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Did farming arise from a misapplication of social intelligence?

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The origins of farming is the defining event of human history—the one turning point that has resulted in modern humans having a quite different type of lifestyle and cognition to all other animals and past types of humans. With the economic basis provided by farming, human individuals and societies have developed types of material culture that greatly augment powers of memory and computation, extending the human mental capacity far beyond that which the brain alone can provide. Archaeologists have long debated and discussed why people began living in settled communities and became dependent on cultivated plants and animals, which soon evolved into domesticated forms. One of the most intriguing explanations was proposed more than 20 years ago not by an archaeologist but by a psychologist: Nicholas Humphrey suggested that farming arose from the 'misapplication of social intelligence'. I explore this idea in relation to recent discoveries and archaeological interpretations in the Near East, arguing that social intelligence has indeed played a key role in the origin of farming and hence the emergence of the modern world.

Keywords: agriculture; archaeology; farming; human mind; material culture; social intelligence

1. INTRODUCTION

(a) *The cognitive impact of farming*

This contribution concerns the role of sociality and social intelligence in the key development of humankind, that which has made modern humans a particularly intelligent type of primate. This development has nothing to do with *Homo habilis* or handaxes, bipedalism or brain size. It is the origin of farming at, or soon after, 10 000 years ago. It is only with the economic basis that farming provides that writing, mathematics and digital technology could be invented and it is these that effectively define the nature of our cognition today. The brain is important, of course, but it now plays a mere supporting role to a cognitive system that is primarily located in materials entirely outside of the body—books, computers, paintings, digital stores of data and so forth. There are, of course, our capacities for empathy, mind reading and social interaction that no digital computer is ever likely to replace. But I doubt if these today are very different to those of our early human ancestors living several million years ago (Mithen 1996). Indeed, if anything, I suspect they have deteriorated through lack of use as we have become dependent on material items as the source of social information.

To appreciate the significance of farming, compare our cultural achievements over the last 10 000 years with those of the Neanderthals throughout the entire 250 000 years of their existence—remembering that the two species have equivalent sized brains but that the Neanderthals always remained as hunter-gatherers (for a review of Neanderthal anatomy and lifestyles see Stringer & Gamble 1993; Mellars 1996). We have gone from living in small, relatively isolated Neolithic communities to a globalized society, with a scientifically based understanding for the origin of the cosmos and life on Earth, with the works of Shakespeare and Bach, with space probes visiting the stars, nanotechnology and the manipulation of DNA. The Neanderthals became extinct doing much the same as they had been doing throughout the entirety of their existence—hunting, gathering, making stone artefacts, sitting in caves, probably feeling rather cold and hungry—even though they may have had third, fourth and possibly even fifth orders of intentionality (Dunbar 2004).

I do not want to denigrate that Neanderthals. I have no doubt that they lived in socially complex communities; their stone tools were extraordinarily difficult to make and to have survived in the ice age of Europe they must have had a profound understanding of the natural world (Mithen 1996). There is also substantial evidence that they had a sophisticated system of aural communication, which some might wish to describe as language. I have recently proposed that their communication would have been highly musical in character making use of variations in pitch, melody and rhythm (Mithen 2005). They were, I believe, highly emotional and sensitive beings, probably far more so than we are today as our abilities have become compromised by a dependency on material culture.

The fact of the matter is, however, that the Neanderthals appear to have been very constrained in their range of behaviours and showed very limited, if any, signs of a creative intelligence: no visual art; no architecture; no body ornaments. Their world was one of cultural stasis. And be sure that they were not living in some Garden of Eden—if any human community could have benefited from the invention of a spear

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One contribution of 19 to a Dicussion Meeting Issue 'Social intelligence: from brain to culture'.

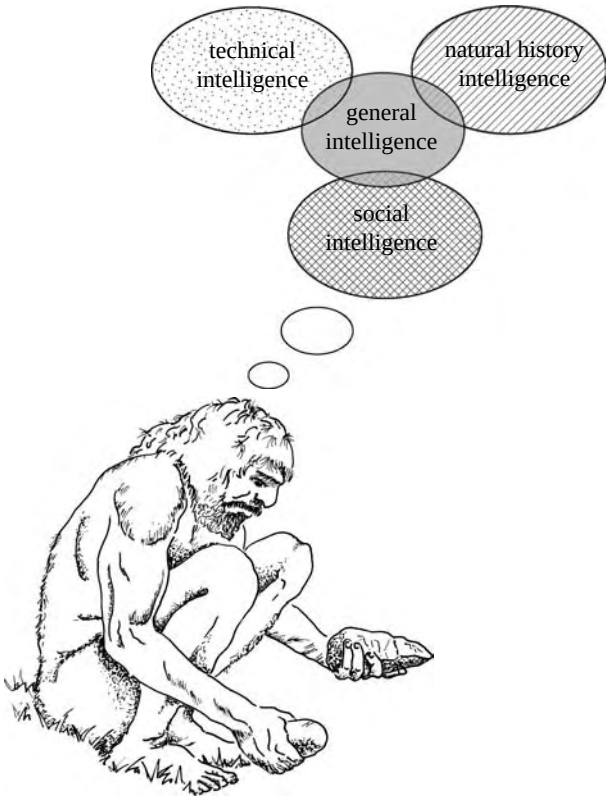

Figure 1. The domain-specific intelligence of the Neanderthal mind (Mithen 1996).

thrower, a bow and arrow or a sewing needle it was surely that of the Neanderthals in light of their demographic profile which suggests they were a marginally viable population (Trinkaus 1995). Moreover, they lived through a wide range of climatic conditions—glacial and interglacial periods—and hence one cannot invoke environmental constraints for their lack of innovation and cultural change. The only explanation I have been able to find for why the Neanderthals can be so like us in some regards and yet so different in others is that their minds had a degree of compartmentalism that we lack today, a domain-specific mentality (figure 1). I proposed this a decade ago in my 1996 book *The prehistory of the mind* and have found no reason to alter my interpretation of the fossil and archaeological record.

