as a tool to both search for artefacts and to maintain a running inventory of finds and crates. The meeting explained how the database works now and what changes will be made in the future to further integrate all databases. The meeting was well received by those Lab Heads present, and will hopefully lead to more labs using the database directly rather than maintaining a separate crate list.

During the season additional discussions between Ian Hodder, Shahina Farid, Sarah Jones, and Lisa Guerre, changes to the database were proposed to further encourage Lab Heads to record the shifting of finds and to keep the location register up-to-date. Tentatively, these changes will take the form of pop up reminders designed to prompt the team leader to note if the location of a particular find/unit has been moved to a new crate. Should the digital prompts not work as discussed a more aggressive plan of action will be needed and it has been proposed the depots function as a library with crates being checked out and in by a dedicated Depot Officer.

As mentioned above, the long history of specialist shifting materials between crates has resulted in an inaccurate inventory and has made the job of the Finds Officer difficult when locating materials. It is hoped that, with the present functionality of the location register, the integration of specialist databases, and the overall cooperation of all Lab Heads in utilizing the finds database an accurate and fluid inventory of all finds on site will be maintained and facilitate future research.

2009 Heavy Residue Archive Report – Milena Vasic*

with Slobodan Mitrović*

*Çatalhöyük Research Project

Backlog from 2008
At the very beginning of the study season, due to the large backlog from the previous year, teams were confronted with the difficulty of completing their analyses without the Heavy Residue. Therefore, members of the Botany, Faunal and Obsidian labs created a list of the "priority" units from 2008 that needed to be sorted for the study season as soon as possible.

As the samples from the South Area had been completed in 2008, a majority of those units came from Building 77 in the 4040 Area as this building had been excavated at the end of 2008 season. For that reason, our local ladies team of residue sorters worked part of the study season in order to sort those samples. They returned on the 9th of August and began sorting 25 other crates of backlog from 2008 from 4040 Area and TP Area respectively.

Samples from 2009
Despite the fact that only the West Mound and South Areas were excavated this year, there was a large number of samples. In total 332 samples were floated in 2009, though several samples were actually a backlog from 2008.

After the entire backlog from 2008 had been completed, the ladies began sorting material retrieved in 2009 from the South Area. In total, 212 samples were processed and the rest was bagged and stored for 2010 to be processed.

Cleaning of the Heavy Residue database
It was clear from the start, that before doing any Heavy Residue analyses, the cleaning of the database was compulsory. Queries have been made in order to determine and correct all the mistakes in the Heavy Residue database.

As the data from Excavation, Botany and Heavy Residue databases should match; attempts have been made in order to correct all the problematic samples. There were several types of problems. First of all, a list of flotation samples that had not been recorded in the excavation database was created. Majority of those samples was from 2003 and 2004. Dealing with the samples that had been recorded on the unit sheets but simply had not been entered in the database was easier, as they were simply copied to the database. However, some of the samples had not been recorded at all.

Since the unit sheets did not have information about the taken samples, a new sample number was assigned by the excavators, and then copied into the Botany and Heavy Residue databases.

Furthermore, there were a number of samples without a sample number in the Botany database. As the floatation is usually done on the same day when the excavators take the samples, or the day after, sometimes excavators do not enter the samples into the database immediately. If the label that comes with a sample does not have the sample number, when sample is being recorded in the Botany database the sample number box remains blank. The sample number was retrieved from the Excavation database and then copied into the Botany database.

In addition to this, there were a number of samples whose sample number did not match in all three databases. An attempt has been made in order to correct it by first copying the numbers from the excavation database where possible, as it is the information that is most likely to be correct. In few other cases, after checking the information written on the Unit Sheets, the sample numbers were corrected in the Excavation database.

Another problem that the team was confronted with was missing or mismatching Volumes. This was corrected by transposing the Botany volume data which are more accurate than the field value.

Furthermore, a list of floatation samples without coordinate information in the Excavation database was created. This was solved by copying the coordinates from the Unit Sheets. In cases when Unit Sheets did not have the samples` coordinates, mid X and Y were copied.

The issue of samples with several flot numbers was also addressed. This was a result of giving several flot numbers to the same sample. It was determined that this usually happens with the flot samples from the burial fills. As the standard procedure is to float the total sample retrieved from the burial fill, usually the whole sample is stored in a number of bags. However, sometimes the excavators send the sample for floatation before the burial is finished, and therefore, people in charge of floatation assign a new flot number each time they get those

parts of sample. As having several different flot numbers for the same sample would be very difficult to deal with when it comes to the statistics, all parts of a sample were combined under the first given number, while the other flot numbers were deleted.

As it would take a lot of time for to sort the whole sample, standard procedure is to split 2 and 1 mm fractions. For samples up to 30 litres, default percentage for 2 and 1 mm fractions is 50% and 25%, whereas for larger samples, it should be either 25% or 12.5%. This of course can vary, depending on the actual size of the sample (for example, if a sample is 5 litres only , all the fractions should be sorted 100%), so it can ultimately be decided what percentage of a 2mm or 1mm fraction would be sorted.

Combining the samples whose fractions had been sorted equally was pretty straightforward. All that was done was adding up the weights and volumes in the database and deleting the other record. On the other hand, combining the samples whose parts had been sorted differently was time consuming as the bags with the unsorted soil needed to be found and pulled out from the depot and then sorted completely before putting them together.

Unfortunately, due to sampling strategy in 2003 and 2004 when a lot of subsampling had been done (for example, 12.5 percent of bone in a sample was sorted, but 25 percent of obsidian), it was simply impossible for some samples to be combined. However, the majority of duplicated samples was combined, and therefore, in 2010 teams will get parts of samples from 2003-2008 that they will have to put together with the rest of the material retrieved from that unit and make necessary changes (flot numbers, percentages of 1 and 2mm fractions).

In order to easily detect problems, option “Problematic Sample” was reintroduced to the Heavy Residue database. It was there all the time, but for some reason it was hidden. It is very useful especially when it comes to the queries and analysis of the Heavy Residue. Thanks to this option, problematic samples can now be excluded from the analyses.

Heavy Residue Inventory
So far, all the Heavy Residue sheets together with their photocopies have been kept in a hard copy. This year, all the originals were sorted by flot numbers, years and areas and stored in folders. As for the photocopies, it has been decided to discard them.

In order to easily find information about where a certain sample is, an inventory of all the crates in the depot from 2003 to 2008 with the unsorted parts of 2 and 1mm fractions have been made. Hopefully, in 2010, all the other crates from the previous years will be done as well.

As the depots are slowly filling up, a discarding strategy needs to be developed. Since the data about those samples already exist, as that represents the “unsorted” part of the sample that was sorted, it needs to be considered whether keeping such a huge amount of soil is really worth it. It is necessary to go through all the crates and discard some of it, such as the samples from the sterile layers etc.

Conservation - Duygu Çamurcuoğlu

Team: Liz Pye*, Duygu Çamurcuoğlu*, Kelly Caldwell*, Graham McArthur*, Amanda Watts*, Daniela Boos Pedrosa*, Sanaz Mehran**

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Abstract
Site and artefacts conservation was successfully carried out during the 2009 study/excavation season in collaboration with the conservation students from the Institute of Archaeology-UCL, Mimar Sinan University and the excavation/laboratory teams. The main activities of the season were the conservation and the maintenance of the buildings in the 4040 and South Areas, the conservation and the installation of the decorated wall border in the Konya Museum, the conservation of pottery, faunal and human bones as well as other small finds.

Research into particular on-site conservation problems were also carried out in order to find the most suitable solutions.

Excavation and treatment of fragile and complex materials

In the 2008 season, the conservation team undertook the most complex and heavy lifts of the last five seasons: The wall border with a spiral motif decoration, which surrounded three walls of a small room in the TP Area (Building 74, Space 327), found during the 2007 season (Figure 119 - left). The spiral motif decoration was incised on mud plaster, which was applied on the surface of the mudbrick walls and appeared to be eroded in places. After being lifted and the immediate conservation work was undertaken (see 2008 Archive report), the wall border stayed in the conservation lab until the 2009 season when its conservation continued and it was prepared to be taken to Konya Archaeology Museum for display (Figure 119 - right).

Fig 119 (left) Decorative border with the spiral motif (right) Decorative border during conservation. Photos Jason Quinlan

During the 2009 season, it was decided that the wall border would be displayed in the Konya Archaeological Museum where it would be placed on a perspex shelf which is fixed onto a wall with stainless steel bolts. The design and discussions with the museum is ongoing.

The Conservation and the Maintenance of the display buildings in the 4040 Shelter

In the 2008 season, with the completion of the new shelter over the 4040 Area, Building 5, Building 52 (with the Bucranium and the horn cores) and Building 77 (with the two plastered pillars attached with large cattle horn cores) needed to be fully conserved and prepared for in situ display (see 2008 Archive report) (Figure 120 a,b,c). The work mainly included the consolidation of the bucranium, the horn cores and the surrounding plastered walls/bins, by using either 25 or 50% Primal AC-33 (acrylic emulsion) in pure water according to the strength needed. For the plastered walls, lime based mortars and grouts (see 2006 Archive Report) were used to stabilise the cracks and voids.

Figure 120: a Building 77 after 10 months on display. Photo Jason Quinlan

This season, visual observations and continuous environmental monitoring showed that it will be a very difficult process to preserve the buildings (specially the burnt and therefore more vulnerable than the unburnt buildings) under a macro environment of the 4040 shelter for a

Figure 120 b *Figure 120 c Photos Jason Quinlan*

protracted period of time, due to the drastic environmental change from buried to exposed buildings. One of the main problems over the last 12 months was the fluctuations in RH

Fig 2 (left) Building 52 (right) B.5

(Relative Humidity) causing a regular action of drying/wetting which activates the soluble salts through the ground water causing mudbrick and plaster layers to constantly erode, delaminate and detach. There was also much damage from small burrowing animals causing physical damage to the structures and the features (Figure 121)

Figure 121: (top) Building 77, (bottom) Building 52. Photos Jason Quinlan.

Figure 122: Stages of conservation. Photos Jason Quinlan.

structures will be inevitable and therefore the current buildings should be displayed maximum for three years which afterwards should be excavated down to the levels below. During the three years period, we will continue conserving the 4040 Area buildings in the usual way, but we may also need to make changes to the 4040 shelter in order to alter some of the impracticalities that it currently presents (Figure 122).

