

## Joint discussion following Eleni Asouti's and Louise Martin's lectures<sup>1</sup>

**Catherine Kuzucuoğlu:** Just a small question. Was there at the beginning of the Holocene wild wheat in Central Anatolia?

**Eleni Asouti:** The whole area is within the distribution of the so-called wild progenitors. But so was southeast Anatolia and so was the northern Levant. I mean, trying to trace the beginnings of agriculture by simply relying on the distributions of wild progenitors is not a very safe approach. For example, recent studies on the genetics of the origins of the first domesticated crops have suggested that the major cereal domesticates, the so-called founder crops, were brought under cultivation once at a specific fixed point, and could not have been brought under cultivation at different time points in different locations. And then you see the same varieties that cannot be genetically related to another wild progenitor spreading elsewhere. Çatalhöyük has minimal quantities of wild cereals, and these are not related to the domesticated varieties that we find.

**Catherine Kuzucuoğlu:** Yes, but my question is that we see wild cereals and not wild wheat in your statistics and data.

**Eleni Asouti:** These were not species abundance values. They were presence values for different plant groups (such as cereals for example). We believe that abundance values in general may be subject to all sorts of taphonomic accidents (in terms of wild wheat species there has been identified *Triticum boeoticum* from charred assemblages believed to represent burnt dung remains).

**Catherine Kuzucuoğlu:** OK, now I come to the thing that is puzzling me if I can explain it. The site of Çatal has lasted quite a long time in flooding conditions. Except at the beginning. When the Çatalhöyük people came they settled, as you said, on land that was not cultivable, and they exploited land that was far away. But let's say that 500 years later there was a change. Still, 10km away cultivable grounds still existed. But now they had also territories that had been constructed by the alluvial fan. This alluvial also represented resource of land. At the same time, this flooding, whether it happened regularly or irregularly, meant some difference for the settling and living conditions. But they did not leave, they stayed there. And maybe they changed, and developed a greater variety of subsistence strategies related to agriculture and exploiting this new agricultural land that was developing around the site. Or they just continued the same pattern as they knew at the beginning, to go out to the drier places for their crops.

**Eleni Asouti:** On the basis of the archaeobotanical data we don't see any real changes, but that may just be a reflection of the fact that they continued exploiting and cultivating the same crops with the same techniques, irrespective of the area. Now, the fuel evidence seems to suggest that as time went by they were exploiting more diverse, dispersed and possibly more

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<sup>1</sup> [EDITORIAL NOTE]: Since the lectures on subsistence by Eleni and Louise were a joint event at the CANeW *Table Ronde*, the ensuing discussion covered both talks, and hence is presented here as a separate chapter. Asouti and Fairbairn reply first, followed by a response from Martin.

distant places as well. If we think that, based on almost all ethnographic case studies, fuel collection really is not a task on its own in any sedentary agrarian society, then that might be an indication that at the same time they were cultivating areas further away. The fact that the crop assemblage stays as it is, does not mean that they could not diversify the production. But on the basis of the archaeobotanical record we cannot really say that this actually did take place. Neil Roberts' data basically seem to suggest that this alluvial backswamp clay is there through the main part of the Neolithic occupation, and we start seeing buried soil horizons towards the end of it, and right before the beginning of the West mound occupation (Chalcolithic). So, I think we should wait and see the fully published results of these investigations before we can actually say that there were different surfaces created at a later date.

**Louise Martin:** We don't know the extent of the settlement in the earliest levels of Çatal – it could be relatively small. And therefore it may not require very large areas to grow for cultivation. There are some sand ridges about 5km away, which we're trying to model at the moment as to how much area you would need to support certain amounts of people. But the question is still valid that the location is clearly not prime for doing cereal agriculture from the start. So why people came there originally maybe has to have other explanations.

**Catherine Kuzucuoğlu:** Another point is that I am very disturbed not to see birds in your alimentation statistics. Because when you know the Konya Plain, when you imagine it with a little bit more water, birds are really important.

**Louise Martin:** The plots that I showed were actually only of those selected taxa which make up the real majority at the site. About 80-90 % of the fauna is represented by those large mammal species, and therefore there were no birds shown on the graphs. Actually there are birds at Çatalhöyük, but they are surprisingly few, considering that it must have been a great location for birds. Nerissa Russell and Kevin McGowan are studying the bird bones at Cornell University, and find a predominance of waterbirds, as you would expect, wetland birds, lots of ducks, lots of migrants, and so forth. So they are there, but in all contexts they are in a much lower representation than you might expect, given the location.

