ÇATALHÖYÜK 2010 ARCHIVE REPORT

Çatalhöyük Research Project

CONTENTS

Archive Report 2010 compiled by Shahina Farid
Photos by Jason Quinlan (unless specified)
Plans by David Mackie (unless specified)

Cover – Handprint in Building 77. Photo Jason Quinlan

2010 SEASON REVIEW

A decorated house found at Çatalhöyük – Ian Hodder

There was even more talk at Çatalhöyük this year than most. Our main aim in 2010 was to discuss the reports that the excavators and laboratory teams had written summarizing their results from the work at the site between 2000 and 2008. In this post-excavation phase (2009-2011) we are preparing 4 volumes for publication and over the summer in 2010 we listened to the draft reports, discussed them, and prepared for producing final reports in 2011. Exhausting and demanding as the daily seminars were, they were also exciting as we saw all the bits of data fall into place and as we could start building new interpretations about this fascinating site.

Çatalhöyük is an important Neolithic site near Çumra, Konya. It was inhabited 9000 years ago by up to 8000 people who lived in a large 'town'. There were no streets and people moved around on the rooftops and entered their houses through holes in the roofs. Inside their houses people made wonderful art – paintings, reliefs and sculptures – which have survived across the millennia. The art was first found by James Mellaart in the 1960s. New work at the site started in 1993 and is planned to continue to 2018, under the auspices of the British Institute of Archaeology at Ankara and with permission from the Turkish Ministry of Culture and Tourism. The new excavations use modern scientific techniques to reconstruct the ways that people lived at Çatalhöyük.

One hundred and seventy one researchers and students and 20 local workers took part in the 2011 season over the period from 11th June – 3rd Sept 2010. In addition we were visited by 21 guests and we hosted two seminars and a conference. The team was made up of individuals from Britain, the United States, France, Germany, Canada, Serbia, Australia, Poland – in fact 19 different nationalities joined Turkish colleagues from Selcuk University and the University of Thrace. The new Assistant Director this year was Onur Özbek from Çanakkale University.

In the presentation of draft reports, the excavators gave up-dates on individual buildings and worked on the stratigraphic relationships between buildings. The heads of lab teams and researchers working in the various labs presented the results of their analytical work. Some very interesting, if rather unexpected, patterns emerged. For example, many members of the team are now arguing that the wetland around Çatalhöyük may not have been as uniform as was once thought. There may have been sufficient dry land for agricultural fields to be located near the site. This is a shift in thinking from our earlier work when we thought fields would have had to be located far from the site. Another new perspective concerns the social organization at Çatalhöyük. We have long assumed this was fairly egalitarian but in recent years we have identified 'history houses' which contained more burials and were more elaborate in terms of architecture and installations. It might have been expected that these special houses would have more control over production, richer burials or more healthy individuals living in them. But as data set after data set came in, it became clear that the history houses were not special in any way other than having more burials and more elaboration. This suggests that any tendencies towards social differentiation at Çatalhöyük were heavily dampened. Of the many other new insights that could be listed, I will just mention one more deriving from the bioarchaeological team working on the skeletons excavated from beneath the floors of buildings. It might have been expected that the inhabitants of Çatalhöyük had poor health. It is often assumed that as humans moved into large settled villages health declined. And indeed at Çatalhöyük the dense clustering of houses surrounded by extensive areas of refuse or midden in which we have found human and animal faecal material suggests unhygienic conditions. We also know that vermin were rife. So it has been a surprise that in fact the health of the inhabitants was good on a wide range of measures. It seems that they must have found a way of managing refuse (we know they levelled the midden and put lime-rich ash on it for example) to minimize the ill-effects, and they did keep their houses spotlessly clean. We cannot assume that they knew about germs, but their practices, wittingly or not, allowed them to maintain good health.

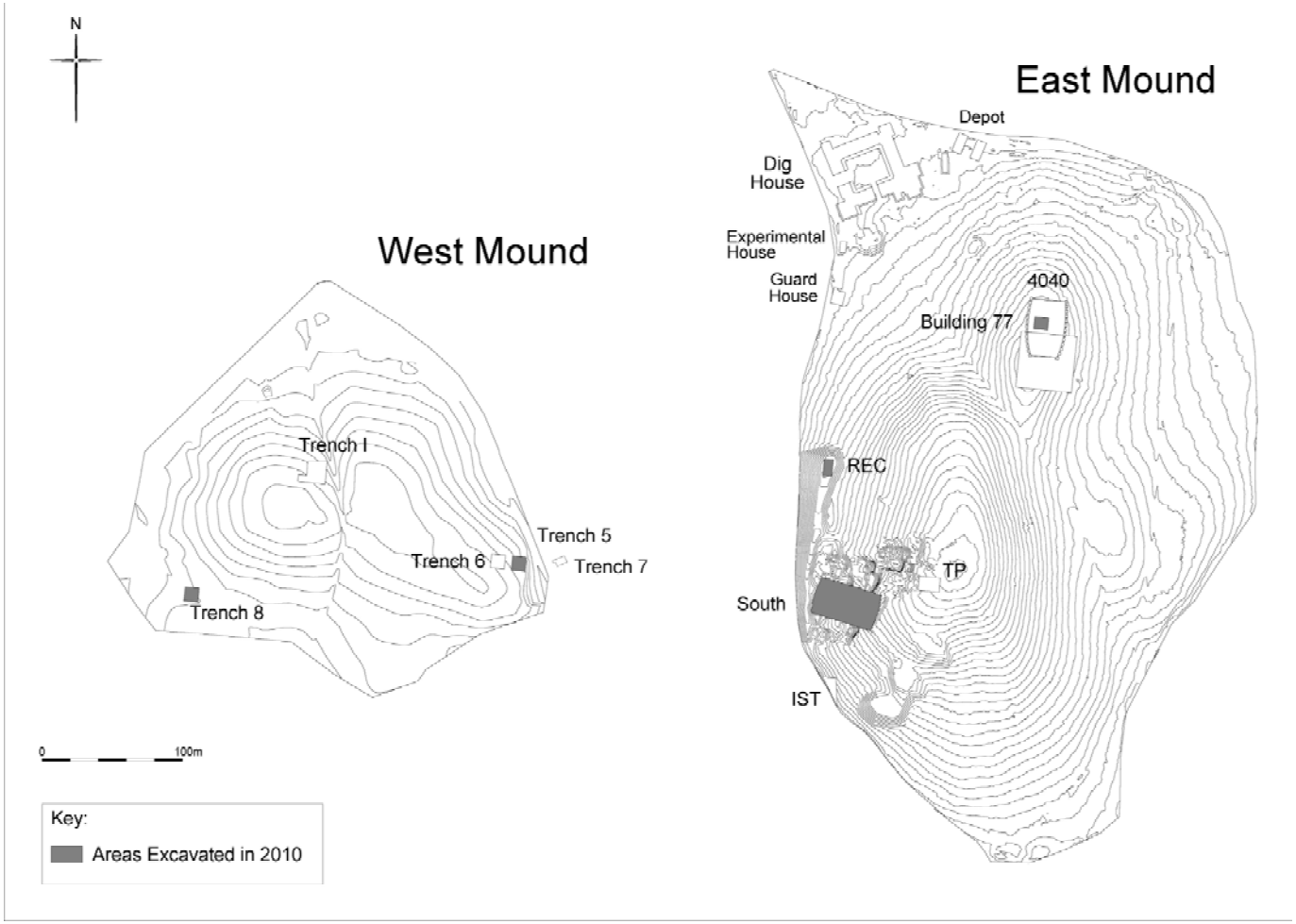


Figure 1. Areas excavated in 2010. Plan David Mackie

As well as all the talking and writing, we did do some excavation this year. Burçin Erdoğu continued his work on the West Mound (Figure 1) exploring the nature of Chalcolithic buildings. His team from Thrace University continued to identify the boundaries around the building they had identified in previous years with marvellous 2-storey red floors. Also on the West Mound, Peter Biehl from SUNY Buffalo continued excavation of a group of houses, identifying their size and relation to each other as well as exploring exciting evidence for pottery production.

On the Neolithic East Mound we excavated mainly in the South Area (Figure 1) where we have been trying to understand the overall development through time at the site (Figure 2). We have for the first time been able to excavate buildings in what Mellaart called Level VI, which are often burned and very well preserved. One of these buildings, Building 79, was reported on last year.

Figure 2. General view of the 2010 excavations in the South Area at Çatalhöyük. Photo Jason Quinlan.

In 2010 we finished the excavation of the next-door Building 80 which although partly burned had been abandoned in a controlled way so that we found little left on floors. The building is nevertheless remarkable with the north wall standing 2.5m high (Figure 3). The white walls have been carefully plastered and the interior surfaces of the plaster have been divided into horizontal zones by ridges and slots. We remain unclear why these zones were produced. The uppermost zone is an overhang that rests on a wooden beam. Mellaart had assumed that the upright posts held up these horizontal beams but as can be seen on the north wall in Building 80, the upright post scar does not extend up to the horizontal beam slot. The horizontal beam then must have had the function of a brace – tying in the bricks of the wall as is seen today in many mudbrick walls across Turkey.

Despite the fact that Building 80 had been very carefully cleaned out on abandonment, there were still traces that indicated it must have been a complex and well-furnished building. For example, the bench on the east wall near the ladder entry had the stubs of two cattle horns that were set in it. And in the centre of the west wall we found evidence of some installation attached to three upright and plastered posts, similar to that found in Building 79. The installation on the west wall in Building 80 can be reconstructed as having a large flat pillow capital (as found in Building 79 and reported on last year) and a plastered goat skull. There was no evidence of a second storey in Building 80, unlike Building 79.

Figure 3. The north and east walls of Building 80 in the South Area. Photo Jason Quinlan.

To the west of Building 80 we excavated a series of buildings (Figure 4), which were less well preserved, but which provided important stratigraphic information. Indeed our main aim in excavating in this area of the South shelter is to link the stratigraphic sequences uncovered by Mellaart and by us in the 1990s with the more recent work we have been doing in the upper levels. What has become clear is that the stratigraphic sequence at Çatalhöyük is much more complex than had been thought. It is indeed so complex that we have had sadly to abandon Mellaart's neat scheme of 14 levels labelled with Roman numerals. We have substituted our own scheme using letters of the alphabet and this scheme will be published in the new volumes. In the excavations this year one of the buildings we excavated had earlier been excavated by Mellaart as his Level VIB. This definite correlation between his levels and our excavation has allowed us to explore the full complexity of the stratigraphic sequence, with some house sequences showing more 'levels' than others.

Figure 4. Excavation of buildings in the South Area. Photo Jason Quinlan.

In the North shelter we had not initially intended to excavate. The aim here during the study season phase has just been to monitor and maintain conservation. But over the winter some deterioration had been caused to Buildings 5 and Building 77. In particular the burned matrix of Building 77 had resulted in many of the walls and plasters turning to a soft plaster, even where they had been consolidated. So we have taken the decision to conserve heavily burned houses by excavating the plasters and wall features and then capping the walls with new plaster (Figure 5) and reconstructing significant features. In starting this process in Building 77 we removed the upper layers of plaster and found that the main room was even more elaborate than had previously been realized. All around the northeast platform with its pair of bull horns on pilasters (Figure 6), the plasters had been painted red many times.

Figure 5. Using local knowledge to help cap the walls in Building 5. Photo Jason Quinlan.

Figure 6. Working on the northeast platform in Building 77 before discovery of the wall paintings. Photo Jason Quinlan.

The red seemed to extend from the platform along the adjacent walls as a dado. But west of the platform, and west of a northern niche, we found an incised plaster panel (Figure 7 left). The design is both regular and irregular and further work will be needed to see how far it extends. On the east wall above the platform and red dado, we came across a very fine painting of vertical and slanting lines. But it was the north wall above the platform that was most impressive. A niche there surmounted by a plastered ram skull and horns was surrounded in a red panel, and to the right above the ram skull was found some very well preserved paintings of hands (Figure 7 right) in red and similar to others found by Mellaart in a variety of houses. Overall, then, this northeast platform emerges as of very singular importance. We have not excavated the main platform yet, but just south of the platform we found human burials. Our suspicion is that the whole platform was for burial.

Figure 7. (left) Incised plaster panel on the north wall of Building 77 (right) Painted hands above the northeast platform in Building 77. Photos Jason Quinlan.

OTHER ACTIVITIES – Shahina Farid

Conferences & Seminars

- John Templeton Foundation Project II

This second three-year programme funded by the John Templeton Foundation follows from the success of the first programme (2006-2009), which has culminated in the publication of "Religion in the emergence of civilization: Çatalhöyük as a case study. Ed Hodder, I, 2010. Cambridge University Press, Cambridge; New York".

The new questions being addressed in this second programme centre around 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' (see Hodder Archive Report 2007) 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?

Towards this topic we held a conference at Çatalhöyük. On 24th &-25th July about 100 people attended talks on 'Religion as the basis for power and property in the Neolithic of Anatolia and adjacent areas.' The speakers included Ofer Bar-Yosef, Gary Rollefson, Marc Verhoeven, Danielle Stordeur, Harald Hauptmann, Klaus Schmidt, Mehmet Özdoğan, Nur Balkan Atlı, Mihriban Özbaşaran, Douglas Baird and Kostas Kotsakis. This impressive line-up of Neolithic specialists debated in the dig house seminar room (Figure 8) discussing recent results from their excavations and making comparisons with Çatalhöyük.

Figure 8. The conference in the seminar room in the dig house. Photo Jason Quinlan.

Following the conference the annual seminar was held involving a newly configured group of international scholars in the disciplines of archaeology, anthropology, philosophy and religious studies. These seminars are aimed for contribution to the interpretive process, which have proved very successful for the interpretation of the site.

This team of scholars were then conducted on a tour, ably organised and led by Banu Aydınoğlugil, to other Neolithic excavations to contextualise the period, and Çatalhöyük. They visited the excavations at Aşıklı Höyük where they were hosted by Prof. Mihriban Özbaşaran, director of the excavations and research, Istanbul University. The group then travelled to visit

the Museum of Anatolian Civilisations in Ankara where they were guided around the galleries with special attention to the newly furbished Çatalhöyük gallery. A reception was also held at the museum in their honour. The final leg of the tour was a visit to Göbekli Höyük in the Şanliurfa region, SE Turkey where the director of excavations Prof. Klaus Schmidt hosted and guided the group.

- Iraq delegation - World Monument Fund

From 18th to 20th July we hosted a delegation from the State Board of Antiquities and Heritage in Iraq and Future of Babylon Project Directors from the World Monument Fund.

Prior to visiting Çatalhöyük the delegates had meetings in Ankara at the Museum of Anatolian Civilisations and at the Directorate General of Monuments and Museums.

The aim of the visit to Çatalhöyük was to conduct a series of seminars on Comparative Site Management Planning using Çatalhöyük as a case study. Topics addressed included an introduction of site management strategies and long-term goals including on-going archaeological excavations, sustainability and funding, and community participation and ownership.

Visitors

The site is open to visitors year round and are guided across the site and through the Visitor Centre by our site custodians. Some tours however, are organised by operators to take place during the excavation season for a guided tour by Project Director Ian Hodder or Field Director Shahina Farid.

One group that has been visiting for some years is organised by the Turkish Cultural Foundation (www.turkishculturalfoundation.org) as part of their Teachers Study Tour of Turkey. Three times a season, since 2007, we are visited by American teachers from across the United States. The teachers' itinerary takes them to destinations including Istanbul, Bursa, Iznik, Efes, Kuşadasi, Cappadocia, Konya and Ankara. The groups visit schools to learn about the Turkish school system and the highlights of their program include an "Ebru" (marbling) workshop, a briefing by Turkish educational NGO's, visits to the Iznik Foundation and the Çatalhöyük excavations.

A sample of organised group tours who visited us in 2010 included c.100 delegates from an International Business Conference hosted in Konya and a group of Yale University alumni whom we hosted to a BBQ dinner and music entertainment.

TV & Documentaries

On the 14th June a documentary team filmed at the site for a 7 part series entitled 'The River Flowing Westward', to be broadcast by TRT in Turkey, Al Jazeera, PBS and the BBC.

Other Events

As every year we enjoyed an evening hosted by our friends and supporters at Karavan, a prominant kilim shop in Konya. We enjoy traditional Konya kebab, which is slow oven cooked lamb, with rice, which we eat al fresco in the dig house courtyard sitting on sumptuous carpets and kilims on loan from Karavan. Our feast is followed by a Sema or Whirling Dervish presentation on the terrace of the dig house. We are grateful to Asim Kaplan for his continued friendship and support to the project.

Guards House

Finally, a new guards house that was granted permission for construction by the Koruma Korullu in 2009 was completed in its new location in the spring of 2010 (Figure 9). It was furnished and occupied over the summer, which allowed the demolition of the old guard house that had been subject to subsidence in recent years.

Figure 9. (top) The new guards house (left) and the old (right). Photo Jason Quinlan, (bottom) view of the new guard house on arrival to the site. Photo Sonya Atalay.

We are indebted to the Konya Sugar Factory for making this happen.

ACKNOWLEDGEMENTS

An international team 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 Soner Ateşoğulları.

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

Funding for the project in 2010 has also been received from the British Institute of Archaeology 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 and the Templeton Foundation and an anonymous donor.

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

YapıKredi BOEING

Main Sponsors

Other sponsor

FIELD TEAM 2010

Project Director:	Ian Hodder.
Field Director & Project Coordinator:	Shahina Farid.
Assistant Director:	Onur Ozbek.
Government Representative	Soner Ateşoğulları.
Project Assistant:	Banu Aydınoğlugil.
Camp Manager:	Levent Özer.
Site Assistant:	Yildiz Dirmit.
Site Custodians:	Mustafa Tokyağsun, Hasan Tokyağsun, İbrahim Eken.
Computing:	Sarah Jones, Richard May, Rafael Lizerralde, Neil Davies.
Database Development:	Sarah Jones.
South & 4040 Area excavations:	Daniel Eddisford, Michael House, Roddy Regan, Lisa Yeomans, Christopher Atkinson, Agnieszka Bystron, Purnur Ece Baş, Maxime Brami, Üğür Eyilik, Sarah Grant, Simge Gureş, Arzu Linga, Dorthe Nistad.
TP excavations:	Arkadiusz Marciniak, Lech Czerniak, Marek Baranski, Marta Bartkowiak, Mathew Boyd, Agata Czeszewska, Patrycja Filipowicz, Andrew Goldman, Arkadiusz Klimowicz, Aldona Kurzawska, Andrzej Leszczewicz, Kamilla Pawlowska, Shannon Stewart, Marek Polcyn, Joanna Pyzel.
IST Team:	Mihriban Özbaşaran, Güneş Duru, Nurcan Kayacan.
West Mound, Trenches 5:	Peter Biehl, Eva Rosenstock, Jennifer Byrnes, Xose Hermoso-Buxan, Bela Dimova, Ingmar Franz, Laura Harrison, David Orton, Eva Maria Mihan, Sonia Ostaptchouk, Jana Rogasch, Sophie Schmidt, Patrick Willett.
West Mound, Trench 8:	Burçin Erdoğu, Nejat Yücel, Onur Özbek, Melek Kuş,Ozan Özbudak, Abdurrahman Sönmez.
Stanford Field Team:	Max Forrest Rose Figura, Alysha De Souza, Sadie Weber.
Stanford Post-grads:	Serena Love, Adam Nazaroff, Helen Human.
Selcuk University Field Team:	Numan Arslan, Mustafa Çeşşur, Mehmet Çırak, Ramazan Kaya, Ayşegul Tabakoğlu, Onur Yüksel.
University California Merced:	Maurizio Forte, Paola Di Giuseppantonio Di Franco, Fabrizio Galeazzi, Carlos Bazua, Julia Cline, Justine Issavi, Llonel Onsurez, Johnathan Wang,
Site Workers:	Mevlut Sivas, Mustafa Yaşlı, İsmail Yaşlı Hüseyin Yaşlı, Hasan Yaşlı , Numan Buluc, İsmail Buluç.Yusuf Tokyagsun, Mustafa Zeytin,
Residue Sorters:	Saliha Sivas, Hatice Yaşlı, Rabia Yaşlı, , Tulin Yaşlı, Esra Şener,
Illustration:	Katy Killackey, Mesa Schumacher, Lyla Pynch-Brock.
GIS Team:	Cordelia Hall, Camilla Mazzucato.
Survey and Digitising:	Cordelia Hall, David Mackie.
Geophys Team:	Kristian Strutt, Grant Cox, Eleonora Gandolfi, Jessica Ogden.
Finds:	Julie Cassidy, Lisa Guerre.
Heavy Residue:	Milena Vasic, Slobodan Mitrović.
Conservation:	Duygu Çamurcuoğlu, Rosemary Jeffreys, Ashley Morgan Lingle, Sanaz Mehran, Lucie Monot.
Image and Media:	Jason Quinlan, Üğür Eyilik.
Faunal Team:	Nerissa Russell, Arzu Demirergi.
Human Remains:	Clark Larsen, Başak Boz, Lori Hager, Emmy Bocaege, Evan Garofalo, Scott Haddow, Josh Sadvari.
Archaeobotany:	Amy Bogaard, Michael Charles, Catherine Longford, Muge Ergun, Petra Vaiglova, Gemma Martin.
Charcoal:	Eleni Asouti
Phytoliths:	Philippa Ryan.
Isotopic Analysis:	Jessica Pearson.
Micromorphology Team:	Lisa-Marie Shillito, Emma Anderson, Georgia Koromila, Jamie Rowe.
Shell:	Daniella Bar-Yosef Mayer, Burcin Gümüş,.

Chipped Stone:	Tristan Carter, Marina Milic, Danica Mihailovic, Kelly Brown, Triantafyllia Eirini Dogiama.
Groundstone:	Karen Wright, Kimberly Jones, Emma Jordan, Christina Tsoraki, Ruth Siddall.
Bead technology:	Karen Wright, Roseleen Bains.
Ceramics:	Nurcan Yalman, Hilal Gültekin, Duygu Tarkan Özbudak.
Post Chalcolithic Assemblage:	Mark Jackson.
Figurines & Miniature Clay Objects:	Lynn Meskell, Lucy Bennison Chapman, Louise Martin.
Clay Stamps:	Ali Turkcan.
Clay Balls & Geometric Shapes:	Sonya Atalay, Sheena Ketchum.
Clay materiality & sourcing:	Chris Doherty.
Landscape Survey & Coring:	Chris Doherty.
Speleotherm Sourcing:	Onur Özbek, Gülgün Gürcan.
Architectural Analysis:	Serena Love.
Clay Architectural Material:	Mira Stevanovic.
Visualisation Team:	Stephanie Moser, Graeme Earl, Sara Perry, Ian Kirkpatrick, Rachel Bassinger, Gemma Tully.
Forensic Team:	Karl Harrison, Anna Davenport.
C14 Dating Team:	Alexandra Bayliss, Shahina Farid.
Summer School:	Gülay Sert, Nuray Kaygaz, Işıl Demirtaş.
Community Archaeology:	Sonya Atalay, Sema Bağci,Teddy Mendoza.
Community Theatre Project:	Serdar Bilis, Ozlem Ozhabes.
Research Projects:	Sheena Ketchum, Antonia Davidovic Walther.
House Staff:	İsmail Salmancı, Nevriye Şener, Gülsüm Eken, Elmas Motuk.

EXCAVATIONS

Introduction to the South Excavation Area 2010– Shahina Farid

Whilst the focus of the first half of the 2010 season was on publication work the second half was spent on excavations conducted in 4 areas (see Figure 1); the South and 4040 Areas on the East Neolithic Mound and Trenches 5 and 8 on the West Chalcolithic Mound (for background to the excavation areas, aims and objectives see previous Archive Reports).

Continuing from the previous seasons work excavations in the South Area took place in Building 80 and to its north in Building 86 (Figure 10). In both cases the season's objective was to reach the floors of the buildings. In Building 80 this was achieved as much of the closure fills were excavated last year, whereas Building 86 was overlain by middens of Space 344, defined as an external area post dating the closure of Buildings 79, B.80 and B.86. 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.79 & B.80).

The ledge of roughly contemporary buildings to the west of B.80 was also excavated, again following on from last year's work. This included Building 96, which was partially delineated last season and B.97 that had been exposed in 1962 as E.VIB.28. In this building much of this season's work was spent in the removal of the 1960's backfill and defining and recording the internal plan of the building. To the west lay Space 369, an exterior area of finely lensed midden and trampled surfaces.

The stratigraphic sequence represented by structures B.96, B, 97 & Sp. 369, is crucial to linking our work from the first phase of excavations (those excavated between 1995-99), and this current phase of work represented by the Buildings 10-44-56-65-75-80 sequence. Once linked it will produce as complete a temporal sequence from the surface of the mound to natural at this location of the mound (see A review of the Mellaart Level system and the introduction of a new phasing system at Çatalhöyük 2008 – Shahina Farid, Archive Report 2008). However it is also the most complex set of structures to place in stratigraphic order due to several phases of truncation and landscaping and external use, which may represent a localised hiatus in the settlement sequence. A further complication is presented as evidence of a terrace in this location, one that was also proposed by Mellaart.

Current phasing suggests that B.79, B.80, B.76 & B.86 may be contemporary (in as far as all could have been in use for at least part of their history of use). This relationship is based upon abutting walls and that it appears that B.79, B.80 & B.76 burnt at the same time. After the fire(s) that put the buildings out of use the three burnt structures and B.86 underwent the same closure activities in the form of landscaping (through horizontal truncation) that re configured the area into external spaces (Sp.329, Sp.332, Sp.333, Sp.367 & B.75). How far this landscaping or external area extended is unknown due to previous excavations in the 1960s for which there are no available records.

The link between B.76 and structures to its west is frugal, again due to 1960s work. Currently it appears that B.96 is an earlier phase because of the sequence of underlying structures that are visible in section. However, the area is much cut about; a divergence from building over building over building following in the same building plan. Further planned work will no doubt clarify the conundrum.

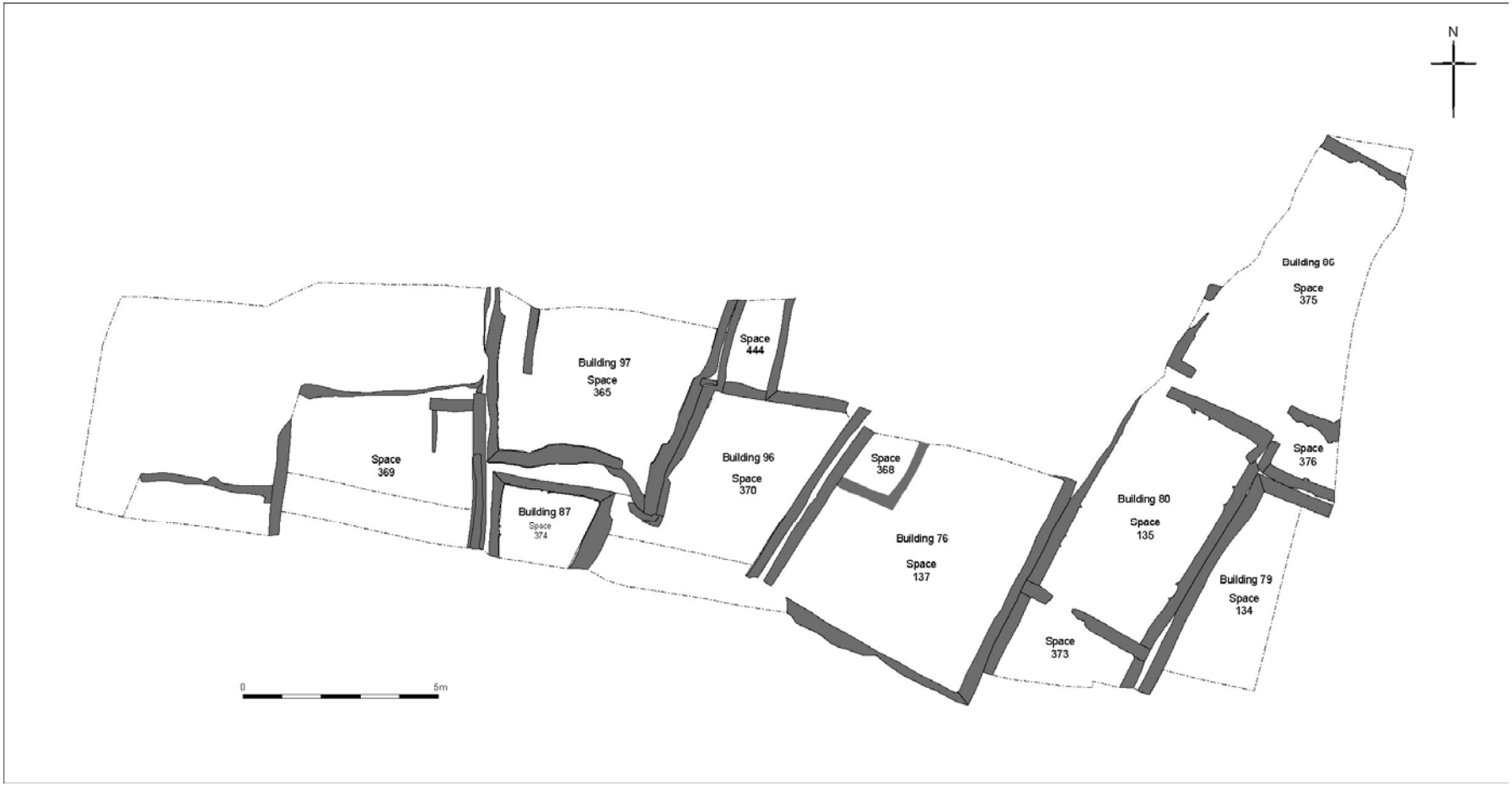


Figure 10. Plan of current buildings under excavations in the South Area. Plan David Mackie

Building 80 - Spaces 135 & Sp.373 – Roddy Regan

Supervisor: Roddy Regan*
Assistants: Christopher Atkinson*, Maxime Brami (1), Alysha De Souza (2).

*Çatalhöyük Research Project, (1) University of Bristol, (2) Stanford University Field Team

Introduction
The main aim of this year's excavation was to reach the floors of Building 80 and record this relatively well preserved partially burnt structure. This primarily involved the excavation of the remaining post-abandonment deposits. The removal of these deposits allowed the interpretation of the abandonment process and whether the fire within the building may have been a deliberate or accidental event. This also led to a reappraisal of the evidence for a second storey to the building as postulated in last years archive report.

Neighbourhood Setting
Building 80 was surrounded by a number of what appear to be contemporary structures, which gave us a broader neighbourhood picture across several buildings (Figure 10). Lying immediately to the east and west respectively were Buildings 79 and B.76, both of these structures heavily burnt. To the north, and also likely contemporary, was Building 86 although this structure (as yet only partially excavated) appeared relatively unburnt.

The relative floor levels of these east-west aligned structures (Buildings 79-80-76) suggest a slight step down between each building from east to west of between 0.2m-0.3m. If contemporary, the drop between Building 86 to B.80 from north to south is a greater at up to 1.2m. The walls of each of these structures abut each other with little evidence as yet of any open or communal space between, which raises questions about intra building access and other issues such as waste disposal (i.e. where are the nearest middens?).

Building 80
The building consisted of two rooms, Space 135 to the north and Space 373 to the south (Figure 11). The building was rectangular in shape and orientated northeast-southwest.
The structure measured at least 9.2m long and up to 3.2m in width, but as the southern wall lies under the southern limit of excavation the true extent of the building remains unclear. The northern room, Space 135, measured 5.9m to 6.0m long with the southern room Space 373, measuring at least 2.6m long but again this remains unclear for the reason mentioned above.

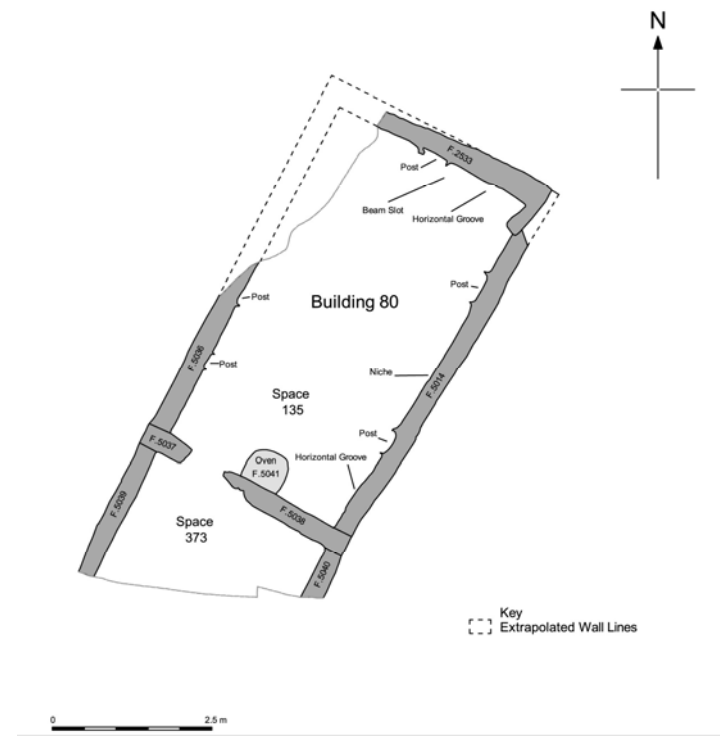


Figure 11. Plan of Building 80. Plan Cordelia Hall.

Overall the structure was demarcated on the western, northern and eastern sides, respectively by walls F.5036/5039, F.2533 and F.5014/5040. Two internal walls F.5037 and F.5038 divided the building into northern and southern rooms with a crawl-space or doorway

between the two rooms. The walls themselves averaged 0.3m in width, reflecting the width of the utilised bricks, which were on average 0.8m long by 80mm thick. The northern wall of the building was particularly well preserved standing 30-31 courses tall (c.2.8m), or 2.16m (24 courses) above highest floor surface.

Space 135

Arranged along the walls on the northern room were a series of engaged posts (Figure 12). On the east wall were posts F.3428 and F.3429 respectively at the south and north. Opposite these on the west wall were posts F.3431 and F.3430 again respectively at the south and north. Placed centrally between the posts on the west wall were three further posts forming a plastered "installation" F.3433. The northern end of the room had a single engaged post F.3422 set against wall F.2533. All the posts, apart from that on the northern wall, had been burnt and initial analysis of the charcoal from the carbonised remains of the posts suggest oak is the major structural element (E. Asouti pers. comm.). The structural function of these upright posts are still under investigation, but it is clear that they do not directly support roof timbers or even a putative second floor, this evidenced by the multiple layers of plaster that partially covered the top of post F.3432. The north and east wall of the structure had evidence of a horizontal slot that likely contained a structural timber running along the inner length of the wall between 1.8m and 2.0m above the upper floor levels. The wall above this slot stepped in towards the building between 20mm-40mm. The wall-plaster immediately above and below this slot lipped out from the wall face. The relationship between the upright posts and these horizontal timbers are as yet unclear in Building 80, although there is evidence, albeit ephemeral, for a horizontal timber running into the wall above the northeast pillar F.3429. It is possible this east west horizontal timber may have been tied into the upright post as well as any north south horizontal timber. This timber may also have supported any plaster capitol at the top of the post as the evidence in Building 79 suggests (see 2009 archive report and below). That some, if not all, of the posts in Building 80 originally supported plastered capitols is indicated by the collapsed remains of these plastered mouldings found in the various backfill and demolition deposits of the building, (18576.x3, 18561.x1 and 18941.x1).

All these structural timber elements, as Mellaart has previously pointed out, would have given added stability to the walls of the structure, although conversely if these failed, especially the beams supporting the overhang, the building would have been more prone to collapse. Mellaart also postulated the idea of a freestanding timber frame around which the mudbrick walls were formed. As yet however we have little evidence for this form of structure within this phase of the settlement.

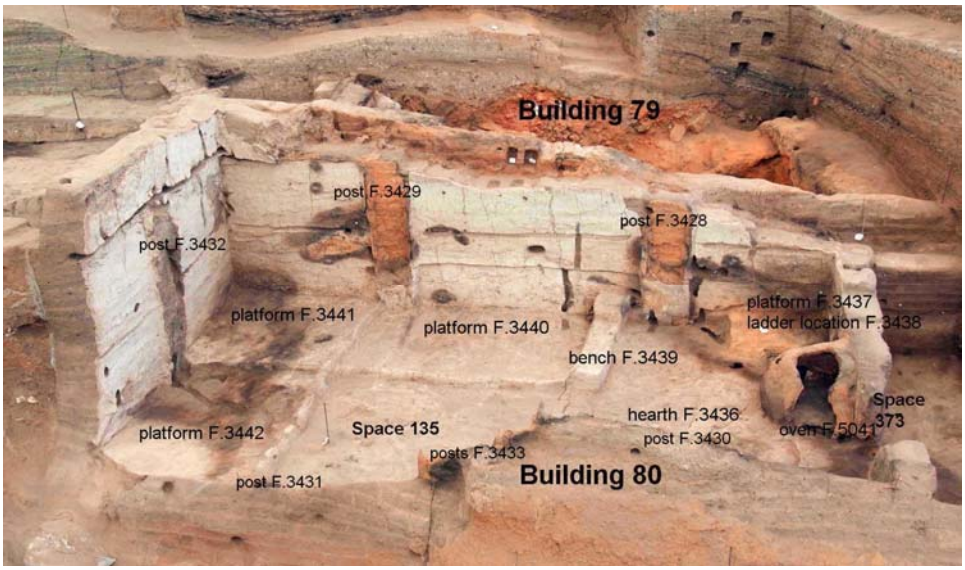


Figure 12. Features of Building 80. Photo Jason Quinlan.

Beyond the structural function of the upright timbers their positions within the building appear to dictate the layout and internal divisions within the house vis a vis the positions of bench and platforms.
The exception to this is perhaps seen with the three plastered posts (F.3433) seen on the central west wall, which does not appear to be physically related to any divisions we can see across the floor area. A similar installation of three plastered posts on the west wall was evidenced in Building 79, while evidence of burnt posts against the west wall of Building 76 may have been the remains of a similar feature. In Building 76 it was postulated that these may have had a primarily decorative function although the presence of horizontal timber slots in the west wall of Building 79 above that installation suggests a degree of structural integrity. In Building 80 a decorative function is suggested by the presence of a collapsed burnt cattle horn core and a similarly collapsed plaster moulding containing a sheep/goat horns 18576.x1 and 18576.x2. The plaster moulding containing the sheep/goat horn had evidence of two wooden pegs that likely attached it to one of the upright posts in the installation.

As mentioned above the post settings within the building are reflected in the layout of the room, although the arrangement of the internal features of the building perhaps conforms to the “typical house”. At the south of the space a well-preserved oven, F.5041, was positioned against and partially cut into the southeast wall of the room. To the east of the oven a small platform or raised area F.3437 supported the base of the ladder F.3438. The ladder base (as yet unexcavated) consisted of what appears to be a rectangular cut with evidence of two inserted posts, one of these surviving as a charred timber. To the north of the ladder there are indications of another raised area seen with a rise in the floor (18977) from west to east and this may represent another platform area, its edges smoothed over by a sequence of plaster surfaces. To the north of this and connected to the east wall was a narrow plastered bench F.3439. The bench had a squared raised area at the east and protruding from either side of this was a pair of broken cattle horn cores. A central east platform F.3440, lay north of the bench, this rendered with what appears to be a continuous plaster surface (18979). While there is no evidence of burial cuts through the platform surface although this did slump in a few places suggesting the presence of burials below. The platform at the north along the line of post F.3429 steps up giving the appearance of another bench, but it is equally possible this is the southern edge of an earlier remodelled platform. Two platforms occupy the north area of the room, F.3441 and F.3442, respectively lying east and west of post F.3432. The central west area of the room is occupied by brown plaster floor (18982). The hearth of the building (F.3436) lay 1.0m to the north west of the oven, this having a scorched (by use) upper surface. It is likely that the hearth overlies an earlier platform as the floor area to the west is raised above floor (18982).

All of the internal wall faces of Space 135 were plastered with multiple coatings, to a total thickness of approximately 20mm. The northern and eastern walls of the room were divided into panels lying either sides of the engaged posts by horizontal groove-rails, these likely cut into the walls prior to being plastered. On the northern wall the groove-rail to the west of post F.3432 is lower than that to the east, perhaps suggesting that the panel divisions are related to the heights of the respective platform floors they lie above. Three sets of grove-rails were present on the eastern wall, these again situated between the engaged posts where any height difference between the groove-rails are less apparent. The wall above the central east platform is further subdivided by a lower moulding or lip that runs between posts F.3428 and F.3429. The eastern wall also held a niche F.3434 lying south of centre the central section of the eastern wall below the rail. Two small plastered holes in the wall (up to 30-50mm diameter) were also noted in the wall, these perhaps holding a small post or peg. A second niche F.3443 was also present within the western wall this accessible at floor level.

While there was no decoration on the upper plaster surfaces, there was evidence of red pigment on earlier plastered surfaces (where the latest plaster surfaces had flaked off). Any decoration appeared to be confined to the eastern wall, with evidence of pigment within the horizontal rails, around the engaged posts, around the within the lower central panel.

Space 373
The southern room of the building had no obvious internal features, although this was only partially revealed. A small dip in the clay floor at the north west of the space might indicate the

presence of a former bin or basin, but this was far from conclusive. Most of any plaster rendering on the internal faces of the wall had been burnt off by the fire, although patches of near vitrified material remained on the west wall.

Burning as Abandonment

Building 80, along with buildings B.76 and B.79 were burnt, the latter two heavily burnt. Building 80 however displayed differential levels of burning and heat damage across the various walls and floors of the structure, suggesting the building or parts of the building was subjected to a less severe fire. For example the northern walls of Space 135, showed very little evidence of burning, while the southern part of the building had been subject to the effects of intensive heat. The most intensive effects of heat were seen in Space 373 that showed signs of being burnt or at least scorched on all sides, with the remnant plaster on the eastern wall nearly vitrified. Several localised circular patches of scorching were identified upon the face of the eastern wall in the northern room it is likely these were the result of something smouldering against the wall possibly items suspended from the roof or smouldering posts.

The pattern of burning makes it likely that the fire started at the southern end of the building, but may have partially spread along the roof of the structure and burnt the posts on the east and west walls, with the northern wall relatively unaffected by the fire.

The burnt nature of the buildings B.76, B.79 and B.80 and their proximity raises the possibility of a general conflagration in this neighbourhood. If this does not represent a neighbourhood wide event then the burning has to be explained as a series of near contemporaneous events. Both of these propositions could be the result of intentional burning, especially if these are interpreted as individual events. Addressing whether any fire in a particular building is deliberate or accidental has sorely tested our interpretation of the archaeological evidence as to which, if any, it may be. In Building 79 for example many objects and deposits appeared to have been left 'in situ' prior to the fire, including stored seeds, a quern and grindstone. To our current sensibilities this tends to suggest an accidental fire with goods lost to the conflagration. However if your intention were to deliberately burn your house would the goods within it matter? In comparison to Building 79, Building 80 had little evidence of 'in situ 'household' goods and objects 'lost' to the fire. It is possible however that the building was still accessible after the fire and any items could have been removed then. Possibly indicating that this was not the case was that Building 80 contained a number of discrete groups of objects that indicated the building was being prepared for abandonment prior to the fire. Within the northern room these included a group of bones and some stones at the east of the oven (18964), a similar deposit within the oven (18955), an obsidian cluster on the north west platform (18944), and a fragment of ground stone left on the hearth. In the southern room was a group of very burnt bones (18958). The very burnt and fused nature of the bones within the southern room, suggest these had been burnt in situ and not gathered after the fire. The animal bones within the other clusters were also burnt, although whether these had burnt in situ or gathered after being burnt was less clear. If these objects were placed prior to the fire, which is being tentatively suggested here, then it appears that the oven roof had also been deliberately demolished or 'knocked-in' as cluster (18955) lay over the remnants of the oven roof.

These clusters are reminiscent of similarly placed objects evidenced within later abandoned buildings (i.e. Buildings B.75, B.65, B.56 and B.44), and along with the demolition of the oven can be seen as repeated behavioural events within an overall abandonment process, only in this case the building was later burnt. It may be of course that the fire just happened at a moment in time when this building was in the process of being abandoned and the two events, abandonment and burning, are coincidental.

Demolition and Infilling as Abandonment

The southern floors of the building were sealed by a layer of very burnt building collapse (18947), although little collapse was evidenced in the centre of Space 135. Immediately above the northern floors of the building was a distinct charcoal rich deposit (18948), suggesting some form of wooden structure or storage of organic material at this end of the building (Figure 13).

Figure 13. Charcoal rich deposit (18948) close to the floor could be the remains of a wooden structure. Photo Jason Quinlan.

This deposit also contained three burnt seed clusters, (18945), (18949) and (18952), with deposit (18945) stored within a crude clay container (18957) (Figure 14 – see Archaeobotany this report). Discounting the possibility that the northwest platform was used as a storage area, the presence of the seeds may be explained by a collapsed storage area, possibly a loft, hence the charcoal in this northern area. Alternatively the seeds may be the remnants of a' left' deposit, a type that is not usually seen but preserved in this instance by the fire.

Figure 14. Burnt seed clusters, (18945), (18949) and (18952), with deposit (18945) stored within a crude clay container (18957*). Photo Jason Quinlan.*

It appears that the roof of the structure had partially caught fire given the evidence of burnt roof timbers and the presence of burnt and likely collapsed clay roofing material located at the south of the building and around the edges of the northern room. However given the sequence of deposits that subsequently infilled the building (see below), it appears that much of the roof may still have remained in situ. Given this, it is likely the building was still accessible after the fire, as their appeared to be little superstructure collapse within the building, except perhaps at the extreme southern end of the building. This would perhaps account for a second series of 'left' deposits or clusters seen within the building. These included objects placed on and around three of the burnt timber posts. Over the carbonised remains of SE post F.3428 was left a denticulated obsidian blade (18939), around the SW post F.3431 was placed a group of objects (18940) including bone tools, mini clay balls and obsidian. Similarly around the burnt remains of the northern most post within installation F.3433 were placed a group of obsidian along with a grouping of small pebbles (18965).

The bones within cluster (18939) were burnt and had obviously been affected by fire, however these and the other post clusters must have been placed over the post after they had been burnt out. More ambiguous, as to whether it was placed before or after the fire was a group of obsidian tools left within niche F.3434 in the eastern wall of the northern room.

Beyond these objects the building appears to now have undergone a 'conventional' backfilling sequence combined with a series of demolition events. The non-demolition deposits consisted of a series compacted fairly homogenous clay silt, this material likely imported from elsewhere and brought into the building. While the infilling deposits were being imported into the building, part of the surviving superstructure of building was also being levelled no doubt as part of the same infilling process.

Some of the most important survivals within this general infilling process were the remnants of a series of structural timbers that undoubtedly represent the roof of the building. These timbers suggested a collapsed or more likely a demolished roof that became part of the general backfill of the building. The timbers had survived by being partially burnt and had survived as lengths of carbonised remains and or voids within the surrounding clay infill deposits and initial analysis of the charcoal suggests juniper was the primary roofing component. The longest timber remnant measured 1.36m but this, as with the other timber remains, only represent a fragment of timber that no doubt spanned the overall width of the structure. The plotting of the timber remains suggested at least eight cross-timbers running from north to south across the width of the building. This is a minimum number, as any timbers at the south of the building may have completely burnt out, while conversely any timbers at the north of the building may have remained relatively unburnt, and either reused or rotted in situ leaving little trace. The spacing of the collapsed timbers suggest a cross timber every 0.3m along the length of the building, however a grouping of three timbers (18538), (18585) and (18586) lying adjacent to one another perhaps suggests a more complicated arrangement. The timbers appeared to have suffered a greater degree of burning at their eastern and western ends than towards their centre where they existed as charcoal surrounded voids. This suggests more intensive burning around the edges of the building and perhaps in the form of burnt roofing material around the edges of the building. Immediately surrounding the burnt posts at the north of the building was deposit (18941), this appearing to be the remains of unburnt roofing material. This material was very compact and blocky suggestive of roof material of up to 0.3m thick. The problem discerning this was that, the possible roof material, the backfill material and some of the burnt timbers appeared to have been rammed or pounded together during the backfilling/demolition process, this was apparent as a very compacted matrix and the shattered nature of some of the charcoal that constituted the burnt timber remains. This compaction was also apparent within subsequent infill deposits (18933), (18928) and (18925)/(18927). The infill deposit inter-digitated with burnt demolition material (18947), (18931) and (18929) this confined to the south and the west of the building. Thereafter the building was filled by a similar sequence of infill and demolition deposits reported on in last years archive report, which is summarised below.

Two mixed burnt deposits which sat in depressions around the edges of the room, (18576) and (18580). Both of these deposits yielded a number of architectural fragments (burnt brick and plaster). Likely derived from this same demolition process was collapsed wall (18924)/(18594), this consisting of up to 13 courses of mudbrick, likely coming from the southern wall separating Spaces 135 and Sp.373.

Sealing the southernmost of these deposits, (18580), through the crawlspace at the south of Space 135 and running into Space 373, was a thick (c.0.2m) deposit of mid-dark brown clay-rich infill, (18555), which appeared to indicate the deliberate backfilling of Space 373.

Within Space 135 a thick band of mixed yellow and grey brown silty clay (18578), sealed the easternmost burnt collapse. This was in fact a compound dump, which was relatively sterile and this material appeared to have been mixed and possibly graded before dumping.

Another Storey?
Sealing the southern end of this material was wall collapse/demolition, (18561). This wall collapse consisted of 8 or 9 discrete sandy silt brick courses, orientated broadly east-west,

suggesting that it may have been material from the southern wall of the space. Combined with wall collapse (18924)/(18594) up to 21-22 collapsed courses were present. If these figures are added to the existing wall F.5038 (standing 13 courses high) it would give a combined wall height of up to 3.0m. This perhaps suggests the presence of a second storey, possibly located over the southern room of the building as opposed to one covering the northern room as postulated in last years archive report. This wall collapse was also associated with a series of burnt and collapsed plaster floors.

Sealing the collapse mixed dump of mudbrick-like material (consisting of broken bricks and burnt bricks), (18564). This deposit similar to the earlier dump, (18578 – above), only looser, courser and redder, with far more burnt material.

This dump was cut in the northeastern corner of the space by a large retrieval pit, (18563), which appeared to be associated with a patch of scoured out plaster in the corner of the northern wall. The fill of the pit (18560) yielded a large horn-core. In the northwestern corner of the space the dumping continued with a further burnt mudbrick dump, (18558), overlain by similar dump (18554). It was within this deposit that the underlying collapsed timbers first became apparent during excavation.

In the northern part of the space the dumping continued with another far more compact clay rich dump (18543). To the south of the space in the depression near the oven was another grey clay-rich brick dump (18552), which may represent further demolition of a southern wall. This was sealed by two dumps of sterile bright yellow sandy clay, (18541) and (18544), Roughly contemporary with this in Space 373 a second thick band of homogenous room-fill was deposited, (18544), which was otherwise identical to the earlier (18555). It yielded a single cattle horn and some redeposited red-painted plaster.

Overlying the architectural collapse associated with the southern wall was another major wall collapse, (18531/18532), which was clearly plastered upon its underside (18540). The bricks were identical to those in the eastern wall F.5014 and its position clearly indicated the collapse came from this eastern wall. Seven or 8 courses were identified and the central portion of the collapse was burnt on its topside only. A loose granular infill (18538), filled the gap between the collapse and the remains of the standing wall.

Sealing this wall collapse was a dense band of mixed tumble, (18526) which effectively built up and levelled the eastern part of the space. It seemed likely these dumps were essentially filling in gaps and levelled out the area. These upper dumps almost certainly derived from outside the building with little evidence of demolition.

Dumped upon this levelled material was a band of dump mudbricks (18521) that contained a single antler. This heap of dumped brick effectively split the space into two short dump sequences. On the southern side of the brick dump was a band compact and homogenous material, (18519), this sealed by looser and heat affected building fragments (18518).

The northern part of the space was effectively filled with thick bands of dumped material. (17389), (17342), (17365), (17361), (17331) and (17321) filled the central northern portion of the room backing up against the north wall F.2533, along with plaster collapse (17364).
This effectively marked the interface between Building 80 and the overlying Space 344.

Killing or Rebirth?
Within the infilling and dumping sequence of Building 80, were a series of objects that might suggest their deliberate incorporation within the backfilled material. The objects consisted of a series of obsidian points, horn cores and scapulae, these occurring far too frequently and standing out from the general background finds, suggesting more than just casual loss or general discard having entered the building as redeposited material. Although this needs more comparative analysis it would appear that the majority of these objects were concentrated within the lower and upper backfilling sequence, with few objects coming from the ‘middle’ dumped/demolition deposits. Amongst the lower deposits (18933) contained a horn core, an antler and two obsidian points. Three obsidian points were recovered from infill deposits (18925)/(18927). Deposit (18941) contained two obsidian points and a horn core.

Deposit (18928) contained two obsidian points and a worked bone with deposit (18929) containing a horn core. From the upper deposits pit fill (18560) contained a horn core, deposit (18543) contained two horn cores and two scapulae. Deposits (18541), (18544), (18526) and (18521) contained single objects respectively a scapula, a cattle horn, a horn core and antler. Lastly deposit (17342) contained two scapulae and obsidian. Even within this crude separation it can be seen that while specific animal bones occur within both upper and lower deposits there appears to be a marked preference for obsidian objects, particularly points, within the initial backfilling of the building.

Building 79 Revisited
Small-scale investigations were conducted on this building. This mainly concerned the removal of part of the upper walls of the structure to examine the nature of the horizontal beams that run along the inner edge of the upper walls. The removal of part of the northern wall F.5012 revealed the impression of a horizontal slot F.5032 (18967), this measuring up to 0.12m wide. This likely tied into a second timber slot (18970) that probably held a support for the now partially collapsed plastered capitol that lay above engaged pillar F.5020. A similar horizontal slot (18969) was also revealed with the partial removal of wall F.5013 this measuring up to 0.2m wide. Also removed from the building was a deposit (18971) of what was likely the collapsed roof of the oven F.5034. Burnt timber samples were also gathered from post F.5019, (18973), and (18974) from the central installation.

Space 344 and Building 86 – Maurizio Forte, Paola Di Giuseppantonio Di Franco & Justine Issavi

Team Leader: Maurizio Forte (1)
Supervisor: Christopher Atkinson (2)
Assistant: Paola Di Giuseppantonio Di Franco (1)
Students: Carlos Bazua (1), Fabrizio Galeazzi (1), Justine Issavi (1), Llonel Onsurez (1), Julia Kline (1), Jonathan Wang, (1), Patrick Willett (3)

(1) University of California Merced, (2) Çatalhöyük Research Project, (3) SUNY Buffalo

Introduction
The UC Merced fieldwork season ran from July 10 until August 16 undertaking excavations of Space 344 overlying Building 86 (Figure 15). This area was first excavated in 2009 with a northern wall F.5024 of the underlying B.86 (Figure 16) demarcating its northern extent. Space 344 is defined as an open space of multiple midden deposition that formed after the closure of Building 86, largely characterized by levelling and midden dumping.

Figure 15. Space 344 in foreground with walls of underlying B.86 defined beyond. Photo Team UCM

The season's strategy of excavations was determined by the excavations that were conducted in this area in 2009. In 2009 only half of Space 344 was excavated up to an arbitrary line to the north and excavated to the upper horizon of infill of B.86.
The first 3 weeks of excavation in 2010 therefore concentrated on the remaining strata relating to Space 344 located to the north side of the area up to the northern wall of B.86 (Figure 16). Thirty-seven layers (19100-19138) corresponding to different deposits of the "midden" were defined and excavated incorporating many fragments of animal bones, ash and fragments of charcoal.

The stratigraphic sequence showed clearly that the upper levels of the deposit were compromised and disturbed by different environmental events (roots, animals' tunnels, and water exposure) since the area has remained exposed since the 1960s.

By the last two weeks all deposits of Space 344 were excavated exposing the complete underlying Space 376 of B.86.

Figure 16. The Northern wall F5024. Photo UCM

Open Area, Space 344

Space 344 mainly consisted of compact yellow-grey layers (19130) and (19135), relatively rich in finds (animal bones, obsidian flakes, shaped clay, shells, etc.) and interdigitated ash and charcoal lenses. The consistency of the layers could be a marker of the use of this area for human activities. This interpretation is further reinforced by the presence of pits (19131)/(19132), (19133)/(19134), whose function is unclear as of now. The pits are similar to those found during the 2009 excavation season to the south of this area, and interpreted as quarry pits for compacted soil.

Figure 17. Space 375 at the end of the excavation season. Photo UCM

Figure 18. Dividing wall F.3461. Photo UCM

The upper layers of Space 376 excavated as units (19115-19138) consisted of more heterogeneous deposits with relatively more inclusions of pottery, bone tools and clay figurines. In addition the surfaces of the layers were more compact and compressed including other structural elements. The occurrence of oven F.5038 and

other smaller related structural elements fitted interpretations of 2009, in that at this phase of use area (Figure 17) became an open activity space with associated trampled horizons.

Building 86, Space 376
During the excavation a new wall, F.3461, was revealed (Figure 18) defining the division of the internal spaces of Building 86. The building appears to consist of three rooms that are, at present, identified as Sp.445 to the north, Sp.375 in the centre, and Sp.376 towards the south-western edge.

The building perimeter is delimited by walls F.5024 to the north, F.5025 to the east, and F.5029 and F.5030 to the south; the interior is divided by F.3461 to the north and F.5026 to the south.

The northern wall, F.5024, was further revealed during this excavation season. Since it was leaning at a dangerous slope, a logistical decision was made to remove a part of it. Four layers of mud-bricks and mortar were taken off. As more of the wall was revealed during the excavation, there was no evidence of plaster on its interior, unlike other structures in the South Area (i.e. the walls of Building 80). The lack of plaster could indicate the exposure of the wall for a period of time before being covered by the infill, or the result of an intentional removal and possible reuse of it.

The internal wall F.3461 was revealed in a small portion. It seems to be weathered and has signs of erosion, which could mean that it was exposed for a time before being covered by the infill. The presence of this wall could indicate a crawl space giving access to a storage room.

As of the current excavation F.3461 marks the southern limit of Sp. 445.

Only two units were excavated in Sp.445: (19137) and (19138). They had large amount of plaster inclusions as well as pieces of mud brick, and therefore, were interpreted as being a wall collapse. Another layer (19139), was defined but was not excavated.

Space 329
This year the excavation of Sp. 329 was continued and completed. The layers are consistent with the 2009 excavation season findings, comprising midden-like deposits of surface laminated dumps, (19101), (19106)-(19109), (19114)- (19116), (19126), (19128), and several fire spots (19104)/(19105), (19119)/(19120), (19123)/(19124). There are also several other pits not associated with fire activity (19102)/(19103), (19110)/(19112), (19111)/19113). These midden layers were clearly distinguishable from the in-fill layers because of their looser consistency. Moreover, the midden-like layers' components are mainly ash and charcoal, whereas the in-fill layers consisted of yellowish sandy-clay textures.

Even though the presence of pottery and worked clay was not substantial within the layers excavated, it is important to take note of the occurrence of clusters of articulated pottery sherds, (19125), (19127), in the layers closest to Building 86 in-fill. One of the clusters (19125) was comprised of burnt sherds, and the datum reinforces the idea that numerous activities, mainly associated with

Figure 19. Space 329, East section. Photo UCM

fire spots, were taking place within the middens. There is more evidence of activities in the earlier layers.

Many of the midden layers were disturbed by post-depositional features, such as insects and plant activities, as well as a number of animal burrows. Moreover, the north-western limits of Space 329 had been exposed since the Mellaart excavation.

In general it was evident that there was a depression at the centre of the midden area with laminated deposits conveying in the middle and with a concave profile. This is confirmed by the two sections on the Eastern and Western edge of the trench (Figure 19).

Building 96 - Spaces 370 & Sp.444 – Lisa Yeomans

Supervisor: Lisa Yeomans*
Assistants: Önur Yüksel (1), Ramazan Kaya (1), Ayşegul Tabakoğlu (1),

*Çatalhöyük Research Project, (1) Selcuk University.

Introduction
Building 96 comprises of two spaces, Sp.370 forming the main room of the building and Sp.444 forming the northern storage room (see Figure 10). The tops of the walls and the infill of Sp.370 were exposed during last years excavation season and the space appears stratigraphically below B.87. The southern end of the building is beyond the limit of excavation and the western part of the space is truncated by a construction cut for the later building, B.87. Erosion of the 1960s excavation trench partially removed the eastern wall of the northern storage space and the northern wall was completely removed but the plans of the building from the early excavation indicate that the space was not much larger than currently surviving. A fire that burnt many of the buildings excavated by Mellaart to the north damaged the northern storage room but the main space of the building was unaffected by the fire. From the thickness of the wall plaster the building was in occupation for a long time, had a number of features of similar form other buildings and had a notably large eastern platform.

Space 370
The main room of B.96 is irregular extending 4.55m from its north wall to the limit of excavation to the south. The north end of the space is wider measuring 3.4m narrowing to 2.44m where the space's western wall changes direction and space widens again with a wall built at right angles to the western wall. This western part of the room appears to be truncated by B.87 but there is an indication from the surviving plaster return that the room would not have been much wider than its surviving extent.

The position of four posts and can be seen from the scars in the wall plaster where these were removed damaging the plaster covering (Figure 20). One post is located at the corner

where the western side where the building widens. The post scar (F.3503) shows that the timber would have been 0.18m in width. In the northwest corner of the building a post flanked either side of the crawl-hole into the northern storage space. The western of these (F.3506) was, rather unusually for the buildings at Çatalhöyük, positioned where the northern and western walls meet. On the other side of the crawl-hole the wall plaster protruding into the room formed the eastern side of the post-scar. The western side of the post-scar (F.3500) was not visible, as much of the plaster above the crawl-hole had fallen off the wall when the building was abandoned. Although these two posts framed the crawl-hole they apparently did not offer any structural support within the crawl-hole and may have been purely decorative features. On the eastern wall, located where there was a step between the two platforms, a further post-scar shows the presence of an additional post. This post would have been approximately 0.33m wide but as no corresponding post is positioned on the western wall, it also seems that it was decorative rather than functional. An interesting pattern is notable between the locations of post-scars on the eastern walls of the row of buildings that are currently excavated and possibly contemporary (Figure 21). The post-scars in each of the buildings (B.80, B.76 to the east and B.97 to the west) are aligned, both from the east and from the west (the eastern wall of B.79 was not exposed as it is located beyond the limit of

excavation). In B.96, a fifth post was possibly positioned beyond the southern limit of excavation by the east wall but all that remains of this is an indication, in plan, that the plaster lipped away from the wall at the level that the infill was removed to. It seems likely that this was a further post as it would be positioned at the back of the bench and could have provided structural support as it would form an opposing post to F.3503.

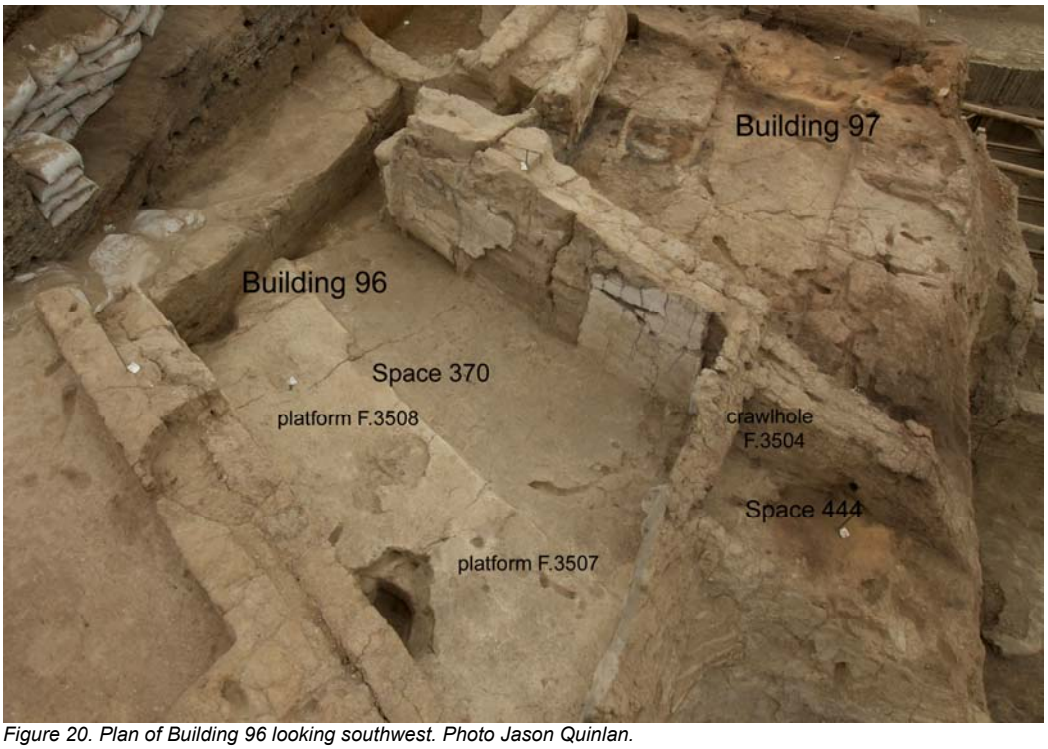


Figure 20. Plan of Building 96 looking southwest. Photo Jason Quinlan.