Conservation of small finds

Work on a variety of finds excavated in the field (horn cores and other animal bones, human bones, pottery, clay and stone figurines) was undertaken on the site throughout the 2009 season (Figure 123). As previous years objects such as Neolithic pottery and complete or diagnostic animal bones were conserved for analysis.

Figure 123: Conservation stages on 18545.X1. Photos Conservation Team.

Conservation Research Projects

Experimentation with locally available clays - Graeme McArthur

Original and repair materials should have similar performance characteristics and to get the closest match to the original material, a local source of the same material can be used. Some experiments were carried out this season to examine the use of locally sourced clay to repair and partially rebuild the damaged bins in Building 5. These bins had previously been reconstructed with a mortar mix consisting of 1 part hydraulic lime, 1 part brown sand and 1 part fine residue from the flotation tanks, mixed with 5% Primal AC-33 in pure water. However, mainly due to the environment factors, most of this reconstruction has detached and much of the bins have become very friable and were in need of repair. Figure 124 below shows the test area of the bins used for this experiment. The area shown is extremely friable and thus had to be injected with 50% Primal AC-33 in pure water prior to the reconstruction process in order to strengthen the mudbrick enough to apply any new materials.

Figure 124: A test area of the bins in Building 5 under the 4040 Shelter. Photo Graeme McArthur

Before testing on archaeological materials, various mixtures of the clays were tested in a tray to look for ease of application and toughness and thus the samples below were created. By only mixing with water, the clay was extremely sticky and hard to apply. Adding straws helped the application as so each higher percentage of Primal AC-33 in water did.

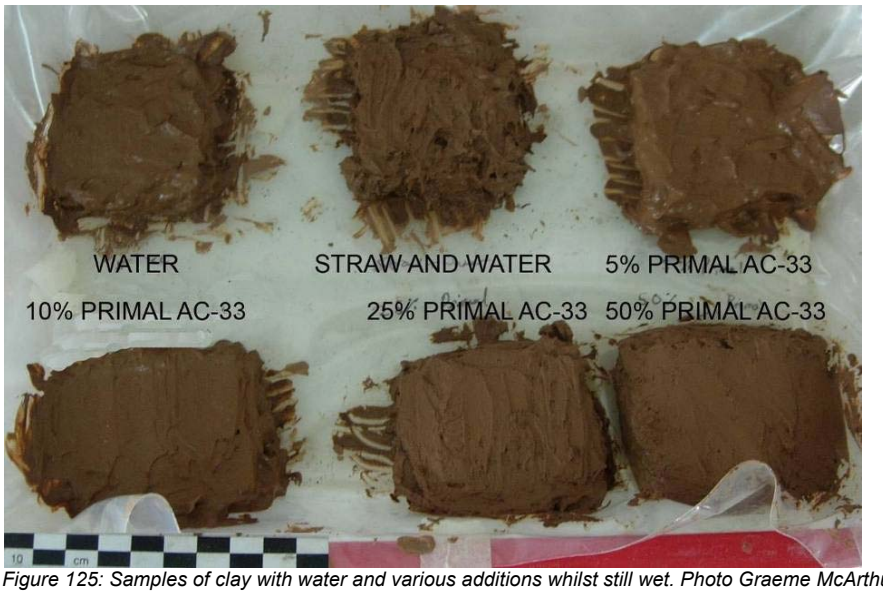

Figure 125: Samples of clay with water and various additions whilst still wet. Photo Graeme McArthur

The samples were left inside the bins in Building 5, so they would dry in the same conditions that they would if they were used as a conservation material. The results are shown in figure below.

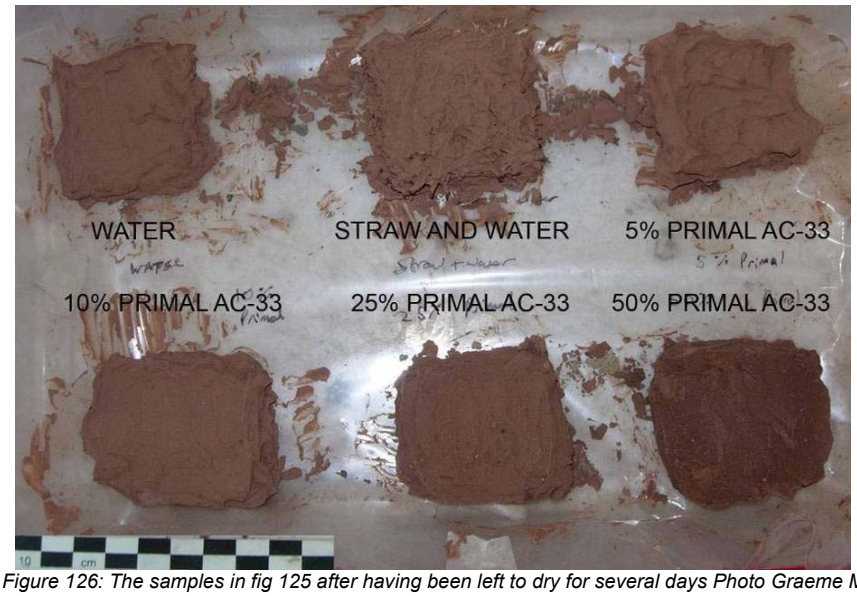

Figure 126: The samples in fig 125 after having been left to dry for several days Photo Graeme McArthur

The most striking result here was the shrinkage of each of the samples; the mixture with straw remained closest to its original size but had numerous cracks as the clay still contracted around the support material. Surprisingly, even the 50% Primal AC-33 shrank considerably, more so than the 25%.

Hardness testing with a scalpel proved as expected, that the higher the percentage of Primal AC-33 added, the harder the final material. The samples mixed with water, straw and water, 5%, and 10% Primal AC-33 were very easy to scratch, whereas the 25% and 50% Primal AC-33 were very difficult to remove any material from. However higher percentages of Primal AC-33 resulted in darker colours and a significant increases in weight that might prove too heavy to be used on delicate materials.

After these test samples it was decided to try the mixture with 25% Primal AC-33 on the test area of the Building 5 bins as this was applied as shown in figure below. It was noted that this mixture of clay was difficult to apply in this manner due to its stickiness; a more putty like texture would be preferable.


Figure 127: clay mixed with 25% Primal AC-33 applied to the Building 5 bins. Photo Graeme McArthur

Unfortunately as figure below shows, upon drying, the shrinkage of the clay combined with the extremely friable nature of the archaeological material caused the detaching of some of the original material.

Figure 128: Clay mixed with 25% Primal AC-33 upon drying. Photo Graeme McArthur

A second attempt of using clay mixed with 50% Primal AC-33 was then tested alongside the standard mortar used on site that consists of 1 part hydraulic lime, 3 parts brown sand, mixed with 50% Primal AC-33 in pure water. Figure below shows both of these applied to the Building 5 bins, with the clay on the left and the mortar on the right. It was noted that the 50% Primal AC-33 mixture was far more putty like and extremely easy to apply to the friable surface; conversely the mortar was very difficult to apply to the friable surface due to its fairly stiff consistency.

Figure 129: Clay mixed with 50% Primal AC-33 and a mortar applied to a test area of the bins of Building 5. Photo Graeme McArthur

As figure shows, the shrinkage of the clay caused it to detach partially upon drying, whereas the mortar mix was completely detached. Finding a material to stabilize the extremely friable mudbrick is proving to be of great difficulty and the work will continue with more additions/modifications to the materials and the application methods such as working on the trying to use straws with various Primal AC-33 mixtures to attempt to reduce the shrinkage as they dries and experimenting with application methods.

Figure 130: Clay mixture with 50% Primal AC-33 and mortar after drying. Photo Graeme McArthur

Environmental Monitoring project - Duygu Çamurcuoğlu

We downloaded data from the dataloggers, which had been placed in Building 5, B.77 and B.5 during the 2008 season in order to monitor the RH and temperature for a year.

From the readings, it was clear that the newly built 4040 shelter presented a similar pattern of RH and temperature as that of the protective tent that used to cover Building 5. The RH and temperature regularly fluctuated during the year, RH going up to 90% and down to 25% while the temperature raised over 40 CO and down to -10 CO. However this time, fluctuations caused significant damage, as the area covered under the 4040 shelter is not feasible to create a stable micro-environment. The constant change in the shelter's environment (i.e. front/back flaps not closing properly in winter and being regularly opened/closed in the summer due to the changes in weather and for the comfort of the visitors did make it difficult to stabilise the environment and to reach an equilibrium within the shelter.

After two seasons of observation along with results of the environmental data, it was agreed that it is not really possible to control and maintain an adequate environment in the shelter and therefore we will keep maintaining the display buildings both chemically and physically until they are excavated again in 2012. In the meantime, discussions with the architects will continue to find ways to control the significant changes in the environment under the 4040 shelter.

Documentation of conservation
Development of the conservation database has continued throughout the season as we collaborated with the Database team and achieved very efficient results. All artefacts were photographed before, during, after treatment and registered to the new image catalogue in order to be linked into the recently developed Çatalhöyük Conservation database.

Reflexive Conservation
For the last two years, we take part in all the events designed to inform the local community about the Çatalhöyük project, working particularly with children to introduce them to conservation through activities such as simple pottery reconstruction and explaining what conservators do on site. We also involve local workmen and the site guards in aspects of conservation, which develop their awareness not only of conservation but also of the importance of preserving their own heritage. With their knowledge of the landscape, the soil and the architecture as well as basic training from us, they help us with complex work during the excavation seasons, and they can monitor the site and provide first aid if necessary between seasons.

Acknowledgements
Big thanks to all team members who made 2009 a very successful season.

RESEARCH PROJECT REPORTS

Coring Report - Chris Doherty (1)

Assisted by Slobodan Mitrović (2)

(1)Oxford Research Laboratory for Archaeology, (2) Çatalhöyük Research Project

A further series of sediment cores was taken as part of the ongoing environmental program to investigate the Neolithic land surface and locate raw materials for mudbricks, clay balls, pottery and figurines. The specific aim this year was to examine the extent to which the Çarsamba's course had deviated from it's current position between the two mounds: to inform on the possible distribution of sandy sediments. Sandy and coarse-silty sediments are increasingly being identified as components of East Mound pottery fabrics and mudbricks. Defining the location and extent of such sediments is important for reconstructing the production of these materials, and for understanding the relationship between the Çarsamba and the mounds.

