New light on Neolithic revolution in south-west Asia

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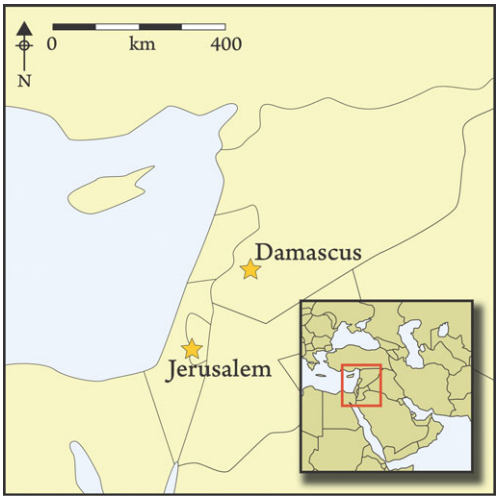

Shortly after his retirement from a distinguished career in the Department of Archaeology at Edinburgh, the author gave the Rhind Lectures for 2009, bringing together his thoughts about the Neolithic revolution, and comparing Childe's ideas with today's. These lectures, summarised here, announced the modern vision to a wide audience. It is a reversal of the old: Epipalaeolithic people came together in the first large, permanent communities, to form extensive settlements which only later needed to be fed by farming.

Keywords: south-west Asia, Neolithic revolution, Gordon Childe, spirituality, monumentality, agriculture

Introduction

Gordon Childe's famous notion of a Neolithic revolution saw the switch from hunting to herding and from gathering to cultivation as the pivotal agent of change. It was a model subsequently followed by many scholars. Today the imperative is different: not economic but cultural and cognitive. Already from about 23 000 years ago, we see groups of hunter-gatherers in parts of south-west Asia begin to transform their settlement and subsistence strategies and develop large, permanently co-residential communities well before the beginning of agriculture. This new form of social life implies that the cognitive and cultural faculties of *Homo sapiens* had become capable of managing cultural systems through external symbolic storage, or monumentality, an essential instrument of social complexity.

Having rejected Childe's model of farming as an adaptation necessitated by climate change and environmental desiccation, Robert Braidwood asked 'Why then? Why not

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Table 1. Periods as referred to in the text, with approximate dates.

Periods	Approximate dates in absolute years ago	Cultural labels in the Levant
Upper Palaeolithic	45 000–25 000 BC	
Early Epipalaeolithic	23 000–15 000 BC	Kerbaran
Middle Epipalaeolithic	15 000–13 000 BC	Geometric Kebaran
Late Epipalaeolithic	13 000–10 200 BC	Natufian
Early aceramic Neolithic	10 200–8800 BC	PPNA (= Pre-Pottery Neolithic A)
Late aceramic Neolithic	8800–6900 BC	Early, Middle, Late & Final PPNB

earlier?' That question has mostly been overlooked, but it applies to the emergence of new, permanent communities as much as to the adoption of farming practices. Braidwood's prescient hunch was that perhaps culture was not ready (Braidwood & Willey 1962: 332). The answer I propose is: (1) only at a certain point in human cognitive evolution did it become possible for *Homo sapiens* to transcend certain biological limitations of the human brain by cultural means; and (2) this increased mental facility was made necessary by the reliance on larger and more cohesive social groups, itself a product of hominin evolution.

This long story, covering the 16 millennia of the Epipalaeolithic and early Neolithic periods in south-west Asia (23 000–7000 BC; see Table 1) can be told briefly in three parts. The first concerns the transformation in subsistence strategies as small-scale, mobile, hunter-gatherer bands became large, permanently co-resident communities. The second part focuses on those large, permanent communities, their extraordinary architecture and the associated symbolic representations and practices. The third part sets those processes in the wider context of long-term population growth and the cognitive, cultural and social evolution of *Homo sapiens*.