Two platforms were located against the eastern wall (F.4092). In the northeast corner of the space a roughly square platform (F.3507) measured 1.33m by 1.66m from east to west. This platform stepped down to the south onto a long eastern platform. The eastern platform (F.3508) measures 2.76m in length making this platform exceptionally long. There are also extensive signs of slumping towards the central part of the platform indicating that numerous burials may be located under the eastern platform. This corresponds to the thick build up of plaster (approximately 40mm) within the building indicating that the building had been in use for a substantial period of time. Both of the platforms had a feature removal scar on western edges possibly indicating the removal of pedestal features. To the south of the eastern platform was a bench only partially visible within the area of excavation. The bench (F.3509) has a width of 0.48m. To the west of the platforms and bench, the floor is a mid grey clay and inline with the end of the bench this general floor area has a step down running from the end of the bench to the post-scar on the western wall. To the north the floor layers can be seen lipping up over the mid brown clay floor of the northern storage room.

Space 370 must have extended significantly further to the south than the limit of excavation, as the room would have also had to house an oven and probably a hearth. These features are located in the southern end of the main rooms of the buildings at Çatalhöyük and therefore Sp.370 is probably, at the very least, a meter and a half longer than exposed by excavation.

Two niches in the walls of Sp.370 were excavated. The first was just above the crawl-hole with the top truncated by the 1960s excavations. This niche (F.3501) measured 0.18m in length and extended into the wall 0.15m and had a surviving height of 0.19m. The second niche (F.3511) was in the lower part of the east wall with the plaster layers extending into, and covering the back of the niche which, measured 0.58m in length, 0.1m in height and extended back into the wall 0.16m. A further possible niche may have existed in the western part of the room but was cut by the construction of B.87.

Figure 21. Overview of possibly contemporary buildings on the south ledge of the South Shelter and regularity of post emplacements looking west. Photo Jason Quinlan.

A large area of plaster on the western wall (F.4090) is not present and this is apparently where the plaster would have extended to cover a large feature on the western wall. The form of the feature is not certain but partially comprised of a large recessed area of the wall that was infilled and plastered over before the end of the use of the building. As with the eastern post-scar, this feature on the western wall mirrors similar features on the western wall of the buildings (B.79 and B.80).

Access from the main room of B.96 into the northern storage space was by the means of a crawl-hole (F.3504) in the north wall (F.3505) (Figure 22). The dimensions of the opening measured 0.94m in width and 0.61m in height making the crawl-hole one of the largest so far excavated. The top of the crawl-hole was supported with a wooden lintel indicated by phytolith impressions of the timber. Additionally on the east side the fire in the storage room had charred and preserved a small area of the wooden lintel.

Space 444

The northern storage space of B.96 measures 0.95m in width with the crawl-hole the same width as the south side of the room. In length the room measures 2.2m but is truncated to the north by the 1960s work excavations. This space was apparently exposed in the 1960s and appears on his plan as the western storage space to his House E.VIA.27. However, it is clear that this space is part of B.96 of the current excavations and a double wall not marked on the earlier plan separating this room from House E.VIA.27. The 1960s Level VI plan also shows a triple wall between this space and his House.E.VIB. 28. (To note however is that House E.VIA.27 is shown on a Level VIA plan and appears to be transposed on to the following VIB plan, possibly without further excavation. It is on the Level VIB plan that House.E.VIB.28 first appears whereas it does not appear to have been excavated at Level VIA. This is precisely the area where the stratigraphic sequence needs to be resolved (see Farid, Introduction, this report), also the location of a terrace step-Shahina Farid). It is now clear that the walls dogleg slightly in this area but the two buildings were only separated by a double wall.

The surviving walls of Sp.444 are coated with one plaster layer and the brown clay floor is sealed, under the crawl-hole, by numerous layers of the floor layers in Sp.370. Unlike the main room of the building, therefore, this room underwent minimal modification throughout the life of the building. The walls of this space have been burnt, probably from the fire that destroyed a number of buildings excavated to the north in the 1960s.

Figure 22. Building 96 looking north. Photo Jason Quinlan

Infilling sequence

The 2010 excavation removed the infilling deposits of B.96. Only one of the post retrieval pits was excavated. This was cut (19231) was from the removal of the post by the eastern wall (F.3510). The cut measured 0.43m in depth and damaged a large area (0.79 x 0.65m) of the platforms at the top of the cut. The fill (19230) of the post-retrieval pit was similar to the lower infill of the building and contained a number of plaster collapse fragments.

Just above the western side of the floor of Sp.370 was a spread of animal bone (19227). This cluster of bones were all large fragments differing from the bone discarded in the middens and included a cattle scapula, two cattle radiae with articulating carpals, a couple of sheep/goat pelvis bones, two cattle astragali and some vertebrae. The group of bones were discarded at the abandonment of the building and therefore may represent a closure deposit. Apart from a single clay ball (19216.x2) left on the eastern platform, no other items from the final use of the building were found on the floors or platforms. The lowest infill deposit (19216) in Sp.370 contained a moderate amount of animal bone especially towards the south of the room. It is possible that the building was not infilled with the intention of building directly on top of the building and the space gradually infilled with discarded material. In the northern part of the space, just above the platforms, the deposit contained more plaster collapse. This corresponds to the lack of plaster on the upper part of the eastern wall, which must have fallen from the walls onto the platforms. For this to happen, the building must have been left after the abandonment, as it was not usual for the occupants of the buildings to pull the plaster from the walls. Within the plaster collapse a substantial amount of red paint was excavated. Much of this red paint was found as large solid layers within the collapse suggesting that at some point during the occupation of the building, part of the wall plaster on the eastern wall was painted with a solid red design.

The infill of the crawl-hole was excavated separately as fill deposit (19240) after the infill sequence had been excavated to the floors, but is the same as infill (19216). In the western part of B.96 a wall collapse deposit was excavated and this contained a complete cattle scapula (19219.x1). The upper infill deposits were separated on the basis of quantity of building materials and dumped midden-like materials. Above (19216) was (19213) which contained more material from dumping activities and this was sealed by (19214) containing

an area of laminated roof collapse fragments. The uppermost infill deposit (19212) contained more brick collapse including collapse of part of the west wall.
The infill deposits in Sp.444 (19217)/(19215) contained burnt rubble and burnt animal bone. The burnt rubble was more concentrated in the north of the room as a result of the fire being more intense to the north.

Summary
B.96 is a large, long-lived building with similar features to contemporary buildings. The northern storage room was affected by a fire that destroyed the buildings to the north excavated in the 1960s but it is not known whether this put the whole building out of use. When the building was abandoned, it was just left to gradually fall down. Initially parts of the wall plaster fell, the roof gradually fell in, material was discarded into the shell of the building and whole segments of the walls fell on top of this discarded material. The building on its western side may have been subsequently cut for the construction of B.87. B.87 was not in use for a long before the whole area of truncated by quarry pits and midden then accumulated in the area (see Sp.372 in 2009 archive report).

Building 97 - Space 365 – Christopher Atkinson

Supervisor: Christopher Atkinson*
Assistants: Alysha De Souza (1), Justine Issavi (2), Antonia Davidovic Walther (3)

*Çatalhöyük Research Project, (2) Stanford University Field School, (3) Independant

Introduction
To the west lay Building 97 (see Figure 10), which was excavated in 1962 as E.VIB.28. According to the plan of Level VIB there was a division in the building to the west which delineated a narrow room leading (presumably through a crawl hole) to a small (storage) room to the north. Much of this season's work was spent in the removal of the 1960's backfill and defining and recording the internal plan of the building prior to full excavation planned for 2011

The northern portion of the building, the northern wall and small room, are absent, lost to erosion due to exposure since 1962 and it appears that the southern portion of the original building may have been truncated by the construction of B.87 to the south. Further work will clarify this relationship. The current plan of the building consists of a single irregular shaped room (Sp. 365) (Figure 23), measuring 4.6m wide to the south widening to 6.2m wide to the north by 5.0m in length N-S. The building is delineated by the western wall (F.4086), the southern wall (F.4087) and (F.4089) and the eastern wall (F.4088). The section of the southern wall (F.4089) serves as a reinterpretation of the building plan. Initially assuming that the wall was straight (see 1960s Level VIB plan), it was found during this seasons excavation that the wall made a dog-leg to the south before linking with the western wall (F.4088). Four post emplacements were defined, a south wall post (F.3453), west wall post (F.3519), east wall posts (F.3451) and (F.3452). An oven/ hearth zone was located in the southwestern part of the room with platforms lining the rest of the walls (northwest platform (F.3459), north-central platform (F.3455), northeast platform (F.3457), east-central platform (F.3454), southwest platform (F.3460)). A bench (F.3456) lay at the end of the SE platform and the configuration of platforms created a sunken central floor space.

The 1960s Excavation
Excavation continued from where investigations ended in 2009 with the removal of infill from the interior of Building 97. This infill (19218) and (19245) consisted of mid-greyish orange mixed sandy clay silt with inclusions of burnt brick and plaster; the deposit represents the primary backfill of the building following the1960's excavation. It became apparent on the removal of the backfill that the building was not fully excavated during 1962; this is most evident within the southeast corner and within the west of Space 365 where room fill relating to the abandonment and closure of the building remains in-situ.

Largely the infill (19218) and (19245) seal the building features investigated during the 1962 excavation.

It is apparent from a thin compact surface of silt clay (19244) that the building remained exposed for sometime following excavation and prior to backfilling. The underlying building features are in the majority of cases truncated by the 1960s investigation, an example is the east bench (F.3456) where a likely bucrania was removed from the east end associated with post (F.3456) against the east wall (F.4088). Animal burrows have further truncated

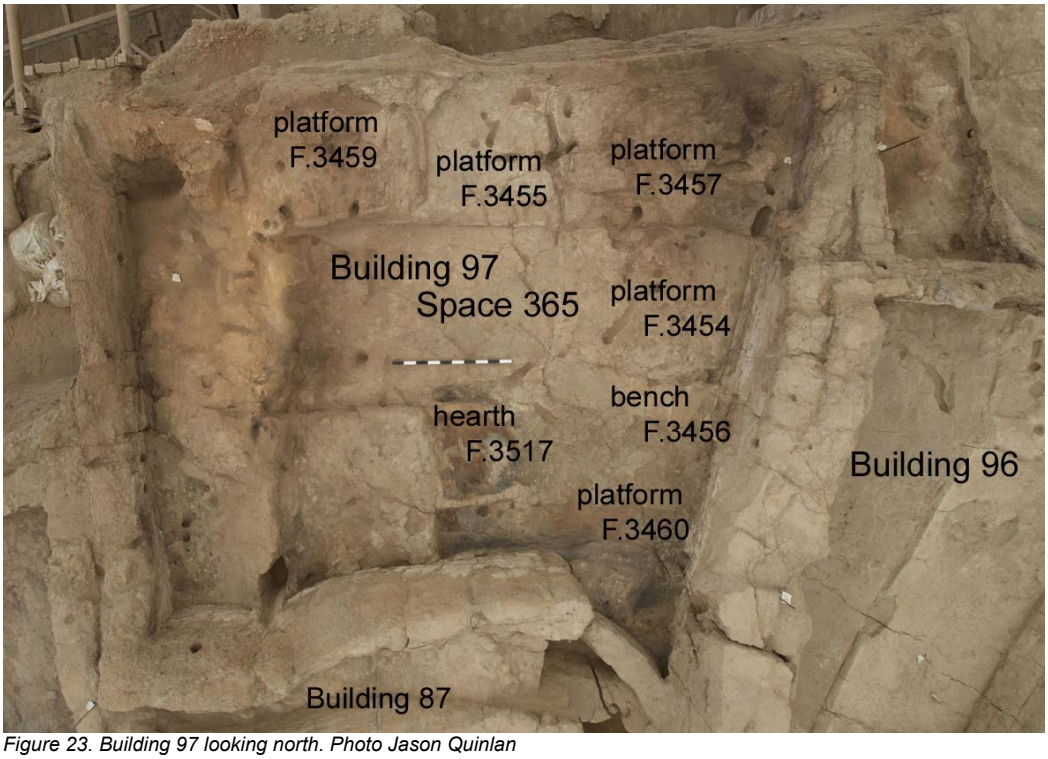


Figure 23. Building 97 looking north. Photo Jason Quinlan

platforms, particularly those located within the north of the building. The central north platform (F.3455) has, due to both animal burrowing and excavation in 1962 been largely removed; this is evident from its southern edge, which has been removed leaving it level with the floor space (F.3518). No in-situ finds were excavated as a result of the earlier excavation.

In-situ deposits
The upper fill within the west of the building (19228) and (19229) consists of burnt collapse with plaster and brick fragments. Within the base of the burnt collapse (19229) there were two clusters/scatters of charred grain (19238) and (19242) - see Archaeobotany this report. The charred grain spread with phytolith inclusions suggests that it fell from a height, and may have been contained within a basket. The charring of the grain suggests that the burnt collapse ((19228) and (19229)) was slow burning when deposited. The possible basket of grain is likely to have been suspended from the ceiling, or perhaps stored upon a loft or shelving space.

Closely associated with the grain was a cluster consisting of two obsidian points (19241).

The underlying deposit (19243) represents the deliberate abandonment/closure of the building, included within the backfill along the edge of the western wall (F.4086) was a cluster of cattle bone. The deposit remains unexcavated.

Burials
Within the odd shaped southeast corner of B.97 three sequences of room fill containing plaster and brick fragments ((19222), (19226) and (19263)) were identified not having been fully excavated during the 60's investigation. During the 2009 season a disarticulated human skull (19235) within deposit (19226) was identified but not released for excavation and

remained in-situ until this year. The head was orientated to the south, facing west. The body is absent and likely to have been truncated during excavations in the 60s when the building was perhaps misunderstood as being rectangular. Embedded into the plaster face of the eastern wall (F.4088) and likely associated with the burial (19235) were a number of post-cranial fragments including one rib. The embedding of the bones into the wall plaster can be attributed to the gradual slumping inwards of the structure.

During the investigation of the skull and following the removal of the room fill (19222) it was discovered that the burial was associated with a second skeleton (19224), which is likely to be contemporary due to its close proximity (see Figure 53). The skeleton is of an adult, tightly flexed and resting on the left side with head to the southwest. Phytoliths were closely associated with the upper part of the skeleton as was red pigment that also appeared on the underside of the burial. Like the burial of (19222), the lower body of burial (19224) had been truncated during the 1960s excavation.

The burials were placed into a single shallow cut (19225) within deposit (19226); the fill (19225) consisted of dark brown/grey, silty clay with inclusions of plaster and cattle bone. Of interest is that the two burials were placed into the back fill of the building rather than within the eastern platforms of a room. Do the burials represent the death of previous owners to a house/building during abandonment? Or were they associated with an overlying building excavated in the 1960s?

Underlying the room fill (19226) is what appears to represent a period of midden fill (19263). The fine lenses that make up the midden deposit remain unexcavated. A question has arisen regarding the middens association with the south wall (F.4087) as it appears that the midden underlies it. This may be due to a possible retrieval pit made on abandonment of the building prior to the use of space as a midden, which subsequently filled the void in the wall.

Abandonment
The abandonment of Building 97 is difficult to assess due to the removal of sequences during the 1960s excavation. With the remaining evidence it could be suggested that the initial end of the building is defined by the accumulation of midden debris meaning that the building was abandoned and left open for midden deposit (19263) to accrue within the southeast corner, further evidence of a hiatus between end of use and infilling is indicated by the clay silt room fill (19243) within the western quarter of the building. This would be prior to a burning event concentrated within the north of the building, within the northwest and northeast corners. Evidence for the burning event comes from the collapse material (19228) and (19229) as well as from the burnt plaster along the western wall (F.4086). Though burnt fill had been removed within the northeast of the building; the northeast platform (F.3457) and the plaster face to the eastern wall (F.4088) had been subject to substantial burning. As evidence of fire is absent within the remainder of the building, it could be deduced that the fire was accidental, having spread from an adjoining building to the north.

Any later sequence of events regarding the abandonment/closure of the building is lost due to investigation carried out during the 1960s.

Space 369 – Agnieszka Bystron

Supervisor: Agnieszka Bystron *
Assistants: Numan Arslan (1), Mustafa Cessur (1), Mehmet Çırak (1), Ece Baş (2), Üğür Eyilik (2), Simge Gureş (2), Arzu Linga (2).

Çatalhöyük Research Project, (1) Selcuk University, (2) Trakkya University

Space 369 appears to be and external space located to the west of Building 87 and to the southwest of Building 97 (see Figure 10). The area was partly excavated in 2009 and was characterised by compact dumps, possible trodden surfaces, fire spots and possible retaining walls.

The space measures 4.81m (E-W) and 4.14m (N-S) and continues south beyond the limit of excavation, is bounded to the west and north by remnants of walls exposed in the 1960s F.4093 and F. 4094, and to the east by wall F.4085 (Figure 24).

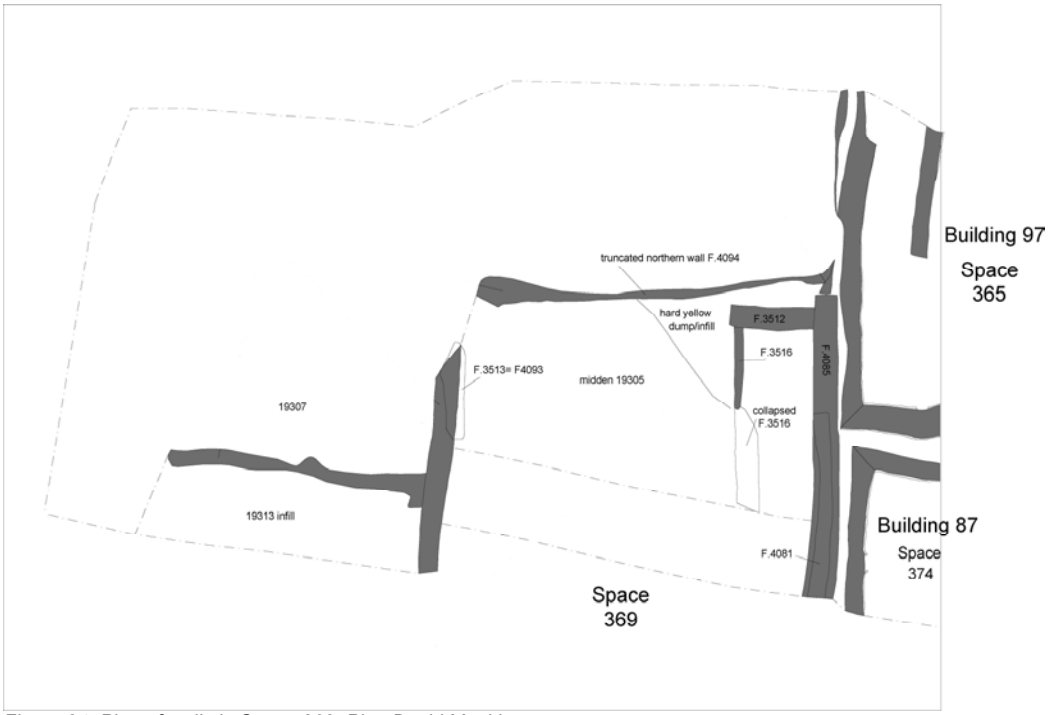


Figure 24. Plan of walls in Space 369. Plan David Mackie

A succession of laminated midden layers (19300),(19301),(19302), (19303) and (19304) sealed two walls F.3512 and F.3516 on the eastern side of the space (Figure 25). F.3512 abutts F.4085 at its northern end and runs west for 1.0m and has remnants of plaster (19322) on the internal side. This wall is abutted by a narrow (N-S) wall F.3516 which runs south to the limit of excavation, the last 1.3m appears to have collapsed in towards the east. Remnants of thin plaster (19320) adhere to the western side. It is not clear whether these walls form a revetment or are more structural and form a division within the space.

The removal of the midden layers allowed the remnants of the northern wall F.4094 to be removed, exposing another (E-W) wall beneath, heavily truncated by the limit of excavation in the 1960s. The fragment of western wall F.4093 was not removed and also sits on a (N-S) wall truncated at the northern end by the limit of excavation in the 1960s. At the southern end this wall is abutted by another fragmentary (E-W) wall that extends 3.75m west was revealed under the erosion layer (19313). To the north of this wall a spread of broken clay brick fragments was exposed (19307). To the south of the wall the infill (19313) was partly removed to define the wall.

Within Space 369 another laminated midden layer (19305) was exposed which appears to be contained within the area bounded by F.3512 and F.3516 on the east and by the partly truncated walls which follow the same alignment as F.4093 and F.4094 on the west and to the north. The midden layer appears to have an edge on the northwest corner of the space where an area of hard compact yellowish brown deposit may represent a dump or infill to the space below, which may have been cut/quarried and backfilled with midden material. Further excavation is required to clarify this.

Figure 25. Space 369. Photo Jason Quinlan

4040Area
Building 77, Spaces 336 & Sp.337 – Michael House

Supervisor: Michael House*
Assistants: Agnieszka Bystron*, Dorthe Nistad (1), Max Forrest Rose Figura (2), Sadie Weber (2), Sarah Grant (3),

*Çatalhöyük Research Project, (1) Independant, (2) Stanford University Field School, (3) McMasters University

Introduction
This structure was initially excavated in 2008 removing all of the structural collapse associated with the buildings termination by fire and the subsequent demolition infill. These deposits covered a mass of cultural material which was scattered across most of the exposed surfaces, which included distinct zoning or work areas based on the presence of complete tool kits; cereal parts - grain processing areas; prepared foods; as well as tool production and stone working. The unique survival of architectural elements (particularly within the building infill) afforded from this burning event has given us insight into construction techniques as well as a closer estimation of the original height (3.20m +) of the structure and raised more questions about the presence of a second story.

Past work - a description of the spaces as found in the 2008 season
The structure consists of two spaces (Figure 26), a storage area to the west Space 337, the smaller measuring 4.1m x 2.0m, and Space 336, the main living space to the east (4.4m x 4.4m).

Once the infill was removed a number of exciting features were revealed that were not destroyed by the fire, and some that had even been preserved during the fire. In Space 336 these included; a ladder scar on the southern wall (SE corner); two engaged plastered decorated pillars on the eastern wall, and what appears to be a burnt off plastered post which would have projected out horizontally over the NE platform. On the northern wall towards the NE corner was a small plastered rams head, which originally held protruding horns, below this is a small niche. Also, roughly central on the northern wall is a large alcove, and a second niche mirroring the first on the western side of the alcove. To the west of this was a large plaster covered feature built around three large structural timbers most likely with a wattle

frame. It incorporates a crawl hole to allow access from the north central platform and was most likely for storage although its true purpose is uncertain. The exterior was thickly plastered like the walls of the space and had some form of decorative moulding, perhaps a plastered niche.

In Space 336 six platforms and a bench were located against the four walls forming a central sunken floor area. The northeast platform F.6051 is particularly noteworthy for its two low pedestals with protruding cattle horn cores creating an enclosure around the platform.

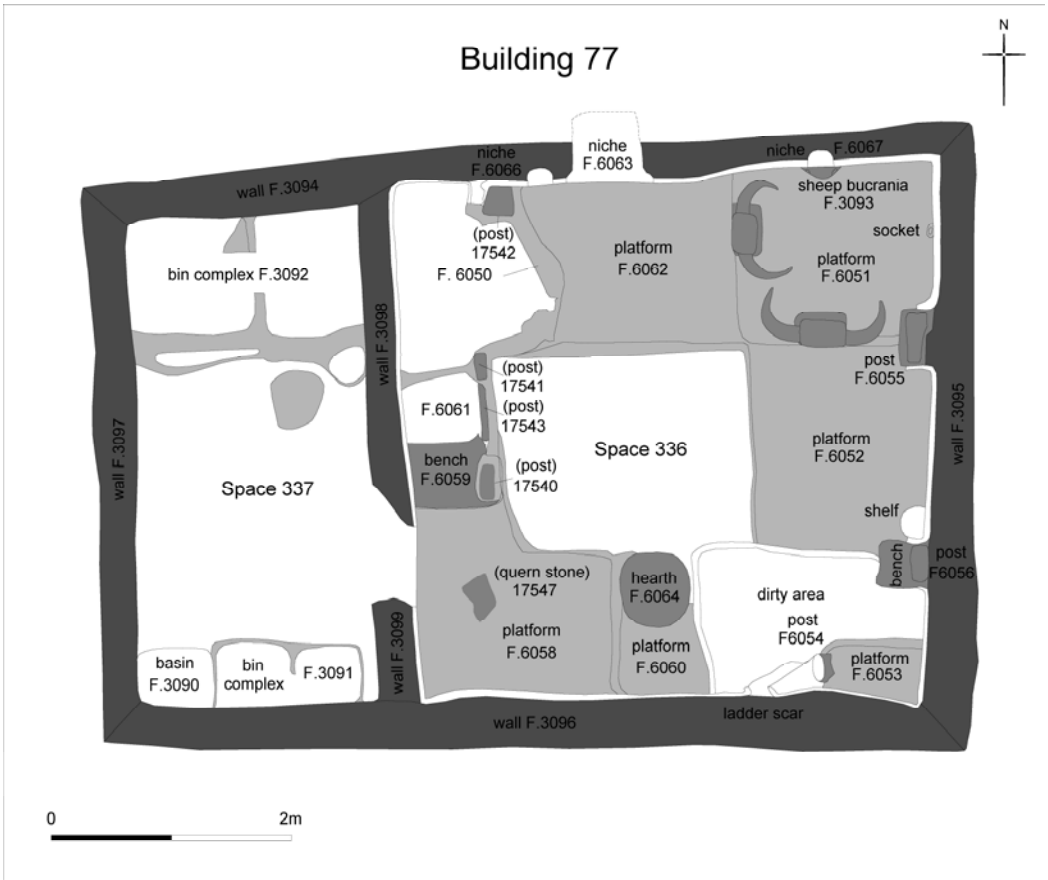


Figure 26: Plan and internal furnishing of Building 77. Plan David Mackie.

The floors/surfaces of Space 336 were covered in cultural debris possibly representing abandonment deposits within the abandonment phase, the objects either 'left' or abandoned during and or after the fire. These included a large quantity of burnt animal bone, cattle horn and red deer antler, several clusters of grind stone, a number of small polished stone axe heads, several tools and worked bone objects, and several phytolith impressions either from spiral matting or basketry. In the SE corner around the ladder was a deposit containing burnt seed grain and peas, which were most likely held within a container. From the scatter pattern it seems probable that many of the objects had either hung from the rafters of the roof or fell in from the roof during the early collapse by burning, possibly from a second story, some however appear to be in there original place or near to it (see 2008 Archive Report).

In the north of Space 337, the 'store room', were two large bins. They appear to have been cleaned of content and deliberately backfilled, although there could be variations of preservation throughout the building even within spaces, which could account for the lack of stored items. The floors to the south of the space revealed the outline of three basins against the southern wall where scatters of several clusters of ground stone including a possible 'tool kit' as well as several articulated eagle sized bird talons and two obsidian projectile points. Also covering the floor in front of the bins was a thin layer of charred seed grain with the

husks still attached, south of this was a concentration of chaff demonstrating dehusking was occurring within the storage room.

Excavations 2010
Building 77 was on display for two years under the North Shelter but has since much deteriorated (Figure 27). Excavation was therefore proposed to avoid further loss of information through collapse and erosion. This year's excavations focused on the NE platform, the north and eastern walls and the southern platform range in Sp.336 whilst Space 337 was excavated in its entirety.

Figure 27. Building 77 prior to excavations in 2010. Photo Jason Quinlan.

The northern and eastern walls revealed a sequence of wall paintings from simple red handprints to elaborate geometric designs in red and black. The lower portion of the north and east walls was painted as a solid red panel extending around onto the wattle structure in the NW corner. This red panel extended onto the NE platform enhancing it as a focal feature. The red panel covered an earlier incised (geometric) decorated panel on the northern wall (west of the central alcove)

The auroch horns within the pedestals on the NE platform were connected to the skullcap, one from a mature adult the second from a young adult. The skulls were fixed in position with two timber stakes either side and the skull was then encased in clay before being plastered and decorated.

Excavations to the south revealed a sequence of fire installations, both oven and hearth structures, forming a very complex stratigraphic sequence adding credence to the hypothesis that the dwellers at the time of the fire, were in the process of building a new oven on the location of the earlier ones.

Side Room Storage - Space 337
The storage room to the west had stratigraphic severance from the main space by a late Roman/Byzantine pit. This and the comparatively simple sequence meant the entire space could be excavated this season. The earliest features (unexcavated) below this space relate to an earlier structure Building 99, they consist of at least two grey mud brick walls, one to the north (19411) and one to the west (19415), both slightly stepped in from the walls of B.77 but following roughly the same floor plan. In the NW corner was a small room or space about the same size as the northwestern storage structures of B.77. This earlier form appears to have been constructed with mud brick (19412) however rather than the clay storage bins F.3092 of B.77. There may also be a dividing wall to the south but the very compact clay infill (19416) relating to the closure of the earlier building made it hard to distinguish. The closure infill of the space (19414), formed the construction horizon for B.77, and was cut by a small ovoid pit (19060) to the NE. The function of this pit was unclear at first it was thought to be a pre-construction or child burial based on the shape, however this was not the case, the fill (19057) was distinct from the surrounding material and contained very small quantities of animal bone, stone, obsidian and charcoal, essentially the usual background noise associated with

demolition infill. The pit was most likely associated with the construction phase of B.77 maybe as additional roof support.

Northern storage Bins F.3092

This pit was sealed below the construction of the large northern bins F.3092; the superstructure (19031) of the bins was created using a fine dark grey brown clay (burnt), the construction initially survived to a height of 0.85m and spanned the entire room at 2.02m in width divided down the middle forming two storage areas approximately 1m square. This height survival was remarkable considering the thickness of the bin walls was 60mm, but exposure over the last two years had seen much of the structure crumble and collapse in the face of the massive efforts of the conservation team. The internal faces of the eastern side of the bin were thickened with the addition of a second clay layer (19030) slightly different in colour from the initial construction. This second skin also created an internal space between the two walls in which was placed a large (worked) stone (19003), which was flattened on two sides and partially on a third. This stone was most likely reused but at the end of its life appears to have been utilized as a mechanism for regulating grain flow in the NE bin, and could be rolled up a gentle slope between the two skins of the bin structure, allowing the grain out (Figure 28)

Figure 28. Storage bins F.3092 as excavated 2008. Photo Jason Quinlan

The two bins were floored with a homogeneous, compact, grey brown clay c.30mm thick, containing fragments of stone and bone (17515) to the west and (17516) to the east. There was no evidence for resurfacing or the removal and re-establishing of the floors, making theses surfaces very long lived based on the plastering thickness in the main room.

Constructed and incorporated in the southeast corner of the bin front F.3092 was a small circular bin 0.3m in diameter initially believed to be a portal or way of accessing the grain inside the main large bin to the north, it was in-fact a separate entity accessed only from the main body of the room. The shape of the bin was formed at the same time and using the same materials as the superstructure of the large square bins F.3092. This small feature was later resurfaced/lined with two clay layers (19035) & (19034) both about 10mm thick with the former containing a small quantity of carbonized seed.

Basin group F.3091

To the south of the space along the entire length of the southern wall was a group of three horizontally truncated basins F.3091, the basin in the SW corner was originally interpreted as a hearth F.3090, this was just a case of differential burning in the corner. All three basins share the same core construction being built at the rooms inception along with the bins to the north, constructed directly above the infill of the earlier unexcavated structure below. The walls of the structure are built using shaped clay (19011), containing small quantities of burnt fragmented animal bone and charcoal flecks. The colour varies, based on the differential burning from the fire - mid grey brown to dark grey. The structure measures 2.03m (E-W) x 0.67m (N-S) and was divided into three individual units all roughly rectangular and 0.6m long. Above this crude core was the truncated remnant of a finer surface or core (19024) a mid to light brown clay. All three of the basins had been lined and then later relined, prior to abandonment after the fire. The original surfaces ((19012) – (19014) east to west) were all dark grey brown clays, containing small fragments of stone, bone and charcoal. Two ((19012) & (19014)) contained small quantities of obsidian and ceramic. The later resurfacing events

((17580), (19004) & (19005)) were undertaken with similar materials and contained a very similar assemblage of material culture.

Respecting the superstructures of both bins to the north and the basin group to the south of the room was the central floor surface (17514). This single compact clay surface was heavily burnt and varied in colour across its surface based on the intensity of the fire and the oxidization process. Once again this appeared to contain the usual assemblage of cultural material (background noise), including occasional small obsidian flakes, stone fragments and small-abraded animal bone fragments. A small block of this surface was left in situ in the vicinity of the crawl space to allow for any stratigraphic link.

This was the only floor within central space of the room. As is often found in buildings across the site, there is a marked difference between the multiple wall and floor plaster events in the main space when compared to the side room where there is little or no plaster on the walls or laid floors. There could be several reasons for this; the first being the lack of need to have a nicely presented space for simple storage; the space may have been completely striped out prior to the fire.

Larger Room – Space 336

The excavation in the main space was far from simple, the fragile nature of the surviving wall plaster combined with the many delicate wall paintings and incised decorative elements on the northern and eastern walls made purist stratigraphic excavation next to impossible. The focused areas of excavation within the space were on the northeast (F.6051) and eastern (F.6052) platforms and the southern platform F.6060 and hearth F.6064.

Northeast Platform F.6051

One of the earliest features removed were the horned pedestals on platform F.6051. These were removed slightly out of sequence due to their very fragile nature. This decision was made so as not to lose any of the construction information. The two pedestals were initially thought to be constructed using individual unattached horn cores set into a clay pillar, however excavation revealed a different story. Both sets of horn cores were attached to the auroch skullcaps, the skull cut from the upper neck to just above the eye sockets to fit the pedestal core (Figure 29). There was clear evidence that the horn sheaths were clearly attached originally.

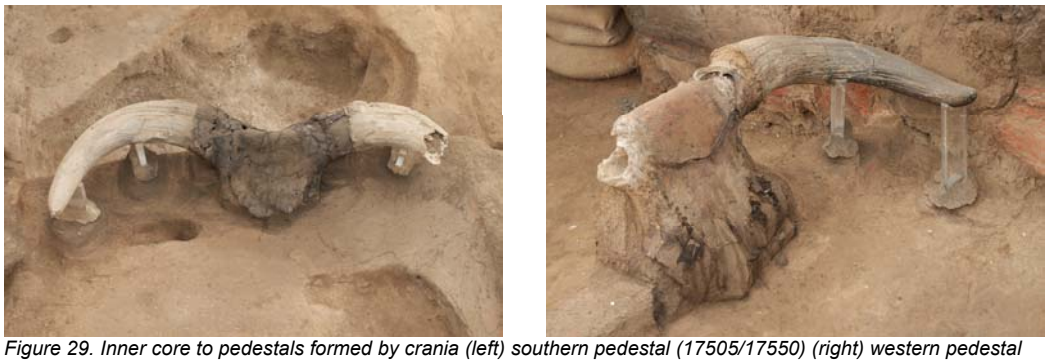


Figure 29. Inner core to pedestals formed by crania (left) southern pedestal (17505/17550) (right) western pedestal (17564/17565) Photo Jason Quinlan

The skull from the southern pedestal (17505/17550) appears to be from a mature auroch, the skull measuring 0.28m between the two horn cores (Martin 2010 Pers.com) the skull was supported or wedged between two thin timber posts (19092) & (19093) prior to the construction of the clay core, both timbers were completely carbonised. The posts were around 20mm in diameter and 0.2m in height (from the top of the platform). Both were slightly angled with the distance between them wider at the base than the top. The entire structure was then covered in a clay core (19094). The partially fired clay had a grain to it and was most likely applied in thick layers building up the core slowly but in a single event, with a final measurement of 0.4m (E-W) x 0.26m (N-S) x 0.24m high.

The construction technique employed for the second western pedestal was the same. The skull (17564/17565) was cut in the same way retaining the horns (sheath & core), but was from a younger auroch (young adult). The timber supports were slightly thinner with a diameter of 15mm but were angled in the same way, like the southern pedestal they continue down into the platform and were not fully excavated so the total length is not known. The pedestal was then built up with a clay core (19095), in a rectangular form 0.4m x 0.22m x 0.29m, the low lying curb around the out side of the platform on the southern and western edges appears to be contemporary with the core construction, both were constructed on an earlier (unexcavated) platform surface and appear to represent a period of major elaboration.

The pedestals and platform were then coated with (19010) a thin layer of grey/white plaster before being painted with 2-3 fine layers of red pigment paint possibly in a single event. This red panel covering the platform continues on to the northern (F.3094) and eastern (F.3095) walls as a solid red panel extending as high as 0.17m up the wall (Figure 30). The eastern wall appears to have been divided in three sections with the use of a raised central panel, the red stopping at the base of this decorative element. A lower panel or recess is also present on the northern wall, however this recess appears to have become an issue for the occupants who filled/levelled it with a bone rich mud mortar (19028) and a small grey brown mud brick (19026), placed on its end, not on its bed, to fill the gap (partially excavated). The platform F.6051 was then sealed below several layers of mid brown sandy clay plaster 10-30mm thick (17561), which extended very slightly to the west onto platform F.6062.

Figure 30. Red panel traced on the outer platform and pedestal faces and around the walls. Photo Jason Quinlan

The surface of the platform was truncated in the NE corner by a small oval scoop (19016) 0.28m x 0.2m x 0.15m, filled by (19015), which contained a few bone fragments and a small piece of low fired clay (pottery?). The function of the scoop is unclear, it may be that anything contained within was removed after the fire prior to the demolition and backfilling, or before the fire.

The northern and eastern walls were finally coated with up to 20mm of very compact (partially fired) mid grey plaster (19006), which would have originally been fine white marl prior to the fire. This wall plaster represents some 55-80 plaster laminated renders, many of which were most likely applied in relatively quick succession i.e. several coats to achieve the desired finish.

Wall paintings - north wall F.3094

Many of these remain partially excavated and out of phase with each other, due mainly to poor survival. Many of the linking relationships were difficult to prove and as such many of these wall paintings at present remain stratigraphically isolated.

In the northeast corner on the northern and eastern walls above the pedestal platform were a sequence of wall paintings. The earliest exposed painting (19078) on the top of northern wall was of two red handprints with a circle at the centre of the palm of each (Figure 31 & see Figure 7), unlike many of the painted hands on the site the realistic form of these have lead many to view them as hand impressions which may have been finished with a brush. The hands were on their sides with the fingers extending to the east.

Figure 31. Hand prints on north wall Building 77.

Sealing this was (19085) a series of between 10-15 fine laminated layers of white & grey plaster restricted to the upper part of the wall, degraded and fire damaged at the base below the rams head F.3093. Painted on the upper layer below the rams head and around the niche F.6067 was a red frame or boarder rectangular in shape (Figure 32). The inside of the niche was lined with white plaster. In line with the red border at the very bottom was a red line of paint extending to the east visible as minute traces of linear paint. It is likely this phase of painting is contemporary with (19010) the red panel at the base of the wall, however this is stratigraphically difficult to prove due to the poor survival of the plaster below the level of the rams head.

Above this was (19406) which included several plain white plastered layers 5mm in thickness with an upper layer of solid red in an oval shape around and at least partially covering the ram head 0.27m x 0.2m. This was covered with unit (19077) consisting of between 40-70 finely laminated layers of white and grey plaster. This was then covered with another thick laminated plaster unit (19006).

Figure 32. Red boarder framing niche F.6067. Photo Jason Quinlan

East wall F.3095

The wall plaster on the eastern wall was divided into three sections by the two post emplacements, each section providing individual stratigraphic threads.

The earliest painting on the eastern wall in the NE corner of the space was positioned between the northern wall and post F.6055 to the south. The painting (19051) covered most of the area and appears that the painting had been destroyed (in antiquity) or was not present on the upper and lower panels. The painting consists of alternating black and red geometric designs (Figure 33). The red paint was well preserved where as the black was highly fragmented, mainly only visible as a light grey negative impression.

The painted panel was sealed by unit (19050) consisting of c.10-15 layers of white/grey plaster (fire affected), the upper layer had a clear red line across, this maybe equated with the layer (19406) on the northern wall, which also has a partial fragmented red line. This was finally capped with unit (19006), which covered the northern wall and eastern wall north of post F.6055.

In the central area between the two post on the eastern wall a large amount of the plaster had fallen away from the wall leaving the brick work exposed. This essentially removed the chance of creating any stratigraphic link between the wall paintings, which only survived on the uppermost portion of the extant plaster and the small amount of plaster that survived at the base that linked the platform sequence and the burials (see below).

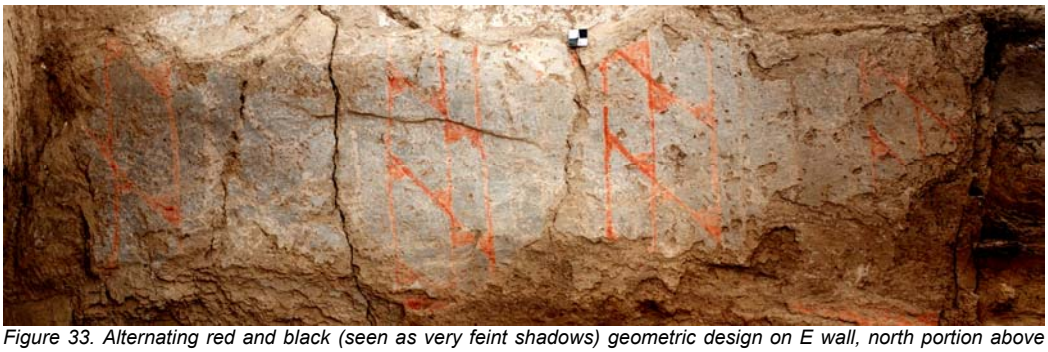


Figure 33. Alternating red and black (seen as very feint shadows) geometric design on E wall, north portion above NE platform. Photo Jason Quinlan.

The earlier of the two paintings on this central portion of the eastern wall was (19018) another red hand design although this one was highly fragmented when compared to the one on the northern wall (19078). The painting consisted of a one near complete upright hand print (unlike those on the north wall which were on their side) (Figure 34), and another with just two fingers surviving just above. A third partial print was on the south facing side of post pillar F.6055.

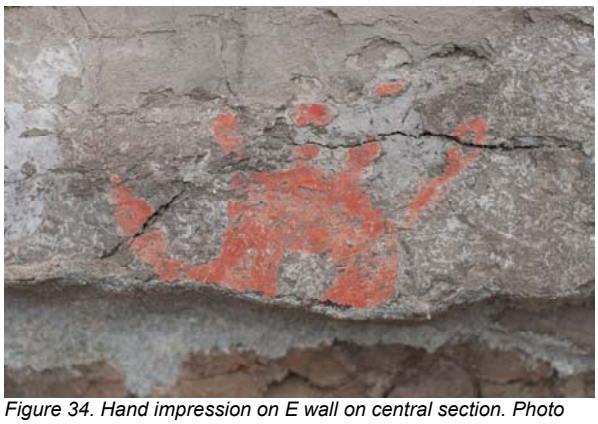


Figure 34. Hand impression on E wall on central section. Photo Jason Quinlan.

Above this was a geometric design, similar to (19051) to the north of the post. This design was mainly red painted on the upper most layer of 6-7 layers of clean white plaster (now grey from fire damage), the design consisted of linked parallel lines extending up the wall and a possible circular design. The painting was in very poor condition with only an area of 0.4m x 0.37m surviving. This was capped by layer (19055) of clean plasters (no paintings) up to 20mm thick, this is equivalent to (17571) & (19006)

Eastern Platform F.6052 & Burials F.3600 & F.3601

The earliest exposed but unexcavated surface (19433) on the eastern platform is stratigraphically sealed by flooring to the SE and to the west and in turn appears to be sealing one or more possible burial cuts defined as slumped areas on the platforms surface. This surface was truncated at the north end of the platform by the cut (19009) for a primary burial, one of a small sequence of inhumations. This large teardrop shaped cut respected the edge of the NE platform F.6051, and appears to have removed all traces of an earlier burial, which was only represented by the re-deposited skull fragments of an infant (Sk.19048), placed at the feet of the primary burial. The primary burial was itself heavily disturbed by a later burial and only the skull (east) and feet (west) of an adult remained in-situ (Sk.19038).

Figure 35. Burial F.3601 skeleton.(19022) under excavation. Photo Jason Quinlan

The rest of the individual is either missing or re-deposited within the later burial as

(Sk.19053). The individual had been place on its right side most likely in a flexed position. The burial was then backfilled with (19044); a light grey brown, silty clay containing occasional obsidian flakes, plaster floor chunks and charcoal.

This was burial was truncated by the latest burial in the building F.3601 (Figure 35) represented by (19023) in an oval cut for the burial of an early adolescent or late child (Sk.19022). Positioned on its left side in a flexed position, head to the west, and facing the elaborate NE platform, the bones were baked black by the heat from the fire and the carbonized brains were preserved within the skull cavity. Also placed carefully in the grave to the north of the primary was the remains (Sk.19053), mainly the long bones from the disturbed interment in the burial below (F.3600) as well as a juvenile skull (Sk.19039). The burial was backfilled with (19021) which contained small fragments of disturbed human remains, small flecks of calcium carbonate, and hard lumps of clay.

The burials were sealed by (19007) a thick (20-40mm) resurfacing layer, comprised of layers of grey greasy flooring and burnt oxidized red make up layers (three in total) covering the entire upper surface of the platform. The surface was relatively uneven due to subsidence relating to the burials below.

Incised panel & 'Wattle' room F.6050

Figure 36. Incised lower panel (19049) of geometric design, western side of niche F.6063 on the N wall. Photo Jason Quinlan.

To the west of the alcove on the lower half of the extent northern wall was a fantastic incised panel (Figure 36), which predated the NW 'wattle' room F.6050. The decorated panel (19049) was divided into three or four panels, two of the panels were square and comprised of geometric star or flag like cross patterns with some coiled organic elements in the corners, with a central rectangular panel with a zigzag design, a fourth panel to the west was heavily damaged but appears to have been of a similar design to the aforementioned panel. The incised panel had traces of red paint on its surface. There was faint trace that this incised panel existed to the east of the alcove too but which did not survive.

Constructed directly against this was the clay core (19080) of the structure or small room F6050 in the NE corner. The removal of this structure revealed scars on the floor, which indicate this the superstructure replaced some earlier form of division in the NW corner of Sp.336. The superstructure core was plastered both inside and out with fine white marl, this would appear to place some significant meaning on the interior function, rather than that of simple storage.

The interior plaster (19081) was 25mm of laminated plaster and almost as thick as the plastering of the exterior. Many of these layers could probably have been grouped and were most likely from successive re-plastering events. All were restricted to the feature and did not

extend onto the floors or walls. The feature was heavily fired making separation of the individual plaster layers next to impossible. It was noted that one of the layers 20mm from the surface was painted as a solid red panel. The exterior plaster (19079) consisted of 10-30mm of laminated plaster layers, and like the interior had a red painted panel about 20mm from the upper surface.
Sealing the exterior plaster (19079) of the NW structure F.6050 was a solid red decorative panel which continued onto the northern wall, west of the large alcove or recess (17560), also covering the incised decoration on the north wall at a height ranging between 0.21m – 0.28m. This red panel can probably be broadly equated with (19010) to the east, however the physical separation from each other by the alcove and the larger number of layers (eight in total) has meant a separate unit number has been allocated (19037).

The Southern Oven and Hearth sequence
There was no evidence of a last oven in this building but a hearth F6064 cut the northern end of the south central platform F.6060. A scar on the southern wall appeared to indicate the location of an earlier oven and a pile of stones (17510) on the platform at abandonment lead many to speculate that the occupants may have been in the process of rebuilding the oven. Excavations soon revealed this was the case and that an oven was not only present in the area but had been replaced at least five times, and operated at some points with a sequence of bins or basins to its west. Many of the ovens were highly fragmented, levelled and in some cases cut into later ovens and features (Figure 37).

Figure 37. Oven/hearth zone of Building 77 centrally located against the S wall. Photo Jason Quinlan.

Most of the earliest ovens in the sequence remain unexcavated to date and therefore some of the stratigraphic relationships are speculative for now.
Oven F.3609 was constructed using a solid clay core or wall unit (19422) to the east and possibly unit (19426) to the west, with differential colouring based on oxidization. It had a mid greyish brown interior with a light orangish brown exterior. The structure was set into the southern wall within an arched cut as were most of the proceeding ovens. This portion remained unexcavated so as not to undermine the southern wall, and in turn provided a great section through all of the oven walls and surfaces, it measure 0.9m (E-W) x 0.4m (N-S) (not fully excavated). The structure would have had rounded or curved sides and slightly tapered towards a blunt front. Above what remained of the oven walls were two small patches of truncated surface, (19424) the interior was a well fired mid to light greyish brown. The second (19425) covered what would have been the entrance to the oven and a small area immediately in front of the structure. The early interior surface was later replaced with (19091) forming a thick levelling layer 30-50mm thick of grey clay with frequent organic grass temper and caped with (19088) a fine light brown, clay silt surface. Both extended beyond the imposed limit of excavation (L.O.E.) beneath the south wall.

To the east of the oven are as yet unexcavated floors (19423). These greasy dirty floors in the SE corner also cover the SE ladder platform F.6053, and were cut by three post or stake holes, one just to the north of platform (19404), the other two (19099) & (19041) were located just to the east of the oven. It is unclear what function they served but the proximity to the oven may mean they were in some way connected. They may have functioned with the later oven F.3607 also. The fill of (19099) was black and ashy, the fills of the other two were unremarkable.

Cutting the floors on the SE ladder platform was a later repair (19409) (0.4m x 0.3m x 0.29m) to the ladder with replacement timber (17539), most likely deciduous oak. The timber was angled within the cut sloping west (top) to east (base) the timber extended slightly above the platform surface where it had broken off or completely burnt away. The surviving timber appears to have been a box half-structure from an oak branch. This and the earlier as yet unexcavated ladder timber (19027), to the south against the southern wall were then plastered up to with floor/surface (17573) 35mm of floor and make up (two of each) covering just the SE platform F.6053 which measured 0.6m x 0.5m. This also sealed a layer of red wall plaster (4 layers in total) on the southern portion of the eastern wall F.3095.

The platform floors (17573) were sealed below a floor sequence in the SE corner (17572), and patchy surface (19041), which effectively links the ladder sequence back into the later oven sequence F.3603. Also above (17573) on the platform itself was the plaster and clay core relating to the later phase of ladder build. This unfortunately collapsed at the beginning of the season but it had been fully recorded last season and the stratigraphic relationship was clear. In addition we cold look at the construction techniques in the collapse and the small amount that remained in-situ. The structure stood to a height of 1.4m and extended 0.3m from the southern wall. It partially covered the platform but most of the structure stood on the surface west of the platform. The fine laminations of plaster (19000) were well cemented, roughly 36 in total with some fractures seeming to imply that there were 5 distinct multi layered grouping events in the plastering of the ladder structure. Due to the termination by fire the colours ranged from and orangish brown on the outer layers to a white & black. It was angled between 65 and 70 degrees (1:3 or 1:4 slope)and the layers were applied to a clay core (19001).

This oven appears to have superseded directly by oven F.3607; of similar design and size this later structure was heavily truncated leaving only the slightly curved eastern wall (19420) extent, once again the coloration was varied inside and out based on oxidization of the fine clay superstructure. The oven interior was levelled with (19084), 30mm of loose clay bedding, preparation for a now fragmented but solid well fired plant tempered surface (19083), the oven was resurfaced later with another plant tempered surface (19082) before going out of use. The post/stake holes were later sealed by a dark brown clay surface (19090), which covered the entire sunken SE area but not the ladder platform, it also respected the oven.

Due to the limited survival of some of these oven features and the later truncations made to the west during the construction of some sunken basins, the stratigraphic sequence for the placement of the oven F.3608 becomes some what problematic. The construction of this oven saw a move to the west unlike the others in the sequence that directly superseded each other. It would appear that this structure came after the instillation of the first oven F.3609 and before that of oven F.3606, constructed somewhere either side of oven F.3607, the section appears to place it between F.3609 & F.3607 however the reuse of certain elements from earlier structures in the construction of later ones makes this placement far from secure.

Only the western portion of the oven survives extending 0.62m from the southern wall. It was constructed on three, as of yet unexcavated, patches of floor surface (19421), (19428) & (19427). The oven wall (19421) was built with a mid reddish brown course clay 0.13m thick surviving to a height of only 60mm, and was full of plant voids unlike the other oven superstructures in the sequence that were constructed using a fine clay, with no inclusions. The oven F.3608 also appears to have been quite long lived, with four resurfacing events (19098), (19419), (19418) & (19417). The surfaces were all plant tempered and well fired, all heavily truncated to the north and the east by later installations (ovens and basins). When the

oven went out of use it was levelled to the height of the SW platform F.6058, backfilled and the whole platform was resurfaced with (19059), covering any traces of the oven.

The next sequence saw a cut being made just to the north of the oven F.3607; this sub square truncation (19089) and the associated structural work and surfaces may well represent an overhaul rather than complete replacement of the oven. However due to limited survival of the associated deposits this has been allocated a separate number oven/heath F.3606. The cut was filled with (19087) a light orangish brown to mid reddish brown clay,. once again plant tempered. This extended 0.9m from the front of the oven and measured 0.7m in width x 50mm thick. The function of this was probably as a repair to the platform surface in the area immediately in front of the oven. The oven saw three phases of levelling and resurfacing (19075), (19074) & (19072), each baked hard with plant inclusions and measuring between 20-30mm in thickness.

To the west of the oven was constructed a sunken long basin F.3605 running the entire length of the oven 1.0m x 0.3m and like the oven was set back into the southern wall. The basin used the west side of the oven wall as its eastern limit and cut the platform surface (19059) to the east. It was clay lined twice with (19405) and (19073). The basin continued in use and was modified during the next phase of oven construction F.3603.

To the east of the oven structure F.3606 was a small vestige of an eroded floor (19086), which was cut by (19065), post-like hole 0.12m in diameter x 0.17m deep. The fill was particularly note worthy, consisting of a very soft/loose ash and charcoal, containing moderate quantities of burnt human bone; the material almost looked cremation like.

This possible posthole/small cremation pit and the oven were sealed by superstructure of the final phase of oven build (F.3603), in the building. This was the most complete oven structure of the sequence, it had a robust core (19070) measuring 0.7m (1.3m including the integral platform to the north) x 0.92m x 0.16m high. Like its predecessors it was set back into the southern wall slightly, had curving sides, tapering slightly at the access point, the superstructure like the oven below included a small platform in front of it. The oven was lined with a fine clay 0.65m x 0.62m on a bedding layer of plant-tempered make up or insulation (19068). Both lining and superstructure had occasional obsidian flakes present in the construction.

As stated above, the basin F.3605 continued in use for a period of time in conjunction with this late phase oven before it was shortened in length. Just over half of the basin was infilled at the northern end with a firm light grey brown ashy material (19062). At the southern end the newly formed space was relined with (19069) forming a new smaller sunken basin F.3602 measuring 0.57m x 0.35m x 80mm to the west of the oven. The in-fill at the north end was then cut by a single very shallow (truncated) stake hole 0.12m in diameter (19067), the fill (19066) was ashy reflecting the material the stake cut into and contained a single animal bone.

The basin modification continued with a new basin being cut (19058) to the north of basin F.3602. This latest feature in the basin sequence F.3604 once again used the western wall of the oven as its eastern limit, extending to the west and truncating the platform and the earlier long basin below. The basin was an irregular sub squared shape 0.72m x 0.74m, and was lined twice with (19054) dark grey clay & (19052) a mid grey fine ashy clay, both were very friable unlike the other basin linings, this may be related to a change in function with the basin being used as a hearth next to the oven before being abandoned and backfilled with a burnt clay (19043). This material also contained small charcoal pieces, occasional obsidian flakes, and some of the burnt lining. The basin was effectively levelled to the height of the SW platform, and the platform was resurfaced (17556), leaving only basin F.3602 and oven F.3603 present.

The final sequence saw the abandonment and levelling of the oven F3603 with compacted clay, most likely some of the demolished oven (19042). This was then cut at the northern end by (19046), a sub square preparatory cut for a 0.62m x 0.58m hearth F.6064. The backfilled oven was then surfaced (19033) forming a new south central platform F.6060 covering any

trace of the oven sequence below. This platform was resurfaced once with unit (19017/17558) before the building went out of use. The hearth was then clay lined (19045) to a thickness of up to 50mm. The hearth underwent a series of minor alterations and repairs (19040), (19025), (19019) & (17557), prior to the fire and subsequent closure of B.77.

Conclusion/Summary
Due to the complexity and fragile nature of the wall paintings the main room (sp.336) was not completed this season remaining a work in progress. The side storage room (Sp.337) was excavated in it's entirety onto the infill and walls of the building below, which appears to be the same or similar in plan to both B77 and the partial highly truncated structure that superseded it B.12, demonstrating continued use and occupation most likely by the same family group.

Space 60 – Lisa Yeomans

Supervisor: Lisa Yeomans*
Önur Yüksel (1), Ramazan Kaya (1), Ayşegul Tabakoğlu (1),

*Çatalhöyük Research Project, (1) Selcuk University.

Introduction
Limited excavation took place in Sp.60 (Figure 38) to clarify the building sequence. From the 2008 excavation in this space, we already knew that B.64 was later than B.59 but we wanted to see if B.59 was also earlier than the building below B.64. This would highlight the problem of using levels of buildings for phasing without excavating their construction sequence.

Excavated sequence
The lowest excavated deposit in Sp.60 was the fill (12909) of a large levelling cut (19211). The levelling cut extended across the area where Sp.138 (Pre B.64) and B.59 meet and was probably with the intention of reducing the build-up of external deposits that surrounded the buildings. The cut was infilled with an orange clay deposit. To the north, another dump layer (19210) was the earliest stratigraphic unit excavated. This was atypical of the midden units in Sp.60 comprising of clay from walls and moderate bone fragments and lower quantities of other finds. A large fire-spot (19208) sealed this layer. All the bone from the fire-spot was carbonised from the insitu burning activity but, as with many of the fire-spots, no ash from the burning remained.

Both units (19208) and (19209) were horizontally truncated by a large levelling cut (19207). After this the area gradually built up again with dump deposit (19206) which itself was cut by pit (19204) on the west side and sealed by dump layer (19205) on the east side. The latest stratigraphic unit excavated in 2010 was dump later (19201) sealing the fill of the pit and layer (19205) and was below a deposit excavated in 2008 (17714).

Figure 38. Overview of Space 60 excavations 2010. Photo Lisa Yeomans.

Summary
After the removal of a series of dump layers, pits and a fire-spot, the deposits were reduced in level enough to see in elevation the external faces of the walls and this clearly showed that the building below B.64 (Sp.138) was built on a layer abutting the outside of the external wall of B.59.This proves that both Sp.138 (Pre-B.64) and B.64 were later than B.59 and it therefore highlights the problem of using abutting buildings in the phasing as a sequence of

two buildings abutted the wall of B.59. The excavated sequence, in summary, is a continuation of the Sp.60 sequence excavated in 2008 and represents activities in the external areas, built-up of dump layers and management of the external spaces by levelling cuts.

WEST MOUND

West Mound Excavations, Trench 5 – Peter F. Biehl, Jana Rogasch & Eva Rosenstock

Team Leaders: Peter Biehl (1), Eva Rosenstock (2)
Team: Jennifer Byrnes (1), Xose Hermoso-Buxan (3), Bela Dimova (3), Laura Harrison (1), Eva Maria Mihan (2), Jana Rogasch (2), Sophie Schmidt (2), Patrick Willett (1).

(1) SUNY Buffalo, (2) Free Berlin University, (3) University of Cambridge.

Overview

During a four-week field season, excavations in Trench 5 continued with a team of ten and two workmen. The main objective of the 2010 season was to obtain complete outlines of buildings, parts of which had been excavated during the last years. In order for this to be achieved, excavations focussed on the central and eastern part of the trench, while the western part (Sp.343, Sp.342) was not excavated (Biehl- Rosenstock 2009a). Trench 5 was extended to the east by 2m, where the eastern part of B.98 and three other spaces were newly discovered (Sp.446, Sp.447, Sp.448), and to the south as well, to locate the southern parts of the building related to Sp.310/453 (Figure 39). In the extensions, several post-Chalcolithic features, including three poorly preserved burials, probably from the Late Roman/Early Byzantine period (F.3316, F.3317, F.3318) were excavated and documented. In addition, the upper layers of the extension south of Sp.310/453 and Sp.345 contained several pits (Unit (15161) and F.3331) of unknown date, Late Roman/Early Byzantine or later, which destroyed parts of the walls and buttresses F.3301, F.3302, F.2427, F.5068, F.5076 and most of the original room fill of Sp.454 (F.3316, F.3317, F.3318, F.3331 see Byrnes in the Human Remains Archive Report). The preliminary results of the 2010 season provide further insights into the architecture and use life of Early Chalcolithic buildings and first indications of their spatial organisation within a neighbourhood.

The Early Chalcolithic Architecture

Trench 5, at the eastern edge of the West Mound, shows several mudbrick buildings very close to each other, separated by gaps of 5-10cm between adjacent outer walls. The large internal buttresses of these buildings might have carried a second storey; so far, however, there is no clear evidence of this. The buildings have different sizes: B.98 and the adjacent building (Sp.343) are rather larger, while possible buildings to the south (Sp.447, Sp.342, Sp.345, Sp.310/453/454) are smaller. To the north of B.98 and Sp.343, the south walls (F.2429, F.3337) of at least one more building are already visible.

The eastern extension of the trench allowed for the identification of a large building, which was named B.98 (Figure. 40). Its western part (Sp.340, Sp.341) was already defined in 2008 (Biehl – Rosenstock 2008), while the other parts (Sp.449, 450 and 452) have now been identified after removing two post-Chalcolithic graves (F.3316, F.3317). The part preserved seems to be the basement of the building, measuring 6m x 6m with four large internal buttresses limiting the usable space. The passageways between the five cell-like spaces formed by these buttresses could only have been traversed by one person at a time and would not have allowed for the movement of larger objects. The walls and buttresses of B.98 are preserved up to 1m high at least. As the floor was not reached in the 2010 season, it will be among the main objectives to continue its excavation next season in order to completely understand the building history and identify the original outlines of the building. F.3320, F.3321 and F.3335 are currently interpreted as representing a rebuilding event of B.98, opening it towards the northeast to include Sp.446 into the building complex. These structures

F.3321 and F.3335 are currently interpreted as representing a rebuilding event of B.98, opening it towards the northeast to include Sp.446 into the building complex. These structures might have truncated the eastern part of wall F.2428, which may have originally formed a corner with wall F.3324. This hypothesis, can only be verified when we excavate the eastern part of F.2428 below F.3320, F.3321 and F.3335 – or prove that the base of these features lies higher than those of the other structures of B.98. However, the fact that several successive plaster floors excavated in Sp.446 (15170, 15190, 15341) are much higher up than the not yet reached floor level in B.98 supports the interpretation of this space as a later addition.