A total of 8 cores were taken to a depth of 5m, which in all cases was sufficient to intersect the marl surface. Previous work, both the KOPAL survey and our own coring, had proved the presence of sandy sediments between the mounds. Yet it is not understood whether the Neolithic Çarsamba channel had meandered or split to give similar deposits near the outer peripheries of either mound. Therefore, the target observation was the occurrence of any sandy or silty sediments lying above the marl. These coarser sediments would indicate flowing water and so the former position of the Çarsamba channel and the nature of it's flow.

Cores were taken along the eastern boundary of the East Mound, and north-western margin of the West mound. As always, preferred core locations had to be modified to accommodate standing crops. The relatively wet conditions had delayed the wheat harvest this year, and so the majority of cores had to be located on dirt roads (Figure 131). The same truck-mounted percussion rig was used as in previous years (for details see the 2007-8 Archive Reports). In some cases, core retrieval was poor due to the very wet conditions, but the main aims of this year's survey were successfully met.

The 2009 cores are now being investigated in the laboratory at Oxford, using microscope analysis to distinguish fine-grained cultural materials from natural sand grains. On completion, the findings of these cores will be combined with previous cores to allow us to map out the distribution of sandy sediments lying above the marl.

Figure 131: position on 2009 cores

Micromorphology and high-resolution micro-analysis of architectural materials, life-histories of buildings and middens - Wendy Matthews

Team led by: Wendy Matthews
Lisa-Marie Shillito, Matthew Almond, Emma Anderson, Helen Stokes and Joanne Wiles

Reading University

Early architectural materials and the life-histories of buildings

Wendy Matthews, Matthew Almond, Emma Anderson, Helen Stokes and Joanne Wiles

Early architectural materials and the life-histories of buildings are being investigated at the University of Reading in joint research between the Departments of Archaeology and Chemistry. The aims are firstly to examine technological and socio-cultural choices in the selection and transformation of materials for architectural members and surfaces (Lemonier 1993; Houben and Guillaud 1989), and secondly to study how materials and surfaces are used to construct and embody social, cultural and political settings, boundaries and events within buildings and the life-histories of the individuals, households and communities associated with them (Bourdieu 1990; Bachelard 1994; Parker Pearson 1994; Matthews 2005a and b; Asatekin 2005).

The methodology is multi-scalar and interdisciplinary, integrating detailed analysis in the field, with in-situ micro-analysis of materials and microstratigraphic sequences of walls and floors to study:

- Source materials and techniques in the manufacture of architectural materials and surfaces.
- Impact of activities and environment on those surfaces.
- Accumulations of residues from activities in deposits on walls and floors, including soot, ochres, and micro-residues including plant remains, dung and coprolites, bone fragments, and aggregates.
- Post-depositional alterations.

The techniques applied focus on high-resolution in-situ analysis of materials and residues, given the heterogeneity and thinness of individual depositional layers within buildings at Çatalhöyük, which are often <0.012-5mm thick. The techniques applied include:

- Micromorphological analysis of wall and floor sequences in large resin-impregnated thin-sections (Figure 132), 14 x 7cm, 30 microns thick, using optical polarising, oblique incident and fluorescent light microscopy, at magnifications of x40-400 (Courty et al. 1989).
- IR microscopy to analyse and map the mineral composition of materials and residues, using the Bruker Equinox 55 Infrared Spectrometer with a Bruker IRscope II Microscope Attachment in the Centre for Advanced Microscopy and the Perkin Elmer Spectrum 100 Infrared Spectrometer with Spotlight 400 Microscope Attachment in the Chemical Analytical Facility at Reading.
- SEM EDX to map at high-resolution the elemental composition of materials and residues, using the FEI Quanta 600 FEG Environmental SEM equipped with an Oxford INCA energy and wavelength dispersive X-ray system in the Centre for Advanced Microscopy at Reading.
- SRS micro-IR and micro-XRD to analyse and map the mineralogy of materials and residues, previously at the Daresbury synchrotron facility, with a grant from CCLRC, and future work at the Diamond synchrotron facility.

- High resolution spot sampling for biomolecular analysis by GC-MS of 5β-stanols and bile acids from suspected coprolites and dung, in collaboration with Prof Richard Evershed, Dr Ian Bull and Lisa-Marie Shillito, with a grant from NERC LSMSF.

This research is being conducted by a team of members of staff and PhD, MSc and undergraduate students at Reading and prepared for publication and discussion in the Study Season in Summer 2010.

The buildings focused on include: in the South Area - Buildings 53 (Figure 132), B.65, B.68, B.80; and in the 4040 Area - Buildings 49 and B.45, and wall plaster in B.77. This research is also examining the nature of external areas and surfaces, in addition to the research on middens conducted by Lisa-Marie Shillito. The geoarchaeology of burials was investigated by Beth Harley during the Field Season in Summer 2009. Comparisons are also being made to architectural materials and life-histories of buildings and areas at the earlier Aceramic Neolithic site of Boncuklu, 9km to the north of Çatalhöyük (Baird 2008), and to other Neolithic settlements across the Near East, including the sites of Sheikh-e Abad and Tappeh Jani in the Central Zagros Archaeological Project, Iran (Matthews et al. 2010).

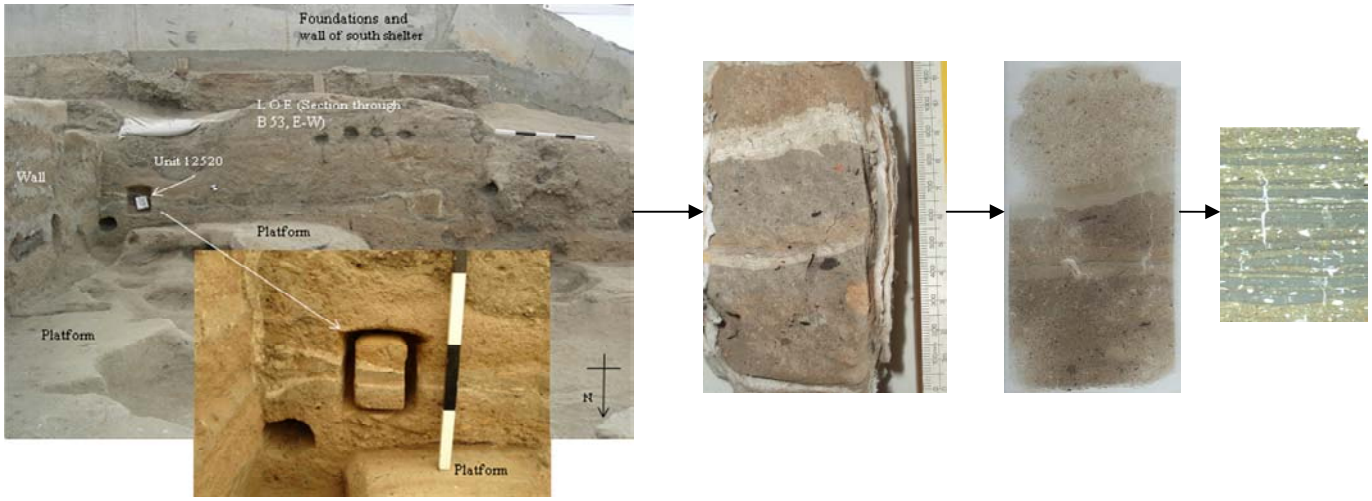

Figure 132: Sequence of photographs showing the production of a thin section (14 x 7cm) from a block sample containing Unit 12520, removed from the south section through Building 53, South Area. The final image shows part of a sequence of multiple white plaster layers in this unit as seen through the optical polarising microscope (x100 magnification, frame height = 0.6mm). Main section photo Çatalhöyük Image Collection Database.

Microspectroscopic analysis of plaster sequences - Joanne Wiles

An integrated analytical methodology, including spectroscopic techniques and micromorphology, has been used to analyse mud plaster sequences and natural sediments from the Neolithic site of Çatalhöyük in Turkey in order to explore the uses and perceptions of soils and space at the site, as part of a recently completed PhD by Joanne Wiles (Wiles 2009). Questions under investigation include:

- What are the chemical and physical characteristics of the plaster materials employed architecturally at Çatalhöyük?

- Can possible sources of natural material be identified through comparison with the natural sediments?

- Have the raw materials been modified in the transition from raw material to finished product? And what are the biographies of the plasters?

The sediments were analysed using bulk FT-IR spectroscopy, FT-IR microscopy, X-ray diffraction, Scanning Electron Microscopy with Energy Dispersive X-ray Analysis, Atomic Absorption and X-ray fluorescence spectroscopy. Mapping of multiple plaster sequences was conducted using FT-IR microscopy and spatially resolved X-ray diffraction using the

synchrotron source at the Daresbury Laboratory. Experiments using the FT-IR microscope in reflectance mode and SEM/EDX were conducted directly upon the surface of thin sections so that the spectroscopic analysis could be directly combined with micromorphological analysis, retaining additional contextual information.

Plasters were taken from various features at the site. A total of 16 deposit types were identified according to their Munsell colours, characterised spectroscopically and described micromorphologically and compared to natural sediments local to the site including marl, softlime and backswamp clay. Marl and softlime have been demonstrated to be composed of calcite and dolomite respectively. The majority of the white plasters were identified as being composed of marl but evidence suggests that several white plasters observed were prepared from a softlime source. The backswamp clay was identified as being composed of montmorillonite, with calcite and quartz. Several of the light olive brown and olive deposit types produced FT-IR spectra which resembled that of backswamp clay.

Observations of the periodicity displayed within the plaster sequences revealed that the complexity of the sequence, types and quality of plaster used and microresidues within them differed between contexts within the buildings studied. Fine multiple plasters with white sediments and occasional ochre inclusions were observed upon the east walls suggesting an association with ritual practices. Thick pale olive brown through to yellowish or dark brown plasters with micro-residues including bone and coprolite were observed in domestic features such as the oven, bin or store-room wall.

A series of archaeological questions were explored using the results of spectroscopic and micromorphological analysis. In exploring these key questions an attempt has been made to take into account the alternative uses of and perceptions of soils and sediments as highlighted by various authors and ethno archaeological studies (Boivin 1999, 2004a, 2004b, Taçon 2004). In this way it is hoped that the scientific data can be used as a basis for tentatively exploring the 'otherness' of life at Çatalhöyük. These questions and the results will be explored further in the forthcoming study season, 2010.