The minds of modern humans appear to be quite different: ways of thinking and stores of knowledge about the social, natural and technical worlds flow unconstrained into each other, enabling us to live within a world of metaphors and analogies (figure 2; Mithen 1996). This is a cognitively fluid mind which arises, I believe, from the evolution of compositional language and the role of inner speech (see also Carruthers 2002). It is one in which natural objects, plants and animals can become understood in social terms as members of one's kin, such as the polar bear by the Inuit (Saladin D'Angulure 1990). We see this in all traditional societies, whether in terms of specific understandings of particular animals or general attitudes to the natural world which are frequently—perhaps universally—imbued with a sense of will and purpose. 'The forest as parent' is a powerful metaphor found among many forest-dwelling groups (Bird-David 1990).

While we see here the imposition of a social way of thinking onto the natural world and physical objects, we must also note that an equally important characteristic of humans is to treat other persons as non-social objects. In this regard, people use ways of thinking appropriate to physical objects to manipulate other people without recourse to their feelings and relationships—the most extreme form of this being racism. Indeed, the capacity of modern humans to act without recourse to empathy, mind reading or any other feature of social intelligence is a key defining feature of the modern mind. All too often we have acted as the most socially non-intelligent species on the planet.

The roots of cognitive fluidity can be traced back to the Middle Stone Age of Africa, as in the shell beads and decorated ochre recovered from Blombos Cave dating to *ca* 74 000 years ago (Henshilwood *et al.* 2002; D'Errico *et al.* 2005), but the evidence becomes most striking after 50 000 years ago with the advent of the Upper Palaeolithic in Europe (figure 3; Mithen 1996, 1998). Stone flakes are no longer mere tools for killing or butchering animals—they are invested with social significance and become symbols and emblems, they embody memories and become social currency; the cave paintings tell us that animals are no longer just for eating—they are kindred spirits within an ice age world, seemingly able to transform themselves into human form. While we may have no direct evidence, we certainly should not doubt that the ice age landscape itself—the hills, rivers, woodlands and so forth—was enthused with symbolic meanings, with a will and a purpose of its own; nature was a metaphor for social life.

Nevertheless, even with such cognitively fluid minds, modern humans remained living as hunter-gatherers from their emergence at *ca* 200 000 years ago until less than 10 000 years ago—and for many communities a great deal more recently than that. Those modern human hunter-gatherer communities certainly had cultural achievements that we admire today, but they remained technologically and socially constrained prior to the origin of farming—no metal work, monumental architecture, writing, state-organization and so forth. We must be cautious, however, as late Pleistocene and early Holocene hunter-gatherers were certainly more technologically diverse than was once believed. The invention of pottery, for instance, was once thought to be associated with farming (e.g. Childe 1958) but this is now recognized as a Eurocentric view as ceramics were invented by hunter-gatherers in many parts of the world including tropical south America, the Eastern Sahara, and throughout East Asia where the earliest examples reach back to at least 12 500 years ago (Imamura 1996; Rice 1999; Kuzman 2006).

Here, I should stress that I view the modern mind and intelligence as being as much constituted by items of material culture as by the brain—broadly following arguments for 'active externalism' by Clark (1997, 2003) and Clark & Chalmers (1998). The clever trick that modern humans learned was to use material culture such as rock art and shell beads, and most recently written texts and mathematical notation, to extract more out of their brains than nature had intended (Mithen 1998). A similar idea was developed by Renfrew (2001), who drew on Donald's (1991) idea

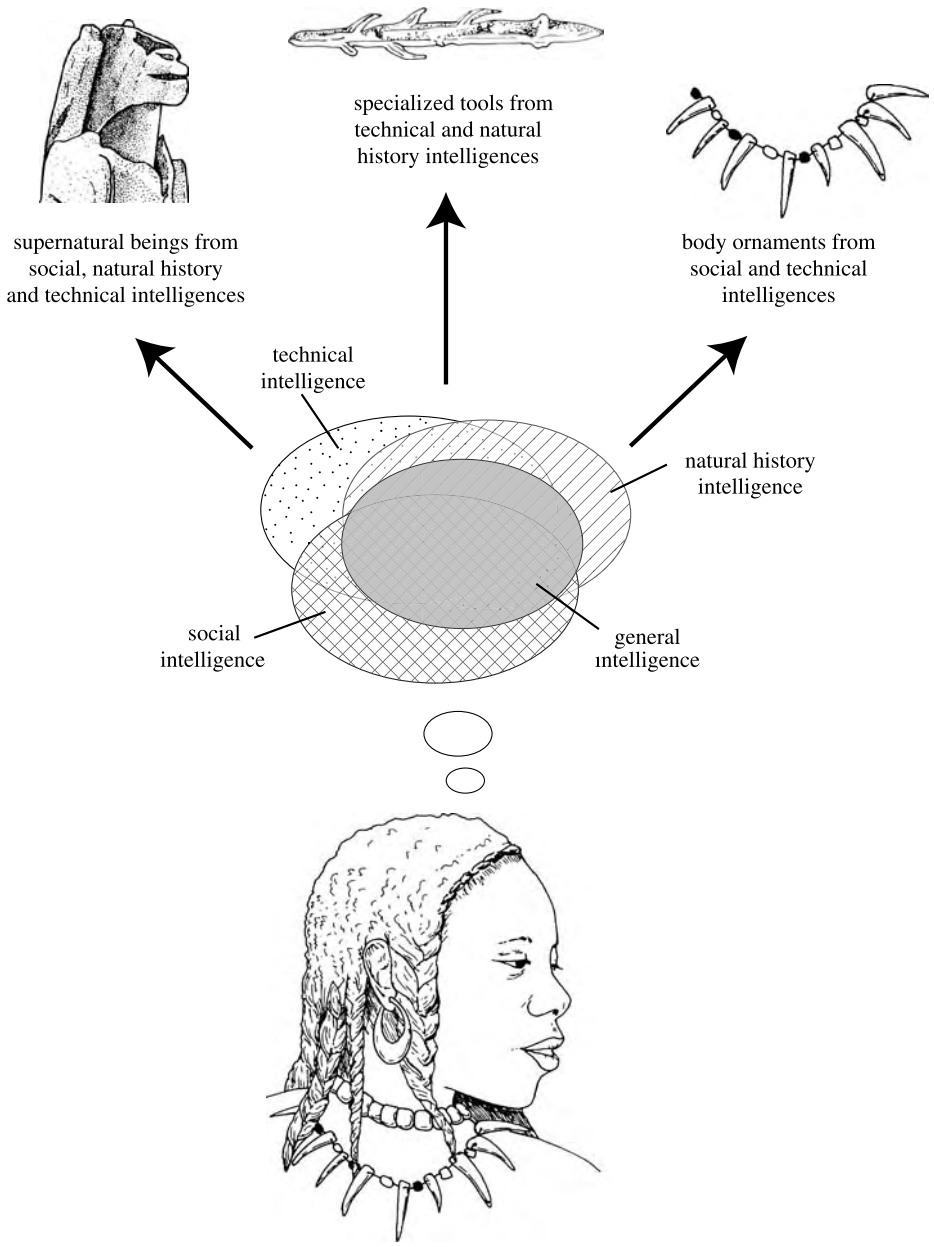

Figure 2. Cognitive fluidity is characteristic of the modern mind–a capacity to integrate ways of thinking and stores of knowledge to generate creative ideas and which underlies the pervasive use of metaphor and analogy in human thought (Mithen 1996). This figure illustrates how cognitive fluidity gave rise to the art, ideology and technology of the Upper Palaeolithic.

