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

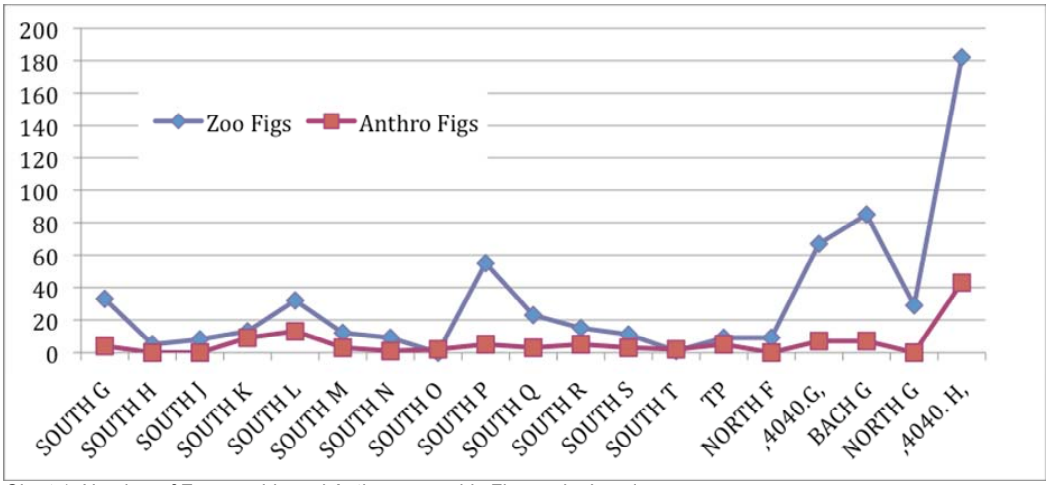

Chart 1. Number of Zoomorphic and Anthropomorphic Figures by Level

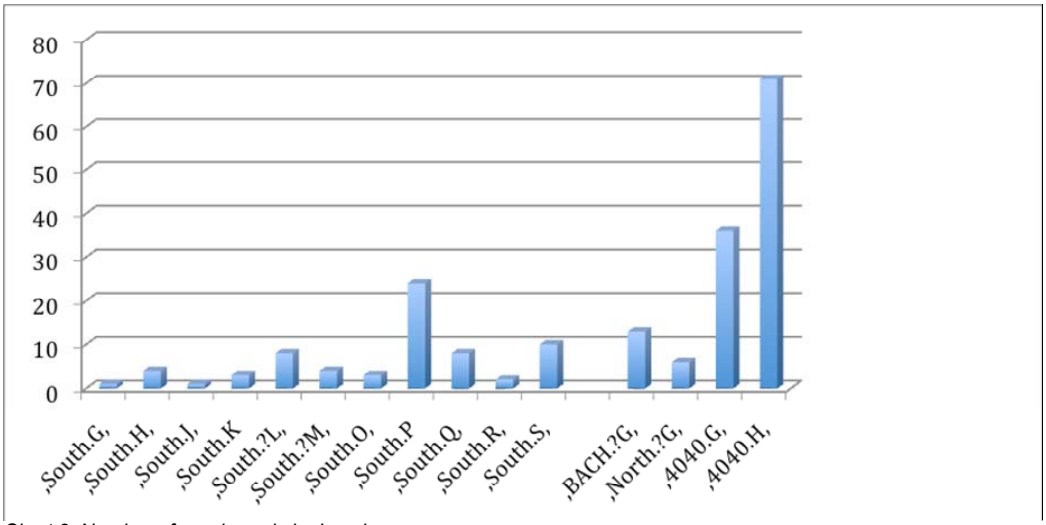

Chart 2. Number of quadrupeds by Level

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.

