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# Çatalhöyük: the leopard changes its spots. A summary of recent work

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**Abstract**

This paper summarises and interprets data from the Neolithic site of Çatalhöyük East collected between 2000 and 2008, while at the same time integrating data from earlier and more recent excavation seasons. The paper focuses on evidence for change during the occupation of the site, arguing for an increase in the size and density of occupation into the middle levels associated with symbolic and ritual elaboration within an aggressively egalitarian community. The middle 'classic' levels at Çatalhöyük were associated with increased workload, physical stresses and illness. The pressures were relieved in the upper levels after 6500 BC by shifts to greater mobility, increased economic independence of houses and dispersal of population. This shift in the upper levels may be of relevance to the spread of farming populations into northwestern Anatolia and Europe.

**Özet**

Bu makalede, 2000–2008 yılları arasında Çatalhöyük Neolitik yerleşiminin doğusundan elde edilen veriler özetlenmekte ve yorumlanmakta, aynı zamanda daha önceki ve son yıllardaki kazılardan elde edilen veriler birleştirilerek değerlendirilmektedir. Makalede son derece eşitlikçi bir toplum içinde sembolik ve törensel ayrıntılar ile ilişkili olarak orta tabakalara kadar yerleşimin büyüklüğü ve yoğunluğunda bir artış olduğu ileri sürülerek, Çatalhöyük'ün yerleşim gördüğü süre boyunca ortaya çıkan değişiklikler üzerinde durulmaktadır. Çatalhöyük'te orta 'klasik' tabakalar artan iş yükü, fiziksel baskılar ve hastalıkla ilişkilendirilmiştir. M.Ö. 6500'den sonra üst tabakalarda daha fazla hareketlilik, evlerin artan ekonomik bağımsızlığı ve nüfusun yayılması ile bu baskılar biraz rahatlamıştır. Üst tabakalardaki bu değişim, Kuzeybatı Anadolu'ya ve Avrupa'ya çiftçi nüfusun yayılmasında önemli rol oynamış olabilir.

The objective of this paper is to document and interpret evidence of substantial change during the occupation of Çatalhöyük. In his account of the site, James Mellaart (1967) noted changes during the occupation of the East Mound but his primary focus was on the elaborate buildings found in the middle periods of occupation. Later analyses of the material assemblages excavated by Mellaart began to quantify changes in, for example, ceramic and lithic technologies (Conolly 1996; Last 1996), and B. Düring (2006) identified changes in architecture and in the continuity of buildings in the upper levels. Renewed excavation in the lowest levels of occupation (Hodder 2007a) contributed to the recognition of substantial economic, cultural and social change. Earlier Neolithic occupation at Aşıklı Höyük often seems to have been very stable and slow-changing (Esin, Harmankaya 1999). Results from recent excavations at Çatalhöyük demonstrate the degree to which, at least by the seventh millennium BC in central Anatolia, rates of change had increased. The leopard was a key symbol at Çatalhöyük (Hodder 2006) but it could certainly change its spots with relative rapidity (Mellaart 1967).

This paper argues that detailed hypotheses about Çatalhöyük's history can only be generated by combining diverse sets of data that initially might appear to have little to do with one another. Such assembling produces very broad conclusions about the nature of social organisation at Çatalhöyük, with an important emphasis on change before and after 6500 BC. Around this date it is argued that Çatalhöyük shifted from a population-needy system in which people were crowded into collective social and ritual structures, to a fragmentation and dispersal of population



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across the landscape. In the early levels, ritual ties and sodalities allowed low levels of production by individual houses and a strong focus on sharing and pooling resources; but there were tensions within this system that became intolerable by 6500 BC. The demands on individual domestic productive units to service all the complex ties in which they were enmeshed led to population increase and generic physical stresses and strains. The solution was a greater focus in the upper levels on independent domestic production coupled with the first intimations of specialisation and differentiation between houses. There may too have been an overall shift in modes of religiosity around 6500 BC from an 'imagistic' mode, in which rituals were infrequent but high arousal, to a 'doctrinal' mode, in which rituals were more frequent and everyday.

Focusing on change through time at Çatalhöyük, this paper summarises and interprets data collected between 2000 and 2008 and published in a recent series of volumes (Tringham, Stevanovic 2012; Hodder 2013a; 2013b; 2014a; 2014b), while at the same time integrating data from earlier excavation seasons (Hodder 1996; 2000; 2005a; 2005b; 2005c; 2007a) and more recent excavations (2009–2013; see www.catalhoyuk.com Archive Reports). The account is thus based on the field and laboratory research of a large number of people; the main direct sources are listed in the acknowledgements. I am very grateful to all team members, all of whom would point out that what follows is my own idiosyncratic view of the data and ideas that we have collectively produced. Publications by team members, referred to below, should be consulted in order to evaluate the broad narrative interpretation that is the aim of this article.

Since the start of the project in 1993 and since the start of excavations in 1995 we have worked mainly in the South Area (fig. 1) where the aim has been to understand Mellaart's (1967) stratigraphical sequence. The other main excavation area has been the North or 4040 Area where the aim has been to understand the social geography of the settlement. Smaller-scale excavations have taken place in the TP Area (Marciniak, Czerniak 2007), in the IST Area (Özbaşaran, Duru 2014) and on the West Mound (Gibson, Last 2003; Biehl, Rosenstock 2007; Erdoğu 2007).

In our earlier work between 1993 and 1999, we had used Mellaart's system of levels from 0 to XII. As we worked in the South Area between 2000 and 2008, particularly in the upper levels, it became impossible to fit what we were finding into Mellaart's scheme. In response to these difficulties, in 2008 we introduced a new system of levels based on the stratigraphical relations in our own

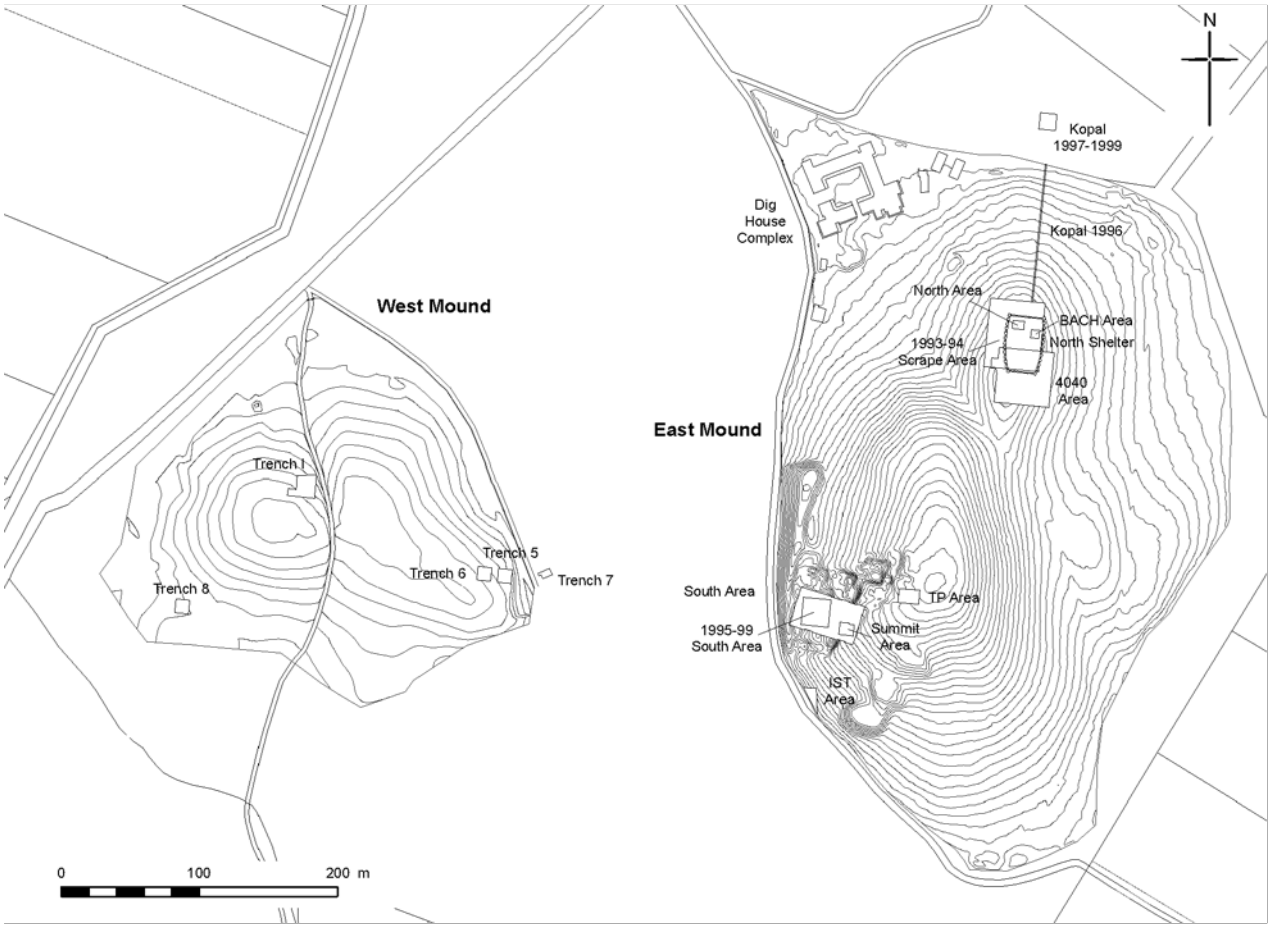



*Fig. 1. Location of excavation areas (Camilla Mazzucato and Çatalhöyük Research Project).*