of 'external symbolic storage' when discussing the Neolithic Revolution. He was arguing that symbols had to come before concepts, whereas my proposition is less philosophical in nature: it is simply that the economic basis provided by farming enabled a massive expansion in the diversity and quantity of material culture, which had a profound impact on the nature of human cognition, epitomized by the invention of writing within the early civilizations.

(**b**) ***The origin of farming***

So it is to the origin of farming that we must look to understand the source and nature of human intelligence today. What was the role of sociality and social intelligence in causing this turning point of human history? The idea that social intelligence may have played a role in the origins of farming can be attributed to Nicholas Humphrey. The following quote is taken from his 1984 book, *Consciousness Regained*:

> The care which a gardener gives to his plants (watering, fertilising, hoeing, pruning etc) is attuned to the plants' emerging properties…True, plants will not respond to ordinary social pressures (though men do talk to them), but the way in which they give to and receive from a gardener bears, I suggest, a close structural similarity to a simple social relationship. If…[we]…can speak of a conversation between a mother and her two month old baby, so too might we speak of a conversation between a gardener and his roses or a farmer and his corn. (Humphrey 1984, pp. 26–27)

In this quote, Humphrey was suggesting that the 'fortunate misapplication of social intelligence' may have played a key role in the origin of agriculture. So archaeologists should ask whether there is any evidence that this was indeed the case. I will do so below, drawing on evidence from one of my own excavations in the Near East and making what, I will readily admit, are some rather speculative interpretations of that

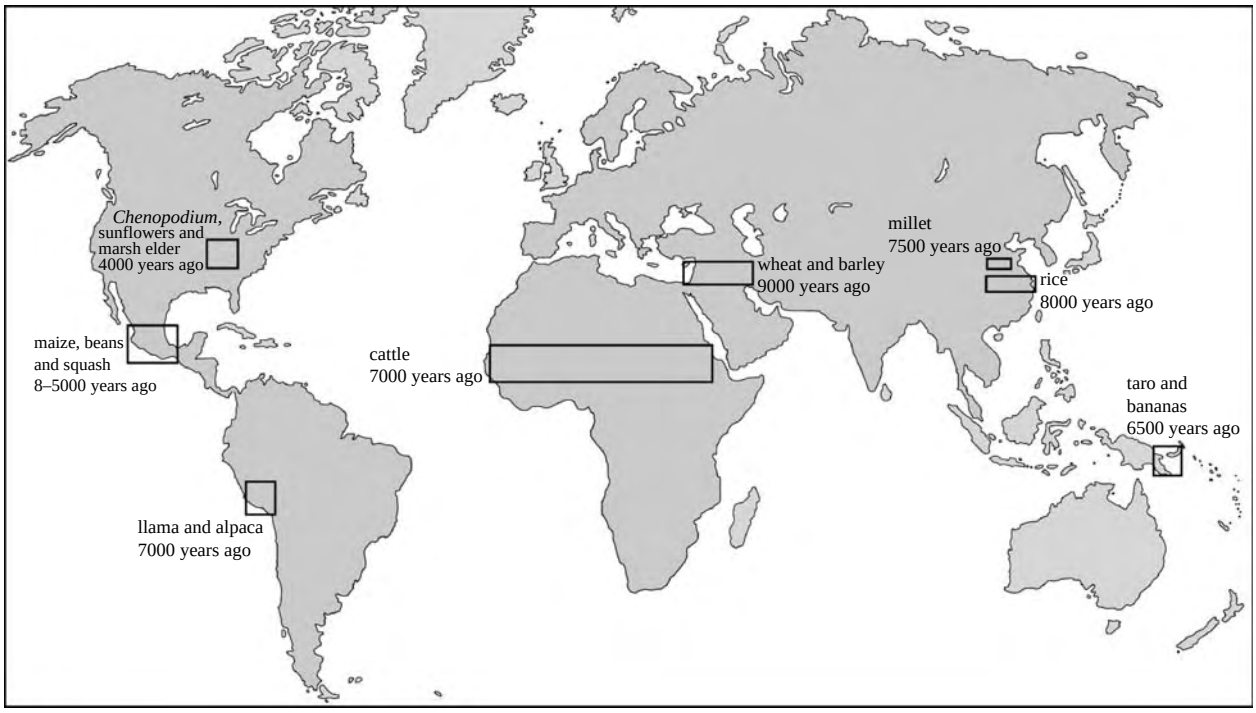

Figure 3. Eight primary centres for the origins of agriculture with approximate dates for the first domesticates (Smith 1995; Mithen 2003).

Figure 4. Guilá Naquitz, Oaxaca Valley, Mexico, undergoing excavation in 1966 (© Kent Flannery).

evidence. First however, let me provide a very brief background to the origins of agriculture.

There were multiple centres of animal and plant domestication throughout the Old and New Worlds in the Early and Middle Holocene (Mithen 2003). Smith (1995) highlighted seven—Near East, Central Mexico, South China, North China, South Eastern Andes, Eastern United States, Sub-Saharan Africa (figure 3)—but it is now evident that there are numerous others, including localities in India and the Eastern Sahara. Its earliest occurrence was in the Near East and based on the domestication of wheat, barley and legumes, followed by sheep, goat and cattle (Bar-Yosef & Meadow 1995); in China, rice may have been domesticated at a similar time (Zhao 1998), while in the Andes, the earliest domesticates were rather later and were animals, llama and alpaca (Rick 1980), although potato and quinua may have been domesticated at a contemporary or even earlier date. Cattle were independently domesticated in the Eastern Sahara (Blench & MacDonald 2000), while in Highland New Guinea the first domesticates were crops such as taro and banana (Denham *et al*. 2003).