**Catherine Kuzucuoğlu:** Does this mean that there was not a lot of hunting?

**Louise Martin:** In my view, yes. It confirms that they are really primarily reliant on domestic herds. They are obviously hunting other large mammals – cattle and equids, boar and deer. They also appear to be eating birds' eggs quite frequently which would have been a collected resource. But my point is that people at Çatalhöyük do not seem to have been hunting a lot of birds, which we assume were readily available at certain times of year. Hunting of mammals is clearly taking place and may have been fairly important, but it is not the dominant mode of obtaining meat.

**Wendy Matthews:** From Level VIII on the mound of Çatalhöyük there is a major change in the bricks. If you think of the bulk of the mound, this is about 5 to 9 metres. And these are oxidised sediments – some of them are definitely alluvial –, but others are more brown oxidised sediments and may be from raised or dry areas. So this may be a change in the deposition in the region. But in bringing soils onto site for mud bricks, we have to think about who has access to those lands as well. And they vary almost from house to house. And

related to that, palaeoecological coring has been either linked to specific mounds with Douglas's survey, or the very edge of the Çatalhöyük mound. So on the fan there may be a whole range of variation which hasn't been picked up by systematic coring. So we don't really understand the mosaic of the alluvial fan, and how that might change through time, with implications for cereals. And if I may just switch slightly to dung, I took a range of micromorphological samples from Aşıklı Höyük all coming from the earliest levels of the open area. And most of the fuel was in fact dung burnt as fuel. There is also a vestigial layer there of trampled, uncharred dung which may indicate penning within the settlement. So, one of the ways perhaps of looking at animal management before morphological change in the bones may involve, as you said, herding techniques or penning; and certainly the proliferation of the dung as fuel at Aşıklı suggests a very close relationship with this questionable penning area. Brochier at Cafer Höyük and Çayönü also picked up dung. But dung is taphonomically difficult to detect, either because it is uncharred in an animal pen, or if it is burnt the occluded carbon gets burnt off quickly after 300-400°, so you won't pick it up as charred plant materials. In other words, micromorphology would help in that respect. As to animal pens, in fact I found two within the settlement at Çatalhöyük, somewhere in the deep sounding area, and they are larger than depicted on the reconstruction. But from that you identified neonates and young animals. Simultaneously, you cited that Pınarbaşı A was in fact perhaps seasonal because of the young animals. We have them also within the mound at Çatalhöyük. So I wonder if there is additional evidence to suggest seasonality, not just these young animals which may be even penning at an early stage in Pınarbaşı.

**Douglas Baird:** I think this flooding question still needs significant investigation and discussion, particularly in terms of the human scales that we're talking about. I'll go further than Wendy and say not only is there a problem about the number of core samples and the fact that they are related to archaeological sites, but indeed those samples show there is significant micro-topographical variation on the fan during these early phases of alluviation; and really we could be looking at quite a mosaic of landscapes within this flooded environment. And therefore we may not have to look as far away as 10km for areas for farming, in addition to which we need to consider possibilities - obviously very difficult to demonstrate - of land management. People have been farming in the flooded environments of the Konya Plain for millennia successfully, using all sorts of drainage and other related activities. Drainage is the question as much as irrigation. So, there are lots of issues I think still to be investigated.

**Eleni Asouti:** So far we haven't had any evidence for the existence of drainage works around Çatal. The other main point when saying that this is a non-optimal area is precisely its unpredictability, which of course also means that one should definitely not deny the existence of such micro-topographical variability and of mosaics of environments. But the question arises as to why adopt highly opportunistic farming, possibly carrying large risks in terms of crop failure that could have occurred at any point in the event of a flood, and not decide to place the settlement 10km further up in the first place and do away with all these risk-carrying factors. This is not an exclusive argument; it just tries to see the whole thing as it develops in the perspective of an optimal farming strategy. An optimal farming strategy would suggest that these people should avoid the alluvial floodplain itself if they were completely 'agriculturally-minded', and found the settlement in the hills and the terraces 10km away altogether.

**Douglas Baird:** Whether the areas 10km away were any more optimal in these low rainfall areas, poor hill soils and so forth – these aren't good soils 10km away – for the moment remain big questions.

**Eleni Asouti:** But they are still next to the river, which is basically the pattern we see in Aşıklı and Canhasan III.