Interdisciplinary microanalysis of depositional cycles and activities in middens, and analysis of phytoliths and organic residues in human coprolites - Lisa-Marie Shillito

This research aims to contribute to our understanding of the Neolithic in the Near East through examining midden formation processes at Çatalhöyük, which can help identify sequences of domestic and craft activities, such as, food processing, preparation and consumption, fuel use, and basketry and lithic production. These activities are closely linked to questions of food procurement and production, diet and resource use. Questions of diet include wild versus domesticated resources, the consumption of plant versus animal products, and possible temporal or seasonal variations in the exploitation of these, based on availability or preference. Questions of resource use include types of fuel and their links to domestic and craft activities.

These questions are approached in this research through examining midden formation processes, and cycles of deposition, and how these relate to human activities. Whilst the floors of buildings and primary deposits are often very clean (Matthews 2005a), middens are a major source of domestic residues, containing a rich range of sediments and bioarchaeological and micro-artefactual remains. Although middens are recognised as an important source of information, for example in understanding discard practises (Martin and Russell 2000), they are excavated in large units, which do not represent actual units of deposition. Specialist research on animal bone assemblages and plant macro remains from middens are routinely limited to these large units, which represent multiple discard events. This thesis aims to examine the information from individual layers in middens to complement and expand upon what has been learnt from other methods of enquiry at the site. In order to study midden formation processes, a number of techniques have been selected, to study middens from the macro to micro scale. These include chemical microanalyses detailed

previously (FT-IR, SEM-EDX, GC-MS) and microstratigraphic phytolith analysis, in conjunction with thin section micromorphology.

This project addresses several important questions at Çatalhöyük, including past environment, diet, resource use, and cyclicity/seasonality of daily life. Several limitations have been identified in previous analyses of middens, including limitations of micromorphology, problems of plant taphonomy with relation to phytolith analysis, and the identification of faecal material. In this research it has been hypothesised that by examining phytoliths in thin section in conjunction with extractions from fine layers, taphonomic problems associated with interpreting phytolith remains can be reduced. Also by examining a large sample set of phytoliths from individual layers, and understanding their precise context through micromorphology (e.g. fuel versus animal fodder versus discarded matting), we can test current hypotheses related to cereal and general plant use, for example the suggestions that cereals were an important aspect of life at Çatalhöyük (Fairbairn 2005) or that they were grown on dryland c.5km away (Roberts and Rosen 2009). By examining phytoliths from coprolites in middens (identified as human or otherwise by GC-MS) we can examine diet of animals and humans on short time scales.

Figure 133: Lower section of midden (Space 130). Photo Lisa-Marie Shillito

Figure 134: Close up of lower section (Space 130) with thin section block locations marked. Photo Lisa-Marie Shillito

Results have important implications for economic questions such as the changing nature of plant resource use as food and fuel, and the frequency and variability of these uses. Results also suggest that middens need to be considered in conjunction with buildings as important activity areas that are part of the household unit, containing important in situ material as well as discarded material. The quantity of human faecal material and proximity to houses has important implications for perceptions of clean and dirty (links with constant presence of fire?), and the relative lack of animal faecal material supports interpretations of dung being used as fuel.

Sequences have so far been analysed from middens in Space 115 and Space 261 in the South Area, Space 279 in the 4040 Area and a midden unit (8932) in TP Area, with 21 thin sections and 300 complementary analyses (FT-IR, GC-MS and phytolith analysis) having been carried out. Aims for the 2009 season included collecting and preparing a final set of samples to complete the sequences analysed as part of PhD research, and targeting the sequence of midden deposits in Space 130 and 339 in the South Area (Figures 133 – 135), where possible surfaces have been identified, and to investigate the changes in midden deposition that occur alongside the change in use of the adjacent buildings B.44 and B.56. Future comparative work is also planned with middens at Boncuklu. Further coprolite samples were collected for analysis by GC-MS as part of a recently awarded NERC LSMSF grant to investigate coprolites with digested bone inclusions, to investigate if these are human as suggested by micromorphology observations, or if these are dog as suggested by the size of the bone inclusions (Russell and Martin 2005).

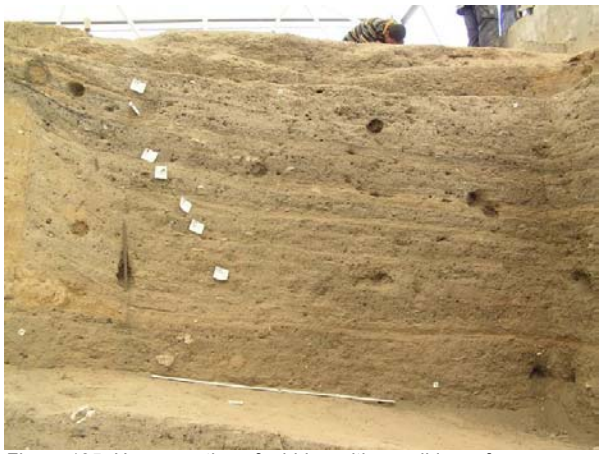

Figure 135: Upper section of midden with possible surfaces (Space 339). Photo Lisa-Marie Shillito

References

Asatekin, G., 2005. Understanding traditional residential architecture in Anatolia. The Journal of Architecture, 10(4), 389-414.

Bachelard, G., 1994. The Poetics of Space. Translated from the French 'La Poetique de l'Espace' (1958 Presses Universitaires de France) by Maria Jolas (1964 The Orion Press, Inc.), with a new foreword by John R. Stilgoe., Boston: Beacon Press.

Baird, D., 2008. The Boncuklu Project; the origins of sedentism, cultivation and herding in central Anatolia. Anatolian Archaeology, 14, 11-3.

Boivin, N. (2004a) From veneration to exploitation: human engagement with the mineral world in Soils. Stones and Symbols: Cultural Perceptions of the Mineral World, Eds N. Boivin and M. A. Owoc, UCL Press, London
Boivin, N (2004b) Geoarchaeology and the Goddess Laksmi in Soils. Stones and Symbols: Cultural Perceptions of the Mineral World, Eds N. Boivin and M. A. Owoc, UCL Press, London
Boivin, N. (1999) World Archaeology, 31 (3), 367-388
Bourdieu, P., 1990. The Logic of Practice, Oxford: Polity Press.

Courty, M. A., P. Goldberg & R. I. Macphail, 1989. Soils and Micromorphology in Archaeology, Cambridge: Cambridge University Press.

Fairbairn, A. (2005) A history of agricultural production at Neolithic Çatalhöyük East, Turkey. World Archaeology 37(2): 197-210.

Houben, H. & H. Guillaud, 1989. Earth Construction: A Comprehensive Guide, Chippenham: Intermediate Technology Development Group.

Lemonier, P. (ed.) 1993. Technical Choices: Transformation in Material Cultures Since the Neolithic, New York: Routledge.

Martin, L. and Russell, N. (2000). Trashing Rubbish. Towards reflexive method in archaeology: the example at Çatalhöyük. I. Hodder (ed) Cambridge, McDonald Institute for Archaeological Research. 57-69.

Matthews, R. J., Y. Mohamadifar, W. Matthews & A. Motarjem, 2010. Investigating the Early Neolithic of Western Iran: the Central Zagros Archaeological Project (CZAP). Antiquity Project Gallery.

Matthews, W., 2005a. Micromorphological and microstratigraphic traces of uses of space, in Inhabiting Çatalhöyük: Reports from the 1995-99 Seasons, ed. I. Hodder Cambridge: McDonald Institute for Archaeological Research and British Institute of Archaeology, 355-98, 553-72.

Matthews, W., 2005b. Life-cycle and life-course of buildings, in Çatalhöyük Perspectives. Themes from the 1995-99 Seasons., ed. I. Hodder Cambridge: McDonald Institute for Archaeological Research and British Institute of Archaeology at Ankara, 125-51.

Parker Pearson, M. & C. Richards (eds.) 1994. Architecture and Order: Approaches to Social Space, New York: Routledge.

Roberts, N. and Rosen, A. M. (2005). The Nature of Çatalhöyük, People and their Changing Environments on the Konya Plain. Çatalhöyük perspectives: reports from the 1995-1999 seasons. I. Hodder. Cambridge, McDonald Institute for Archaeological Research and the British Institute at Ankara: 39-54.

Russell, N. and Martin, L. (2005). Çatalhöyük Mammal Remains. Inhabiting Çatalhöyük: reports from the 1995-99 seasons. I. Hodder (ed) Cambridge, Macdonal Institute / British Institute of Archaeology at Ankara.

Taçon, P. S. C. (2004) Ochre, Clay, Stone and Art in Soils. Stones and Symbols: Cultural Perceptions of the Mineral World, Eds N. Boivin and M. A. Owoc, UCL Press, London
Wiles, J. An analysis of plaster sequences from the Neolthic site of Çatalhoyük (Turkey) by microspectroscopic techniques. Unpublished PhD University of Reading.

Oven firing experiments 2009 – Karl Harrison

The oven in the experimental house was fired on two occasions at the start of the 2009 season – on the 20th and 21st of June. The oven is a c.70 x 70 cm clay structure located against the southern wall of the experimental house, built between 1997 and 2002. The author first lighted the oven in 2004, when it was noted that the flat roof structure limited the expulsion of smoke products from the room compartment (Harrison, 2004).

Firing experiment 01-09
20/6/09
A fire was lit within the oven, consisting of brushwood, kindling wood and dried cow dung – a fuel which is still used locally in places. The oven contained no fitting to raise the fuel bed off the ground to improve ventilation beneath. Consequently, there was no means by which the stifling affect of the ashes could be limited. The day was hot and fine, with a light northerly breeze blowing across the site.

Four people were arranged within the structure; one sat on the low platform to the western side of the structure, a second stood in the centre of the front room, a third sat on the taller narrow seat against the eastern wall and the last (the author) was crouched by the oven feeding in fuel, by the south wall. On this occasion, the access doorway in the south wall was left open to afford exit to those inside.