Hunting, harvesting and sedentism

The early Epipalaeolithic site of Ohalo II (Figure 1) is remarkable for its early date (around 25 000 BP, in the heart of the Last Glacial Maximum) and the conditions of organic preservation (Nadel & Hershkovitz 1991; Weiss *et al.* 2004). Many of the characteristics that have generally been thought to be typical of the late Epipalaeolithic of the southern Levant are present from the very start of the period, more than ten millennia earlier. Ohalo II was a structured settlement that extended over at least 2300m^2 area. It consists of a cluster of brush huts whose interiors show signs of repeated cleaning out and renewal. Refuse and waste were dumped to the east of the huts; as well as a small, central hearth in each hut, there were extensive open-hearth areas, perhaps for communal cooking. One burial has been found among the huts, that of an adult male.

The subsequent submergence of the site led to extraordinary preservation of organic remains. To date, 142 botanical taxa have been registered, and more than 19 000 grass seeds, including wild wheat and barley, have been identified. Heavy ground stone equipment is found at the site, and traces of starch were found on the working surface of one stone that was examined; it was found carefully set into the floor of Hut 1 (Weiss *et al.* 2008). The

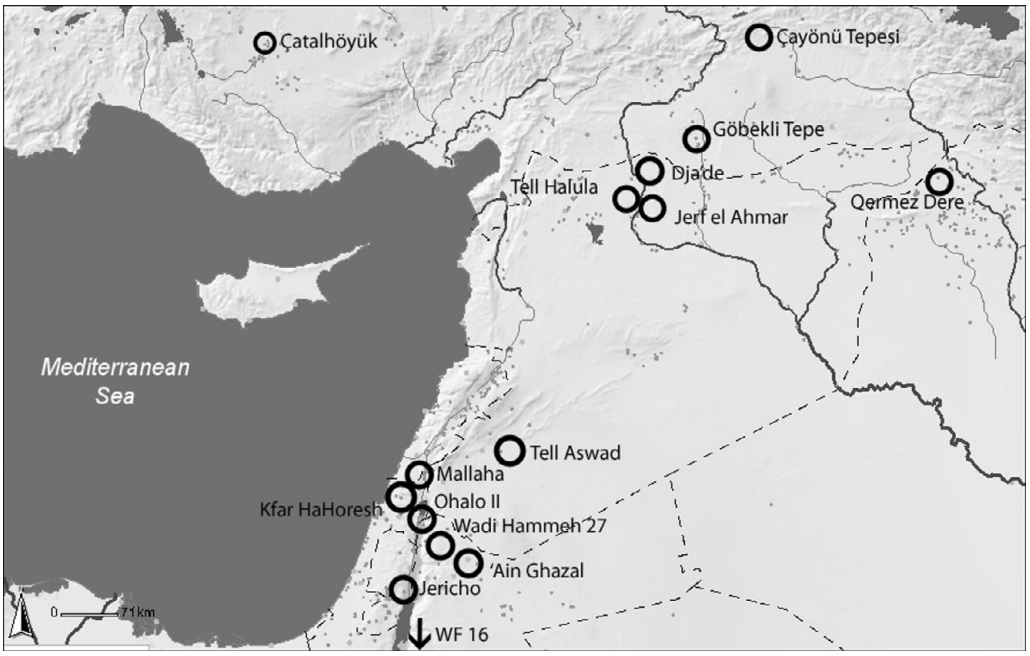

Figure 1. Map showing the places mentioned in the text.

stored seeds imply that people were certainly there from early summer for several months. The combined floral and faunal data show that people were using the site all year round, even if they may not have been in residence year in year out. The faunal remains are the classic profile of the broad-spectrum strategy – plenty of gazelle and fallow deer, but also fox, hare, many species of birds, lots of fish and some tortoise.

Whatever the changes adopted in consequence of a move to stored harvests, there were other factors that required changes in subsistence strategy. Archaeozoologists have charted the loss of large ungulate species in the Upper Palaeolithic, followed in the Epipalaeolithic by the steady reduction of the remaining ungulates and increasing concentration on gazelle. At the end of the Epipalaeolithic and the beginning of the early Neolithic, Simon Davis noted a more rapid shift in the faunal spectra; more and more of the gazelle were immature – bad news for hunters and for the gazelle – and, in compensation, numbers of birds, small mammals, fish and amphibians increased sharply (Davis 2005). From the Upper Palaeolithic through the Epipalaeolithic the numbers of tortoise and their size decline sharply; as tortoises become smaller and rarer, birds and small mammals, particularly fox and hare, increase (Stiner *et al.* 2000). Tortoises are both slow to reproduce and easy to catch; thus they constitute a sensitive barometer of human predator density. Birds and small mammals require more skill and effort to catch, but they reproduce quickly; they are much more resilient in the face of human predation.