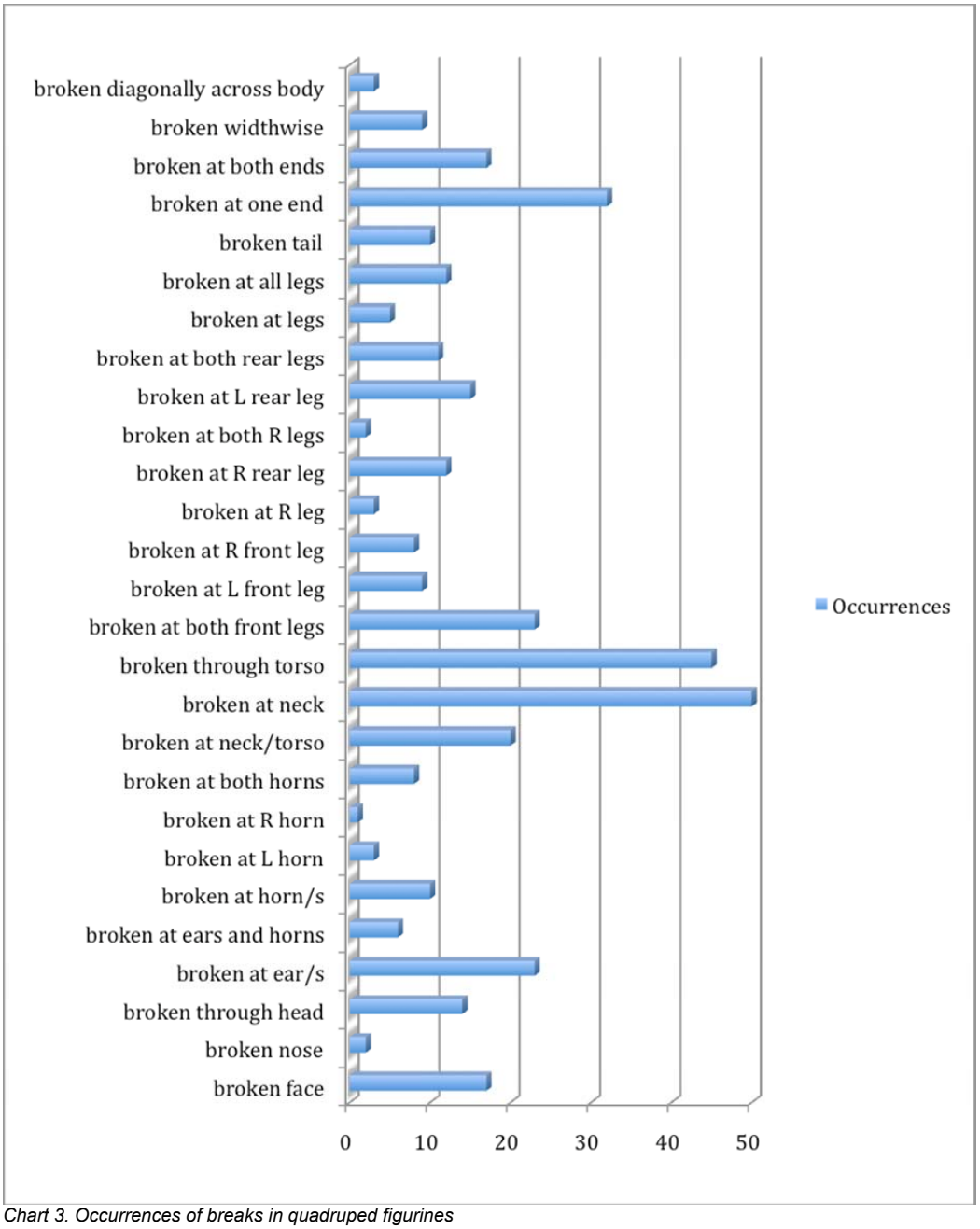

Chart 3. Occurrences of breaks in quadruped figurines

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.