**Douglas Baird:** Depends on how deep-cut the river was. In terms of the drainage channels and so on, we have millennia of human occupation on the fan and we don't have a drainage or an irrigation channel to show for it before 1900.

**Didier Binder:** As far as I know the wheat assemblage of Aşıklı seems to be very evolved. To compare it to similar situations in the East – did you find close relations with assemblages of wheat further to the east?

**Eleni Asouti:** Well, I can tell you that domesticated wheats exist in Çayönü from early on; wheats were definitely introduced, because for these particular varieties the wild progenitors do not exist in the area. So, yes, I think certainly wheat cultivation could have been introduced in Central Anatolia via the southeast too. And in any case, Aşıklı is much earlier than Çatal. So even if we decide to accommodate the possibility of a different pathway for domesticated plants and animals arriving in Çatal, the truth remains that we see as the main route for the Early Neolithic agriculture of Central Anatolia the southeast.

**Didier Binder:** Louise, can you tell us if there are differences between the three layers of Pınarbaşı A? Do you have differences between the animal assemblages?

**Louise Martin:** Denise Carruthers is studying this, but my impression is that they are fairly similar. But we are really talking such small sample sizes of faunal remains for Pınarbaşı A that I am sure sample size would be interfering with any patterning anyway.

**Peter Kuniholm:** When we talk about the distribution of botanicals it's instructive to look at the quail migration, which goes from the Black Sea all the way down to the Sinai; and when you see the distribution of emmer, einkorn and barley, then that's exactly where the quail go. Whether the quail go there because that's where the stuff was, or because you have fifteen, twenty, thirty billion quail pooping on you land, and you're going to have a crop before you know it -. But it has nothing to do with people whatever.

**Adnan Baysal:** From your data, Louise, it seems that the amount of sheep and goat from Pınarbaşı towards Aşıklı and Çatalhöyük shows a little decrease, while cattle show an increase.

**Louise Martin:** It is true that Çatalhöyük does show more cattle – in some phases it's up to 20 %, but not the 90 % that Dexter Perkins identified. In my view, this has to do with the ecological difference between Çatal and Aşıklı; if you have most likely more cattle available around Çatalhöyük – the receding seasonal floods and the marshes and so forth make really good cattle territory. In Aşıklı you actually have better sheep territory – less standing water and marshy areas, although I don't know the environmental reconstructions for that area particularly well. Cattle was obviously extremely important to the people of Çatalhöyük and it could very much be a factor which drew people to that area, as opposed to these prime cereal growing soils. It would be wonderful for wild animals. So in my view the differences between the sites are probably down to availability or ecological variation.

**Hijlke Buitenhuis:** First of all we are very happy with the Pınarbaşı data – we finally have what seems to be a reflection of the natural fauna in this area, of the hunted fauna. What is clear from the Aşıklı material is that, if it is a managed wild population, it's a very limited population. Although there are quite a lot of species found, 75-85 % of the material is sheep and goat. And that goes for the whole site. They must have invested a lot of time and energy in managing these wild animals and they didn't have time to do actually much else. Actually, in Çatal, immediately when we see the real domesticated sheep, the real herding coming up, the amount of hunted animals, apart from these last groups, is larger. So there is this dichotomy between hunting and management. It's an interesting thing to see that for Aşıklı it's very difficult to speak about hunting there. Actually there is no real hunting – by far the majority is this wild resource management, whatever that may be and however they did it. In relation to Clemens' talk earlier today about the dispersal of the Neolithic cultures, or the Neolithic developments, it was very interesting to see your data on cattle. The conclusion was that in Çatal there are no domestic cattle – or maybe only at the very end. But they don't seem to change very much. The evidence is 100 % clear that by the time we have this dispersal to Northwestern and Western Anatolia, even into Greece, they have domestic cattle. This morning we heard that there are real connections between Central Anatolia and Western Anatolia and between Central Anatolia and Northwest Anatolia, and they arrived there, at least on the basis of the evidence from Ilıpınar, with the full complement of domestic animals. So where did these people get their domestic cattle from?