In terms of plant foods, at the beginning of the Epipalaeolithic the harvesters at Ohalo II gathered a surprising range of small-seeded grasses, as well as some cereals. At the other end of the Epipalaeolithic period, people were much more focused on the cereals and

large-seeded pulses such as lentils. The view of botanists seems to have swung away from the idea of a rapid process of domestication of cereals, towards a long period of 'pre-domestication agriculture', that is, cultivation before the recognisable traits of the domesticated species were manifested. George Willcox and his colleagues have shown us the process towards domestication in progress over about 1500 years from the late Epipalaeolithic (Willcox *et al*. 2008). Another recent study proposes that cultivation may have begun as early as the middle Epipalaeolithic (Allaby *et al.* 2008). The earliest morphologically domesticated crops are found around the boundary between the early and later aceramic Neolithic (Colledge 2002; Willcox *et al*. 2008). The first evidence of domesticated flocks of sheep and goat, and cattle and pig have been found at sites across north Syria and south-east Turkey, only shortly after the first fully domesticated cereals appeared. Settlement strategies changed as reliance on the storage of harvested crops increased. Groups tended towards sedentism, and, as permanent settlements developed, community size grew.

There are three points to note. First, the steady changes in settlement strategy and faunal spectra through the Upper Palaeolithic and Epipalaeolithic periods as outlined above are unrelated to the switchback of climatic change from the start of the Upper Palaeolithic, through the Last Glacial Maximum, the oscillations of the recovery, the sudden Younger Dryas and the early Holocene climatic optimum.

Second, in an eco-systems approach, the pressures on available hunted prey-species might have been expected to encourage a stabilisation, or even a reduction, in human population. However, what we see is population growth overall, an increase in community size and permanence of residence. We may conclude that the 'normal' forces that should have ensured that human population density stayed within limits were no longer operating. It seems that social and cultural imperatives over-rode the simple economic cost argument: people placed a higher value on living together, and bore the costs. Simple population growth strained available resources, especially large herd ungulates, and required adaptations that involved greater investment of labour and technology for hunting, trapping, fishing, harvesting and food processing. Large, permanently co-resident communities, dependent on the resources immediately accessible from their settlements, only magnified those requirements for adaptation and increased investment.

Third, once the suite of fully domesticated crops and herded animals had come into use, some of the basic parameters of the story changed. Although a greater investment of labour was required, and there was greater risk in dependence on a narrow spectrum of crops and herds, the productivity of the land around the settlement was increased, and even children could contribute to the economy. In the late aceramic Neolithic and beyond, we see further acceleration in population growth, rapidly expanding community sizes, and, soon, the colonisation of new territories by farming communities. The more productive economy allowed the exploitation of extensive new territories, and it was portable: farming complemented rather than prompted the advent of permanent communities.

Settlements and the building of social space

It is generally thought that communities became larger and more sedentary than the typical mobile hunter-gatherer band only in the final Epipalaeolithic Natufian. But there are

examples of large sites (up to 2.3ha in extent) that date to the middle of the Epipalaeolithic period, that accumulated a significant stratigraphic depth, have rich material culture that indicates long-term residence and the full range of activities, have some stone-built structures, or have intramural burials.

In the Natufian, there were some long-lived settlements consisting of substantial, stone-built, semi-subterranean structures; some settlements also accommodated intramural burials, on occasion forming veritable cemeteries. There is a good case for thinking that some of these large, open sites of the Epipalaeolithic period in the Levant, especially the late Epipalaeolithic, were permanent settlements. In the early aceramic Neolithic period, almost all the sites that we know are stratified open settlements, and small, camp occupations are uncommon, except in marginal, semi-arid regions.