The fire took about five attempts to start with a lighter, due mainly to the rapid combustion of the brush. More brush was sought, which was supplemented with sticks on top, followed by dung cakes. Once the fire caught, it quickly established a flaming combustion within the body of the oven. It was noted that lighting the fire near the front of the oven led to rapid smoking from its mouth, rather than farther back in the cavity. Flaming combustion rapidly developed and within c. 30 seconds of ignition, flames were visible from the rear vent hole. Sufficient

thermal energy was present within the oven structure to cause the dung to ignite, which continued to burn with a smouldering flame.

Within 2 minutes of combustion it was apparent that the smoke was building within the compartment, having failed to vent successfully through the chimney hole located directly above the oven. Visibility dropped rapidly and those highest in the compartment (Observers 2 and 3) were forced to leave. Within 3 minutes Observer 1 was forced to leave, then finally the author within 4 minutes of burning.

The flaming combustion was evident for c. 3 minutes, where it died down to a smouldering burn concentrated on the dung cakes. These were checked periodically and were found to still be smouldering c. 15-20 minutes after the initial ignition.

It was hypothesised that a major design flaw was encountered during the initial oven lighting in 2004 – that the smoke-hole in the roof did not provide a sufficient release for the smoke. The breeze should have facilitated the removal of smoke, but in this instance it sheared across the flat roof structure, causing the smoke to vortex and spread within the compartment to the back wall. The presence of a light, temporary chimney flue would extend the passage of the smoke and prevent its escape within the compartment.

Firing experiment 02-09
21/6/09
A chimney was constructed out of cardboard, to a height of c. 30cm. This was used to effectively raise the height of the entire smoke hole and limit the effects of wind shear over the roof. Blankets were used to pad the outer edges of the chimney base, preventing the wind from cutting across the flue.

Returning to the oven itself, it was found that a quantity of dung cake had failed to combust, as well as some of the initial brush used to set the first fire. This was taken out for reuse, but points to the fact that the general temperature of the oven environment had not raised by a significant degree to set in motion a sustainable combustion maintained by radiant heat flux (this should be one of the major advantages of the closed *tandir*-style ovens).

The second fire featured a much lower amount of dung cake, both due to a lack of dung in the immediate area, and because it was more important to rapidly test the ability of the new chimney structure. A larger quantity of brush was used in order to promote a rapid flaming combustion with associated smoke. Approximately eight observers were present in the middle of the compartment, of which about 6 were standing and two sitting on the ground. The weather was hot and dry with very little discernable breeze.

Figure 136: The second burning experiment. Flaming combustion clearly visible from rear vent of oven and smoke seen to be expelled from the compartment.

The fire ignited after the second attempt with the lighter, and promptly (within a minute) spread to cause a flaming combustion that was visible from the rear vent hole. Within 90 seconds, this flaming combustion was visible c. 30cm above the top of the oven. The fire produced significant quantities of smoke, and these were seen to be expelled by the flue to a

much greater extent than the previous day, despite the lack of wind. The peak of flaming combustion appeared to produce a convection current that assisted with the upward movement of smoke.

As the peak flame of the brushwood died back and the fire began to smoulder, then the lack of thermally-derived convection led to greater lateral spread of the smoke, which no longer favoured the chimney, but rather gathered within the compartment. The observers were forced to leave the building within five minutes of ignition, and the experimenter within six minutes. At this point, the smoke was still not as thick as it had been the previous day. It is theorised that an oven being fuelled over a longer period would build in internal radiant heat flux, resulting in a much more intense smoulder combustion that succeeds in consuming many more of the pyrolysis products that made up the smoke.

Figure 137: Prototype chimney in place over opening in roof succeeds in assisting the ventilation of the compartment.

Conclusions

This series of very simple experiments not only reveal the farsightedness in constructing the experimental house on the site of Çatalhöyük (Stevanovic, 1997), but also how many areas of archaeological interest can be touched upon via the use of experimental constructs. The following is a brief list of concluding thoughts and remarks:

- The differential expulsion of smoke between the two experiments has demonstrated that even the most rudimentary of chimney flues is successful in more than halving the retention of smoke within the main compartment.

- Such a chimney would not have to be an architectural feature. The same effect could be brought about by a very light windbreak, such as a framework holding an animal skin, or a woven basket structure, lightly plastered to prevent permeation by the wind. Alternatively, the walls of temporary structures on the roofs could also act to shield the mouths of the chimneys and facilitate venting of smoke from the rooms.

- The firing experiments have thus far all concentrated on the initial phases of combustion, due to the levels of discomfort within the compartment making further work impossible. It is hypothesised that, could the fire be maintained for long enough, then the heat within the oven would continue to rise and internal oxygen levels drop. This would promote a flameover reaction of reduced burning within the compartment, which would bring about a recombustion of smoke products, as the liberated carbon reignites. This would greatly lessen the smoke released into the compartment (carbon monoxide would still be released, which would require efficient expulsion from the house).

- The notion of a temporary flue structure could easily be extended within the compartment. A skin suspended from the frame of the smoke hole, even if only falling c. 1 metre down into the compartment would have the effect of acting like a chimney for smoke and combustion gases that might otherwise escape laterally and remain within the compartment.

Further Work
The findings of these oven-burning experiments prompt the progress of further work. It is hoped that with greater amounts of time and access to fuel it will be possible to advance some of these elements in future seasons:

- Now that the principle of a flue has been shown to greatly assist in the venting of smoke, oven-firing experiments should be allowed to be conducted over a longer duration.

- Experimental use of internal flue systems is required to ensure safe burning over a long duration.

- Peak combustion efficiency, together with fuel consumption and thermal output of the oven can then be assessed.

- Heat loss through the body of the oven can be quantified.

- Thermal imaging of the structure will assist in assessing heat loss both through the oven, and also from the structure itself.

- Blocking of the southern access door is a requisite of future burning experiments, as this is a modern artefact to facilitate access.

- Modelling of temperature flow within the compartment.

- Carbon monoxide levels within the compartment.

- Ash residue rates and fire cleaning.

- Cooking experiments.

- Restricted char patterning on the plaster caused by flue system.

- Formally timed and monitored combustion experiments

- The potential use of a flue system in the Neolithic can be assessed through observation of the material record:

    - High fuel loadings in roof levels as evidence for external chimneys.
    - Restricted patterns of heavy char on walls directly below the rooftop access point.
    - Limited high-level smoke staining elsewhere within the structure, away from the oven.

References
Harrison, K. (2004) “Fire at Çatalhöyük: Integrating Forensic Practise”. Çatalhöyük 2004 Archive

Stevanovic, M. (1997) “1997 report on experimental archaeology at Çatalhöyük; manufacturing bricks for the house replica”. Çatalhöyük 1997 Archive

The Experimental Firing of a Neolithic Oven - Daniel Eddisford, Roddy Regan and James S. Taylor

A reconstruction of one of the Neolithic houses was built on the site led by Mirijana Stevanovic, Berkeley University, between 1997 and 2000. This building is not a copy of a specific Çatalhöyük house, but does have a typical layout with a domed oven set against the southern wall below an opening in the roof. The way in which this oven functioned has never been entirely clear. There is no archaeological evidence to suggest the ovens on the site had a chimney or flue. However, attempts to light a fire within the reconstructed oven have always resulted in the building rapidly filling with smoke, making it impossible to remain within the house.

Figure 138: the oven before firing. Photo Daniel Eddisford.

Figure 139: the external fire. Photo Daniel Eddisford.

Experiments were conducted to light the fire (see K. Harrison, this report) in preparation for a planned experiment by the British TV series Blue Peter, (see Other Activities, this report). Based on Harrison's experiments the Blue Peter television team were advised to use a flue type device. A lightweight flue was fashioned from a rolled reed mat, in an attempt at direct the smoke from the vent in the top of the oven directly out through the opening in the ceiling above. The presenters attempted to spend the night in the reconstructed house, with the oven lit. The flue proved to be ineffective however, the building again filled with smoke, and the leopard clad presenters were not able to stay in the house. The failure of the flue to extract the smoke from the building may be in part due to the fire never reaching a sufficient temperature to create the required 'draw' to vent the smoke from the oven.

Following a series of discussions between the excavation team another attempt to light the oven was made. The aim was to cook in the oven, without filling the building with unbearable levels of smoke. The discussions came about during excavations in the South aAea of the site where a large number of external fire spots in open midden areas between buildings have been excavated. The function of these fire spots has never been convincingly established, however it seems likely that the inhabitants of the site were frequently using external fires for a number of functions.

The problem encountered in all earlier attempts to use the reconstructed oven was that of excessive smoke coming from the oven, a consequence of the fire actually being lit within the oven. Even given a tolerance of smoky environments, the quantity of smoke created by previous attempts to light the oven made the house uninhabitable. Therefore, in an attempt to create less smoke within the building the vent on top of the oven and the mouth of the oven were closed off, with only a small air vent left open. A fire was lit outside and hot embers, heated clay balls and heated stones were then brought into the building and placed within the oven (Figure 138 & 139)

The fuel used for the fire was wood from local poplar trees and animal dung. These were used in an attempt to replicate the signature of wood and dung charcoal recorded in excavated ovens on the site. Stones and reconstructed clay balls were placed in the fire and heated. Only once the wood and dung began to reduce and become charcoal or white-hot ashes were the fuel, stones and clay balls moved inside to the oven. A metal shovel was used to transport the hot embers; more authentic tools could include large animal scapulas or wetted hides or basketry (Figures 140 & 141).

Figure 140: oven directly after lighting. Photo Daniel Eddisford.

The first load of embers placed in the cold oven smoked a little, and the fire was fanned slightly to raise the temperature. The building became slightly smoky, however it was still possible to stay within the house. A group of tourists entered the building at this point and found the level of smoke bearable. The addition of more loads of hot embers raised the oven temperature, encouraged better combustion and the building rapidly cleared of smoke entirely (Figures 142 & 143).

The oven was loaded with embers and allowed to warm up for half an hour. Then the clay balls were arranged on top of the embers and a foil wrapped chicken was placed on top of them. The oven was closed and the chicken left to bake. The chicken was cooked for approximately three hours, with one additional load of hot embers added midway through. The house was warm and smoke free throughout the cooking process, and was pleasant environment to be in. After three hours the chicken was removed and found to be both well cooked, and very tasty (Figures 144 & 145).

Figure 141: Oven fifteen minutes after lighting. Photo Daniel Eddisford.