**Louise Martin:** First, about your first point, why do you get more wild animals at Çatal than at Aşıklı? – It doesn't initially seem to make sense but there are a number of factors, I suppose. One is that there may have been an absence in the sheep and goat at Çatal for particular times of the year if flocks were really being pastured at a distance and then returned to site on some form of seasonal basis. We haven't done our seasonality studies on the sheep remains yet to know whether this is the case, but if it is, it may be that wild animals were hunted at times when domesticates were absent, or few. So, there are all sorts of factors that might be adding to the pattern, as well as the variations in the availability of animals mentioned above. Also, I think there might be slightly more equids in the dryer Konya Plain than there were in Cappadocia. There would be extensive grasslands coming up every summer in the Konya area and I can imagine them being prime for wild grazers. In the middle period of Çatal there are actually quite a lot of equids – more than we expected. Concerning your second point about the lack of domestic cattle at Çatalhöyük, it is worth remembering that the new project hasn't yet analysed the upper layers, and this picture is therefore missing. Therefore we don't really know what's happening to cattle at the top, or the end of the sequence (e.g. Levels I-IV). Our colleague Sheelagh Frame is looking at the fauna from Çatal West. We are really interested to see what happens there, and maybe there are changes. But maybe it's not until people actually started moving animals from their prime environment that they start to change size. And therefore, things could be going on in Çatal which we are not detecting, and it's not until they are actually moved off that they morphologically change.

**Hijlke Buitenhuis:** Actually, for this hunting on the equids, which increases, in the Tepecik-Çiftlik area (which is rather fertile and not very dry) 25 % of the remains which I looked at this year were either equids or deer, so they are there quite a lot. And it seems to be a pattern for this (Early Chalcolithic) period – they have quite a lot of hunted, real hunted wild animals.

## Reply from Eleni Asouti and Andrew Fairbairn

The points raised by the discussants are very interesting, each picking on a different topic of special interest. We believe that many of these topics (e.g., the similarities/differences with Southeast Anatolia) have been sufficiently addressed in the written version of the paper (not everything could be included in the presentation for obvious reasons) and thus need not be repeated in length here. We would like however to pursue further two subjects that attracted most comment during the debate: the presence of the wild progenitors in Central Anatolia, and the question of the location of Çatalhöyük in relation to the associated costs and/or benefits for agricultural production.

Concerning wild cereals, there is evidence for the presence of wild einkorn wheat (*Triticum boeoticum*) in Central Anatolia, both today (Zohary and Hopf 2000) and in the past, at Aşıklı Höyük (Van Zeist and De Roller 1995) and Çatalhöyük (Fairbairn *et al.*, in press). It is however present in tiny quantities and may have derived either from wild stands grazed by animals or from plants growing as weeds in crop fields. There is however no evidence (including genetic, phytogeographical and archaeological) for the presence of wild emmer wheat (*Triticum dicoccoides*) in Central Anatolia at any time. In addition, domesticated emmer wheat is the dominant crop at sites of this period in the region and we assume therefore that it was introduced to the region. Wild barley (*Hordeum spontaneum*) is also absent from the modern vegetation of Central Anatolia. Possible wild-type *Hordeum* rachis segments have been reported from both Aşıklı Höyük and Çatalhöyük, but note that these may have equally derived from cultivated forms (Van Zeist and De Roller 1995:183). Again, one could also argue that the wild type seeds were present as crop contaminants.

The naked wheats are derived from emmer and other tetraploid glume wheats as well as from the hybridisation of tetraploid wheat (*T. dicoccum*) and the grass *Aegilops squarrosa* (making a hexaploid wheat) of which the latter has a distribution well outside Central Anatolia (Zohary and Hopf 2000). Both tetraploid and hexaploid wheats are found in Central Anatolian Neolithic sites (Aşıklı Höyük, Çatalhöyük, Canhasan III and Erbaba). They are definite imports, created under human control and are totally dependent on human action for their survival.

In summary, the only possible wild cereals in Central Anatolia during this period are wild einkorn and wild barley. Neither is well represented in the excavated archaeological sites and neither is found without an association with cultivated cereal crops, thus suggesting that the archaeological finds may have derived from weeds rather than wild stands. Peter Kuniholm suggested that the crop species might have been distributed by migrant birds. This is of course possible and may well account for the spread of wild einkorn in the area. However, any domesticated crops distributed in this way would not have persisted. Domestication prevents the natural dispersal mechanism from working and leaves the grain to be eaten and/or rot on the straw. We believe that dispersal via exchange or population movement is the only credible agent for the spread of cereal crops in Central Anatolia.

Moving on now to the 'big question': was or was not Çatalhöyük ideally located for the purpose of agricultural exploitation?