From the end of the Epipalaeolithic through the aceramic Neolithic of the southern Levant (the only part of south-west Asia where there is sufficient data) Ian Kuijt has charted the increase in the average size of settlement sites (by a factor of 10), the increase in the density of buildings within them (by a factor of 8), and the increasing scale and compartmentalisation of domestic buildings (Kuijt 2000b). We may also observe that the number of known sites of the later Epipalaeolithic is much greater than for the earlier Epipalaeolithic; and the same is true for the greater number of later aceramic Neolithic sites in contrast with the early aceramic Neolithic. In sum, we have evidence of increasing population, increasing size of population units, and increasingly permanent occupation of settlements.

We should recognise that these settlements, whose inhabitants must have numbered many hundreds, and in some cases thousands, were not simply small clusters of autonomous hunter-harvester or farming households; we need to make a deliberate effort to set aside the 'village-farming' tag that Robert Braidwood introduced (Braidwood 1960). Some of the most spectacular and surprising discoveries of the last 20 years have come from late Epipalaeolithic and early aceramic Neolithic settlement sites, before the mixed farming economy became standard.

Settlements may demonstrate a structured, communal layout, as at early Epipalaeolithic Ohalo II, early aceramic Neolithic Qermez Dere in northern Iraq (Watkins 1990), and at WF16, an early aceramic Neolithic settlement site in southern Jordan (Bill Finlayson and Steven Mithen *pers. comm.*). The design, building and maintenance of houses within a settlement could be surrounded with elaborate symbolism, as at late Epipalaeolithic Mallaha in northern Israel (Valla 2008), or in the careful deposition of many kinds of debris (including human body parts) at Wadi Hammeh 27, a late Epipalaeolithic settlement in Jordan (Hardy-Smith & Edwards 2004).

In some parts of south-west Asia in the later aceramic Neolithic period (8500–6500 BC), houses took on stylised and even monumental form, for example, at Çayönü in south-east Turkey (Schirmer 1990). The so-called pier-houses of the southern Levant were similarly stylised, and were repeatedly, and expensively, re-faced with thick lime plaster, sometimes coloured red, and burnished (Byrd & Banning 1988).

At several settlements in south-east Turkey and north Syria, there existed communal buildings, that is, buildings that were central to the community, and were not domestic in function. In an open area at the centre of the settlement of Çayönü, the excavators found a succession of three special purpose buildings, of which the most spectacular is the so-called

Figure 2. Jerf el Ahmar, an early aceramic Neolithic settlement in north Syria. The earliest of three successive, subterranean 'community buildings', which the excavator suggests was used both as a granary and for ceremonies. At the end of its use-life, a headless corpse was placed in the centre of the floor, the posts and roof were burnt, and the cavity was filled in.

skull building (Özdoğan 1999). At Jerf el Ahmar, an early aceramic Neolithic settlement on the Euphrates in north Syria, there was a succession of circular, subterranean buildings that were monumental in scale, up to 9m in diameter and 3m deep (Figure 2; Stordeur *et al.* 2000). At Dja'de, a settlement dating to the middle of the aceramic Neolithic period a little further down the Euphrates, another circular, subterranean structure with massive internal buttresses is emerging (Figure 3; Coqueugniot 2000).

There are two sites, Göbekli Tepe (Schmidt 2006), near Urfa in south-east Turkey, and Kfar HaHoresh in Israel (Goring-Morris 2000), which might appear to be settlements, but on investigation seem to be otherwise. Göbekli Tepe is an artificially mounded site on a bare limestone ridge with extraordinary, panoramic views. It is several hundred metres in diameter and the stratigraphy is many metres thick. It appears that people piled up thousands of tons of debris, consisting of stone chips, soil and occupation debris including carbonised plant remains, animal bone and chipped stone tools and débitage, in order that they could then create huge cavities 10–30m in diameter and at least 3m deep.