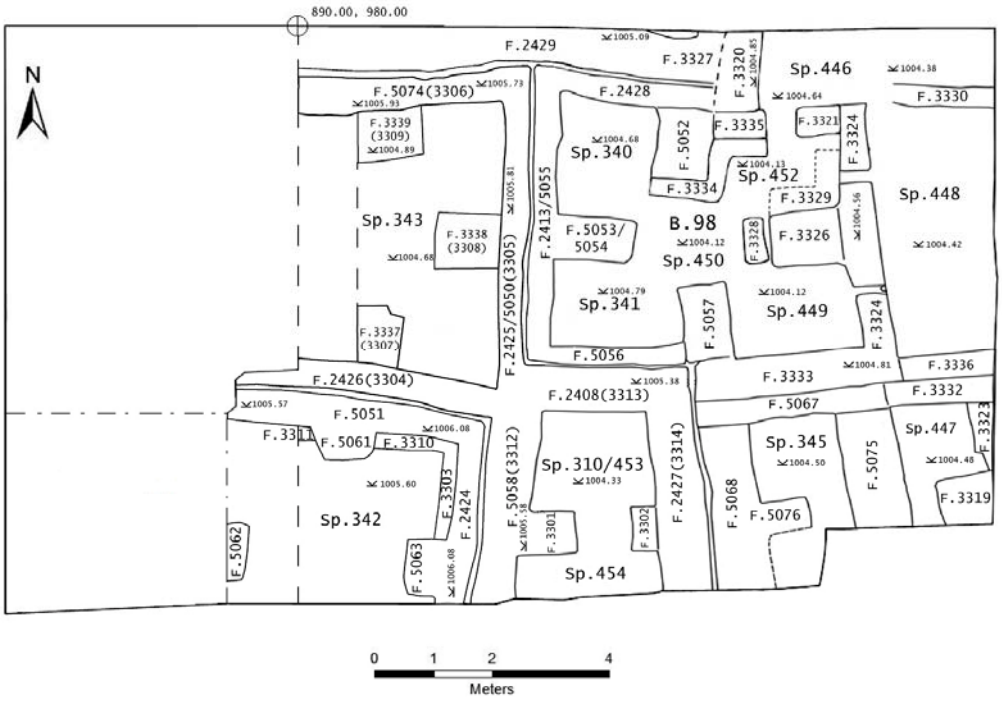


Figure 39. Plan of Trench 5. Plan Tr.5 Team.

The floors in Sp.446 are made up of yellowish-white ((15170), (15190)) and orange plaster (15341). Units (15170) and (15190) were located in the western half of the room and could not be traced in the eastern half. They are separated only by a 1cm thick layer of fill (15190), which might represent a preparation for the application of the upper floor (15170). Units ((15170), (15190), (15191)) were sectioned in order to verify this hypothesis. The thick, firm, orange floor Unit (15341) was detected in the eastern part of the space. The floor does not continue until wall F.3330, it may have been destroyed in the southern part. As it is sloping considerably towards the west, its western part could not entirely be exposed in 2010. A layer of fill approximately 20cm in thickness separates floors (15190) and (15341) in the western part of the room, (15341) and can therefore be interpreted as considerably younger than (15190) and (15170).

While the relation of F.3320, F.3321 and F.3335 to B.98 still has to be investigated, the identification of three bench-like features (F.3328, F.3329, F.3334) as younger additions to B.98 is secure as all of them sit on debris within Sp.450 and Sp.452. These features, of which F.3329 was badly destroyed by animal holes and thus not easily identifiable, were built on roughly the same height, each consisting of two rows of mud brick on top of each other and built in front of buttresses and walls which could thus be used as back supports. As the bases of these features are higher up than those of F.3320, F.3321 and F.3335 and bench F.3334 was built abutting F.3335, the benches must have been built later. Consequently, we can identify at least two separate rebuilding/restructuring events of B.98, separated by the time span necessary to accumulate the debris under F.3334, 3328 and 3329.

Figure 40. Building 98. Photo Jason Quilan

The east wall of B.98 (F.3324) showed two features that have not been observed in any other wall so far, two gaps (15336, 15337) of 10-15cm in width. Outlines of gap Unit (15336) could not be securely defined in 2010 due to animal disturbances in this part. Unit (15337) is a slot within the wall, having a rounded base, a width of 10cm and a preserved height of 12cm, while its upper part was not preserved. A possible interpretation of Units (15336) and (15337) as window-like features, allowing for the circulation of air and to provide light in B.98 leads to the assumption of the adjacent Space 448 being an open area. Furthermore, this space is rather large without any internal features such as buttresses and contains a fill (15184, 15178) remarkably void of the artefacts and building debris that were encountered in all the other spaces excavated. Also, if Space 448 would represent a building, it would assumedly have its own western wall running parallel to wall F.3324, as all buildings excavated in Trench 5 so far did not share walls. The northern limit of Space 448 is unclear, as the stratigraphic position of wall F.3330 in relation to B.98 could not yet be determined; its eastern part is outside the trench borders. Whether or not Space 448 represents an unroofed and open area, and what the purpose of this area might have been could be clarified by defining its full extent and further excavating its fill.

South of B.98 and the possible open area Sp.448, part of another building was excavated (Sp.447). The walls and buttress forming this space (F.3319, F.3323, F.3332, F.5075) are preserved only up to 0.45m high. A remarkable feature in Sp.447 is the first plaster floor (15167) excavated within a building in Trench 5 that can be related to the surrounding walls, as the plaster of the floor and that of the walls and buttress are connected and probably represent one single plastering event (Figure 41). Floor (15167) indicates that we can expect plaster floors also in the other buildings.

Phasing and Use Life of the Early Chalcolithic Buildings

The features excavated indicate both building events within and between buildings. The non-linear south wall of B.98 (F.3333, F.5056), which was constructed to fit exactly alongside the pre-existing walls F.2408, F.3332 and F.5067, suggests that B.98 was built later than the buildings represented by Sp.310/453/454, Sp.345 and Sp.447. The different floor levels of the buildings excavated in Trench 5 might also be indicative of different building sequences in this area. In B.98, Sp.342, Sp.345 and Sp.448, the floors are not reached so far, while in Sp.447 a firm, white plaster floor (15167) could be traced that lies on a level above the supposed floor in the above mentioned buildings. Floors of Sp.310, Sp.454 and Sp.343 are not preserved,

but when reconstructed using the base level of the surrounding walls, would also have been higher up.

Figure 41. White plaster floor of Sp.447. Photo Peter Biehl

firm, white plaster floor (15167) could be traced that lies on a level above the supposed floor in the above mentioned buildings. Floors of Sp.310, Sp.454 and Sp.343 are not preserved, but when reconstructed using the base level of the surrounding walls, would also have been higher up.

Different building materials and construction techniques observed might also have chronological significance. The features surrounding Sp.310, Sp.454 and Sp.343 (F.2408, F.2427, F.3301, F.3302, F.5058, F.3312, F.3313, F.3314), as well as Sp.342 (F.2424, F.5051, F.5061, F.5062, F.5063) are made up of dark bluish-grey bricks and yellowish-white mortar, while walls F.2429 and F.3327 are built from reddish clay and a crumbly, hard and reddish mortar. This reddish clay and crumbly mortar was also used to build the younger phase of Sp.343 (F.2426, 2425/5050, F.5074, F.3337, F.3338, F.3339; see III.2), while the older walls and buttresses below (F.3304, F.3305, F.3306, F.3307, F.3308, F.3309) consist of the same greyish bricks and lighter yellowish-grey mortar as the walls of Sp.345 and Sp.447. The construction technique coupled with the grey bricks and yellow mortar, which was also used for the walls and buttresses of B.98 (including later additions), has visible horizontal mortar lines, but none vertical and no single bricks can de distinguished when viewed from top down. Possibly wet slabs or bricks of mud were put next to each other without any mortar used here, but rather only applied between courses. A thick, white plaster coating on the interior surfaces is a common feature of all structures in Trench 5, but is missing or destroyed in the upper parts of walls F.5055, F.5056, F.5067, F.5068, F.5075 (eastern surface), F.3333 and F.3324 (western surface).

The walls surrounding Sp.310 and Sp.454 (F.5058, F.2408, F.2427) and B.98 (F.2413/5055, F.2428, F.5056, F.3333, F.3324) bind into each other in the corners, while the walls surrounding Sp.345 and Sp.447 abut each other. The joints between those abutting walls become visible after they have dried out for some days and might indicate that the walls were not built at the same time, but buildings in this part rebuilt several times.

There is evidence that re-building and changing was not only done in B.98 but seems to be a common feature in the buildings in Trench 5: Firstly, the fact that the space between buttress

F.3319 and wall F.5075 in Sp.447 is much too narrow for a person, as is the space between F.5075 and buttress F.5076 in Sp.345, might indicate that wall F.5075 is a later addition dividing a larger room with twin buttresses (F.3319, F.5076). Secondly, Sp.343 and Sp.310/454 represent buildings on top of older buildings with nearly exactly the same outlines – this was already observed in 2009 (Biehl – Rosenstock 2009a): Under the walls and buttresses surrounding Sp.343 (F.2426, F.2425/5050, F.5074, F.3337, F.3338, F.3339), older features (F.3304, F.3305, F.3306, F.3307, F.3308, F.3309) form an older building with the same size and structure as Sp.343. In this case, the younger buttresses (F.3337, F.3338, F.3339) were partially destroyed and difficult to define (Biehl – Rosenstock 2009a). Similar to the situation in Sp.343, under walls F.5058, F.2408 and F.2427 forming Sp.310, older walls (F.3312, F.3313, F.3314) surrounding the older Sp.453 became visible. An older phase of Sp.454 is not yet reached. Further excavation in Sp.453 in 2010 revealed that buttress F.3302 continues further down than the other buttress F.3301 and wall F.5058, broadens its lower part and has irregular outlines here. F.3301 thus might represent a wall closing Sp.453 to the south which was cut later to form a buttress within a building formed by Sp.310 and Sp.454. Buttress F.3302, much smaller than F.3301 and sitting on fill, was then added to the younger building.

Figure 42. Concentration of antler, bone tools and pottery in the fill of Sp.449. Photo Peter Biehl.

Figure 43. Cache of several hundred clay balls (15343) piled in the southeast corner of Sp.449. Photo Laura Harrison.

The structures and the room fill excavated in Trench 5 provide not only further insights in the architecture but give also first indications of the use life of the Early Chalcolithic houses. It is especially the events of building, re-building and changing as well as of use and abandonment, which need to be addressed. The fills of Sp.310/453, Sp.342, Sp.343 and Sp.345 were already described in previous reports (Biehl – Rosenstock 2008, 2009a). In 2010, excavation of room fill focussed on Sp.340, Sp.341, Sp.449, Sp.450, Sp.452 (B.98), Sp.446, Sp.447 and Sp.448. The debris filling Building 98 (15137, 15139, 15144, 15152, 15160, 15166, 15177, 15180, 15340, 15343, 15344) was mostly made up of building materials such as clay of different colours, plaster, and chunks of mortar. Within the building debris, considerable amounts of large and articulated animal bones (Orton, this report), large pot sherds including whole vessels (Franz, this report), cores, raw forms and tools of obsidian and flint (Ostaptchouk, this report), fragments of bone, stone and ceramic tools (Franz and Ostaptchouk, this report), clay balls, and body ornaments made from bone and stone were found. This fill can most probably be interpreted as waste: building materials, pots and tools discarded after falling out of use, and also the waste from the production of those pots and tools. Charred plant remains indicate processing of grain and pulses, and potentially basketry and burning of dung (Bogaard –Charles this report). Especially rich in artefacts was

the fill of Sp.449 (15160, 15180, 15343, 15344), including large numbers of polished bone artefacts and painted pot sherds, stone tools, antler (Figure 42), figurine fragments (15160.x23 and 15160.x24), and most importantly a cache of several hundred clay balls (15343) piled in the southeast corner of the room (Figure 43). The clay balls could represent stored raw material for the production of clay artefacts (Franz, this report; see also interpretations for clay balls from Çatalhöyük East as sling stones (Mellaart 1966: 188; 1967: 78, 217) and heating stones (Atalay 2005).

The fill of Sp.453 (15335), Sp.454 (15165, 15176), Sp.446 (15142, 15171, 15187, 15194, 15196, 15198) and Sp.447 (15163) closely resembles the debris filling B.98 in constitution and quantity of components. The fill of the potential open area Sp.448 (15178, 15184), however, consists of more homogeneous, darker soil with only few of the artefacts and building materials described above. The waste filling the houses was accumulated after the buildings were no longer inhabited indicating an abandonment of their domestic use life but most likely not the abandonment of the whole neighbourhood at the eastern fringe of the West Mound.

Outlook

Researching this neighbourhood with its different houses and spaces with different functionalities - including most likely non-domestic in- or outdoor activity areas for pottery production etc. - is one of our main objectives for the next field season.

The southern extension of the trench will also enable us to continue to excavate the buildings associated with Sp.342 and Sp.310/453/454 until we reach their floors. Only then we can begin to study the modalities of use, reuse and abandonment of buildings; the time gap between abandonment and the infilling with debris; the provenance of the debris; the duration of the infilling process – which must have been rather rapid (Biehl – Rosenstock 2009a; Orton 2009 and this report). Contextualising the use lives of buildings and possible open and unbuilt spaces within a neighbourhood will help us to better understand similarities and differences between the East and West Mounds.

Acknowledgments

Peter Biehl and Eva Rosenstock would like to thank the University at Buffalo, the Free University Berlin and the Alexander von Humboldt Foundation and all the team members, specialists and the Çatalhöyük Project for their support. A special thanks to Patrick Willett for his technical work on this archive report.

References

Atalay, S. 2005: Domesticating clay: the Role on Clay Balls, Mini Balls and Geometric Objects in Daily Life at Çatalhöyük. In: Hodder, Ian (ed). Changing materialities at Çatalhöyük. Reports from the 1995-1999 seasons. By members of the Çatalhöyük teams. Çatalhöyük Research Vol.5. Cambridge/ Ankara: McDonald Institute for Archaeological Research/ British Institute at Ankara, 139-168.

Biehl, P.F. – Rosenstock, E. 2008: West Mound Trench 5. Çatalhöyük 2008 Archive Report, 90-97.

Biehl, P.F. – Rosenstock, E. 2009a: West Mound Excavations, Trench 5 & Trench 7. Çatalhöyük 2009 Archive Report, 38-42.

Biehl, P.F. – Rosenstock, E. 2009b: 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.

Mellaart, J. 1966: Excavations at Çatal Höyük, 1965. Fourth Preliminary Report. Anatolian Studies 16. 165-191.

West Mound Trench 8 - Burçin Erdoğu

Supervisors: Burçin Erdoğu & Nejat Yücel
Team: Onur Özbek, Melek Kuş, Abdurrahman Sönmez.

*Thrace University, (1) Çanakkale University

A short season of excavation on the West Mound Trench 8 at Çatalhöyük was undertaken by a team from the University of Thrace, department of Archaeology. This year excavation season had two major objectives:

1. to extend the excavation area to the East in order to discover new structures. This operation helped us to gain a better understanding a complexity of Çatalhöyük West occupation, especially on the issue of whether B.78 was a special building.
2. to excavate in the southern part of the B.78 in order to understand occupational sequence of this area. The last excavation season, this area was provided the first evidence of the EC II occupation.

Figure 44. Building 94. Photo Team Thrace

As regards the first objecttive, this year season began by excavating the eastern part of B.78. Another building (B.94) was exposed immediately after the removal upper fills (Figure 44 & 45). B.94 is a rectangular building measure ca. 5 x 8 m. It has its own walls, though it was separated by ca. 0.4m from the neighbouring B.78. Surprisingly, a gap on the southern wall may have been a doorway? Walls of B.94 were not plastered regularly, and there is no trace of red paint. The building has two internal buttresses. The northern buttress F.2971 measures 0.8x0.75 m while the southern buttress F.2974 measures 0.7x 0.9m. Slightly concave floor was not excavated fully in this season. A sherd with a human face in relief was found in the fill of the building (Figure 46). It was the most exciting find in this season, and similar samples were also found in B.25 by C. Gibson and J. Last in Trench I.

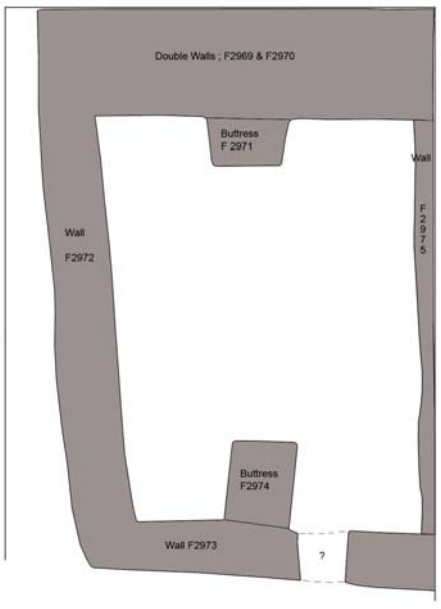


Figure 45.Plan of Building 94. Plan Team Thrace

Excavation also continued in the southern part of the trench. In 2009 an oval oven and a deposit containing lots of burnt construction materials with EC II pottery as well as objects such a stone vessel with a carved crayfish figure, a spondylus bracelet and two vessels with painted human figures were found in this part of the trench.

Several phases of ashy midden deposition have been identified in this season, and we decided to excavate this area fully next season.

Results of the 2010 excavation season indicate the existence of possible special buildings in Chalcolithic West Mound as in Neolithic East Mound. When we compare Building 78 and Building 94, B.78 is larger than B.94, and it has red painted regularly plastered walls and floors. B.78 has also larger buttress. Results of this excavation season also show that there are areas for rubbish discard. Work for the next season will continue in the same parts of Trench 8 and will mainly aim to the completion excavating B.94 and the midden area.

Figure 46. A sherd with a human face in relief was found in the fill of the Building 94. Photo Team Thrace

CULTURAL AND ENVIRONMENTAL MATERIALS REPORTS
Çatalhöyük Animal Bones 2010

Team Leader: Nerissa Russell (1), Katherine Twiss (2)
Team: Kamilla Pawłowska (3), David Orton (4), Arzu Demirergi (2).

(1) Cornell University, (2) Stony Brook University, (3) University of Poznań, (4) University of Cambridge.

Introduction - Nerissa Russell

For the core team, the 2010 season at Çatalhöyük was a study season devoted to drafting, presenting, and discussing forthcoming monograph reports on our work. Thus for the South and 4040 Areas, lab work was limited to a small amount of tidying up, the recording of special finds, and assistance in specialized studies (stable isotopes, radiocarbon dating). With the exception of a few delicate special finds needing immediate attention, the animal bones from the South and 4040 Areas excavated in 2010 are to be recorded in future years for the final set of publications.

However, two members of the Çatalhöyük faunal team continued work on material from the TP Area and Trench 5 on the West Mound, recording 31,844 additional bones, bringing the total specimens recorded to 1, 031,886.

TP Area - Kamilla Pawłowska

In total, 47 units and 22,940 animal bones were recorded from the TP Area in 2010. The vast majority of bones analysed from TP Area originated from floor deposits of Buildings 72, 62A, 62B, 61A, 61B, and Space 320 (Levels TP.O, TP.Q, TP.R). However, the research also focused on midden (Levels TP.P, TP.Q) and infill deposits (from different levels), as well as on the concentration of animal bones (Level TP.N). In addition, we selected samples from the studied bones from this part of the tell for isotopic studies, C14 dating, and geological analysis.

Level TP.O
Space 320
Floor deposits from the eastern (15268) and southern (15817) parts of Space 320 are similar. The material contains unidentified bone fragments, highly fragmented, 1 cm long, with no gnawing marks, with two weathering stages, some burnt and some calcined. The scrap includes sheep-size pieces of long bone. In the eastern part, the floor was located against the west edge of the wall (12274), while in the southern part it was situated between two parallel walls (13524) and (12274), and demarcated by a small perpendicular wall (15227) from the south. Bone material from the floor (15268), which marks the earliest phase of occupation of the space, does not stand out.

Building 72
Space 323
The very thin floor layer in Space 323—probably associated with the youngest phase of occupation of Building 72—was arbitrarily divided into two similar parts (13583) and (15204). Material from (13583) gives the impression of being a floor or infill deposit, due to its characteristics (Ovis/Capra fragments predominate: scapula, humerus, tarsal, phalanx, teeth; human bone and microfauna are also present; pieces burnt in various temperatures (low and high); very slight and slight weathering stages of bone fragments; trampled pieces, some digestion, fragments of 1–4 cm length). Floor (15204) was more solid and better preserved than floor (13583), but the bones have similar taphonomic characteristics. One difference is in the degree of fragmentation of the material, which is much greater in (15204). The bones are 1–3 cm long. Single fragments of long bone shaft splinters display filleting marks in both deposits. Directly underneath these floor parts are some make-up layers—(15206) and (15207) respectively—which contain animal bones (yet unstudied), pebbles of different size, fragments of plaster, bricks, and destroyed floor.

Space 324
A small floor fragment (15296) located in a doorway between two truncated walls, (13059) and (13088), contained very slightly and slightly weathered bones, largely trampled, very fragmented, and thus unidentified: pieces of long bone, ribs, fragments of vertebrae, maxilla, teeth (one fox deciduous tooth was however identified).

A floor fragment (15202) in the NE part of the space contained several diagnostics: a human rib; a cattle upper tooth, extremely worn, and thus partially lacking the crown; a digested carpal bone of sheep or goat. This floor is associated with the youngest phase of occupation of Building 72. The rest of the bone fragments were sheep-size and cow-size, with some burnt at low temperature (burnt and carbonized), some trampled, some digested. The degree of fragmentation of the material is significant (mostly fragments of 1–2 cm in length, or 4 cm among the diagnostics). Bones were very slightly weathered, with some pieces slightly weathered.

Level TP.Q
Building 62A
Building 62A was divided into two rooms by a centrally placed wall (13026) and (13025) with NE alignment. From the main part of the floor (13040) in the eastern room comes material that gives the impression of being mixed deposits from the floor (1 cm long pieces, trampled), along with other material such as infill and construction material (fragments of 2–3 cm with calcium concretions, at a very slight stage of weathering with some pieces slightly and moderately weathered, all rather worn). Carnivore activity is moderate; there are a few burnt pieces—with some of them, a roasting pattern was observed (sheep-size long bone). Diagnostic bones derived from sheep/goat and a small-medium equid (metapodial parts, phalanges, carpal bones, teeth). Due to the considerable size and heterogeneous nature of the layer in different parts of unit (13040), four flotation samples were taken by the excavators (Sample 7 from the northwestern corner of the unit, S. 4 from the northeast, S. 10 from the central area, and S. 2 from the southern area). The samples are more or less identical: S. 2 is similar to S. 5, both being largish samples. S. 10 is somewhat smaller, with on average somewhat fresher surface condition, and is intermediate in level of burning. S. 7 is similar to S. 5, but with considerably more burning. Generally all the samples look like the material from the dry sieve, and resemble dirty construction or infill material mixed with floor deposits. Their

use is related to building and backfilling. Their features may be a result of the total collection of deposits.

A fragment of the floor layer (13045) in the central part of the eastern room of Building 62A was better preserved. It was recorded as a separate unit due to traces of trampling. This fragment of floor was surrounded by the floor layer (13040) described above. Bone material from this unit looks like floor deposits combined with construction material, and is similar to (13040).

Animal bones from floor layers (13043) and (13050) in the western part of Building 62A are clean infill deposits (the vast majority of specimens are sheep-size, with a substantial number of 3–4 cm fragments alongside the smaller pieces, but some larger pieces are also present, as well as trampled pieces, digested fragments, with fairly homogeneous colouration) of relatively rapid accumulation (very slightly and slightly weathered, articulated complete caprine carpals, no worn surfaces, and with just one piece having gnawing marks). Floor layer (13050) was distinguished by its considerable amount of organic material (charcoal), but the material from floor deposit (13043) does not differ in this part of the building.

Animal bones from the floor of the southern part of the building in (13052) and (13048) are associated with a phase of use of the building. The bones from the floor deposit are very slightly and slightly weathered, mainly 1–2 cm long, burned at high temperatures, digested, two pieces slightly gnawed, including fragments of teeth. Well-represented trampled fragments include sheep-size shaft splinters and sheep-size ribs, particularly in (13048). Sheep/goat, bird, and fox bones are present. Material from the two units does not differ substantially. Material from floor fragment (13052)—which to the excavators appeared to belong to some kind of storage space—has a smaller number of diagnostic fragments, which may be related to sample size and greater fragmentation of the material. Compared to the rest of the floor, the material in this part of the building is much more fragmented.

The infill material (13047) is related to the building's stage of filling up. The diagnostic fragments here were derived from sheep/goat and cattle bones: they are 1–11 cm long, though mostly 2–4 cm, very slightly and slightly weathered, not gnawed, some reworked, trampled, 2% burnt, some digested, none with diagnostic zones.

Building 62B

During the analysis of animal bones from the floor of the Building 62B, two types of assemblage were distinguished. The first type was associated with the occupation phase of the building: (13001), (13015), (12299), (13013), and (12283). These are fragments of the floors in the southern part of the building. Among them, (13001) and (13015) are similar: they contain mostly sheep-size pieces, several diagnostic sheep/goat pieces, 1–2 cm long, pieces burnt at low and high temperatures, digested pieces, and trampled pieces. (12299) and (13013) differ from these due to their lack of trampled fragments and a lesser quantity of material. These floors look very clean, in particular (13013). According to excavators, (13013) is a floor fragment of a small space or room that was separated from the main part of the building by a small wall (13005). The southern section of the floor was plastered (plaster 13012). This part of the building could have been unused, which explains the lack of trampled fragments and the small amount of material (1 cm long sheep-size pieces), or perhaps it was regularly cleaned. Surprisingly, a small fragment of the room's floor is also represented by (13015). A small fragment of floor (12283) from the highest sequence in phase II of the building contained two unidentified sheep-size pieces with slightly weathered surfaces, 1 cm long.

The second type of bone material found in Building 62B is related to the abandonment of the building and its filling (11582). The bone deposit is fill from multiple sources; little, if any, has anything to do with activities during the occupation of the house. The floor was of a considerable size, and lacked internal divisions, but analysis of flotation samples indicates differentiation of the floor space. Material from (11582) in different parts of the space vary in degree of fragmentation (the central part of the floor has the most fragmented pieces, 1–3 cm long—S. 9 and 12) and in the proportion of burnt bones (the western part, S. 5 and 7, has more than elsewhere).

Infill layer (13019) was located on floor (13040) in Building 62, and is an effect of the process of accumulation connected with the abandonment of the building. The material looks like fill coming from multiple sources, and is mainly sheep-size, but there is also a certain amount of large mammal material. Body part distribution is fairly even for the sheep-size pieces. The bone is highly fragmented, with most pieces being less than 3 cm in length, though a fair number of pieces in the 4–6 cm range are present. Surface condition is variable, but mostly quite worn. The small fragment of deposit (13039), which also looks like fill, was very similar to the described infill layer.

Level TP.R
Building 61A
Bone material was analyzed from the floors of the building in the northwestern (11745), western (11724, 11731, 11743), central (11793, 11782, 11781), and southern (13004, 12289) parts. Material from the floor was similar from all units (1–2 cm long fragments, trampled, digested pieces, very slight weathered, calcined, burnt and carbonized fragments, and with a few sheep/goat bones).
Animal bones from layer (12238) in the eastern part of the building, found at the same level as a cluster of human and animal bones (12240), looks like infill or a small midden. Sheep/goat, cattle, dog, and human bones are present. Surface condition is variable: very slight, and moderate weathering stage; some pieces reworked; a few with gnawing marks, and one heavily gnawed. Fragment sizes are in the range of 1–5 cm. Animal bones from a make-up layer (12234) in the eastern part of the building look like infill from multiple sources. Diagnostics include bird, human, sheep/goat, and microfauna. The bones have very slight, slight and moderate weathering; trampled pieces, digested pieces, and pieces burnt in low and high temperatures are all present; some fragments are reworked; 1–7 cm long). Material from (12254) and (12257)—found below (12234) and material from floor (12262)—looks similar.

Building 61B
Space 248
A small fragment of floor (11770), situated in the southeast corner of Space 248, contained floor deposits with a sheep/goat tooth fragment, while the rest is sheep-size pieces of vertebrae and trampled long bones. All fragments are 1 cm long, with very slight weathering. Quantities are considerably smaller than we have usually observed in the buildings.

From the same part of Space 248, unit (11752) contains a single diagnostic fragment each of sheep, sheep/goat, cattle and microfauna, but mostly consists of sheep-size scrap. Bone fragments have been burnt at low and high temperatures (calcined, carbonized), digested, trampled, and have two weathering stages. Fragment sizes are mostly 1–2cm, with several of 1–3 cm length.

Units (11784) and (11785) lie on floor (11752) in Space 248, underneath the infill layers and containing fragments of human skeletons (11740) and (10986)– mostly skulls. Bones are in weathering stages 2, 3, and 4; they have been burnt at low and high temperatures; they are 1–7 cm long; are digested; they come from sheep/goat, cattle, bird, human, and microfauna; several bones are reworked; there is some calcium concretion. There is a notable lack of sheep-size shaft splinters in (11785).

Other Units Recorded
In addition, analysis was performed on animal bones from the infill of a Hellenistic pit located in the northeast corner of the extension (11544); from the lower part of a kind of platform—probably an element of the floor of B. 81 (17656), Level TP.M; from midden deposits in Space 421 (12277), Level TP.Q, and in Space 405 (17804), Level TP.P; as well as from the hearth found in infill from B. 81 (15829), Level TP.M. The ashy layers of this last hearth contained a rich paleobotanical deposit (burnt seeds of wheat and barley), along with clusters of phytoliths and bone ornament (15829.X4 is the base of something resembling a large bone spoon).

Moreover, the study of material from the large concentration of animal bones (17809)—located in the southeast corner of Space 346, Level TP.N—begun in 2009, was continued in 2010.

From all the units of Space 327 (15237, 15821, 15839, 17622, 17639, 17808), Level TP.N, (15821) stands out, due to its larger amount of cow-size bones. The layer, which was described by excavators as a small midden, looks rather like an infill deposit with a cluster of cow-size bones. It was situated to the south of a truncated platform (13533) in Building 73, and underneath a rubble layer (15822). This deposit may have accumulated in the foundation trench for the walls of Space 327.

Other Activities
In addition, a total of 234 samples were taken for stable isotope (N, C, Sr) studies, C14 dating, and geological analysis. They come from different levels and contexts: Level N (Space 420), Level P (Building 73), and Level Q (Space 412). The bones belong to cattle, sheep, goat, small-medium equid, large equid, boar, ox, medium canid, and dog, from various body parts.

Animal Bones Report Trench 5 - David Orton

Introduction
Faunal research on secure Early Chalcolithic contexts within Trench 5 continued in 2010, having begun in earnest in 2009. Four units were fully recorded this season, and an additional eight assessed. Research concentrated on the rich fill deposits within spaces Sp.310 and Sp.342, although material from spaces Sp.343, Sp.447 and Sp.449 was also assessed. The emphasis at this stage is on conducting detailed assessments of as much undisturbed material as possible, in order (a) to provide rapid feedback to the excavators, (b) to avoid a backlog of entirely unstudied material, (c) to develop a frame of reference for West Mound faunal deposit classes, and (d) to provide immediate - preliminary - quantitative data through recording of measurements and diagnostic zones (DZ).

Units studied in 2010
A sequence of fills from Space 342 (16896, 18309, 18311, 18328) were assessed in 2009 and the lowest, (18328), was subject to full recording in 2010. The overall impression of this sequence is of extremely rapid deposition and minimal subsequent disturbance, as attested by excellent preservation, very limited carnivore damage, and an abundance of refits and articulations. Processing by humans prior to deposition also seems to have been limited, with a low degree of fragmentation, and body part representation is generally very even. The underlying fill unit (18341) - assessed this season - broadly continues this pattern but with rather less extreme preservation and slightly lower coherence.

Space 310 was the main focus of faunal study in 2010. As with Space 342, this space contained a sequence of extremely rich but poorly differentiated fills (18303, 18318, 18326, 18343) that can certainly be considered primary deposits and appear to have formed very rapidly. Of these, (18318) and some associated clusters (18316, 18321) have now been fully recorded, and the remainder assessed. The lowest fill yet studied, (18343), has particularly dramatic preservation and coherence, with some quite extensive articulated groups.

The fill sequences so far excavated in spaces Sp.342 and Sp.310 seem to represent successions of dumps of lightly processed post-consumption waste, differing both from typical room fills and from middens as defined on the East Mound. On the basis of fauna alone, the closest analogue might be the East Mound 'feasting deposit', but with caprines dominating rather than cattle and with multiple events represented in a continuous sequence. However, the fills of both spaces also contained large quantities of other materials, including unfired pottery and un-worked antler as well as finished artefacts. Understanding the nature and purpose of deposition in these spaces will require integrative analysis of the bone and ceramic materials.

Excavation in spaces Sp.447 and Sp.449 only began this season, with the uppermost fills from each - (15163) and (15160) respectively - processed in time to be assessed. These are similar to the fills described above from spaces Sp.310 and Sp.342 in terms of composition,

taphonomy, and articulations. By contrast, unit (18314) from Space 343 - assessed in 2010 - is atypical (in East Mound terms) near-sterile room fill, with high fragmentation, low coherence, and frequent evidence for carnivore ravaging. The overall amount of material is also very low given the very substantial volume of the unit.

Taxonomic composition

Table 1 shows the current taxonomic distribution from Trench 5, along with that from the earlier excavations of Building 25 (Gibson et al. 2004), and from the South sequence on the East Mound (Russell et al. 2010). The results are broadly consistent between the two Chalcolithic areas, with caprines strongly dominant and five to six times as many sheep as goats. The only noteworthy differences are the markedly lower representation of cattle and rather higher percentage of equids in Trench 5. Taxonomic composition is likely to vary with context type, but at present too few West Mound units have been studied for this to be assessed. Equids in particular are often represented by articulated groups of foot bones with multiple DZ, resulting in an uneven distribution between individual units and rendering the overall figure unreliable at this stage. Cattle bones are spread much more evenly across contexts studied thus far, with most large units having one or two DZ (Table 2). Diagnostic Zone (DZ) counts for Trench 5, compared with figures for Building 25 (Gibson et al. 2004) and for the South area on the East Mound (Russell et al. 2010).

Some clear differences emerge in comparison with the East Mound, particularly the increased dominance of caprines at the expense of cattle. This trend already seems to have started in the latter part of occupation on the East Mound, although it should be noted that there is considerable fluctuation between individual Hodder levels. A decline in the other main hunted taxa - equids and pigs - also seems to have taken place over time.

	Trench 5		Building 25		South H-L		South P-T	
	DZ	%DZ	DZ	%DZ	DZ	%DZ	DZ	%DZ
Caprines (total)	770	92.9	1432.5	91.2	180.5	67.4	1118.0	83.3
Sheep	458.5	55.3	464.5	29.6	22.5	8.4	494.0	36.8
Goat	87.5	10.6	77	4.9	5.5	2.1	54.0	4.0
Sheep/goat	224	27.0	891	56.7	152.5	56.9	570.0	42.5
Cattle	19.5	2.4	77	4.9	29.5	11.0	116.0	8.6
Pig	0	0.0	2.5	0.2	5.0	1.9	20.0	1.5
Equid	29	3.5	32	2.0	13.0	4.9	41.5	3.1
Cervid	0.5	0.1	8.5	0.5	0.0	0.0	4.0	0.3
Hare	0	0.0	0	0.0	4.2	1.6	11.4	0.8
Dog/wolf	6.6	0.8	13.2	0.8	23.2	8.7	10.8	0.8
Fox	3.4	0.4	3.5	0.2	1.2	0.4	11.6	0.9
Other carnivore	0	0.0	1	0.1	11.2	4.2	9.2	0.7
TOTAL	829	100	1570.2	100	267.8	100	1342.5	100

Table 1. Diagnostic Zone (DZ) counts for Trench 5, compared with figures for Building 25 (Gibson et al. 2004) and for the South area on the East Mound (Russell et al. 2010).

The increasing dominance of caprines is consistent with the suggestion that the Central Anatolian Late Neolithic and Early Chalcolithic saw the development of "increasingly complex and large-scale pastoral systems" (Arbuckle et al. 2009, 149). The West Mound units studied during 2009 and 2010 include a surprising number of very large sheep and especially goat specimens. If these represent wild individuals then this would have intriguing implications given the rarity of wild caprines on the East Mound, the effective cessation of cattle hunting (see below), and the overall decline in numbers of other wild species. Alternatively, the larger individuals might simply be males, indicating changes in herding strategies. In the case of sheep, this might be associated with early wool production, but evaluation of this hypotheses will require detailed biometrical analysis alongside consideration of age and sex data as they become available. As a first step towards this, Figure 47 shows preliminary biometric data for sheep and goats from West Mound Trenches 1 and 5 in comparison to previously published data from the East Mound (Russell and Martin 2005). The size distribution for goats from the West Mound is broadly similar to that for the East, but with the addition of a few very large

specimens as noted above. For sheep, however, there is an overall shift towards larger individuals that requires explanation.

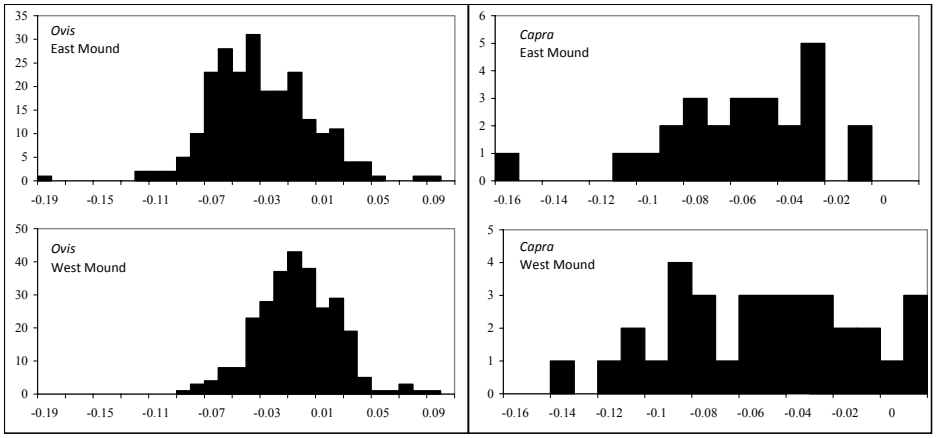


Figure 47. Preliminary log ratio data for caprines from the West Mound, in comparison with published East Mound results (Russell & Martin 2005; standards from Meadow 1981; Uerpmann 1979).

Cattle domestication

The wild status of cattle within much of the sequence at Çatalhöyük East is well established (Russell et al. 2005), but it is not clear that this

holds either for the latter part of this sequence or for the West Mound. One of the main lines of evidence for domestication is biometry; a marked reduction in size is typically seen amongst herded populations. Figure 48 shows preliminary log-ratio size data for cattle from the West Mound (Trenches 1 and 5) in comparison with various areas on the East Mound. A clear size reduction is indeed seen between the East and West, although more recent results from the South area suggest that size reduction may in fact have begun during the occupation of the East Mound (Twiss et al. in prep.). Changing sex ratios and degrees of sexual dimorphism may play a part here, and these results will need to be examined carefully alongside age and sex data before final interpretations can be made. Taking the metric data at face value, however, it would seem that all or most of the cattle on the West Mound are likely to have been domestic.

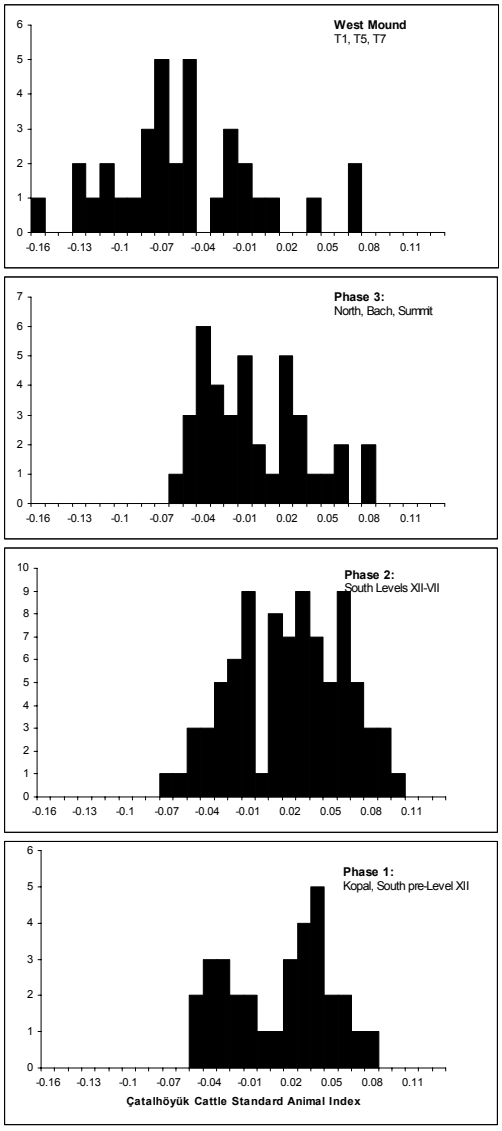


Figure 48. Preliminary log ratio data for cattle from the West Mound, in comparison with published East Mound results (Russell et al. 2005). Standard animal: 'The Ullerslev Cow' (Degerbøl and Fred

Acknowledgments
Thanks are due to the rest of the Çatalhöyük faunal team for the use of East Mound data for comparison, but particularly to Sheelagh Frame who recorded many of the West Mound measurements used here.

References
Arbuckle, B. S., Öztan, A. and Gülçur, S. 2009. The evolution of sheep and goat husbandry in central Anatolia. Anthropozoologica, 44:129-57

Degerbøl, M. and Fredskild, B. 1970: The Urus (*Bos primigenius* Bojanus) and Neolithic domesticated cattle (*Bos taurus domesticus* Linne.) in Denmark. *Det Kongelige Dansk Videnskabernes Selskab, Biologiski Skrifter*, 17:1-177

Gibson, C., Last, J., Frame, S., and Raszick, T. 2004: West Mound. In Çatalhöyük Archive Report 2004.

Meadow, R. H. 1981: Early animal domestication in South Asia: a first report of the faunal remains from Mehrgarh, Pakistan. In *South Asian Archaeology 1979* (ed. H. Härtel). Berlin: Dietrich Reiner Verlag, pp. 143-79.

Orton, D. 2009: Çatal Höyük Animal Bones 2009 – West Mound, Trench 5. Çatal Höyük 2009 Archive Report. 72-73.

Russell, N. and Martin, L. 2005: The Çatalhöyük mammal remains. In Inhabiting Çatalhöyük: reports from the 1995-1999 seasons (ed. I. Hodder). Cambridge: McDonald Institute, pp. 35-95.

Russell, N., Martin, L. and Buitenhuis, H. 2005: Cattle domestication at Çatalhöyük revisited. Current Anthropology, 46:S101-S8

Russell, N., Twiss, K., Orton, D., Pawłowska, K. 2010: Çatalhöyük Animal Bones 2009. In Çatalhöyük Archive Report 2010.

Twiss, K., Russell, N., Orton, D., Demirergi, A. in prep. Fauna. In Humans and landscapes of Çatalhöyük: reports from the 2000-2008 seasons.

Uerpmann, H. 1979: Probleme der Neolithisierung des Mittelmeeraumes. Wiesbaden: Biehefte zum Tübinger Atlas des Vordern Orients, Reihe A 27.

2010 Çatalhöyük Human Remains Report - Scott D. Haddow, Lori D. Hager and Jennifer Byrnes

Team Leaders: Simon Hillson (1), Clark Larsen(2)
Team: Emmy Bocaege (1), Başak Boz(3), Lori Hager(4), Scott Haddow (5), Evan Garofalo (6), Joshua Sadvari (2), Jennifer Byrnes(7).

(1) Institute of Archaeology, University College London, (2) Ohio State University, (3) Trakkya University, (4) Çatalhöyük Research Project and Pacific Legacy, Inc., (5) Çatalhöyük Research Project, (6) Johns Hopkins University, (7) University of Buffalo

Introduction
The 2010 season at Çatalhöyük consisted of one month of study and one month of excavation. As part of a series of presentations by each of the lab teams and excavators, several of the human remains team members presented the preliminary and/or final results of their research for the upcoming round of publications. Much of the rest of the study season focused on data cleaning and the refinement of age, sex and depositional categories for the human remains database. Emmy Bocaege, Başak Boz, Scott Haddow, Lori Hager and Joshua Sadvari all contributed to this effort with assistance from the project database developer Sarah Jones.

Research on the Neolithic skeletal assemblage continued throughout the season including studies of the dentition by Başak Boz and Simon Hillson aimed at reconstructing health and dietary patterns. Clark Larsen continued his analysis of activity/mobility patterns through an analysis of adult long bone cross-sectional geometry. Evan Garofalo carried out similar research on the juvenile long bones for her Ph.D. thesis, while Joshua Sadvari collected data for his Ph.D. on trauma, degenerative joint disease, and infection. Emmy Bocaege collected tooth impressions of developing teeth for her Ph.D. research on enamel hypoplasia. Further indicators of physiological stress such as those associated with anaemia were analyzed by Lori Hager. Başak Boz and Lori Hager finalized various aspects of their study of Neolithic burial practices at Çatalhöyük for the upcoming publications. In the South area, Lori Hager also excavated and recorded two Neolithic skeletons found in the southeast corner of Building 97. Scott Haddow continued his sorting and inventory of the Mellaart skeletal collection and was responsible for excavating and recording several Neolithic burials from the 4040 Area. Jennifer Byrnes was responsible for the excavation and recording of Post-Chalcolithic burials from the West Mound.

During the excavation season, the remains of at least four Neolithic individuals were excavated in Building 77 in the 4040 Area. In the South Area, two Neolithic skeletons which had been truncated by excavations in the 1960s were found in an unusual location in the infill of the SE corner of B 97. In addition, numerous isolated human bones were recovered from tertiary contexts in the South Area due to the ongoing excavations of middens and the infill of several buildings where the loose, scattered bones are often found. Finally, several disturbed or partially disturbed Post-Neolithic burials were excavated in Trench 5 on the West Mound.

Neolithic Burials
4040 Area
Building 77, Space 336

The skeletal remains of at least four individuals were recovered from the northern section of the east platform in Building 77. These consist of one primary undisturbed juvenile, F.3601, Sk (19022), one primary disturbed adult, F.3600, Sk (19038) and Sk (19053), a primary disturbed infant, F.3600, Sk (19048), and an additional juvenile skull, F.3601, Sk (19039), found in what appears to be a secondary context. As with Building 76 excavated in 2009 (South Area), Building 77 has undergone extensive burning and the high temperatures associated with the fire have differentially altered the colour of the bones. Those skeletal elements closest to the heat source (i.e., those highest within the platform or located in the western end of the grave cuts) were baked to a dark brown colour, while those located furthest from the heat were baked to varying shades of orange or brown. In the case of one individual, Sk (19022), a small amount of what appears to be carbonized brain tissue was recovered from within the cranium. Similar material was found within the crania of all five individuals found in Building 76.

Figure 49. East platform of B.77, F.3600: Primary disturbed burial of Sk (19038). Primary disturbed infant Sk (19048) can be seen in the southern end of the grave cut (19009). View North. Photo Jason Quinlan.

Given the assumed longevity of Building 77 and its architectural and stylistic elaborations, many more burials surely lie beneath the east and northeast platforms. Unfortunately, time constraints and the priorities of architectural conservation did not allow for further exploration this season.

F.3600: Sk (19038), Sk (19048); Cut (19009); Fill (19008), (19044)

Feature F.3600 is a disturbed primary burial of an adult female Sk (19038) (Figure 49). The burial was subsequently truncated by the later interment of Sk (19022) (F.3601) leaving only the skull and the feet remaining in situ. Originally the body must have been tightly flexed on its right side as the head is oriented to the east (facing north) and the feet to the west. The left and right femora and tibiae, as well as the left humerus were found neatly stacked in the north part of the grave cut (19023) for Sk (19022). These disarticulated long bones, in addition to loose adult hand bones, ribs and vertebral fragments found in the grave fill (19021) of F.3601 were assigned skeleton number (19053), and later associated with Sk (19038) in the lab. Despite the careful redeposition of several skeletal elements belonging to Sk (19038), the right humerus, left and right radii, ulnae and fibulae, os coxae and the majority of the axial skeleton were not recovered. In the absence of pelvic criteria, the sexing of Sk (19038) is based on cranial morphology. Age assessment is based on dental wear and, while not as reliable as other techniques, provides an estimate of between 25 and 35 years.

In terms of health, uniform inflammation of the alveolar bone (tooth sockets) in the maxillae and mandible (without antemortem tooth loss) may be symptomatic of a mild or incipient form of adult scurvy. As the skull of Sk (19038) was located deep in the easternmost end of the grave cut (19009), the colour of the bone was little affected by heat transfer through the platform. Located in the western end of the grave cut, however, the bones of the feet were baked almost black.

Figure 50. East Platform of B.77, F.3601: Primary juvenile Sk (19022), with redeposited adult long bones Sk (19053) to the right of the skeleton. These redeposited bones were later determined to belong to Sk (19038). View West. Photo Jason Quinlan.

The loose and partially articulated bones of an infant, Sk (19048), aged 18 months (+/- 6 months), were also recovered within the grave fill (19044) of F.3600. The cranium, a few ribs and the articulated lower right arm and hand were found in the southwest corner of the cut; the mandible was found above the right foot of Sk (19038), and a cluster of ribs and vertebrae was found in the southern section of the cut. These bones likely represent an earlier burial that was dislodged by the digging of the grave cut (19009) for Sk (19038). Additional infant bones from the same individual, including the right clavicle, scapula and both ischia were recovered from the grave fills of F.3600 (19044) and F.3601 (19021). Age assessment of Sk (19048) is based on dental development. The bones of Sk (19048) were also baked dark orange and brown, especially those recovered from the western end of the grave cut.

F.3601: Sk (19022), Sk (19039), Sk (19053); Cut (19023); Fill (19021)

Feature F.3601 is a primary burial of a late child/early adolescent, Sk (19022), which is too young to be assigned a sex (Figure 50). This burial represents the last in the sequence of interments in the north portion of the east platform. The body was flexed on its left side with the head to the west (facing northeast) and the feet to the east. Both left and right legs were tightly flexed against the chest with the knees in close proximity to the chin. The right foot was placed on top of the left, both extended to the north. The left arm was underneath the torso, flexed slightly at the elbow with the hand underneath the left hip. The right upper arm was on top of the torso with the elbow flexed at 90° and the hand extended just above the ankles. Based on dental development, an age estimate of 12 years (+/- 2.5 years) can be made. Traces of phytolith were found directly underneath the skeleton indicating that the body was likely placed on some type of reed matt. As described earlier, the cut (19023) for this burial has been dug straight through the centre of the earlier, larger cut (19009) for Sk (19038), nearly displacing the entire skeleton but for the skull and feet. After Sk (19022) was placed in the grave cut, some of the disarticulated limbs (19053) from Sk (19038) were neatly positioned alongside the body in the north end of the cut.

Figure 51. East Platform of B.77, F.3601: Redeposited limbs of Sk (19053) (partially removed) and an isolated cranium, mandible, and several cervical vertebrae from a child, Sk (19039), of six years (+/- 2 years). View North. Photo Jason Quinlan.

Because Sk (19022) was buried under the eastern platform at a relatively shallow depth on its left side, the entire upper right side of the skeleton was baked a dark gray-brown colour by the fire, while the lower left side of the skeleton was slightly less heat altered. A small amount of what appears to be carbonized brain tissue was recovered from within the cranium of Sk (19022). This might provide an indication of the amount of time occurring between the first and last interments in this section of the east platform as Sk (19022) is the only cranium that retains traces of carbonized tissue. It would appear that sufficient time had elapsed to allow the complete decomposition of brain tissue in the first three skulls prior to the house fire.

At the bottom of grave cut (19023), just below the redeposited limbs of Sk (19053), an isolated cranium and mandible (along with several cervical vertebrae) were found (Figure 51). These bones, belonging to a child of six years (+/- 2 years) based on dental development were assigned skeleton number (19039). It is unclear at present exactly where this skull derives from, as there were no other bones associated with this individual in the grave fill and no indication of an earlier grave cut. It is hoped that further excavation in the east platform will clarify the depositional nature of this individual.

Burial Sequence for the East Platform of B.77:

Earliest:	F.3600	- Sk (19048) infant burial (cut obliterated by subsequent burials)
		- Sk (19038) completely disturbs earlier burial of infant Sk (19048)
Latest:	F.3601	- Sk (19022) cuts through Sk (19038)
		- Sk (19039) redeposited in grave fill at same time (?)

South Area

Only two interments were discovered in the South area this field season. Several buildings were in the process of removing the infill during the excavation season where interments are not common. Tertiary human bones were found in non-interment contexts within the infill of these buildings. Having reached the floors and platforms typical of interment activities by the end of the field season; many of the burials from these buildings will be revealed in the next field season. Two Neolithic adults were found buried in the infill of Building 97 in the southeast corner of the house as primary interments.

Figure 52. Southeast corner of B.97, Space 365, F.3458. Calvarium of Sk (19235) below and vertebral column of Sk (19224) above. Both adult partial skeletons in primary contexts; disturbed by Mellaart in the 1960s. View Southeast. Photo Jason Quinlan.

Building 97, Space 365

F.3458: Sk (19224), Sk (19235); Fill (19223); Cut (19225)

During the 2009 field season, the top of an adult skull, Sk (19235), was found in the presumed southeast corner of Space 365. Protected by the east and south walls, the skull was stratigraphically locked by overlying strata. It was therefore recorded, photographed, and left for future excavation. In 2010, Space 365 was further excavated and defined within Building 97. The southeast corner was revealed to be unusual because the east and south walls did not meet at right angles. Rather, the south wall continues at an angle that results in a triangle-shaped wedge between the east and south walls. Sk (19235), situated at the northern edge of this southeast corner, was revisited with the intention of lifting it. While excavating the area around the partial skull of Sk (19235), the partial skeleton of Sk (19224) was discovered situated directly above Sk (19235) in this wedge-shaped southeast corner. Both of the adults were buried in the infill of the house, but could be cut from a later building in this location (this needs to be researched with the 1960s archive).

One of these adults, Sk (19235), consisted of the calvarium only; the other individual, Sk (19224), was truncated below the waist (Figure 52). The disturbance to the burials occurred during earlier excavations in the 1960s when it was likely believed the house to be rectangular with the south and east walls meeting at right angles. In Building 97, however, the triangular-shaped inset in the southeast corner survived the 1960s excavations that missed this unusual corner but nonetheless disturbed the lower bodies of the two adults.

Figure 53. Southeast corner of B.97, Space 365, F.3458. Sk (19224) flexed partial skeleton in primary context in the infill; disturbed by Mellaart in the 1960s. View North. Photo Jason Quinlan.

Tightly flexed on its left side, the gracile female Sk (19224) was oriented with the head to the southwest and the feet (by deduction) to the northeast (Figure 53). The head was on the left side, facing northeast. The truncated lower body was mostly absent although some bones were found in the disturbed infill from 1960s backfill. The right humerus was extended and the arm bent acutely at the elbow. The right lower arm and hand was extended towards the chin. The left arm was missing. The right and left legs were tightly flexed at the hips and knees. The right knee was touching the forehead and the left knee was close to it. The hips, proximal femora, distal tibiae and fibulae, and both feet were not present having been removed in the 1960s. Sk (19224) is one of the smaller individuals found at Catalhoyuk. All skeletal indicators suggest the individual was an adult.

The interment of the two individuals is likely related given that they occur in close proximity to one another in an odd corner in the infill of the Building 97. Sk (19224) is a gracile skeleton, probably female, whereas Sk (19235) is more robust and probably male. One cervical vertebra (C1) and a few rib bones were found loose in the east wall near Sk (19224); they clearly belonged to the larger individual Sk (19235). Phytoliths were noted above Sk (19224) and adhering to underside of her bones at the bottom of the cut. Red pigment was seen above and below Sk (19224) in association with the phytoliths. Large chunks of charcoal were noted in and around the thorax of Sk (19224). The fill (19223) surrounding both skeletons contained several large animal bones such as cattle.

Post-Neolithic Burials
West Mound

F.3317: Sk (15142); Cut (15143); Fill (15141)

Feature F.3317 is a disturbed primary burial of young adult female, Sk (15142). The burial was found very close to the top soil level. Sk (15142) was oriented in an East-West direction, with the head to the west. Although the skull was missing, the position of the postcranial skeleton suggested Sk (15142) was buried face down. Many elements were still articulated, such as the forearms at the wrist, the carpals and metacarpals, the sacrum and right os coxa, and the right scapula and humerus. Both forearms were above the lower limbs and sacrum, suggesting that the arms were placed with a slight bend at the elbow behind the hips of the individual. The entire right lower limb was missing except for 2 metatarsals. The left fibula, much of the tibia, left os coxa, and left foot were also missing. Most of the rib cage and vertebral elements were present, yet they were highly fragmented and scattered due to excavation damage at the topsoil level and to erosion. Since this burial was so close to the surface, it is highly probable that Sk (15142) slid down slope from its original location due to erosion.

Age assessment was based on visible epiphyseal fusion lines in the process of closing, and the morphology of the pubis which indicates an age range of 17-20 years at the time of death. There was one thoracic vertebra and one rib that displayed some reactive bone (periostitis), so there may have been some type of thoracic cavity inflammation in life. The grave cut (15143) was only observed on the western section of this burial, which can be attributed to the body moving down slope during erosion.

F.3316: Sk (15150); Cut (15147); Fill (15149)

Late period red mud bricks were found underneath the area of interment for F.3317, Sk (15142). Feature F.3316, Sk. (15150) was located within these mud bricks (15148). The remains of the lower limb of this individual were highly fragmented and crushed. While the lower limb bones corresponded to the missing elements of Sk (15142) found above it, the bones were in such bad condition due to root damage and to fragmentation, it cannot be said for certain that the bones are from the same individual. Many isolated elements were found within the grave fills (15141) and (15149) of both skeletons (15142) and (15150). For example, there was an isolated right temporal bone of a neonate found in the grave fill (15141) of Sk (15142).

F. 3318: Sk (15155); Cut (15154); Fill (15153)

Feature F.3318 is a disturbed primary burial of an adult female Sk (15155). The burial was truncated at the level of the pelvis by a later pit (F.3331) so that most of the lower portion of the body was missing, including the entirety of the lower limbs, the right os coxa, and the sacrum. In addition, the right forearm and right hand were also absent. Sk (15155) was

positioned in an East-West direction with the head to the west. Unfortunately, the skull was partially damaged during excavation upon discovery of the burial, so it was not possible to determine which direction the head was facing. Small red ochre deposits were found in the area where the right hand and right os coxa would have been located. On both sides of the skull at the level of the ear (external auditory meatus) were yellow pigment deposits, possibly yellow ochre. The grave cut (15154) was only apparent near the skull, and then it became increasing unclear in the direction of the feet. The age of this individual was based on the changes in the auricular surface of the left hipbone, which is indicative of a middle aged adult between the ages of 40-45 years.

F. 3331: (15189), (15192), (15199); Cut (15185); Fill (15179), (15193), (15195)

Feature F.3331 was a late period pit that truncated F.3318, Sk (15155) and other skeletons found in clusters: (15189), (15192), (15199). The bones represented a secondary deposit of several skeletons whose bones were highly fragmented and scattered. Designated a cluster unit, it is still unclear as to how many individuals are contained in this pit feature since it could not be completely excavated this season. The cluster (15189) represents the partial cranial and iliac remains of a neonate found in the northwest section of the pit fill (15179) in the disturbed pit (F.3331) that undercut F.3301 (buttress) in Space 454. Because of the high level of disturbance in this pit, it is unclear if the cluster (15189) was a disturbed Chalcolithic burial, or if it was from the later Byzantine period. Both Chalcolithic and Byzantine artefacts were found within the pit, including potentially special items such as a large Byzantine burial stone and tiles.

Directly to the east of (15189) were clustered human bones (15192), a partial adult cranium missing most of the facial elements. Red ochre was located directly on the skull, covering a small area on the posterior surface of the occipital in the areas around the nuchal lines. In addition, another red ochre deposit was found about 5 centimetres northeast from the skull (15192) in the surrounding pit fill (15193). This cranium was not articulated with any other element, though after careful excavation of the remaining pit fills (15179) and (15195), it was discovered that the remains of at least one highly fragmented individual was scattered in the northern and eastern sections of this pit feature. These remains were assigned to the cluster (15199). Before discovering these bone clusters, there were other disarticulated human adult and neonate remains in pit fill (15165), which lay above (15179). The adult remains from (15199) could continue further down within this pit. The bones from cluster (15199) were from a middle aged adult of 40-49 years at the time of death. Sex was determined to be male based on the morphology of the hip bone.

Archaeobotany Report 2010 - Amy Bogaard & Michael Charles

Team leaders: Amy Bogaard (1), Mike Charles (2)
Team: Catherine Longford (2), Muge Ergun (3), Petra Vaiglova (1), Gemma Martin (2).

Flotation workers: Mevlüt Sivas (5), Hüseyin Yaşlı (5)

(1) University of Oxford (2) University of Sheffield (3) Istanbul University, (4) Kücükköy,

Introduction

The archaeobotanical team this season was split into a 'discussion' and a 'field' group in order to cover the project's activities. Bogaard, Charles and Ergun participated in the discussion season, while Longford and Ergun ran the flotation system with the assistance of Gemma Martin (Sheffield) and Petra Vaiglova (Oxford). Alexandra Livarda worked throughout the year and over the summer on archaeobotanical laboratory work in the UK.

Discussion season

We presented preliminary results from full analysis of around 200 samples, selected on a range of archaeobotanical and/or archaeological criteria in consultation with other teams; over 50 further samples are also under analysis and will be incorporated in the final report. Identification work has been a collaborative effort between Bogaard, Charles, Livarda and Ergun, with strategic assistance from Dragana Filipovic (currently completing her DPhil on material from the previous excavation cycle).

Key archaeobotanical topics for the upcoming report include assemblage formation, context-related variation, storage/consumption and the nature of farming. We have thus far completed a unit by unit archaeobotanical account of the spaces excavated in the South and 4040 Areas from 2000 to 2008 and a series of exploratory multivariate analyses of the data in relation to context and phase. Context-related variation is marked, and a general contrast between internal and external contexts associated with in situ burning has begun to emerge that may shed particular light on the spatial configuration of plant-related activities. Our investigation into the nature of farming practice incorporates stable nitrogen, carbon and strontium isotope analysis of a suite of samples, mostly concentrations of plant material in burnt buildings. Results are continuing to emerge that will directly complement ecological interpretation of potential arable weeds associated with crop remains.

We are contributing to several themes that will be the focus of discussion in 2011, including internal versus external activities, storage/sharing of food and taskscapes.

Field season - Catherine Longford

Preliminary archaeobotanical results

The flotation team processed 191 samples (c. 3,280 litres of soil) during the 2010 season. As in previous years, at least 30 litres (where available) were processed from each deposit; average sample size was c. 17 litres in 2010. In total we received 86 samples from this season's excavations in the South Area, 82 from the 4040 Area (both on the East Mound) and on the West Mound, 17 samples from Trench 5 and 3 from Trench 8.

As the 2010 season was a reduced excavation season, the archaeobotany team was able to consolidate previous seasons' work whilst also process the current season's material. Level 1 archaeobotanical assessment was carried out on the 2009 backlog and the 2010 samples from South, 4040 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). A small backlog of material remains for assessment in 2011.

Overall, the samples analysed were consistent with the archaeobotanical taxa found previously at the site. 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 the majority of contexts (midden, room fill, oven fill, fire spots) reflecting widespread dehusking of glume wheat grain.

In the South area several concentrations of plant material were found in burnt Buildings 80, B.79 and B.97. On the floor of Building 80 several concentrations were found in the northeast section of the room. One sample unit (18952) was a small concentration of c. 200 seeds of pea (Pisum sativum). Near the peas another seed concentration unit (18945) was almost entirely composed of cleaned barley grains. These two seed concentrations may have been hung from the roof or kept on the floor in baskets or wooden containers. In Building 79, a concentration of dehusked glume wheat grain was found on the base of bin F.5031 units ((18596), (18598)). On the floor of Building 97 unit (19238), a scatter of glume wheat grain was present. This grain had been dehusked and was very well preserved. These concentrations were all modest in size.

Midden contexts such as those excavated in the South Area north of Building 86 in Space 329 and Space 369 west of Building 87 were dominated by the usual 'waste' components (glume wheat chaff, seeds of wild plants including sedges, dung, tubers, roots and nutshell/fruitstone).