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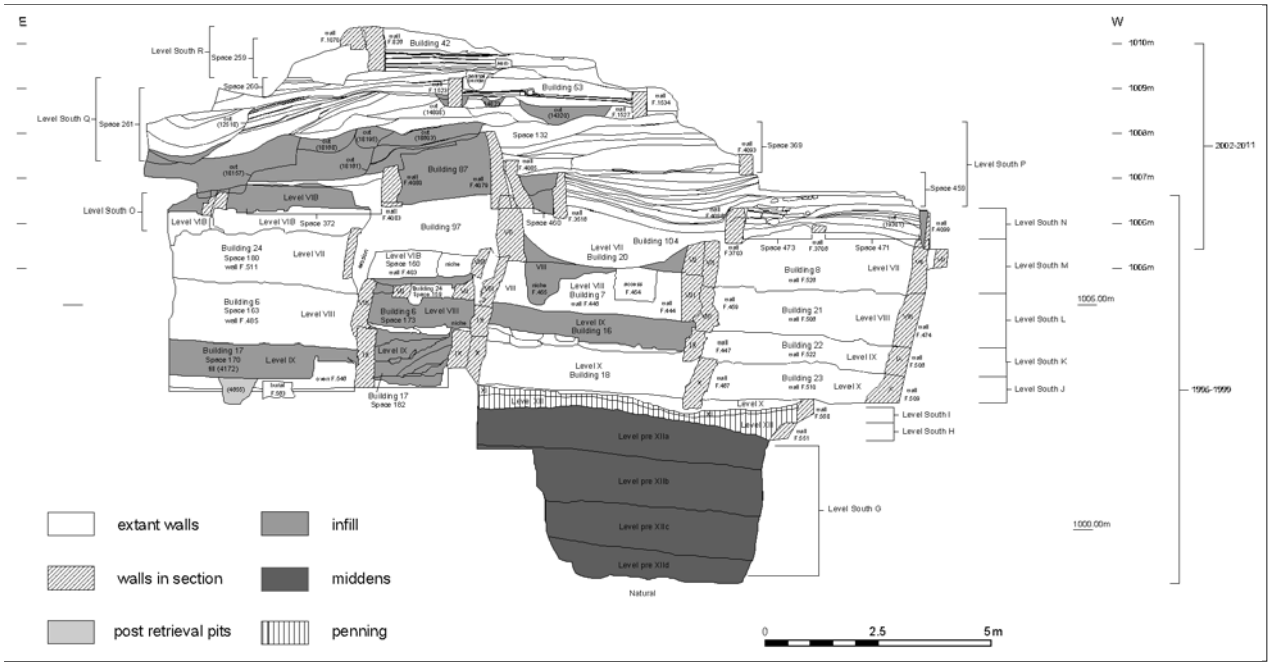



*Fig. 2. Section through the South Area (Shahina Farid and Çatalhöyük Research Project).*

overall Harris Matrix (Farid 2014). Our matrices for the separate South, IST, TP and North Areas were not linked stratigraphically, so we developed separate sequences of levels for each area. In each separate sequence, levels are given letters from lower (nearer A) to higher (nearer Z). Thus Level South G is lower than South H (fig. 2). It is important to note that the letters given to levels in each sequence are not linked to levels in other sequences. Thus, it is not the case that Level South G is equivalent in time to 4040/North G. The current understanding of the relationships between levels in the different sequences, based on radiocarbon, ceramic and chipped stone data, is shown in table 1. The table also shows our current understanding of the links between the new system and the Mellaart levels.

Given the current state of excavations, there are some important constraints on the summary account provided below. In particular, up until 2008 we had excavated few houses and middens in the key middle levels, Mellaart's Levels VI and our Levels South N and O. Table 2 provides the numbers of units excavated in each level in the 4040 and South Areas between 1995 and 2008. This shows the overall emphasis on the upper levels in the South Area in 2000–2008 and on Levels South G to M in 1995–1999. The South N and O lacuna is being filled by current work (B.76, B.79, B.80, B.86, B.97; B = Building). The lack of data from Level South N and O is to some degree filled by the large sample of units excavated from Level 4040 G which is approximately contemporary with Levels South N to O (table 1), although there may also have been differences between contemporary communities in the northern and southern parts of the East Mound.

Another important limitation of our work that needs to be recognised in evaluating the results is that often only parts of buildings have been excavated. Part of our brief at Çatalhöyük has been to place the site on display, and in 2012 the site was placed on the UNESCO World Heritage List. As a result of the focus on presentation and conservation, we have not been able to complete excavation in all buildings; in fact most have been left on display after removal of fill and the uncovering of floors and features such as ovens and hearths. Fewer buildings have been excavated through the floors and into burials and sub-floor features. For example, of 34 buildings excavated between 2000 and 2008, in only 11 have the complete occupation sequences been excavated (Hodder, Farid 2014: table 1.5). Another three buildings were completely excavated in 1995–1999 and by the BACH team (Hodder 2007a; Tringham, Stevanović 2012).

While much time and effort has been expended on reconstructing the climate and environment of Çatalhöyük, there remain uncertainties and debates still to be resolved. M. Charles et al. (2014) have used anthracological, macrobotanical, faunal, clay/material and human skeletal on-site data from the 2000–2008 excavations in order to build an integrated spatial and chronological model of land use. Although there are no regional off-site climatic sequences (for example pollen) that relate directly to the site, a reconstructed regional model sees the climate at the time of occupation as more humid than at present and able to sustain rain-fed agriculture. Earlier reconstructions of the environment around the site envisaged sufficiently wet conditions that agricultural



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| Levels | | Years calibrated BC |
|---|---|---|
| *Mellart* | *South – 4040* | |
| 0, I, II | TP6 | 6400–6000 |
| | South T – 4040 J | |
| | South S – 4040 J | |
| | South R – 4040 I | |
| | South Q – 4040 H | |
| (V) | South P – 4040 H | |
| VIA | South O – 4040 G | 6500–6400 |
| VIB | South N – 4040 G | |
| VII | South M – 4040 F | 6700–6500 |
| VIII | South L – 4040 F | |
| IX | K | 7300–6800 |
| X | J | |
| XI | I | |
| XII | H | |
| Pre XII | G1, G2, G3, G4 | |

*Table 1. The new system of stratigraphical levels and their approximate relations to Mellaart's system of levels.*

fields would have been located 12–13km to the south on drier terraces (Roberts, Rosen 2009). Recent coring work, however, has suggested that Çatalhöyük was situated in an undulating and diverse environment, in a marl hollow rather than on a local rise in topography (Charles et al. 2014). The new reconstruction argues that the local landscape was never completely buried by alluvium deposited by the Çarşamba and May rivers. There would have been areas of exposed marl and marl soils. A fragmented mosaic is envisaged with higher hummocks interspersed with connecting water channels. Within this diverse environment both wetland and dryland resources were exploited and at least some fields could have been near the site. The debate between these two views continues and will be the subject of future research.

| *Levels North/4040* | *Number of units 1995–1999* | *Number of units 2000–2008* |
|---|---|---|
| North ?F | 243 | 3 |
| North ?G | 743 | 86 |
| North G | | 936 |
| Scrape ?G | 13 | 355 |
| North ?H | | 11 |
| North H | | 471 |
| North I | | 224 |
| North J | | 25 |
| *Levels South* | | |
| South G | 101 | 1 |
| South H | 16 | |
| South I | 10 | |
| South J | 328 | |
| South K | 328 | |
| South ?K | 440 | 1 |
| South L | 266 | 29 |
| South ?L | 377 | 25 |
| South ?M | 549 | 160 |
| South ?N | 18 | |
| South O | 14 | 1 |
| South ?P | | 10 |
| South P | | 334 |
| South Q | 14 | 429 |
| South R | | 377 |
| South S | 65 | 493 |
| South ?T | | 33 |
| South T | 34 | 27 |

*Table 2. The numbers of units excavated in each level in the North and South Areas between 1995 and 1999 and between 2000 and 2008.*

**The organisation of the site**

Recent intensive geophysical survey (Strutt 2013) has confirmed earlier surveys suggesting that the whole East Mound, down to 4m below the surface, was covered by a dense agglomeration of buildings, with some areas of midden between them. After excavation began in 1995, an early conclusion was that all the buildings are houses; there is no evidence that some buildings are solely shrines and others domestic houses (Mellaart 1967). This argument for domestic activity is based on the large numbers and wide range of artefacts found in burned houses (non-burned houses had usually been cleaned out very carefully on abandonment), and is more convincingly based on micromorphological studies undertaken by W. Matthews and others, showing micro-traces of a wide range of activities on plaster floors and cycles of soot accumulation on up to 450 layers of plaster washes on internal building walls (Matthews 2005; Matthews et al. 1996; 2013).



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Another important general conclusion is that there is little significant variation between houses. We have identified four types of building: history houses, multiple-burial houses, elaborate houses and other houses. History houses (Hodder, Pels 2010) are defined as having at least three phases of rebuilding and in at least one phase there are large numbers of burials (over 10–15). They are often more elaborate than other houses, but multiple-burial and elaborate houses exist for which we do not have any evidence that they were repeatedly rebuilt. The measure of elaboration is based on the numbers of floor segments, basins, benches, installations (including bucrania and other animal fixtures), pillars and paintings in the main room of a building (Hodder, Pels 2010: 166). Multiple-burial houses have over 10–15 burials. There can be between none and 62 burials in one building. Since the higher figure is more dead than can have been produced by a small house over its lifetime of 60–100 years, it seems highly probable that the dead were buried preferentially in multiple-burial and history houses. We also have evidence of secondary burial (Andrews et al. 2005; Molleson et al. 2005; Boz, Hager 2013).