Archaeologists have been discussing and debating the origins of farming ever since the discipline began. Just like in the debates about modern human origins, archaeologists now have ever increasing amounts of evidence about modern day genetic diversity which is providing an improved chronology for the domestication of plants and animals. At present, it seems most likely that there were quite different processes leading to farming in each region of the world, and there may

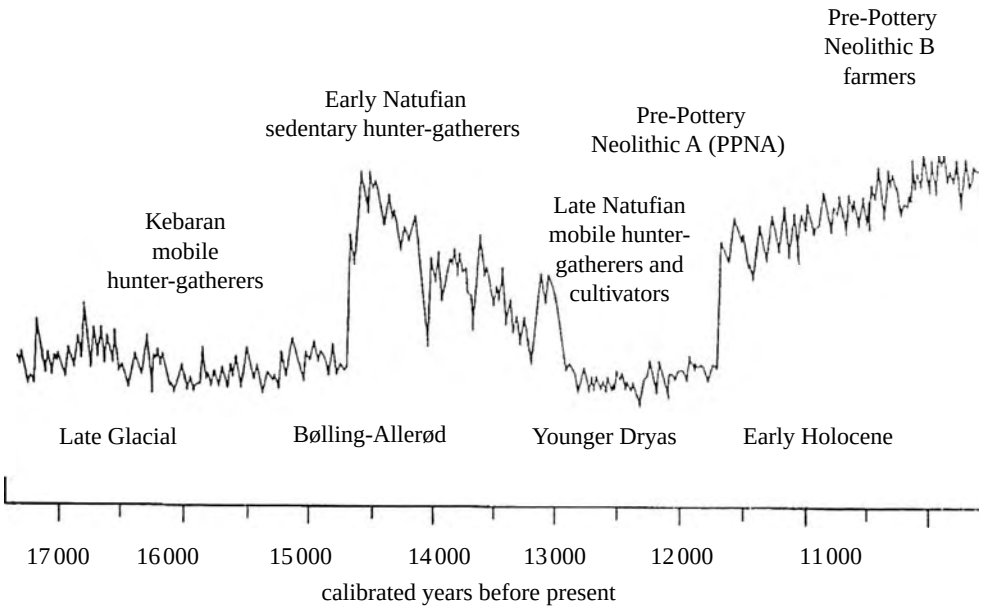

Figure 5. The environmental and cultural sequence of the southern Levant during the Late Pleistocene and Early Holocene. The line is based on oxygen isotope ratios used as a proxy for global temperature.

Figure 6. Tell el-Sultan, surrounded by the modern settlement of Jericho in Palestine (September 1999 (© Steven Mithen)).

Figure 7. The Pre-Pottery Neolithic B site of Ghuwyer 1, Wadi Faynan, southern Jordan. This shows the typical architecture for the Middle PPNB period with rectangular structures densely packed together (© Alan Simmons).

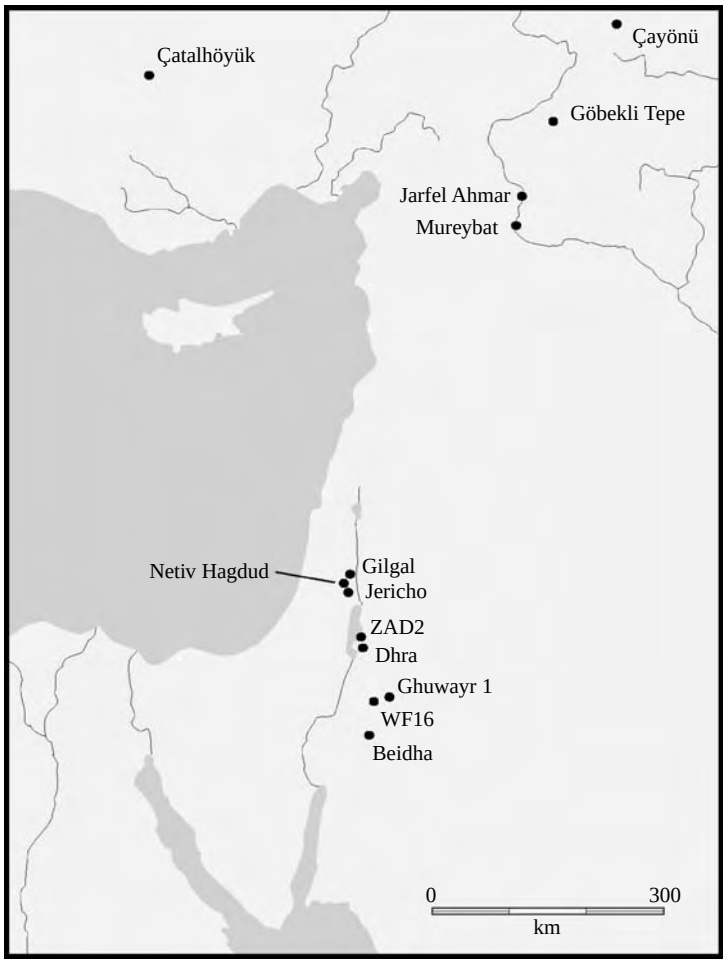

Figure 8. The Levant showing the location of key Pre-Pottery Neolithic A sites, and the Pre-Pottery Neolithic B sites of Çayönü and Çatalhöyük.

have even been localized variation within regions such as the Near East. The only common factors appear to be farming that arose by the activities of *Homo sapiens* during the early Holocene.

Theories for the origins of farming have been diverse (e.g. see reviews and articles in Smith 1995; Harris 1996; Mithen 2003). Population pressure on wild resources, arising from either increasing numbers of people or climatically imposed environmental degradation, has been a popular idea (e.g. Binford 1968; Cohen 1977) but has always struggled to find strong support. The basic problem with this and several other theories is that the mobile hunter-gatherer lifestyle always looks far more attractive than sedentism, which creates problems of refuse disposal, hygiene and social conflict within one's neighbours—hunter-gatherers solve these by simply moving away, whether from their rubbish or other people. That is no longer an option after one has invested in field clearance, irrigation ditches, stock fences and so forth.