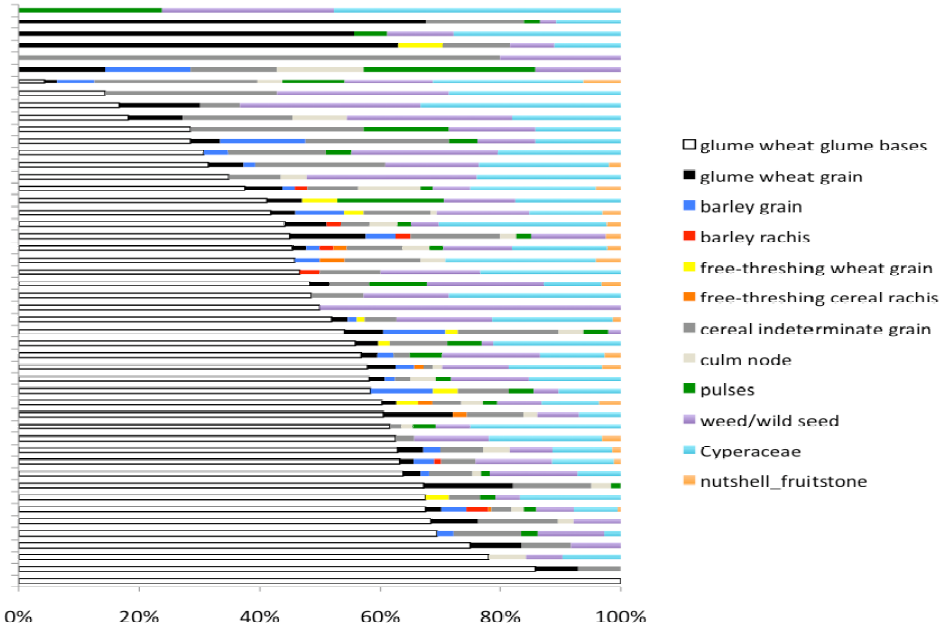
Archaeobotany Preliminary Report on West Mound Trenches 5, 6 and 7 - Amy Bogaard and Michael Charles

Introduction and methods

From 2006-2010, a total of 81 soil samples was submitted for flotation from Trenches 5, 6 and 7 on the West Mound (67 from Trench 5, 1 from Trench 6 and 13 from Trench 7). Sampling and processing methods were the same as those developed in the East mound excavations (Hastorf 2005). A bulk soil sample of c. 30 litres in volume was taken from every excavation unit (excluding ploughsoil and post-Chalcolithic disturbance) and processed by machine flotation; units yielding less than 30 litres were sampled in their entirety. The flot (floating material) from each sample was retained by a piece of chiffon with an aperture of c. 300 microns and air-dried in the shade; when dry, the flot was sieved at 4 mm, 1 mm and 0.3 mm. The heavy residue (non-floating portion) of each sample was retained by a mesh with c. 1 mm aperture size, spread out in shade to dry and sieved at 4 mm, 2 mm and 1 mm. Material of each sieve size was sorted on site by the heavy residue team (Cessford and Mitrovic 2005); typically, the 4 mm material was sorted in its entirety, whereas random subsamples of the 2 mm and 1 mm fractions were extracted for sorting with a riffle-box. Charred plant material from the heavy fraction was bagged together with material from the flot.

A total of 63 samples from Trench 5 (49), Trench 6 (1) and Trench 7 (13) have been assessed for archaeobotanical composition following the protocol developed for the East mound (Bogaard et al. 2005); a further 18 samples from Trench 5 were excavated towards the end of the 2010 season and will be assessed in 2011. Level 1 assessment yields basic information on composition (major crop and wild plant taxa as well as plant parts) and richness of all samples; it enables rapid feedback for other teams and informs future selection of samples for full analysis. The 4 mm flot is scanned and major categories scored according to their relative abundance. A random subsample (c. 5 ml in volume) of the 1 mm flot is extracted using a riffle box, sorted and identified to major category (e.g. for crops - barley grain, barley rachis, glume wheat grain, glume wheat glume bases etc.; e.g. for wild plant remains – sedge seeds, other wild etc.)

a.



b.

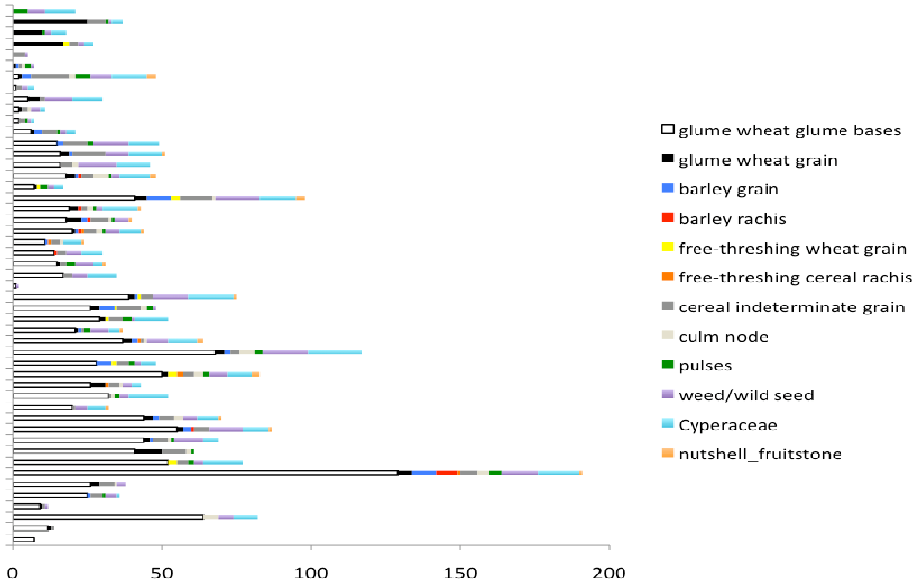
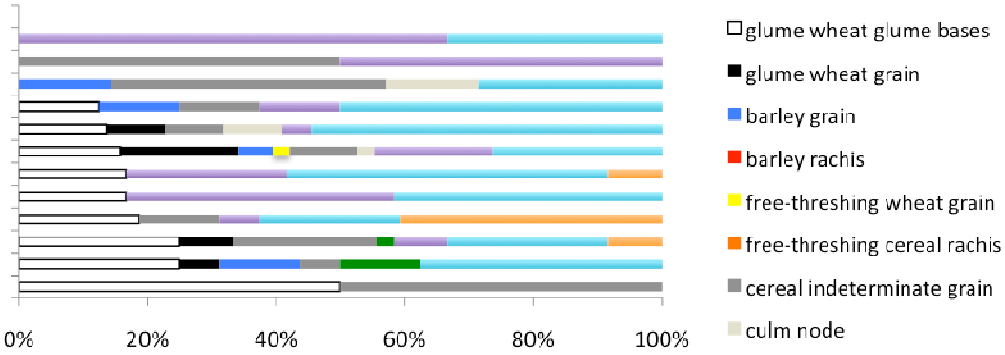


Figure 54. Summary of archaeobotanical composition of Trench 5 samples (and 1 Trench 6 sample) based on analysed subsamples of the 1 mm flot based on a. percentages; b. absolute counts.

a.



b.

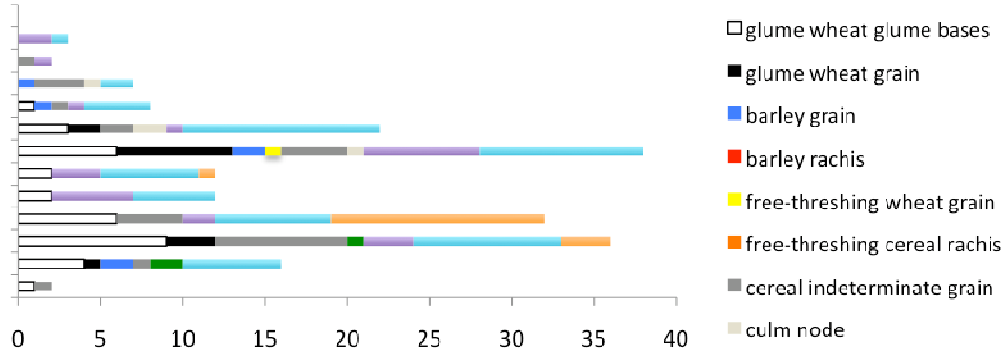


Figure 55. Summary of archaeobotanical composition of Trench 7 samples based on analysed subsamples of the 1 mm flot based on a. percentages; b. absolute counts.

Results and discussion

Quantitative results from analysed subsamples of the coarse (1 mm) flot are shown in Figure 54 on the basis of percentages and absolute counts. The dominant component is glume wheat glume bases, which represent the by-product of dehusking of glume wheats such as einkorn and emmer. This cereal chaff category is dominant in many East Mound samples and in the assemblage from Building 25 on the West Mound (Fairbairn et al. 2005; Bogaard et al. in prep a, b). Recent evidence from the East Mound suggests that the glume wheats were stored as spikelets and dehusked on a piecemeal basis (Bogaard et al. 2008, in prep a), and the West Mound data presented here, together with those from Building 25, suggest that this practice extended through the Early Chalcolithic sequence.

While the glume wheats dominate the assemblage due to the manner of their storage/piecemeal processing, a much wider range of crops is represented in the samples. Several cereal types are attested: in addition to einkorn, emmer and the 'new type' glume wheat, hulled and naked barley grain types occur, as well as free-threshing wheat, identifiable as bread wheat on the basis of its rachis. The pulses attested are lentil and pea; no bitter vetch or chick pea have been recorded so far from Trenches 5-7, though they do occur at relatively low frequencies in the Building 25 assemblage (Bogaard et al. in prep b). Overall, the crop spectrum of Trenches 5-7 is similar to that known from Building 25 and notably includes hulled barley, which is virtually absent until the uppermost phases of the East Mound and is well represented in the Building 25 assemblage.

Though the wild plant assemblage from Trenches 5-7 has not yet been identified in detail, preliminary assessment indicates that sedges are conspicuously common (Figure 55), as they are also in Building 25 and throughout the East Mound sequence (Fairbairn et al. 2005; Bogaard et al. in prep a, b). This continuity in the occurrence of wetland plants, which could have entered the charred plant record by multiple routes including animal dung (burned as fuel) and use for basketry/building material, is notable given apparent palaeosol formation and cessation of local flooding during the Early Chalcolithic (Boyer et al. 2006). The high frequency of sedge seeds in West Mound deposits suggests continued local availability and use of wetland habitats and underscores the overall conservatism of the plant assemblage.

Approximate densities of charred plant items per litre soil processed range from c. 1 to c. 20 items per litre. None of the units represented are associated with in situ burning. The plant material analysed thus far represents the re-deposition of residues from burning events and activities that cannot as yet be placed spatially.

References

Bogaard, A., Charles, M., Ergun, M., Jones, G., Ng, K., Polcyn, M. and Stone, N. 2005. Macro-botanical remains. www.catalhoyuk.com/archive_reports

Bogaard, A., Charles, M., Ergun, M., Ertuğ, F. and Filipović, D. 2008. Macro-botanical remains. www.catalhoyuk.com/archive_reports

Bogaard, A., Charles, M., Livarda, A., Ergun, M., Filipović, D. and Jones, G. in prep a. Archaeobotany. In I. Hodder (ed) Humans and landscapes of Çatalhöyük: reports from the 2000-2008 seasons. Los Angeles: Cotsen Institute of Archaeology.

Bogaard, A., Charles, M. et al. in prep b. Archaeobotany. In C. Gibson and J. Last

Boyer, P., N. Roberts, and D. Baird. 2006. Holocene environment and settlement on the Çarsamba alluvial fan, south-central Turkey: integrating geoarchaeology and archaeological field survey. Geoarchaeology 21: 675–698.

Cessford, C. and Mitrovic, S. 2005: Heavy residue analysis. In I. Hodder (ed.) Changing Materialities at Çatalhöyük: reports from the 1995–1999 seasons. Cambridge and London: McDonald Institute Monographs/British Institute of Archaeology at Ankara, pp. 45-64.

Fairbairn, A., Near, J. & Martinoli, D. 2005: Macrobotanical investigation of the North, South and KOPAL area excavations at Çatalhöyük East. In I. Hodder (ed.) Inhabiting Çatalhöyük: reports from the 1995-1999 seasons. Cambridge: McDonald Institute Monographs/British Institute of Archaeology at Ankara, pp. 137-201.

Hastorf, C. 2005: Macrobotanical investigation: field methods and laboratory analysis procedures. In I. Hodder (ed.) Inhabiting Çatalhöyük: reports from the 1995-1999 seasons. Cambridge: McDonald Institute Monographs/British Institute of Archaeology at Ankara, 129-136.

Phytolith report 2010 - Philippa Ryan (Institute of Archaeology, UCL)

Work undertaken whilst on-site

I was present on-site for three weeks (17 June – 7 July) of the post excavation season. The main objective was to attend presentations given by lab teams and excavators, as well as to present the results from phytolith analyses. The phytolith presentation was based upon a chapter 'Plant use from landscape and household perspectives: the phytolith evidence' prepared for forthcoming site volumes.

Whilst on-site, summaries of various categories of phytolith data, such as in relation to specific buildings or contexts, were compiled for different research teams. For instance, phytolith data from storage bins and fire-installations were summarised in a format suitable for facilitating direct comparison with macrobotanical datasets on a unit by unit basis - with the aim of further addressing research questions relating to the nature of plant food storage and fuel use.

This season, there were no designated 'priority units' from excavations to process. However, macroscopically visible silica-skeletons present within burnt mudbricks were sampled in order to further investigate the types of plants incorporated within construction materials (see previous 2007-2009 archive reports).

Research Overview

In addition to analysing sediment samples for priority tours and silicified traces of artifactual remains whilst on-site (see 2006-2009 archive reports), the phytolith analysis of sediments from Çatalhöyük has formed the basis for my doctoral research undertaken at the Institute of Archaeology, UCL. Research objectives within my thesis 'Diversity of plant and land-use during the Near Eastern Neolithic; phytolith perspectives from Çatalhöyük' included investigating the role of wild and domesticated plant resources, the types of environments exploited, any evidence for resource ranking, temporal changes in plants present on-site, differences in plant usage between site areas or buildings, as well as 'plant pathways' on to the site.

To address these research questions a wide range of plant uses and contexts were considered. Phytoliths were used to investigate the food and non-food uses of plants, such as for fuel, craft activities, and construction purposes. Phytoliths were extracted from sediments sampled from features and floors within buildings, as well as middens and other external spaces. Bulk midden samples were analysed from site levels spanning the occupation of the East Mound to address long-term temporal change in plants present, whilst micro-lenses within a smaller number of individual units were processed to consider a finer temporal resolution. In addition to sediments, macroscopically visible silicified traces of plant artefacts, such as basketry, and from the plants used in construction materials were also analysed. These whitish remains are formed by the in situ decay of plants and provide information about specific types and locations of plant use. Samples were mainly taken from site areas excavated since 2006, but also from archive deposits from previous seasons in order to obtain sediments relevant for certain questions, such as addressing temporal change. In addition to the chapter and chapter contributions being prepared for the forthcoming site volumes, various aspects of the research are currently being prepared for journal publications.

Mollusc Shells at Çatalhöyük: Insights from the 2010 Study Season - Daniella E. Bar-Yosef Mayer (1 & 2) & Burçin A. Gümüş (3)

(1) Department of Zoology, Tel Aviv University, Tel Aviv, Israel, (2) Recanati Institute of Maritime Studies, University of Haifa, Haifa, Israel, (3) Ankara, Turkey

Introduction

This report presents our main insights into shell exploitation that matured during the seminars that took place at the site during the 2010 study season. It is based on the shells that were recorded during the 2008 and 2009 field seasons, and includes an estimated 50% of the shells recovered throughout the renewed project (1990s and 2000s). The material presented here is based only on shells that we examined in person: some shell artefacts were reported previously by D. Reese (2005) and re-examined. A small number of shells currently at the Konya Museum were also studied in 2010.

Discussion

Çatalhöyük is particularly rich in molluscan remains of three classes: Gastropods (snails) that naturally inhabit marine, freshwater or land environments; bivalves that naturally inhabit marine and freshwater environments; and Scaphopods (tusk shells) that inhabit only marine environments. Mollusc shells were brought to the site from four different sources: The Mediterranean shore, fossil beds in the Taurus mountains, various freshwater sources in the vicinity of the site, and several land snails may have been collected at or near the site. These shells reflect a variety of human activities: Shells of gastropods, bivalves and scaphopods that were used as personal ornaments, usually beads, originate in all four environments. Bivalves that were collected as food were collected in a nearby river. The nearby river, as well as other freshwater sources (lakes and marshes) is where mud was collected for construction materials and pottery production, and within this material were thousands of tiny freshwater snails. Some of these could have also brought along with certain plants. The discussion below is presented in a way that expresses the shells' exploitation, and the information that we as archaeologists can extract from the data.

Environment

Land snails can serve as environmental indicators, but very few land snail species were discovered at the site (n=5). Most of them were discovered near the surface and could post-date the deposits in which they were found. This raises the question of why so few land snails were present at Çatalhöyük. One possible interpretation could be that, the houses made of mudbricks did not allow humidity to penetrate, thus making them an unattractive habitat for the landsnails. This information is based on our interview with Veli, the builder of Kücükkoy, who specifically mentioned the lack of humidity in the houses as being an advantage for using mudbricks in house construction. Alternatively, landsnails were moved out of the site by the settlers of Çatalhöyük in order to keep the houses clean. Yet another option for the absence of landsnails in the site could be that the surrounding of the site was swampy or wet, which deterred the snails.

Freshwater snails and bivalves form the largest group of shells at the site. Most of them are minute snails (under 1 cm) that are either that size when fully grown, or the juveniles of larger specimens like Viviparus and Valvata. These shells derive mostly from the debris of mudbricks and mortar. But they were also encountered as inclusion in potsherds (see below). Together with Serena Love we inspected some of the bricks and mortar in the field and identified the molluscs as inclusions in them, and we assume that they were introduced to the site inadvertently. They represent the surroundings of site: fast running water of rivers and a lake, and slow running water possibly of a marsh. Several of these species, namely, Lymnaea stagnalis (Linnaeus, 1758), Stagnicola palustris (O. F. Müller, 1774), Radix auricularia (Linnaeus, 1758), Gyraulus (Armiger) crista (Linnaeus, 1758), and Planorbarius corneus (Linnaeus, 1758) are known to live in waters that contain macrophytes. Since they climb, hide, attach themselves and feed on these plants, they could have been collected, not necessarily only with the construction materials, but also when plants were collected, such as phragmites used for production of mats etc. (Thanks to P. Ryan for information on phragmites).

We tried to investigate what types of snails are available today in the various environments that are suitable for mudbrick construction today for comparative purposes. We collected and sifted shells sampled in three locations but the samples were too small to reach any definite conclusions. Furthermore, the changes in the environment between the Neolithic and today, and especially channelling of water for irrigation over the last few decades, do not allow a reliable analogy.

A comparison of the environmental information of the shells to the report on the environments reflected by the wood remains (Asouti 2005) reflected similar environments, and the Radix, a species that typically lives in brackish lakes may have originated in the same areas as the tamarisk, and both are not very abundant. A preliminary analysis shows that when comparing the proportions between the different components by level, we observe only slight differences. It is important to stress with regard to the sources of freshwater shells, that the changes in proportion between the different shell groups does not necessarily reflect the presence or absence of these environments. It only tells us in what types of water bodies the inhabitants of the site chose to collect the mud and plants.

Unio shells were considered to have been collected as a food source (see below) and those were sampled and tested for climate and seasonality. They were sampled from throughout the Neolithic sequence of Çatalhöyük for isotopic study and sent to NERC Isotope Geosciences Laboratory of the British Geological Survey in Nottingham. Based on a preliminary study of four samples analyzed for ∂18O, results suggest that the climatic conditions were hot and dry summers and cold and wet winters. This is not surprising as it is to be expected in this environment of Mediterranean climate. We expect further collaboration with Dr. Melanie Leng that will enable more refined results throughout the sequence.

Food

The freshwater environment that produced the small snails in the mud was also a source of food: Several edible shellfish were recovered at Çatalhöyük: Most prominent are the Unio pictorum bivalves that live in river systems, in highly oxygenated and clean waters. Some large freshwater gastropods, especially Viviparus viviparus coming from similar environments, namely freshwater river systems, river channels, floodplain lakes and ponds, could also have been consumed. The latter, however, appear in relatively small numbers and are scattered, not concentrated, throughout the site, and therefore are not treated by us as food remains.

The long sequence of the south area permits a preliminary view of how Unio were exploited. The shells were most prominent in phase South.G where they account for 72% of shells in this phase. Moreover, Space 181 of Hodder Level South.G exhibits a large MNI (n=693) of Unios that were mixed with all other types of artefacts including obsidian tools, stone beads, etc. While Unios are present in all levels, they were often found as fragments and over 12,000 fragments have been recorded in our database. However, MNI counts amount to only 898. It is our impression that but for South.G, Unio valves were collected for purposes other then food (discussed separately below). It is worth noting the proportion between supposedly edible Unios and artefacts made of their shells: In South.G, out of the MNI of 693 shells, only six (1%) were artifacts.

Three of the valve samples tested for oxygen isotopes to date, suggest that shellfish were collected in autumn. This is probable, as it is likely that following hot and dry summers some food sources (especially plants) were scarce and additional food resources were sought. In many non-western societies shellfish are considered as a low ranked food that is often a last resort in the absence of better and more nutritious foods. The seasonality of shellfish gathering could and should be checked in relation to other seasonal food resources (fruits, cereals). The shell midden at South.G complements other information on the initial settlement of the site: Faunal remains, botanical remains, and wood procurement, all indicate a more variable exploitation of the site's environment and the available resources.

Ornaments and artefacts

Ornaments and artefacts made of shell are discussed here according to their origin.

Land snails

The sixty-nine perforated Xeropicta snails found together in a niche ((11691) B. 56, South.R – fig 51 Archive Report 2005), may have formed a necklace or another type of decoration. Their perforation, mostly in the last whorl opposite the aperture do not seem consistent with holes perforated by rodents found in other land snail (Mienis, personal communication). Therefore we conclude that they are a deliberate human production.

In addition, one Borlumastus shell was perforated 13167.X13.

Freshwater shells

- **Unio artifacts:**

Besides food, 108 artefacts made of Unio shells were found throughout the site. Unio artefacts can be divided into three main types: perforated pendant, non-perforated artefacts that seem "blanks" of pendants, and incised artefacts that may have had a functional, rather than ornamental function. In addition, several empty valves were placed in graves and seem to have served as grave goods (x and h finds) and had traces of pigment in them. These were recovered especially in levels 4040.F, 4040.G, South.L and south.Q. In other levels there were no Unio artefacts (missing in South.H, I, M, P, and S) and in the rest only one was found. This might suggest that where Unios are abundant, the shells may have been collected for the production of artefacts rather than for food. Where they are present they form 5-15% of shell beads, but in South.Q, where 13 pendants were found in the context of a baby burial (bldg. 53), they form a third of the shell beads. In South.L they are also relatively abundant due to a concentration of five specimens in bin fill (Unit (4796) in B.6).

The unusual cluster of Unio pendants from unit (11985), a baby burial in Building 53, contained 21 perforated Unio pendants adjacent to the skeleton (Figure 56). Those are different from most other perforated Unio artefacts in that they have two perforations each, their shape is that of a rounded square, they are especially thin (ca. 1 mm in thickness). A microscopic examination of the holes indicates that they are not worn, neither were they sewn, in other words, they were not used and were probably produced to serve as grave goods.

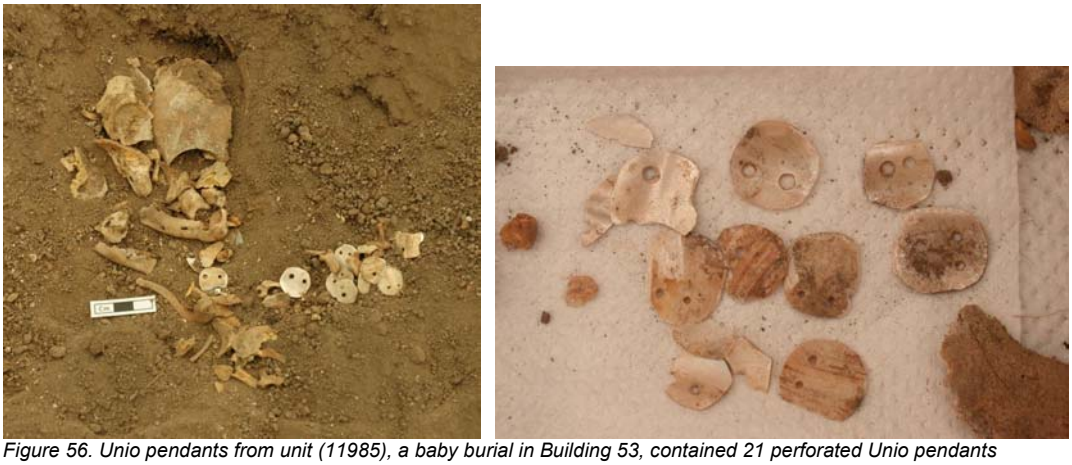


Figure 56. Unio pendants from unit (11985), a baby burial in Building 53, contained 21 perforated Unio pendants adjacent to the skeleton. Photos Jason Quinlan.

Unlike the Unios used in the burial (11985, see above), most Unio pendants had a single perforation. The overall shape of the artifact varies from an oval to a square and many did not have their margin worked or smoothed. In one case there was a pendant with three holes (Unit (1868), South.K). We also found a number of "blanks" that had the same general squarish contour and dimensions but were not perforated, as well as two partially perforated items. The striations inside the holes indicate they were mechanically drilled, i.e., with the help of a pump drill or a bow drill (We thank Rose Bains for making an SEM photo of these artefacts that enabled this determination). 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, usually from the inside nacreous

surface of the shell outwards. The serrated artefacts (n=9) 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. Those could have been used for pottery decoration, but similar artefacts, it has been suggested, could have served as "fish scalers" (MacDonald 1932). The finding of one such item in Building 77 where fish remains were found may lend support to this interpretation. However, the fish themselves are small species that may not require scaling (We thank the faunal team for providing this information).

- **Shells with colour**

A few shells had red colour painted on them, and others, in particular Unio valves, had traces or lumps of pigments on their interior, and sometimes also on their exterior surface. In a few cases they were discovered in burials (features F.4023, F.4028 in 4040.G). Both red and yellow ochre were present and they are associated especially with juveniles and infants.

Several specimens of large freshwater gastropods, mostly Viviparus, have a ground hole in the body whorl and in a few cases red stripes were painted on them, as well as on two Stagnicola specimens. Two fossil gastropods were also painted (see fossils, below).

While the Unio valves usually contained ochre, it is possible that the painted stripes were produced from other pigment such as cinnabar, but the material was not yet tested.

Marine shells

The dominant species of marine shells are Columbella, Nassarius, Conus and Antalis, that together form 90% of all marine shells in the site. Columbella and Antalis form over a half of those. This seems to reflect a continuation of a Palaeolithic tradition, as these are the species dominant in the Levant and the Eastern Mediterranean during Upper Palaeolithic and Epi-Palaeolithc periods (Bar-Yosef Mayer 2005, Colonese et al. 2010). In the Levant we see a gradual change during PPNA and especially PPNB towards other species, and Glycymeris, Cerastoderma and Cypraea are much more prominent. The latter are present in negligible numbers at Çatalhöyük, yet they might reflect connections with the Levant. To some extent this may be related to symbolic values of this society and an as yet unknown symbolic value attributed to the "Palaeolithic species". The Palaeolithic nature of this assemblage may be further indication for the degree of mobility of this society, as seen in the dominance of scaphopod shells and the presence of Antalis is in all levels where other marine gastropods and bivalves were found. The use of scaphopods and other shell beads in conjunction with stone beads should be further explored (see scaphopods, below).

The only marine bivalves were from the family Cardiidae (possibly fragments of Cerastoderma glaucum) and they were represented by one speciemen from South.R and another from South.L. This is curious in light of the dominance of such shells in PPNB Levantine sites. A similar situation is encountered with Cypraea (cowrie) that is represented by only two specimens in South.G. Equally surprising is the absence of cowries from the West Mound.

Fossils:

Fossil shells recovered at the site are part of a Miocene fauna (gastropods and bivalves) that existed in brackish to shallow marine facies of different geological formations representing different ages. The habitat and ecological environment of the species represented is one of shallow waters, and sandy and muddy bottoms of the Thetis sea. The most likely source area for these fossils could be the shallow marine units of the Karaman-Mut basin of the Taurus mountains (Bar-Yosef Mayer et al. 2010 and references therein).

Most fossil gastropods and bivalves were not worked and are assumed to have been collected as "souvenirs". However, two fossil gastropods were perforated (Terebralia bidentata and Clavatula calcarata) and two shells (one bivalve and one gastropod) painted (Athleta ficulina and Terbralia bidentata). Thus in total we can refer to four of the fossil gastropods and bivalves that were manipulated, probably at the site.

Another group of fossils were scaphopods, also referred to as Dentalium shells. In the eastern Mediterranean they are only known in Pliocene units in Syria basin and the Lower Pliocene

marine deposits of the Hatay-Samandağ and İskenderun sub-basins (Bar-Yosef Mayer et al. 2010). The latter were cut into short annular sections, and all of those can be considered as beads. While the scaphopods are found throughout the sequence, most fossil gastropods and bivalves were recovered in areas 4040 and TP, thus in the top levels of the site. This implies contacts with the Hatay region, which is over 300 km from the site, throughout the sequence, and "expeditions" to the Karaman area, about 50 km away, only in later periods of the site's occupation (see also discussion of scaphopods, below).

Scaphopods

Scaphopods, better known as Dentalium, are a major component of the ornaments and originate in both the Mediterranean (where the most common genus is Antalis), and fossil beds of the Hatay region (where the common genus is Dentalium). Scaphopods from both locations are scattered throughout the sequence, but they are completely absent from the West mound, in accordance with what is known from the Levant: These shells are no longer used in post-Neolithic societies, with the exception of Chalcolithic and Early Bronze Age pastoralists (Bar-Yosef Mayer 2008). Furthermore, if scaphopods are indeed indicators of high mobility and are used primarily by hunter-gatherers and herders, this may serve as a clue to a decrease in mobility once the Çatalhöyük inhabitants resettle in the West Mound. The presence of two especially large scaphopods on the East mound might indicate that these served as raw material and shell bead production may have taken place on site.

Shells in plaster and in pottery

Some of the complete or slightly broken Unio valves come from plaster contexts. Furthermore, thin sections of plaster show the presence of shell (Matthews 2005, Camurcuoğlu, personal communication). While this topic is under investigation and experiments are carried out to determine the presence and role of shell in different types of plaster (Çamurcuoğlu, personal communication), this raises the question of whether or not shell were collected especially for this purpose. Because Unio valves were specifically identified in several plaster units, we assume that the tiny shell flakes identified in the thin sections of plaster are probably those of Unio. To that one should add the 12,000 or so shell fragments that we recorded as a minimum number of fragments throughout the record (every bag that contained only Unio fragments was recorded as having one fragment because it is impossible to count the fragments as they keep breaking, and because we cannot assess MNI from these fragments). In light of the dominance of Unio fragments throughout the sequence, we should explore several possibilities: a. that Unio were collected for the production of ornaments and that the waste was crushed and mixed with other components to produce plaster; b. that Unio from the lowermost levels of the site where they served as food were collected as a readily available resource for plaster production; c. that Unio valves were collected as food and the debris was crushed to produce plaster, (and also possibly to discard of the bad smell that follows food debris), or, that a few were made into ornaments and the rest were crushed. This topic requires further study.

Shells were a component not only in plaster, but also in ceramics. We noted several Unio valves that were highly polished on their exterior face, probably the result of their being used as burnishers of pottery. In addition, the pottery team noted several specimens of Vallonia sp., a land snail, embedded in ceramic pieces from TP (15279). It is as yet unclear whether they are intentional temper or were part of the natural makeup of the clay.

Conclusions

Shells were exploited at Çatalhöyük in every possible way: The most common finds are snails and Unio bivalves from (probably) the nearby Çarsamba river. The latter were used primarily as a food source, and secondarily as a source of mother of pearl ornaments. Some of the crushed remains formed part of the plaster in the site. A few river shells, both Unio and gastropods were painted red. Since those were not perforated, it is not possible to determine that they were personal ornaments, but they most likely played a role in the spiritual lives of the inhabitants of Çatalhöyük.

Personal ornaments and jewellery were made not only of local material (Unio, Viviparus, and Xeropicta), but also from imported shells. Those consist of marine and fossil shells that were

either used in their natural state (as in the case of scaphopods and naturally holed gastropods), or were perforated and/or painted.

Most marine and fossil shells were found in middens and fills, similarly to figurines. Very few come from graves. This is indicative of their value, as it shows that this society was not ready to discard of their valued ornaments and figurines inside graves, but they kept them for use by the living.

Preliminary environmental studies based on the shells indicate that the information gathered to date complement information from plant remains, and isotopic studies might provide more accurate clues on the paleo-environment and paleo-climate.

References

Asouti, E. 2005, Woodland Vegetation and the Exploitation of Fuel and Timber at Neolithic Çatalhöyük: Report on the Wood Charcoal Macro-remains. In Inhabiting Çatalhöyük: reports from the 1995-1999 seasons, Edited by Ian Hodder. Çatalhöyük Research Project Volume 4, McDonald Institute Monographs/British Institute of Archaeology at Ankara. pp. 213-258.

Bar-Yosef Mayer, D.E., 2005, The Exploitation of Shells as Beads in the Palaeolithic and Neolithic of the Levant. Paléorient 31/1: 176-185.

Colonese, A., Mannino, M.A., Bar-Yosef Mayer, D.E, Fa, D.A., Finlayson, C.J., Lubell, D., Stiner, M.C. 2010, Marine Mollusc Exploitaion in Mediterranean Prehistory: An Overview. Quaternary International. Available on line: http://dx.doi.org/10.1016/j.quaint.2010.09.001

Bar-Yosef Mayer, D.E.,Gümüş, B.A. and Y. İslamoğlu, 2010, Fossil hunting in the Neolithic: shells from the Taurus Mountains at Çatalhöyük, Turkey. Geoarchaeology 25(3): 375–392. DOI:10.1002/gea.20311

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

Matthews, W., 2005, Micromorphological and Microstratigaphic Traces of Uses and Concepts of Space. In Inhabiting Çatalhöyük: reports from the 1995-1999 seasons, Edited by Ian Hodder. Çatalhöyük Research Project Volume 4, McDonald Institute Monographs/British Institute of Archaeology at Ankara. pp. 355-398

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.

Ceramics 2010 Archive Report – Nurcan .Yalman

Team Leader: *Nurcan Yalman
Team: Hilal Gültekin (1), Duygu Tarkan Özbudak (1)
West Mound Trench 5: Ingmar Franz

*Çatalhöyük Research Project, (1) Istanbul University, (2) Freiburg University

The 2010 studies were intended for preparing and generating the first draft of the pottery chapter for the forthcoming volumes and, present the data collected between 2003-2008 for team discussions

However the focus was more on the stratigraphical relations. The analysis of the South Area sequence during the winter months, exhibited some meaningful patterns on database queries. The indicators, which help us to separate time sequences, were determined in this work

The summer work was the year to clarify the indicators, which reflect changes through time. The material from safe or relatively safe contexts was rechecked during the study season. The determined indicators were sought carefully and the ware and type groups which, caused error were re checked and failures are corrected.

The rechecking work comprised 185 units from the South Area and 327 units from the 4040 Area, all from buildings and spaces. These units are from 24 Buildings and 10 Spaces from the 4040 Area, and 15 Buildings and 53 Spaces from the South Area. This rechecking gave us the opportunity to rescan the material in light of recent results of thin section analysis.

During the season, all buildings and spaces excavated between 2003-2008 located stratigraphically in collaboration with the results of the fieldwork and obsidian.

This season a very basic refitting work has been done as well. This is applied to the South B.10-B.80 sequence and on material which were found in situ / primary contexts. Most of the vessels were not complete or had missing parts and it is checked if any of them have constituent sherds in successive buildings. The results were negative in these terms.

Here are the preliminary results extracted from summer work:

Chronology:
Our starting point was the South Area as we could examine the longest time span and easily link the TP and IST areas into it.

The studied material in the South area encapsulates the time span between Hodder Level P (partly) to Hodder Level T. In the 4040 Area, except B.1, B.3 and B.5, all spaces (buildings, external areas, middens and even virtual spaces) and shelter foundation trenches are studied.

Overall, the dominant forms and ware groups of Çatalhöyük East pottery do not show dramatic changes through time. The biggest change occurs between Mellaart Level VII-VI as mentioned above.
Level P points the time period when the Dark Line (Dark Mineral Ware) cooking pots become dominant vessels. Basket handles are seen as a common element in this period. Besides the Dark Line variations, a small group of sherds distinctive with their red paste (RP) colour appears. They are generally coarse but also quite hard/strong /heavy vessels. The Dark Line in that level seems to be a bit coarse as well (in terms of inclusions size and wall thickness).

Level Q material is where we start seeing closed bowls but deep jars are still dominant. Thin walled deep jars also increase. The red paste (RP) and sandy wares (S) become visible although there is still a dominance of DMS.

In Level R, the dark line is still dominant but the Cream Mineral Ware (Light Line) becomes visible in that level. There is not much change in other characteristics. Open bowls appear as a new form.

Level S represents a period in which relatively clearer change happens. A new ware group appears and although they have their roots in earlier levels, changes in fabric and possibly firing and/or paste preparation made us give them Tr (Transitional) codes. Besides these Tr groups, the increase of DME (Dark Mineral Extra inclusions) is a new group for the pottery assemblage of that level. South Level S has also got new forms such as collared bowls and jars which is an initial stage of well developed “S” profile forms.

Finally Level T yields both Tr groups and “S” profile sherds besides collared bowls and collared jars.

4040 shows some correlations in ware and form groupings, which allow us to link it to the South sequence. According to the chronological analysis of the pottery there are 4 levels.

Building 47 with “S” profile and collared forms and Tr ware groups represents the latest levels for 4040 Area and it is possibly later than South T.

B.67, fits between Level S and Level R in forms (collared bowls and jars) and the ware groups (more similar to Level R). The buildings B.64, B.55, B.57 and B.58 have clear similarity. B.64 shows no Tr group in ware and have RP (red paste) which is an indicator for Level Q and P

for the South area but also DME which increase in South Level S. B.55 and B.57 also have increase number of RP ware but also Tr groups although consist of a couple of very small sherds. Forms of B.55 show South S characteristics. B.54 has no “S” or Collared profiles like South but have ring/foot bases, knobs with crescent shape are seen in the South Level T although ware characteristics do not indicate that late stage therefore could be slightly earlier. B.45 seems to be lack of indicators so far.

Recent and Future Work:
South Sequence was not complete because the early level ceramics, which have been studied by J. Last (Pre -2003) were outside of our responsibility. This situation caused a problem to understand the change through time. To be able to complete the whole sequence, J.Last material was brought to Istanbul University for evaluation in the new system (ware basis) to render them comparable. After finishing the registration of early level materials, IST Area material will be located into the stratigraphical location.

Pottery Report Trench 5-7 - Ingmar Franz (Freiburg University)

General information

This season we assigned old unused unit numbers to new units excavated, which is why we again have 15100 and 15300 numbers similar to those we started using in 2007.

Most of the pottery excavated since 2006 until today was sorted, weighed and counted. Additionally the greatest dimension of the largest sherd of both the diagnostic and the undiagnostic material was measured. Statistical interpretation of this information provides an important impression of the excavated material from single units or even specific room fills. If the number of sherds is high and the combined weight is low, the mean sherd size is small. If the number of sherds is low but the combined weight is high, the mean sherd size is large. The registered size of the largest sherds then yields a more detailed impression of how high the degree of fragmentation is. Nearly all Units from 2008 to 2010 were processed in this way, but not the material from 2006 or 2007. Until today more than 680kg of pottery have been processed, consisting of almost 29,000 sherds. The weight of the undiagnostic material is slightly greater than the weight of the diagnostic material, but at the same time the total number of undiagnostic sherds is 2.6 times higher (Table 2).

	weight in g	amount of sherds
undiagnostic	343,161	20,877
diagnostic	340,909	7,945
total	684,070	28,822

Table 2 Processed pottery from Trench 5-7 to date.

Discussion of last year’s interpretations

The miniature clay bucrania 18343.X54 that was discovered last year and was interpreted as part of a clay cattle figurine is more likely another piece of the pottery production puzzle. It has already been discussed that the clay head was attached somewhere because it shows a perforated forehead and a flat back.

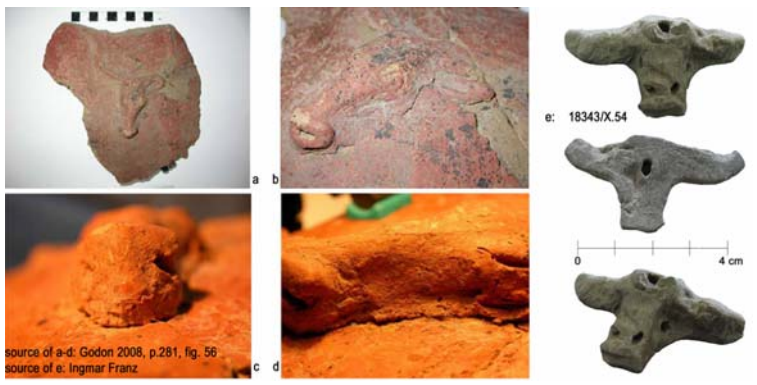


Figure 57. Pottery with bucranium application from Tepecik Çiftlik and a clay bucranium from Çatalhöyük West, Trench 5, Space 310, Unit 18343

Martin Godon showed in his excellent research on the pottery production at Tepecik Çiftlik, c.150km northeast of the contemporary settlement at Çatalhöyük, how potters at this time produced vessels with bucrania applications. They shaped such decorations separately and later attached them on the vessel surface before finishing and firing (Godon 2008, p. 281-282; Fig.1). Such applications on vessels are also known from other sites in the area, like Köşk Höyük, Canhasan and even Çatalhöyük East Mound (Figure. 57).

The huge burnishing stone 18341.X.23 found last year was interpreted as a tool for pottery production, but because of the size of its flat burnishing surface it looks more suitable for applying or burnishing wall plaster on houses. This type of burnishing stone looks very similar to the obsidian "mirrors" found in female burials in Mellaart's Levels VI-IV on the East Mound (Mellaart 1963). Could these mirrors also simply be tools for plastering walls (Figure 58)?

Figure 58. Comparison of the burnishing stone from Trench 5, Space 342, Unit 18341 with one of the obsidian "mirrors" found in women burials of Levels VI-IV on Catalhöyük East Mound.

Discussion of this one stone tool brings to mind a new aspect of other stone tools and raw materials. With the exception of maybe some smaller burnishing stones, every other stone artefact and raw material could also be used for other purposes such as building construction. Even use wear analysis will not allow us to conclusively define the former utilization because buildings and pottery consist of very similar or even identical materials.

Raw materials – red pigments, calcite, gypsum and clay

This season we again found many pieces of different raw materials which could have been used as pigments for painting pottery, walls of houses and the human body, or as material for pottery slip or temper and wall plaster (Table 3). The finds 15195.s1, 15180.X36 and 15335 in Figure 59 show abraded surfaces that indicate that they were rubbed on grinding stones or plates (see Figure 62). The calcite crystal 15343.X24 in the same figure shows no such surfaces but is most probably the remnant of a larger crushed crystal. Future material analysis will show which materials were collected (Figure 59).

Unit number	Provenance (Trench/Space)	Description	Unit number	Provenance (Trench/Space)	Description
13846	6/-	red pigment	18318	5/310	red pigment
15153	5/burial above SP 310	red ochre	18318	5/310	white lump
15158	5/450	lump of red pigment	18318	5/310	white lump
15160	5/449	red pigment	18318	5/310	red pigment
15163	5/447	red pigment	18328	5/342	red pigment
15165	5/454	white lump	18331	5/345	green pigment
18311	5/342	lump of red pigment	18343	5/310	rubbed red ochre piece
18313	5/340	cristall	18343	5/310	red pigment
18314	5/343	cristall & white lump			

Table 3 Continued list of red and white raw materials from Trench 5 and 6 (see AR 2009).

To see if there is also raw clay or prepared clay in the room fills we sampled some promising lumps of clay during the last years (Figure 60). The material from Unit 14213 looks like pure clay and the other samples could be prepared clay because they show many different inclusions and they look pugged (Figure 60, 15343 clay lump). The most obvious evidence for prepared clay is the clay ball cache we found in Space 453 and especially in Space 449. Here a huge pile of unfired clay balls was unearthed in the eastern corner (Figure 61). Visual comparison with unfired pottery indicates that both artefacts constist of the same material (Figure 60, 15335 clayball and 15335.X14). All the clayballs show flattened surfaces and have sizes comparable to golf balls. It is apparent upon inspection that they were rolled between two hands and then piled for drying (Figure 60, 15335 clayball). Future material analysis will show if it is really the same material. If so, we are on course for identifying the main components of the production chain, but still there are three other major elements missing: the firing place, the workshop area and the sources of raw materials.

Figure 59. Red and white raw materials from Trench 5.

This discovery of clay raw material at Çatalhöyük West Mound is indeed fascinating but not surprising. During the recent excavations at Ulucak Höyük (West Coast of Turkey, near İzmir), which was occupied between c.7000-5700 calBC, and therefore contemporary to the combined occupation span of Çatalhöyük, different sized unfired clay balls and bigger lumps of clay were discovered in Level IV. This level, which dates to around 5800-5700 calBC, has also yielded well-preserved settlement remains that show several possible “workshop areas.” Here clay was found together with grinding and burnishing stones, pottery vessels and other artefacts (Çilingiroğlu 2009, p. 52-56).

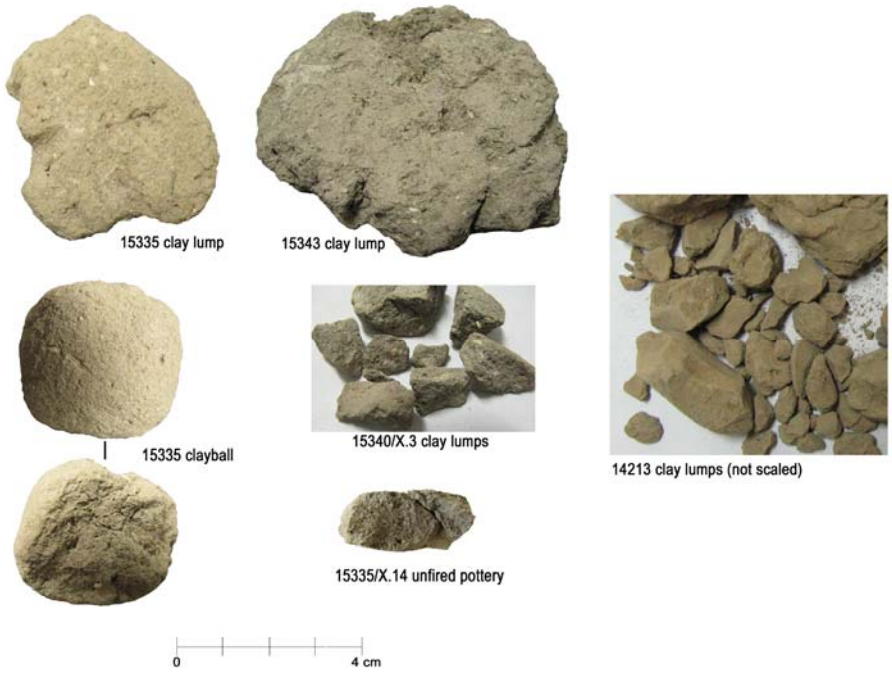


Figure 60. Comparison of sampled clay and one clayball with unfired pottery (all finds from Trench 5).

Figure 61. Pile of hundreds of clayballs discovered in the eastern corner of Space 449 this season. a: Space 449 during excavation, b: excavated clayballs. Photo Laura Harrison

Tools – probably used during pottery production

As with raw materials, we've found several new tools that could have been used during pottery production. The following table lists all registered stone tools including the finds presented in last year's report (Table 4; see AR 2009, p. 47-48). In some cases the tools show traces of red or white raw material. The descriptions are preliminary and could change in the future. The most common kind of stone tools are tools for processing raw material such as fragments of supporting grinding stones (19 pieces), rubbing stones (10 pieces), unspecific grinding stone fragments (7 pieces), hammer-rubber multi-tools (5), grinding plate fragments (4 pieces), and hammer stones (2 pieces), pestles (2 pieces) and mortars (2 pieces). Only five examples of burnishing stones, one rubber-burnisher multi-tool and two possible scrapers

could have been used directly during the pottery shaping and finishing process. Ten new stone tools excavated this year are shown in Figure 62.

Unit number	Provenance (Trench/Space)	Description	Traces of raw material (red/white)	Unit number	Provenance (Trench/Space)	Description	Traces of raw material (red/white)
15159	5/446	grinding plate fragment	-	18303	5/310	multi-tool (rubber & pestle)	red
15160	5/449	multi-tool (rubber & burnisher)	red	18303	5/310	grinding stone fragment	-
15160	5/449	grinding stone fragment (support)	-	18305	5/343	hammer stone fragment	-
15160	5/449	grinding stone (rubber)	red	18309	5/342	grinding stone fragment	-
15160	5/449	grinding stone (rubber)	red	18309	5/342	grinding stone fragment (support)	-
15160	5/449	multi-tool (hammer & rubber)	-	18311	5/342	grinding stone fragment (support)	-
15161	5/late pit over SP345	grinding stone (rubber)	-	18311	5/342	hammer stone	-
15163	5/447	grinding stone fragment (support)	-	18313	5/340 & 341	grinding stone fragment	-
15165	5/454	grinding stone / mortar	-	18313	5/340 & 341	grinding stone fragment	-
15165	5/454	grinding stone fragment (support)	-	18314	5/343	burnishing stone	-
15165	5/454	grinding stone fragment (support)	-	18314	5/343	grinding stone fragment	-
15166	5/448	grinding stone fragment (rubber or pestle)	-	18316	5/310	grinding plate fragment	red
15169	5/447	grinding stone / flat mortar	-	18316	5/310	grinding stone fragment (support)	red
15172	5/345	grinding stone fragment (support)	-	18316	5/310	grinding stone fragment (support)	red
15178	5/448	burnishing stone fragment	-	18318	5/310	burnishing stone	-
15180	5/449	grinding stone (rubber)	red	18321	5/310	grinding plate fragment	red
15180	5/449	scraper	-	18321	5/310	grinding stone fragment	-

15335	5/453	multi-tool (hammer & rubber)	red	18321	5/310	grinding stone fragment (rubber)	red
15343	5/449	grinding stone (rubber)	red	18323	5/310	grinding stone fragment	-
15343	5/449	multi-tool (hammer & rubber)	red	18328	5/342	multi-tool (hammer & rubber)	-
15343	5/449	grinding stone fragment (support)	red	18328	5/342	grinding plate fragment	white
15343	5/449	grinding stone (pestle)	red	18331	5/345	burnishing stone	-
18301	5/343	grinding stone fragment (support)	-	18341	5/342	burnishing stone	-
18301	5/343	grinding stone fragment (support)	-	18341	5/342	grinding stone fragment (support)	red
18301	5/343	grinding stone fragment (support)	-	18343	5/310	grinding stone fragment (rubber)	-
18302	5/343	grinding stone fragment (support)	red	18343	5/310	grinding stone (pestle)	red
18302	5/343	multi-tool (hammer & rubber)	red	18343	5/310	scraper	-

Table 4 List of stone tools from Trench 5 used for processing raw materials and probably used for pottery shaping and finishing processes.

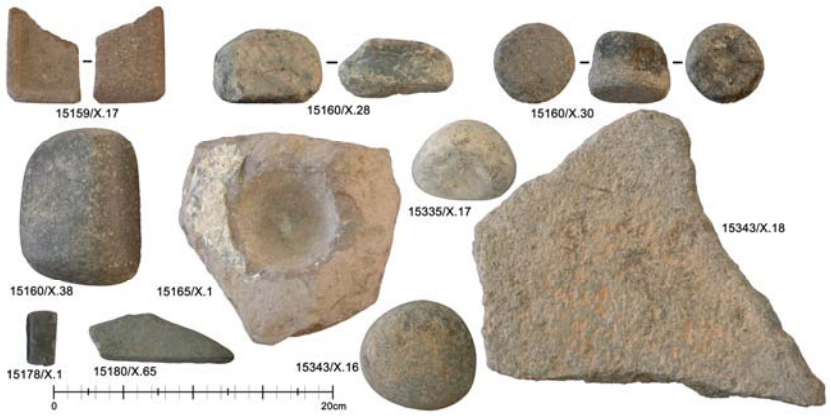


Figure 62. Stone tools for processing raw materials and possibly for shaping and burnishing pottery.

In addition to these stone tools there are also some interesting bone tools of which some were already published last year (Archive Report 2009, p. 48). Table 5 lists all registered bone tools that are possibly related to the pottery production process including last year's finds.

Unit number	Provenance (Trench/Space)	Description
15180/X.51	5/449	red painted carved bone stick with flattened used point

15340/X.19	5/449	snake-looking carved bone stick with flattened used head
17225/X.2	5/-	splitted long bone piece with used point
18323/X.4	5/310	splitted long bone piece with used point
18323/X.10	5/310	splitted long bone piece with used point
18328	5/342	pointed rib piece with used edges
18343	5/310	long bone fragment with used edges
18343/X.5	5/310	splitted long bone piece with used point

Table 5. List of all registered bone tools that are possibly related to the pottery production process.

Two extraordinary bone sticks were discovered this year in Space 449. They were carved out of long bones and reminiscent of knitting needles. Both of them have flattened points that show a used bottom. Stick 15180.X51 is painted with three red lines and stick 15340.X19 has a snake-like head (Figure 63). Could this unusual kind of bone tool have been a potter's tool, or was it used as a needle or awl for basketry, net or mat production? Future use wear analysis will help us answer this important question.

Figure 63. Knitting needle-like bone sticks discovered in Space 449

Unfired pottery

As in prior years, we found many pieces and several clusters of unfired pottery. Table 6 lists all recent and not yet mentioned discoveries (Table.5; Archive Report 2009, p. 45). Unfortunately they were not often discovered while excavating the room fills but during dry sieving. The fact that clusters sometimes are found accidentally "in situ" indicates that they are regularly imbedded in the fill but are hardly visible during the excavation process. They have the same greyish colour as the fill matrix and are very soft. Normally hard ceramic sherds "jump" out of the fill when you hit or scratch them. Unfired pottery instead is missed or even destroyed. The photo of Unit (15335) in Space 453 (below Space 310), which was excavated by myself, shows the kind of difficult fill situation we often face in Trench 5 (Figure 65). The fill is full of artefacts, but also full of phytolith layers and lumps of clay or building materials such as painted plaster, daub or mud brick pieces. Because I chose an unconventional excavation technique I was able to discover two unfired pottery clusters "in situ" (15335.X3 & 15335.X14 in Figure 64). There is also one piece that was excavated last year but only just registered this year from Space 310, Unit 18326, which shows a partial cut- and prick-decoration that is the definitive evidence of incised pottery being produced locally by the same people who produced the painted pottery.

Unit number	Provenance (Trench/Space)	Description	Unit number	Provenance (Trench/Space)	Description
13700	surface	pieces	18303	5/310	pieces
15139	5/449	pieces	18312	5/343	pieces
15160	5/449	pieces	18316	5/310	1 piece
15165	5/454	pieces (painted)	18321	5/310	pieces
15172	5/450	pieces	18322	5/342	1 piece
15179	5/310	pieces (painted)	18326	5/310	pieces + incised piece
15180	5/449	pieces + cluster (around 15180/X.16), base + painted	18335	5/345	pieces
15335	5/310	pieces (painted) + cluster (15335/X.3) + cluster (15335/X.14)	18339	5/345	pieces
15340	5/450	many pieces --> cluster? (base, painted)	18341	5/342	pieces
15340	5/450	handle fragment + 1 piece	18346	5/342	badly fired pottery?
15343	5/449	pieces	18346	5/342	pieces
18301	5/343	pieces	18377	5/-	1 piece

Table 6 Unfired pottery from Trench 5.

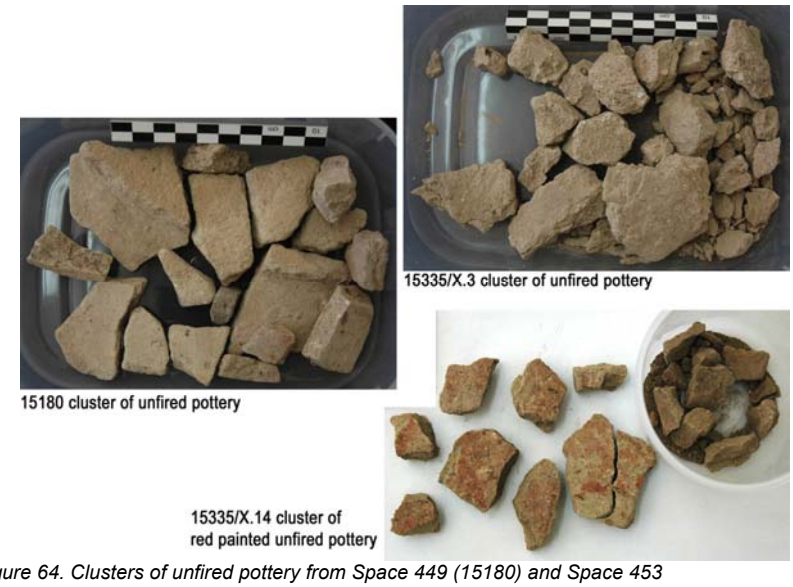


Figure 64. Clusters of unfired pottery from Space 449 (15180) and Space 453 (15335.X3 & 15335.X14) from this year.

Figure 65. Room fill impression of arbitrary Unit 15335 in Space 453 (below Space 310). Photo Laura Harrison.

Vessels – refitted vessels, vessels in refitting process or complete profiles

Including the 31 vessels defined this season, 91 vessels are now registered overall. In most cases just a portion of the vessel is preserved, which is able to show the complete profile. Some vessels could be refitted almost entirely and occasionally vessels are even preserved unbroken. In Table 7 all newly defined vessels are listed according to an arbitrary and provisional list number. Their provenance is shown, together with a short description and a preliminary categorization of the possible vessel functions (Archive Report 2009, p. 44-45). To date there were very few possible fragmented parts of cooking pots discovered in Trenches 5 to 7. The directed refitting process shows that they are coarser unpainted restricted bowls with a C-profile and lugs. In most cases they are sooted on the outside. Unfortunately no single complete vessel profile could be refitted so far. Another very interesting fact is that so far three substantial Late Neolithic fragmented vessel parts were recognized in room fills on the West Mound. One was excavated in arbitrary Early Chalcolithic room fill units in Trench 7 (Vessel 5: Unit 15104 + Unit 15106 + Unit 15107; Archive Report 2008, p. 99). The other two came out of Space 343 (Vessel 57: 18314/X.16; Archive Report 2009, p. 45) and Space 449, Unit (15160) (Figure 66). Figure 67 shows four Vessels from Space 449. Vessel 67 and Vessel 68 are typical Early Chalcolithic I (EC I) necked jars. They are from the same Unit (15160) and could be refitted almost completely. Both of them were most probably used for storage or transport because their necks are clearly restricting the opening. From Vessels 74 and 75 only small parts are known so far but in both cases the complete profile is preserved and gives us the chance to imagine what the vessels looked like - they were square bowls. Figure 68 shows three miniature vessels. Especially in the case of Vessel 78 it is clear that this vessel is a miniature variant of a necked jar with an internal lid-supporting rim. Pieces of miniature vessels are very common in the finds spectrum. In Figure 69 a typical EC I double sided painted carinated oval bowl with a standring and small noblets on the carination is shown together with two typical EC I double sided painted bowls with a C-profile. Such bowls most probably were used for serving food or for eating and drinking because their opening is unrestricted and they are very decoratively painted on both surfaces. Finally, in Figure 70, the upper third part of a necked jar is shown which is painted with an unusual pattern (Vessel 71 from Space 447). Such a pattern is not known from Çatalhöyük West so far. Necked jars typically show horizontal zigzag-patterns on the body like the vessels in Figure 67 - 69 and vertical zigzags or thick horizontal bands on the neck (Vessel 67, 68 & 78 in Figure 67 & 68). This jar instead shows a possible spiraloid pattern.

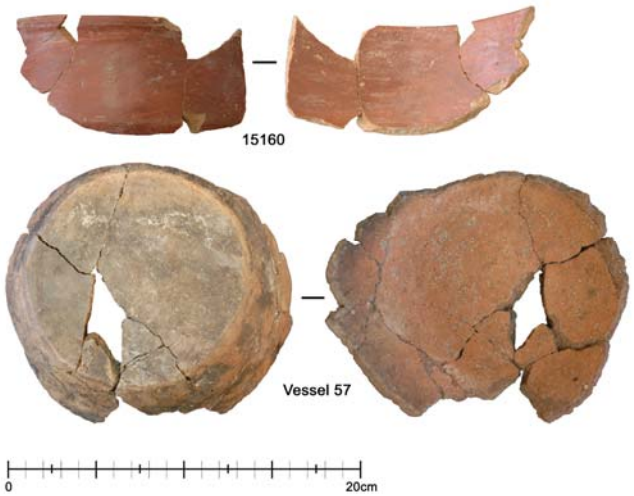


Figure 66. Fragments of Late Neolithic pottery vessels from Trench 5.

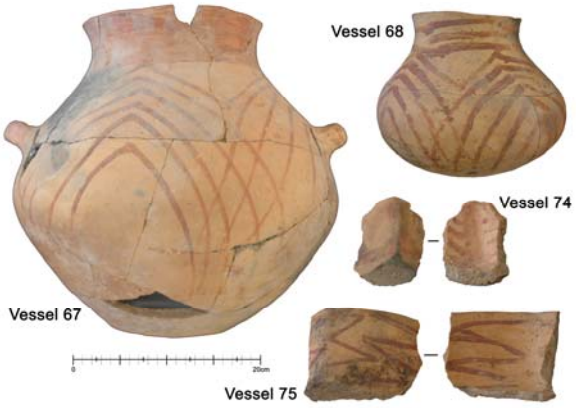


Figure 67. Two almost completely refitted painted necked jars and two profile-sherds of painted rectangular bowls from Space 449 in Trench 5.

Vessel number	Unit number	Provenance (Trench/Space)	Description	Possible function
60	18331	5/345	double sided painted unrestricted carinated bowl with S-profile	serving
61	18301	5/343	slightly restricted painted bowl with C-profile	serving / potters training / model
62	18305	5/343	double sided painted unrestricted carinated bowl	serving
63	18301	5/343	unrestricted painted carinated bowl	serving
64	18343	5/310	double sided painted unrestricted carinated bowl	serving
65	15152	5/341	unrestricted carinated miniature bowl	serving / potters training / model
66	18343	5/310	inside painted restricted bowl with C-profile	serving / preparation
67	15160	5/449	big painted handled necked jar	storage / transport
68	15160	5/449	small painted necked jar	storage/ transport
69	18341	5/342	unrestricted double-sided painted global bowl with	serving

			standring	
70	15194	5/446	small slightly restricted knobbed bowl with C-profile	potters training / model
71	15163	5/447	painted necked jar with extraordinary decoration pattern	storage / transport
72	15343	5/449	double sided painted restricted bowl with C-profile	serving
73	15160	5/449	small painted necked jar	serving / storage
74	15160	5/449	double sided painted square bowl	serving
75	15160	5/449	double sided painted square bowl	serving
76	15165	5/454	double sided painted unrestricted carinated bowl with standring	serving
77	15177	5/450	double sided painted unrestricted carinated bowl with standring	serving
78	15160 +15177 +15180	5/449 +5/450	miniature painted necked jar with lid rim	potters training / model
79	15160 +15177	5/449 +5/450	double sided painted slightly restricted bowl with C-profile and perforated lugs	serving
80	15180	5/449	double sided painted carinated bowl with standring	serving
81	15180	5/449	small double sided painted unrestricted bowl with C-profile	serving
82	15159	5/446	miniature unrestricted bowl with C-profile	serving / potters training / model
83	15169	5/447	double sided painted unrestricted carinated bowl with standring	serving
84	15180	5/449	double sided painted bowl with C-profile	serving
85	15165	5/454	big double sided painted carinated bowl (most probable once with standring)	serving
86	15160	5/449	double sided painted unrestricted carinated bowl with standring	serving
87	15179	5/310	double sided painted unrestricted bowl with C-profile	serving
88	15196	5/446	double sided painted unrestricted bowl with C-profile	serving
89	15343	5/449	double sided painted unrestricted bowl with C-profile	serving
90	15340	5/450	painted carinated bowl	serving

Table 7 Continued preliminary list of defined vessels from Trench 5-7.

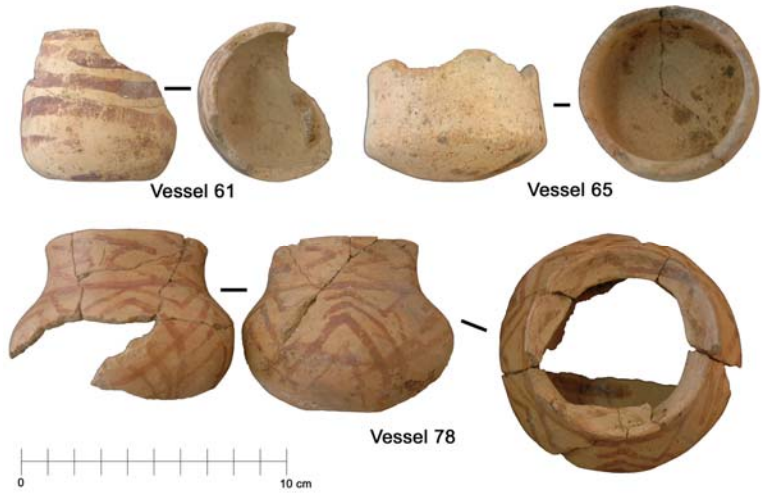


Figure 68. Three miniature vessels from Trench 5.