If some degree of social differentiation existed between houses at Çatalhöyük and if history houses had some special roles other than being foci of burial and symbolic and ritual elaboration, then we might expect there to be correlations between different types of building and the material assemblages associated with them. History houses, elaborate houses, multiple-burial houses and other houses should be correlated with different types of material data; but, in fact, such correlations are hard to find. Many different types of data, including botanical data, obsidian point densities and numerous health and diet markers for those buried beneath the floors of buildings do not show correlations with the measures of architectural elaboration, numbers of burials and longevity of buildings. There are not good correlations with storage and overall building size (Hodder, Pels 2010). C. Mazzucato (2013) has plotted the logged density of finds per building, the number of individuals buried in each building, the area of the buildings, the amounts of obsidian projectile points found and building elaboration indices with the objective of trying to find correlations among these variables. No correlations were observed. C. Nakamura and L. Meskell (2013) found no correlation between the number of burial goods and the size of buildings. Large buildings do not have richer burials. Also, there is no rise in the quantity of burial goods in conjunction with increasing building elaboration (fig. 3); and the average numbers of artefacts per person for history houses and non-history houses are not different. While some differences between house types were found in some markers of disease and workload, the overall impression is of a fierce egalitarianism.

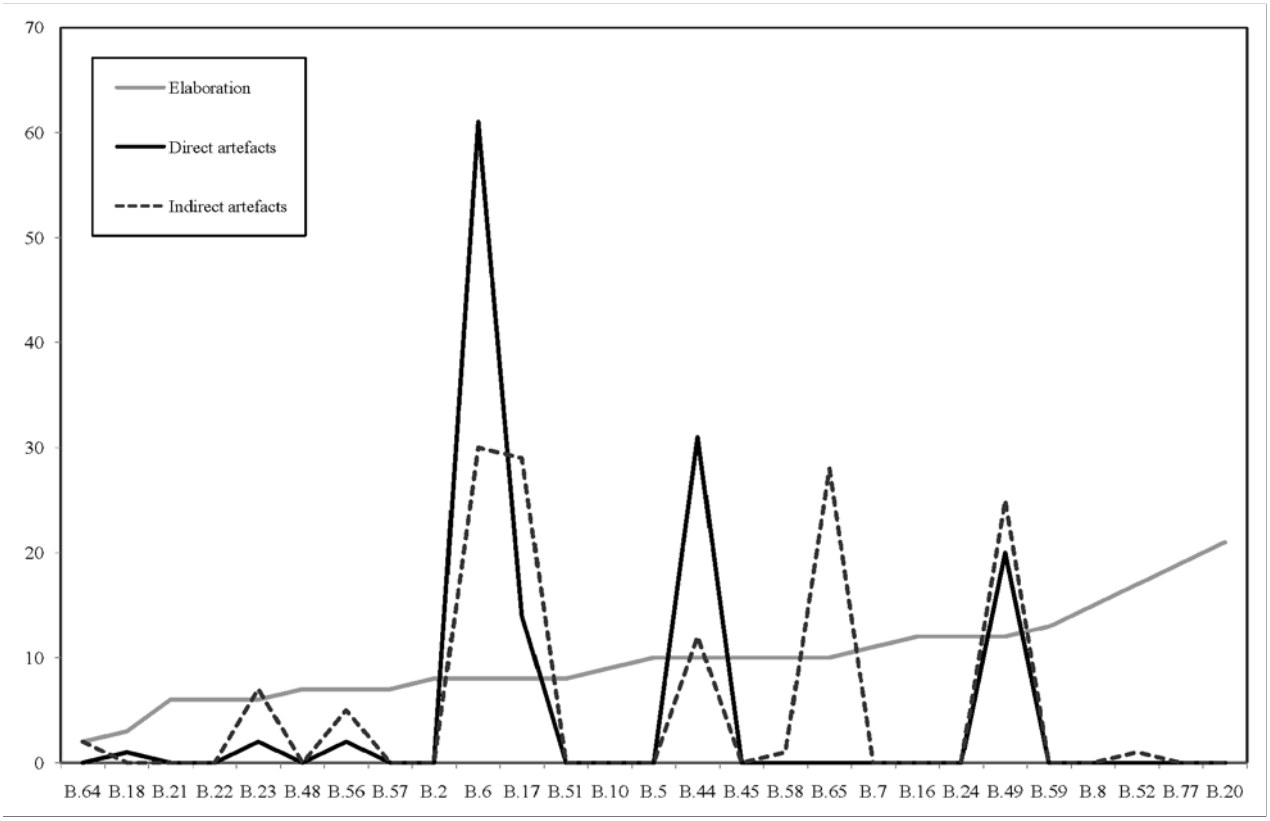



*Fig. 3. The relationship between burial goods and building elaboration (Carolyn Nakamura, Lynn Meskell and Çatalhöyük Research Project).*



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At the peak of its occupation, Çatalhöyük is estimated to have housed between 3,500 and 8,000 people based on a wide range of different types of evidence (Cessford 2005). What held an egalitarian community of such a size together for over 1,000 years? The question is even more intriguing when one notes that in many ways each house was relatively independent. The separation of each house from its neighbour and its repeated rebuilding using the same walls lead to a stratigraphic isolation that has dogged the phasing of the site (Farid 2014). There is evidence for a house-based organisation in many areas of productive activity. While this feature of the site is most clearly seen in its upper levels, it is also characteristic of the site as a whole. Analysis of the bricks used in making houses shows a complex picture of independent and shared use of brick-making resources (Love 2013; Tung 2013). E. Asouti (2013) finds that different buildings concentrated on different types of wood for the major structural upright timbers in the house; B.77 mainly used oak and B.80 mainly juniper. T. Carter and M. Milić (2013) note that in South P there is great variability from house to house in terms of the ratio of obsidian from the two main sources of East Göllü Dağ and Nenezi Dağ. At least in the lower levels of the site, houses had their own obsidian caches kept beneath floors in the southern parts of the buildings. Storage of food in bins in side and main rooms of houses is found in most buildings at Çatalhöyük and was on a relatively small scale (Bogaard et al. 2009; Demirergi et al. 2014). Pottery vessels too, both bowls and hole-mouth jars, were relatively small, suggesting household-based activities rather than large-scale activities or extensive storage (Yalman et al. 2013). Large-scale storage pots only appear on the West Mound. There is much botanical and phytolith evidence that glumed cereals were stored in the husk in bins in houses and were taken out on a daily basis for pounding and grinding in order to make food (Bogaard et al. 2013a; 2013b; Demirergi et al. 2014). The evidence for ground stone (Wright 2013) fits this pattern of processing of cereals and other plant foods in the side rooms and southern parts of main rooms. The later stages of plant food processing occurred indoors. There is remarkable similarity in the range of plants used in each building (Bogaard et al. 2013b), helping to build the case for the separate social equivalency of buildings.

Independent memory- or history-making in sequences of stacked houses has been most clearly seen in the B.65-B.56-B.44-B.10 sequence of houses in the South Area (Regan, Taylor 2014). Distinct sources and types of mud-brick were used for the houses in this sequence, and R. Regan and J. Taylor also note a number of distinct attributes of this late sequence of buildings including the setting of pots in floors at the base of ladders. N. Russell et al. (2013) note a distinctive set of pathologies in sheep bones from B.65 and its associated middens, indicating some form of isolation for the flock used by the building's inhabitants. Similarly, they note a recurring pattern of wolf paws in the B.65-B.56-B.44 sequence. B. Boz and L. Hager (2013) also found, on the basis of matching teeth to mandibles, that bones from a burial in B.65 had been retrieved and redeposited in a grave in the following B.56; a clear case of house-based history-making.

Perhaps the most remarkable evidence for the relative independence and autonomy of individual buildings is provided by isotopic evidence for the diets of those buried beneath buildings. J. Pearson (2013) demonstrates that the diets of humans buried beneath floors of the same house were often similar. The pattern is especially clear in the case of neonates, reflecting the short-term diets of their mothers. Spatial autocorrelation analyses of adult human isotopes indicate much mixing in the 4040 Area, but also a distinct diet associated with the B.59 and B.60 sequence (Mazzucato 2013; for the location of B.59, see fig. 4).

This strong evidence for the relative autonomy of houses at Çatalhöyük brings into sharp focus the question of what held the large egalitarian community together. There is evidence for some social differentiation by age (Pearson, Meskell 2013), and men and women seem to have lived very similar lives based on the evidence of diet, bodily activity and burial practices (Hodder 2006). What were the other social groupings that tied individual houses together?

There is evidence for various scales of grouping beyond the individual house. For example, there is much evidence that individual houses were components of neighbourhoods, sectors and sub-mounds. B. Tung (2013) notes groups of neighbouring buildings with similar brick compositions, either built at the same time or using a similar source or using similar knowledge about how to make bricks. N. Yalman et al. (2013) identify a group of buildings in the South Area that all have pots set into floors in the southeast of the main rooms. Vasić et al. (2014) note that the only two burials of women with decorated boar-tusk collars occurred in South M in adjacent buildings (B.50 and Mellaart's building EVII.12). For other similarities or connections between nearby buildings, see Sadarangani 2014 and Farid 2007.