The sides of the subterranean structures were retained by stone walls; around the foot of the walls a stone-slabbed bench was built, interrupted at regular intervals by radially set T-shaped slabs. In the centre of each circle stand a pair of larger monoliths (Figures 4 & 5; also see frontispiece to this issue). All are T-shaped slabs with creatures carved in raised relief – wild bulls, boars, foxes, cranes, snakes, spiders and scorpions. In the largest structure so far investigated, the central monoliths stand 5.5m tall. What is particularly striking is the

Figure 3. Dja'de, early eighth-millennium BC settlement in north Syria. Excavation in progress on a subterranean, circular building, with (probably) three large internal buttresses. The mud plaster is covered with a painted polychrome abstract design.

continual refashioning of the circular structures, moving and reworking of monoliths, filling in one old structure and creating another alongside.

At Kfar HaHoresh, there is plenty of occupation debris, and there are rectangular lime-plaster floor-like surfaces and lengths of low wall, but the excavators are sure that there were no houses. The plastered floors cap pits and hollows in which human and animal remains, and feasting debris, were deposited in complicated sequences of actions (Goring-Morris & Horwitz 2007; Goring-Morris *et al.* 2008). Nigel Goring-Morris has described the site as a place where *'the dead have their own settlement'*.

A feature common to most settlements of the early Neolithic (and some of the Epipalaeolithic, too) is the incorporation of human burials among the houses, under the floors of houses, or in the substructure below the living floors. At no site is the number of burials sufficient to account for the adult population; even at Çatalhöyük in central Anatolia, where the ratio of burials to houses is greatest, the excavators estimate that only about a half of the population was accorded intramural burial (Hodder 2006). At 'Ain Ghazal in Jordan, as well as the ceremonial intramural burials, the excavators found bodies unceremoniously thrown into rubbish pits (Rollefson 2000). We do not know why a few were selected for intramural burial; perhaps the dead were important for the ceremonies as much as the ceremonies were for the deceased.

Kathleen Kenyon's excavations in the pre-pottery Neolithic strata at Tell es-Sultan, ancient Jericho, in the 1950s, introduced us to the deposition of detached skulls, especially those

Figure 4. Göbekli Tepe, near Urfa, south-east Turkey, showing one of the large, circular, subterranean structures (Structure D) under excavation. A series of monoliths is set in a paved bench whose surface has just been reached. The pair of central monoliths stand 5m tall.

with modelled facial features. As well as the positive evidence of the recovered and curated skulls, there were the bodies that had been buried in shallow pits among the houses, and from which the skulls were absent. There is now a list of sites in the Levant that have produced modelled skulls (reviewed recently in Stordeur & Khawam 2007). Variants of the practice of recovering, curating, modelling and caching or redepositing skulls have been evidenced across south-east Turkey and northern Iraq, and at later Neolithic settlements in central Anatolia.

Ian Kuijt has drawn attention to the cycles of ceremony that lie behind the burials and skulls found in settlements in the southern Levant (Kuijt 2000a, 2008). The first cycle took place over the hours or days following a death. A second cycle followed months or years later, when a grave was opened in order to retrieve the skull. After a period of accumulation and curation, in a third cycle, groups of skulls were finally committed to the ground, often beneath the floors of the living settlement.

Archaeologists have tried to group these practices of burial, with the later retrieval and curation of the skull, in a straitjacket concept called 'skull cult'. Recent excavations have forcefully demonstrated that each community followed some very general principles that seem to be common over a wide area, but interpreted them and put them into practice using their own way of doing things. Usually, bodies are found buried in a contracted position in a shallow oval pit, but at Tell Halula, uniquely, bodies were buried in narrow cylindrical pits, having been wrapped in cloth bindings seated with knees drawn up; the burials were

Figure 5. Göbekli Tepe, Pillar P27. The fully three-dimensional carving of the animal is so far unique at the site.

clustered in the 'front' part of the living room, close to the doorway, and their locations were marked by 'plugs' in the plaster floors (Guerrero *et al.* 2009).