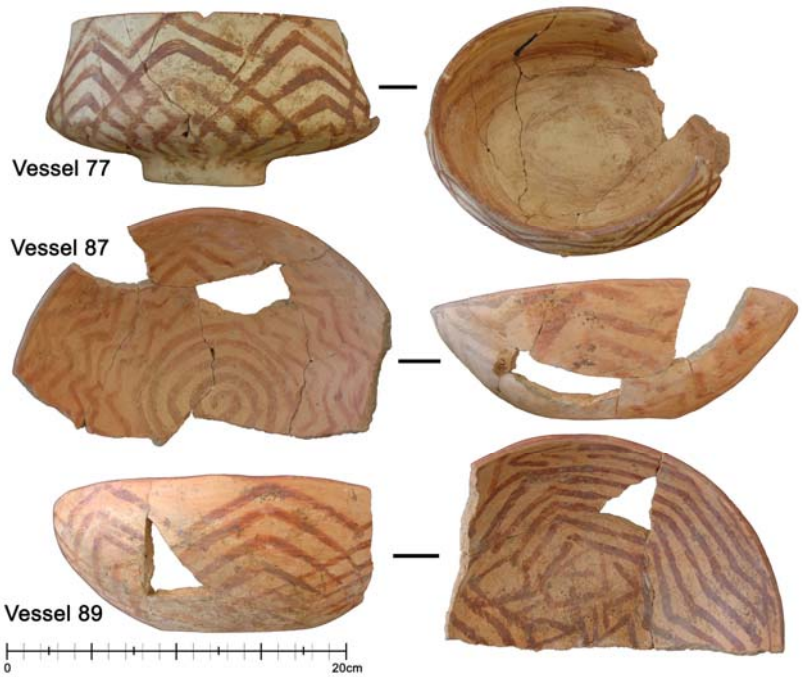


Figure 69. Typical painted unrestricted bowls from Çatalhöyük West Mound. One carinated type with standring and four noblets on the carination, and two bowls with C-profile.

Figure 70. Big painted necked jar with an unusual most likely spiraloid decoration pattern.

Figure 71. Pieces of slags and a high-fired sherd found in Trench 5

Slag or vitrified pottery – a new find category

A new and very exciting find category is comprised of pieces of slag. The first piece was found in 2007 but it came from disturbed contexts. For this reason it was not seen as a very important find, possibly being from a historical period. Fortunately the slags from 2009 and this year are from Early Chalcolithic contexts (Figure 71). The question now is if they are natural volcanic slags or artifical slags. If they are manmade, they are evidencing that the pyrotechnological skill of the people at Catalhöyük allowed them to reach very high temperatures. But what kind of matter was melted? Considering the other evidence for pottery production in Trench 5 it seems very likely that they are pottery slags. In fact one slag looks like a high-fired and melted sherd (Figure 71, 15138 high fired sherd). Future material analysis will answer theses questions.

As with the clay balls this find category was also observed at Ulucak Höyük. In Building 6 of Level IV vitrified pottery in hearth remains, clay balls, grinding and burnishing stones, and pottery vessels were discovered (Çilingiroğlu 2009, p. 55).

First 3D-scans of Vessels – Vessel 69

This season we started with 3D-scanning of the first vessels with a Next Engine 3D-scanner (Figure 72). For this Patrick Willett joined the Team of Maurizio Forte from the University of

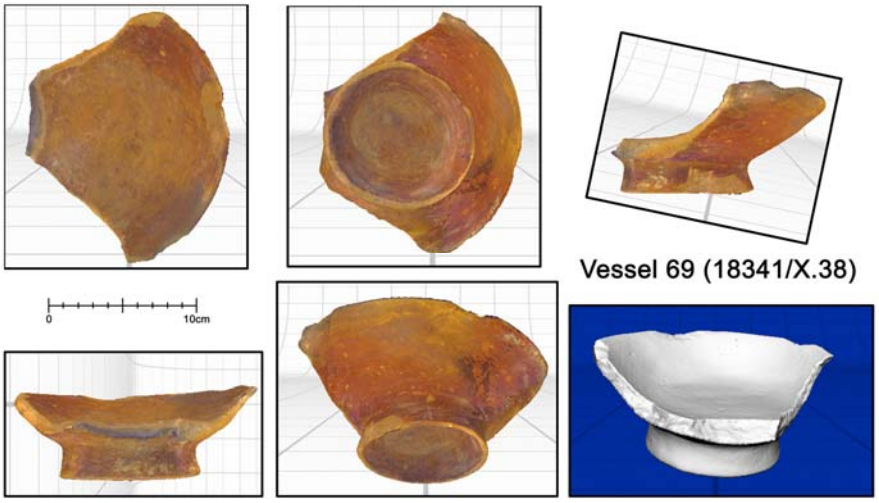


Figure 72. Different views of the 3D-model of Vessel 69 (18341.X38).

California at Merced and was trained in creating 3D-models (see Merced-Team report). The objective of this new way of documenting pottery is to get an accurate and digital representation of the whole artefact. In the case of large and complete and painted pottery there is large time saving and pottery can be documented quicker. As the pottery can only studied and documented during the field season this is an important factor. A 3D-modelled artefact allows us to do different kinds of geometric analysis off site like profile detection and volume calculations. Additionally such models can easily shared with other researchers as well as protect the original artefact from being touched and accidentally damaged. Next year we will scan other vessels in order to get 3D-models of all different vessel types.

Preliminary conclusions on the scale of pottery production and the value of pottery at Çatalhöyük West

Looking at the painted decorations in general, it is clear that they were applied systematically and relatively fast without too much effort (Figures 66-70). Only in a very few cases does the decoration show symbols like human or animal representations (Archive Report 2007, p. 129; Archive Report 2008, p. 100 and Figure 44 above).

Additionally, as was already mentioned by Mellaart, the decoration is often reminiscent of basketry (Mellaart 1965). If we also consider the vessel shape by this reference it shows that the entire vessel seems to imitate a basketry container. The best example to demonstrate this basketry-pottery relation is the so-called “basket-handled” vessel type, which was discovered in Trench 1 on the West Mound in 2000 (Last 2000). Important to note is that basket-handled vessels were already produced in the Neolithic period on the East Mound. The best example is the so-called “face”-pot from a pit in the 4040 Area (McCann 2007). Another, direct link to baskets is shown by Martin Godon in his analysis of the production sequence of the pottery at Tepecik-Çiftlik. He demonstrates how the lower part of pottery vessels were produced in basket moulds. Impressions of those moulds are observable on bases of some pottery vessels or sometimes even on the surface of some lower vessel parts (Godon 2008, p. 217-317). Similar basket impressions are also visible on some bases from the West Mound, which indicates that here also the potters used basket moulds for producing pottery. In conclusion, the direct relation between basketry and pottery is observable in the artefact spectrum of Çatalhöyük. This link between basketry and early pottery is assumed theoretically in many papers but the direct evidences are rare (Rice 1999).

The very systematic and standardized time-saving formation and decoration processes, the direct basketry-pottery relations, and the vast amounts of pottery on the West Mound, in

combination with recent potential pottery slag finds, indicates that pottery was some kind of mass product with a relatively low value which replaced basketry during the Early Chalcolithic in many aspects of daily life.

Acknowledgments

I would like to thank the West Mound Trench5 Team and especially Bela for her tremendous help processing the huge piles of pottery.

References

Çilingiroğlu, Ç. 2009: Central-West Anatolia at the end of 7th and beginning of 6th millennium BCE in the light of pottery from Ulucak (İzmir). (Text). Dissertation zur Erlangung des akademischen Grades Doktor der Philiosophie. Betreut von E. /. Helwing B. Pernicka. Tübingen. Eberhard-Karls-Universität, Fakultät für Kulturwissenschaften.

Godon, M. 2008: Les productions céramiques d'Anatolie Centrale. Dévéloppements culturelles et phénomènes d'expansion du Néolithique Céramique entre 7000 et 5500 BC Cal. PDF version of his PhD-thesis at Nanterre. Université Paris X, Ecole Doctorale Milieux, Cultures et Sociétés du passé et du present.

Last, J. 2000: West Mound Pottery. In: Catalhöyük 2000 Archive Report, fig. 38.

McCann, S. 2007: 4040 Area - Space 279. In: Çatalhöyük 2007 Archive Report, p. 76-79.

Mellaart, J. 1963: Excavations at Çatal Hüyük, 1962, Second Preliminary Report. In: Anatolian Studies 13, Plate XXV (b). London 1963.

Mellaart, J. 1965: Çatal Hüyük West. In Anatolian Studies 15, p. 135-156. London 1965.

Rice, P. M. 1999: On the origins of pottery. In: Journal of Archaeological Method and Theory, Vol. 6-1, p. 1–53.

2010 Figurines Report

Animal Figurine Research Project - Lynn Meskell (Stanford University) **& Louise Martin** (University College London)

Team: Lucy Bennison Chapman (University of Liverpool)

While 2010 was a study season and taken largely with seminars, we did initiate a new research project based around animal figurines, specifically quadrupeds, and the possibilities for investigating indigenous taxonomies. In archaeology it is a novel, but perhaps rather obvious idea, to have a figurine specialist and a faunal analyst work together on such topics. Our larger research questions are how do we systematically analyse zoomorphic figurines in a way that reveals new data? How do new methodological approaches and cross-disciplinary analysis offer new insight into relationships between Neolithic people and animals?

The first step we took in the 2010 season was to identify all the quadrupeds stored on site and to assemble them together in one place for the first time. These examples were all consistently photographed from six angles to identify what the makers of the figurines were keen to represent, what body forms became standardized, and any signs of manufacturing techniques or surface treatments. We have 374 quadrupeds in the current figurines database. Over 800 individual photos were taken.

To undertake future analyses Louise Martin constructed a new Access database that is directly linked to the main figurine database. The additional database fields were designed to record morphological attributes of each quadruped figurine that would make the process of assigning taxonomic descriptors to figurines highly transparent, and also to allow for examination of morphological consistency, variation and emphasis. In terms of taxonomic

assigning taxonomic descriptors to figurines highly transparent, and also to allow for examination of morphological consistency, variation and emphasis. In terms of taxonomic 'identification', some figurines are strongly suggestive of a particular animal (e.g. cattle, equid, boar/pig), while others are far more ambiguous, and indeed may never have been intended to represent a single taxon. We therefore allowed for different levels of classification (from the specific, e.g. 'cattle' to the broad, e.g. 'quadruped') and for a range of confidence-levels in interpreting taxon (from 'likely' to 'highly questionable'). It also seemed important to allow for multiple possibilities as to what a figurine may represent to allow for ambiguous cases.

We recorded the approximate size of figurines in a relative manner (e.g. whole hand size, sits in palm, thumb size), the posture of the animal (whether standing or reclining), and basic ratios of head, body and leg proportions, to assess which body areas were given emphasis.

Further database fields broke the body of a single figurine down into separate zones for recording, such as head, ear, horn, trunk, legs, and tail, to note the presence/absence of these features, and where present to describe their position and morphology. Template 'types' were developed to record the morphology of each of these body part zone, and in this way the co-occurrence of body part types can be analysed quantitatively to ask about variability in production, recognisability of forms, and hopefully the possible uses and treatments of animal figurines.

In terms of their find-spots, 131 quadrupeds were retrieved from middens, 40 from building fill, 30 from construction/fill, 10 from a cluster, 13 from activity areas and 18 were designated arbitrary, 7 from floors and the rest remain unassigned, largely because of the 1960s excavations and those retrieved from later re-excavation of his spoil heap (see Summer School Reports – recorded as REC). We can say that quadrupeds are found in external spaces, namely means outside, rather than inside houses. They are typically found in middens that were themselves places of activity and those activities may have involved a significant degree of involvement with living animals. One rather unexpected find that proves intriguingly is that the 4040 has the greatest concentration of quadrupeds (especially 4040.H) and less frequently depicted animals including horse, fox, pig, boar, bear, etc. The number of quadrupeds far exceeds all other levels.

In 2010 it should also be noted that we found our first stone quadruped (Figure 73). 19101.H3 appears to be a natural stone that had some suggestive features and was worked to enhance the animal's features. The head is rounded, as are the hindquarters. It stands upright with great difficulty, the left rear back leg is not fully present, nor is the left front. But the right back and front legs are formed and enable it to stand if adjusted. The stomach is carved or present from the lumpy quality of the stone (Charts 1 & 2).

Figure 73. Limestone quadruped (19101.H3) found in external midden in Space 329, South Area. (1.96 h x 1.31th x 2.86 l, 8.6grams). Photo Figurine Team

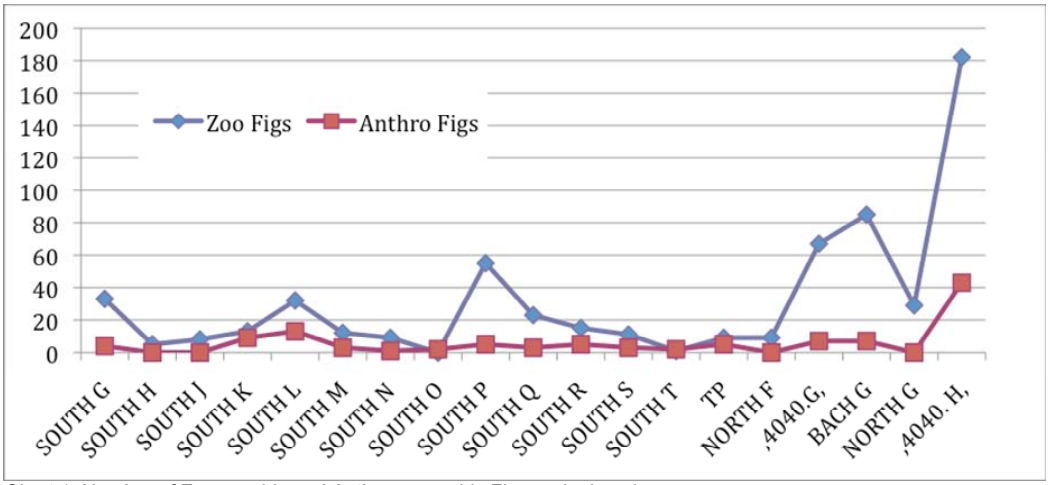


Chart 1. Number of Zoomorphic and Anthropomorphic Figures by Level

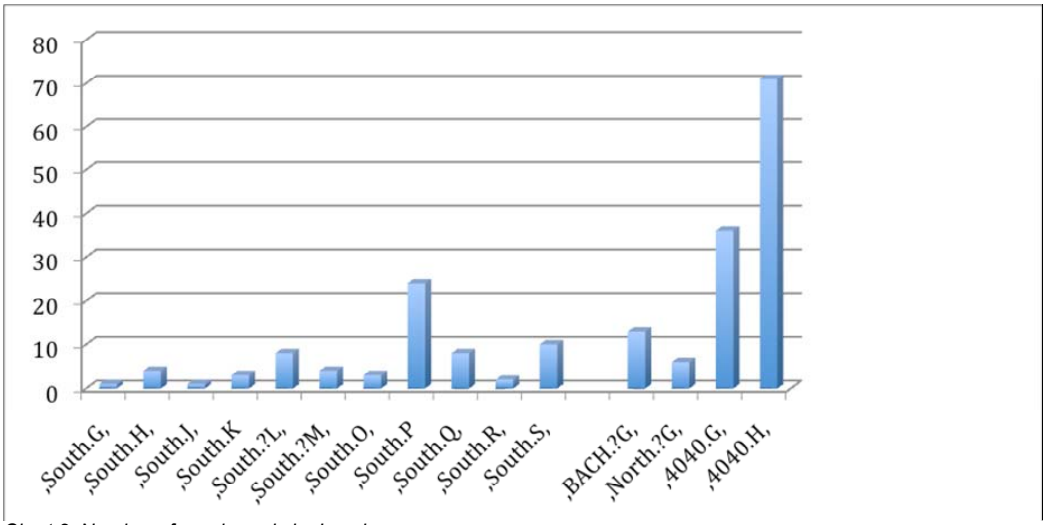


Chart 2. Number of quadrupeds by Level

Our initial findings are instructive. By examining all the figurines together we detected a manufacturing focus upon two salient regions: the head and the tail. These were given disproportionate attention and care at the expense of all other bodily zones. This preoccupation can be linked to wall paintings, the plastered figures installed in buildings, and the bucrania (Hodder 2006, Hodder and Meskell 2011). Less attention is paid across media to body parts, legs, hoofs, and hides. So we might suggest that archaeologists cannot simply relate this preference to a fixation on meat consumption for example, since figurine makers were not representing the meatiest parts of animals like wild cattle.

Abbreviation also occurs in zoomorphic corpus as we have noted across the site (Nakamura and Meskell 2009). With the cattle figurines there is a tendency to focus on head and shoulder region emphasizing the bulk and hump-like shape around the withers. The torso is compressed and then there is a move straight to the rump and tail. This reinforces the material emphasis upon the salient parts in the representational schema: heads and tails.

Unlike the anthropomorphic corpus, no paint is added to zoomorphic examples, but there is evidence for stabbing, fingernail marks, maiming, added manes, pinching, and ridges. With the stabbing of animals, this probably accompanied the original manufacture rather than a much later manipulation. Some of this could be a form of decoration. It might possibly indicate that the animal that was made is a dead one. Within the corpus there are a couple of examples that look to have been ripped in half when still malleable (13140.X10 and

13140.X3). This evidence could be marshalled to suggest that something like dividing of the animal was operative or that such pieces might have been used as tokens.

Louise Martin detected that most of the pieces that are in progress are flattened on the left side, with only one on the right side, indicating something about their embodied manufacture and the various stages of decision-making. We suggest that quadrupeds tend to be made by holding them in the palm of the left hand; they fit neatly into to hand shape, and then are modelled in that hand. With this propensity for leftness, pieces of clay are then added from the right hand and decisions made as to whether a particular figurine would be finished or abandoned. The bottoms of many quadrupeds look as if they were flattened by tamping them down on one end and then adding the tail as separate piece, which could be clay or in some cases stone.

There are a few figurines that have close parallels implying that each could have been made by the same person, such as sheep/goat figurine 14183.H8 and 999999.H264. Two almost identical equids, 12508.H3 and 12502.H4, were excavated from the South Area. We should point out that these equids are very different from the way horses are painted on the walls, particularly around the snout. Then we had the two fox figures, small carnivores, (12648.X2 and 12980.H8) both from 4040H. There are also two sheep/goat examples 4194.H2 from the South and 1059.H1 from South L). Another set of parallels is the two goats 2250.X2 from Bach G 1997 and 19305.X5 from South P. They are both finely modelled, very small, with extremely detailed features of ears and horns (Chart 3).

In future research we are going to conduct a scenario exercise. For example we would ask what could we expect to see if zoomorphic figurines were made as hunting magic? We might expect stabbing at crucial zones, maiming, trussing, flints in place like Ain Ghazal (Rollefson 2000), other kinds of manipulation and hundreds of examples. If instead figurines were Tokens or proxies this might entail demarcation of body parts, splitting of bodies (Chapman 2000, Talalay 1993), intentional breakage or ripping in half of bodies, heads off bodies or legs, leading to a more partible notion of the body. If they were Toys might entail more uniformity, domestic animals rather than wild beasts, small size, standing poses, assemblages found together, and more miniatures. Such research can only be conducted systematically using the database to quantify results, rather than anecdotally. It is also likely that a unilinear interpretation will not hold and that multiple meanings were at play and this is where our associated contextual data, both temporal and spatial, will prove invaluable. We also intend to investigate the representation of morphological changes through time, and determine whether specific examples show age or sex traits, we as any features associated with wild or domesticated status. Ultimately we hope that this close reading of animal figurines will enable new windows upon Neolithic theories of classification and indigenous taxonomies, rather than simply reifying our own.

References

Chapman, J. 2000. Fragmentation in Archaeology: People, Places, and Broken Objects in the Prehistory of South-Eastern Europe. London: Routledge.

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

Hodder, I., and L. M. Meskell. 2011. A ‘curious and sometimes a trifle macabre artistry’: Some aspects of symbolism in Neolithic Turkey. Current Anthropology.

Nakamura, C., and L. M. Meskell. 2009. Articulate bodies: forms and figures at Çatalhöyük. Journal of Archaeological Method and Theory 16:205-230.

Rollefson, G. 2000. "Ritual and social structure at Neolithic ‘Ain Ghazal," in Life in Neolithic Farming Communities. Edited by I. Kuijt, pp. 163-190. New York: Kluwer.

Talalay, L. 1993. Deities, Dolls, and Devices : Neolithic figurines from Franchthi Cave, Greece. Bloomington: Indiana University Press.

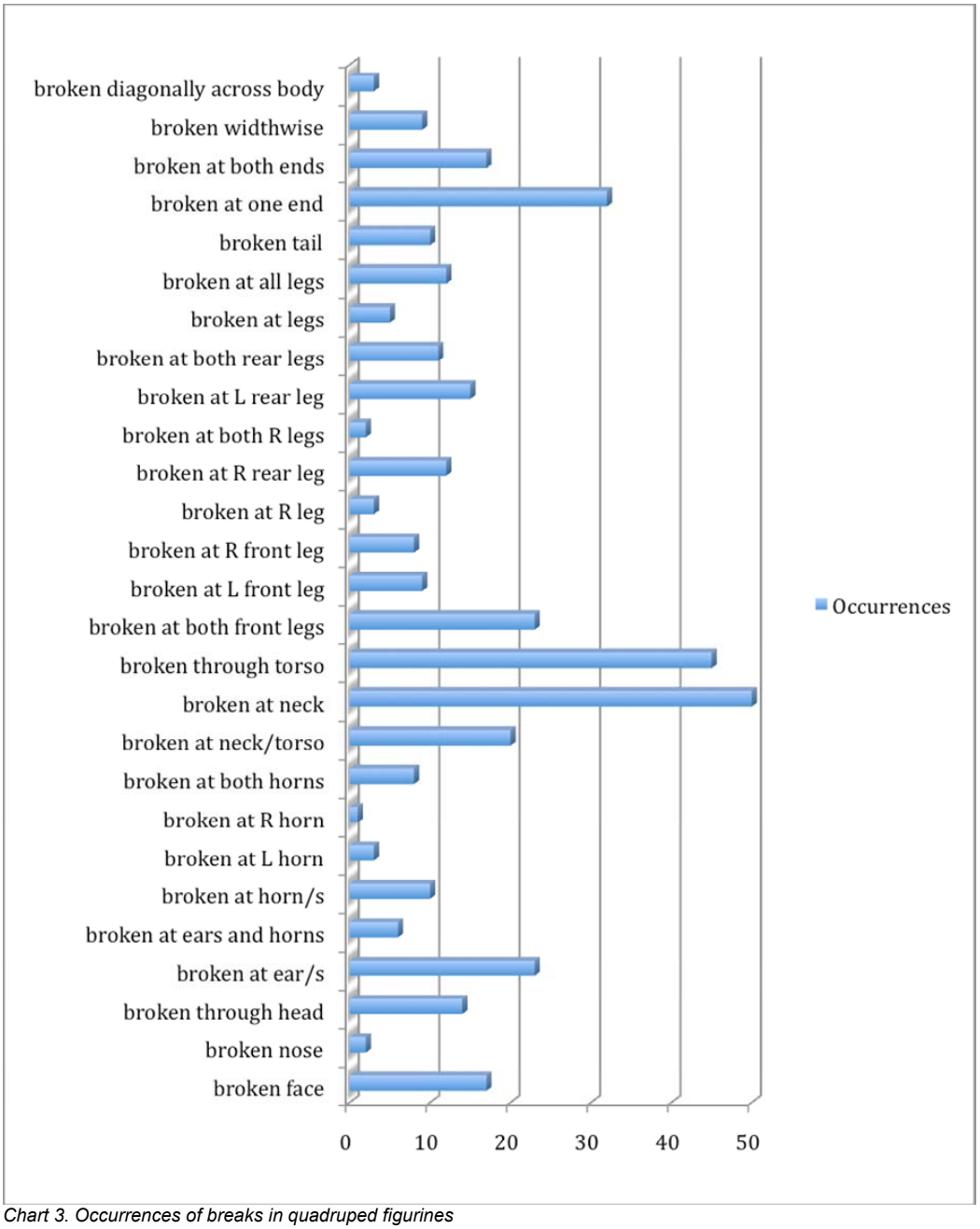


Chart 3. Occurrences of breaks in quadruped figurines

Figurines Clay Composition Report – Jeff Aviss (Oxford University)

The figurines of Çatalhöyük have attracted significant interest specifically with regards to the so-called 'Mother Goddess' figurines as classified by Mellaart in his first excavations in the 1960s. However, it has been well documented since the excavations under the leadership of Ian Hodder began in 1993, and with Lynn Meskell and Carolyn Nakamura's research of the figurines since 2004, that although there have been some quite impressive samples, "the mundane dominate numerically" (Meskell 2006: 144). Previous work on the figurines has primarily focused on re-working the classifcatory system that was handed down from Mellaart into a new language and vocabulary that now classifies figurines as zoomorphic, anthropomorphic, or abbreviated human forms, as compared to Mellaart's earlier categories of "humanoid, "ex voto", "schematic", "mother goddess" and "fat lady" (Meskell et al. 2008: 140). Further research has also looked at the spatial patterning and deposition of the figurines

(see Meskell 2006, and Meskell et al. 2008), as well as their usage and importance in the Neolithic lifeworld (see Meskell 2008a).

To date no work has been done regarding the compositions of clay that were used in their making and manufacture, although there has been some brief discussion (see Meskell et al. 2008: 141). This lack of research afforded me the opportunity to conduct an analysis of the clay composition of the figurines and to further explore questions that have been asked repeatedly with specific interest towards the firing or heat exposure and the provenance of the clay. It must be stressed that the work during the 2009 session at Çatalhöyük was only an initiation of what may become a well-ingrained part of the research on the figurines, and furthermore, that only figurines from the 2008 and 2007 dig seasons were examined and therefore their clay compositions may well not be representative of the entire figurine corpus. Future research on the figurines from previous dig years is necessary as are perhaps secondary questions regarding the clay usage with specific attention to the relations of clays being used for mudbricks and pottery, possible hierarchical usages of clay, and perhaps possible preferences of clays for specific shapes and forms.

Using a purely non-destructive method of petrographical analysis, approximately 200 figurines of the 2008 and 2007 seasons were examined macroscopically and microscopically, and features and observations recorded simply from these two methods of observation. Although limiting, macro and microscopic observations proved capable of providing a significant amount of information regarding the structure, strength, sand and silt contents, inclusion types, and frequency of inclusions, from the clays of the figurines. Much appreciation goes to Sarah Jones for altering the database on several occasions to the present layout. The database fields on my arrival were somewhat limiting and were thus altered to their present layout which allows for numerous observations to be recorded in a nearly unlimited manner (Figure 74).

To begin with a macroscopic analysis of the clays, I first began by suggesting we classify the soils into four broad categories by their types: Upper Alluvial, Lower Alluvial, Black Organic, and Marl. This was intended as a broad classificatory scheme and it soon became obvious throughout the observation process that there was a significant range of clays being used that do not neatly fit into any single category precisely. Initially, however, such a classification is perhaps necessary to define a type of clay. Adjustments in the future may indeed be made to this field by possibly adding in more precise and descriptive clay types. However, for the time being, it is possible for the recorder to not only choose from these four broad categories, but also to write in any unusual clays they may encounter, thus allowing the user some flexibility in the recording of their observations. Other observational fields added to the database include colour uniformity/distribution, polishing, holes/incisions, fractures, staining, and added/natural (for inclusions), all of which have drop-down fields of labels for the user to select. The added/natural field should perhaps be removed considering that all of the inclusions of the figurines were naturally included and were not intentionally tempered, and thus this selection is a redundant process. To complete the macroscopic observations a 255 character ‘clay notes’ field was added wherein the user can input any unusual features or observations of the clay composition that they encounter, or any possible questions or concerns they may have that may be answered through microscopic analysis.

Upon the completion of the macroscopic observations I then began to re-examine the figurines from a microscopic perspective in order to fully record and understand the clay compositions. In order to enter such observations into the database a ‘clay composition’ section was added with 10 large fields wherein the user can input any microscopic features and observations that they encounter. In order to understand the clay composition the inclusionary features of the clays were recorded as well their frequencies and types (fine or coarse), and again, like the clay notes section for the macroscopic observations, the user is able to write in any brief notes or comments on the clay content, sand/silt content and overall composition of the clay. Those features that were recorded included quartz, sand grains, jasper, black charcoal, gypsum, potassium feldspar, and many others (see chart 4 below for full details). Care was taken to try to differentiate between secondary and primary material features yet one can experience significant difficulties in successfully determining the context of the material and the overall clay composition due to dirt and other secondary build-up.

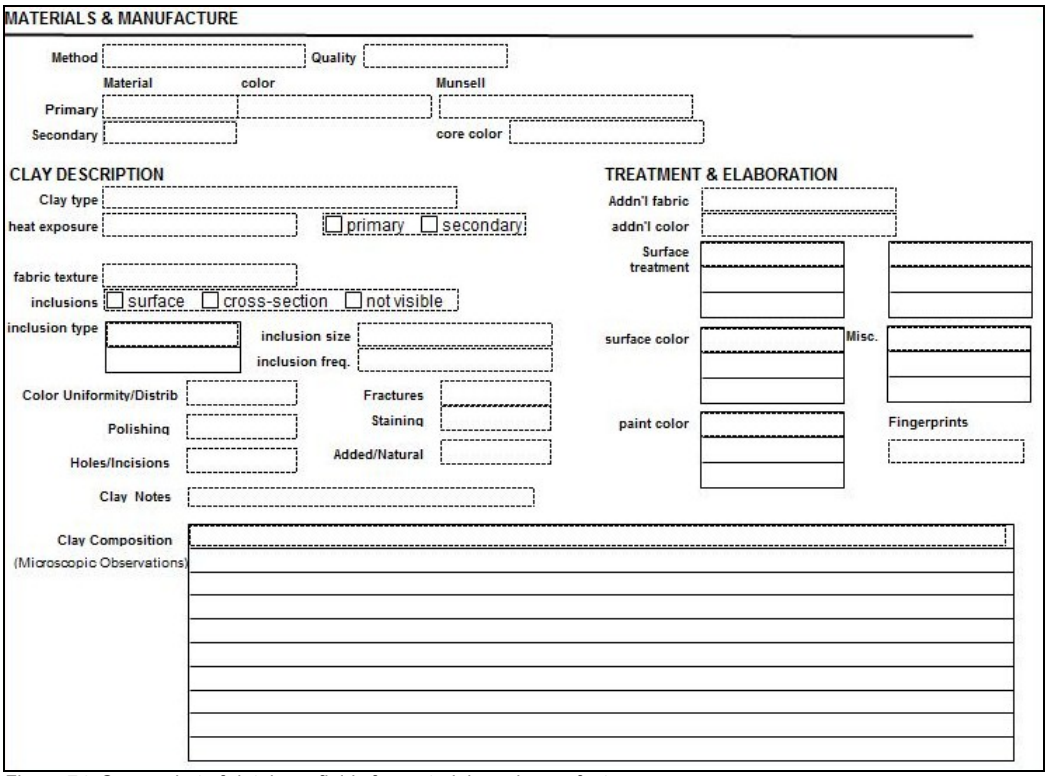


Figure 74. Screenshot of database fields for materials and manufacture.

Observations and Results

As already mentioned, the most apparent observation from handling and working with the figurines was the exceptional range of materials that were used for their manufacture. Although the figurines were initially classified into four broad categories, it became apparent that there were variations in clay composition that may necessitate the creation of sub-categories. The categories that became apparent through the observations are discussed below.

Inclusions Recorded

White-Grey-Colourless Inclusions	*Description*
Quartz	Usually clear and colourless but may be milky white. Quartz is a relatively hard mineral, and can be distinguished from all other white or colourless types as it cannot be scratched using a steel needle.
Calcite	Calcite is the calcium carbonate mineral which forms limestone (and marl). Calcite is usually milky white, very rarely colourless. İt can be easily scratched or broken using a steel needle, and so is readily distinguished from quartz.
Feldspar	The volcanic rocks in the catchment of the May and Carsamba rivers supply large quantities of volcanic minerals to the local clays. After quartz, the most common is feldspar. This is a milky white mineral, although some varities are pinkish. Feldspar is a bit softer than quartz and will take a slight scratch with a steel point, but will not scratch as easily as calcite.
Shell	Looks like shell.
Marl	Marl is a limestone-clay mixture. Normally this is a soft material but it may have become hardened through firigin. White or off-white/grey, marl inclusions will not appear as a single crystal or grain, but as fine aggregates.
Plaster	As plaster is made of marl, the two cannot be reliably distinguished.
Mica	Shiny, plate-like grains which often show a hexagonal outline and are best seen on the outer surfaces of the pot. Local clays are dominated by the brown-gold variety (biotite), but the white type (muscovite) is sometimes present.
Bone	Un-burnt bone may be present where colluvium/midden is being used.
Phytoliths	Where not carbonised, larger plant elements may appear as white fibrous inclusions. The white colour is due to the siliceous phytolith skeleton of the plant

	material, and often also to later in-filing by gypsum.
Gypsum	White or colourless fibres which are the result of post-depositional processes. Gypsum is very soft, the fibrous crystals being readily disrupted by pressure from a steel needle.
Volcanic Rock	Certain fabrics contain fragments of light-grey coloured volcanic rock (andestie and dactite). Often these are relatively large (a few mm) angular grains, which may contain small dark volcanic crystals. Usually these are only present in fabrics which also have a high proportion of mica and ferromagnesian minerals.
Red-Orange-Brown Inclusions	
Chert-Radiolarite	A hard, flint-like material, cannot be scratched with a steel point.
Feldspar	See above.
Mica(biotite)	Brown or gold biotite mica is by far the commonest type, being derived from the extensive areas of volcanic rocks in the Carsamba-May catchment. Seen as flat, soft, commonly hexagonal inclusions, especially on surfaces.
Marl and Plaster	Marl and plaster exist in a variety of grades, most of which are not prue white but are discoloured (brown) by a variable component of clay. İdentification as for marl (white).
Ferromagnesian minerals (Volcanic Minerals)	The dark coloured volcanic minerals are not easy to differentiate by eye or by binocular microscope, and are given their group name “ferromagnesian minerals”, rather than being identified individually. Usually these are shiny dark green or black, but many are also brown. Again these relatively hard minerals can be distinguished from charcoal by use of a steel needle.
Black Inclusions	
Charcoal – Carbonised Organic Matter	These are usually easy to recognise, either as black carbonised remains with some plant structure, or as distinctively shaped holes.
Ferromagnesian Minerals (Black Volcanic Minerals)	As described above, these are more commonly black.

Chart 4. Courtesy of Chris Doherty.

Upper Alluvial Clay

Although it has initially been assumed that the upper alluvial clay was purely Chalcolithic in date, some figurines do seem to have been made using this clay source. However, it should be stressed that very few examples (only 4, 2%) were found to have been made using Upper Alluvial clay, although more may perhaps be found through future research. In general, Upper Alluvial clay is a fine alluvial silty clay that lacks inclusions, is reddish-brown in colour, and in some cases contains some conspicuous grains of dark biotite and amphibole. Due to the reduced clay content in many cases the surface is disrupted due to excessive shrinkage (Doherty 2008). Most figurines of this clay type are of a very fine texture. The most conspicuous Upper Alluvial clay figurine from this years research was 17049.X1 which was anthropomorphic/zoomorphic in shape (Figure 75). Although most Upper Alluvial clays have a high sand and silt content, this clay was very dense, solid, and pure and had practically no sand, silt, or inclusions, and was thus quite an odd sample. It also seemed to have been really well smoothed.

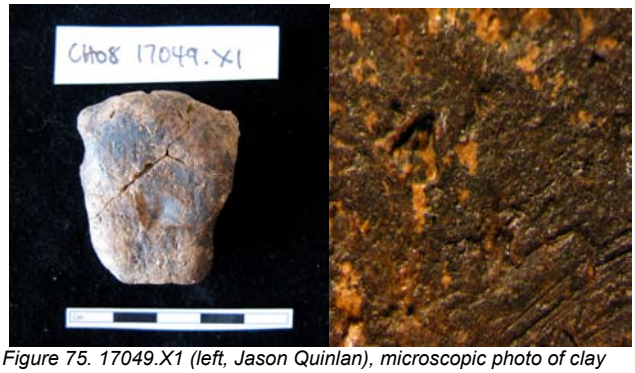


Figure 75. 17049.X1 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

Lower Alluvial Clays

The majority of figurines analyzed throughout this study season were manufactured using Lower Alluvial clays (126, 63%). However, it became obvious through inspection of the 2008 and 2007 figurines that there were significant variations with regards to compositions and colours of Lower Alluvial clay types, yet they all seemed to still be part of the same broad category. Despite a sharp boundary between the Upper Alluvium and Lower Alluvium, there do not appear to be any strict boundaries or borders between the varying types of Lower Alluvial clay types, and therefore their classification is purely on the varying colours, clay, and sand and silt contents. Although information on the database to date has used only the four broad categories, and only one for the Lower Alluvium, it may be more accurate to classify the Lower Alluvium into three sub-categories, as listed below.

Upper Lower Alluvial

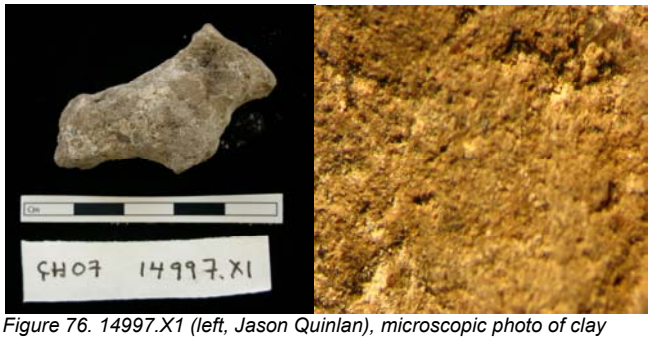


Figure 76. 14997.X1 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

These clay types tend to be very fine due to their high sand and silt content and are usually a much lighter gray than the other Lower Alluvial levels (which will be discussed below). These figurines would have required more working, modelling, smoothing and heating due to their lack of clay content (Meskell et al. 2008: 141). From a macroscopic viewpoint one notices that these clays are sporadically coloured and also tend to fracture due to shrinkage and their reduced clay content. Microscopically, the frequency of inclusions is fairly low and those inclusions found are very fine and characteristic of a sandy and silty composition, and thus tend to be black volcanic minerals, quartz, sand grains, and feldspar. An example of a figurine manufactured using a Upper Lower Alluvial clay type is 14997.X1 (Figure 76).

Middle Lower Alluvial

Middle Lower Alluvial clay types tend to have a much higher clay content than the Upper Lower Alluvial types, and a more moderate sand and silt content. Their texture is considerably fine and smooth, they tend to polish quite easily using a steel needle, they are also fairly consistent in colour uniformity and do not seem prone to fracturing or holes considering their strong clay content. They are usually a medium grey colour. Such clays seem to be have been used widely in making many of the large quadruped figurines (Figure 77). Middle Lower Alluvial clay types usually have a low frequency of very fine inclusions, but in some instances we find conspicuously large coarse inclusions, such as marl, which in some cases cause shrinkage and damage. Furthermore, such inclusions of marl and plaster may also create a greenish lime tint to the clay.

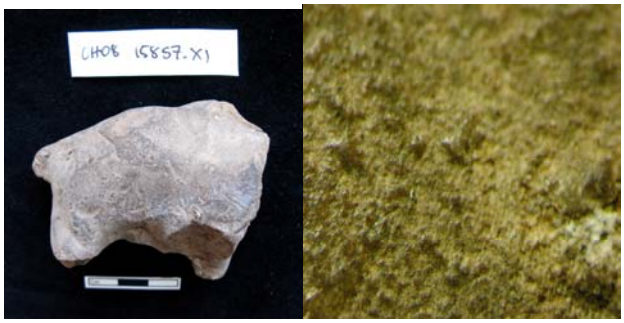


Figure 77 15857.X1 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

Low Lower Alluvial

Below the Middle Lower Alluvial clay levels we find a much darker, smectite-rich backswamp clay that is a much darker grey and seems to mix in (in some cases) with the underneath Black Organic level or Marl. The high clay content allows for a high plasticity and elasticity and we find many examples of horns (Figure 78) and small curved horns that do not suffer any damage from shrinkage. Although it is smectite-rich, it does still have a moderate sand and silt content and the majority of inclusions are of a very fine texture of a sandy/silty clay. Figurines using such clay are usually very fine, do not fracture or shrink often, and are uniform in colour. These clays do, however, tend to have a higher organic, vegetal, and plant material content than the above levels and some more conspicuous inclusions of marl, which in many cases cause shrinkage and damage. In rare instances do they contain coarse inclusions.

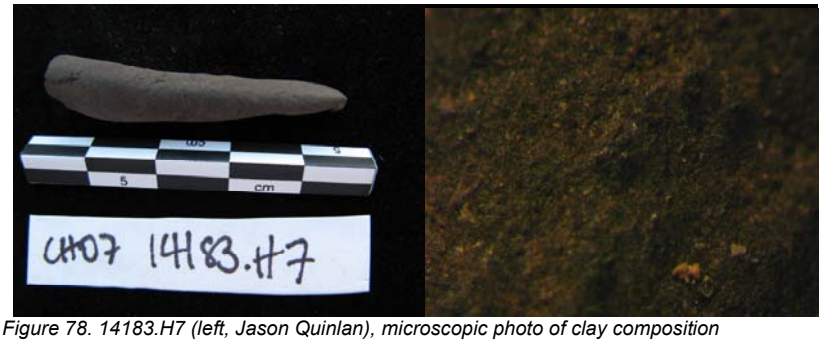


Figure 78. 14183.H7 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

Black Organic

Only 19 (9.5%) of the figurines analysed from the 2008 and 2007 corpus were classified as of composed of the Black Organic clay. This makes sense considering when one considers its poor composition and usability for making figurines. The Black Organic is a sticky, lumpy clay that is usually quite coarse, has a very low sand/silt content, and when exposed to any source of heating or baking crumbles and fractures heavily. This clay usually features coarse inclusions which may contribute to its shrinkage and fracturing when heated. Although the clay is labelled as a Black Organic, its organic content is not significantly greater than that of the Low Lower Alluvial. Despite its rather poor use in making figurines it is noticeable that of those 19 figurines analyzed, they represented shapes of nearly the entire range of types of figurines, from small horns to quadrupeds (Figure 79).

Figure 79. 15755.H4 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

Marl

Of the approximately 200 figurines that were analyzed 50 of those were made from marl or marl variants. Like the Lower Alluvium, it seems necessary to create sub-categories of differing compositions and types for the marl, and therefore, those types of marls that were used at Çatalhöyük seem to be either a very white pure marl, or a reddish-brown sandy marl.

Pure Marl

Figurines made using a pure marl source seem to be more rare than those using a mixture of marl and sand. This type of marl is in its essence practically pure as it does not feature any coarse inclusions, and those inclusions that are present are incredibly fine and very rare. It is very distinctly bright white although environmental, depositional, and secondary treatment such as burnishing and smoothing may alter the surface colours. Many of the figurines that were used from a pure marl source seem to have been carved, and in most cases the figurines have an exceptionally fine and smooth texture. The pure marl sources seem to have been used more sparingly as they are found infrequently. However, when found, the pure marl was used to fashion a variety of shapes and types of figurines. An example can be seen below (Figure 80).

Figure 80. 16886.X2 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

Sandy Marl

The majority of figurines found to have been made of a marl source were made from a very sandy-marl, rather than the pure marl source discussed above. Although it is still a marl its colour is nowhere near as pure white as the pure marl sources, and is instead a reddish/brown. We find a range of figurine types being made using this clay type. The usual composition of such clay includes very fine inclusions typical of a sandy source, thus including quartz, red sand grains, black volcanic minerals and feldspar. These inclusions dominate the composition of the clay at a very high frequency. The texture of these clays is usually quite fine although depending on the level of sand/silt they may be more coarse, and also in some cases more prone to fracturing and shrinkage damage. Such clays seem to lack black or white organic plant or vegetal material or any other type of coarse inclusions. There may have been quite a mixture between the sandy marl sources with those levels above it, such as the Black Organic and Low Lower Alluvium levels. However, it may also be possible, and hopefully with further research it will be shown, that the sandy marl may have mixed with an even lower, perhaps beachy sandy clay underneath the pure marl source.

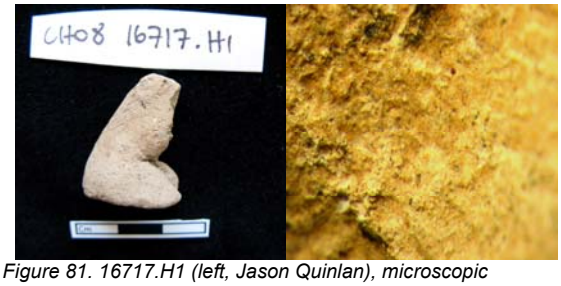


Figure 81. 16717.H1 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss.)

One interesting figurine looks as if though a sandy-marl was used as a form of slip (15605.H1 Figure 82). Admittedly, it is unsure if the slip was intentional or depositional, but it is apparent from observation that it was a slip in some form as it appears to have chipped and it was unevenly applied inbetween the more difficult reaches of the front legs of the figurine. The majority of the slip is concnetrated on the snout of the animal and also along its back.

Figure 82. 15605.H1, sandy-marl slip across the snout, parts of the legs, and back. (Jason Quinlan).

Summary

In summary, the clay compositions and types that were utilised for the making of the figurines varies considerably, and are summarised in the chart below for ease in future research. The accurate recording of observations of the compositions of the figurines is quite limited in many respects. As this is a purely non-destructive process we are limited from looking at thin-sections and are also limited with regards to the cleaning of the figurines, as many of them are incredibly dirty due to depositional processes as many of them were found in middens.

Clay Type	*Colour*	*Composition, Structure, and Inclusions*
Upper Alluvial	Reddish Brown	- very sandy, silty brown alluvial clay - lacks coarse inclusions - significant amount of sand, some organic material although limited - moderate frequency of inclusions, mainly of sandy type of material and minerals
Upper Lower Alluvial	Light Gray	- very few, fine inclusions - high sand/silt content - sporadic colouring
Middle Lower Alluvial	Medium Gray	- usually fine inclusions, some rare finds of marl/plaster - moderate sand/silt content, high clay content making figurines quite strong and dense - marl/plaster inclusions can cause shrinkage and fracturing as well as tinting clay to greenish lime colour - low frequency of inclusions
Low Lower Alluvial	Dark gray/brown	- fine silty clay - increase in organic/vegetal and plant material - strong smectite rich clay allows for high plasticity and elasticity - low frequency of inclusions
Black Organic	Dark brown/black	- high clay content - coarse inclusions sometimes attributing to fracturing and shrinkage; although majority fracturing caused by baking and heat exposure - coarse, crumbly, and lumpy clay; lack of sand/silt - do find organic material, but not to significantly higher degree than Low Lower Alluvial - fairly high frequency of inclusions
Pure marl	White	- no coarse inclusions and very low frequency of fine one - pure source
Sandy marl	Brownish/reddish white	- high frequency of sandy inclusions

Exceptions
Aside from the above categories of clay types that were utilised it is quite possible that still further types of clays were used. Although not seen through this research, we are on the look out for possible secondary clay such as colluvium or from midden deposits. One figurine that did stand out, however, was of made of pure brown silt (16479.X3) that seems to have been highly fired all the way through. Such firing most likely would have been necessary for this figurine to have maintained its form considering its pure silt composition.

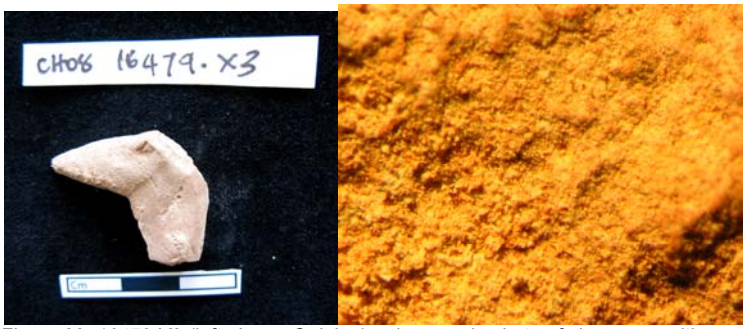


Figure 83. 16479.X3 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss). Notice pure silt content.

Heat Exposure
One of the original goals of this project was to assess the heat exposure of the figurines. However, for the most part this has proven exceptionally difficult to assess and therefore the firing of the majority of figurines was indeterminate. It is clear, however, that the figurines were not fired at pottery-making temperatures and more or less, seem to have been either sun baked, or lightly baked from heat exposure from hearths or by burning in middens (Meskell et al. 2008: 141). This research was, however, able to identify some figurines that received uneven heat exposure. Some notable examples include 16756.H2 and 14186.H10, both of which showed concentrated burn marks either creating pinkish stains (as seen on 16756.H2), or black burn marks (as seen on 14186.H10).

Figures 84. 16756.H2 (left, Jason Quinlan), and 14186.H10 (right, Jason Quinlan).

Provenance of Clays
Working with Chris Doherty and through his knowledge and work of the immediate geology of the region, it has become obvious that all of the clays that were used for the making of the figurines were expediently available at all times, with the exception (perhaps), of Upper Alluvial clay types during the Neolithic occupation. All of the clays that were used, the Marl, Black Organic, Lower and Upper Alluvial types, have all been found in very close proximity to the site and can be found less than 1km away thus suggesting they were all local and well known. In short, the clays were always readily available for expedient use and manufacture in the making of the figurines.

Conclusions
It is admitted that this has been brief initiation survey of the clay compositions and that future variations are bound to arise with regards to changes in the database fields and to entries and observations that will be recorded. It is a suggestion that the database be made even more specific with regards to the various sub-categories of clay compositions, which may allow one to conduct more accurate quantification studies.

In conclusion, the people of Çatalhöyük utilised a significant range of clay sources for the making of figurines, all of which would no doubt have been local, and readily available for use. Admittedly this study has been brief and more or less a classification of the clays that were used for the manufacture of the figurines. Although questions remain regarding heat exposure and firing temperatures, some other questions may arise now that a classificatory scheme is in place for the recording of the clay compositions. It is hoped that this initial study will help initiate future studies that may look at future questions regarding possible clay preferences, clay hierarchies, and other spatial and temporal relations between the clays used for the figurines and those used for the pottery and mud-brick.

Chipped Stone Report Trench 5 - Sonia Ostaptchouk (Musée Nationale d'Histoire Naturelle, Paris)

Concerning the Lithic Technology Study, we have continued to work on the question of the nature of the production in Trench 5 as well as the topic of economy of raw material. The study is oriented around issues such as:

- The nature of the raw material that the people of the Chalcolithic decided to knapp and the provenance of it.
- The quantity and the state of the raw material imported to the site (block, preformed cores, blanks, tools, etc…)
- The possible difference in the treatment of each raw material.

Excavation season 2010: Chipped Stone
Material examined in this preliminary report includes the lithic material found in secure context from Peter F. Biehl & Eva Rosenstock's Trench 5 excavations, season 2010. All the material was counted, weighed and measured for the database (Figure 85).

	Count	Weight (Grs)
Obsidian	1195	1754
Flint	38 (+5 axes)	1531.43

Figure 85. Season 2010, Trench 5: counting and weighting.

The assemblage of the 2010 season (Figure 86) confirms the idea and the technological observations done the two last years (see Archive Report 2008, 2009): the production is mainly oriented towards unipolar blades. We can distinguish two main groups of blades based on the diagnosis of different production techniques: (a) pressure blades and (b) percussion blades (see Archive Report 2008). Indeed the bipolar production is absent or anecdotic. We observe the same homogeneity in the assemblage concerning the technological characteristics of production as in the state of the surface of the material (except for NOCs (Non-Obsidian Components), see Archive Report Season 2008, 2009). Concerning the proportions of the various raw material: for the obsidian, as was the case last season, we notice that the two mains sources (Nenezi Dağ and Göllü Dağ) are more or less proportionate: 53 % Göllü Dağ, 43 % Nenezi Dağ and 1% of yellowish brown obsidian probably from Acigöl (?) (see Figure 87).

The NOCs remain minor in the assemblage with 3.3 % for the 2010 season (see Figure 87).

Space and Finds
Space 341
In this space we found more robust blanks than in the other spaces: for the obsidian, we notice three big blades (15152.A2, 15139.A1, 15139.X1) from Göllü Dağ (dark blue, type 20). Note that in general the biggest blanks observed in the material from Trench 5 seem to be made of obsidian from Göllü Dağ, especially type 20. In this space we also found big flint chunks and tools. They could have been used for percussion work, to break bone or other

Season 2010			
Obsidian			
core	3		
core reuse?	2		
fragment of core	3		
blade remnant cresting scars	4		
natural surface	1		
tablet	12		
flake probable tablet	20		
blade	349		
blade with natural surface	7		
blade edge	6		
flake	85		
flake with natural surface	15		
debris	30		
debris with natural surface	3		
esquille	23		
esquille with natural surface	1		
burin spall	3		
esquill bulblr	1		
retouched pieces			
retouched blade	312		
retouched flake	41		
Pièce esquillée	111		
	indentified support		40
	on blade	1PF	33
		2PF	22
	on flake	1PF	4
		2PF	7
	on tablet		1
	on fragment of core		4
notched blade	12		
end scraper	6		
troncated blade	5		
projectile	6		
retouched tablet	3		
retouched burin spall	3 (1?)		
perforator	4 (1?)		
double perforator	1		
denticulated blade	2		
pointe ?	1		
	total : 1067		

Figure 86. Study season 2010, Technological Categories.

hard materials. We have acquired an original and unique tool for the West Mound, a double perforator (15139.X2, see Figure 88), some retouched blades and *pièces esquillées.*

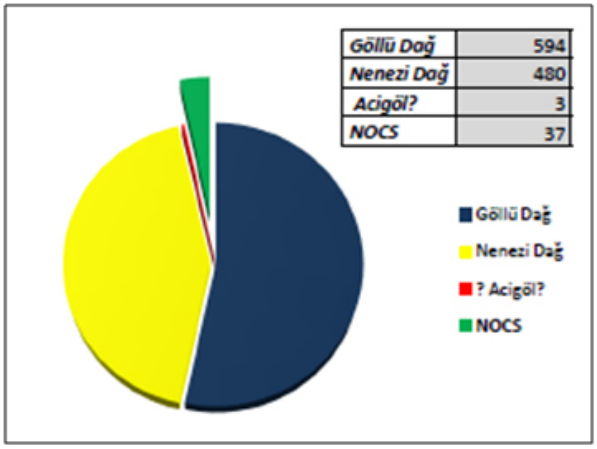


Figure 87. The Raw material, Season 2010, Trench 5.

Space 449

We have found only a bit of obsidian in this space for the moment: Some blades and fragments of pieces esquillées. Among the finds uncovered this season were some robust elements of obsidian from Göllü Dağ (type 20) (example 15160.A12). One small core (15180.A20) was reused as a tool for percussion, as was the core 15137.X1 from Space 340 (Figure 89).

Concerning the NOCs, we found the main concentration of big elements in this space. They appear in the form of a big flake (15160.X2), a burnt retouched blade (15160.X40), a perforator (15160.X18), and a rough core of cream flint with light patina on the surface (15160.X27). So we can also envisage for this space rough work on hard materials.

Figure 88. Double perforator 15139.X2. Photo Lithics Team.

Space 340

In this space we found slightly more flakes than during the 2009 season. We also found a small obsidian core (15137.X1). Like all the cores found this year, it is at the final stage of production, and it is reused as a percussive tool (see traces of percussion on photography, figure 89).

Space 310

Here we found an irregular retouched blade (a scraper: 15165.X16). Notice that the obsidian comes from Göllü Dağ (type 20). We found more flakes in this space than in the others, and a certain number of fragments of *pièces esquillées*.

Figure 89. Cores reused like tool, West Mound, Trench 5.

Space 345
In this space we found a big tablet, given a second usage as an end-scarper (15172.X6) (Figure 90). This tablet shows the rest of the core with a platform (natural surface). The *débitage* seems to be oriented towards the production of blades (probably by percussion?) all around the circumference of the core from a unique striking platform. Another big tablet (Figure 90) was also found in this space (15172.X5). It takes the form of a plunging blade. This blade was knapped from an opposite striking platform than the principal one of *débitage*. The rest of the material is composed mainly of fragments of blades.

So we have noticed that this year, for certain spaces, we seem to have bigger and rougher NOC elements. And for the obsidian, a possible connection between Göllü Dağ type 20 and robust support is observed. Moreover, the concept of reusing cores in Trench 5 is confirmed by the finds of this season (Figure 89).

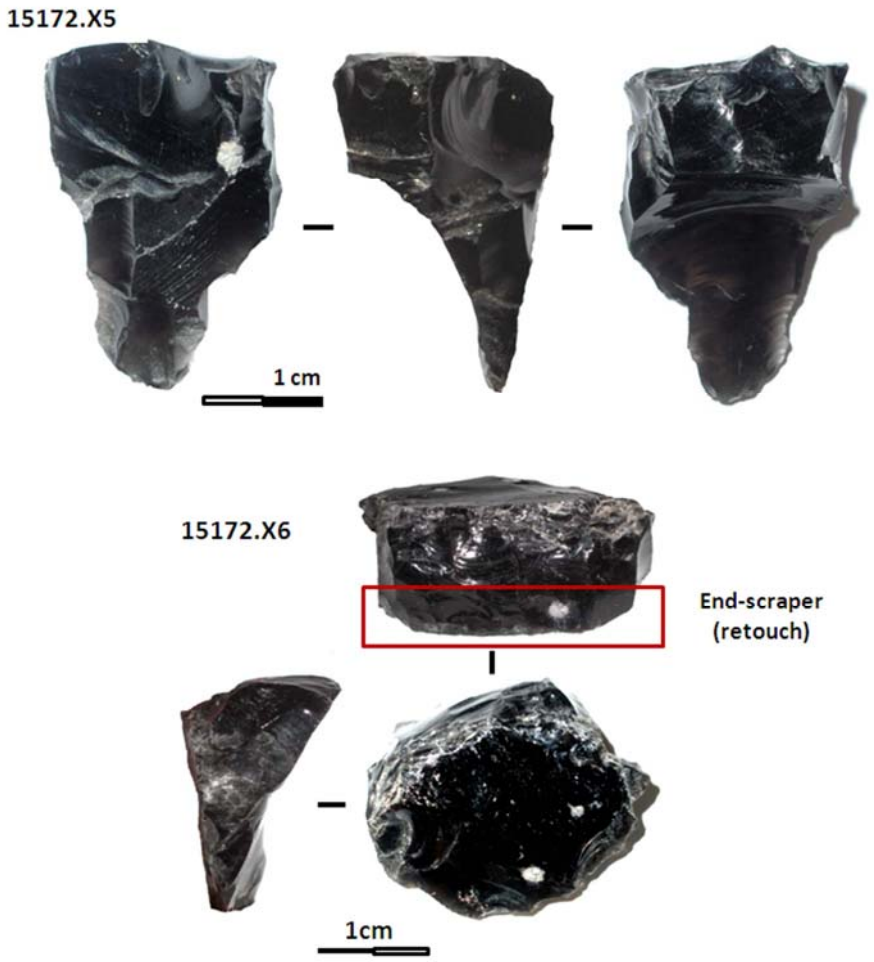


Figure 90. Tablets, West Mound, Trench 5

The typology of arrowheads (secure and unsecure contexts, obsidian and flint) on the West Mound is also confirmed by the finds of this year. They are generally small/medium dimensions with a “half-circle” section (for example, see the obsidian arrowhead 15340.X28 from Space 452). We can compare them to the “type 8” defined by Conolly (Conolly, 1999): the type 8 refers to small points, with tangs and without shoulders that are on average over 20mm smaller than type 6 points (c. 65mm). They are often bifacially retouched, varying between sub-parallel to scalar retouching on both faces. The dorsal surface typically appears

covered in or shows invasive retouching, something which this surface doesn't present on the West Mound. So not only can we clearly observe less projectile points during the Chalcolithic at Çatalhöyük, but also a simplification and reduction of the size of these arrowheads.

Additionally, we found a small flint cobble (15159). On it we can notice two zones with percussion traces. I don't think that it was likely used as a hammer for knapping due to its size and weight. It is not heavy or hard enough to be used in such a manner.

The economic aspects of the assemblage

I would like to discuss briefly about the different phases of the *"chaînes opératoires"* represented on the site. For the Report of this season, I would like to place my focus on the economic aspects of the lithic study. In fact we now have a sufficient enough quantity of material to draw significant and quantitative conclusions on the production.

Thanks to experimentation, we know characteristic products of each phase of the *chaîne(s) opératoire(s)* of production (see Inizan & al. 1999: 27, figure 3). For this, individual pieces of lithic material were classified by technological category (see figure 86). Thus we can have a synthetic view of the represented and unrepresented phases on the site. Moreover, a global analysis, from synthetic technological categories, allows us to define the state of importation of material on site globally. In the material of Trench 5, the different phases of production are incompletely represented. Concerning the Chipped Stone here, we clearly have a deficit of the first phases of the production (see graphic, Figure 91):

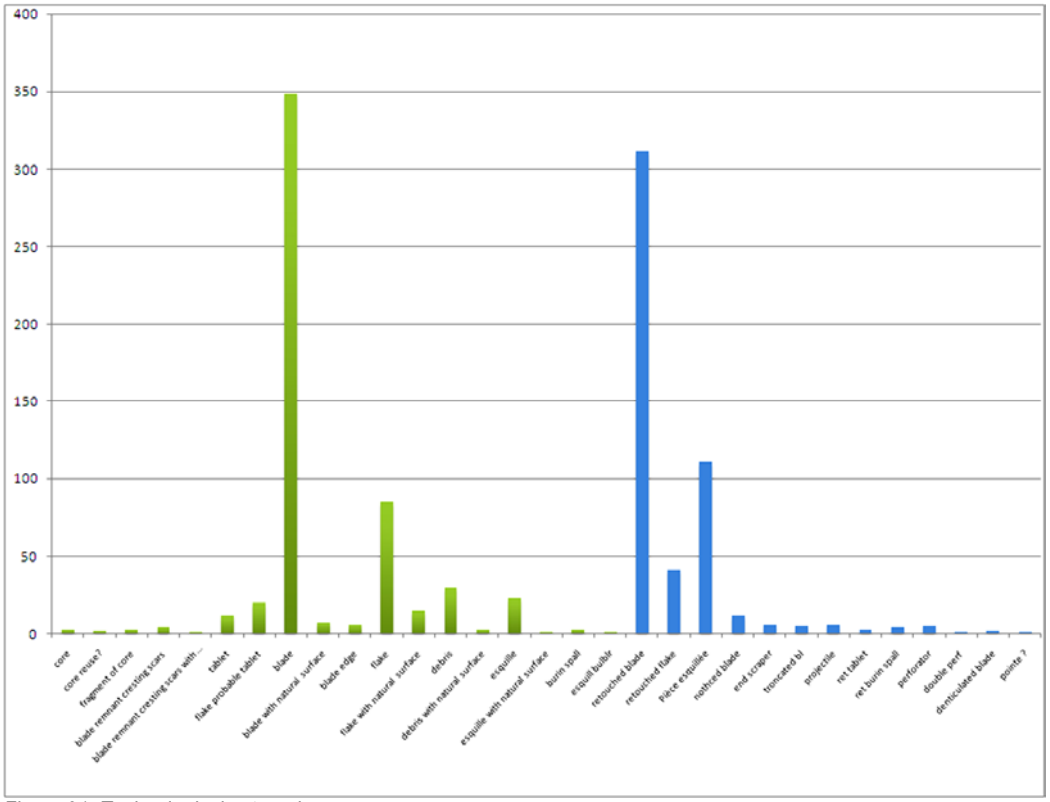


Figure 91. Technological categories

- The phases of shaping out the core and the beginning of removal are under-represented: the relative absence of cortical elements is significant. Cortical blades are absent as well. Crested blades or blades bearing cresting scars, easily identifiable, are rare (5 blades bearing cresting scars, see figure 86). The rare cores are reused as tools; some fragments seem to be used like *pièces esquillées.*
-

- The technical pieces that could show the rejuvenation phase of the core during the débitage are also rare. We observe few tablets and generally the diagnosis is uncertain. So the activities of knapping are limited in Trench 5.
-
- On the other hand, the *plein débitage* phase (production phase) of blades (blade code 212' rarely 123) seems to be over-represented. Any refitting was possible. And a detailed study of the type of obsidian, defined by Nurcan Kaycan, Marina Milić and Tristan Carter (Report 2007), shows the diversity of the raw material used. So despite the presence of a few rare cores, the in-situ production for trench 5 is clearly minor. The main portion of the obsidian seems to be imported as blanks. The question of where they are imported from (from another part of the West Mound, some others sites, or from original sources…) remains outstanding. My studies will be oriented towards this question over the next season.
-

Other finds from the West Mound, 2010 Season
The polished stone axes

This season we found 5 polished stone axes (Figure 92): 4 distal fragments and one complete. These small axes are all made on metamorphic stones, generally green stones like serpentinite (the complete one) or green schist (15165.X18). Only the axe from 15158 is a darker metamorphic stone (black with fined grains). The only complete stone axe doesn't seem to have been used. It is very flat and shows a clean polished surface. We can envisage that it was used more like an object of prestige, such as many known examples from the European Neolithic (even if the prestige axes in Europe are characterized by a small hole). The other axes show marks of use on the cutting edge. The axe from (15158) is smaller than the others. It shows traces of use on one of its faces.