B. Düring and A. Marciniak (Düring 2005; 2006; Düring, Marciniak 2005) have proposed that the household in the Anatolian Neolithic was not an independent and self-sufficient unit, but rather was part of a larger social association that inhabited clustered neighbourhoods, especially in the early phases of occupation at the site. There is much evidence to support this idea, despite the strong evidence for house autonomy in construction and use. B.55 shares a portion of its wall in the southeastern corner with B.58. The northern walls of B.55 and B.58 were both protected



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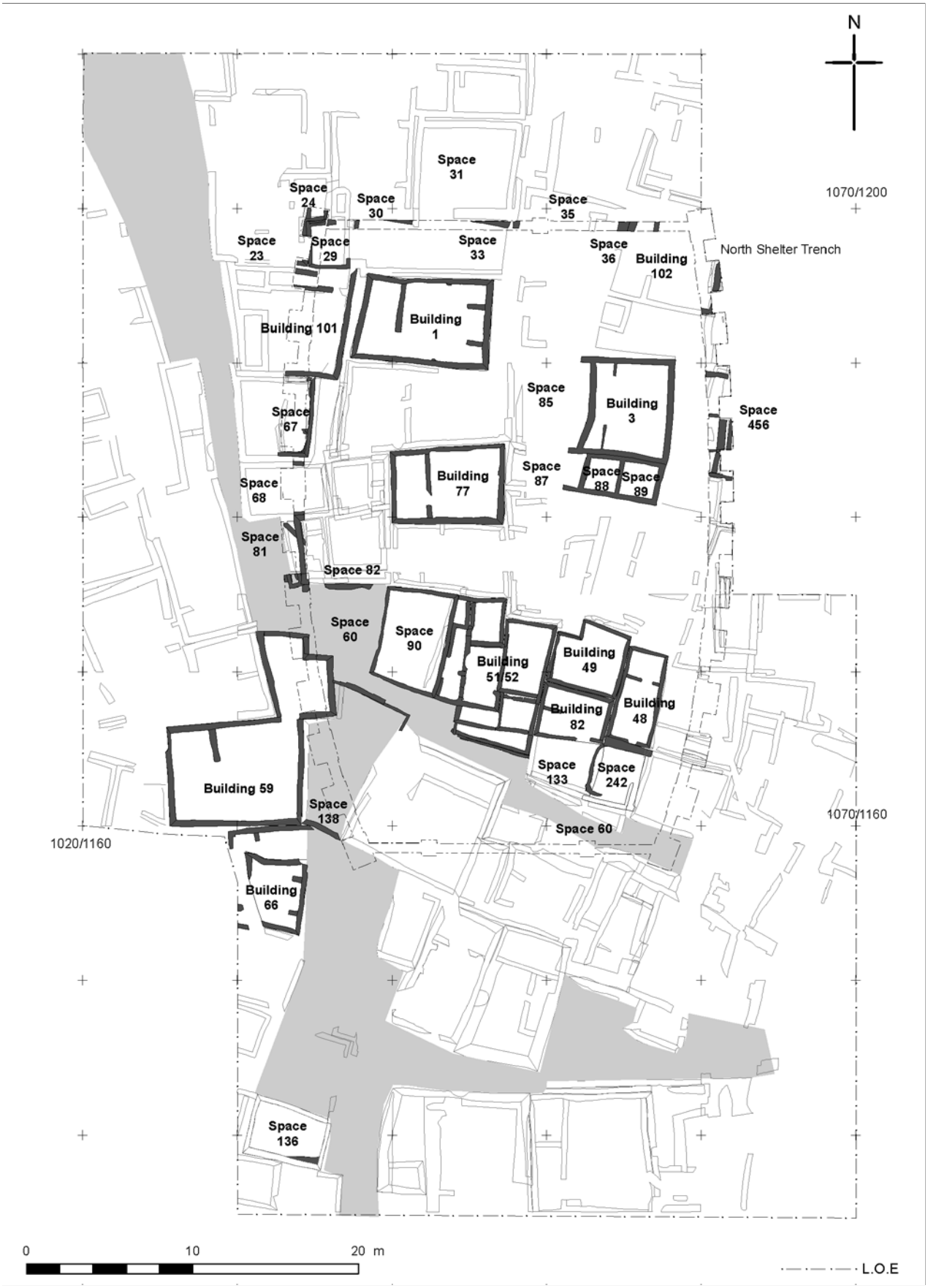



*Fig. 4. Plan of buildings in Level North G in the North or 4040 Area with midden zones indicated (Camilla Mazzucato and Çatalhöyük Research Project).*



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from the adjacent midden by the same retaining wall. The eastern wall of a niche in B.58 was also the western wall of B.67. To the east of B.3 there was a structure in Space 41, and a door (F.633) existed between it and B.3, at least in an early phase of B.3.

There were also larger-scale social groupings. Some of these larger groupings constitute 'sectors' separated by areas of midden and similar in character to those identified at Aşıklı Höyük (Esin, Harmankaya 1999; Özbaşaran 2011). Linear zones of midden separating areas of housing are shown in figure 4. How significant these were in social terms is difficult to assess and we have found no distinctive traits restricted to individual sectors; indeed several of the local neighbourhood traits cut across the sectors. Within the sectors there are also radial divisions formed partly by zones of midden (at certain phases) and partly by the alignments of walls (see fig. 6). There is also evidence of terraces on the steep western slope of the mound in the South Area. These terraces were initially identified by Mellaart as slight changes in floor height.

Despite the evidence for neighbourhood groupings, there is much evidence for links between houses that cross-cut any associations based on proximity, terrace, radial zone or sector. For example, a geometric painting has recently been discovered in B.80 in Level South O (fig. 5). This is so similar to a painting found by Mellaart in the contemporary building VIA.50 that some connection is indicated. And yet the two buildings are at opposite ends of the South Area excavation. Indeed, if we connect buildings with leopard reliefs, bear (splayed figure) reliefs, painted hands, horned benches and so on, we find complex cross-cutting relationships (fig. 6). We also have much evidence for feasting involving groups larger than the individual house (Demirergi et al. 2014). If we add to these connections between buildings the circulation of human body parts and joint burial in multiple-burial and history houses, then it is clear that individuals had numerous relationships they could call upon in times of hardship. This picture is further complicated by evidence regarding the genetic affinities between people buried in houses.

Biodistance studies based on dental morphology of the human remains from the site (Pilloud, Larsen 2011; Hillson et al. 2013) show that biological affinity played only a minor role in interment location, and that there were other more important factors in determining burial location. To some degree those that were buried in houses were 'practical' rather than official biological kin – that is they were people brought together on the basis of a wide range of factors including the need to cooperate and share in joint labour. The people buried in a particular building may have included adoptive, foster or fictive kin held together by memory- and history-making and by the



*Fig. 5. Painting in B.80 (Jason Quinlan and Çatalhöyük Research Project).*



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*Fig. 6. The South Area in Level South ?N showing radial divisions, terraces, numbers of burials in houses and the distributions of similar symbolic features (Ian Hodder and Camilla Mazzucato).*

various types of network described in this paper. It is also possible that those buried in a building did not live within the 'house' of that building: it is possible that burial location was part of the negotiation of social and economic relations between households after the death of one of its members. On the other hand, the evidence for some degree of distinct diet associated with those buried in buildings at least suggests that the group that ate together also was buried together. Often this co-eating, co-burying group was larger than an individual building – thus a social 'house' consisted of more than one building. The important result from the work by M. Pilloud and C. Larsen is that links between those buried in buildings were not simply biological; and correspondingly the complex links between buildings included the separation of children from biological parents at some point soon after birth. It is hoped that this striking conclusion, not explored in other studies of Neolithic sites in the Middle East, can be further evaluated at Çatalhöyük in future aDNA studies.

The evidence for complex overlapping networks shown in figure 6 is derived from the lower period of occupation (up to South O). Presumably this system was very resilient. It meant that individual households did not have to amass great surpluses because they could always depend on others in the varied networks that each could call upon; but maintaining all these connections through mechanisms such as reciprocal feasting and exchange must have been expensive and demanding. We can explore how this dialectical process unfolded by turning to evidence for change through time.

**The lower levels up to 6500 BC**

To start at a beginning: prior to Çatalhöyük, in the ninth and eighth millennia BC, there were small settlements scattered across the Çarşamba alluvial fan that extended out into the flat marl of the Konya plain (Baird 2005; 2007b). Recent excavations by D. Baird at one of these sites, Boncuklu, have provided evidence of small oval



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houses set within extensive midden areas in a wetland environment (Baird 2007a). It is of particular interest that several of the symbolic traits that distinguish Çatalhöyük already existed at Boncuklu, including burial in houses, removal of heads, installations on walls, painting on walls and floors, and separations between 'clean' and oven-related 'dirty' parts of floors. Boncuklu differs from the contemporary and much larger site of Aşıklı Höyük in Cappodocia where elaborate symbolism is not found within domestic houses. Thus a local tradition already existed, and presumably several of these local settlements came together in the foundation of Çatalhöyük at the end of the eighth millennium BC. As people moved into Çatalhöyük, or as the site grew, the surrounding settlements were abandoned (Baird 2005). The movement of populations into 'mega-sites' is also found in the southern Levant in the late eighth and seventh millennia BC (Verhoeven 2006).