We agree that the geomorphological evidence, as it stands at present, is inconclusive about certain elements that are of key importance for addressing this question from a sound factual

basis. Much of the criticism levelled against the current geoarchaeological interpretation stems from the presence of a moderate number of sediment cores, whilst in private communications other colleagues have expressed concerns about the ability to detect geomorphologically and with the resolution necessary for this purpose, the frequency of flooding events. Overall, poor organic preservation and the homogenous fine-grained sediments deposited in many areas means that there are few well-defined sedimentary facies preserved that allow distinguishing between different depositional environments and landscape units.

However, the sediment record from around the site does indicate that there were floods and waterlogging (whether annual or at longer intervals). If indeed the inhabitants of Çatalhöyük preferred to cultivate the immediate surroundings of the site (perhaps on small undulations or hummocks raising from the floodplain) one should also then be prepared to recognise the possibility that they followed very opportunistic strategies of land use, by relying on risk-carrying predictions about the availability and accessibility of arable land during each agricultural cycle. At the same time, the wood charcoal evidence suggests that there were certainly drier patches close to the site, as can be surmised by the ubiquity of riverine forest species. However, their high frequencies in the charcoal record throughout the examined sequence also indicate that these woodland patches were probably under low clearance pressure, which would accord with an opportunistic pattern of small-scale, very dispersed arable exploitation. How one could, though, fit such a pattern with the on-site record, suggesting the high dependence of the Neolithic community on cultivated cereals and pulses, seems to be another question in need of a plausible answer (pending of course on the population size estimate one chooses to believe). On the comment of Douglas Baird about the low arable potential of more distant areas, we must note that the hillslope soils are still used today for rainfed cultivation (Driessen and De Meester 1969; field observations at Karadağ 1999) and with the higher rainfall modelled for the period of occupation, these soils would have been certainly much less marginal for agriculture.

Of course the temporal aspect of the whole process should not pass without comment and due consideration. It is entirely likely that later on in the history of the settlement, as the alluvium built up, suitable raised areas became more and more available in the immediate environs of the site. It is possible (in fact almost certain) that the geoarchaeological and the archaeobotanical record lack the resolution necessary to discern such subtle and slow developing changes in both the environmental setting and agricultural production. However, our concern was mainly directed to the beginnings and hence, in a way, the origins of the community residing in Çatalhöyük. And our evidence clearly indicates that agricultural production (however one decides to define it) was central to their subsistence practices. The apparent contrast between this fact and the palaeoenvironmental evidence (so aptly summarised by Catherine Kuzucuoğlu in her questions) is what we tried to address in this paper.

As we stressed during the discussion part, an alternative interpretation positing the arable exploitation of areas further away from the settlement (at a 5km minimum distance for the sand ridges to the south, and 10-12km maximum for the terraces in the area of Çumra) is not an exclusive one. It appears indeed that the site offered some benefits in terms of diverse resource availability (particularly in the prospect of a bad harvest when they could have switched to gathering, game or wildfowl as a risk-buffering strategy). Unfortunately, the

research on cultivation practices (that could furnish some direct evidence on the issue of field location) has been hampered so far by the lack of storage contexts that could provide sound indications on the types of stored crops and their associated weed floras (the latter generally considered as good indicators of field-specific microenvironments). However, both the wood charcoal data and the seed material from dung fuel assemblages do suggest that more distant environments (including both the steppe and the park woodland) were regularly exploited by the Neolithic community. Therefore, if agriculture was practiced *only* in the immediate surroundings of the site, there at once arise some serious interpretive challenges to tackle: how were agricultural activities scheduled in order not to conflict with wood gathering and pastoral production? What would be the implications concerning the division and scheduling of labour for spatially separated activities? Inherent of course in the last question are also issues of population size and the organisation of production. Ethnographic and archaeological evidence worldwide has suggested that 'in most agricultural economies activities that conflict with agricultural production are soon abandoned' (Wenke 1999:275). Our record however does not indicate that any such 'abandonment' took place through most (if not all, for we lack evidence from the latest levels) of the settlement's history.

This is not the place (fortunately) to begin unpacking all the complex issues raised by these questions. However, they are indicative of the range of the subjects involved and certainly preclude the conceptualisation of any answers to the problem of settlement location as the most 'straightforward' or 'logical' ones. Research is ongoing and the level of detail in current and forthcoming analyses guarantees that exciting new results will be produced which can only sharpen further our analytical and interpretive concepts. The present evidence (however inconclusive) when viewed in the context of the regional settlement record (cf. Watkins 1996; Baird, this volume) suggests that Çatalhöyük forms part of a continuum in the settlement history of the Konya Plain. This history in turn seems to have awarded special importance to the habitation of wetland environments and the exploitation of diverse resources for some 1000 years prior to the establishment of Çatalhöyük. We put forward a hypothesis suggesting that the subsistence choices of the Neolithic inhabitants of Çatalhöyük could have formed as a response to parameters that moved beyond the mere availability and accessibility of exploitable resources. Part of this explanation involved the consideration of factors such as group identity and cultural traditions mediating with settlement economy, both admittedly difficult to prove (or disprove for that matter) on the basis of the evidence currently available. Only through further research will it become possible to refute or substantiate our claims.