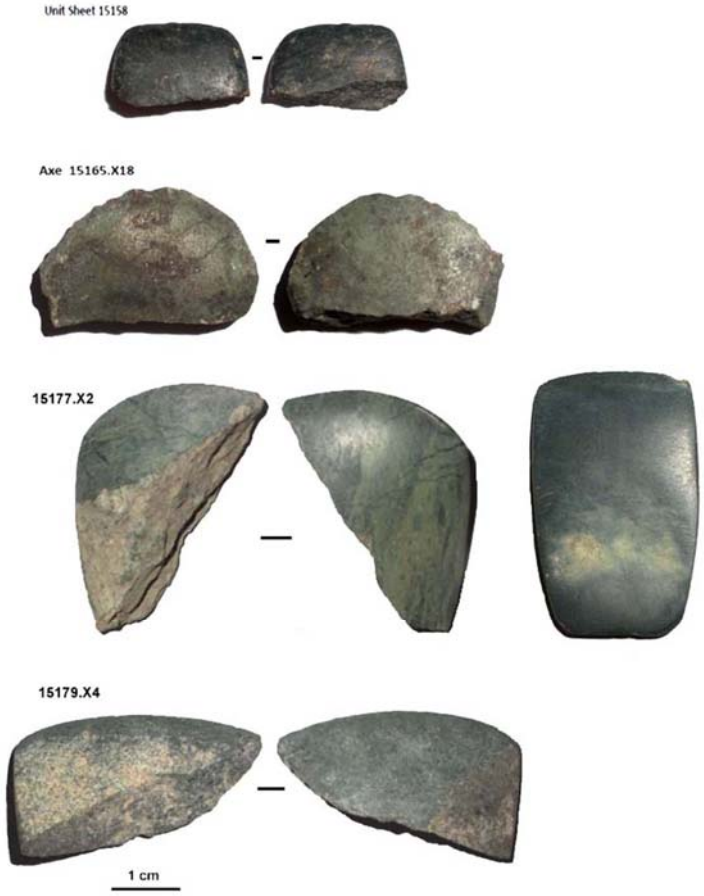


Figure 92. Polished Stone Axes, West Mound, Trench 5, Season 2010.

Infrared Spectroscopy: A new approach for the Characterization of NOCs (Chalcolithic)
(This part of the study was part of Sonia Ostaptchouk's PhD, at the MNHN, under the direction of François Fröhlich).

The banality of the chemical composition of flint and its responsiveness to environmental variations (with a total or partial change of its chemistry) don't always allow for a resolution by chemical analysis of the problem of origins of artefacts found at archaeological sites. For these proprieties, we have to consider a mineralogical approach by Infrared Spectroscopy combined with more traditional means of observation.

Principles of Infrared Spectroscopy
Infrared Spectroscopy (IR spectroscopy) is spectroscopy that deals with the infrared region of the electromagnetic spectrum, that is light with a longer wavelength and lower frequency than visible light. It refers to a range of techniques, mostly based on absorption spectroscopy. Infrared Spectroscopy (molecular spectroscopy or vibrational spectroscopy) is a tool capable of evaluating crystallized substances as well as amorphous material. This method exploits the fact that molecules absorb specific frequencies that are characteristic of their structure. A molecule can vibrate in many ways, and each way is called a *vibrational mode*. And the frequency of the vibrations can be associated with a particular bond type. The infrared spectrum of a sample is recorded by passing a beam of infrared light through or on the sample. Examination of the transmitted light reveals how much energy was absorbed at each wavelength. This can be done with a monochromatic beam, which changes in wavelength over time, or by using a Fourier transform instrument to measure all wavelengths at once. From this, a transmittance or absorbance spectrum can be produced, showing at which IR wavelengths the sample absorbs. Analysis of these absorption characteristics reveals details about the molecular structure of the sample. When the frequency of the IR is the same as the vibrational frequency of a bond, absorption occurs.

Techniques of analysis
Infrared spectroscopy has been highly successful for applications in both organic and inorganic chemistry. But recently it was developed at the Center of Infrared Spectroscopy at MNHN for mineralogical studies. The technique of analysis by infrared spectroscopy, as developed at the CIS, allows for the use of various accessories adapted to the nature of the object being analyzed (Fröhlich F. & Gendron- A. Badou, 2002): the Specular Reflection (SR) does not require samples of materials, the artefacts is put directly on the small analysis window. The Attenuated Total Reflection (ATR) requires a micro sample of a few milligrams, so the powder obtained after some grinding by hand is placed on the analysis window. Another analysis technique, also requiring a sample of a few milligrams, consists of the making of a pastille. This latter form, composed of the artefact's sample, reduced to less than 2 microns, and KBr, is positioned on a sample holder designed for this purpose. These three techniques were used to study the artefacts of Çatalhöyük.

The first analysis of 64 artefacts in 2009/2010 from the West Mound of Çatalhöyük shows a great mineralogical diversity. The analysis by Infrared Spectroscopy (ATR, KBr pastille and RS) allows for differentiation of, among other things, pure chalcedony, porcellanite, and carbonate flint (dolomite and/or calcite). Thus the visual diversity of NOCs observed by Chris Doherty and Marina Milić (Archive Report 2006; Poster 2007) is confirmed by recent analysis by Infrared Spectroscopy.

This technique of analysis gives access to a non-selective inventory of analyzed components of the sample, and allows for a fast and non-invasive characterization (Fröhlich F. & Gendron-Badou A., 2002). Moreover, this study allowed us to establish our classification based on macroscopic observations and to enrich it by mineralogical data. This combined approach, applied to the artefacts of Çatalhöyük, is envisaged for geological collections which will be sampled during a Project Mission of Survey, in the desire of comparing the geological and archaeological data.

References
Conolly, J. 1999: The Çatalhöyük Flint and Obsidian Industry: Technology and Typology in Context, BAR International Series 787, Oxford.
Doherty, C. & Milić, M. 2007: Poster: Non-obsidian characterization studies at Çatalhöyük, Turkey. Archéometrie 2007 (conference), Aix-en-Provence.

Inizan, M., Reduron, L., Ballinger, M., Roche, H., & Tixier, J. 1999: Technology and Terminology of Knapped Stone, CREP, Meudon.

GEOPHYSICAL SURVEY

Summary Report of the 2010 Geophysical Survey at Çatalhöyük – Kristian Strutt & Jessica Ogden

Kristian Strutt, Jessica Ogden, Grant Cox, Eleonora Gandolfi,– Southampton University

Between the 17th and 24th June 2010 a geophysical survey was conducted across the east mound at Çatalhöyük. The survey was conducted by the University of Southampton on behalf of Prof. Ian Hodder and the Çatalhöyük Project with the aim of testing the application of two different geophysical survey techniques, and locating and mapping the extent of buried archaeological features at the site. Magnetometry and Ground Penetrating Radar (GPR) were applied (Figure 93), with the first technique being used to survey most of the north and central parts of the mound, and the latter being applied to two areas corresponding to previous cleaning and planning. The first area was located immediately to the north of the 4040 shelter, and the second was located on the northern side of the highest part of the mound, corresponding to a 20m by 20m cleaning area (bottom left coordinates 980, 1080 on the site grid).

Figure 93. Magnetometry and Ground Penetrating Radar (GPR) were applied. Photos Jason Quinlan

For the survey a series of grids were established at a tangent to the site grid, with pegs placed at 30m intervals across the northern and central parts of the mound. The magnetometer survey was conducted using a Bartington Instruments Grad 601-2 fluxgate gradiometer. Data were collected along 0.5m traverses with a reading interval of 0.25m. Data were then downloaded and processed using Geoplot 3.0 software. The GPR survey was conducted using a Sensors and Software 500Mhz antenna attached to a Noggin Smartcart. Data were collected along traverses 0.25m apart. The data were then imported into GPR Slice for processing and slicing of the profiles to form a series of plan representations of the results at different depths for each survey area.

The results of the magnetometry cover an area of 5.7 hectares, and indicate the presence of structures of probable Neolithic date, especially across the central and western parts of the mound. Other features, including Byzantine and Islamic tombs, and modern utility features, were also located in the results. The targeted GPR surveys to the north of the 4040 shelter and at 980,1080 correlate with the magnetometry and indicate a large number of structures of probable Neolithic date, running to the north of the 4040 excavation area and across the centre of the mound (Figure 94).

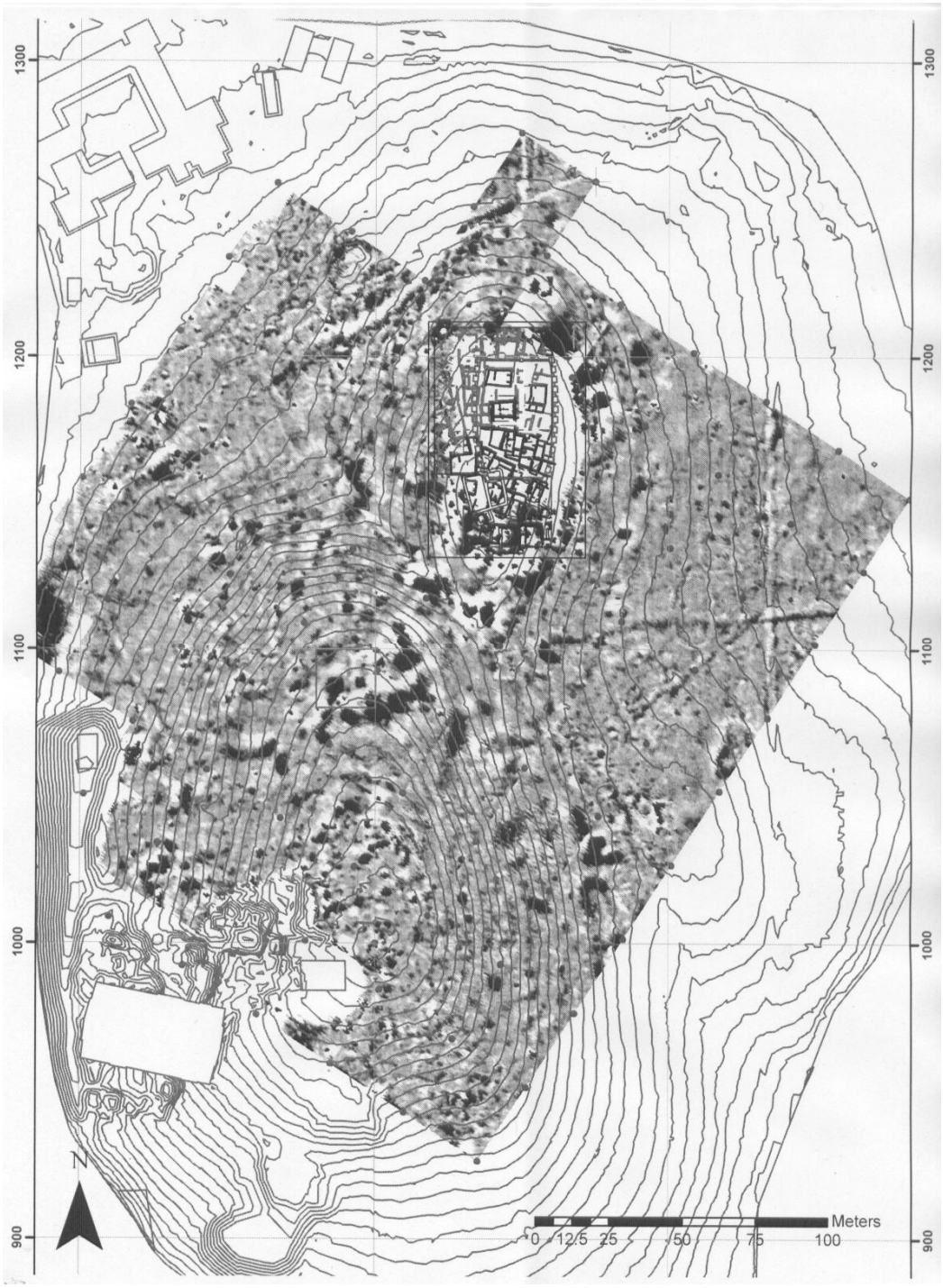


Figure 94. Preliminary data from the 2010 seaon.

SUPPORT TEAMS

Çatalhöyük IT Archive Report 2009 - Sarah Jones*

*Team: Sarah Jones, Richard May, Rafael Lizarralde Neil Davies.

*Çatalhöyük Research Project

This years archive report from the IT team is brief due to post-season time constraints and the distributed nature of the team out of season.

Rich May set up the IT infrastructure on site as usual (Figure 95). The set up was based on the major changes that were made last year with a few alterations to improve the wireless reception and accessibility to the network. The printers were set up differently, using the old server as a print server and this improved reliability and we did not suffer from printer connection lose as much as in previous years. Rich was on hand at the beginning of the season to help set up early arrivals.

Figure 95. Rich May setting up the IT infrastructure. Photo Jason Quinlan

This year we were lucky to be joined by Rafael Lizerralde (Raffi), a computer science undergraduate who was able to work along side Sarah Jones. Raffi provided invaluable help to Sarah by taking over the workload of setting up new users and trouble shooting their problems. He also developed some new programs to help communications between team members including a wiki, a server alert message system and a chat room.

This freed up Sarah to concentrate on database work. This year the work concentrated on the excavation and finds databases. The work of data cleaning on both of these was time consuming for Sarah, the finds and the GIS teams and as we went along we sorted out any issues in the databases to stop problems arising in future.

The lab team databases were dealt with as required by each team. The chipped stone database incorporated level two data for the first time, which required data cleaning by the team. The groundstone database was re-developed and the team sorted the data to be imported from excel before taking on board the MS Access system and entering new data into that. A new MS Access front end was developed for the Figurines database to bring it in line

with the other databases used by the project. Later in the season a zoo-archaeology element was added to this.

Sarah was able to work closely with the GIS team to facilitate the development of the GIS system, which is proving invaluable to all team members in their post excavation work. She was also able to help individuals expand their querying skills and it was a successful season in that respect. There was continued development of the links between the image database and the other databases all contributing to our strategy for an integrated IT system.

Many thanks to Raffi for his wonderful contribution to the project and hard work over the 6 weeks he was present on site. His help was invaluable and he has left us some fantastic systems for future seasons.

Conservation – Duygu Çamurcuoğlu

Team: Liz Pye*, Duygu Çamurcuoğlu*, Ashley Lingle*, Lucie Monot*, Rosemary Jeffreys*, Sanaz Mehran**

*Institute of Archaeology, University College London
**MimarSinan University, Istanbul

Introduction
Site and artefact conservation was successfully carried out during the 2010 study/excavation season in collaboration with the conservation students from the Institute of Archaeology-UCL, MimarSinan 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 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.

The Conservation and the Maintenance of the display buildings in the 4040 Shelter and the Experimental Capping project.
In the 2010 season, the maintenance work of Buildings 5 and B.77 of the North Shelter continued as the unstable environment under the shelter (see 2009 Archive report) caused more deterioration to the buildings throughout the year. The conservation work undertaken involved the consolidation of plastered walls/bins and other features, by using 10 or 25% Primal AC-33 (acrylic dispersion) in pure water depending on 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 96. North wall F 228 in Building 5, after the removal of plaster.

Following the difficulties to conserve and control the environmental levels as well as slowing down the erosion occurring under the shelter, it has been decided that a method of wall capping by using natural/local materials would be tested in one of the buildings, to experiment and evaluate the success of the treatment in comparison to the consolidation method. Building 5 was targeted for this work. As mentioned in the 2009 Archive report, one of the main problems over the last 2 years was the fluctuations of the RH and

temperature 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 and not respond long term to any conservation treatments. In order to test the experimental capping method, the most severely delaminating plasters were removed from some of the walls prior to the application of the capping. Delamination was occurring because the consolidation of these layers seems to be not working while they are constantly delaminating due to the movement of soluble salts within the mudbrick walls. Therefore, the plaster layers on the north wall F.228, wall F.229/Bench F.350, south wall F.224/Niche F.245 were removed after they were fully recorded and samples were taken (Figure 96).

Figure 97. left - Replastering F.228 in Building 5, right - adding chaff into marl plaster

The wall capping material, locally available earthen plaster (marl), was used in the same way that the villagers would plaster their houses and the same as used in the reconstruction of the experimental house. We worked with the local women and men to prepare and apply the capping plaster onto the mudbrick walls (Figure 97-left). The capping plaster was constructed mainly in two layers: a thicker base layer and several layers of very thin marl washes. Firstly, large amounts of marl pieces were required to be dissolved in water. Following this, sieved chaff was added into the base layer of plaster (almost 1:1) to make the plaster more durable and to prevent cracking during the drying process (Figure 97-right). The addition of chaff made the plaster more dough like and during application and more water was added for ease of application.

Figure 98. Replastering process North wall F.224

Before the application of the base layer, the wall tops and surfaces were lightly dampened for the plaster to attach onto mudbrick better. Bare hands and damp clothes were used to apply the plaster onto the walls by smearing tightly (Figure 98). Once a thick layer of base layer was applied, it was left to dry overnight. Once dry, it was observed that the edges of the capping opened up, loosening contact with the wall face (Figure 99 - left). In order to fill the opened edges, a thick layer of plaster was applied and smeared onto the edge of the previously applied plaster. Then two-three layers of very thin plaster wash (without chaff) were applied over the base layer in order to smooth the rough surface of plaster (Figure 99 - right).

Figure 99. right - Plaster opening up upon drying, left - Thin layer of marl wash

Once the capping plaster dried, the appearance became quite white and hugely contrasted with the rest of the walls in the building (Figure 100). In order to blend the colour in, soil wash was used to tone down the surface of the plaster hue. The success of the capping will be evaluated in 2011 season to see whether the capping method works for the buildings of Çatalhöyük and for the shelter environment, as opposed to the consolidation treatments.

Two interesting discoveries of the 2010 season were the “hand print painting” and the “incised decoration” which were found on the north wall (F.3094) of Building 77. However, these areas of wall art were not well preserved due to the fragility of the burnt plaster layers. As the work continued on the east corner of the north wall, two very well preserved red painted hand prints were discovered around the NE platform with the horn core pillars (Figure 101). Close examination of the hands showed that they were possibly original hand prints, with additional painting as some kind of regular brush/tool marks were also visible to the naked eye. This hand print decoration could be considered as the most preserved painting of the current project so far and therefore decided to be conserved and investigated further to its extent. In order to preserve the red pigment layer, 5% Paraloid B72 in Acetone/Ethanol were applied on the painted area, in three layers. Since the aim is to continue peeling the layers of plaster on the bottom part of the hand prints to see if there are more decoration, the east corner of the north wall was temporarily covered and backfilled until the 2011 season (Figure 102). For this work, firstly the horn core pillars were lifted (see below). For the reburying, layers of Japanese tissue + geotextile sheets were placed directly onto the painting, followed by the soft Perlite bags and then heavy sand bags to support the north wall.

Figure 100. North wall F.228 in Building 5, after replastering

The incised decoration was made of mud plaster and found on the north wall (F.3094), to the west of the niche (F.6063). From some of the delaminated plaster fragments it looked like there were at least 5 layers of red paint applied over the incised panel (Figure 103). In order to preserve the decoration as well as the wall until the 2011 season, its surface was consolidated with 10% Primal AC-33 in pure water, whilst for the plaster layers around it 25%

Primal AC-33 in pure water was used. It was backfilled as the same way as the hand print paintings.

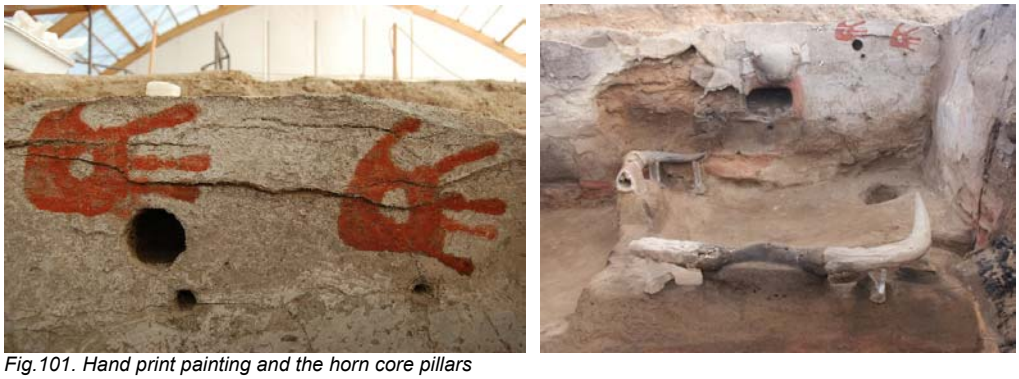


Fig.101. Hand print painting and the horn core pillars

Figure 102. Backfilling. Photo Jason Quinlan.

Figure 103. Incised spiral decoration in Building 77. Photo Jason Quinlan.

Other important work undertaken within the 4040 shelter was the excavation and removal of the mud pillars with horn cores in the Building 77. Following discussions, it was agreed that it would not be possible to preserve these significant features in situ due to the shelter environment and therefore as much as information as possible should be retrieved by excavating and recording. One of the most interesting features of the horn core pillars that were discovered was that the whole skull being embedded into the mud plaster pillars (see Figure). This was exciting archaeological information to be gained as the construction of the pillars explains details about how the horn cores were placed into the pillars and how they were standing up in a balanced way.

The Conservation and Maintenance of the buildings in the South Shelter

The conservation and maintenance work in the South shelter continued as the excavations progressed. Conservation work particularly focused on Building 80 in order to protect the plastered walls and the related features, mainly monitoring and supporting the highest north wall F.2533 against collapse. In comparison with the 4040 shelter, it has proved that consolidation, mortaring and grouting work is more effective if it is undertaken at the same

time as the excavations, as when the buildings are exposed, deterioration starts immediately and if there is no immediate conservation treatment applied, the rate of deterioration becomes higher. For this reason, the walls of Building 80 were regularly checked and conserved in order to reduce damage. In addition to consolidating and grouting of cracks that are constantly appearing the north wall was supported by wooden anchors and sandbags against unexpected collapse.

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 2010 season. As previous years, objects such as Neolithic pottery and complete or diagnostic animal bones were conserved for analysis.

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.

Acknowledgements
Big thanks to all team members who made 2010 a very successful season.

SITE VISUALISATION & PRESENTATION

Southampton Visualisation Team - Actions in 2010 - Stephanie Moser & Sara Perry
(University of Southampton)

After a productive reconnaissance season in 2009, the Southampton team returned to the site in 2010 with a wider remit and a larger group of researchers and designers (Stephanie Moser, Graeme Earl, Sara Perry, Ian Kirkpatrick, Rachel Basinger, Gemma Tully). Our focus has been multi-stranded, extending from site presentation and promotion to visual production for academic interpretive purposes. The scope and legacy of the archaeological work at Çatalhöyük demands that we take a methodical approach to present and future project planning and development. In 2010, this has meant that we have invested in both the completion of a series of small, well-tested visual outputs for the site, and the exploration of longer-term intellectual objectives and research partnerships with the greater Çatalhöyük team.

Site Leaflet
Following from discussions begun in 2009, an A4, 2-fold, 3 panel, colour leaflet has been designed for free distribution to Çatalhöyük visitors. Currently, there are no simple orientation tools available to guide visitors through the site, nor to take home upon departure. Feedback from the site guards, camp manager, project director and field director has indicated that a map and take-away leaflet are amongst the site's most needed and requested visitor resources. Alongside these, Çatalhöyük's guards have been clear that certain questions are repeatedly posed by virtually all visitors to the site, and that such questions might best be responded to in the context of a brief written handout. We have aimed to meet these needs via a double-sided leaflet whose contents include a new, full-page site map, and bilingual (Turkish/English) information panels. The design and text have been critically reviewed by more than 20 members of the international Çatalhöyük team, from the site guards and camp manager, to site supervisors, excavators and illustrators. The final version reflects the combined input of each of these reviewers.

The leaflet has been designed in Adobe Illustrator and 5000 copies have been made in the initial print run (Figure 104)

Figure 104. 2-fold, 3 panel, colour leaflet has been designed for free distribution to Çatalhöyük visitors.

Site Guidebook

Since 1998, Çatalhöyük has produced multi-page site guidebooks for sale to visitors. With revised versions of these books published in 2002 (16 pages) and 2004 (24 pages), it has been six years since the last update to their content and look. Alongside a complimentary leaflet, Çatalhöyük's guards have repeatedly noted that a purchasable guidebook is one of visitors' most sought-after site mementos. Based on this information, we have produced a first

draft of a 24-page, full-colour informational guide. New findings and critical reinterpretations of the archaeological record since 2004 have necessitated a complete rewrite of text (including original sections on daily life, the West Mound, and the interpretation and future of Çatalhöyük), and a full redesign of the book's visual template and graphic content. Current textual and visual materials have been collected on site from excavators, illustrators, photographers, lab managers and site guards, supplemented by information from recent site reports, published academic articles, Hodder's (2006) The Leopard's Tale, and the 2006 From Earth to Eternity exhibition guide.

Interviews have been conducted with Çatalhöyük's guards to understand previous successes and difficulties with the content and sales of site guidebooks. Ideally, the books will be priced at approx. 5 TL (their production cost being about 1TL each).

Upon completion of this field season, the draft guide will be circulated to team leaders for critical input. By 2011, our aim is to have it translated, critically reviewed by the site's Turkish site guards and camp manager, and ready for a full print run.

Visitor's Centre
The modernisation and redesign of Çatalhöyük's Visitor's Centre is a long-term project whose successful realisation depends upon reflective, critical engagement with both general and academic audiences. We are committed to the development of small, temporary exhibits that allow us to test visitor responses and tailor displays to changing interests and populations. Similarly, we are committed to inexpensive, locally-sourced means of presentation that demand very low levels of technological investment. Our intention is to cultivate a fluid, accessible visual environment that can easily be reproduced and added to by community members, and that can allow the exhibition space to transform in order to suit different activities and demands over the course of each year (e.g., teaching, community events, museum viewing).

In 2010, our focus has been multifold: we have begun to unite the aesthetic of the Visitor's Centre with the visual style applied to Çatalhöyük's on-site signage (developed in 2009); we have begun to add dimensionality to the Centre's interior which has traditionally been dominated by flat, wall-bound display panels; and we have continued to interview site guards, Turkish employees of the site, and visitors regarding their perceptions of Çatalhöyük and its presentation.

Fabric Panels
In particular, we have designed and installed two fabric panels at the entrance to the Centre whose purpose is to more deliberately and sensitively draw visitors into the room, guide them towards the orienting site video, and divide the room into more manageable spaces whilst still allowing flexibility in movement (Figure 105) Our intent is to gauge visitor reaction to these panels over the next year and, should such reaction prove positive, continue to add others over time. An anticipated side benefit of the panels is absorption of some of the echo that makes conversation within the Centre difficult. Multiple team members, including Turkish site guards, were consulted on the initial design concept, and subsequent feedback on the finished products suggests an initial positive reception to these additions.

Site Map
We have also replaced the antiquated site map, which sits immediately on the left upon entering the Centre with the new map designed for the site leaflet. This was a necessary update to a resource that was otherwise 4+ years old. The map has been printed at Bahçivanlar printers, in colour on foam board at a size of 39.5 in x 54.87 in (Figure 106).

Interviews
We have extended our programme of interviews with site staff and visitors (the vast majority of whom are Turkish) in order to better formulate the displays and Çatalhöyük's overall site presentation. The extent of our data collection (which was initiated in 2009) is such that we are now in a position to begin providing general direction on future visual exposition, as much of the visitor feedback we have received resonates with guard and archaeologist input. This

feedback includes adding texture, dimension and directionality to the Visitor's Centre, as well as providing answers to common visitor questions.

Figure 105. Fabric panels at the entrance to the Centre whose purpose is to more deliberately and sensitively draw visitors into the room. Photo Rachel Bassinger.

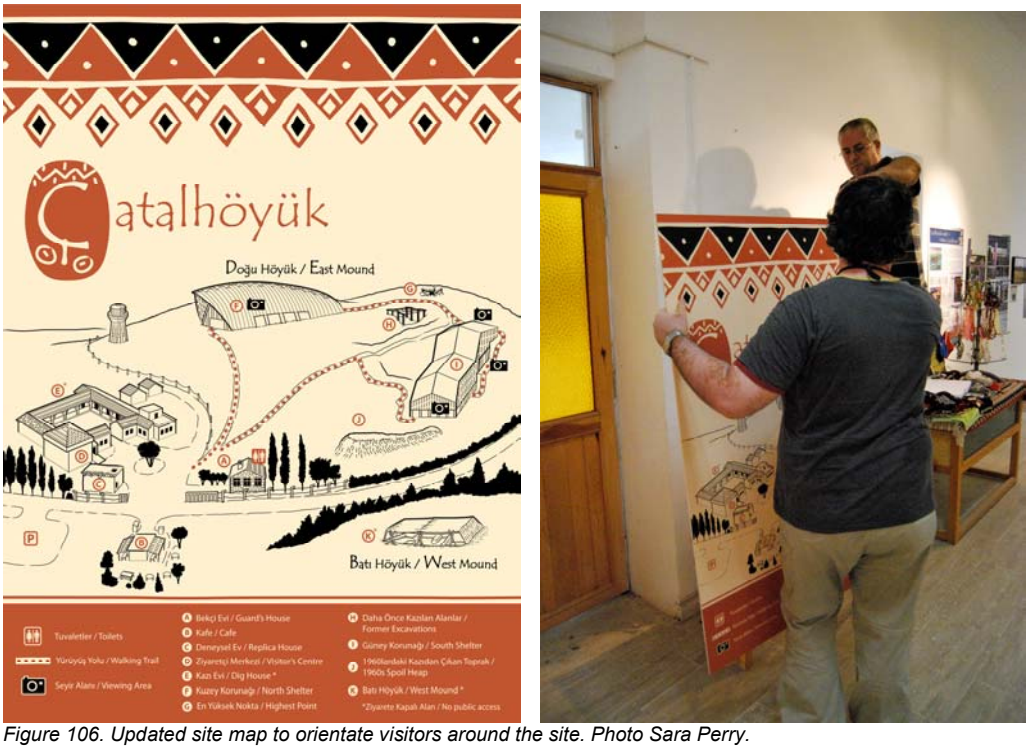


Figure 106. Updated site map to orientate visitors around the site. Photo Sara Perry.

TV Signage

Amongst the visitor information that we have collected, we have received repeated reports that, upon first entering the Centre, guests are not watching the site's introductory film. This film offers critical context on Çatalhöyük's history of investigation and interpretation, and is thus seen as an important prelude to the site tour. Interviews have indicated that visitors are unclear about the length of the video and are perhaps intimidated about requesting a viewing if other members of their party are indifferent to it or might object. In the long-term, it would be ideal to enable visitors to initiate the film themselves—a prospect which is complicated at present by the multiple steps necessary to turn on and programme the TV/DVD. In the short-term, then, we have produced Turkish/English text panels encouraging people to sit for the film's brief showing (Figure 107).

Figure 107. Visitors watching an introductory film to the site. Photo Sara Perry.

Alcove Paintings

Lastly, we have created new displays for the south-west and north-west corners of the Centre, in the pre-existing alcove spaces. Originally intended to house the television and other electronic equipment, these alcoves have sat unused in recent years, gradually accumulating debris and museum discards. They are fitted with lights and are large enough to allow visitors to enter and turn around within the space. In the south-west corner we have featured a composite painting of figurative wall art from Çatalhöyük (Figure 108), and produced explanatory signage in Turkish and English. The painting extends around the alcove, recalling the enclosed artistic spaces of various homes at the site. Our objective is to assess response to the addition of colour and iconography directly to the walls, as well as to relieve the environment of some of its stark whiteness and, in so doing, add a kind of intimacy which is reminiscent of the archaeology itself. Plans for the north-west alcove (featuring geometric and some figurative patterning) have been drawn and await input and implementation in 2011.

Figure 108. Use of the alcoves, originally planned to house a television and computer, adds an intimacy which is reminiscent of the archaeology itself. (Photo Sara Perry)

The total cost of our modifications to the Centre is approximately 258TL or just over 100GBP, nearly half of which is attributable specifically to the site map. Materials include 7m of fabric (28TL), paints and brushes (93TL), dowling (4TL), ceiling and wall fixtures (6TL), small text panels (50TL), sewing equipment (5TL), and map print (100TL). Future work in the Centre will entail the addition of new display areas and material exhibits, ongoing visitor interviews, as well as exploration of the possibility of expanding the environment into a second room.

Merchandising

There is an acute interest amongst individuals both at Çatalhöyük and within the surrounding communities (at least as far away as Konya) in developing the potential for future production and sales of Çatalhöyük goods. For a variety of reasons, merchandising has proven problematic at the site, and thus has tended to stall in its planning and implementation phases. In the absence of the community archaeology team (with whom we hope to liaise remotely), we have begun to investigate the feasibility of initiating a Çatalhöyük product line, and to research successful examples of such lines at other archaeological sites. With respect to the latter, we have visited the prehistoric site of Aşıklı Höyük whose reconstructed village and community-produced sales items offer a possible model for Çatalhöyük. Extensive discussions with Aşıklı Höyük's director Prof Mihriban Özbaşaran and PhD student Güneş speak to the potential—in terms of increased visitor numbers, local employment, and community-based production—of carefully-researched and sensitive merchandising and reconstruction efforts. The Aşıklı Höyük team is clear that its circumstances (e.g., regarding number of visitors, site renown, production and distribution of goods, etc.) significantly differ from those of Çatalhöyük. Our own efforts will require critical review of the existing infrastructure, of community development opportunities, and of the longer-term social ramifications of on and off-site sales. With this in mind, we have drafted a series of proposed next steps for merchandising—along with an outline of our related work this season.

As a corollary to such work, we have investigated opportunities to partner with various bodies in the making and distribution of Çatalhöyük products. This has entailed multiple meetings with community and business representatives in Çumra and Konya. Our explorations here are purely speculative and, as above, depend upon close scrutiny and planning of any potential trade relationships.

Reconstructed houses

Conversations have been in progress for multiple years now regarding the development of a new series of reconstructed homes in the front courtyard of the Visitor's Centre/Dig House. These homes would function not in the experimental capacity of the current house, but rather as 'replica' spaces allowing visitors to explore archaeological recreations of specific buildings excavated at Çatalhöyük (e.g., buildings 77, 79, 80, and Mellaart's hunting shrine and shrine 10). Earlier plans to generate models of such homes have been difficult to materialise, not least because of the logistics of the operation and the absence of a dedicated team to guide the project. We have been asked to consider options for the production of a small community of reconstructed houses. This is a long-term effort that will require the input and attention of a variety of parties. We have liaised with Cordelia Hall and Dave Mackie about the very early orchestration of the work and necessary data requirements. We have also collected basic plans prepared for previous incarnations of the replica houses. In 2011, we will continue to explore logistical issues behind the conceptualisation and execution of the homes in concert with the larger Çatalhöyük team.

Web Development

Discussions have continued about the short and long-term redevelopment of the project website, and experimentation with a variety of new web technologies on Çatalhöyük's database and public interface. Prior to a complete website renovation, we have proposed small interim amendments to the existing site targeted at known issues, e.g., the addition of more general orienting information on Çatalhöyük within the homepage. Proposed actions have been put forth regarding the testing and development of an intelligent multimedia catalogue for Çatalhöyük's extensive archive, alongside semantic web publication and other online possibilities.

Digital Visualisation and Visual Theory
Southampton's expertise in the digital visualisation of archaeological sites—not to mention Çatalhöyük's ongoing investment in such visualisation—has meant our involvement in multiple graphic projects at the site. Amongst these, we are continuing to work on computer-based reconstructions of Çatalhöyük's homes and to invest in the related use of polynomial texture mapping for the construction of surface models. Moreover, the addition of Maurizio Forte's UC Merced team to the Çatalhöyük project allows us further opportunity to critically assess the application of new visual technologies to archaeological enquiry. There is great potential here for novel theorising about, and judicious evaluation of, different forms of digital and analogue graphic production, and discussions have thus been initiated with UC Merced regarding longer-term collaborations.

Acknowledgments
Our work this year has hinged on the help and input of many people, most of whom have gone beyond all expectations to enable us to complete the aforementioned projects whilst on site. Amongst our own team, Gemma continued our programme of site interviews, and Rachel was the driving force behind the execution of the Visitor's Centre alcove and fabric panel designs. Many of Rachel's ideas have been carried over into the site leaflet and guidebook which have been crafted by Ian. Ian has also been instrumental in producing related signage and visual products, and applying his artistic vision to the site. Amongst the Turkish team, Yıldız, as always, has been an incredible asset, contributing to all aspects of our project, from translation to interviewing to design. Levent has similarly been tremendously supportive, reviewing our work and driving us across Konya in search of materials. Mustafa, Ibrahim and Hasan have repeatedly given input and helped to install and shape the visual outputs. We could not have completed this work without them, the site's archaeologists and illustrators, and most significantly, Shahina.

Photorealistic Modelling: Southampton University Archaeological Computing Research Group - Grant Cox

Supervisors: Stephanie Moser and Graeme Earl

Introduction
There is potential and an incredible danger in incorporating three dimensional technologies into the study of archaeological sites. This is most poignant in areas where reconstructions factor as both a base for visualisation and as an analysis for artefacts and structures that are no longer present. Constructing imagery using the latest programs and techniques can be an incredibly persuasive tactic. Therefore, responsibility lies with the artist to make sure any modelling is deemed to be as physically accurate in all areas of investigation as possible, "In order for the archaeologists to benefit from computer-generated models and use them in a predictive manner, they must accurately simulate all the physical evidence from the site being reconstructed" (Devlin et al. 2001).

Since the autumn of 2009 extensive research into the viability of three dimensional computing as a medium for reconstruction at Çatalhöyük has been undertaken, culminating in a Masters Dissertation submitted in October 2010 for Southampton University.

Lighting and Mental Ray
Initial groundwork for the inclusion of 3D technology revolved around demonstrating the ability of the software 3DS Max and in particular it's rendering engine Mental Ray.

3DS Max can be summarised as a, "powerful, integrated 3D modelling, animation, rendering, and compositing" package (Autodesk. 2010). Within this, Mental Ray is the shipped ray tracing rendering engine and when used it can provide very accurate simulations of both light and materials, standing as a very stable render engine that allows, "outstanding quality and unsurpassed realism" (Mental Images. 2010). This precision is most visible in its generation of light of which it provides two main forms of indirect illumination, final gather and global illumination. These can either be used independently, or in unison to recreate a simulation of bounced light with 100% accuracy to its natural properties and spread, "they are both 100%

correct physically. These differences are usually due to the shaders used inside the scene and not the underlying algorithms" (Van de Steen. 2007: 12).

Reproduction of light was focused upon in initial work with the software, and it was specifically applied in relation to photographic archives of the reconstructed house at the site; no direct measurements were used. After being sent the still images from inside the structure, time was invested to analyse the power of the software and whether it could fulfil its claims of accuracy and provide a useful platform for future research.

Analysis of the software highlighted that Mental Ray provided a realistic level of accuracy and adaptability in its performance as a rendering engine. Consequently, over the summer of 2010 work was undertaken to develop its use further and after visiting the site in June, research commenced on a viable topic for a Masters Dissertation.

Due to its highly visual nature, the Level V Hunting Shrine (F.V.I), found in the final year of the 1960s excavations (1964) was chosen as a beneficial topic and having answered questions regarding lighting, focus shifted to the other avenues of research 3D Max could provide for. Regarding the Shrine, visualisation was lacking and only a few slides from the original excavations existed. It seemed a strange occurrence that one of the most decorated structures from the original excavations remained so untouched, however it meant that any successful work would visually translate the wall paintings into imagery that had not been seen before by archaeologists or the public. Aims for the project were:

· To provide a medium that allows for analysis of the space (In particular the walls paintings) that cannot currently be achieved. Every element was to be fully customisable, providing a fluid system for critically examining new evidence regarding painting, movement and habitual life.
· To deliver a medium that not only capitalises on, but addresses public interest, engaging with them on a personal level. This will invite both their criticism and insight into the archaeology and develop a communal platform for interpretation at the site.
· To evolve new ideas for future visualisation and reflect upon the benefit of immersion into the construction process of this model.

Methodology and Results

To achieve these aims, research was conducted into Mellaart's intepretation of Shrines at the site, in particular those with a high density of decoration close to the Hunting Shrine, such as Level VI. These, along with the specific site reports of the structure itself, (Mellaart 1965) were used as the key references for the construction of the geometry and internal details. Frequent focus was also placed on current research and integrated with information provided by Mellaart regarding the buildings architecture.

A key motivation within the design process was the 'History House' classification (Farid. 2008: 27) and great lengths were taken to ensure current interpretation was maintained within the virtual space; every decision made was scrutinised and integrated to allow for future adaption. The technical processes used were heavily tested and dissected in the full study.

Figure 109 – A render looking at the North wall and the famous bull mural. Image Grant Cox.

Analysis of the model

It has been stated in other reconstructions of the site, in particular by Morgan (2009: 9), that the process of building virtual models of archaeological content, "requires the archaeologist to approach artefacts, architecture, and the landscape from a different perspective; one that requires an additive, accretive process, breaking down the object into component parts instead of viewing excavated materials as a whole". It can definitely be said that in considering the fundamental details of this model an appreciation for many of the finer archaeological details arose and plaster texture, paint colour and wear, accurate water stains, were all elements that would potentially not have been noticed without the physical interaction that the construction process provided. The control of colour, dealing with textures and factoring in anomalies, scattering pieces of broken mats and considering the impurities of the space was effectively faking the many processes of life that can be taken for granted every day by the archaeologist when envisioning the past. Decisions of personal taste, the forming of habits and preference that mould our living spaces into things that we can call our own are all important conceptual procedures that develop ideas of familiarity and comfort. In this model these decisions were made at a local level and deciding where to place the baskets and the mats, the decolouration of the walls and the floor, the use and movement within the structure and the day to day impact of living were all researched decisions that were applied subjectively, effectively made this space 'mine'. Questions such as 'Where would I place that?' or, "How would I treat this space?" abounded especially after focusing so heavily on individual components of the room.

Figure 110 –A render looking towards the South wall. Image Grant Cox.

An example of this can be seen with the hanging plants and skins (Figures 109-111), as they were relegated to the corners of the room so that they could be moved 'out of the way', whilst still keeping their role. Whilst working through the 3DS Max space and in particular when focusing on the underlying geometry, they were hidden because they would simply just act as a distraction and likewise with the baskets. Their presence was useful in containing other items, but their place within the room was simply to store items in the least invasive way. Reflecting upon these actions, this model sits not just as a valuable academic resource, but also a symbolic and personal one. It contains hours of work and worry, personal decisions and actions that have been developed in all stages without exterior dependence, creating a virtual space in such a way that is possibly the closest anyone will get to interacting with the architecture in a symbolic act of 'ownership'. In fact, through showing people renders and virtual panoramas, the model has taken on this perceived role even further.

Looking at the final result, it is hopefully clear that thought went into the placement of every feature. It is also hoped that it can be accepted that the majority of these inferences came from current research when possible and that in its completion; critical accuracy was always the aimed outcome. Too often virtual reality and graphical programs like 3DS Max can be over used to prove more about the technical ability of the software and the artist than the underlying archaeology. The worry with this is that, "our public face will become a mere simulacrum, behind which is hidden our own technocratic image" (Barceló. 2000: 28) and this was something that was always intentionally avoided.

Figure 111 – Render looking South East. Image Grant Cox.

Conclusion

In concluding this study, it is the belief of the author that it has been a very successful project. Due to previous work and a strong foundation, it began not just with a great deal of confidence, but also expectation and in its completion; a photorealistic model has been completed that enables considerable development and alteration from any future research at the site.

Furthermore, it is believed that it also accurately implements current theory and research successfully without overindulging in the temptation to promote unnecessary virtual techniques. Its use of materials and techniques in 3DS Max was always intended to be subtle, providing images that the viewer could empathise with and in presenting a finished product, it is hoped that the work will be seen as a beneficial addition to Çatalhöyük's impressive archaeological resume.

References

Barceló, J. A., 2000 "Visualizing What Might Be: An Introduction To Virtual Reality Techniques In Archaeology" in, Virtual Reality in Archaeology, edited by Juan A. Barceló, Maurizo Forte and Donald H. Sanders, BAR International Series, No. 843

Devlin, K. and Chalmers A. 2001.Realistic visualisation of the Pompeii frescoes. In Proceedings of the International Conference on Computer Graphics, Virtual Reality, Visualization, and Interactions in Africa (AFRIGRAPH). ACM, 43–47.

Farid, S 2008, A review of the Mellaart Level system and the introduction of a new phasing system at Çatalhöyük,in ÇATALHÖYÜK 2008 ARCHIVE REPORT, www.catalhoyuk.com (Accessed 26/08/2010)

Mellaart, J, Excavations at ÇatalHüyük, 1965, Forth Preliminary Report, In Anatolian Studies, Vol. 16 (1966), pp. 165-191, British Institute at Ankara: Ankara

Morgan, L. Colleen, 2009 Re-Building CatalHuyuk: Changing Virtual Reality in Archaeology, in Archaeologies (2009) available at http://works.bepress.com/colleen_morgan/1 (Accessed 20/04/10)

Van Der Steen, 2007, Rendering with Mental Ray.

Autodesk, 2010, 3DS Max Products, (Online) Available at http://usa.autodesk.com(Accessed 22/08/2010)

Mental Images, 2010, Home Page, (Online) Available at http://usa.autodesk.com/adsk/servlet/pc/index?id=13567410&siteID=123112 (Accessed 06/12/2010)

3D Digging Project - Maurizio Forte (UC Merced)

Students: Carlos Bazua, Paola Di Giuseppantonio Di Franco, Fabrizio Galeazzi, Justine Issavi, Llonel Onsurez, Julia Kline, Jonathan Wang, Patrick Willett

(1) U.C.Merced, (2) SUNY Buffalo

Technologies
Hardware: Laser Scanner Minolta 910, Laser Scanner Trimble CX, Laser Scanner Nextengine, GPS Trimble, NVDIA 3D Vision Kit, 3D Camera Fujitsu, StereoProjector ViewSonic (Figure 112).
Software: Geomagic, Meshlab, 3D Studio Max, Arc 3D, Realworks, Pointscape

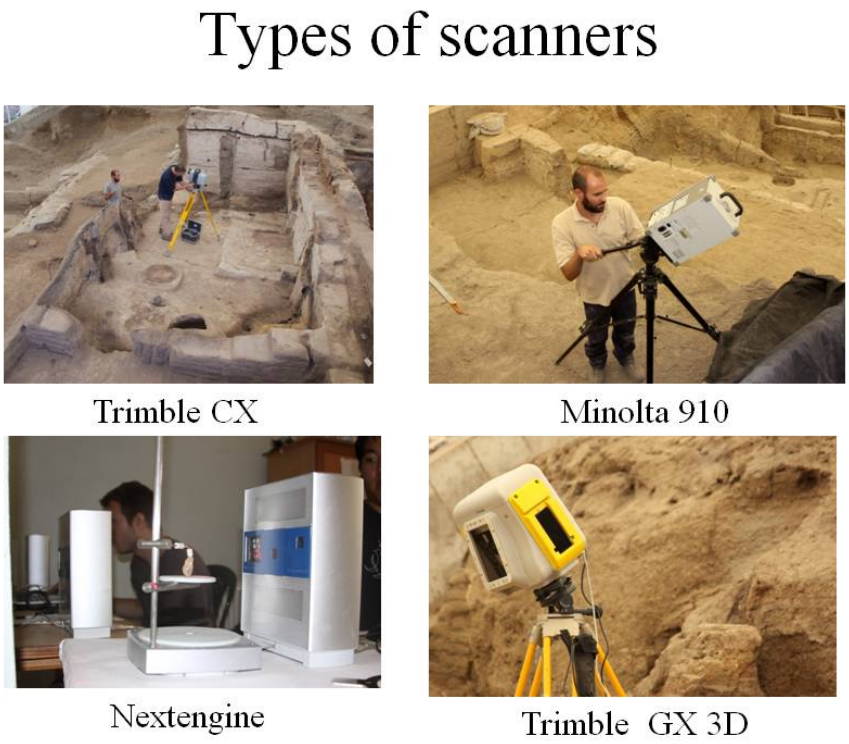


Figure 112. Types of scanners used on the project. Photo UC Merced Team.

3D-Digging is a research and educational project born from the collaboration between UC Merced and Stanford University in the Fall 2009. The main goal of the project is to interpret an archaeological excavation in 3D using advanced technologies for visualizing and interpreting structures, artefacts and stratigraphic layers. All the fieldwork activities are based on 3D data recording by laser scanning, digital photogrammetry, and computer vision. The project is planned in 3 stages of work: 3D learning, 3D digging-data recording and 3D communication and reconstruction. 3D learning represents the phase of education and familiarization on 3D

technologies through workshops, seminars, and lab sessions during the fieldwork. The second phase of 3D digging and recording is planned in the archaeological site of Çatalhöyük. The third phase concerns the implementation of the data in a 3D virtual collaborative system (based on Open Source software) available for scholars and students.

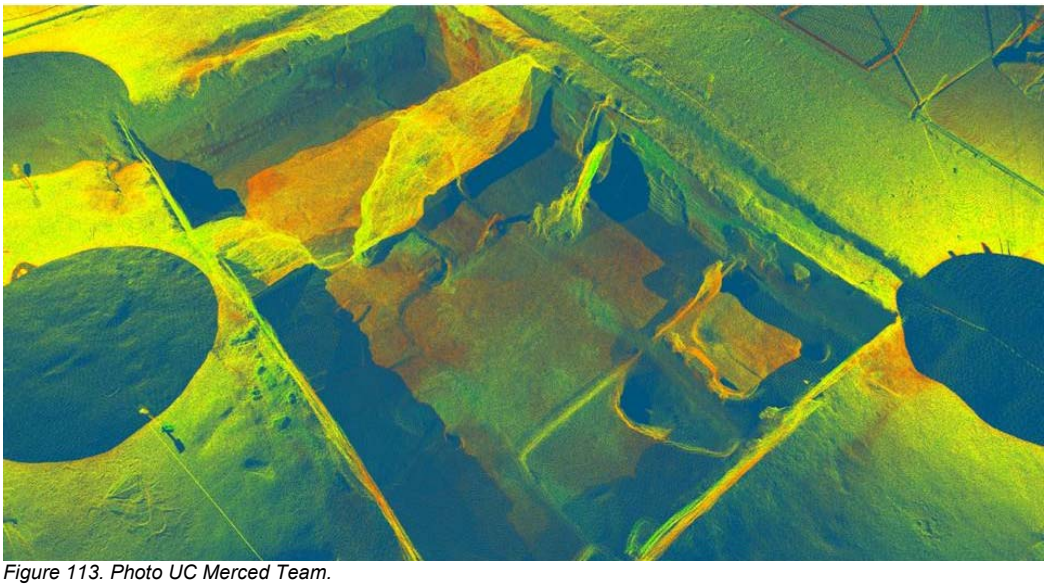


Figure 113. Photo UC Merced Team.

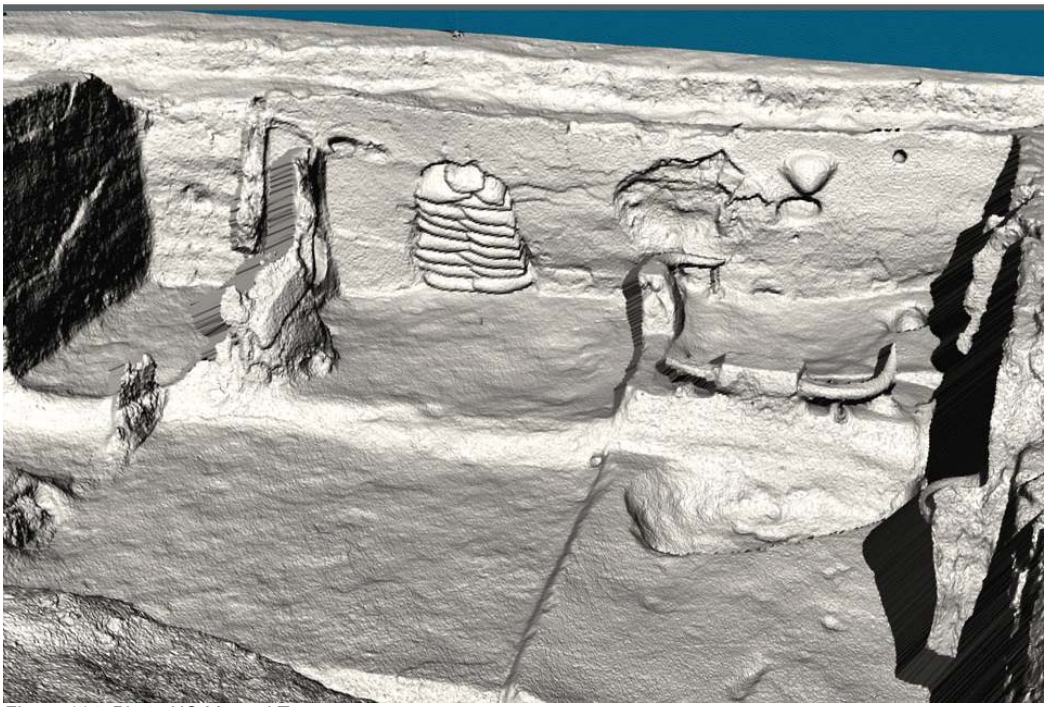


Figure 114. Photo UC Merced Team.

Figure 115. Photo UC Merced Team.

Figure 116. Photo UC Merced Team.

This work allows the complex stratigraphy of the site to be explored, analyzed and interpreted promoting new questions about site processes. The final outcome, the 3D collaborative environment, could become a prototype for a new methodology of archaeological research.

The case study of Çatalhöyük is ideal for testing the use and implementation of different technologies simultaneously at work in the same place. Nowadays the 3D technologies of documentation and reconstruction are able to produce a relevant amount of data in a very

short time and they can have a relevant impact in the interpretation process of archaeological research. 3D visualization and interpretation of an archaeological site from a macro (landscape) to a micro scale (stratigraphy) creates new perspectives of analysis and the experimental possibility to regenerate all the archaeological data in a virtual environment. Therefore the virtual digging is able to represent all the phases of excavation reproducing the entire context of spatial and temporal data in a different way. There are several reasons supporting the need to virtually reconstruct in 3D the site and part of the landscape:

- Preservation of the site. The fragile archaeological structures and remains of the site have to be documented in detail and with very sophisticated instruments before time and environmental factors can damage them.
- Analysis of the environmental context. The 3D reconstruction of the mound by scanner could highlight unexplored relations between site and landscape.
- Reconstruction of all the excavated structures. Part of the site is open to visitors but it is very difficult to interpret it in a comprehensive broader vision.
- Data recording of small size artefacts (figurines, pottery, other artefacts). The 3D digitalization of the artefacts constitutes a very important new database, with an accuracy of microns, for study and research. 3D Printing of replicas of the objects would allow them to be displayed in the excavation area and in different other locations, preserving the originals in the local museums.
- Experimental use of different integrated technologies and models.
- Stereo visualization of 3D data during the excavation. The use of portable stereo systems for visualization (video-projectors, 3D DLP displays) of the excavations involves the archaeologists analyzing daily the data recorded in stereo-vision.
- Use of virtual collaborative environments for interpreting data and testing the reconstructions.

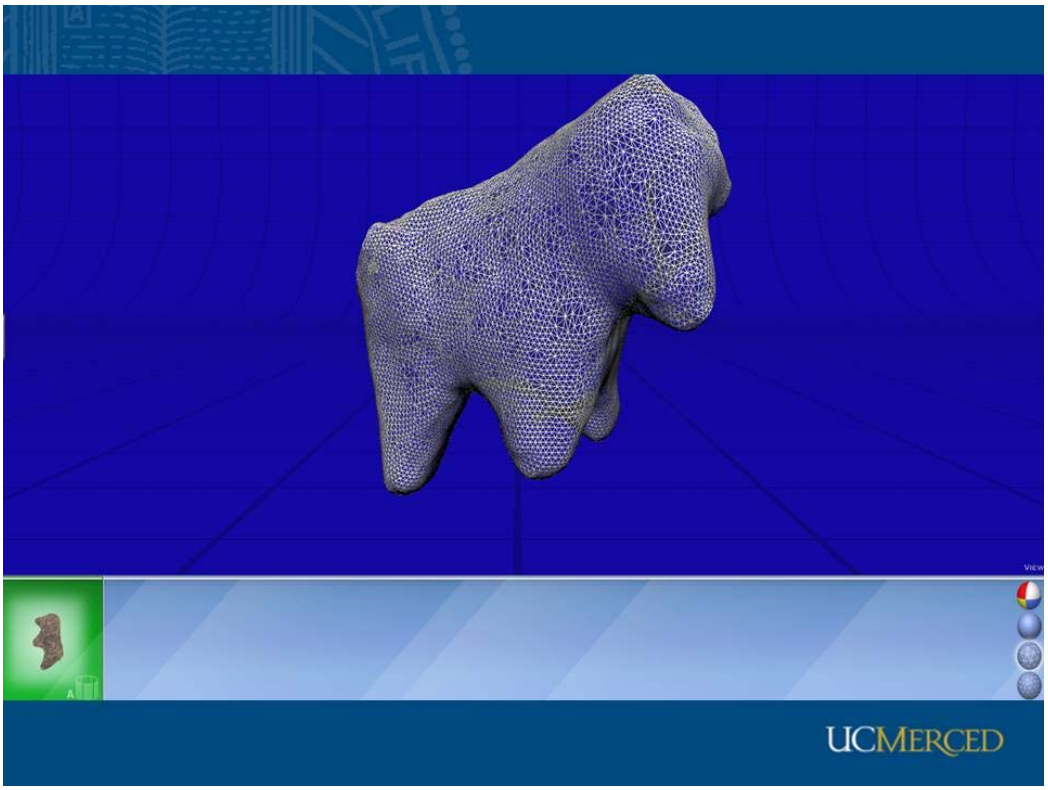


Figure 117. Photo UC Merced Team.

The fieldwork activity of the UCM team had the twofold scope of excavating a multistratified deposit such as a “midden area” (East mound, Building 86, Space 344, Sp.329, Sp.445) and to document all the excavation by 3D laser scanners, computer vision and 3D stereoscopy. For this scope we have used a triangulation scanner for the microstratigraphy (Minolta 910),

an optical scanner for the artefacts (Nextengine) and a time of flight/phase scanner for the buildings and the largest areas of excavation (Trimble CX). The use of different technologies was necessary for applying a multiscale approach to the documentation process. In fact, scanners at different accuracy are able to produce different kinds of 3D datasets with various levels of accuracy.

The fieldwork was associated also to a Summer Course, with different training sessions in lab and in the excavation area with graduate and undergraduate students from UCM and SUNY Buffalo Universities. The students had training in laser scanning (optical and time of flight), computer vision, GPS and 3D modelling.

In particular a specific procedure was adopted for the data recording of the stratigraphic units: every single phase and surface of excavation was recorded by the triangulation scanner after cleaning and the traditional manual archaeological drawing. The contemporaneous use of both methodologies was fundamental in order to overlap the logic units of the stratigraphic sequence (and related perimeter) on their 3D models.

The combined use of the 3D stereo camera and the stereo video projector have allowed the visualization of 3D archaeological data and models day by day, stimulating a debate on site about the possible interpretations of buildings, objects and stratigraphy.

With the time of flight scanner Buildings 80, B.77, B.96 and all the general areas of excavation in the North and South shelter were recorded and documented. With the optical scanner Nextengine, 35 objects were recorded in 3D involving different categories: figurines, ceramics and stone.

RESEARCH PROJECT REPORTS

Integrated micro-contextual approaches: micromorphology and sub-surface terahertz imaging of architectural materials and paintings, and organic residue, phytolith, and geochemical analysis of middens.

Wendy Matthews, Lisa-Marie Shillito, Matthew Almond, Gillian Walker, John Bowen, Emma Anderson, and Georgia Koromila with contributions from J. B. Jackson, J. Labaune, G. Mourou, J.F. Whitaker, I.D. Bull and J. Rowe – University of Reading

Introduction - Dr Wendy Matthews, School of Human and Environmental Sciences, University of Reading & Dr Matthew Almond, Department of Chemistry, University of Reading

The research presented in this section of the Çatalhöyük archive report is directed at two research areas, investigating a) architectural technologies and building histories, and b) ecology, diet and discard practices. The focus in the application of analytical techniques is on integrating high-resolution micro-contextual approaches (micromorphology, IR microscopy, SEM EDX and sub-surface terahertz imaging) with geochemical (XRF and pXRF) and bioarchaeological characterisations (GC-MS and phytolith analyses), in order to identify the composition of the diverse range of mineral, bioarchaeological and anthropogenic components in archaeological deposits and materials, and their precise depositional histories and contextual associations, to provide a fuller understanding of their ecological and sociocultural significance (Albert et al. In Press; Goldberg and Macphail 2006; Matthews 2010; Shillito et al. 2009; Wiener 2010).

This research is conducted by two groups with key researchers at the University of Reading. The first group is a collaboration between the Departments of Archaeology and Chemistry, led by Dr Wendy Matthews and Dr Matthew Almond, with PhD students Lisa-Marie Shillito and Emma Anderson, and MSc Geoarchaeology students Georgia Koromila and Jamie Rowe, with support from Dr Ian Bull, NERC Life Science Mass Spectrometry in GC-MS analyses, and Dr Stuart Black in XRF analyses. The second group, is in the School of Systems Engineering, lead by Dr Gillain Walker and Dr John Bowen, conducting sub-surface terahertz

imaging of wall-paintings at Çatalhöyük as part of a new AHRC/EPSRC Science and Heritage Programme “Seeing Through Walls: discovering Europe’s hidden mural paintings” project, in collaboration with: Dr. J. B. Jackson, Mr J. Labaune, and Prof. G. Mourou, Institut de la Lumière Extrême (ILE) at ENSTA-Ecole Polytechnique; Dr. Michel Menu, Laboratories of the Center for Research and Restoration of the Museums of France (LC2RMF); Dr. J. F. Whitaker, Center for Ultrafast Optical Science (CUOS) at the University of Michigan; the Çatalhöyük Conservation team, Duygu Camurcuoğlu and Prof Liz Pye at University College London; and the first group in high-resolution characterisation of sequences of plasters and pigments.

In Summer 2010 Lisa-Marie Shillito, Emma Anderson, Georgia Koromila and Jamie Rowe visited Çatalhöyük. In the Post-Excavation Study sessions, Lisa-Marie Shillito presented research on ecology diet and discard practices, based on her completed PhD research on middens, and Emma Anderson presented research on technologies and histories of architectural materials and buildings, based on her newly started PhD research, together with results from other University of Reading researchers and their contributions to the forthcoming Çatalhöyük volumes (Matthews et al. Forthcoming and Shillito et al. Forthcoming). A range of micromorphological and spot samples for geochemical analysis were collected to examine

· ecological strategies, activities and discard practices in external areas, notably middens in TP Area, Unit (8932) and middens/external areas in the South Area, including Phase Q, Space 314 Units (14083), (14511), (14534), (14549) (Figure 118), and Phase P, Space 329 (17068).
· knowledge and technology of architectural materials and life-histories of buildings, including: the introduction of gravel to some constructed surfaces in the later levels of the settlement, e.g. Area TP, Building 61, (Unit 11729); and collapsed floors in Building 79, to study rare traces of activities in upper-storey rooms/areas, and the nature and impact of a major fire at the end of the life of this building.