As part of a regional trend in the Middle East, houses at Çatalhöyük gradually increased in size through time, and there is more evidence for subdivision into rooms in comparison with Boncuklu and more space for storage and productive activity. One effect of the increased amount of activities in the house may have been a search for more efficient cooking technologies. In the lower levels of the site, cooking in hearths and ovens in houses was achieved with the aid of clay balls (Atalay 2005); but the use of these early 'boilers' gradually decreased as the use of cooking pottery increased. J. Last et al. (2005) show that the introduction of pottery at Çatalhöyük in South I or H was part of a wider first use of vegetable tempered pottery in the Middle East around 7000 cal. BC (Aurenche et al. 2001). This initial use of organic tempered pottery at Çatalhöyük was then followed by a series of changes around South M which involved more use of pottery, more controlled firing and better pastes, mineral temper and thinner walls (Yalman et al. 2013). Last relates the major South M shift to the increased use of pottery in cooking. As S. Atalay (2005) demonstrates, cooking with clay balls is very efficient but it requires a lot of attention from the cook as balls are added and changed during the cooking. Cooking with pottery demands less attention from the cook, thus allowing other tasks to be undertaken. Multi-tasking may have become attractive as the demands on households proliferated through time. The shift also demanded greater connections between people and communities. The earliest pottery at Çatalhöyük made use of local clays, but from South M there was a switch to predominantly non-local clays (Doherty, Tarkan 2013) probably obtained from volcanic regions to the west. So increased or more efficient production at the house level led to the need for links between communities that would have had to be sustained.

In the earliest levels of the site local backswamp clays were used to make bricks that were very long and thin. Walls made of such bricks proved to be very unstable and in Level South M there was a gradual switch to sandy reddy clays (Doherty 2013). These sandier bricks would have provided greater structural support, especially as houses got larger. C. Doherty sees mud-brick changes relating to the increased use of sandy deposits from beneath the marls and from colluvium accumulating on the flanks of the developing tell. A complex and cyclic process underlies the overall slow gradual change in mud-brick composition. The continued act of bringing sand on site (for mud-bricks, foundation fill, floors and/or roof surfacing) starts a process whereby the colluvium becomes sandier which then begins to increase the sand content of the next generation of colluvium-based mud-bricks, and so on. Tung (2013) argues that in the earlier occupation of the site there is more evidence of common uses of brick recipes, but after South K there was more variation between houses in terms of recipes. This notion of some degree of sharing in terms of mud-brick composition in the early levels is also seen in S. Love's (2013) discussion of brick composition.

The social networks in the settlement also involved complex exchanges of food. G. Demirergi et al. (2014) discuss evidence for the sharing of food; and certainly the consumption of wild cattle and other wild animals linked different houses together. Pearson (2013) provides some evidence for distinct diets in individual houses, but there is also evidence for mixing and interaction of foodways. After the earliest levels, Pearson provides evidence for herding of sheep over a wider range of environments – so again the demand for food at the house and community level led to greater inputs of labour (in this case wider grazing patterns). Evidence for more intensive exploitation of sheep is provided by E. Henton's (2013) work on isotopes and teeth wear. Henton shows that South K, L and M have more evidence of early birthing of lambs. The increase in early birthing contrasts with the later birthing found in wild flocks and suggests greater intervention in herd management. The earlier birthing would have allowed flocks to be taken away from the ripening crops (when sheep can do most damage to them). However, there were increased costs for humans in such an intervention because humans may have had to provide fodder for the sheep during times when the sheep needed extra nutrition – during rutting, mating and the final stages of foetal growth.

The complex symbolic systems summarised in figure 6 seem to reach their apogee in Levels South M to O. This is when there are more installations and reliefs in houses and when the most famous 'classic' Çatalhöyük buildings occur. N. Russell and S. Meece (2005) provide clear evidence of an increase in animal-part installations and



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special deposits in houses in the lower levels, peaking in Level VI/South N/O with a sharp fall in the upper levels. This peak of symbolic elaboration is also the time when most burials occur beneath the floors of houses (Cessford 2005), and in current data burials are most common in the middle levels North G, South M and Q (Boz, Hager 2013). Nakamura and Meskell (2013) show that it is in South L to M and North G that the number and variety of burial artefacts reach their apogee.

There is also some evidence to suggest that the population gradually rose until Levels South M, N and O. We know very little of the extent of the earliest occupation of the site, but excavations in the South Area have found no buildings in the lowest levels and the midden deposits discovered may have been towards the edge of the site. By Level South J this South Area was more densely populated and the density of houses increased into Level South N. As the population increased in the middle levels, the demands of such a system must have been high. S. Hillson et al. (2013) identify clear evidence for higher levels of fertility in South M and North G. The servicing of all the complex multi-layered ties between houses would have caused the strains and stresses we see in the skeletal evidence. The prevalence of osteoperiostitis among adult individuals is at its peak in South M to O and declines dramatically in the upper levels. This evidence suggests heightened conditions of non-specific stress, especially during the peak population (Hillson et al. 2013). Workload too seems to have been at its height in South M to O. Hillson et al. show that the prevalence of osteoarthritis decreases in the later levels relative to South M to O across all three age categories, although the results are only significant for older adults. This suggests that, at least for older adults, workload was highest during the middle levels and reduced in the later phases of occupation. Evidence of accidental skeletal trauma also suggests a rather more accident-prone population in South M to O, perhaps linked to the increased workload.

We thus witness in the lower levels of Çatalhöyük (up to South O or the end of Mellaart's Level VI) a tension between the predominantly collective and egalitarian nature of society and the productive capacity of independent houses. The clustered community structure that is so distinctive at the site (as well as elsewhere in central Anatolia such as at Can Hasan III and Aşıklı Höyük) provided a social network for individual houses that could be called upon. The dependence on community allowed individual production and storage to be low-scale. But provisioning these community relations became increasingly demanding. The provisioning included food sharing, feasting and rituals focused on wild animals and on the circulation of human body parts. One way to relieve pressures on productive units would have been to increase fertility and population, and we have seen evidence that this occurred. House production had to become more efficient, and the herding of sheep became more intensive at the same time as increased investment in increasingly elaborate rituals and symbolic activity. The more that productive units had social and ritual ties, the more were they buffered against hardship and loss; but the increased numbers of ties demanded more provisioning, harder work and thus demands for more people and their labour. The pressure of this dialectic between house-based production and community dependence led to increased population, increased workload, physical stresses and illness. A solution had to be found.

**The later occupation from South P to South T**

Around South O and P an alternative solution emerged. History houses invested less in ritual ties within and between clustered neighbourhoods and focused more on independent production and the build-up of their own surpluses. The increased focus on domestic production led to heavier investment in sheep herding and in the adoption of domestic cattle. There was greater mobility and use of the landscape for a wider range of resources. Personhood became less based on membership of the individual house within its larger history-house group and on membership of cross-cutting ritual communities; rather, it became more associated with individual ties of exchange. Because the focus was more on individual house production, the dependence on large cohesive populations to provide a safety net declined: population decreased and dispersed. Health improved and the stresses and strains declined.

However, this new system had its own dialectic forces. The more that houses increased productive activity and got bigger, the more they needed durable wood to hold up the roofs, and so the inhabitants shifted from oak to juniper (Asouti 2005; 2013); but juniper proved more difficult and arduous to work, more difficult to split into straight sections – putting yet further pressure on the household. As the inhabitants came to depend on domestic cattle, they found it necessary to lop elms in order to provide elm fodder. More types of obsidian tools and greater lengths of cutting edge were needed, and so the inhabitants had to invest in new, highly-skilled technologies (Carter, Milić 2013). We will see other examples below. The increasing demands on the house were relieved by some degree of specialisation and increasing social differentiation. The emphasis on egalitarian relations continued throughout the occupation of the site, but as the closely-knit ties weakened within the community, houses had to depend more on their own production and on relations of dependence with others based on exchanges of labour and goods. Specialisation and differentiation increased but they made their own demands on the productive system.



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There is consistent evidence for a decrease and dispersal of population in the upper levels of the site (from South P onwards). In the South Area, Mellaart's Levels 0–III occur at the top of the mound, with earlier levels further down the slope until Level VII (South M) is found around the skirt of the mound. In the South Area there is no indication that any construction took place over the top of B.42, and Mellaart (1967) suggested that the settlement may have receded during levels IV, III and II. In the northern area, 4040 F is earlier than and around the edges of 4040 G. Level 4040 H, however, appears more localised above 4040 F. Erosion on the top of the mound may have played a part here but we do not see 4040 H yet on the northern slope of the northern eminence. Levels 4040 I and J are also localised in the southern part of the excavated eminence area. All this suggests a contraction in the upper levels (Farid 2014).

Evidence for continued increased activity and production in houses is seen in the increase in average house size in the upper levels. Some buildings became larger and more complex with more rooms and spaces. B.67 in 4040 H consisted of a complex of seven spaces. At what appears to be the peak of its function, B.52 also comprised seven spaces, five of which were internal and two external. B.52 is dated to the boundary between 4040 G and H. The mean size of buildings gradually increased through time and this is especially true if the Mellaart data are included.

As buildings grew bigger and multi-roomed, they also increasingly made use of adjacent open areas. There seems to be a pattern of increased encroachment onto adjacent midden areas in the North Area, especially onto the Space 60 midden. Similarly, outside ovens, hearths and yards increasingly appeared in the South Area from P onwards. Overall, we have found more fire-spots in midden and open areas in the upper levels. In the upper levels of the site the relationships between houses and middens seem to change. Houses have more midden space around them which they use for a variety of purposes. For example, the building sequence B.83-B.59-B.60 in the 4040 Area starts off when the building is part of a cluster of other buildings, but by the time that B.60 is built it is at least partially surrounded by an area of midden. A very similar process occurs in the South Area where more isolated buildings emerge from South P onwards (for examples, see Hodder 2014a). The IST Area contained B.63 and two other buildings, but it also had a large mud-brick platform south of B.63 and an open area used as a midden (Özbaşaran, Duru 2014). Thus not only did houses get larger, but they also became part of productive complexes that included yards, outside ovens and hearths, and middens on which activities took place.