Social explanations for the origins of farming have also been prominent (e.g. Bender 1978; Hayden 1990) and in some cases are persuasive. In central Mexico, the first domesticates were plants such as squash, maize and beans (Smith 1995, 1997). The evidence comes from desiccated plant remains from sites such as Guilá Naquitz in the Oaxaca Valley, a site famous for having taking six weeks to excavate and then more then 20 years to analyse (figure 4; Flannery 1986). It is unlikely that these foods were staples of the diet and we know that they were domesticated while people remained as mobile hunter-gatherers. They may have been grown as prestige or luxury foods, for use in feasts to impress visitors and perhaps for exchange in a context where groups and individuals were in social competition with each other (for a speculative scenario, see Mithen 2003, pp. 281–284). For instance, the cultivation of teosinte that led to maize may have been for its sugary pith rather than its grain, to then use in alcohol production (Smalley & Balke 2003).

(c) *Sociality and the origin of farming in the Levant*

The most studied region of the world for the origin of farming is the Near East, or to be more specific the Levant (Southeast Turkey, Lebanon, Syria, Isreal, Palestine and Jordan), where the earliest domesticated form of wheat (emmer & einkorn) and barley have been found at *ca* 10 000 years ago (Bar-Yosef & Meadow 1995). In this region, we have a succession of cultural entities that broadly relate to the changing climatic conditions of the late glacial and early Holocene (figure 5; Bar-Yosef & Belfer-Cohen 1989). At 15 000 years ago, the archaeological evidence indicates mobile hunter-gatherers in a cold and dry landscape, who left scatters of chipped stone artefacts referred to as the

Figure 9. Göbekli Tepe, southern Turkey, undergoing excavation by Klaus Schmidt in October 2003 (© Steven Mithen).

Figure 10. Stone pillar incised with image of a fox at Göbekli Tepe (© Steven Mithen).

Kebaran industry. During the late glacial interstadial between 14 700 and 12 800 years ago, a period of increased rainfall and warmer temperatures, substantial settlements consisting of circular stone dwellings appeared, along with major technological developments, the creation of cemeteries and art objects. This is referred to as the Natufian culture which some archaeologists interpret as sedentary hunter-gatherers, exploiting the rich plant and animal resources that arose from the spread of mixed oak woodland (Bar-Yosef 1998; Mithen 2003). Whether such settlements reflect sedentary or mobile hunter-gatherers, they did not survive during the Younger Dryas, 12 800–11 600 years ago, although several elements of the Natufian culture continued.

The dramatic global warming at *ca* 11 600 years ago which marks the start of the Holocene sees the return of settlements with circular stone structures along with the introduction of new artefact types which denote the Pre-Pottery Neolithic A (PPNA; Kuijt & Goring-Morris 2002). This culture was first discovered in the lowest levels of Tell el-Sultan, Jericho (figure 6), when being excavated by Kathleen Kenyon in 1958, and is now represented by numerous sites throughout the Levant. It is followed by the Pre-Pottery Neolithic B culture constituted by settlements with rectangular buildings (e.g. figure 7), often densely packed together and having two storeys, associated with the remains of domesticated cereals, sheep and goat (Kuijt & Goring-Morris 2002). These were farming villages and hence the transition from hunter-gathering to farming occurs within the PPNA period, one that lasts for just 1000 years at most, and possibly no more than a few centuries. It was during the PPNA that hunter-gatherers chose to adopt sedentary lifestyles and began to cultivate cereals and legumes in such a manner that domesticated forms arose.

The reasons for doing so must be related in some manner to the climate changes associated with the start of the Holocene. Invoking the changing climate and environment does not, in itself, provide an explanation for this dramatic change in lifestyles which laid the foundations for the early civilizations of Mesopotamia and Egypt.

Following Kenyon's excavations at Jericho, further PPNA sites were discovered and excavated throughout the Levant, but principally in the region of today's West Bank (figure 8). The best preserved and the most informative is Netiv Hagdud at which a variety of structures built with either stone or mud brick were discovered with typical below floor burials and ground stone artefacts such as pestles and

Figure 11. View looking eastwards from the summit of Göbekli Tepe towards the Karacadağ hills where geneticists have pinpointed the earliest strains of domesticated wheat (© Steven Mithen).

Figure 12. Wadi Faynan, southern Jordan. The Pre-Pottery Neolithic site of WF16 covers the two knolls in the foreground. The white Landrover is adjacent to Trench 2 (see figure 14), while the circular dwellings found in Trench 3 (see figure 13) are located on the knoll in the immediate foreground (© Steven Mithen).

mortars (Bar-Yosef & Gopher 1997). Wild barley had been cultivated, but it had not yet evolved into a domesticated form; meat principally game from the hunting of gazelle.

We need to look at the two sites that were discovered in the 1990s and which are both still undergoing study. The first is the most remarkable—the site of Göbekli Tepe in southern Turkey (figure 9). The discovery of this site in 1995 astounded archaeologists because it appears to be a Neolithic hill top sanctuary, the like of which had never been seen before. Göbekli Tepe is still under excavation by Klaus Schmidt (2001) and any interpretation must be preliminary. At around 11 500 years ago, large semi-subterranean circular structures were constructed in the side of a hill and massive pillars of stone erected in their interior. These were decorated with images of wild animals—foxes, wild boar, water birds, snakes, spiders and aurochs (figure 10; Schmidt 1998, 1999). The imagery itself is familiar from the PPNA site of Jerf el Ahmar in Syria (Stordeur *et al.* 1997) and the rather later Çatalhöyük in Turkey (Mellaart 1967; Hodder 2006). But never had such monumental structures been seen in the early Neolithic. The site looks and feels like an amalgamation of Lascaux Cave and Stonehenge.

The investment in time and labour to have created this site must have been vast. When visiting, one's feet literally crunch across stone flakes littering the ground because these pillars of stone were quarried dressed and then decorated with no more than flint flakes. The largest standing stones are estimated to weigh 7 tons;

Figure 13. Circular stone structures within Trench 3 at WF16. Structures of this type are typical of the Pre-Pottery Neolithic A period. They are likely to have been the base of dwellings with walls made from timber, reeds and hides (© Steven Mithen).