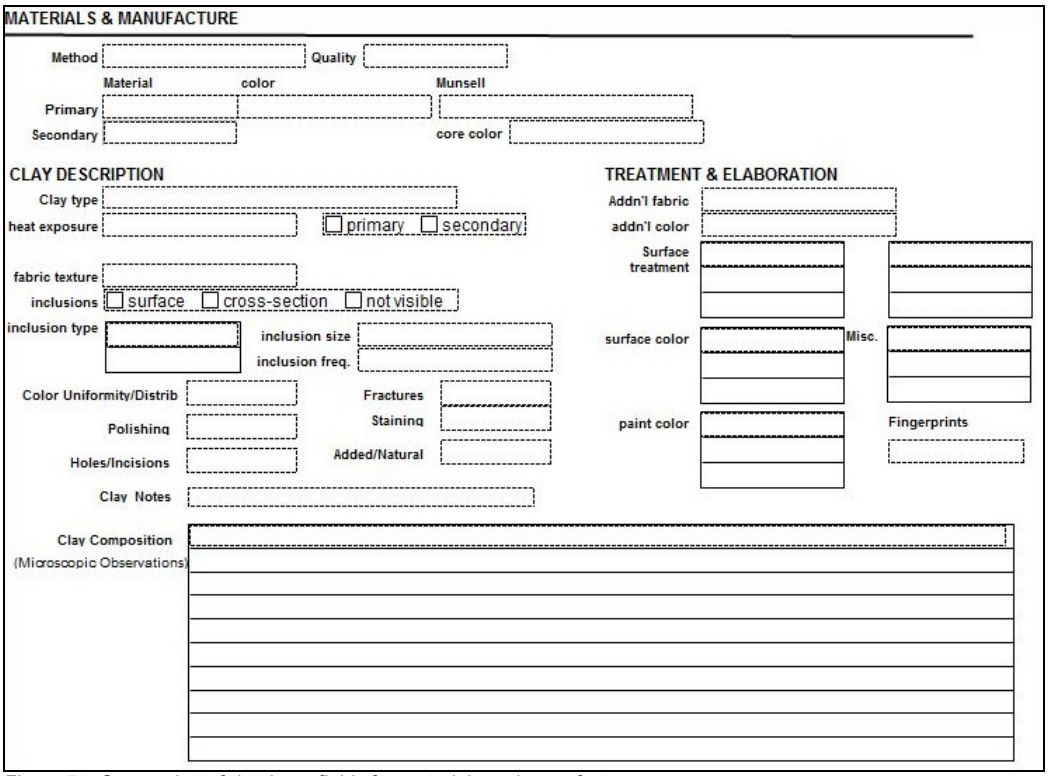

Figure 74. Screenshot of database fields for materials and manufacture.

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.

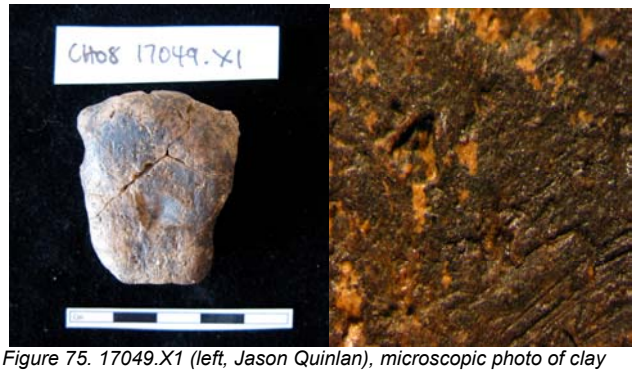

Figure 75. 17049.X1 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

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

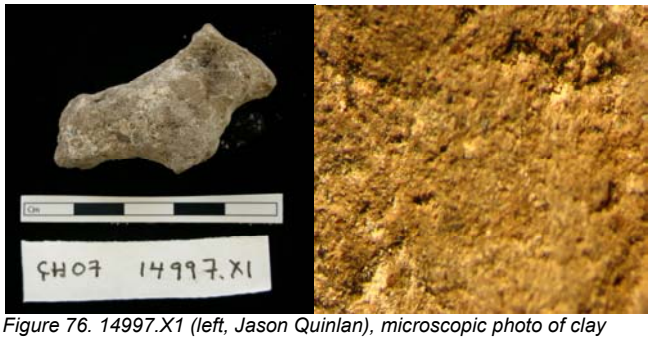

Figure 76. 14997.X1 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

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.