Figure 118. Emma Anderson collecting blocks samples from external area South Area Phase Q, Space 314, for integrated micromorphological and geochemical analysis.

The results from these two research themes at Çatalhöyük are being compared to those from other Neolithic sites, including Pınarbaşı and Boncuklu in the Konya Plain, as well as Sheikh-e Abad and Jani in Iran (R. Matthews et al. 2010), to study local, regional and temporal variation in ecological strategies, activities and discard practices, and in knowledge and

technology of architectural materials and life-histories of buildings, and to examine Çatalhöyük in its wider Neolithic context.

One hope in the sub-surface terahertz imaging, is that it may be possible in the future to develop the application of portable THz imaging to the study of in-situ wall plaster sequences within buildings in the field at Çatalhöyük to see through plaster layers to underlying wall-paintings, and thereby contribute to the study of the frequency and history of these powerful images and media within individual buildings, and to conservation strategies.

As this research comprises the work of individual research groups, and PhD and MSc students, this archive report is sub-divided into sections, with specific authors, as follows:

- GillianWalker et al. Seeing through walls: Sub-surface terahertz imaging
- Emma Anderson Integrated micro-analysis of architectural materials: Technologies and life-histories of buildings
- Lisa-Marie Shillito Midden formation processes and daily activities
- Georgia Koromila TP Area, a midden sequence: A contribution to our understanding of open areas and formation processes at Çatalhöyük, using micromorphology and X-Ray fluorescence.

Acknowledgements
We are very grateful to Shahina Farid, Field Director and Project Coordinator, Çatalhöyük Research Project, for all of her help, and to participants in the post-excavation study sessions for their helpful feedback and comments. We are also very grateful to the following for their support of this research: STFC Diamond Light Source; NERC LSMSF; AHRC/EPSRC; The John Templeton Foundation; and CEMAS, in addition to the institutions generously collaborating in this research, listed above and below.

References
Albert, R.M., Berna, F., and P. Goldberg. In Press. Insights on Neanderthal fire use at Kebara Cave (Israel) through high resolution study of Prehistoric Combustion Features: Evidence from phytoliths and thin sections, Quaternary International (2010), doi: 10.1016/j.quaint.2010.10.016.

Goldberg, P. and R. I. Macphail with contributions from W. Matthews. 2006. Practical and Theoretical Geoarchaeology, Oxford: Blackwell.

Matthews, R. J., Y. Mohamadifar, W. Matthews and A. Motarjem, 2010. Investigating the Early Neolithic of Western Iran: the Central Zagros Archaeological Project (CZAP). Antiquity Project Gallery.

Matthews, W., Almond, M.J., Anderson, E., Wiles, J., and H. Stokes. Forthcoming. Biographies of architectural materials and buildings: integrating high-resolution micro-analysis and geochemistry. In Hodder I. (ed.) Substantive Technologies at Çatalhöyük: Reports from the 2000-2008 Seasons. Los Angeles: Costen Institute of Archaeology Press.

Shillito, L-M., Matthews, W. Almond, M., Bull, I., and R.P. Evershed. Forthcoming. Ecology, diet and discard practices: new interdisciplinary approaches to the study of middens: integrating micromorphological, phytolith and organic residue analysis. In Hodder , I. (ed.) Humans and Landscapes of Çatalhöyük: Reports from the 2000-2008 Seasons. Los Angeles: Costen Institute of Archaeology Press.

Shillito, L.-M, Almond, M. J, Nicholson, J, Pantos, M, and Matthews, W (2009) Rapid characterisation of archaeological midden components using FT-IR spectroscopy, SEM-EDX and micro XRD Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 73 (1): 133-9.

Weiner, S. Microarchaeology: Beyond the Visible Archaeological Record. Cambridge : Cambridge University Press, 2010.

Seeing Through Walls: Sub-surface terahertz imaging of wall sections from Çatalhöyük -

Dr. G. C. Walker, Dr. J. W. Bowen. School of Systems Engineering, University of Reading

Dr. J. B. Jackson, Mr J. Labaune, Prof. G. Mourou. Institut de la Lumière Extrême (ILE) at ENSTA-Ecole Polytechnique and Dr. Michel Menu, Laboratories of the Center for Research and Restoration of the Museums of France (LC2RMF)

Dr. J. F. Whitaker, Center for Ultrafast Optical Science (CUOS) at the University of Michigan

Funded by the AHRC/EPSRC Science and Heritage Programme as part of the "Seeing Through Walls: discovering Europe's hidden mural paintings" project.

The aims of this research are to determine whether non-destructive THz imaging can be used to identify the presence of sub-surface paint layers within the wall plaster sequences at Çatalhöyük, and subsequently to identify if this technique can generate an image of paint layers that have been obscured by later layers of plaster. The technique is being trialled in the study of small samples wall-plaster samples that have been exported for material and pigment analysis, in collaboration with the conservation and micromorphology teams.

Terahertz (THz) radiation falls between the infrared and millimetre wave regions of the electromagnetic spectrum. Innovations in the last ten years have lead to the generation and detection of THz radiation at room temperature; more recently commercial available portable systems have emerged on the market. Sub-picosecond duration pulses are reflected from samples to identify the presence of layers within the material. Many materials which are visibly opaque are transparent in this frequency range, including plaster up to approximately 1 cm in thickness. (Jackson et al. 2008). It would be expected that paint layers within the plaster would generate reflections and thus could be identified in a non-contact, non-invasive way.

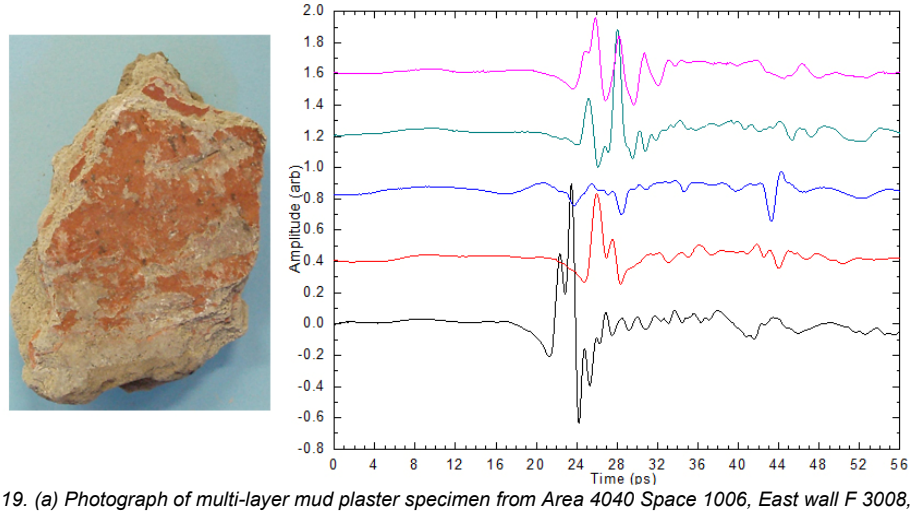


Figure 119. (a) Photograph of multi-layer mud plaster specimen from Area 4040 Space 1006, East wall F 3008, Unit (16080) and (b) select reflected terahertz time-domain signals from specimen.

Initial studies from samples of wall plaster from the 4040 area have shown the presence of sub-surface reflections (Figure 119) from red ochre paint and plaster interfaces. This sample

is from Space 1006, East wall F 3008, Unit (16080). Preliminary indications are that two layers at least 300 microns below the surface could be identified using an off-axis reflection measurement technique. It is noted that a smooth, non-scattering, top surface improves the alignment and directionality of the reflected signal towards the terahertz receiver (Figure 120), therefore we anticipate more successful results from prepared wall surfaces and/or normal incidence measurements with different focal points to improve depth penetration. We hope to publish this work in the near future.

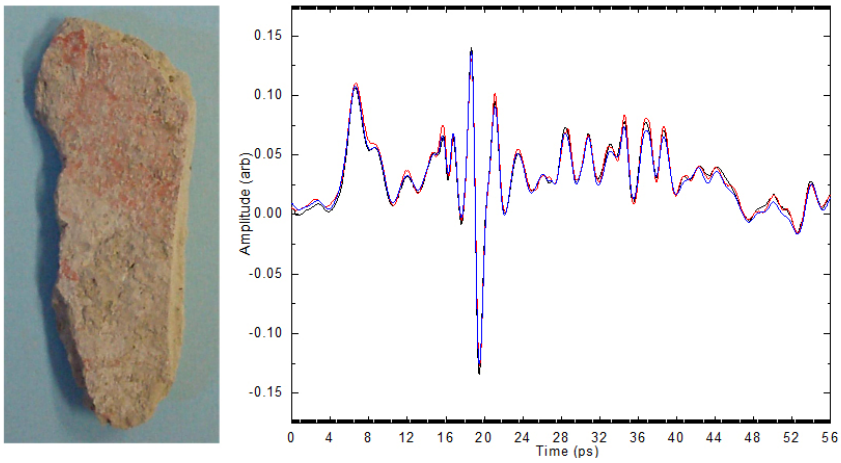


Figure 120. (a) Photograph of multi-layer mud plaster specimen from Area 4040, Building 49, Space 100, Unit (7913), fragment of collapsed plaster in room fill, and (b) select reflected terahertz time-domain signals from specimen.

Further work will include the use of this technology on site to identify the presence of sub-surface paint layers and give an indication of their depth below the surface. In addition we aim to characterise the THz frequency response of common pigments found on the Çatalhöyük site and to begin to explore the possibility of identifying these pigments from sub-surface reflections in order to reconstruct the obscured image.

References

Jackson, J. B, Mourou, M., Whitaker, J.F., Duling, I.I., Williamson, S.L., Menu, M. and Mourou, G.A. Terahertz Imaging for the non-destructive evaluation of mural paintings, Optics Communications, 2008 (281), 527-532.

Integrated micro-analysis of architectural materials from Çatalhöyük: Technologies and life-histories of buildings - Emma Anderson. PhD Student. Department of Chemistry, University of Reading.

Early architectural materials are being analysed by integrated micro-analysis to contribute to several archaeological themes including the exploitation of natural resources and early technological choices. The definition of social places and boundaries in buildings is being investigated through analysis of a range of floor and wall sequences from Building 49. The effects of heat and burning on building materials is also being investigated as several of the samples have been exposed to high temperatures. These building materials and sequences are being compared to those from the nearby Neolithic sites of Boncuklu and Pınarbaşı in Turkey (Baird 2003 and 2009), and Sheikh-e Abad and Jani in Iran (Matthews et al. 2010), to study local, regional and temporal variation in early architectural knowledge, technologies, and practice in the Neolithic more widely.

This research focuses on the analysis of intact micromorphological block samples for scientific analysis. Spot sub-samples have been taken from the visibly distinct layers and components, before impregnation with resin, for bulk analysis using Infrared Spectroscopy (FT-IR) and powder X-ray Diffraction (XRD) to determine mineralogy of materials. However, due to the removal of these sediments from their original context, as well as the mixing and crushing of the individual components, and layers that are less than one millimetre thick, during processing, these analytical techniques only provide fairly crude overviews of the

chemical composition of the sediments and materials. Many wall plasters foundation layers and surface finishing coats are less than 0.12-0.5 mm thick.

High resolution micro-chemical analysis of components and materials in thin section, however, allows the materials and components to be analysed as if they were “in-situ”, within individual layers, because all of the layers and their interfaces are kept in-tact when the block is removed. Micro-analytical techniques, therefore, can be used to add interpretive weight to micromorphological observations, and to identify components not detected using optical microscopy.

The analytical instruments being used in this work include:

- Infrared spectroscopy with a Perkin Elmer Spectrum 100 with a diamond Attenuated Total Reflectance (ATR) cell in the Chemical Analysis Facility (CAF), University of Reading.
- X-ray Diffraction using a Bruker D8 Powder Diffractometer in the CAF.
- Micromorphological analysis of thin sections using a Leica DMEP Polarising Microscope with a Leica DMEP DFC 290 camera.
- Infrared microscopy with: 1) a Perkin Elmer Spectrum 100 Infrared Spectrometer with Spotlight 400 Microscope attachment in the CAF; and 2) a Bruker 80 V Fourier Transform IR Interferometer with Hyperion 3000 microscope on the Infrared Beamline (B22) at the Diamond Synchrotron source.
- SEM-EDX with a FEI Quanta FEG 600 Environmental Scanning Electron Microscope (ESEM) and Oxford Instruments INCA X-ray Analysis System (EDX) in the Centre for Advanced Microscopy (CfAM), University of Reading.

Infrared (IR) microscopy is proving particularly useful in the analysis of materials from Çatalhöyük in thin section. It is being applied to the characterisation of micro-inclusions and sediments and mapping of the chemical composition across sequences, producing very clear images of the locations of the different materials and components. Principal Component Analysis (PCA) by the Perkin Elmer “Spectrum” software enables identification of individual components and areas which are chemically distinct and high-resolution characterisation of these. Figure 121 illustrates an IR mapping experiment across a wall plaster sequence from Building 53, Space 257, Wall F.1526, Unit (12520). The foundation layers are composed of calcite and clay, with quartz inclusions, similar to the local marl, whilst the fine white surface plasters finishing are composed primarily of dolomite with a small amount of clay, and are likely to have been brought from outcrops of soft-lime up to 6 km from the site, pending comparative analysis of these source materials, using IR microscopy.

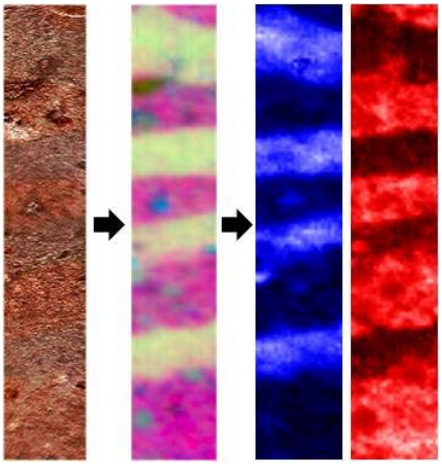


Figure 121. Optical micromorphology of plaster sequence (left, PPL), PCA derived image showing the location of the different chemical components (middle) and two maps of specific minerals (blue – dolomite and red – calcite). Space 257, Wall F.1526, Unit (12520).

Similar micro-spectroscopic experiments are being conducted on a range of thin sections from several buildings at Çatalhöyük, including mud bricks, floor, wall and oven plasters and a plaster sequence with wall-paintings from Building 49, and possible source materials.

IR microscopy is also being applied to characterise other attributes of materials, including the effects of burning on clays and bone, and variation in spectra for different forms of calcite (Weiner 2010). A sequence of collapsed second-storey floors/ roof plasters from Building 79 are currently being analysed to study their microstratigraphic sequence and the effect of heat on these materials from a major fire at the end of the life of the building.

IR microscopy has also been carried out using the Synchrotron source at Diamond (Beamline 22), to compare to conventional IR microscopy.

References

Baird, D. The Boncuklu Project: Investigating the Beginnings of Agriculture, Sedentism and Herding in Central Anatolia. Anatolian Archaeology. 2009, Vol. 15.

Baird, D. Pinarbaşi. Anatolian Archaeology. 2003, Vol. 9.

Matthews, R. J., Y. Mohamadifar, W. Matthews and A. Motarjem, 2010. Investigating the Early Neolithic of Western Iran: the Central Zagros Archaeological Project (CZAP). Antiquity Project Gallery.

Weiner, S. Microarchaeology: Beyond the Visible Archaeological Record. Cambridge : Cambridge University Press, 2010.

Midden formation processes and daily activities - Lisa-Marie Shillito

AHRC Research Associate, Department of Archaeology, University of York.
Formerly, PhD Student, Department of Chemistry, University of Reading.

Analysis of midden material from LMS's PhD is now complete. A summary of the results was presented in the 2010 field seminars, and the results will be available shortly as a monograph with BAR/Archaeopress. This work was also presented as a paper at the ICAANE conference in London, April 2010, the EGU conference in Vienna, April 2010 and the EAA conference in Den Haag September 2010. It has benefited from several discussions at these conferences. The overall aims and objectives of the research are as follows:

1. To develop an integrated methodology for the study of midden formation processes and discard from specific activities by linking high precision geochemical analysis with high-resolution microscopic analysis of deposit materials, morphology and precise-depositional context to provide a more robust interdisciplinary characterisation of the origin, deposition and post-depositional alterations of archaeological deposits. The specific objective is to combine high-precision spot sampling for phytolith, FT-IR and GC-MS analysis of specific components with thin section micromorphology of components precise depositional context and associations, in order that midden formation processes can be better understood.

2. To investigate cyclicity/periodicity/seasonality of resource use and activities, through the investigation of the abundance and frequency of discarded remains and potential "seasonal" indicators such as food processing residues, food remains which are not readily storable (for example some fruits, leaves), wind/water laid sediments relating to annual changes in climate and storm events, and particular component assemblages which may relate to cyclical activities, such as crafts.

3. To investigate longer term changes in settlement, ecology, diet and food processing through analysis of middens from early-middle to late levels of Çatalhöyük, Levels VII to 0 and any variation between neighbourhoods through the study of contemporary middens from the North (4040) and South areas of the settlement, in Levels VI.

Activities represented in middens
At the macroscale the major patterns in deposition observed are sequences of finely stratified deposits interspersed with "massive" ashy and mixed deposits. The fine layers are composed largely of ash and partially charred reeds and grasses, organic material including coprolites, charred animal dung and non-charred remains of plants, which have decayed in situ. These fine layers are related to more frequent, cyclical activities such as hearth rake-out, floor sweepings, and the disposal of organic waste. The larger homogenous layers, in these middens, occur less frequently – the large ash layers representing perhaps more specialised activities.

Massive ash layers – evidence for pyrotechnology?
Although it is clear that these relate to some sort of large scale burning activity occurring on the midden surface, distinguishing the specific activity is more difficult. A combination of thin section micromorphology, phytolith and geochemical analyses has demonstrated that the massive white ash layers contain a mix of plant calcite, finely grained calcite, faecal spherulites, and reed/grass phytoliths (Shillito et al. 2008). There are no charcoal inclusions, indicating that the temperature of the heating was above 500ºC (Boardman and Jones 1990). This is also supported by FT-IR analysis of clay inclusions indicating a temperature of at least 500ºC (Berna et al. 2007). Aggregate inclusions in the ash include small sub-rounded fragments of reddish aggregates possibly soil from plant roots, and large anthropogenic aggregates with plant voids, probably from added vegetal temper. Bivalve shell fragments with parallel orientation are also present. The large clay fragments are suggested to be the remains of a clay superstructure used in the bonfire firing of pottery, as is observed in ethnographic studies (Livingstone-Smith 2001). This method of firing is consistent with the pottery technology present at this level in the site.

Evidence for the use of dung and reeds as fuel
Although the use of fuel at Çatalhöyük has been studied extensively through macrobotanical remains (e.g. Asouti and Hather 2001), micromorphology can contribute by linking different fuel types to different activities, and investigating the non-charred component of the archaeological record (Matthews 2010). The observation of calcareous spherulites in direct association with reed and grass phytoliths provides evidence for the use of dung as fuel, and also the presence of reeds and grasses in animal diet. In addition, reed and grass phytoliths are observed in large quantities in their own right, suggesting these may also have been a fuel source. This demonstrates that the Neolithic inhabitants were making use of a wide range of wild resources in close proximity to the site. There is a possibility that different fuel types were being used for different activities.

Biomolecular analysis of coprolites in middens – implications for health and diet
Organic residue analysis was carried out in collaboration with Ian Bull at the NERC Life Sciences Mass Spectrometry facility, funded by two NERC LSMSF grants. Full results of the analysis are under review for publication (Shillito et al. forthcoming). Identification of coprolites in the field is still uncertain because of similarities in morphology and structure with deposits such as yellow ochre, clays and silts, and possibly decayed food remains. Biomolecular analysis of organic residues by GC/MS can be used to identify coprolites with greater certainty, and is able to distinguish between omnivore and ruminant material on the basis of sterol content, and between omnivore species on the basis of dominant bile acids (Elmmahli et al. 1997, Bull et al. 2002). In this study, the majority of coprolites observed in middens are identified as human of the basis of their sterol distribution, and the presence of lithocholic and deoxycholic acids. The lack of ruminant residues could be due to this material being used as a fuel resource, which is also supported by the observation of faecal spherulites in ash deposits. The presence of significant quantities of human faecal material in close proximity to buildings has implications for health and diet, and our understanding of the use of space in the Neolithic. Further work in this area examining coprolites from other contexts such as burials is ongoing.

Finely stratified layers – ash, charred and decayed plant remains
A large volume of the finely stratified layers that we can see in the field are identified in thin-section as ash deposits with different inclusions and structures. The difference in colour between the different fine layers is a result of differing percentages of micro-charcoal in the

deposits, with a larger percentage of micro-charcoal meaning the deposit has a darker grey colour. As well as plant remains in the form of ash and charred remains, there are also frequent deposits of reed and grass remains that have decayed in situ. Surprisingly few cereal deposits were observed in the midden sequences studied – though one deposit of highly silicified wheat husk phytoliths was observed in the South Area, unit (12519). The parallel orientation and articulation of this deposit indicates the decay of organic remains, including wheat husks, in situ, rather than re-deposition of already decayed plant materials. The wheat husks were not associated with animal dung remains, and so in this instance were not used as fodder.

The combination of thin section micromorphology and phytolith analysis is particularly useful for observing the original articulation and size of conjoined phytoliths, and interpreting their taphonomy, context and significance (Albert et al. In press). Experimental studies of wheat in Israel have demonstrated that larger conjoined phytoliths form under conditions of high water availability (Rosen and Weiner 1994). Thus the size of wheat husk phytoliths has been used as a proxy for past irrigation. At Çatalhöyük the small size of wheat husks from floors in storage areas has been used to suggest cereals were being grown 13 km from the site (Roberts and Rosen 2009). However, post-depositional processes can also impact phytolith size. Recent experimental work has also demonstrated that processing methods have a significant impact on the size of conjoined phytoliths (Jenkins 2009). By observing phytoliths in thin section, their taphonomy can be better understood and the large size/articulation of conjoined cereal and reed phytoliths can be examined, though it is noted that further experimental work is needed to understand exactly how these processes impact phytolith size.

Temporal changes in midden deposition

One aim of this research was to compare differences in midden deposition between the early (South and 4040 Areas) and later levels (TP Area). Noticeable differences in the later middens, from Levels III-0, are the lack of massive ash deposits. It could be that the development in ceramic technology meant that pyro-technological activities had been relocated to the edge of the settlement, though it should be noted that the area excavated is smaller and further work is needed to confirm this. The TP middens, seem to have greater volumes of mixed homogenous deposits, with only occasional finely stratified ashes and plants that are so extensive in the early levels.

However, there are also similarities between the earlier and later deposits. The TP middens do show similar overall phytolith assemblages, with high quantities of articulated reeds suggesting continuous exploitation of the wetland environment into the later levels. Recent field observations from the West mound in 2009 suggest a similar picture of the use of wetland resources into the Chalcolithic. Despite the greater degree of post-depositional reworking in the later levels from gypsum salt crystalisation, there is still a significant quantity of human faecal material in these middens.

Summary of completed work

This research has demonstrated that midden deposits are important sources of information on activity, diet and resource use. The presence of in situ burning, in c.Level VI demonstrates that middens are also important areas of primary activity, though it is unclear at this stage whether this relates to a pyrotechnological activity such as ceramic production or lime burning. As previously noted by Matthews (2005, 2010), microstratigraphic analysis is essential for understanding the plant remains – macrobotanical remains represent only the remains that have been charred, whilst micromorphology can be used to observe the non-charred and plant ash aspects of the record. In addition, microbotanical remains such as phytoliths benefit from contextual observation in thin section, which enables a better understanding of their original size and articulation- information which is largely lost if these are observed out of context. Taking this into consideration, the presence of very large wheat phytoliths in this study has provided evidence for wet farming for at least some of the cereals in Level VI/VII. The study of ash deposits has also directly demonstrated the use of dung (and possibly reeds) as fuels.

Future work

Future work is planned which further integrates a wide range of analyses in order to address specific questions at Çatalhöyük. It is important that we begin with the question and devise an integrated methodology that can best address these questions, rather than examining different classes of material in isolation. It is expected that micromorphology will contribute to the following research areas: palaeodiet and health through the study of coprolites and parasites; plant taphonomy, water-uptake and implications for wet or dry cereal cultivation (this issue will benefit particularly from comparison with recently completed experimental work by Jenkins et al. as part of the Water, Life and Civilisation project, which highlights the complexity of phytolith formation), fuel and resource use through further integrated micromorphological and phytolith analyses; and pyrotechonology through integrated study of ceramic fabrics and geochemical investigation of possible areas of production and experimental firing. It is stressed that future microbotanical work needs to be integrated with microstratigraphic analysis – we have an excellent opportunity at Çatal to show how these methods complement and enhance each other to get the most out of the microarchaeological record.

Now that a framework has been established for analysing these complex deposits, it is hoped to integrate firstly heavy residue analysis with microstratigraphy to see if this can help clarify potential activities, and secondly faunal remains and macrobotanics. We need to decide what questions are we interested in and how midden deposits can best be analysed in order to achieve this. From a methodological point of view, Çatalhöyük provides a unique opportunity to act as case study for this integration of methodologies and our understanding of formation processes and taphonomy.

It is hoped that micromorphology sampling can also be targeted to specific questions that arise during excavation. If specific hypotheses are suggested during excavation, then micromorphology can be used to test these hypotheses. This would also make writing and publishing in scientific journals much quicker, keeping Çatalhöyük at the forefront of scientific archaeological research. It would be of great benefit to include excavators as co-authors of this work, as they are best placed to describe what is happening at the macroscale, which is essential for microscopic interpretations. It is suggested 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.

References

Albert, R.M., Berna, F., and P. Goldberg. In Press. Insights on Neanderthal Fire Use at Kebara Cave (Israel) through high resolution study of Prehistoric Combustion Features: Evidence from phytoliths and thin sections, Quaternary International (2010), doi: 10.1016/j.quaint.2010.10.016.

Asouti, E. and Hather, J. (2001) Charcoal analysis and the reconstruction of ancient woodland vegetation in the Konya basin, south-central Anatolia, Turkey: results from the Neolithic site of Çatalhöyük East Vegetation History and Archaeobotany 10:23-32

Berna, F., Behar, A., Shahack-Gross, R., Berg, J., Boaretto, E., Gilboa, A., Sharon, I., Shalev, S., Shilstein, S., Yahalom-Mack, N, Zorn, J. R. and Weiner, S. (2007) Sediments exposed to high temperatures: reconstructing pyrotechnological processes in Late Bronze and Iron Age Strata at Tel Dor (Israel). Journal of Archaeological Science 34: 358-373.

Boardman, S. and Jones G. (1990) Experiments on the effects of charring on cereal plant components. Journal of Archaeological Science 17: 1–11.

Bull, I.D., Lockheart, M.J., Elhmmali, M.M., Roberts, D.J. and Evershed R.P. (2002) The origin of faeces by means of biomarker detection. Environment International 27(8): 647-654.

Canti, M. G. (1999) The Production and Preservation af faecal Spherulites: Animals, Environment and Taphonomy. Journal of Archaeological Science 26: 251-258.

Cessford, C., Blumbach, M., Akoglu, G., Higham, T., Kunihom, P. I., Manning, S. W., Newton, M. W., Ozbakan, M. and Ozer, A. M. (2005). Absolute Dating at Çatalhöyük. Changing Materialities at Çatalhöyük: Reports from the 1995 - 1999 Seasons. I. Hodder (ed) Cambridge, McDonald Institute for Archaeological Research and the British Institute of Archaeology at Ankara.

Elhmmali, M., Roberts, D. J. and Evershed, R. P. (1997) Bile acids as a new class of sewage pollution indicator. Environmental Science and Technology 31: 3663-3668.

Fairbairn, A., Asouti, E., Near, J. and Martinoli, D. (2002) Macro-botanical evidence for plant use at Neolithic Çatalhöyük south-central Anatolia, Turkey. Vegetation History and Archaeobotany 11: 41-54.

Hodder, I. (2006) The Leopard's Tale: Revealing the Mysteries of Çatalhöyük. Thames and Hudson.

Jenkins, E. (2009) Phytolith taphonomy: a comparison of dry ashing and acid extraction on the breakdown of conjoined phytoliths formed in Triticum durum. Journal of Archaeological Science 36: 2402-2407.

Livingstone-Smith, A. (2001) Bonfire II: The return of pottery firing temperatures Journal of Archaeological Science 28:991-1003.

Matthews, W., French, C. I. A., Lawrence, T., Cutler, D. F. and Jones, M. K. (1997) Microstratigraphic traces of site formation processes and human activities. World Archaeology 29(2): 281-308.
Matthews, W. (2005) Micromorphological and microstratigraphic traces of uses and concepts of space. Inhabiting Çatalhöyük: Reports from the 1995-1999 seasons. I. Hodder (ed) London, McDonald Institute for Archaeology/British Institute of Archaeology at Ankara. 355-399.

Matthews, W (2010) Geoarchaeology and taphonomy of plant remains and microarchaeological residues in early urban environments in the Ancient Near East Quaternary International 214:98-113

Mellaart, J. (1967) Çatal Huyük: A Neolithic Town in Anatolia. McGraw-Hill.

Rosen, A. M. and Weiner, S. (1994) Identifying Ancient Irrigation: a New Method Using Opaline Phytoliths from Emmer Wheat. Journal of Archaeological Science 21: 125-132.

Rosen, A and Roberts N. (2009) Diversity and complexity in early farming communities of Southwest Asia: New insights into the economic and environmental basis of Neolithic Çatalhöyük Current Anthropology 50 (3): 393-402.

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.

Shillito, L.-M, Almond, M. J, Nicholson, J, Pantos, M, and Matthews, W (2009) Rapid characterisation of archaeological midden components using FT-IR spectroscopy, SEM-EDX and micro XRD Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 73 (1): 133-9.

Shillito, L-M, Matthew, W. and Almond, M.J. (2008) Investigating midden formation processes and cultural activities at Neolithic Çatalhöyük, Turkey Antiquity vol 82 issue 317 http://antiquity.ac.uk/projgall/shillito/index.html

Shillito, L-M, Bull, I.D, Matthews, W, Almond, M.J., Williams, J. and Evershed, R.P. (forthcoming) Biomolecular and micromorphological analysis of suspected faecal deposits at Neolithic Çatalhöyük, Turkey Journal of Archaeological Science.

TP Area, midden sequence: A contribution to our understanding of open areas and formation processes at Çatalhöyük, using micromorphology and X-Ray fluorescence - Georgia Koromila, MSc Geoarchaeology, University of Reading.

Funded by the A.G. Leventis Foundation.

Introduction

In studying ecological and social practices, open areas and middens are important because they consist of deposits rich in cultural and bioarchaeological material and they represent particular types of meaningful deposition and space use (Martin and Russel 2000; Shillito above), and complement studies of the 'cleaner' surfaces and floors within and, presumably, on top of buildings.

What follows is a short presentation of the results of micromorphological and geochemical analyses conducted on two undisturbed sediment blocks from a sloping midden sequence in the TP Area, Unit (8932) (Figure 122) (Czerniak and Marciniak 2004), as part of an MSc Geoarchaeology Dissertation (2009-10). Chronologically, it is placed at the end of Late Neolithic / beginning of Early Chalcolithic.

The research questions addressed here can be summarized as follows:
What can we infer from the pre-depositional histories of the sediment components regarding past activities? What processes and/or practices are associated with the choice of both the materials and the place of discard? Was the deposition repetitive or discontinuous and in what time-scales? Was it disturbed, and how did this relate to living practices?

Figure 122. Çatalhöyük TP Area, Unit (8932), South profile.

Methods

Micromorphology was employed to identify microscopically the components comprising each specific layer and to infer their pre-depositional pathways, the character of their deposition and any post-depositional alterations, in order to reconstruct use of space and sedimentation processes.

The sediment blocks were oven dried at 40oC, then impregnated under vacuum and cut, ground and polished until thin sections 7x14cm were produced c. 30μm thick. These were studied using a Leica DMEP standard optical polarising microscope under x40, x100, and

x400 magnifications, and described according to standardized atlases (Bullock et al. 1985; Courty et al. 1989; Stoops 2003).

X-Ray Fluorescence (XRF) was used to combine the microscopic observations for each layer with its geochemical composition, in order to assess the sensitivity of geochemistry and its potential in such sediments for activity-specific interpretations. The results were analysed using SPSS Statistics 17.0.

XRF was applied to sub-samples taken from the sediment blocks before impregnation and ground and pressed into powder pellets. These were analyzed using a Philips PW 1480 X-Ray fluorescence spectrometer, with a dual anode Sc/Mo 100kV 3kW X-Ray tube. The spectrometer is calibrated and the unknown samples were measured using Philips X40 analytical software.

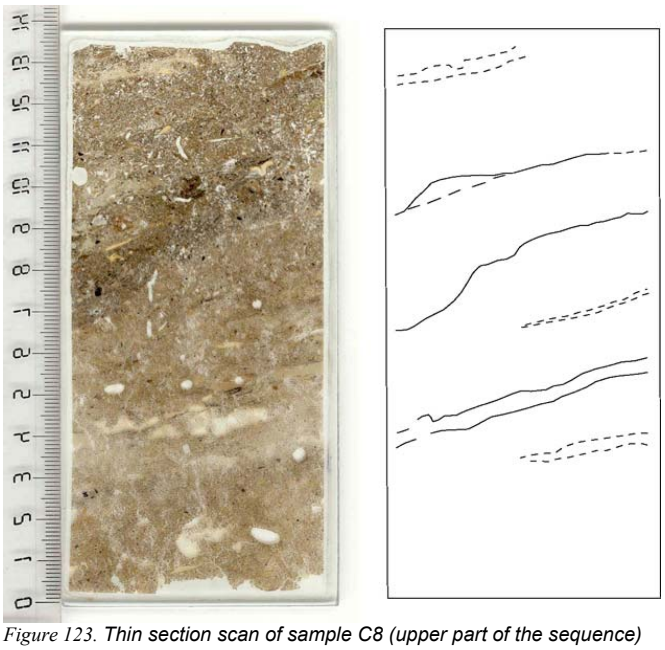


Figure 123. Thin section scan of sample C8 (upper part of the sequence) and drawing showing the designated microstratigraphic units

Results and interpretation

a. Micromorphology

The identified microstratigraphic units (Figures 123-124) were categorized into two broad types according to attributes, which present the highest degree of variation: unit thickness and related distribution, diversity, fragmentation, orientation and distribution of components.

In both types of units, the range of sedimentary and bio-archaeological material is very wide, including calcitic ashes, phytoliths, charred plant remains, decayed plant impressions, sediment aggregates, burnt and unburnt bone fragments, shell fragments, herbivore and omnivore dung, igneous and sedimentary rock fragments, single mineral grains.

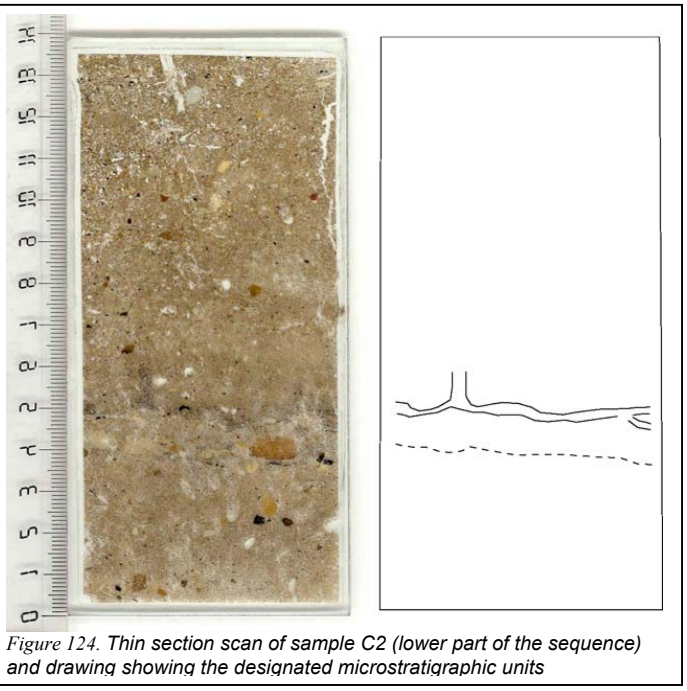


Figure 124. Thin section scan of sample C2 (lower part of the sequence) and drawing showing the designated microstratigraphic units

It is the configuration and the contextual relationships of these components that allow us to distinguish between unit types. The first group of deposits (Type A) (Figure 125) is characterized by a thickness range of c. 30 mm to over 85 mm, embedded related

distributions, random or weak orientation, random distribution, and high diversity and mixing of components. In contrast, the second unit-group (Type B) (Figure 126) is comprised mostly of thin bands (c. 1-10 mm) with embedded to intergrain aggregate related distributions, moderate to strong orientation and clustered or in lines distribution of inclusions. This group are usually richer in organic than minerogenic material, and include specific classes e.g. large omnivore dung aggregates with bone fragments or clusters of phytolith and charred plant material.

[These differences are of major significance for understanding the pre-depositional, depositional and post-depositional agencies responsible for the formation of the sequence.

The inclusions in Type A units seem to have long and complex pre-depositional histories, as their high degree of fragmentation and roundness indicate extensive mechanical weathering. The diversity and mixing of burnt and unburnt material attest multiple primary sources. In the case of Type B units, heterogeneous, burnt and unburnt components, suggest multiple primary contexts, but here the components are not as thoroughly mixed, and are distributed in clusters and large aggregates within which the components maintain their original contextual associations. In sum, the evidence suggests that Type A units consist of material long exposed, mixed and reworked before its final deposition, having lost its original associations, while in Type B units inclusions were not as extensively and long exposed as to completely disaggregate.

Turning to the stage of deposition, evidence is not very clear. Type A units are unlikely to represent single depositional events; within these thick, uniform, unsorted and unoriented

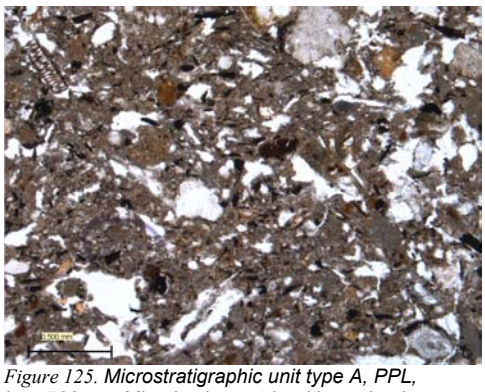


Figure 125. Microstratigraphic unit type A, PPL, bar=500 µm. Mixed ashy matrix with randomly oriented inclusions, among which charred plant remains, rock fragments, bone (bottom left), a reed phytolith (top left)

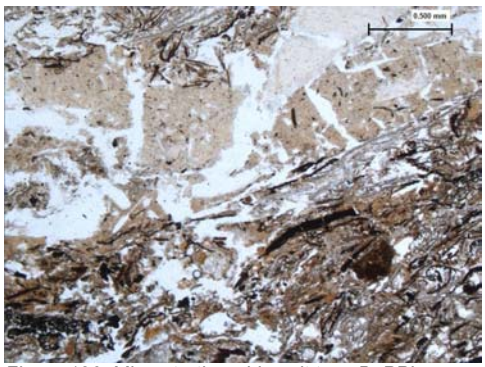


Figure 126. Microstratigraphic unit type B, PPL, bar=500 µm. Concentrated phytoliths and charred plant remains in parallel orientation, along with a large omnivore dung aggregate (upper half).

assemblages there are some instances of almost horizontally laid material, e.g. omnivore dung bands or long articulated phytoliths, which seem to have been deposited on an active surface. Some of these have been separately described as distinct sub-units and classified as Type B, but, regardless, it is important that they represent discontinuous breaks in these undifferentiated units, where they definitely define surfaces, thus suggesting that Type A deposits are most likely the result of a gradual and continuous accumulation process in an open area, perhaps encapsulating a multitude of singular events that have been masked by post-depositional mixing. Type B units, by contrast, with intergrain aggregate, less compacted, related distributions, and strong orientation and clustering of components, represent more distinct episodes of deposition, preserved during the accumulation of the sequence.

Throughout the sequence there are traces of alteration after deposition, including bioturbation and gypsum crystallization, particularly in voids. Apart from these processes, some disturbance may be attributed to mechanical reworking, perhaps due to surface trampling of sediments, especially for type A deposits, as this is in accordance with the homogenous distribution of material and the uneven degrees of compaction, although trampling features

are not thus far well understood (Matthews 2010: 102; Matthews et al. 1997: 291). Post-depositional disturbances are detectable but less abundant in the, perhaps quickly covered, Type B units, where non random patterns of distribution and orientation are retained.

Based on this understanding of formation processes it is possible to comment on activities and use of space. The accumulated material in the sediments under study relates to activities that took place elsewhere. Calcitic ashes with charred flecks and phytoliths, but no identifiable dung derived calcareous spherulites (Canti 1997; 1999) attest burning activities with plant derived fuel, from various wood and grass types. Faecal material identified in some units indicates the presence of herbivore species, and omnivore species whose diet included bone. The rock fragments present represent allochthonous material, brought to the site, intentionally or not, by procurement activities reaching beyond the alluvial plain. Some of the sediment aggregates could be derived from constructional materials. Finally, discard itself should be perceived as a continuous succession of dumping events of diverse material. This together, with possible indications of trampling suggest a picture of an active open space frequented by humans and/or animals.

b. Elemental analysis

The XRF results exhibit correlations that reveal which groups of elements are co-dependent, and likely to have the same source(s) of input. Out of the three groups identified, two comprise elements considered to be strong anthropogenic indicators (Oonk et al. 2009: 38), namely P, Si, Cu, Zn and Na forming one group and Ca, Sr and V another. Interestingly, these elemental groups are negatively correlated with each other, as markedly expressed in the concentrations of Ca and P (Figure 127).

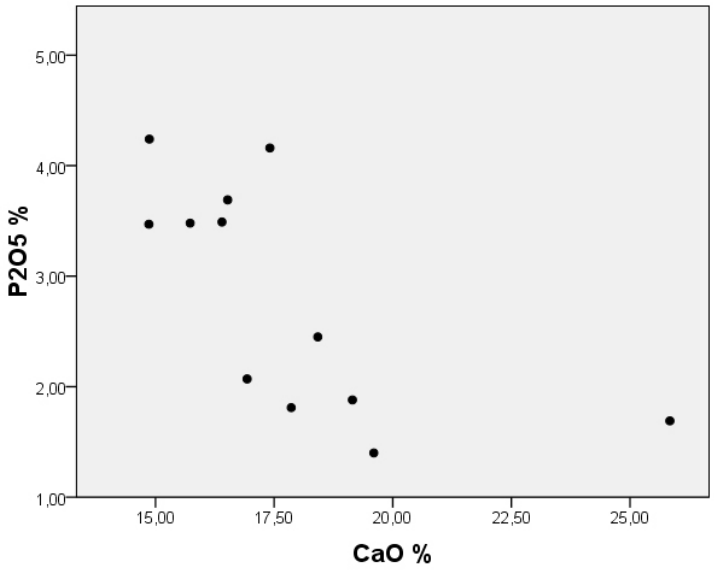


Figure 127. Scatter diagram showing strong negative correlation between % of P2O5 and CaO.

This negative correlation is puzzling because in most studies high levels of Ca and P are recorded together (Middleton et al. 2005), while in this case when P increases Ca decreases and vice versa. If we attempt to attribute the anthropogenic enrichment of elements to specific residue components identified in the sediments through micromorphology, we can relate Ca to ash and calcareous sediment input, P to the various components of organic origin, and Si to the phytolith material, thus, the pattern corresponds to ash and sediment related elements increasing when organic/plant related elements decrease and vice versa. To explain this, taphonomic factors should be taken into consideration because, unlike most multi-element studies, here the samples originate from mixed and redeposited material, and therefore they do not bear a clear geochemical signature corresponding to a specific activity context. Indeed, in Type B units there seems to be more plant material likely to have partly decayed in situ, while in Type A units, the more mixed ashy groundmass is likely to originate from a number of different contexts and contains less organic material which perhaps had partly decayed

elsewhere. The fluctuation of elemental concentrations, however, does not completely correspond to unit types (Figure 128). Moreover, given that some Type B units are not included in this analysis, as they were not recognized macroscopically during sub-sampling, it is essential that more samples are analyzed before any conclusions are drawn on whether or not geochemistry here is mainly affected by taphonomy.

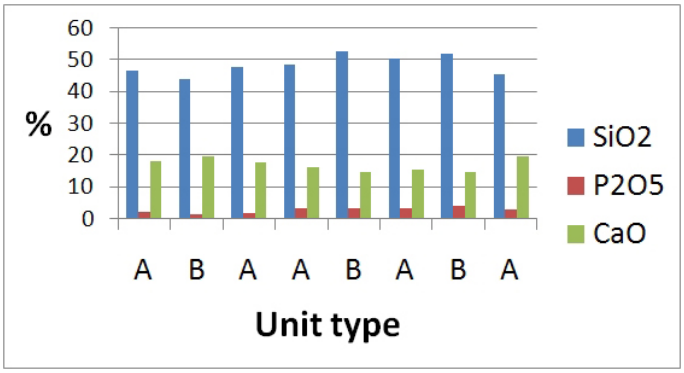


Figure 128. Concentrations % of CaO, P2O5, and SiO2 according to unit type.

Summary and future directions

Micromorphological analysis of a midden sequence from Late Neolithic levels at TP Area indicates continuous use of space in an open area, comprising mainly disposal of mixed and diverse material resulting in accretion of sediments, sometimes with discernible surfaces and more frequently thoroughly reworked due to disturbances like redeposition and possibly surface trampling. The geochemistry of these sediments does not reveal any clear associations with specific activities, as any particular signatures are masked by mixing and relocation, but it does appear to be sensitive to taphonomical differences.

Some issues remain unclear, however, and demand further investigation. To fully understand formation processes one needs to consider the time factor. Besides dating which would be extremely useful in defining rates of deposition, identification of seasonal cycles is another aspect related to the question of time. Phytolith analysis could be applied in that direction, as the phytolith types of flowering plant parts are seasonally specific (Rosen 2005: 207) and their quantification could show patterns of seasonal variation. Also, XRF analysis of additional samples from the sequence should be able to clarify the relationship between taphonomy and geochemistry.

References

Bullock, P., N. Fedoroff, A. Jongerius, G. Stoops & T. Tursina 1985. Handbook for Soil Thin Section Description. Wolverhampton: Waine Research.

Canti, M.G. 1997. An Investigation of Microscopic Calcareous Spherulites from Herbivore Dungs, Journal of Archaeological Science 24: 219–231.

Canti, M.G. 1999. The Production and Preservation of Faecal Spherulites: Animals, Environment and Taphonomy, Journal of Archaeological Science 26: 251–258.

Courty, M.A., P. Goldberg & R.I. Macphail 1989. Soils and Micromorphology in Archaeology. Cambridge: Cambridge University Press.

Czerniak, L. & A. Marciniak 2004. Excavations of the TP Area. Çatalhöyük 2004 archive report.

Martin, L. & N. Russel 2000. Trashing Rubbish. In: I. Hodder (ed.), Towards reflexive method in archaeology: the example at Çatalhöyük: 57-69. British Institute of Archaeology in Ankara Monograph No. 28. Cambridge: McDonald Institute for Archaeological Research.

Matthews, W. 2005. Micromorphological and Microstratigraphic Traces of Uses and Concepts of Space. In: I. Hodder (ed.), Inhabiting Çatalhöyük. Reports from the 1995-1999 seasons:

355-571. British Institute of Archaeology in Ankara Monograph No. 38. Cambridge: McDonald Institute for Archaeological Research.

Matthews, W. 2010. Geoarchaeology and taphonomy of plant remains and microarchaeological residues in early urban environments in the Ancient Near East. Quaternary International 214: 98-113.

Matthews, W., C.A.I. French, T. Lawrence, D.F. Cutler & M.K. Jones 1997. Microstratigraphic traces of site formation processes and human activities. World Archaeology 29: 281-308.

Middleton, W.D., T.D. Price & D.C. Meiggs 2005. Chemical Analysis of Floor Sediments for the Identification of Anthropogenic Activity Residues. In: I. Hodder (ed.), Inhabiting Çatalhöyük. Reports from the 1995-1999 seasons: 399-412. British Institute of Archaeology in Ankara Monograph No. 38. Cambridge: McDonald Institute for Archaeological Research.

Oonk, S., C.P. Slomp & D.J. Huisman 2009. Geochemistry as an Aid in Archaeological Prospection and Site Interpretation: Current Issues and Research Directions. Archaeological Prospection 16: 35–51.

Rosen, A.M. 2005. Phytolith Indicators of Plant and Land Use at Çatalhöyük. In: I. Hodder (ed.), Inhabiting Çatalhöyük. Reports from the 1995-1999 seasons: 203-212. British Institute of Archaeology in Ankara Monograph No. 38. Cambridge: McDonald Institute for Archaeological Research.

Stoops, G. 2003. Guidelines for analysis and description of soil and regolith thin sections. Soil Madison, Wis.: Science Society of America.
List of Figure captions

Modelling Chronology - Alex Bayliss (English Heritage) & Shahina Farid (Çatalhöyük Research Project)

Due to an administrative error the section on scientific dating was omitted from the 2009 Annual Report. We therefore outline here progress on the dating programme during 2009 and 2010.

At the start of 2009, on the basis of %N values on whole bone, we estimated that 134 of the 207 bone samples exported in 2008 (63%) would probably be sufficiently well-preserved for successful radiocarbon dating. Preservation is better lower down in the mound and significantly worse (with less than 20% of samples probably datable) in the deposits closer to the surface. In May 2009, 43 samples of articulated or articulating bone were submitted for dating to the Oxford Radiocarbon Accelerator Unit in order to provide a skeleton chronology for the upper part of the South Area.

Figure 129. Lisa Yeomans drilling an animal bone sample from the South Area

Meanwhile work continued apace on assessing the stratigraphic sequences and identifying units for faunal scanning in the TP and South Areas. By the end of May Alex & Shahina had completed this task for the South Area, and in June Alex went to Gdansk to complete a similar task on the finalised TP matrix with Arek Marciniak & Marek Barański. On site more than 450 units were scanned for faunal articulations by Lisa Yeomans and Marta Bartkowiak (ably assisted by Agata Czeszewska and Patrycja Filipowicz).

At the end of the 2009 excavation season Alex went to site to take samples, not only from those articulations identified from previous seasons of excavation but also from units excavated in 2009 (Figure 129). This strategy aims to minimise the stratigraphic gap between

the top of the South Area and the base of the deep sounding. Overall 21 additional samples were taken from the TP Area and 167 from the South Area (including five samples of carbonised material from within skulls in B.76). This may be equivalent to the 'carbonised brain' recovered and dated in the 1960s from building E.VI.1 (6600 – 6240 cal BC; 7579±89 BP; P-827). The highlight of this season was the opportunity to sample surviving skeletal remains from the 1960s excavations. Scott Haddow undertook a preliminary assessment of this material and identified the minimum number of individuals in each building (Figure 130). In total, 144 people recovered from 36 buildings were sampled.

Figure 130. Scott Haddow identifying the minimum number of individuals in E.VII.31 (excavated 1965).

In the autumn 32 new radiocarbon results were reported by the Oxford Radiocarbon Accelerator Unit. These, along with the existing suite of dates from the deep sounding (Cessford 2005) and the detailed stratigraphic analysis, enabled a wider sampling strategy for the South Area to be designed. This was based on simulation models (Bayliss 2009) incorporating the relative dating summarised in the site Harris matrix with radiocarbon ages simulated from articulated bone samples that had already been identified as suitable for dating. Unfortunately this model is still limited by the gap in the stratigraphic sequence in the South Area (which can be only partially, and tentatively bridged by the Mellaart excavations). In total a further 108 samples from the South Area have now been submitted for dating to the AMS laboratories at Oxford University and the University of California (Irvine).

In April 2010, Alex and Arek Marciniak met in London to finalise the selection of a new suite of samples for the TP Area. Poor collagen preservation, however, meant that there were insufficient suitable samples for an effective dating programme. During the 2010 season, therefore, David Orton scanned over 130 unit from the TP Area for articulating faunal groups, in addition to nearly 150 from the South Area (Figure 131). This process was made possible by Arek Klimowicz who located almost every faunal crate from both Areas and moved them between the store and the faunal laboratory – sometimes more than once (Figure 132)! Even though many of these units had been scanned before, 107 new samples were identified and exported. We also thank Andrej Leszczewicz for taking photographs of the sampled articulating groups.

Figure 131. David Orton identifying articulating bone groups from the TP Area.

Because of the poor collagen preservation in the TP Area (and at the top of the mound generally), we also identified and exported a dozen or so samples of charred plant remains for radiocarbon dating in 2010. These are the first such samples we have selected, because of the ever-present risk for charred plant remains to be residual; if the relative dating from stratigraphy is to be employed in a Bayesian model to constrain calibrated radiocarbon dates, then it is essential that all the dated samples date from the time when the unit was deposited. For this reason two single-fragments of short-life material will be dated from each selected deposit (Ashmore 1999), on the basis that if the results are not statistically consistent, then

the older sample, if not both samples, may well be residual. All the material is from deposits (such as oven rake-outs or hearths), where a functional relationship between the deposit and the charred plants may be inferred. We thank Marek Polcyn for providing this material, and Amy Bogaard for isolating and identifying sub-samples suitable for radiocarbon dating. We also thank Lech Czerniak for excavating a new sample from an oven in B.81, which will allow us to anchor firmly the base of the TP sequence.

Figure 132. Arcadiusz Klimowicz shifting yet another pile of faunal crates!

Over the next few months the new series of samples from the TP Area will be finally chosen and submitted for dating to laboratories at the University of Poznan and the University of California (Irvine). Whilst the samples are being dated, we will concentrate on writing an interim publication on the dating programme for the current suite of site monographs, and on determining the place of the sampled buildings excavated by Mellaart in the 1960s in the overall sequence in the South Area. This should allow us to embark on a new round of simulation and sample selection once we have the next set of results, and enable us to provide an outline dating sequence for the whole of the South Area in advance of the stratigraphic union between the upper buildings in the South Area and the 1999 deep sounding.

References

Ashmore, P, 1999 Radiocarbon dating: avoiding errors by avoiding mixed samples, Antiquity, 73, 124–30

Bayliss, A, 2009 Rolling out Revolution: using radiocarbon dating in archaeology, Radiocarbon, 51, 123–47

Cessford, C, 2005 Absolute dating at Çatalhöyük, in Changing materialities at Çatalhöyük: reports from the 1995-99 seasons (ed I Hodder), 65−99

Fire Installations - Sheena A. Ketchum (Indiana University)

During the 2010 season, I worked on a dissertation feasibility study of the fire installations at Çatalhöyük, funded by a Departmental Skomp Summer Research Award, from the Anthropology Department Indiana University Bloomington. At this point, my analysis of fire installations is focused on ovens and hearths, a further study of fire spots and fire pits will be included in my later work. 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. For my dissertation research, I am interested in performing a detailed analysis of the ovens and hearths at Çatalhöyük in order to look at ideas of materiality, agency, meaning, gender, social aspects of the household/neighbourhood, 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 appears to be much more limited, why?

I posed a number of questions to address while in the field, in an effort to embody the people and their choices. Where are the fire installations located within the buildings? What does this tell us about the people who built, used, destroyed, and rebuilt the fire installations? 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? How does this embody the people, their choices, their belongings, and their choices to discard items? A number of history houses have been identified on site; these

houses are characterized by a sequence of building and rebuilding of houses directly on top of one another with nearly perfectly aligned walls and features. So what about the history houses, are the fire installations a unifying factor among the history houses? What do the fire installations reveal about the people who occupied the history houses, are these buildings and their inhabitants unique? How do fire installations move within one building, across the site, and within the history houses over time? What kinds of patterns does this reveal about the people who lived at Çatalhöyük. Why do the fire installations keep moving throughout the buildings and what does this say about the people? Why does a single building often have multiple ovens and hearths through the house's life history? What kind of stories does this tell about the people who lived here? What did the fire installations mean to the occupants? Why were the fire installations sometimes destroyed at the abandonment phase and other times filled in? Why are the fire installations treated differently at abandonment? What does this suggest about the meaning of the fire installations. How were the fire installations manufactured? What is the technological style, what choices did the people make during the process of manufacturing? How were the fire installations used? What are the relationships between fire installations and other artefacts and what are the embedded meanings? What kind of windows into the past can the fire installations reveal? How the lives of people at Çatalhöyük be examined through an analysis of the fire installations?

In an attempt to answer this myriad of questions, with the help of Sarah, I began the process of creating a fire installation database, in order to unify all of the data into one location. I examined the excavation database and Volume 3, for descriptions, dimensions, associations, and phases of FI units, features, spaces, and buildings while developing queries to gather all of the relevant data together. I examined the photos, building plans, feature plans, and with Camilla's help the GIS in order to visually compare the shapes and forms of the fire installations and their locations. These answers will be addressed in a chapter written by Sonya Atalay and myself, in the next volume. I began sub-sampling archive samples of the floors of ovens and hearths to export for organic residue analysis.

The most recent excavations have brought forth the need to redefine and expand the terms: fire installation, oven, hearth, fire spot, and fire pit.

Acknowledgements:
This fieldwork was partly funded by a Departmental Skomp Summer Research Award, from the Anthropology Department, Indiana University, Bloomington.

Central Anatolian Archaeological Chert Survey (CAACS) - Adam Joseph Nazaroff (Stanford University)

A raw material sourcing program for the in depth analysis of the flint and chert assemblages at the Neolithic site of Çatalhöyük in Central Anatolia has been introduced. The use of provenance research to aid archaeological interpretation of resource procurement and trade has become an indispensable facet of most archaeology projects, although it may be said that several regions of archaeological interest have not seen the in depth sourcing research they deserve. At Çatalhöyük and throughout Central Anatolia, intensive sourcing programs have been undertaken in relation to obsidian (Carter and Shackley 2007) and groundstone (Türkmenoğlu et al. 2005) raw materials, but no such study has been conducted on any flint or chert assemblage in a thorough manner (although see Bezić 2007 for initial commentary on chert procurement in Central Anatolia). The purpose of the research proposed here is to develop a regional database of geologic source-locales for flint, chert, and other microcrystalline quartz raw materials, which may have been exploited in prehistory. The utility of recognizing and mapping both primary geologic outcrops of chert, as well as secondary contexts of chert erosion will be demonstrated through the probabilistic source determination of flint and chert artefacts from the Neolithic occupation at Çatalhöyük. Such a program will not only be used to better situate Çatalhöyük in a prehistoric cultural landscape through understanding the acquisition of resources used to manufacture flint and chert objects, but will moreover provide a database of flint and chert sources accessible to other Anatolian archaeologists, as well as the affiliated characteristics of each outcrop useful for provenance determination (e.g. color, texture, opacity, nodule size, and cortex descriptions) accessible to all archaeologists working in Turkey for future use at other archaeological sites. The

collaboration which will come from sharing this information will help in developing a greater understanding of the contact between communities throughout central Turkey.

Chipped stone sourcing programs at Çatalhöyük have focused almost exclusively on the obsidian assemblage, and have successfully demonstrated the import of obsidian materials from sources several hundred kilometers east of Çatalhöyük (Carter and Shackley 2007). This information has been used to posit interaction with communities in Eastern Anatolia. However, such provenance research of non-obsidian chipped stone (NOCS) materials at Çatalhöyük has been comparatively limited (Doherty et al. n.d.). What's more, these programs have focused solely on the attributes of NOCS objects at Çatalhöyük; to date no attempt has been made to discover the physical locations from which these raw materials may have been acquired. Bezić (2007) reviews the use of chert at a variety of Neolithic sites throughout Turkey, but makes only limited mentioned of any sources of chert materials in Central Anatolia, instead preferentially noting deposits in the southeast of Turkey. An as-of-yet untested hypothesis presumes that the Çatalhöyük chert assemblage originated from these latter locations. A cursory review of geologic literature indicates the presence of chert and flint materials throughout Central Anatolia at locations significantly closer to Çatalhöyük than the southeastern sources (e.g. Robertson and Ustaömer 2009; (Figure 133). What's more, reported visual descriptions of chert nodules match characteristics of the Çatalhöyük chert assemblage witnessed by Nazaroff. It is curious that these locations have not received archaeological attention as of yet. Any attempt at successfully sourcing lithic materials cannot begin from cultural materials recovered at archaeological sites. Rather, geologic samples must be acquired from known lithic sources and used to create a database of attributes—visual and geochemical—in order to compare with attributes seen in artefacts at archaeological sites. Only through establishing these visual and chemical 'fingerprints' can a researcher hope to link artefact material with a point of origin and thus complete a successful sourcing study (Shackley 2008).

Three primary aims constitute this project, which are:

i. To locate and map flint, chert, and affiliated microcrystalline quartz raw material deposits which may have been exploited in prehistory. Raw material deposits are not restricted solely to the primary in situ deposit of geologic material, but include secondary depositional events (e.g. erosion via hydraulic or geologic means—rivers, glaciations, etc.) which may have extended the original boundaries of deposition.

ii. To provide information relevant to probable provenance determinations which link artefact material and source material. Such information, meant to constitute the 'fingerprint' by which source determinations are made, include color, texture, and opacity of materials, as well as microfossils and geochemical data which will be collected at a date subsequent to the 2011 field season.

iii. To further demonstrate the archaeological importance of a thorough NOCS sourcing program in Central Anatolia by using the information from goals (i.) and (ii.) to study the acquisition and consumption of flint and chert at Çatalhöyük.

By extending the lithic sourcing program at Çatalhöyűk beyond the obsidian assemblage to encompass other chipped stone materials, it will be demonstrated that the Neolithic occupants of Çatalhöyűk were situated in a cultural landscape which may include regions to the west of Çatalhöyűk. Demonstrating interactions at a scale beyond the immediate vicinity of Çatalhöyűk through chert provenance research will further elucidate the complexity of social and environmental interactions in prehistoric Turkey. In addition, upon completion of this research CAACS will provide a database of source locales and their characteristics to a broader archaeological community, disseminating information through publication and online venues for the benefit of other researchers similarly interested in the prehistoric procurement of chert. The initial survey proposed here is an essential preliminary step in this process. This project thus promotes further interaction amongst archaeologists as well as the incorporation of geologic research at a scale which transcends traditional disciplinary boundaries.

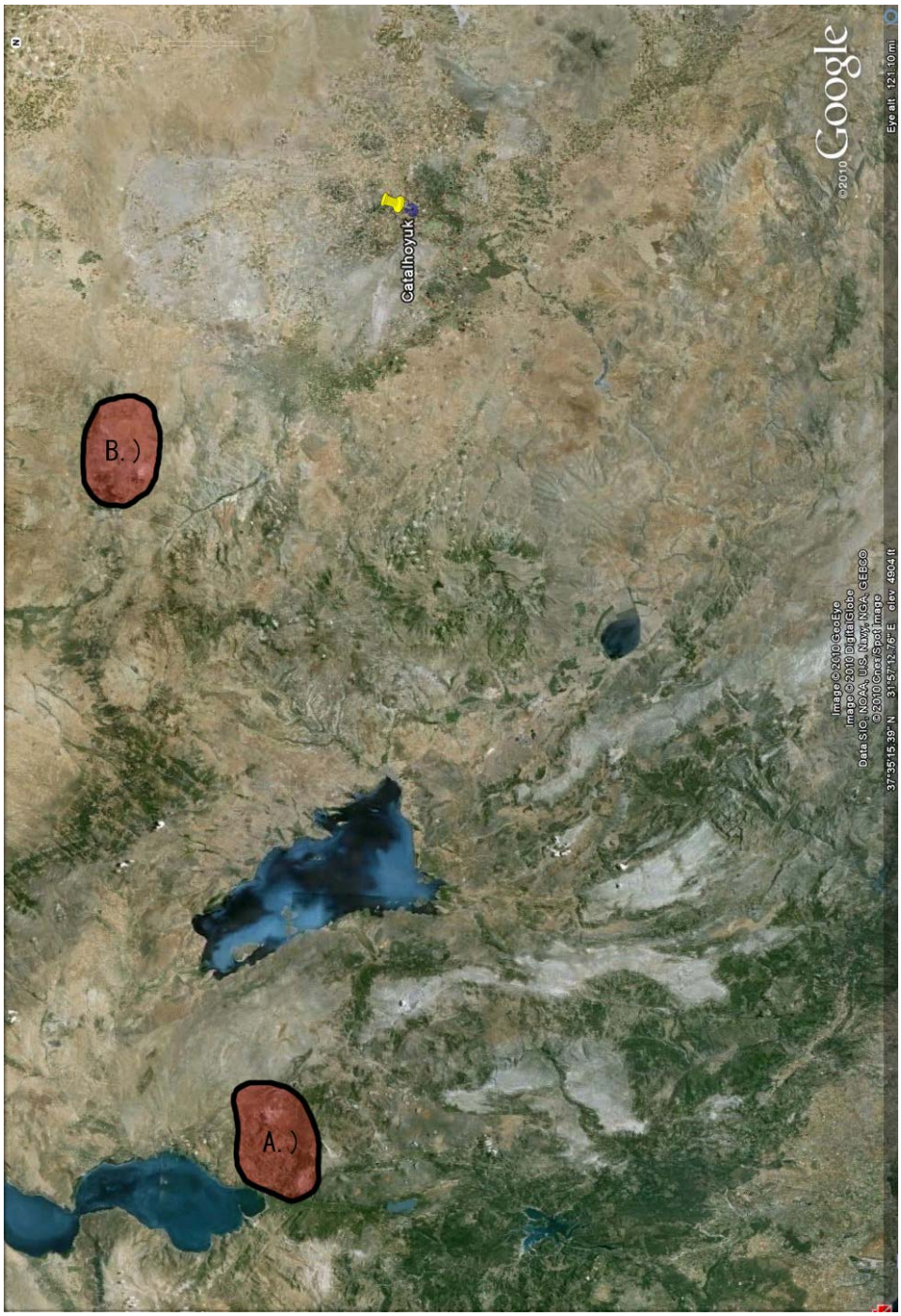


Figure 133 General regions to be surveyed. A.): Egridir outcrops as reported by Waldron (1984). B.): Sizma outcrops as reported by Robertson and Ustaömer (2009).