Figure 14. Human secondary burial, initially placed within a plaster floor of a small circular stone structure within Trench 2 at WF16. The burial was adjacent to a large grinding stone also embedded within the floor. During the use life of the structure, which may have been a period of several hundred years, the burial was periodically opened and bone either inserted or removed (© Steven Mithen).

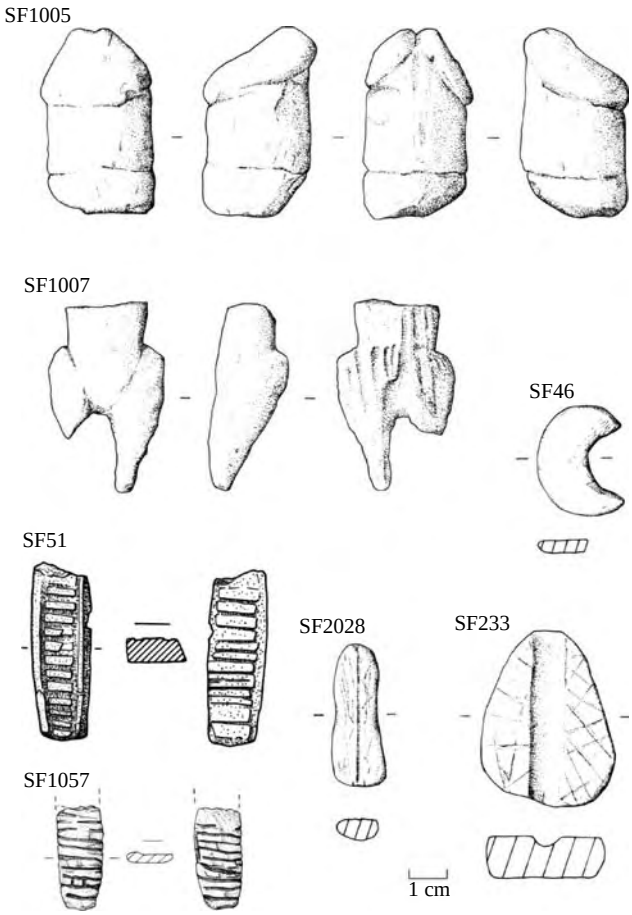

Figure 15. 'Non-utilitarian' ground stone items from WF16. Objects with geometric designs and figurines are typical of the Pre-Pottery Neolithic A from the southern Levant.

at the quarry site, one pillar remains still partly embedded in the rock and is twice the size of any successfully removed.

The meaning of the images is lost to us. It is striking that just at the moment in history when domesticated animals and plants are about to cause an economic, social and cultural revolution, there should be such an investment in representing the wild and dangerous. It does not seem outlandish to suggest that these wild animals may have been totems, animals that formed ancestors for particular social groups. As such, we have here a classic example of cognitive fluidity, the imposition of social intelligence, a way of thinking that had evolved for interacting with other human beings, onto the non-human world.

Whatever the social and symbolic role of these animal images, they must have formed part of a remarkably

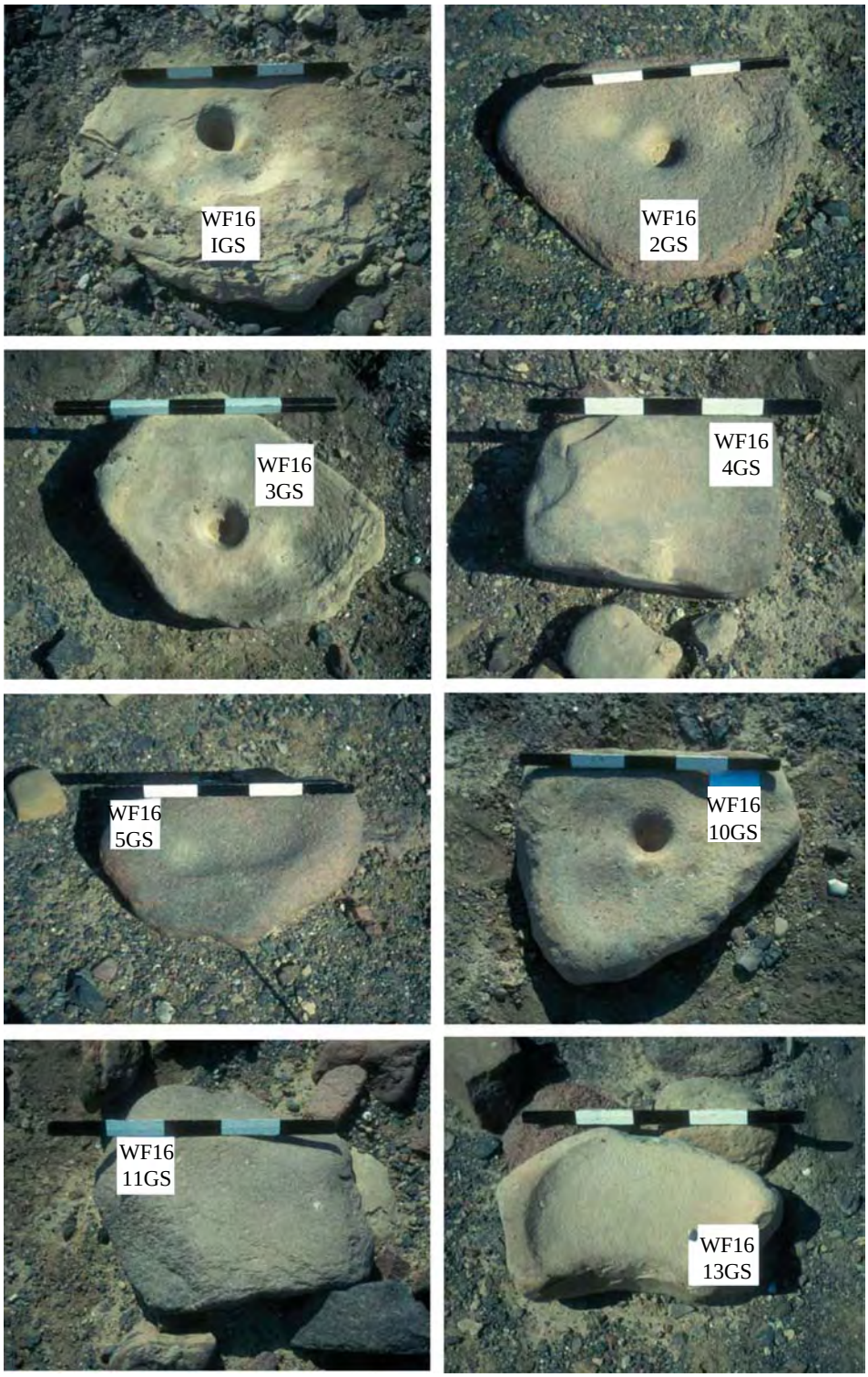

Figure 16. Grinding stones from WF16. The deep cop-hole mortars are typical of the Pre-Pottery Neolithic A period.