### Reply from Louise Martin

Many thanks to the discussants for raising such stimulating points. I will attempt to briefly expand on a few of those points here: the degree of hunting at Central Anatolian Neolithic sites, the differences observed between Aşıklı Höyük and Çatalhöyük East, and the question of the diffusion of domesticates from Central Anatolia to Western and Northwestern Anatolia.

The question of the extent to which groups in Central Anatolia practiced hunting during the Neolithic is an interesting one, and not particularly easy to answer at this stage of research.



For Aşıklı, Hijlke forwarded the idea that the labour expended on the early herd management of sheep and goats may have left little time for hunting, although he finds small proportions of wild animals present throughout the Aşıklı sequence. The implication of that idea is that at Çatalhöyük East, where a more developed system of sheep and goat herd management seems to have been in place, more hunting might have been possible. I find it difficult to make a direct link between the extent of hunting activity at sites and their herding systems, and propose that other factors, discussed below, are likely to have created differences in animal procurement between the two sites.

We ought perhaps to bear in mind that the dominance of sheep and goat at Aşıklı reflects only on-site processing and consumption activity, and there remains the possibility that off-site hunting expeditions used small camp sites, where parts of wild animal carcasses, or even complete carcasses, were eaten and deposited. If that were the case, some hunting activity may be 'invisible' at a large site such as Aşıklı. It seems unlikely that there were not smaller 'task' sites surrounding the main settlement, but unless such sites are located and investigated, the focus will inevitably be on the large, highly visible sites and results will remain partial, rather than encompassing a more inclusive 'landscape' view of human resource use.

The same reasoning applies to Çatalhöyük East, where the ecology of species present, plus skeletal part data, strongly suggest that there is hunting activity taking place at some distance from the site, with only selected carcass parts being returned to the settlement (e.g. deer antler). Despite this, as the discussants observed, there is generally a higher proportion of 'wild' fauna on site at Çatalhöyük East than at Aşıklı. This statement needs some qualification because until we have ascertained the exact status of the cattle, it is difficult to determine whether they should be considered 'wild' or 'managed'. Nevertheless, taxonomic patterns differ between the two sites, with higher proportions of cattle and equids at Çatalhöyük. One of the obvious problems in interpreting this difference is that there is both temporal and locational variability between Aşıklı and Çatalhöyük, and it is difficult to speak of trends through time without first considering geographical variation (which is itself difficult when only two sites are being compared). As mentioned in the discussion, there are ecological differences between the eastern and western parts of Central Anatolia which could account for some differences in the availability of animals around each of the sites. In addition, there are clearly social and cultural differences at play, which may have included the choice of animals selected and how they were used. The inhabitants of Çatalhöyük had a strong ritual and symbolic focus on cattle, which is not evident at Aşıklı. Therefore, regardless of animal availability, the hunting and consumption of cattle had a social function, in addition to a purely subsistence-related one. It is thus difficult to give a single explanation to the observed higher proportion of 'wild' animals at Çatal, given the geographical and cultural differences between the two sites.

Turning to the question of Central Anatolia as a location for the westwards and northwestwards diffusion of domestic cattle, this is a complex subject. Firstly, it is too early to state from the current state of faunal analyses in Central Anatolia whether there is evidence for cattle management and domestication or not. If evidence for local domestication does emerge (e.g. from the later levels of Çatalhöyük East, Erbaça or Çatalhöyük West) then it is possible that Central Anatolia served as a dispersal centre for a Neolithic 'package' of domestic animals

(and plants). It should be stressed, however, that unlike sheep and goats, wild cattle have a widespread geographical distribution and *Bos primigenius* existed across the whole of Anatolia and Europe. In theory, therefore, local domestication of wild cattle could have occurred in many locations once the knowledge of breeding was available. To obtain answers to these questions, close examination of local sequences is needed, and evidence of continuity and change in both subsistence data and material culture. Concerning Central Anatolia, patterns will hopefully become clearer with the analyses and publication of data from recently investigated sites.

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