Fascinating insight into how inside and outside areas were linked has been provided by the archaeobotanical evidence. A. Bogaard et al. (2013a; 2013b; see also Demirergi et al. 2014) demonstrate a very important difference between botanical assemblages associated with food processing inside houses, dominated by cereals, pulses, fruits and nuts, and those associated with external fire-spots, dominated by the dung of sheep and goats that had grazed on small seeded grasses and sedges. The internal deposits are associated strongly with glume bases, indicating that dehusking took place inside houses rather than on middens. Dung use is linked particularly to external spaces, and the types of plant-processing activities that took place in the private spaces of storerooms and main rooms do not occur here. Phytolith evidence (Ryan 2013) supports the pattern of more intensive dung burning outside buildings and more consistent evidence for cereal-processing inside buildings. This suggests a clear private/public distinction which is, however, broken by the outside ovens that emerge in later levels – here glume wheat dehusking and the handling of grain took place together with dung use.

The increased productive capacity of individual houses in the upper levels was intimately linked to the extension of domestic production into the landscape. The faunal remains (Russell et al. 2013) show a sharp increase in caprine herding from South P coupled with the adoption of domestic cattle (fig. 7). The combined impact of cattle domestication and increased exploitation of sheep and goat would have transformed the lives of the inhabitants and required shifts in organisation. Russell et al. (2013) suggest tentatively that in the earlier levels sheep may have been kept in pooled herds, but in the later post-South O levels there may have been smaller herds tended by family (or smaller group) shepherds, with less separation by age and sex. This would fit the isotope data (Pearson 2013) that show greater variability among the sheep in the later levels. There is other evidence too to suggest segregated family herds in the later levels: for example, animals associated with B.65 exhibit what appears to be the same systemic pathology.

Isotope work by Pearson (2013) suggests that in the earliest levels (Level South G), diet variability of animals was quite small but that this became broader through time. As herders increasingly moved their separate flocks over more extensive territories around the settlement the animals would have become more likely to encounter isotopically distinct plant communities on which they grazed or browsed. The range in isotope ratios seems broadly to increase over time, which seems to be only partly explained by the contribution of $C_4$ plants. For example, in South S, some sheep demonstrate a diet dominated by $C_4$ plants, while others were exclusive $C_3$ feeders. The overall evidence suggests that sheep were moved over increasingly wider territories. A similar trend is found for cattle; even after domestication in the upper levels the isotopes for cattle show an increasingly wide range.



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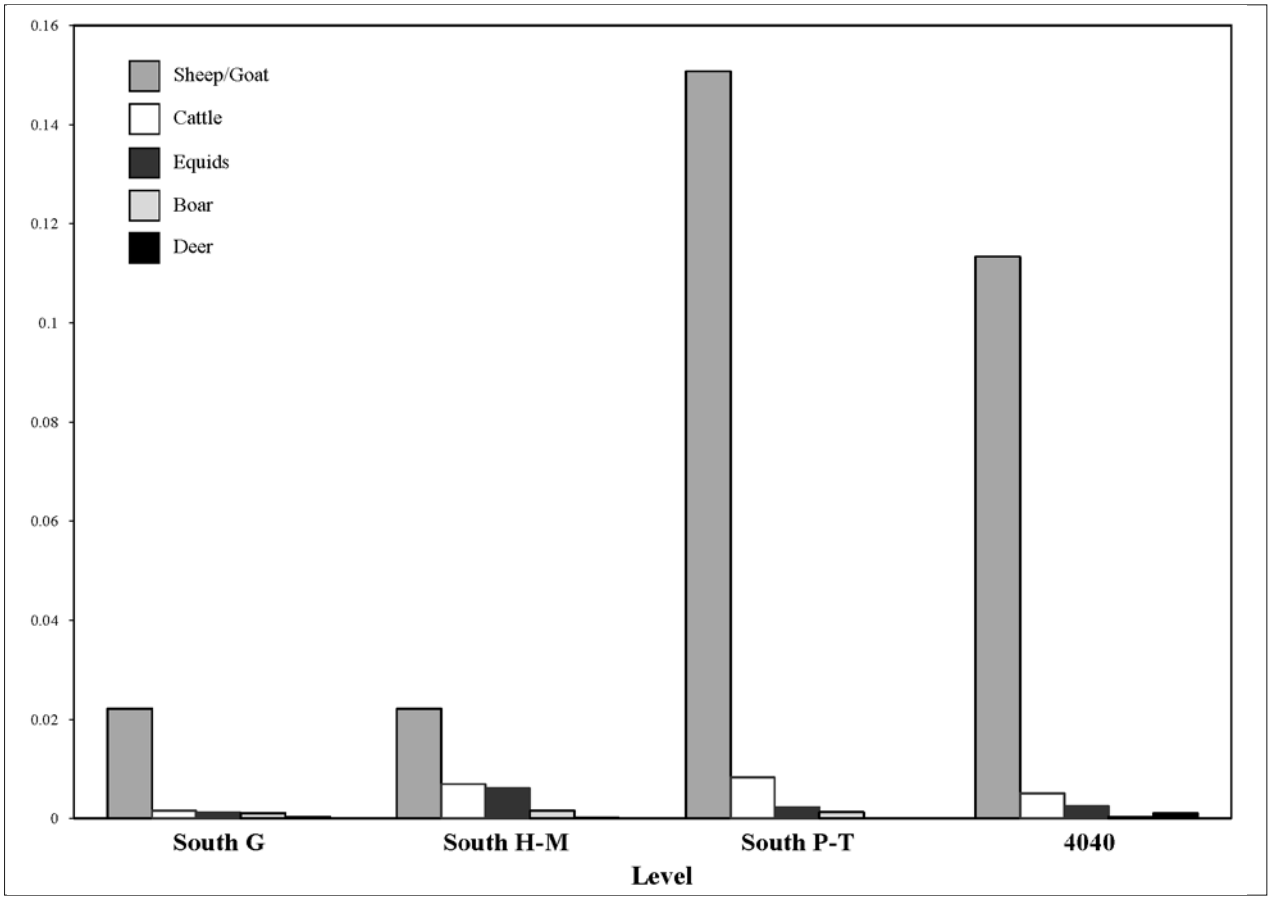



*Fig. 7. Densities in diagnostic zones per litre of the major ungulate taxa in midden deposits through time (Nerissa Russell, Kathy Twiss and Çatalhöyük Research Project).*

Sheep were mainly grazed on the plain rather than in distant upland areas (Bogaard et al. 2013b). For at least part of the year some sheep and domestic cattle were kept close to the site. Sheep body-part representation suggests slaughtering took place near the settlement. Sheep and cattle close to the site would have contributed to local disturbance of environments. Disturbed wet environments would have encouraged the growth of the reed *Phragmites.* These were harvested and brought onto the site for a variety of construction and fuel purposes. One such purpose was to provide temper for mud-brick. Phytolith evidence from burnt mud-brick consists mainly of thin monocot leaves and stems (from wild grasses and sedges), or thin monocot leaves and stems with cereal chaff or *Phragmites* (reed) leaves and stems (Ryan 2013). Other bricks contained no plant impressions. *Phragmites* stems used in bricks were commonly 10mm in width, suggesting consistently-sized, fairly young plants were harvested and possibly managed for this purpose. The chaff present in the mud-bricks is from both free-threshing and glume cereals, predominantly from wheat (*Triticum* sp.). The absence of cereal straw is notable, suggesting that cereal crops were harvested by removing the ears only. In her phytolith research, P. Ryan discovered a massive increase in prevalence of the reed *Phragmites* from South P onwards. This is an invasive species that would have decreased local biodiversity, affecting other plants and all animal groups including insects and birds. Humans would have had to burn or cut back the reeds in order to maintain local habitats, while at the same time they depended on the reeds for roofing, matting, tempering bricks and so on. As already noted, one reason for *Phragmites* expansion could be human and animal (sheep and cattle) disturbance in wetland areas. In addition, the increased scale of quarrying for clays, marls and gravels from South M onwards may have allowed reeds to expand around the site. On the other hand, Asouti (2013) argues that the aggressive expansion of reeds does not seem to have led to the regression of the wet woodland vegetation. The invasive reed stands would most likely have occupied former marshes, abandoned channels and seasonally-wet depressions and quarries rather than inhibiting wet woodland.

The evidence concerning sheep exploitation does not indicate nomadic pastoralism, but we do see increasingly wide and diverse use of the Konya plain, often extending off the alluvial fan onto the marls where $C_4$ plants are



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likely to have been more common. Bogaard et al. (2013a; 2013b) have identified in sheep dung pellets the $C_4$ plants they were eating and their steppic/saline marsh context. It is of interest that Pınarbaşı B, close to the foot of Karadağ, has produced evidence of occupation as a seasonal satellite camp for sheep herders during the last 200 years of the East Mound occupation (Baird 2007b). The use of this site, 30km from Çatalhöyük, may indicate increasingly intensive and extensive use of the landscape. At the more intensive end, Pearson (2013) suggests that South Q shows the first indication of increase in herbivore nitrogen isotope ratios. She suggests that this could be when foddering, linked to the use of domestic cattle and manured crops, started in earnest, again indicating greater entanglements between humans, animals and plants.