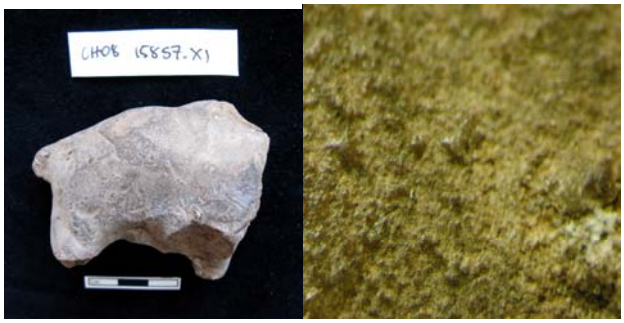

Figure 77 15857.X1 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

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.

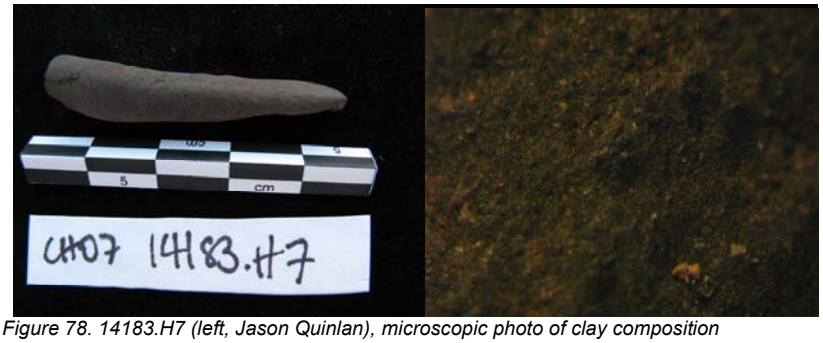

Figure 78. 14183.H7 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss).

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.

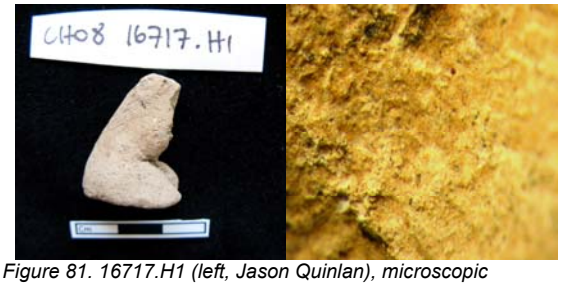

Figure 81. 16717.H1 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss.)

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.

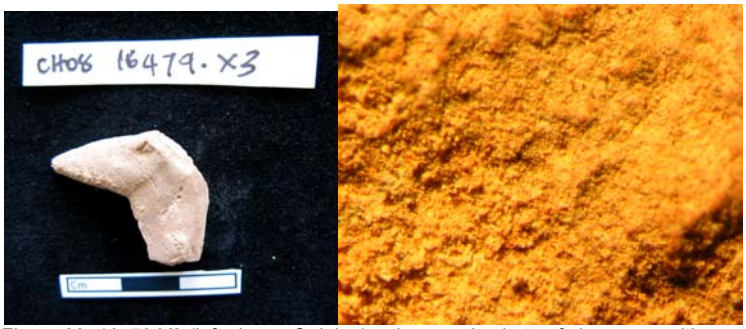

Figure 83. 16479.X3 (left, Jason Quinlan), microscopic photo of clay composition (right, Jeff Aviss). Notice pure silt content.

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.