strong ideology that motivated people to create the structures at Göbekli Tepe. We must assume that this locality was one where people aggregated from the surrounding region, most likely for public ritual, feasting, exchange and status competition. What makes Göbekli Tepe of even greater interest is that it is no more than 30 km from the Karacadağ hills (figure 11). That is where geneticists have suggested domesticated einkorn wheat originated (Heun *et al.* 1997)—although questions have been raised about their methodology (Allaby & Brown 2003) and a more likely scenario is for multiple sources of domestication of wheat and barley in the northern and southern Levant. Nevertheless, the possibility remains that such plants originated owing to the intensive exploitation of wild plants in the vicinity of sites such as Göbekli Tepe to feed the large numbers of people who formed aggregations for whatever ideological purpose such sites served—perhaps a celebration of the wild (Mithen 2003). As such, there would have been no intention to domesticate wild cereals, no climatic cause and the population pressure would have been a highly localized phenomenon. But if to feed the residents and visitors to Göbekli Tepe and similar sites, the wild cereals and legumes were frequently weeded,

transplanted, had their insect pests removed, had their seed collected and then planted, watered and so forth, the transition to domesticated forms would have arisen. So sociality—in this case group size—may have played a key role in the transition to agriculture. But the ultimate cause would have been the ideological need that caused such aggregations to occur, represented to us today by the astonishing pillars of Göbekli Tepe.

While this may be a further example of sociality playing a role in the most important cultural transition of humankind, it cannot be characterized as a misapplication of social intelligence. For a potential example of this, we can look at another PPNA site, one located in the southern Levant in Wadi Faynan (figure 12). This is the site of WF16, one that I discovered in 1996 and where I have undertaken some small excavations with my colleague Bill Finlayson (Mithen *et al.* 2000; Finlayson & Mithen in press), prior to what we hope will be a major open-area excavation in the near future. That will be to excavate large structures that we have detected by geophysics and which most likely contain well preserved and stratified deposits.

WF16 is a Neolithic village with typical structures and material culture of the PPNA: circular 'dwellings' with stone walls; grinding stones embedded in floors (figure 13); chipped stone artefacts forming a bladelet industry with El-Khiam points and many other pointed artefacts; diverse range of ground stone artefacts; beads made from shell and stone. As with other sites of this period, it has human burials below house floors, some of which appear to have had bones repeatedly added to and removed (figure 14). These burials are literally the imposition of the social, i.e. persons, into the natural, i.e. the ground, providing a dramatic material representation of what I suspect was a cognitively fluid understanding of the world.

The art objects at WF16 and at PPNA sites in the southern Levant in general lack the wild animal imagery of the northern Levant and consist of geometric designs and rather schematic figurines (figure 15). Figurines are also found in northern regions and at some later sites, notably Çatalhöyük in Turkey, where they have traditionally been interpreted as Goddesses, images of Mother Earth or symbols of fertility (e.g. Mellaart 1967; Gimbutas 1974; Cauvin 2000). Such interpretations have no scientific basis and are most likely inaccurate. My interest is with the apparently more mundane coarse stone artefacts from WF16, artefacts that were used to process plant materials—mortars, grinding stones (figure 16), pestles (figure 17) and processors (figure 18; Shaffrey in press)—and are normally kept quite separate from any discussions about prehistoric ideology.

By their very nature, pestles and processors are phallic in form and the manner of their use, insertion into the deep cup-hole mortars typical of the PPNA, lends itself to a sexual metaphor. During excavation at WF16, a stone phallus was recovered (figure 15, SF1005), along with another item that may be either an unfinished phallus or simply an unfinished pestle (figure 19). With the evidence from these two objects, the idea that other artefacts initially classified as no more than utilitarian tools may in fact be phallic

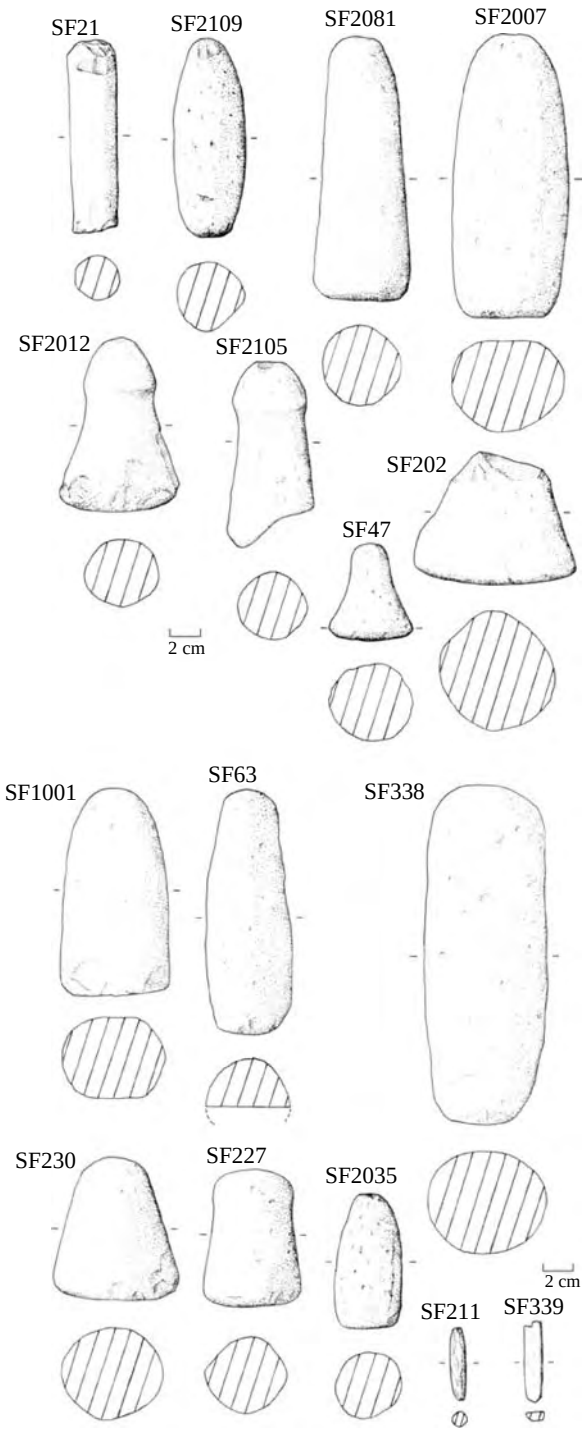

Figure 17. Pestles from WF16.