This firing of the reconstructed Neolithic oven was a success, and proved it is possible to cook in the oven without producing a smoky living environment. This initial experiment did not measure the temperature in the oven. However, it appears that the oven operated at a temperature comparable with a modern oven, possibly 180 degrees centigrade, and that the chicken could have been cooked in a considerably shorter time. We are not clear what the ovens on the site were used to cook, however this experiment shows it could have been used for a variety of foodstuffs including meat and bread.

Figure 142: smoke outside. Photo Daniel Eddisford.

The dung used in the oven burnt down to relatively smokeless embers surprisingly easily, however a more compact form of dung might be more efficient. Further experiments may be able to examine the effect of different proportions of wood and dung both on the firing temperature and the charcoal signature left behind. The external fire, although effective at creating smoke free embers, seemed relatively inefficient. The amount of fuel

Figure 143: watching 'TV' - no smoke inside. Photo Daniel Eddisford.

used could have been reduced by a better control of the outside fire, perhaps setting the fire in a small pit. This kind of fire pit is a feature seen in many of the external spaces excavated on the site

The clay balls used in the oven both retained the heat of the fire and provided a good rest for the chicken, keeping it away from direct contact with the hot embers. The stones used in the oven also helped retain the heat. It is interesting to note that after firing the clay balls were clearly heat effected whilst the stones less so. If the function of the stones were not known it is unlikely that it would have been possible to infer from their appearance the fact that they had been used in a fire (Figure 146).

Figure 144: baking the chicken. Photo Daniel Eddisford.

The oven was examined the following morning, approximately eight hours after the cooking was finished, and found to be still warm. The fuel had burnt very efficiently, and little more than ash was left in the oven. A few hot embers still burnt, and the fire could have been rapidly relit. The heat retained in the oven superstructure continued to heat the building, and would have allowed the oven to be quickly brought back to a useable cooking temperature.

Figure 145: tasting the chicken. Photo Daniel Eddisford.

The vent on top of the oven seemed unnecessary to the way in which the oven was used in this experiment, and the oven may have been more efficient without this vent. The opening on the front of the oven was awkward to both stoke and clean out the oven. It would have been easier if this opening was a ground level, as seen in many of the excavated ovens on the site. In addition the floor of the experimental oven is sunken below the floor level of the house. This made the oven difficult to clean out and may have reduced the amount of air getting to the fire. The oven produced a relatively large amount of ash, and was messy to fire and clean out; with significant quantities of hot embers and ash dropped in the area directly in from of the oven.

Figure 146: Stones and clay balls after firing. Photo Daniel Eddisford.

COMMUNITY COLLABORATION PROJECT REPORTS

Southampton Visualisation Team - Stephanie Moser & Sara Perry

Team leader: Stephanie Moser
Team: Graeme Earl, Sara Perry, Ian Kirkpatrick, Gary Gibbons.

University of Southampton

Introduction - Shahina Farid
The project was delighted to welcome a new visualisation team onto the project this year. Site presentation at Çatalhöyük has been rather ad hoc over the years with information gathered and presented in different styles. We had enjoyed the beginnings of order to "On-site presentation and interpretation" under the direction of Nick Merriman, Institute of Archaeology, UCL (2004 – 2005) but, for a brief period only. It is therefore with much relief that we welcome the range of expertise the team from Southampton offer. Their remit is wide ranging as the project has gathered much data, which we wish to be offered on site and through the web. In this first season, the team conducted a reconnaissance of the data and targeted small projects that could be achieved this summer

Actions in 2009 -

View from the Village Display

Figure 147: Newly designed and displayed "Thought Corner of the Working Ladies". Photo Jason Quinlan.

Owing to the physical breakdown of the original "Thought Corner of the Working Ladies" panel, it has been redesigned with emphasis on reducing text and transforming it into a display more sympathetic to the layout of the Visitor Centre. Moreover, seeking to enhance the women's own participation in the economy of the exhibition, their scarves have been integrated into the presentation. The panels aim to mirror the themes of the existing archaeological exhibit (e.g., craft, teamwork, environment, archaeological site), and – in their hanging from the central area of the room – to utilise the space in a more three-dimensional fashion. We have shaped their display in line with critical input received from other members of the archaeological team, the site guards, and Turkish nationals who are based on site. This has meant rethinking our original concept of printing the panels only in Turkish (as

feedback indicated that English text was also of significance to Çatalhöyük's audiences) and rethinking the original exhibition format (as feedback indicated that the panels needed their own, uncluttered space of display).

Figure 148: Eleven panels have been designed in Adobe InDesign, CYMK colour mode, printed on foam board, at 20x30cm each. Photo Jason Quinlan.

A separate booklet (four-page, one fold, A3 size) containing additional text and photos has been created. At present, we aim to determine whether this additional booklet is meaningful to, and wanted by, visitors. If so, the first print run should approximate 1000 copies.

South Area Display Panels

In an effort to regenerate current displays and align them with visitor interests and site guard and archaeologist feedback, two new panels have been designed for the top and bottom sections of the South Area. Ideally, the existing panel in the centre of the Area will also be discarded and replaced in future by another display to be positioned along the central-southern wall, currently designated "Viewing Area 2".

Figure 149: The topmost panel is intended as a general orientation point for the South Area. Photo Jason Quinlan

The topmost panel is intended as a general orientation point for the South Area, identifying viewing spots for visitors, and clarifying basic issues and common misperceptions about the site. It is to remain in its current position at the top of the South Area.

Figure 150: The bottommost panel aims at sketching out the build up and content of the site. Photo Jason Quinlan

The bottommost panel aims at sketching out the build up and content of the site, noting important timeframes in the development of Çatalhöyük and identifying (through emblematic icons) key artefactual (especially artistic) finds. Our goal is ideally to transform the iconography into physical place-markers that can be installed directly into the South Area itself, adding dimensionality and cultural/material orientation to the site. The panel should be displayed towards the centre of the lower section of the South Area, not in its current location in the far corner where it is virtually inaccessible and unreadable to visitors.

Both panels have been designed with attention to input offered by site guards and locals, as well as substantial feedback from site supervisors, archaeologists, and Turkish nationals based on and off-site. Archaeologists, in particular, have asked that an up-to-date notice board be installed on site to complement the panels and ensure current content. We seek to explore the feasibility of producing and maintaining such a board in the 2010 field season.

Panels have been designed in Adobe Illustrator and printed at Renk to fit into the existing display cases.

Sponsor Signs
The sponsorship signage has been updated to reflect donations from 2008 and 2009, as well as additional support from the Turkish Cultural Foundation. Detailed recommendations for future signs have been written. We would further recommend replacing the outdoor signage, which is becoming increasingly weathered and fragile, with a more durable and legible material display. Etched metal (aluminium) or local marble are options that might withstand harsh environmental conditions while maintaining a high-quality, attractive look. We would like to explore options for such a replacement sign in 2010.

Interviews
We have begun a programme of interviewing site guards for their input on visitor perceptions of and engagement with the site. This is an ongoing project that, owing to time constraints, must be further pursued in the 2010 field season and afterwards.

Also of interest for re-envisioning the Visitor Centre and visitor movements across the site are memories and artefacts from individuals who worked at the site during the time of the Mellaart excavations in the 1960s. We have interviewed Mehmet Akça, apparently the last surviving member of Mellaart's team from Küçükköy, and hope, in future seasons, to explore the possibility of tracking down workers from Mellaart's Beycesultan and Haçilar excavations. We seek to streamline this work with that of Çatalhöyük's community archaeology team.

Visitor Centre Exhibitions
The Centre is currently outfitted with signage and a handful of artefact reproductions generated 5-10+ years ago. Early conversations with site guards, the camp manager and other team members indicate that visitors feel slightly overwhelmed by the amount of text on the walls and concerned by the lack of material culture on display. Interviews with site guards also suggest that some visitors are not aware of the international scale and import of Çatalhöyük. As part of a longer-term project of updating and innovating the display space, then, we have begun to draw up plans for a series of small, new exhibitions at the entrance to the Centre, extending to its far southern wall. These aim to focus on the legacy of the site, and, in the absence of archaeological artefacts, to feature artefactual materials related to Çatalhöyük's history and presence in the media and on the landscape. A depiction of the proposed exhibit is forthcoming.

A portion of this field season has entailed collecting/scanning media clippings of some of the site's coverage in Turkish and various other international journals and newspapers. This will be supplemented by a much broader review of the literature and TV/film archives upon return to the UK. Photographic archives from Çatalhöyük's 1960s excavations have also been searched with the aim of presenting several images within the Centre on its eastern wall. The southern wall will possibly feature a contemporary mural incorporating the textures, colours and materials of Çatalhöyük's landscape with the intent of hinting at the scope and dimensionality of the terrain.

These displays will be complemented in the 2010 field season (and beyond) by more in-depth study of visitor experiences and needs – as well as collaboration with the community archaeology team – in an effort to tailor the Visitor Centre to its assorted audiences. The ultimate goal is to focus on producing a series of new, temporary exhibits over the upcoming years to gauge visitor response, while also keeping content fresh and encouraging repeat visits. A variety of potential themes for such exhibits have been proposed to the project director, including the media (as per above), reconstruction, layering (i.e., plastering, reliefs, paintings), past and present team members, recent finds.

Preparation for Reconstructions
Records have been collected to allow for detailed three-dimensional reconstruction of Buildings 77 and FVI. Work on these models will take place over the 2009-2010 academic year with the hope of utilising them for both interpretive purposes and in Visitor Centre displays by the 2010 and 2011 field seasons.

Logo Redesign
We have begun conversations about re-shaping the Çatalhöyük logo, and are interested in linking it to a larger campaign of branding and marketing the site. This will necessitate long-term planning in relation to the website, Visitor Centre, site informational materials and merchandising. The logo would be a priority within this plan. It has been discussed that the current bear icon might be further stylised into a more distinctive brand for the site. Design could take place during the 2009-2010 academic year in time for more widespread implementation in the 2010 field season.

Website Redesign
Very general discussion has taken place around reshaping and updating the project website. Conversations with various Çatal archaeologists hint at the benefits, alongside archival linking and database access, of optimising the website to allow for online merchandising and donation. Collaboration with Jason Quinlan, the web programmer, and analysis of means to extend Çatalhöyük's reach into other markets, and to cultivate partnerships and sponsorships via its web presence will be ongoing.