References

Bezić, A. (2007) Distribution of Flint in Turkey, from 10,000 to 6,000 cal BC. Case Study - Çatalhöyük. Chert Availability and Prehistoric Exploitation in the Near East, Delage, C. (ed.). BAR International Series 1615. pp. 68-86.

Carter, T., Shackley, S. (2007) Sourcing obsidian from Neolithic Çatalhöyük (Turkey) using energy dispersive X-ray fluorescence. Archaeometry 49(3): 437-454.

Doherty, C., Milic, M., Carter, T. (n.d.) Characterizing the non-obsidian chipped stone raw materials at Çatalhöyük (Turkey)

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

Robertson, A. Ustaömer, T. (2009) Formation of the Late Palaeozoic Konya Complex and comparable units in southern Turkey by subduction-accretion processes: Implications of the tectonic development of Tethys in the Eastern Mediterranean region. Tectonophysics 473: 113-148.

Shackley, S. (2008) Archaeological petrology and the archaeometry of lithic materials. Archaeometry 50(2): 194-215.

Türkmenoğlu, A., Baysal, A., Toprak, V., Göncüoğlu, M. (2005) Ground-stone raw material from Çatalhöyük. In Changing Materialities at Cataloyuk: Reports from the 1995-99 Seasons, Hodder, I. (ed.). BIAA Monograph No. 39, pp. 369-372.

Waldron, J. (1984) Stratigraphy and sedimentary evolution of the NE Antalya Complex: Isparta Province, Turkey. The Bulletin of the Mineral Research and Exploration Institute of Turkey 97/98: 1-20.

Post Chalcolithic Activities at Çatalhöyük

Introduction – Shahina Farid.
Post Chalcolithic activities have been excavated on both the East and West mounds since the onset of current excavations in 1995 and indeed, known about since the 1960s. There is little evidence of any long-term occupation or substantial use in any post Chalcolithic periods. However sequences are represented by structures (industrial type in the TP Area, large 'fort' type in the 4040 Area), and pits. But most commonly burials. Survival of the site of Çatalhöyük owes much to the fact that there was little to no occupation after the Chalcolithic period and that in the historic periods the site was used as an occasional burial ground through different eras. Whilst there has been regular reporting of 'late' material in Archive Reports, and teams have published on the subject matter (BACH, TP), these have been specific to individual trenches of excavation. In 2005 the SEL Team joined the project to work on any Classical Period material (see SEL Team, Archive Reports 2005 – 2008) There is much that can be addressed from this data for the ensuing periods, especially in relation to the Konya Plain Survey conducted by Douglas Baird 1993 – 2000.

To date there has been no systematic review of which periods are represented at the site nor any synthesis of data from across all areas and across both mounds. It was for this latter objective that Mark Jackson, Lecturer in Archaeology at Newcastle University with a specialism in Early Byzantine Ceramics and Roman and Byzantine Settlement and Housing was invited to offer his expert opinion on how to proceed .

Overview of Post Chalcolithic assemblages at Çatalhöyük - Mark Jackson, Newcastle University

Mark Jackson (MPCJ) visited Çatalhöyük for two days in August 2010. The aims of the visit were to evaluate briefly and to discuss the potential of the material from the later phases of the site excavated since the early 1990s. Particular attention was to be paid to the ceramics.

Discussion with Shahina Farid and Ian Hodder confirmed that excavation in most areas at Çatalhöyük has resulted in the recovery of a considerable amount of 'late' material during excavation since the early 1990s. It was discussed that, at some point in the future, it would be useful and important to bring together the material from all the various parts of the site to provide a coherent discussion of the later activity at Çatalhöyük.

The ‘late’ category includes all material dating from the post-Chalcolithic phases. The excavators and previous researchers consider that most of this late material, often called ‘Byzantine’ informally, may be attributed from the Hellenistic period through into the Middle Ages. Previous researchers had noted an absence of Roman material across the site.

Particular parts of the site highlighted in discussion were:
1) Bell-shaped pits cut into earlier features on the summit of the East Mound, excavated in 1996 and 1997.
2) Burials from the 4040 area
3) Burials from the Bach area
4) Burials from T.P. published in N.I.N.O., associated ceramics have been studied by Daniela Cottica.

The visit was a good opportunity to see the trench areas, talk with other members of the team including both excavators on site and those working in the laboratories and to study the site archives.

The annual excavation and study reports, as well as the unit database, GIS and photo archives provided an excellent record of the work at the site and made exploring the archive straightforward. The storeroom on site also provided easy access to all excavated ceramic material. A selection of this ceramic material was consulted in one of the finds laboratories in order to gain an overview.

Since there is currently no established typology of late ceramic material from Çatalhöyük available for reference, this would be something to create in future seasons through systematic analysis of the late ceramic material.
It would seem sensible to attempt to integrate this study with the work carried out by Daniela Cottica on the survey of the sites in the region surrounding Çatalhöyük directed by Douglas Baird. The material from the survey is stored at Çatalhöyük and Daniela’s report close to publication, therefore subject to the appropriate permission, such an integrated piece of research ought logistically to be relatively straightforward to conduct.

Since the ceramic material from the excavations at Çatalhöyük is easily accessible in the site storeroom and has been kept in entirety with no processing or disposal having taken place, it would be relatively straightforward for a ceramic specialist to study this material.

MPCJ was advised not to begin study of the material in 2010, but rather to evaluate the possibility of carrying out this work.

Potential of the material
In terms of the potential of the material, most of the pottery consisted of small often abraded sherds discovered in burial fills and fills of other cut features. Rarely there were complete vessels which may be considered primary with burials or vessels disposed of in pits. Most of the sherds appeared to be residual material. They may be therefore, of some use for providing terminus post quem dates for the contexts in which they were found but their reliability for this purpose needs to be qualified. Since occasionally the ceramic material comes from contexts which relate to the foundation trenches of buildings, or from burials which are cut by such trenches, it may play a significant part in the reconstruction of the chronology of the later periods of the site. Overall however because of the problem with residuality it will not be easy to link this material to particular periods.

A significant proportion of the pottery assemblage is represented by coarse body sherds which could be related to specific classes and sometimes by fabric and form quantified with fragments of more diagnostic forms such as rims, handles, bases. Overall however there were relatively few sherds with diagnostic forms, which would facilitate helpful drawings for researchers. Much might need to be done with the comparison of fabrics.

Recommendations for future work
A basic study of the material could be conducted in a relatively short period of time and would enable the production of a basic series of ceramic types for the site and their distribution. This would involve the recording and quantification of the ceramic material from the late units.

An attempt should be made as part of this study to attribute dates to the ceramic types. Such as study should be conducted in conjunction with the stratigraphic record. In view of the residual nature of the material in many of the contexts and the relative lack of comparanda from excavated sites in the region, the attribution of dates with confidence may be problematic.

There may be a problem in hoping that the ceramics will provide a chronology for the burials. It might be more successful to implement a sampling programme of AMS radiocarbon dating of skeletons rather than to rely on the ceramics to provide the kind of resolution required. This scientific dating evidence could be helpful also in providing a terminus ante quem date for many of the sherds found in burials and provide an independent dating source for the ceramics.

Following the identification and quantification of the ceramic material, the examination of the range of types and classes of the later ceramic material across the site, with the help of the GIS could prove to be very interesting. The fragmentary and residual nature of much of the material from these later fills will of course reduce its potential.

Discussion established that by 2010 the Byzantine skeletal remains from the 4040 area had been given a basic record of age and sex, but that the skeletons had not received the full osteological study given to the material of earlier phases. Some of the grave cuts have to have their skeletons digitized still. Clearly the potential of the skeletons in the later burials is greater than the residual finds found in the fills associated with them and a full human bioarchaeological study of these skeletons seems to be an important recommendation for such a well excavated set of data.

The following notes represent brief working comments on material looked at over a day and a half in order to gain an impression of the material. Part of the brief given to MPCJ by Ian Hodder was to consider the deposits connected to Building 41.

Building 41
Crate P224
Initial examination of sherds excavated in 2006 revealed several sherds in a similar coarse fabric and finish in units (12650), (12647), (12621) from the 4040 Area. These all have pale fabric with yellow slip on the exterior. These derive from units associated with Building 41. Further work on material from the site and the region ought to enable the date of this distinctive coarse ware to be established.

(12650) – fill of grave F.1475. “The foundation trench of the west outer wall of Building 41 cut through fill of grave F.1475” (Annual Report 2006: p.25).
(12647) –lining of F1236 (burial) truncated by cut of annexe to B41*
(12621) – F.1219 - northern limit of B.41

* N.B. the form for Feature F.1236 has F.1236 truncated by 8794=12642 the foundation cut of the ‘annexe’ to building 41 (F.1473). But the plan shows F.1236 burial cutting Annexe to Building 41.

A second identifiable group from these later phases associated with Building 41 excavated in 2006 featured turquoise-blue glazed sherds. Notably from (12395) Wall Building 41 and (12634) southern wall of Building 41. These provide a tpq for the building. My suggestion is that these may date from after the 12th C. AD.

CH06 4040 (12395) late F.1214 wall Building 41
1) closed vessel body sherd with thin turquoise blue glaze over coarse red fabric (not clear glaze on turquoise)

2) closed plain vessel with sparse lime and gold mica
sherds very hard fired.
Suggest 12-14th C. AD

CH06 4040 (12988) Pot late midden layer from west side of Space 279 above mudbrick layer (12993)
Very hard red-brown body sherds
Pale monochrome green glaze on exterior of ?closed vessel body sherd
Thickened rim of incurving closed vessel
Suggest: Post 12th C AD.

CH06 4040 (12634) Southern Wall of Building 41
Body sherd with turquoise-blue glaze, on both sides of faience-type fabric.

CH06 4040 (12976) = unstratified
Red fabric of sherd with small appliqué foot in white/grey fabric with turquoise-blue glaze,
Body sherds and handle root of large amphora

It would appear that the foundation trenches of Building 41 cut the cuts of several graves. This stratigraphic relationship would suggest that the building is later than certain of the graves. It would seem likely that Building 41 dates to the period after the 12th C. AD, and that at least some of the graves pre-date that period.

Late contexts on the summit reveal a very small number of diagnostic Hellenistic sherds but little that was clearly recognizable as Roman or Late Roman.

Other late deposits from the summit were also considered

Crate 123 CH Summit

CH'96 summit (1702) 02.09.1996 Pottery T.E.
Chalcolithic
Pre-Hell-Byz.

CH'96 summit 1704 02.09.1996 Pottery – T.G. bell-shaped pit 147 [=1702]
Many small body sherds. This appears to be mostly early material. The thin-walled black coarse ware body sherds may be Hellenistic-Byz cooking pots – otherwise the rest seems earlier.
Possible Hell-Byz tpq.

Pit 101 of irregular shape pottery bags for (1714), (1728), (1732), (1741).
All pre-Hell.

CH'96 summit (1753) pottery 21.09.96
Mixed periods, range of fabrics and decoration
1 black glaze Hellenistic handle.
Possible other later sherds medieval? (pale slip on red-brown fabric)
Confident Hell. Tpq

CH'97 summit 08/09/1997 (2613) F.135
Mostly pre-Hell. 1 sherd flake may possibly be red sigillata.
Possible Late Hell. Early Roman? tpq.

CH97 summit 03/09/1997 (1797)
Mostly pre-Hell. 1 sherd of Hellenistic Black glaze. 2 possible Hell. Coarse wares.
Confident Hell. Tpq.

CH97 summit 02.09.1997 (1796)
1st bag (of 3) contains some late pieces. Includes red sigillata, wheelthrown coarse wares.
Hell. tpq

CH97 02.09.1997 (1793)
Nothing here suggests a late date

CH97 10.09.97 summit (2636)
Very diagnostic horizontal cooking pot handle form – date uncertain.

CH97 summit 08.09.97 (2614) F.101
Nothing looks late

CH97 summit 06.09.97 (2603)
Very worn body sherds, but seems to be a good candidate for late period. Amphora body sherds, wheel thrown

CH97 summit 02.09.97 (1794)
Rim and handle of globular amphora; amphora body sherd with combing. Late tpq but exact date uncertain.
Byz?

CH97 summit 08.09.1997 (2612)
Not late

CH03 4040 8825.x3 whole pot C7 11/08/03
Two handled plain jug. Lightly twisted handles and everted rim. Body tooled heavily leaving horizontal lines on exterior. Disc base.

Handles could be Hell.- early Byz. Suggest (Roman-)early Byz. because of disc base and tooling but to be confident about the date of this we would need to look for published parallels.

Evaluation of reflexive methods – Björn Nilsson (Södertörn University) **& Åsa Berggren** (Lund University)

The reflexive methodology that has been developed at Çatalhöyük (Hodder 1997, 1999, 2000) has been used by the project from the start and was initially discussed at length both on the site and in publications (Farid 2000, Berggren 2001, Chadwick 2003). So far no in depth evaluation of these methods has been carried out. Now, as a part of a project that aims at evaluating reflexive methodology in archaeology, the Çatalhöyük project is one of two studied projects, the other being the Citytunnel project in Malmö, Sweden. The Citytunnel project was in part inspired by the ideas from Çatalhöyük, and implemented some of the methods, for example an interactive diary. The different settings of the two projects make a comparison interesting. The other team members of this evaluation project are Ian Hodder, Monique Boddington, Anders Högberg and Lynn Meskell.

As a part of developing a method to evaluate the methodology at Çatalhöyük, a series of preliminary interviews and talks took place during the 2010 season. Seven persons, both from excavating teams and from lab teams were interviewed. From this series of talks some points are identified that seem crucial to the implementation of the reflexive methodology. These points will be studied at a greater depth and will be discussed in relation to both projects in the coming evaluation.

References

Berggren, Å. 2001. Swedish archaeology in perspective and the possibility of reflexivity. Current Swedish Archaeology 9: 9–24.

Chadwick, A. 2003. Post-processualism, professionalization and archaeological methodologies: Towards reflective and radical practice. Archaeological Dialogues 10(1): 97–117.

Farid, S. 2000. The excavation process at Çatalhöyük. In Hodder, I. (ed.), Towards Reflexive Method in Archaeology: the Example at Çatalhöyük (McDonald Institute Mono- graphs, BIAA Monograph No. 28). Oxford: Oxbow, 19–35.

Hodder, I. 1997. ‘Always momentary, fluid and flexible’: Towards a reflexive excavation methodology. Antiquity 71: 691–700.

Hodder, I. 1999. The archaeological process: an introduction. Oxford: Blackwell.

Hodder, I. (ed.). 2000. Towards Reflexive Method in Archaeology: The Example at Çatalhöyük. (McDonald Institute Monographs, BIAA Monograph No. 28). Oxford: Oxbow.

Practices of archaeological knowledge production at Catalhöyük 2010
Tonia Davidovic

I carried out ethnographic research at Çatalhöyük this summer for four weeks.

My research interest focussed the practices of knowledge production, which means the activities and interactions during the process of excavating, documentation and analysis of the archaeological finds and features.

The idea to carry out such research at Çatalhöyük derived from my interest in the concept of reflexive archaeology. I had already researched archaeological knowledge production on other excavations as part of my PhD and wanted to compare the practices between these excavations and Çatalhöyük fully expecting some differences.

My theoretical perspective is inspired by approaches from science and technology studies in sociology and anthropology, which allows for research on the very process of knowledge production. Science and technology studies focus on actions and interactions in knowledge fabrication.
My method consists mainly of participating observation. Interviews were not conducted because this would give me a reflected version of the process. So I preferred to watch the process myself whilst participating and conducting informal talks. I also attended some of the presentations of papers during the study season.

So my research questions this summer were concerned with the digging methods and the specific practice of presenting the knowledge, the relationship between excavators and lab. teams, between different teams and the relationship between the local society and members of the team.

Some of my preliminary results in regard to the digging methods showed that in general there is not much difference in the excavation and documentation process at Çatalhöyük to other excavations I have worked at. Some practices are bringing already reflexive methods into the process: for example that everybody is doing the whole process of excavating and documenting. That can bring different interpretations of the features by the different persons working at the site into the documentation. But most of the practices were the same like at any other excavation working on settlement hills with brick constructions.

Many people I have asked at Çatalhöyük have never heard about the concept of reflexive archaeology. Only a few students and supervisors did know it.

Multivocality is brought into the process of knowledge production by having different teams working on site, but in fact the multivocality is mainly restricted to the level of the team supervisors. The different teams are still separated from each other in some regard, visible for example in the evening activities.

The Presentations were seen generally as a good idea to bring the result of all actors together. The ‘multi-sited-ness’ of archaeological knowledge production at different laboratories and offices after the excavation is transformed into a ‘single-sited-ness’ by bringing all actors to the site and into discussions at least for some days.

Archaeologists who presented some buildings were content with the presentation and discussion of the results. Some pointed out that the preparation of the presentation and the

informal talks with colleagues happening during that preparation time were more helpful than the presentation itself to become clear about the results.

The relationship of the actors at Çatalhöyük with the local society is interactive in many ways (museum, teaching programmes for teachers and pupils, invitation of the locals to the site, theatre project and so on). But in other aspects the project still seems to be like an enclave. To build the house on site and not in the nearby village, the restrictions to go outside alone and the convention to work not with local workers but with students only, all these practices have good reasons but lead to the situation that contacts to locals can develop only in a very restricted way. Staying at the site most of the days and visiting on Friday only the hotel in Konya is contributing to the creation of an enclave. As English is the language on site, and by working only with few persons from the surrounding villages, it is not necessary to speak Turkish, so most of the members don't learn it. So in this regard the site leaves the impression to be in an international working camp, which have only few connections to Turkey.

Archaeological Park Research - Beliz Tecirli (University College London (PhD research))

The 2010 archaeological park research was conducted off-site. The research involved:

1) Furthering the understanding of the national legislative framework for site management in Turkey, as a continuation of the 2009 fieldwork
2) A comparative study of existing archaeological parks around the world

The national legislative framework for site management in Turkey

Meetings were conducted in the 2009 field season with the staff at the Konya Conservation Council to discuss the outstanding updates for the preparation of the Çatalhöyük site Management Plan; Landscape Project; and Conservation Plan, as required by the following regulations :

· Koruma Amaçlı İmar Planları ve Çevre Düzenleme Projelerinin Hazırlanması, Gösterimi, Uygulaması, Denetimi, Müelliflerine İlişkin Usul ve Esaslara Ait Yönetmelik
· Alan Yönetimi ile Anıt Eser Kurulunun Kuruluş ve Görevleri ile Yönetim Alanlarının Belirlenmesine ilişkin Usul ve Esaslar Hakkında Yönetmelik

The 2010 (off-site) research has been a thorough study of the Turkish legislative system regarding the protection of archaeological sites. The research has identified the Acts and their principles and procedures that will determine and regulate the transformation of a protected area into an archaeological park. The Acts identified include:

· Kültür ve Tabiat Varlıklarını Koruma Kanunu (Act 2863)
· Yıpranan Tarihi ve Kültürel Taşınmaz Varlıkların Yenilenerek Korunması ve Yaşatılarak Kullanılması Hakkında Kanun (Act 5366)
· Milli Parklar Kanunu (Act 2973)
· Turizmi Teşvik Kanunu (Act 2634)

The next part of this research will be to evaluate the application of the identified principles and procedure in the creation of the Tilmen Höyük Archaeological Park, in Gaziantep, Turkey as well as their application in the preparation and implementation of the Çatalhöyük site Management Plan, Landscape Project and Conservation Plan; the preparation of which is currently being governed by the Ministry of Culture and Tourism. This evaluation will ultimately identify the legal processes which facilitate and those which impede the creation and sustainability of archaeological parks in Turkey.

A comparative study of existing archaeological parks around the world

The term 'archaeological park' does not as yet have a generally accepted definition, which indicates a lack of agreement regarding its meaning and content. A review of the literature

regarding archaeological parks has, unfortunately, pointed to the limited information that is available about their function, purpose and management solutions. Hence, this comparative study has been limited by the variance in the levels of information from the sources that are available. The study aims to answer the following questions:

1) What are the different trends in archaeological parks?
2) What are the main factors which facilitate and/ or impede the effectiveness of archaeological parks?

Firstly, the comparative study has revealed the many definitions of what an archaeological park is; these include legislative definitions from countries which have specific laws for archaeological parks like Italy and Jordan, as well as the definitions suggested by the management bodies that have set up archaeological parks. A general summary of these definitions identify archaeological parks as: preserved land, distinguished by heritage resources and land related to such resources, that have the potential to become an interpretive, educational and recreational resource for visitors via an appropriate infrastructure to protect all heritage resources including unexcavated material (Thakur 2004, Marchetti 2008, Ziferero 2008, Guaitoli 2008). Thus the integrity and authenticity of the historic landscape rests within the entirety of the park itself.

Today, there are a number of archaeological parks in existence ranging in size from a few to thousands of square kilometres each. The census information regarding Italy's archaeological parks shows a rise in this phenomenon since 2002, as 57 active parks became 78 active parks by 2008 (Zifferero 2008). However, considering the very scarce consistency of data related to the management of these parks, this comparative study also revealed the difficulty in demonstrating the effective activity of these parks, or whether they are in fact simple sites that have been classified as archaeological parks (ibid).
The comparison of the various trends in active archaeological parks shows the effectiveness of an archaeological park to depend on two factors:

1) the uniqueness of the historical landscape and degree of development and appeal of the visitor infrastructure
2) the management infrastructure that monitors and ensures the sustainability of the park system and most importantly the integrity of the historic landscape

Most archaeological parks display various didactics, interactive representations, partial renewal and even recreated plots of the historic landscape; however the levels of these visitor displays vary incredibly. As an example, the Angkor Archaeological Park in Cambodia, is located amid forests and farmland and presented to the visitor in a state of romantic ruin (personal observation), whereas the Flag Fen Archaeological Park in Peterborough, United Kingdom, exists almost entirely as a scientific reconstruction of the historic environment. At Flag Fen, within the 20 acres of outdoors and two indoor display areas, ' you can wander through a reconstructed Bronze Age landscape and farmstead, sit and ponder within the reconstructed roundhouses, have a go at weaving on the loom, smell the Bronze Age and Roman herb gardens and stand where our ancestors once stood by the ritual causeway' .

Whatever the approach for visitor displays, as a rule, Marchetti (2008) emphasizes the dynamic structure of ongoing archaeological research as a significant distinguishing feature of archaeological parks, whereby heritage management is conducted simultaneously with archaeological research, conservation and display preparation of newly excavated remains. In this approach the framework for the research strategy and the management of the archaeological landscape, starting from the field research to the final visitor displays, must occur simultaneously as opposed to a consecutive order. This ensures the valorisation of each aspect and stage of the research, culminating in its presentation to the public, which cannot fully happen unless awareness of all aspects has been raised (ibid). The establishment of the Tilmen Höyük Archaeological Park follows this rule (ibid).

In terms of sustainability this comparative study identified various methods adopted by archaeological park management authorities to ensure the sustainability of the historic landscape. The unification of several historic sites in Athens within an archaeological park

framework is one example, whereby modern development threatening the historic physiognomy of Athens is regulated through the creation of a continuous fabric of public spaces, parks and facilities for recreation (Papageorgiou 2000).

The comparative study also revealed interesting monitoring systems to manage sustainability thresholds, such as the Yacoraite Archaeological Park Project GIS system operated to manage the regulation of the various economic activities related to the park management, such as visitor flow. The GIS system identifies deterioration threats to schedule and implement the improvement procedures necessary to sustain the entire park complex (Repiso, Postgraduate study, unpublished).

The comparative study concluded the overall strategic objective of sustainability within archaeological parks to be the integration of all the actions related to the archaeological research, conservation and exploitation of the site with all the actions addressed to the promotion and social development of its stakeholders and the safeguarding of the identified values associated with the landscape. The integration of these actions, when placed in a political context where exists several levels of decision making (from local communities to international organisations), depends very much on political sustainability. The comparative study identified different approaches taken to achieve political sustainability, whether it is the framing of the archaeological park within a participatory management plan for the site or incorporating the park aims within a larger, provincial tourism development plan.

The conclusions of this comparative study and the evaluation of the legislative system that regulates archaeological sites in Turkey will be used to evaluate the role and effectiveness of the Archaeological Park as a management model for the Çatalhöyük landscape.

References

Guaitoli, M. 2008. Archaeology and its museums: from the excavation to multimedia dissemination In ARCHAIA: Case Studies on Research Planning, Characterisation, Conservation and Management of Archaeological Sites. Archaeopress, England, Oxford. Pp 391 - 398

Marchetti, N. 2008. From excavation strategies to Archaeological Parks In ARCHAIA: Case Studies on Research Planning, Characterisation, Conservation and Management of Archaeological Sites. Archaeopress, England, Oxford. Pp 11 – 16

Papageorgiou, L. 2000. The unification of archaeological sites of Athens; the birth of an archaeological park? Conservation and Management of Archaeological Sites 4. Pp 176-84

Repiso, L. I. (Postgraduate study, unpublished). Heritage, Tourism and Sustainability: An Archaeological Park as a Tool for Local Sustainable Development http://www.holcimfoundation.org/portals/1/docs/f07/wk-tour/f07-wk-tour-repiso02.pdf

Thakur, N. M. 2004. Champaner-Pavagadh archaeological park, International Journal of Heritage Studies, Volume 10, Issue 5, 2004, Pp 397 – 399

Zifferero, A. 2008. From archaeological parks to the enhancement of archaeological landscapes: new directions in Italian heritage management In ARCHAIA: Case Studies on Research Planning, Characterisation, Conservation and Management of Archaeological Sites. Archaeopress, England, Oxford. Pp 257 - 272

COMMUNITY COLLABORATION PROJECT REPORTS

Çatalhöyük Summer School Workshop Report - Gülay Sert (Coordinator of Çatalhöyük Archaeology Workshop)

Team: Nuray Kaygaz, Işıl Demirtaş.

Çatalhöyük Archaeology Workshop started on the 15th of June, 2010 within Çatalhöyük Excavation Project. It aimed at discovering the site, developing feelings of preservation and caring on cultural heritage.

Since 2003 it has been a workshop for the children between the ages of 8-12. But this year our target audience has changed. It was in 2009 when we recognized that the public around the immediate surrounding of Çatalhöyük does not know much about the site. With that in mind, we have included adults in our program. This year we therefore focused on adults.

Children Workshops:
92 children participated in the workshop. They were all from Konya, either from the city centre or from the small towns in the surrounds. These children were reached through the primary schools or the orphanages.

The workshop took place between the 2nd and the 16th of July 2010. It was six days a week, between 10.00 and 15.00. The activities were on a regular basis. Everyday, it started with showing a PowerPoint show, which informs about the site and the past inhabitants of Çatalhöyük. Later, we visited the replica house and the mound. We continued with hands-on activities such as experimental archaeology (Figure 134), or creative drama activities. Our motto was “I hear and I forget. I see and I remember. I do and I understand.” The activities attracted a genuine interest in the children. We have observed that they indeed developed a sense of preservation and care about cultural heritage.

Figure 134. Childrens’ activities include making clay models, painting, block printing, writing stories and drama.

The Grown-Up Workshops:
The Teachers:
Having understood that the teachers training programmes lack presenting cultural heritage issues, we have collaborated with Konya Directorate of National Education. Accordingly, the teachers who work at primary schools were invited to Çatalhöyük. 330 teachers attended the workshops between the 15th of June and the 1st of July.

The daily workshop took place 6 days a week, between 10.00 and 14.00. It was the same schedule we followed for the students. However, this time, the practical part was replaced with informing teachers of students' hands-on activities.

We observed that the 95% of the teachers attending the workshops are from Konya. But, most of them never visited the site before. When they were asked the reason behind this, they told us in the rush of their daily life, they never had a chance to visit before. Or, there are no easy transportation facilities provided to make Çatalhöyük easy to visit. Some of them said that they have heard there is not much to see at Çatalhöyük. We checked their knowledge about Çatalhöyük, but their answers were full of mistakes and they picked up what they know by listening from here and there. It was sad that they lacked the necessary information on one of the earliest settlements in the history of civilization. However, knowing that the teachers have benefited largely from our workshops gave us a relief.

Çatalhöyük Archaeology Workshop enables almost 600 students to participate in a month time. Thinking of 342 teachers reaching their students, if each has 40 students, Çatalhöyük will be introduced to more than 13,500 students a year. In addition, the relatives, families and friends of the teachers will also get to know about Çatalhöyük over time. So, considering the ripple effect the teachers will have on their surroundings, the importance of the workshop can increase in importance.

Public Waterworks Administration Workers (DSI):
Cultural Heritage is exposed to destruction mostly because of the construction of dams, roads, or any kind of building construction. The insufficiency of knowledge among the workers sometimes results in total destruction of the monuments even before they are identified. To address this situation we invited workers in these fields of work and 22 DSI workers attended the workshops.

The same daily schedule is followed with the DSI workers. We informed them the importance of the mounds and their preservation on the Konya plain. The talks we had sincerely revealed that they did not know about the history lying beneath the surface of the mounds. They thought that the mounds are only of soil and there is no reason why they should not remove them to construct a dam, or a road, or a water tank. Based upon this revelation we have decided to continue working with DSI workers in the future.

The Other Participants:
Within the project of "Gönül Köprüsü" which might be translated as "Bridge of Love" Çatalhöyük is introduced to 190 students and 15 teachers. They came from Bolu/Düzce.

At the annual festival we have at Çatalhöyük, the guests around the neighbour villages (see Atalay, this report) were shown a PowerPoint introducing Çatalhöyük.

The visitors from Iraq (see Other Activities, this report), who came to exchange their knowledge on heritage management and site plan management, were informed of the educational program we have been running for many years now.

The workshops were held between the 15th of June and the 16th of July 2010. It was 26 working days in total. 529 people participated in the workshops of whose details are given in Figure 135. With those out of our records approximately 750 people attended the workshops.

Ackknowledgements
I would like to thank Çatalhöyük Research project for their support in carrying out such a project.

date	day	participants	the city they come from	number of students	number of grown ups
15-Jun	Tuesday	Teachers	KONYA		25
16-Jun	Wednesday	Teachers	KONYA		24
17-Jun	Thursday	Teachers	KONYA		29
18-Jun	Friday	day-off			
19-Jun	Saturday	Teachers	KONYA		18
20-Jun	Sunday	Teachers	KONYA		19
21-Jun	Monday	Teachers	KONYA		22
22-Jun	Tuesday	Teachers	KONYA		19
23-Jun	Wednesday	Teachers	KONYA		24
24-Jun	Thursday	Teachers	KONYA		24
25-Jun	Friday	day-off			
26-Jun	Saturday	Teachers	KONYA		18
27-Jun	Sunday	Teachers	KONYA		21
28-Jun	Monday	Teachers	KONYA		23
29-Jun	Tuesday	Teachers	KONYA		19
30-Jun	Wednesday	Teachers	KONYA		26
01-Jul	Thursday	Teachers	KONYA		19
02-Jul	Friday	day-off			
03-Jul	Saturday	Çumra Health Centre	ÇUMRA		31
04-Jul	Sunday	TED Private School	KONYA		25
05-Jul	Monday	Orphanage	AFYON	15	2
06-Jul	Tuesday	Orphanage	AFYON	8	3
07-Jul	Wednesday	Orphanage	AFYON	13	3
08-Jul	Thursday	Orphanage	BURDUR	14	3
09-Jul	Friday	day-off			
10-Jul	Saturday	Selçuk University, the Faculty of Veterinery	KONYA	11	
11-Jul	Sunday	Konya TEMA Foundation, Teachers	KONYA		12
12-Jul	Monday	Orphanage	ADANA	canceled	
13-Jul	Tuesday	KDANS Dance School	KONYA	17	2
14-Jul	Wednesday	DSI Workers	KONYA		22
15-Jul	Thursday	?	?		
16-Jul-10	Friday	SHELL		14	4
17-Jul-10	Saturday				
18-Jul-10	Sunday	Seminar for the Iraqi Visitors			

Figure 135. Summer School schedule for 2010.*

Community Based Research Project Report 2010 - Sonya Atalay (UNI)

Team: Sonya Atalay (University of Indiana), Sema Bagci (Middle Eastern Technical University/Ankara), Ted Mendoza (Gengee).

Theatre Team: Serdar Bilis, Özlem Ozhabes

The community based research project continued this field season with great success. Our time was limited because the project assistant, Sema Bagci, was only able to be on site for 10 days. However, we were able to accomplish a great deal during this limited time frame including organizing a successful Çatalhöyük festival, preparing the local children from

Küçükköy for their first Çatalhöyük-based play, producing and delivering both a community newsletter and another comic in the Çatalhöyük children's series. We also made substantive progress on the conceptual planning for an iphone app that will provide a virtual site tour for visitors. Brief summaries of each project are provided below.

Çatalhöyük Festival

Ali Barutcu, the muhtar of Küçükköy, was incredibly helpful in getting things organized for the festival this year. He suggested that we have a banner noting that this is an official, yearly event, and he also provided input on the activities that should take place at the festival. We took somewhat of a different turn for the festival events planning this season and decided to provide hands-on activities that the archaeologists could participate in that involved traditional Turkish handi-crafts and practices. We invited a traditional potter, a feltmaker from Konya, and a demonstration of traditional cooking (preparing gozleme).

Unfortunately, we had some difficulty ensuring that these handi-craft practitioners would be able to attend. In the case of the potter, he was not able to find time in his very busy schedule to attend the event and his apprentice was not as knowledgeable in crafting wheel made pottery. We were told by elders in the Küçükköy community that there was a traditional basket-maker living in one of the local villages, but we were not able to locate this person. Women that we invited from Küçükköy to make gozleme were not able to take part in the festival for numerous reasons, one of which included a tragic death within the households of one local family. Fortunately, we were able to have a craftswomen (Rabia Girgiç) who lives in Konya attend the festival and provide demonstrations of 'Keçe', traditional feltmaking.

Figure 136. Rabia Girgiç demonstrating 'Keçe', traditional feltmaking that she learnt from her father-in-law. Photo Sonya Atalay.

Ms. Girgiç is not Turkish, however she learned her craft from her husband's father, who was a very skilled kececi and knew the old methods of doing the craft. She owns a kece workshop in Konya where she sells felted gifts and art of all sorts. Her demonstrations were very interesting and she has even utilized the Çatalhöyük wall paintings and art as a theme for many of her pieces (Figure 136). This is an interesting model for local women who have talked about bringing back traditional crafts as a way of raising income and in linking up their own interests with the growing tourism related to Çatalhöyük. I spoke with Ms. Girgiç about having several workshops next season for the Küçükköy women so that they could also learn the craft and begin preparing merchandise for sale and/or displays. The plan is to be able to organize one pilot workshop in which we would pay Ms. Girgiç to train local women that are interested and we would provide the materials for them to begin work.

A longer term project would be to start a sort of micro-loan program that would help to provide materials for the women to get started with their craft projects. Currently, the lack of materials or initial capital to invest in materials is a primary stumbling block for getting any type of merchandising program off the ground. Another obstacle is that some of the men in Küçükköy voiced some dissatisfaction with involving the local women in any activities related to Çatalhöyük. This is a very complicated issue and will require a great deal of time and energy investment to understand and address.

Although the income generated from the crafts the women would make is certainly welcome by male members of their families, having the women regularly outside of the home, in any situation where men will be present or the "public" is involved, they men refuse. The men

seem to be more open to meetings that only involve local women, such as henna parties and women meeting with other women in homes. This issue of male disapproval also affected the events and planning for the festival because the women from one family were not able to receive permission needed from their husband/son/older male relative in order to be seen in public. So although the women were very happy to demonstrate the preparation of gozleme for those at the Çatalhöyük festival, the male decision-maker of the household would not allow it.

This was the first time I had experienced this sort of resistance from local men in having their female relatives and family members involved in any public function related to the excavation. It seemed to involve a very complex set of decisions and feelings since on the one hand there is clear desire and need for income that the women can contribute, while on the other hand certain social pressures and beliefs that are competing for importance in daily life practices. At least in this case it was clear that something more powerful than economic pressures had the most impact and effect.

This desire to limit the input and participation of local women at the site was not only limited to the Çatalhöyük festival, but could be seen in other areas as well. Project assistant, Sema Bagci and myself visited the family of two women who were involved last year in starting a handi-craft project on site. The project was their idea – one suggested to the Çatalhöyük interns during a women's meeting (Atalay 2010 provides further details on this project). We were surprised to learn in visiting the local women, who just last year were very enthusiastic about the possibilities of a handi-craft co-operative, that they were no longer interested in making handi-craft merchandise or in being involved in training or workshops at Çatalhöyük. When we inquired about the reasons for the chance, the women first stated that it was an issue of money. We talked about our plans to formulate a micro-lending program that would provide them with an easy way to obtain start-up funds. They then said the reason was transportation – we offered a bus to take them to and from the site. Through the course of the conversation it became increasingly clear that the women had been strongly discouraged from participating in the project and it seemed that the choice wasn't really theirs to make. They eventually described that their fathers would not allow them to continue. As a result, their mothers had also discouraged them, even chastised them in some cases for using up craft materials that had belonged to them. One mother who overheard our conversation with these young women described it as "a waste of their time", saying that their fathers were not happy about it and wouldn't allow it. These are very serious concerns that will have a substantial impact on any cultural tourism plans that might arise in coming years.

Despite these challenges – the Çatalhöyük Festival took place on June 26th, 3-5:30 pm, and it was a great success. The festival was well-attended, with at least 400 people present (some estimates were that 500 attended). Similar to last year, we served a cookie packet and juice refreshments to each visit (Figure 137).

Figure137. Some 500 people visited the Çatalhöyük Festival on June 26th from the local villages of Küçükköy and Abditolu. A hire bus was made available and others arrived in their own transportation filling our carpark, which is a rare sight. Photos – left Jason Quinlan, centre Scott Haddow, right Sonya Atalay.

Another new aspect to the festival this year is that we, at the suggestion of Muhtar Bey, invited a guest village. The plan is to each year invite a different village – a guest village – to attend the festival so that they can also be involved in learning about the site and being exposed to ways they might want to further become involved with the collaborative research being carried out as part of the community based research project. This year the guest village was Abditolu. We provided a bus that picked up guests in Abditolu, brought them to the festival, then returned them at the end of the afternoon. The bus held ~30 people and was full, with standing room only. Other guests from Abditolu attended, providing their own transportation. Next year we plan to invite Karkin or Dedemoglu as the guest village.

As the festivities began, Sema introduced Ali Barutcu, Küçükköy's muhtar, who welcomed everyone and then invited Abditolu's muhtar to speak briefly. We had a banner made that read 'Welcome to the 1st Annual Çatalhöyük-Küçükköy Festival' (in Turkish - Figure 138-left). Both muhtars stood in front of the banner for photos during the introductions.

Figure 138 . The 'Çatalhöyük-Küçükköy Festival' banner with the headman of Küçükköy Ali Barutcu and team Sonya Atalay (right) and Sema Bağci (left). Photos- left Sonya Atalay right Jason Quinlan.

Visitors to the festival attended site tours, a talk by Gulay Sert, and listened to music from a local saz group (Figure 138 right). Visitors were also able to watch a play, vocal performances, and folkloric dancing all put on by the children of Küçükköy. The play (Figure 139) was part of the newly developing community theatre project in which Duygu Camurcioglu and Serdar Bilis are collaborating with the community project.

Theatre Project

The start of the theatre project was described in last year's archive report and is explained in greater detail in other publications (Atalay 2010). This year the project made very positive and substantial strides forward. Serdar Bilis, the production director for the project, visited Küçükköy in Spring 2010. He provided workshops for the children during school hours and provided them with drama training during which they were able to help develop a storyline related to Çatalhöyük. Bilis later drafted a play for the children about Çatalhöyük entitled 'Spirits of Çatalhöyük'. During the summer field season, Sema and I worked with the children on the play, making only a few changes to the script before it was put on for the festival on June 26th. We also designed costumes for the play and produced costumes for each of the children who participated. To ensure that all archaeologists on site could understand the play, we translated it into English and provided copies of both the English and Turkish scripts to those at the festival.

Sema and I worked with the children on a daily basis, practicing the play and preparing the costumes. Their performance was very good, and festival visitors seemed to enjoy it very much. Several of the archaeologists reported that it brought tears to their eyes to see the children so involved and to hear their commitment to protect and care for the site. We videotaped several rehearsals of the play and the performance itself and plan to archive this footage in a DVD.

Some of the challenges we faced with the play were related to sound issues. It was a challenge to provide AV equipment that would amplify their voices properly. This is something we will have to contend with in the future, as the project continues.


Figure 139. A play called 'Spirits of Çatalhöyük' was put on at the festival by school children from Küçükköy. This was the product of a new community theatre project in collaboration with production director Serdar Bilis and Duygu Çamurcuoğlu.

Prior to working with the children in preparation for the festival performance, Sema and I met with the new principal of the school, Murat Cekiç, the former acting principal who first developed the community theatre idea locally, Mehmet Ali Selcuk, and all of the teachers from the Küçükköy school. We had a very productive meeting and spoke of ways that we might partner with the teachers to do collaborative research;/work together. Several ideas emerged, including the idea to co-author a grant to the EU that would fund further performances of the children in Europe. We spoke about developing Çatalhöyük related plays that all the children in the school could perform and that we could film their performances and create a DVD that could be sold for educational purposes to teach about Çatalhöyük in schools in the US, Turkey, and Europe. The teachers had a grant in mind that could be used to fund their travel to Europe so that the students could perform. Sema and I agreed to these projects and we are currently investigating these grants, with the aim of getting an application in before the start of next season.

Figure 140. Küçükköy Primary School Library – the only library in the village.

In our meetings with teachers and the principal of the Küçükköy school we were also provided with a tour of the school so that we could see the condition of the building and learn more about some of the needs that are present. We were given a tour of the school library (Figure 140) and learned that the school is in need of more books and shelf space. The library at the school was provided with books in large part from an earlier project that Ayfer Bartu organized as part of her work at Çatalhöyük (see Newsletter 8, 2001, Bartu Candan). The archaeology team donated books to the library, labelled them, and transported them to the new library space. The books have since been moved the location we saw in the school. One of the needs noted by the teacher is that they are still using a notebook to check out books and there is no electronic system for checking out books. One project that the school hopes the Çatalhöyük project is able to assist them with is putting in place a computer inventory system for the library books.

The school leadership also hopes to build a better computer room for the students to use. Currently the computers they have (many of which are donations from the Çatalhöyük project)

are old and they are in limited number. They hope to be able to provide more computers that are new and in better working condition. Also, they currently have only one computer in the school that has internet access (dial up) and it is the principal's computer. They hope to be able to get internet access for at least a limited number of the student computers in the coming year. We were told that Turktelekom (the phone and internet provider) was going to be out in the next week to assess the possibility of a DSL connection at the school. We were informed that the company makes decisions based on level of interest and previously Turktelekom didn't feel there was enough interest for potential DSL customers. They school hoped that the Çatalhöyük project might voice interest in obtaining DSL because that would help to boost the chances that the company would invest in the infrastructure for the service. The government does provide schools with internet service, but we were told that the service is very slow, take an incredibly long time to be installed or available, and that many sites are blocked. The teachers provided examples of sites that are blocked – including all of youtube (reportedly because there was one youtube video that showed an unfavourable picture of Ataturk). It is our hope that the iphone app (described below) once developed would provide some aid for these projects.

Regardless of the outcome of the EU grant application, we do still plan to continue working with the children on Çatalhöyük-related performances. To this end, Serdar Bilis visited Çatalhöyük during the field season to conduct further workshops with the children. Unfortunately, our time on site did not overlap, but I was able to receive several positive reports about the progress that Bilis made. He began working with the children on another performance and assisted them in making masks related to a future performance. We hope to apply for further external funding that would support this important community based theatre initiative. In particular Bilis hopes to also involve adults in future performances. All performances will be developed from the experiences and ideas of local community members and their relationship to the Çatalhöyük site.

Newsletter and Comic

With the help of Ted Mendoza, our community based research team was able to produce two very well produced informational products for the local community. The first is a newsletter that featured information from several of the archaeologists in each on-site lab. The second is a comic for children (although we know from interviews that it is read by adults as well) about the future development and management of the site. The theme of both the newsletter and the comic is Çatalhöyük's nomination to the World Heritage list. Since the project is putting together an application to submit for World Heritage consideration (submitted Sept 2010), it made sense to focus these informative pieces for the local community on the World heritage list and the process involved in applying for consideration.

Ted Mendoza interviewed members from each of the research labs, and provided them with the following sheet of information.

Input needed for 2010 Çatalhöyük Newsletter:

This year's newsletter will focus on Çatalhöyük's application for inclusion in UNESCO's World Heritage List.

Please consider the following question:

In consideration of Çatalhöyük to be nominated for inclusion on the UNESCO World Heritage List, please describe the connection of the research you are doing here (ie. the body of material worked on, significance of specific finds, etc.) to UNESCO's definition of "Outstanding Universal Value".

UNESCO defines Outstanding Universal Value as … cultural and/or natural significance, which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. And as such, the permanent protection of this heritage would be of the highest importance to the international community as a whole.

I will follow up with each lab head before Wednesday at his/her convenience for a brief 5-10 minute interview. *(This voice interview would be saved for future use in future media packaging, ie. iPhone app, website etc.) I will then summarize the interviews and write a brief*

summary, with lab heads approval to be included in the newsletter. I also would like a photo to include, representing each lab.

Some Çatal-related FAQs to consider for this UNESCO application:

- *According to the 2004 Çatalhöyük Site Management Plan, the UNESCO application will be led by the Directorate General of Cultural Heritage and Museums of the Ministry of Culture and Tourism. The Ministry of Culture and Tourism will be responsible for formally making the application to UNESCO. The Çatalhöyük Research Project role will be to "provide information" for this application.*

- *of UNESCO sites worldwide = 890 (689 cultural, 176 natural, 25 mixed)*
- *of UNESCO sites in Turkey = 9 (7 cultural, 2 mixed)*
- *Application process for nomination is outlined in the 2008 Operational Guidelines available online @ whc.unesco.org*
- *Nomination process is defined in 5 steps:*

    1. *Take inventory of site and get on UNESCO's Tentative List (sites not on this List can not be considered for inclusion.)*

    2. *Prepare/present a Nomination File*
    3. *Evaluation/approval by 2 Advisory Bodies*

    4. *Evaluation/approval by World Heritage Committee*

    5. *Inclusion awarded*

***We'd like this to be done and ready for the festival on Saturday** so that we can distribute at least some on that day. But we will also deliver copies to all local villages.*

Ted then followed up with each lab head and interviewed them about the subject of world heritage inclusion and what Çatalhöyük had to offer in terms of "outstanding universal value" in relation to the material that each lab examines.

From those interviews, Ted summarized the information and created a segment for the newsletter for each lab. Ted also reworked the look and organization of the newsletter to give it an easy to use template so that in future years, information can easily be added and new photos can be put in place. Interviewees had the opportunity to revise and edit their portion of the newsletter before it went to print. The newsletter was then translated into Turkish and copies were printed and distributed to tea houses, local grocery stores, and meeting places in villages surrounding Çatalhöyük: Küçükköy, Dedemoğlu, Karin, Hayiroğlu, and Abditolu (Figure 141).

The comic also focused on World Heritage nominations, focusing on both the positive and negative implications of inclusion on the world heritage list. Unlike previous years, in which comics were very time consuming to produce because they were hand-drawn and rendered on computer, this year we purchased and utilized a computer comic design program. This new program, Comic Life, allows for much easier design of comics – and an easy way to incorporate text and images.

We took photos of local people and scenes for inclusion in the comic and planned to use the program to "comic-ify" the photos. However, in the process of producing the comic and turning the photos into what looked like hand-drawn comics, it became clear that the images were not as clear and illustrative as we would have liked. So we chose to use the unaltered photos for the comic, adding bubble thoughts and a comic design (all very simple to do in the program Comic Life). The result was beautiful and very engaging.

Unfortunately, we did encounter an issue with this when a draft of the comic was reviewed by a local community member. We had asked for his participation and included a photo of him

ÇATALHÖYÜK GAZETE

Letter from the Director

With UNESCO World Heritage status, Çatalhöyük will be recognized as one of the most important sites in Turkey, along with Nemrut Dağ, Safranbolu, Troy, and Pamukkale.
I hope all people in the Çatalhöyük region will benefit.

-**Ian Hodder**, Çatalhöyük Project Director (June 2010)

At Çatalhöyük, One Can Easily "Read" the Evolution of Pottery (Nurcan Yaman, Pottery Lab):

Pottery is important for understanding people's daily practices and lifestyles because it is used for many things, not just cooking. It is important part of a family's household property, even when they are moving from house to house; It has symbolic meaning (i.e. some pots have human or animal faces on them). People first became agriculturalists at Çatalhöyük, and pottery was important for them. Before Çatalhöyük, there was no pottery in Anatolia, so it means people had very different ideas about how to prepare food. Life, values and needs were changing. Over time, people adopted the farming lifestyle, and pottery changed as their lives changed. There are many other Neolithic pottery sites, but at Çatalhöyük, the pottery is the earliest dated. Plus, because we can see the changes from the early levels to the later levels, we can follow the changes in pottery use, and "read" it easily.

Unique Rituals and "Inventiveness" when using Clay Balls (Sonya Atalay, Clay Ball Lab):

Clay balls were used for cooking, so they were common objects, used every day, and often found next to ovens or broken in the garbage heaps. What's unique at Çatalhöyük is that they were also used in unusual ritual contexts. For example, one whole clay ball was found placed between the horn core of a sheep, and specifically placed under a house wall as the house was built. Another example is a cluster of mini clay balls (up to 800) made from the same clay and placed in a basin of wet plaster inside a house. Some within this cluster were decorated with fingerprints. Why did they do that? Maybe they were remembering some kind of community event (like a henna party). At other Neolithic sites within the same time period, clay balls are not found. This is because the other sites are closer to stone materials and they can use stone instead of clay. At Çatalhöyük, we believe the clay balls represent a unique "inventiveness" —people use the location and surrounding landscape in creative ways to meet their needs.

Melding Perspectives to Understand a Product with Different Meanings (Tristan Carter, Chip Stone Lab):

People at Çatalhöyük experienced obsidian in some form every single day — similar to the way we use plastics and metals today. With obsidian, the shapes and uses can range from everyday tools to jewelry, gifts and other personal heirlooms. Because obsidian is a common "raw" material used by everybody, it has different meanings and value systems depending on its context. A spoon and a credit card can both be made of plastic, but they have very different meanings. Through a mix of traditional and "cutting edge" archeology, we are investigating where and how these raw materials were collected. Was there a "specialty shop" to shape obsidian into all it's different uses? Or was this a familiar skill known and performed by everybody? Ultimately, since obsidian was a common raw material globally, the stories constructed here will interlink global communities. In addition, the collaborative approach of the Çatalhöyük Research Project is itself unique. It's richer, more innovative, critical and thoughtful than past archeological approaches. The researchers coming from around the world bring international perspectives. They are pushed to develop questions, integrate them with the rest of the research team, and then answer them. It's a lot of work, but a wonderful experience in the end.

Çatalhöyük: A Deep Stratographical Site Provides a Rich History (Lori Hager, Human Remains Lab):

In our research, we study people and not just what they leave behind. A record of past lifestyles is preserved in the Çatalhöyük bones. Therefore, we can reconstruct a lot about the inhabitants of Çatalhöyük. The people living at Çatalhöyük had a direct physical connection with the people buried there over time. Landscape and community strongly influenced the people and lifestyles there over more than 1,400 years of occupation. These factors and the "osteobiography" (that is, the life-history that is embedded within the skeleton) help us paint a deep, rich story of the life-histories there via personal, family and community perspectives. Also, we would expect that the people at Çatalhöyük (living a more sedentary lifestyle) would experience a decline in overall health over time. However, we are discovering that this is not the case. The people at Çatalhöyük managed somehow to remain quite healthy — all the while living in a densely populated, tight-knit community.

Visit Us!
Site and Museum Hours:
8.00 to 17.00 everyday, year round.
Group tours available upon request.
Telephone: 0 332 351 3207

LOOK! It's Çatalhöyük! The little archeology factory!
- Bo Mendoza, Age 3

A Window Into Ancient Life through a Mix of Specializations (Lynn Meskell, Figurines Lab):

Looking at about 2,000 largely animal figurines (one of the largest collections) from the Neolithic period, we will be able to tell how the people at Çatalhöyük related to the animal world. This site is already famous for many specialties: art historians, geographers, architects, etc. It is a unique site because of its range of goods found within an early settled community and it had a large population. For me, there is symbolically *complex* art at Çatalhöyük. For example, there is a pottery vessel that has cattle horns and a cattle head with human heads on either side. From this representation, we see something is happening in the relationship between humans and wild cattle. Also, there is a focus on male cattle imagery. Historically, the site has been famous for its female imagery (i.e. mother goddess), but over the past 10 years, we have been "correcting the image" with a balance of male and female imagery. At other sites, there is almost an exclusive collection of male symbols. However at Çatalhöyük, you have this unique combination of complex practices, objects and symbolism — forms of monumental "house space" art mixed with everyday practices; how people lived in buildings, used middens and the landscape. It's this mix of specializations that gives us a window into ancient life that is not always present in other projects. The archeology is fantastic, but it's also how that material is disseminated that makes it special. Our next big challenge is to place the site within a wider Middle East context.

Animal Ritual as a Release for Social Stresses (Nerissa Russell, Faunal "Animal Bones" Lab):

It's an extraordinary site... in the extent to which animal parts are incorporated into buildings, visibly and invisibly. Çatalhöyük known for ideas of animal symbolism in the Neolithic period —its paintings and art, and also the animal bones themselves (i.e. cattle horns set into the benches and pillars of buildings; other bones built into the buildings themselves). Because of the 1,000+ year sequence of this well preserved bone, we can tell what the people were eating, and what their hunting and herding strategies were. It is believed that Çatalhöyük was once the center of cattle domestication, which provides a good record of peoples' interaction with cattle in central Anatolia. The cattle here are bigger than any others in the world. On the whole, cattle horns are more symbolic than functional. There is a cattle "theme" throughout the near eastern and European Neolithic, but it is more elaborate here at Çatalhöyük than anywhere else. Because this was such a large and densely-packed site, there is a challenge to living so close together without any clear signs of central authority. As such, there were probably many social stresses, and using animal "ritual" through these symbolic gestures is thought by some to provide a release to deal with these everyday social stresses.

Making Çatalhöyük a Tourist Site through the Way it's Analyzed, Excavated, and Presented (Shahina Farid, Field Director):

In addition to the excavation and research programme at Çatalhöyük another aim from the start of the project under Ian Hodder was to present Çatalhöyük as a visitor attraction, so that people could come and appreciate the work being done here. Older tour guide books say there is "nothing to see" at Çatalhöyük. Therefore, an important part of what we are doing here is to make this place more visible and more understandable to visitors of the site. You can see this in the way we interpret the site — we tell "stories", rather than present our discoveries as dry categorizations (i.e. this kind of pot, that kind of obsidian, etc.), so that people understand clearly what was going on 9,000 yrs ago. The experimental house is a good example of how people can be introduced to what we are uncovering before they see the actual excavation trenches, the ancient remains are then more understandable. In terms of Çatalhöyük being considered as a UNESCO World Heritage site, we're lucky that we have such well preserved houses, as opposed to other Neolithic sites that can not be seen from the surface. At Çatalhöyük, the people were very advanced, and some of the things they did still continue today in local communities. Therefore, talking with local people provides us with a lot of knowledge about the site. The community may not realize how much they contribute and how important their local and traditional knowledge is to help archeologists understand the past. With this knowledge, our Research Team can go back to their own data and understand it better. It's this "back and forth" collaboration that is unique about this project... involving diverse groups of people and recognizing that everyone has important things to contribute to what we are doing here. Çatalhöyük is here for the benefit of all kinds of people.

Report on 2010 Şenlik (Sonya Atalay, Community Project Director):

This year, the 4th Annual şenlik included a children's play, choir and folk dancing. Next year, we plan to have theatre plays by children in all the Küçükköy classrooms. These will be filmed and put on a DVD to be used as a teaching tool about Çatalhöyük in Turkey and in the U.S. We are also helping the school write a grant that will allow the children and their teachers to perform these plays in Europe. Küçükköy was the host village, and Abditoğlu was invited as a guest. About 500-600 people came. Next year, we plan to invite Dedemoğlu. There was a saz band, site tours, a slideshow about Çatalhöyük, along with food and drinks. *Most importantly,* the point of the şenlik is to prepare the village for caretaking of the site, tourism and economic development after the archeologists complete their research 7 years from now. Through the şenlik and other community projects, the people of Küçükköy and surrounding villages have an opportunity to greatly benefit from the rich history of Çatalhöyük.

Figure 141. Front and Back of the Catalhoyuk Community Newsletter (English version).

talking with his wife in the comic. He understood that the photo would be “comic-ified” and so was very upset when he saw an actual photo used instead. He was upset because everyone would recognize it was him in the photo. He didn’t like this idea, worrying about what people would think – a typical concern in the village. We explained that this was only a draft and that we were asking for his input. But there was a still a great deal of discomfort and loud voices and words directed at myself and Sema on this issue –and accusation that we had deceived him by saying that the photos would be comic-ified. We were happy to remove the photo, but that was not the issue. The issue was that this community member did not want his photo (more accurately, the photo of his wife) to be printed in this comic. I believe this is again related to the tensions discussed above in relation to local men asserting control over the women in the community. And, in this case, this individual was also concerned about himself being viewed publicly that was disturbing to him. Figures 142 illustrate the finished comic – the image involved in this incident was, of course, removed before printing and distribution of the comic.

Iphone App

The Iphone app is a project that was conceived by Ted Mendoza and he was the sole person working on this project during the 2010 field season. Ted’s company, Gengee, has been working to develop iphone apps related to energy monitoring and other green building concepts.

Ted’s Çatalhöyük iphone project involved developing a Çatalhöyük site tour iphone app. As currently envisioned, it would be available for site visitors (perhaps for a small fee) in English and Turkish to start out (with plans to later expand to other languages). It would not replace the current audio tour (although that audio tour is now not in use), but could be offered as another option for visitors who wish to have the application and keep it with them to share with others after their visit to the site is over. It could also be used by people who want to learn about the site without visiting (as a "virtual" tour).

Proceeds generated by sale of the app on the Itunes store (likely $1.99) would first be used to cover costs of developing the app, then, after covering development costs, would go into a Küçükköy educational development fund (set up to support education in the local community - or another project that the community wishes to fund).

The app would build on and utilize the written script currently used for the audio tour. It would include photos and video, and perhaps a place where visitors could take their own photos/video and incorporate it into their app. In future seasons Ted plans to work with Stephanie Moser (see Visualisation, this report), and her team to ensure that the look of the app is congruent with the other public materials they are developing.

The idea came about after a recent visit to Cahokia Mound site in St. Louis, MO, where you can use an ipod to take a guided tour of the site. That idea inspired me to consider how new technology could be utilized for heritage tourism at Çatalhöyük. The idea to develop an iphone app for archaeological tours soon followed. It currently doesn’t seem to be much on the market related to archaeology tours, and certainly nothing for Çatalhöyük. The closest thing is museum tours apps (which Ted has already begun to research for best features/layout/design etc.).

I was particularly excited to find that iphones now hold a large portion of the Turkish cell phone market. The hope is that this could be a very useful and well-utilized app, both by Turkish visitors and those from abroad.

We look forward to further developing these projects in the year to come and during the 2011 field season.


ÇATALHÖYÜK after the festival ...
WOW, WHAT A GREAT FESTIVAL THIS YEAR, EH RAHIME?
I ESPECIALLY LIKE THE PLAY ABOUT ÇATALHÖYÜK. Y'KNOW, THEY SHOULD DO A TOUR IN ALL THE VILLAGES!
.... ÇATALHÖYÜK A WORLD HERITAGE SITE?
WORLD HERITAGE? WHAT'S THAT???
.... HOW EXCITING!
HEY MUSTAFA, REMEMBER GOREME LAST SUMMER?
THAT'S WHAT I HEARD. CAPPADOCIA IS BEAUTIFUL. THERE WAS LOTS TO DO, AND LOTS OF TOURISTS TOO!
YEAH, DAD SAID IT WAS A WORLD HERITAGE SITE... IS ÇATALHÖYÜK GOING TO BE ONE TOO?
LET'S LOOK ON THE COMPUTER AND LEARN MORE ABOUT WORLD HERITAGE SITES!
LOOK AT HOW MUCH INFO THERE IS ON WORLD HERITAGE SITES!
Google Türkiye
world heritage
Google'da Ara
Kendimi Şanslı Hissediyorum
..... NATURAL AND CULTURAL SIGNIFICANCE .....
..... COMMON IMPORTANCE FOR ALL HUMANITY .....
UNESCO WORLD HERITAGE SITES
..... "UNESCO" STANDS FOR UNITED NATIONS EDUCATIONAL, SCIENTIFIC, AND CULTURAL ORGANIZATION .....
..... EST. 16 NOVEMBER 1945 .....
..... APPLICATION IS BY THE TURKISH MINISTRY OF CULTURE AND TOURISM .....
..... APPLYING FOR WORLD HERITAGE TAKES YEARS .....
890 SITES AROUND THE WORLD
9 SITES IN TURKEY, INCLUDING:
NEMRUT DAG
PAMUKKALE
GOREME

Figure 142. Front and Back of the Çatalhöyük Comic (English version) focused on application for the World Heritage sites list.

Community Education Research - Veysel Apaydin (University College London)

The presentation of the Past: pitfalls and potentials - An analysis of the approaches to the past in Turkey. Education, Local community and the Political Manipulation of Archaeology via the Turkish National Curriculum.

Community Research projects have been held for over 7 years at Çatalhöyük (I have also been part of it for some years). These included: community meetings, education programs for children and some other social activities for adults as well about the site. In contrast to these, as part of my PhD, I have tried to find out what is the most effective community education system. In order to do this; I have researched community research programs that have been done, undertaken interviews and discussion with every part of the local community.

In the 2010 field season I carried out a community archaeology research project. During the fieldwork I completed several tasks aimed at engaging the local residents living in some villages and towns near Çatalhöyük. Interviews included: Local residents living near Çatalhöyük, school teachers and directors. Additionally, meetings were held at the Cultural Ministry in Ankara, and education programs were analysed at the Museum of Anatolian Civilization and discussed with education specialists. In order to see the relationship and manipulation of archaeology, school curriculums' were analysed and discussed with school directors. Different community education programs were investigated and analysed.

I conducted 20 interviews with local residents near Çatalhöyük (Çumra and Hayiroğlu) and in Ankara. All interviews were organized and appointments were made beforehand, therefore, every single person, who was interviewed, was selected. Qualitative data was designed from interviews to be used in the Quantitative way.

This data has shown that effective community education cannot be considered without contextualizing the work in the social, political, cultural specificities of the society in question. These aspects are: educational background, current national education system, religion, nationalism, collaborations and economy of the local communities (these features has discussed in a paper which will be published soon).