representations, or far more likely artefacts of both a utilitarian and a symbolic nature, deliberately ambiguous, becomes more plausible (such as figure 17 SF2012, SF2105; figure 18 SF283 and SF2034; Mithen *et al.* 2005). Indeed, I have become persuaded that the processing of plant foods at WF16, and possibly throughout the PPNA, was imbued with a sexual metaphor—what one might describe as the misapplication of social intelligence.

This cannot, of course, be more than interpretation based on scarce and ambiguous evidence, and at present it is little more than a proposal which I intend to explore in my forthcoming research. However, it is worthwhile noting that plant-processing equipment, procedures and products have been frequently

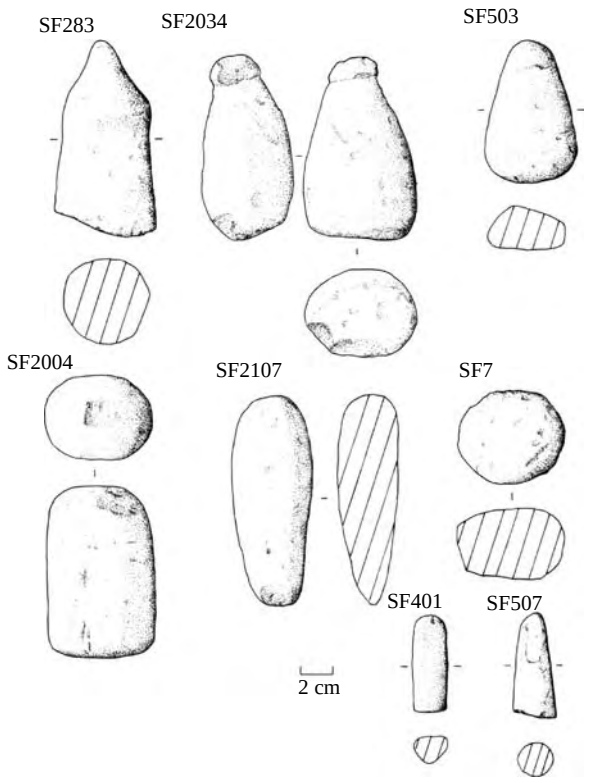

Figure 18. Processors from WF16.

associated with sexual symbolism throughout human history. Explicit sexual imagery is found on stone artefacts and bowls from the Northwest of America from 5000 years ago to the nineteenth century (Marshall 2000). In the Old Testament, Job (31:9–10) uses a mortar and pestle grinding grain as a metaphor for sex. Among the Shona people of Zimbabwe, domestic artefacts are imbued with sexual meanings on the basis of their shape; Shona men were believed to become impotent if they sat upon a mortar (Jacobsen-Widding 1992). In modern day Jordan, the language of cultivation is replete with sexual associations; the name for the stole of the ard being the same as that for penis, and the relationship between the ard and the land being seen as similar to that between men and women (Palmer 1998). With regard to food itself, Camporesi's (1993, p. 16) study of nineteenth century Italian peasant society described bread as the 'most grandiose sexual metaphor ever invented'. While further examples could be given, these can do no more than to lend plausibility to the interpretation of the PPNA plant-processing equipment at WF16 that I have proposed, and the need is to find further sources of direct evidence.

2. SUMMARY

I intend to do that, but I must now conclude by returning to the core of my argument. In 1984, Nicholas Humphrey asked if the origin of farming may have arisen from the misapplication of social intelligence. More generally, we can ask what role sociality played in causing this fundamental change in human economy and culture. Although debates will continue, it can be argued that processes of social competition influenced the development of cultivated

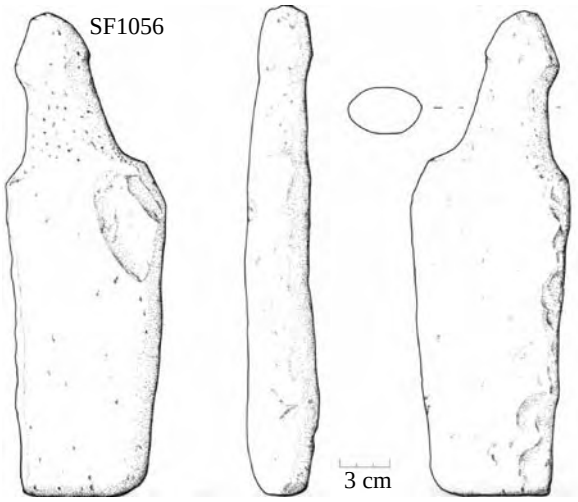

Figure 19. Ground stone item from WF16. This appears to be either an unfinished pestle, a phallus or an object which has deliberately ambiguous associations.

and then domesticated forms of squash, maize and beans in Mexico; these were not grown for basic sustenance but as a means of acquiring prestige, and the similar processes of social competition may have also been significant elsewhere in the world. In Southeast Turkey, it may have been the large aggregation of people at sites such as Göbekli Tepe and the consequent intensive exploitation of wild plants that led to the accidental emergence of domesticated forms.

In addition to these factors of social competition and group size, the evidence at Göbekli Tepe and WF16—the burials, the art, the plant processing equipment—suggest that both the natural world and the material culture were perceived with a manner of thought that would have originated for thinking about human relationships—the misapplication of social intelligence. As such, the origin of farming may indeed be a consequence of the cognitive fluidity that is characteristic of modern humans, while it was the domain-specific mentality of the Neanderthals that left them as hunter-gatherers for the entirety of their existence. And once farming had originated, the pathway to towns, cities and civilization appears to have been almost inevitable, as does that to writing, mathematics and a massive expansion of human knowledge, a fundamental change in the nature of cognition, if not intelligence itself.

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