Site Guidebook and Brochure
Conversations with project directors and site guards testify to the need for an updated guidebook that is sensitive to the full extent of the site (both East and West mounds) and can satisfy visitor requests for a more permanent, purchasable artefact from Çatalhöyük. In addition, a separate but free, double-sided, loose-leaf brochure containing a site map and very general information about Çatal is planned which would complement, but in no way replicate, the guidebook. It is hoped that mock-ups of the latter might be produced for the 2010 field season, while the former would be designed in consultation with archaeologists and site guards (and in line with visitor feedback) during the 2010 season.

Acknowledgments
Yildiz and Mustafa have been incredibly helpful to the team, and most – if not all – of this work could not have been completed without them. Their translation, their knowledge of Konya, their resourcefulness and eye for detail have been invaluable, and the connections that they have facilitated with the local population have meant much richer project outputs. Ibrahim, too, has been fantastic in sourcing and installing display materials, and Sema was priceless in providing the last minute help we needed to mount the View from the Village exhibition. And, in particular, we are grateful to Shahina for her guidance, input and innovation! We would love to get the opportunity to work with them each again in the future.

2009 Çatalhöyük Summer School Workshop Report - Gülay Sert

Coordinator of the Çatalhöyük Summer School Project : Gülay Sert
Team: Nuray Kaygaz, Abdurrahman Sonmez.

As a part of the Çatalhöyük Research Project, the workshop, that is primarily targeted at children aims to develop awareness of cultural heritage, and specifically Çatalhöyük. This season the workshop ran for 25 days.

Students from Konya and nearby cities attended the workshop. Children from local orphanages were also included.

625 people visited the site through our workshop, 494 children and 131 adults. It took place between 10.00 am and 15.00 pm six days a week. Between these hours the programme was as follows.

Workshop Programme:
10.00 - 10.40 am
A powerpoint presentation was shown in the visitor centre to familiarise people with Çatalhöyük.

10.45 – 11.45
Visiting the experimental house and the site.

11.45 – 12.25
Excavation takes place on the 1960s spoil heap in an area 5x5 meter square.

12.40 – 13.40
Lunch at the cafeteria.

13.40 – 14.50
Making of clay objects and pottery.
Imitating the mural designs and reliefs.
Making a modal of Çatalhöyük settlement.
Making of clay figurines.
Printing on a textile with the replica of the seals used in Neolithic Çatalhöyük.
Creative drama activity about lifestyles of Çatalhöyük people

14.50 – 15.00
Certificates for the participants are distributed.

Extending the Programme
It was apparent that many of the local townspeople lacked general information about Çatalhöyük and so this year we extended the profile of our target group. We invited Civil servants from the municipality of Konya and Çumra. Participants attended the Çatalhöyük powerpoint presentation and they were given a tour on the site. Information about the excavation was provided. At the end of the programme the problems faced in representing Çatalhöyük were discussed. New solutions and alternatives were sought through these discussions. Another aim of the discussions was to integrate people as part of the Çatalhöyük project and to get their support, which would give them the responsibility to take care of the cultural heritage.

Figure 151: Up to 70 children from Küçükköy took part in the workshop on Community Day. Photo Scott Haddow.

Collaboration between Çumra Municipality and Çatalhöyük Research Project has been established. This is to increase interest in Çatalhöyük among the people living close to Çatalhöyük. The public relations department at the municipality chose 9 teenagers to be trained as guides at Çatalhöyük and a booklet was prepared by the Summer School Team for training purposes. The Çumra Municipality then provided a free shuttle bus between Çumra and Çatalhöyük every Sunday. Through this collaboration we successfully reached out to many locals who came to visit the site.

130 students from Kilis who were on a non-governmental project called “Gönül Köprüsü Projesi”, were given a tour of the site as part of their visit to Konya.

A workshop was held for 70 children who visited the site on the community day (see next report)

Finally a book for children based on Çatalhöyük is in draft and has been submitted to the Metropolis Municipality of Konya. The book is written by Gülay Sert.

Acknowledgements
On the behalf of the Summer School Team, I feel sincerely thankful to those who have supported the children project.

Building Sustainable Archaeology at Çatalhöyük: community based participatory research update from the 2009 field season - Sonya Atalay with a contribution by Veysel Apaydin

Team leader: Sonya Atalay (1)
Team: Sema Bagci (2), Veysel Apaydin (3), Beliz Terceli (3), Tiffany Cain (4).

(1) Indiana University, (2) Middle East Technical University, (3) Institute of Archaeology, UCL, (4) Stanford University.

Introduction to Community Based Participatory Research

Collaboration is a keyword in contemporary archaeological practice. Topics such as heritage management, community and joint stewardship, cultural tourism, and access to knowledge are topics of growing interest in both the academic realm and the "real" world. In the U.S., we will soon be marking the 20th anniversary of the passage of the Native American Graves Protection and Repatriation Act (NAGPRA), which played an important role in increasing consultation of archaeologists with Native American communities. At the same time, globally archaeologists continue to intersect in more complex and nuanced ways with issues of cultural heritage and tourism. We've seen a dramatic increase in the past two decades over concern with consultations with indigenous and local communities, as the language of collaboration further develops within the discipline. I've argued that these changes are not only positive improvements that make for a sustainable archaeology practice, but that they constitute a paradigm shift within the field – one that is occurring within the social sciences more broadly (Atalay 2008)

Archaeologists recognize that we live in a world where archaeological research project are increasingly up against strong competition for both public and private funding. And why shouldn't they be. As Sabloff (2008) points out – wars, public health issues, human rights concerns, and the very survival of human, plant and animal life on our planet all compete for funding dollars and public attention. Archaeological problems may not immediately measure up in terms of urgency and importance in the minds of many taxpayers.

As a result, it is increasingly clear that we must make the research we do relevant to wider, non-academic audiences. The importance of making archaeological research relevant grows stronger when we consider the ethical implications of conducting research in locations where local communities are largely impacted by excavations but are not included in heritage management and site planning strategies. In many communities where archaeology is conducted, local residents have only limited access to the knowledge and other benefit from the archaeological research taking place in their own back yards. At this juncture of the discipline, it is logical to argue, as I have, that for archaeology to be sustainable it must become collaborative, and research endeavours must be relevant to, accessible by, and of benefit for local communities. For the next generation of students, these concepts will form a core part of their knowledge base and their education and training will include effective and rigorous models of collaborative practice.

Çatalhöyük offers an excellent example of how community based participatory research can be accomplished. Previous archive reports (Atalay 2006, 2008) and publications (Atalay 2003, 2007) outline the basic premise of the community based research project I've been conducting on site since 2006. Community based participatory research (CBPR) is the model I've followed in building a community project at Çatalhöyük. CBPR provides a methodology for conducting collaborative archaeology projects with communities. As the discipline becomes more collaborative, CBPR methods

Figure 152: On site Catalhövük Festival. Photo Sonva

provide guidance for involving people in the process of producing archaeological knowledge while simultaneously building community capacity for research and other areas of development. The sort of 'working together' with a spirit of reciprocity for a common goal outlined by a CBPR methodology provides a framework for a sustainable practice. Utilizing CBPR methods produce archaeology projects that indigenous, local and other affected communities not only allow, but that they actively support. This is because they have "buy in" to the project from the start since they are actively involved in the design and impacted in positive ways by the results.

2009 Field season

During the 2009 field season at Çatalhöyük the community based research project enjoyed a great deal of community support, and as a result the project expanded and made several critical steps forward. This was a short field season – only two weeks – that was conducted with a modest sized team of five (myself and Sema Bagci, with assistance from Beliz Tecirli, Veysel Apaydin, and Tiffany Cain). Sema assisted in every aspect of the community project, and was responsible for all translation during community visits and meetings. Beliz assisted with the women's community meeting, training the interns, and organizing the annual Çatalhöyük festival. Veysel also assisted with planning the annual festival, and helped with production of the community summer newsletter. He also worked diligently to develop a proposal for his dissertation research related to public archaeology on site. Veysel has written about this aspect of his research and his future plans on the site in a short segment below. Tiffany created the community newsletter template, and oversaw production of the summer instalment of the newsletter.

Figure 153: Visitors at Çatalhöyük Festival. Photos (left) Jason Quinlan (centre & right) Scott Haddow.

Çatalhöyük Festival

Our team planned and hosted the annual Çatalhöyük feastnight, which we decided to term a "festival" (senlik in Turkish). The festival was a great success, with an estimated ~500 village residents from the nearby village of Küçükköy in attendance. (Figure 152) In previous years we provided local guests with a meal (of meat and pilav), but this year we decided to take a new approach. At the helpful suggestion of Lutfi Bey, our government representative, we offered our guests a sweet treat basket of cookies, chocolates, cake, biscuits, and juice. The treat baskets were a large success – our guests noted that they were much easier to eat and that these were special treats they don't often have on a regular basis. We also provided the guests with musical entertainment from a local Saz group (Figure 153).

Figure 154: Children from Kucukkoy who assisted with lab tour during the Catalhövük Festival. Photo Sonva Atalav

During the festival, children were offered a range of activities as part of Gulay Sert's archaeology workshop. Over 70 children took part in the workshop activities; working together they built a model Çatalhöyük village out of clay (Figure 151). Adults (nearly 150 of them)

attended a talk in the on-site visitors' centre given by Gulay Sert. All comments from guests were positive about this talk – the high level of interest was clear as visitors remained in a very hot, small area for over an hour to hear the talk. We plan to find a more comfortable (and cooler location) for the talk next year. Following the presentation about recent finds on site, visitors (adults and children alike) were invited to tour the on-site labs. Each lab had a table display set up outside their lab space to provide activities for local residents.