The increase in caprine (mainly sheep) herding and cattle management in the upper levels (from South P) would have had implications for many activities on and near the site. The slaughtering of animals would have been increasingly prevalent. New ways had to be found of processing larger numbers of sheep body parts and removing meat. For both sheep- and cow-sized bones the frequency of filleting cuts increases by a factor of four from Levels South H to M to Levels South P to T (Russell et al. 2013). Meanwhile, consumption cut marks decrease significantly: by approximately two-thirds in the sheep-sized bones and seven-eighths in the cow-sized bones. The fact that both sheep-sized and cattle-sized bones show the same trends suggests that they were processed and consumed similarly. Russell et al. (2013) suggest that the increase in filleting and the decrease in consumption cuts both indicate that, as time passed, meat was increasingly removed from the bone before cooking: the increase in filleting cuts suggests a preference for cooking boneless meat, while the decrease in consumption cuts suggests either cooking boneless meat or boiling the meat so that it easily falls off the bone. It thus appears that, as time passed, the inhabitants of Çatalhöyük relied increasingly on stewed rather than roasted meat. Pottery residues indicate the use of pottery for processing meat (Pitter et al. 2013). Pottery used for cooking started to increase in South M and the diversity and numbers of cooking ceramics increased into the later levels (Yalman et al. 2013). The final processing of sheep bones for meat, marrow and grease took place inside the house, associated with hearths and cooking pots. The house became an increasingly active location for the processing of sheep and cattle meat and protein. This may be one reason that the sizes of houses gradually increased through time.

The increased investment in domestic sheep and cattle and their meat and fat products would have required increases in the range and types of equipment used. Carter and Milić (2013) suggest that the overall shifts from flake to pressure-flaked blade obsidian industries and from East Göllü Dağ to Nenezi Dağ material were in fact quite gradual, the changes happening over several centuries between South M and P. Why were the changes introduced? What was the advantage of the pressure blade production? One clue is that there is also a far higher proportion of formal 'tools', such as backed and notched blades, plus the reappearance of large scrapers in the upper levels. Specialised tasks such as the carving and incising of figurines are attested, and presumably sharp edges were needed to fillet meat from the bone. In short, tools were needed to do more work, or to work more efficiently, as household tasks multiplied. As P. Sheets and G. Muto (1972) have shown, blade production is a very efficient method for gaining large amounts of long workable edge from a given block of source material.

One solution to productive pressures on the individual house was to specialise more so that not all houses or groups of houses had to do all tasks; and we do see some evidence of incipient specialisation. Some ground-stone production seems associated with more complex buildings (Wright 2013). We see specialised stone-bead production in B.75 in South P (Bains et al. 2013), and there is the possibility of some specialisation in chipped-stone production, for example in the preparation of chert bits for drilling beads (Bains et al. 2013; Carter, Milić 2013). But overall, the amount of specialisation and differentiation remains slight. N. Russell and J. Griffitts (2013) note a number of changes in bone tools through time, including a predominance of abraded points in the later levels. They suggest that the appearance of raw material caches for point manufacture in the later periods indicates incipient, small-scale specialisation in their production. Forming points through abrasion requires somewhat more skill than making a simple point on a snapped long bone, but the main difference is the increased amount of labour invested.

The increased emphasis on caprine herding across a diversity of environments may have been linked to the extension of other forms of resource extraction over wider areas. R. Bains et al. (2013) show that in South G to M a limited range of raw materials was used for stone beads and a limited range of colours; but from South P onwards there is a greater diversity of raw materials and more use of blues and greens. Some of the materials come from greater distances and some are harder and involve greater technological skill to work into beads and greater energy expenditure. There is also a greater variety of types of stone bead in the later levels. Shell beads may show a related pattern with a greater diversity of shell materials being brought from a wider range of locations.

Carter and Milić (2013) demonstrate that the southern Cappadocian sources of East Göllü Dağ and Nenezi Dağ supplied the vast majority of Çatalhöyük's obsidian, with the former dominating in the early levels and the latter in



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the later levels. The material from these two sources, which are adjacent to each other, travelled 130km to the site by direct access and through exchange links. In the later levels material was also obtained from the Lake Van area 650–800km to the east. Carter and Milić argue this evidence is part of a wider picture of an expanded range of raw materials being circulated in the second half of the seventh millennium BC in Anatolia.

In the upper levels both Mellaart's project and the current project have found speleothems in a range of contexts. The Çatalhöyük speleothems consist of stalactites, stalagmites, flow stones and dogtooth spars. A total of 25 speleothem samples has been identified (Erdoğu et al. 2013) from a range of contexts including burial, midden and in clusters (Nakamura 2010), and in some cases made into figurines. Comparison was made with samples from caves in the region around Çatalhöyük using ICP-MS and Rare Earth Element analysis, and dated using Electron Spin Resonance (ESR) and U-series (U-Th) methods. The results show that the Çatalhöyük speleothems are probably derived from caves to the south and east at a distance of about 100km. Among these caves, İncikini is the most noteworthy and likely source.

Given the clear evidence from a variety of sources of more widespread use of the landscape in the upper levels of the site from South P onwards, it is of interest that human skeletal evidence suggests greater human mobility in this period. A femoral midshaft index was used (Larsen et al. 2013) to assess the mobility of individuals, and a general trend from less to more mobility through time was noted for both males and females (although only statistically significant for males). Another study of long-bone cross sections suggests that females show some indication of an increase in mobility through the occupation of the site (Larsen et al. 2013).

This wider use of the landscape was associated with and perhaps facilitated by a shift in social organisation. While many social and ritual practices continued from the lower levels, there was a shift in emphasis. Bucrania installations and reliefs of bears and leopards were less common in the upper levels, but bulls' heads appeared as reliefs on pottery and bulls are shown in paintings. Leopards and bears and wild boar appeared on mobile stamp seals (Türkçan 2013). There seems to be a change from the stable fabric of the house to the mobile elements of material culture. A possibly related shift is seen very clearly in a decreased focus on house continuity. Düring (2005) has noted that there is less continuity of buildings in the upper levels and Cessford (2005) has shown that the use-lives of houses decreased. In her discussion of the phasing of the site, S. Farid (2014) notes that it is from Level VI (South N and O) upwards that the problems in assigning buildings to levels becomes more acute. In the upper levels the steady incremental constructions based on preceding plans declined. The decrease of installations in the upper levels and the decreased continuity of house fabric may suggest a decreasing concern with history-making. It is true that the B.65-B.56-B.44-B.10 sequence has much evidence of continuity and history-making, but many of the building phases in this sequence seem short-lived (Regan, Taylor 2014).

The central hearth in B.47 provides a clue as to the nature of the new forms of social relation that were emerging. Central hearths are found in the late levels of the TP Area and on the West Mound in B.25 (Gibson, Last 2003). Ovens increasingly seem to occur in marginal areas in houses or in external areas. It is as if the central room of the house became more associated with commensalism, display and social exchange. Work by A. Czeszewska (2014) on the positioning of wall paintings in the house notes a possibly parallel process. In the earlier periods of the site the paintings are concentrated on the northern and eastern walls. This is also where burials concentrate (Boz, Hager 2013: 419). We have often noticed specific relationships between burial platforms and geometric paintings above those platforms. This is true of B.1, B.49 and B.77; red paneling was associated with the main burial platform in B.3. But in the upper levels, painting spreads to all walls of houses and expands out of any horizontal paneling. It is also of interest that in the upper levels in the South Area burials are increasingly found extending off the northern and eastern platforms onto non-platform floors (as shown by Boz, Hager 2014: fig. 19.27b). This shift relates to a general change from a clear organisation of house floors into northern 'clean' platforms, associated with burial and painting and often using a white floor plaster, and southern 'dirty' floors, associated with hearth and oven and darker floors. This division has been amply documented for the lower levels (Cross May 2005; Hodder, Cessford 2004). In recent quantitative work, Mazzucato (2013) was unable to identify such a difference between 'clean' and 'dirty' floors in the 2000–2008 excavations that have concentrated more on the upper levels. Overall, it seems clear that the earlier strict divisions in the house between secular (south) and sacred (north) break down in the upper levels and the main rooms of houses come to have a more open character, a trend seen in the large central rooms in the TP Area houses and in B.25 on the West Mound.

The pottery in the levels from South O onwards has a greater variety of forms, bases and lugs (Yalman et al. 2013). A greater diversity of pottery seems to have been needed to differentiate functions, occasions, users and so on, perhaps partly linked to increases in the filleting and boiling of meat in the upper levels (there is also an increase in the array of chipped-stone tools in the upper levels, as shown by Carter, Milić 2013). A greater emphasis on deco-



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ration and display and exchange is suggested by the increased decoration and diversity of pottery. C. Doherty and D. Tarkan (2013) note a general increase in the quality of firing. Stone vessels too were dragooned into the new emphasis on exchange round the hearth and social display. Andesite trays became more common in the TP Area and on the West Mound where they also became footed (Wright 2013).

There is other evidence that the community was increasingly less dependent on cohesive ritual ties and more focused on exchanges between independent productive units. In the upper levels, the amounts of domestic sheep and goat remains increased in both daily and special consumption contexts. This is a shift from earlier periods in which domestic sheep and goat were mainly used in daily consumption and there was a preference for wild bulls to be used in special consumption. While the numbers of cattle stayed relatively constant into the upper levels, the use of wild animals was diluted by the introduction of domestic cattle. The dependence on wild cattle therefore decreased. While cattle (and perhaps still especially bulls) continued to be used in special deposits in the upper levels, the degree of fragmentation of cattle bones in middens increased post-South P, suggesting that cattle were also increasingly involved in daily consumption as well. So, again, some of the sacred/secular distinctions were breaking down.