'Lab Guides' in Training

Something new for the festival this year was the incorporation of local children in the lab tours. I invited 8 local children (Figure 154) on site, provided them with a brief introduction to the research taking place on site and to each lab space. The children then spent time with the archaeologists in each lab to gain an understanding of the research taking place there. They were then asked to prepare a short talk to give during the festival, to their parents and other local visitors to the site. The idea was that local residents might feel somewhat less uncomfortable asking questions to someone they know (a child from the village), where they may be a bit reserved in asking questions to archaeologists. This project gave the children a chance to learn more about a particular topic of research, and in the process of their preparation, we assumed their family would also learn more about the archaeology process and research. (Figure 155) The children wore signs to identify them as "Tour Guides in Training" and listed their area of "expertise" with the invitation of "Ask me anything about <Ethnobotany> (<ethnobotany> was replaced with the name of the lab each child was representing)". (Figure 156)

Figure 155: Lab Tour Assistant speaking about Faunal Remains research. Photo Sonya Atalay

Figure 156: Lab Tour Assistant showing off her 'Tour Guide in Training" sign. Photo Sonya Atalay

This activity was very successful in getting the children to talk about the research onsite, and it helped to engage local residents with the lab activities. One unexpected consequence was that several archaeologists found the children to be very interested and skilled at some of the research. One conservator (Duygu Çamurcuoğlu) even noted that she would enjoy taking on one of the students as an intern in the conservation lab. This led us to explore the possibility of an internship program on site – something we continue to investigate and hope to establish on a small, preliminary scale in the 2010 field season.

Comic and Newsletter

As in previous seasons of the Çatalhöyük Community project, we planned and developed another installment of the comic series and developed the summer newsletter to report on the recent research taking place on site (Figure 157). The subject of the comic was 'The Future of Çatalhöyük' – in it, the familiar characters of Ferdi and Seyda return to learn about the future plans for Çatalhöyük and how they (and others in Küçükköy) can be part of them. The comic encourages participation from the local community in the plans and management of the site, and also mentions the need for and importance of protecting the site (and others) from looting.

Figure 157: Turkish version. Comic produced by the Community Collaboration Team. Art work by Katy Killackey

Figure 157: English version. Comic produced by the Community Collaboration Team. Art work by Katy Killackey

Internships

One of the critical components of the community based research at Çatalhöyük is developing ways for the local communities around the site to take part in the research itself. The aim is to eventually move beyond education about the site to a point where local residents feel confident and interested in developing joint research projects collaboratively with archaeologists. As reported in previous archive reports, residents that we interviewed unanimously felt they knew too little to be involved as research partners. However they also overwhelmingly voiced interest in being involved in further planning and management of the site. And there was very high interest in gaining further education about the site to facilitate their successful role as local stewards.

Figure158: First Çatalhöyük Community Project Interns (Rahime Salur and Nesrin Salur). Photo Sonya Atalay

We made a very important step this season in reaching the goal of developing a collaborative research project. With the help of Ali Barutcu, the very efficient and and enthusiasctic newly elected muhtar of Küçükköy, the community project took on and trained two interns from Küçükköy: Rahime Salur and Nesrin Salur (Figure 158) These two have a number of important accomplishments to note – one item that we were most interested to learn about is that they are the first people from their village to graduate from college. Rahime and Nesrin were wonderful interns and assisted with every aspect of the community project during the 2009 field season. (Figures 159 and 160) Their assistance was particularly critical during our first women's meeting in Küçükköy (Figure 161). Both interns presented information about the project to the 75 meeting attendees. And they took charge to assist us in gathering feedback from the women on their ideas for future collaborations with the Çatalhöyük project.

Figure 159: Community Project meeting with our first two interns. Photo Veysel Apaydin.

Figure 160: Rahime Salur and Nesrin Salur prepare powerpoint presentation for Women's community meeting. Photo Sonya Atalay

It was immediately clear that local women from Küçükköy felt comfortable talking with the interns. Directly following the first women's meeting, several women came to the interns with the suggestion of having a group of women on-site at Çatalhöyük regularly to produce hand-crafts, which they hope to eventually display and sell in Çumra and Konya. We were able to start this project on a small, trial basis this summer, but hope to expand it further in 2010. The women will not sell materials on site, but rather plan to build a collection of material that can be used for a large-scale handi-craft exhibition in Çumra or Konya in a year's time. This provides them with much needed money and offers them time to talk with each other in a way they would not be able to do from their individual homes. Another idea currently being explored is to create a market for these items in the U.S. and the U.K. through Fair Trade merchandise store chains such as Global Gifts and Ten Thousand Hands. Discussions of such fair trade exchanges are currently in progress.

Figure 161: Women's community meeting in the Kucukkoy school. Photo Sonya Atalay

There were many ways that the intern program was a success, and as a result I plan to increase the program in 2010 to offer 4 internships to local residents from Küçükköy. Interest in the internship program is already quite high in Küçükköy. During a men's meeting held at the coffeehouse in the village centre early in our field season, several men had already heard about the internships and were interested in applying. One goal of the program is to build community capacity so that younger members of the village are knowledgeable about the research and management of Çatalhöyük so that they can actively and confidently participate in the future planning of the site. Currently, there is very limited participation at the village level during government meetings and planning. At the men's meeting one suggestion made was to use these interns to create a local village heritage committee (kural) that could participate in higher regional-level meetings. The internship program paid each intern 10TL per day, and we hope to continue this paid aspect of the program in 2010.

Archaeological Theatre

Another very successful aspect of the project this year was the involvement of the local school principal from Küçükköy. Mehmet Ali Selcuk was very enthused about using Çatalhöyük as the subject for the upcoming annual children's festival (20 Nisan – 20th of April Festival). We are in discussions and early planning stages of creating the children's play for the festival that would have a Çatalhöyük theme. The principle and other local residents from the village also raised the possibility of developing a children's archaeology theatre in Turkey. The idea is to develop a series of theatre presentations with archaeological themes. Each play would present daily life at a different archaeological site in Turkey. These plays would teach both the children who are involved in the plays and those who attend the events about life in the past. Heritage management and site protection would also be primary themes. All those we discussed these ideas with were strongly in support. However, the primary stumbling block at this stage is funding. The interns were very enthusiastic about this, and many of the other ideas that community members suggested, but their concern is how to fund these projects. With sustainability as a key goal, developing long-term funding is crucial. Building community capacity for grant writing and other research and funding activities plays a key role here. It is something we will continue building towards in future years.

Looking Forward

As mentioned above, this was a very short season, and we feel very pleased to have accomplished so much to move the project forward. Important steps were made this season

in moving the community based project from the education phase that residents requested in 2006, into a truly collaborative research planning phase. We plan to follow up on these successes in 2010.

Community Education Research - Veysel Apaydin.

The main aim of the 2009 Çatalhöyük field season for me was to undertake background research for my proposed PhD project. The proposed project aims to examine the types of community education that have been done to date at Çatalhöyük, document what has been most effective in the teaching methodology, what kind of education and training are more effective, and what kind of audiences are most suitable for education.

During the 2009 field season I focused on two main tasks related to this research project. First was extensive analysis of the overall Çatalhöyük written archive in relation to community education. I read numerous articles and reviewed the database for relevant research material for my proposed PhD. Second, discussions were held with professionals at Çatalhöyük who carry out research in public archaeology. I had in depth discussions with Sonya Atalay about her research that involves a community based participatory research project in collaboration with local residents living in the villages close to Çatalhöyük. Discussions were also held with Gulay Sert who runs the Çatalhöyük Summer school project.

Additionally, I assisted Sonya Atalay with translating forms, preparing the 2009 summer newsletter and organizing the annual community festival that was held at Çatalhöyük.

References

Atalay, Sonya

2003 Domesticating Clay: Engaging with 'They': The Social Life of Clay Balls from Çatalhöyük, Turkey and Public Archaeology for Indigenous and local Communities. Dissertation for completion of PhD at University of California, Berkeley.

2006 Community Archaeology at Çatalhöyük 2006. Çatalhöyük Archive Report. http://www.catalhoyuk.com/archive_reports/

2007 Global Application of Indigenous Archaeology: Community Based Participatory Research in Turkey. Archaeologies 3 (3): 249-270

2008 Community Archaeology Research. Çatalhöyük Archive Report. http://www.catalhoyuk.com/archive_reports/

2008 Pedagogy of Decolonization: Advancing Archaeological Practice through Education. In Collaborating at the Trowel's Edge: Teaching and Learning in Indigenous Archaeology. Stephen W. Silliman (ed.), Chapter 7, University of Arizona Press, Tucson.

Sabloff, Jeremy 2008 Archaeology Matters: Action Archaeology in the Modern World. Left Coast Press: Walnut Creek, CA.

Archaeological Park Research Archive Report 2009 - Beliz Tecirli

Institute of Archaeology, University College London

The 2009 field season has been an introduction to collecting initial data for my PhD research. Framed within the fundamental aim of contributing to broader archaeological knowledge regarding sustainable archaeological landscape management, this research evaluates the role of Archaeological Parks in the formation and dissemination of knowledge and understanding of the past. The research further asks if archaeological parks satisfactorily incorporate the interests and engagement of all interested parties. The interesting set of challenges presented by the Çatalhöyük landscape, such as its rural and remote location, prehistoric context - often not valued by a wide audience, limited visibility and fragility of the

remains and differing stakeholder interests, yield the site an ideal case study for investigating the challenges and facilitating factors in developing a model for the planning, accomplishment and management of an archaeological park. The model will be conceived as transferable to other archaeological landscapes and will therefore be structured to incorporate the basic requirements of archaeological, technical, environmental and social issues of the site. The 2009 field season has been important in achieving the following insights for this research:

- **Understanding the national legislative framework for site management**

Together with Banu Aydınoğlugil and our site representative Lütfi Önel, meetings with the staff at Konya Conservation Council were conducted to discuss the outstanding updates for the application of the Çatalhöyük site Management Plan and the preparation of two further plans, namely; Landscape Project and Conservation Plan, as required by the new national legislation: Koruma Amaçlı İmar Planları ve Çevre Düzenleme Projelerinin Hazırlanması, Gösterimi, Uygulaması, Denetimi, Müelliflerine İlişkin Usul ve Esaslara Ait Yönetmelik. Proceeding from this meeting, a future onsite workshop has been proposed to expand on the technical specification and implementation of the three plans.

- **Understanding the uses of the Çatalhöyük landscape**

Non-structured, personal observations of 1) the Community Archaeology Research as they conducted surveys within the local villages; 2) the Çatalhöyük Summer School Project during their onsite educational activities; and 3) how general visitors to the site engaged with the landscape and the existing visitor facilities, were carried out to develop a general sense regarding the various uses of the Çatalhöyük landscape. Information gathered will be applied to formulate structured surveys for future data collection.

- **Understanding the local community**

Being onsite for a substantial period provided the additional benefit of introducing my role and research to various members of the local community, local authorities and Çatalhöyük team, which will prove vital for future onsite research.