It is possible that the greater independence of and size of some house units in the upper levels was linked to the intensification of sheep production and the adoption of domestic cattle, late as that may have been (Arbuckle 2013). The presence of a large amount of meat (and milk) on the hoof may have allowed a slight shift from the collective pooling of resources identified in the lower levels. Some evidence for the separate grazing of sheep flocks has been mentioned above, and we also begin to see possible signs of accounting. Atalay (2013) demonstrates that mini clay balls are more common in the upper levels, especially the large caches of them. One option is that these balls were kept as blanks to make objects such as small figurines, but Atalay argues that they may have been used as tokens. L. Bennison-Chapman (2013) shows that small geometric clay objects, many perhaps largely used in some token-like way (following Schmandt-Besserat 1996), largely occur in the uppermost levels – from South P and 4040 H onwards.

It can be argued that, in the lower levels at Çatalhöyük, the sense of self was intimately bound up with the material and social fabric of the house (Hodder 2011). In the lower levels there was a strong sense of overall community, and in life and in death the human body was tied to the plastered shapes of the immediate house and the larger history-house group of which it was a member. In the upper levels, however, there is more evidence for distinctive traits associated with individuals. Bains et al. (2013) note that interlocking bone beads are a feature of the later levels, first appearing in South P and becoming numerous only in the post-Level 4040 I Neolithic burials. Tooth beads first appear in South M, but most of the new types begin in South P or later and in the 4040 Area levels. There is a greater range of stone beads in the upper levels. In their discussion of bone tools, Russell and Griffitts (2013) note that abrading the bases of points on distal metapodials produces points that are not only beautiful but distinctive. There is also an increase of incised decoration on point shafts in the later periods. Spoons and spatulas seem to be more common in the upper levels; the function of the spatulas may have been to apply pigments or trace patterns in soft materials. Knucklebones, possibly used in gaming, do not occur before South S and 4040 H.

The designs on the stamp seals that occur increasingly frequently in the upper levels continue those found on walls in the earlier levels, including hands and leopard, bear and wild boar depictions. One possibility is that the stamp seal decoration results from the overall shift from the fabric of the house (and its continuities through time) to the fabric of human relations. Rather than being placed on walls, the motifs are now located on small mobile objects, perhaps transferred to skin, cloth and perhaps stamped on bread (Bogaard et al. 2014). They may have became part of the new emphasis on building relations between independent productive units and between individuals increasingly identified with distinctive beads and bodily decoration.

The account above integrates the various types of change identified in the sequence at Çatalhöyük into one narrative. While many of the details await confirmation and further exploration, there are many cases in which different types of data converge to allow a robust interpretation. For example, human skeletal markers, sheep isotope data, sheep tooth wear, bead and ground-stone sourcing all indicate greater mobility in the use of the landscape in the upper levels of the site (Carter 2011).

The narrative has argued that the population of Çatalhöyük shifted from a population-needy system in which people were crowded into collective social and ritual structures, to a fragmentation and dispersal of population across the landscape. In the early levels, ritual ties and sodalities allowed low levels of production by individual houses and a strong focus on sharing and pooling resources; but there were tensions within this system that became intolerable in South M to O. The demands on individual domestic productive units to service all the complex ties in which they were enmeshed led to population increase and generic physical stresses and strains. The solution was a greater focus in the upper levels on independent domestic produc-



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tion coupled with the first intimations of specialisation and differentiation between houses. There was less focus on continuity in houses and groups of houses (based on history houses) and more focus on exchanges of food, hospitality and goods between houses. In the early levels too, cross-cutting interactions and sodalities (Mills 2014) tied the community together, but in the upper levels the nature of these interactions changed; they were based less around sodalities identified by animals such as leopards and bears, and based more on exchanges between independent units which were perhaps starting to own resources such as cattle and sheep and comprised of persons with a greater sense of individual self.

There may too have been an overall shift in modes of religiosity at Çatalhöyük. It has been argued (Hodder 2010; 2014c; Whitehouse, Hodder 2010) that, in the lower levels of the site, rituals, such as those involving treatment of the dead, killing wild animals and placing their body parts in houses, and feasts involving large wild bulls would have been relatively infrequent, but would have involved high arousal, enhancing the strength of the cross-cutting communities involved in them. But after South P, it has been argued, this 'imagistic' mode of religiosity moved in the direction of a more 'doctrinal' mode in which ritual events were more frequent and everyday and incited lower levels of arousal. These latter forms were associated with the expansion of animal symbols into a broader array of media such as pottery and stamp seals and with the wider use of domestic cattle and sheep in feasting events. As noted above, the distinction between sacred and secular became more blurred. The more narrative nature of the teasing and baiting scenes in the art in the upper levels also supports this more doctrinal interpretation. H. Whitehouse et al. (2014) further argue that the main causal factor in this shift away from high arousal, low-frequency rituals seems to have been productive intensity (in particular the more intensive use of domestic sheep and the adoption of domestic cattle and milk), not community size. However, it is also possible that the search for single causes is misplaced. As noted above, the strong egalitarian emphasis on shared resources in the early levels led towards a clustering of population and complex ties of neighbourhood and cross-neighbourhood dependencies. These social and economic ties were partly maintained by imagistic forms of ritual participation; but providing the wild animals and the human body parts to sustain those ties became expensive. The calls on more productive households in times of hardship must have been considerable. More labour and more people were needed. Fertility and population increased up to South N and O leading to stresses and strains that needed resolution. In this scenario, causality is dispersed within the totality of the economic, social and ritual entanglements.

**Conclusion**

The narrative provided above takes the account through 6500 BC and up to 6300 BC, after which there are further changes being studied in the TP Area excavations (Marciniak, Czerniak 2007) and on the West Mound (Gibson, Last 2003; Biehl, Rosenstock 2007; Erdoğu 2007). The main sequence described here is one of a gradual build-up of population density, social and ritual elaboration, associated with increased bodily stress, work and disease. The situation was relieved around 6500 BC by changes in economy, ritual and society that led to dispersal and greater independence of productive units. The focus on collective sharing and non-accumulation by individual units was already under threat at the start of the occupation of Çatalhöyük, when house units were both independent and heavily dependent on complex cross-cutting social networks. The tensions in this system were released by allowing individual house units greater self-sufficiency, probably based around the ownership of cattle and sheep as part of a system of mixed farming in which small-scale labour-intensive cultivation was mixed with and integrated with herding (Bogaard 2004). Whether the change at 6500 BC was sudden or drawn out needs to be substantiated by new excavation of the South N and O levels. These levels are associated with a horizon of burning of individual houses that seems to have been controlled and managed, rather than the result of large-scale violence. Debate remains as to whether the burning could have been accidental (Cessford, Near 2005; Twiss et al. 2008), but, given its restriction in occurrence in the sequence, some link to changing rituals and to the tensions in South N and O and North G seems possible.

The implications and wider relevance of the Çatalhöyük sequence as described in this paper are potentially considerable (Hodder 2007b; Hodder, Meskell 2011). The seventh millennium BC more widely in the Middle East is a time at which the Neolithic village pattern reaches its apogee in a series of mega-sites, similar in size to Çatalhöyük, many of which decline (Verhoeven 2006) leading into the Pottery Neolithic. Is it possible that the narrative at Çatalhöyük can be applied in some form to the wider and overall transformation of the Pre-pottery Neolithic B village system? Did the mega-sites take that system to a point at which the earlier elaborate social and ritual system faced tensions of the types identified at Çatalhöyük that needed resolving?

The mid seventh millennium BC is also the time at which Neolithic farming extends into northwestern Anatolia and into the Balkans (Özdoğan 2010). Increasingly, diverse forms of evidence locate the source of that spread in central Anatolia. For example, recent research on the spread of Indo-European languages argues for an origin in central Turkey (Bouckaert et al. 2012 confirming Renfrew 1987).



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Equally, the study of population genetics often identifies a core for the spread of many gene variants in central Anatolia (King at al. 2008; Haak et al. 2010). The archaeological evidence has long suggested connections across central and northwestern Anatolia and the Balkans in the seventh millennium BC. Is it possible that the impetus for these spreads derived from the build-up of pressures of the type identified at Çatalhöyük, released by the dispersal of more self-sufficient mixed farming units? Was the main contribution of the social and ritual elaboration at sites like Çatalhöyük to fuel the spread of farming populations outside the fertile crescent–central Anatolian core?

But my main purpose in this paper has been to demonstrate that 160 researchers in 32 different specialisms can, working over 21 years, produce a remarkably detailed historical account. Particularly where many different datasets confirm each other (as in the example of a wider use of the landscape and greater mobility in the upper levels), a robust argument can be built. The potential for detailed reconstruction of events in a 1,000-year sequence is considerable. A weakness remains the relative lack of information for parts of the sequence; this is a problem that current excavation aims to address. Perhaps the major remaining weakness is the imprecision in the dating regimes that have so far been used at the site. A new programme of dating based on 600 dates in the South sequence and the use of Bayesian statistics aims to produce greater accuracy (Bayliss et al. 2014). At that point it is hoped that a detailed account might be written of prehistory at Çatalhöyük, allowing many of the causal claims and relationships identified in this paper to be scrutinised more adequately.

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