At Tell Aswad, near Damascus, bodies were not placed in pits, but were laid at ground level both inside and against the outside walls of houses, or concealed under small earthen mounds on the house floor (Stordeur & Khawam 2009). But after several centuries, practices changed abruptly, and wide hollows at the edge of the settlement were designated for burials. Each of the burial areas was initiated with the deposition of a clutch of human skulls, most of

Figure 6. Tell Aswad, late eighth-millennium BC settlement in southern Syria. A large hollow has been 'dedicated' for use as a burial place by the deposition of a cluster of human skulls. The facial features are modelled in clay and coloured; some have a black line (eye-lashes) across the closed eyelids.

them with delicately modelled facial features (Figure 6; Stordeur & Khawam 2006, 2007). Following the inauguration of the mortuary area, a variety of burials took place, some primary, others secondary, some single, others multiple.

What we are seeing, I believe, is an example of what Richard Wilk has called 'common difference'. Wilk was referring to a practice or an idea that has been shared, but which is worked out differently within the cultural context and circumstances of particular communities (Wilk 2004, with thanks to Ian Kuijt (2008) for bringing the idea to my notice).

Building super-networks

What I have pointed to are some of the great efforts of labour and imagination that were required to build (literally) and maintain these earliest large, permanently co-resident communities. It is easy for us, who were born and brought up in modern communities, to underestimate how we formed our sense of community and belonging (though it is becoming a matter for confused and tortured debate, at least within Britain). The anthropologist Anthony Cohen has given us a slim and elegant text on the symbolic construction of community (Cohen 1985). This is a bottom-up view of how individuals use all sorts of abstract ideas, practices and things of symbolic value in the recognition of their community

with others, rather than a top-down analysis of social organisation by categories such as band, tribe or chiefdom.

Lesley Aiello and Robin Dunbar have extrapolated from the relationship between group size and cortex of the brain among primates to the scale and complexity of social relations among hominins (Aiello & Dunbar 1993; Dunbar 1997, 1998). They conclude that the brain of *Homo sapiens* theoretically limits our ability to keep mental control of the relations among individuals to around 120–150 individuals; it is clear that modern humans have found ways to circumvent that limit.

Clive Gamble used social network analysis to explore how the Upper Palaeolithic in Europe is different from the Middle Palaeolithic: *Homo sapiens* had begun to use materials such as marine shells and high-quality flint in long-distance exchanges in the maintenance of extended networks (Gamble 1998, 1999). But those networks still numbered around one or two hundred individuals. For at least half of its existence *Homo sapiens* has been engaged in making signs, sharing symbols, evolving full modern language and other systems of symbolic representation. Humans were wearing pierced marine shells and painting and carving with red ochre before 100 000 years ago. The art of the Upper Palaeolithic represents a major development in cognitive skill and cultural faculty. The construction of whole systems of symbolic representation, in the form of settlement form and monumental architecture marked with images and accommodating ceremonies, as described above, begins only around the end of the Epipalaeolithic and beginning of the Neolithic in parts of south-west Asia (cf. Watkins 2004, 2005, 2006).

But we should go further. I have recently argued (Watkins 2008) that the exchange of goods and materials (obsidian, marine shells, greenstone, black basalt, malachite and more) among communities at local, regional and supra-regional levels should be understood in association with the sharing of symbols and symbolic behaviour, such as intramural burial, skull retrieval and curation. These are evidence of nested networks, local (within communities, among local communities), regional and supra-regional. The principles are in some ways similar to Renfrew's notion of peer polity interaction spheres (Renfrew 1986), which was framed with networks among the élites in 'early state modules' in mind. Over time, from the later Epipalaeolithic through the early aceramic Neolithic, we can see these networks growing in intensity and expanding in scale, constituting an entirely new cultural phenomenon that matches in its originality and importance, the formation and maintenance of large, permanently co-resident communities.

In order to build and sustain communities of many hundreds or even several thousands of persons, various kinds of symbolising artefacts and practices needed to be shared as the outward and visible signs of the abstract concepts of household, neighbourhood and social memory. The philosopher John Searle has called these abstracts, such as money or marriage, 'institutional facts' (Searle 1995). But they need symbolic material correlates. Along with Renfrew (1998), I believe that Merlin Donald's description of systems of 'external symbolic storage' is entirely persuasive (Donald 1991, 2001), whether in terms of written language or symbolic material culture. Donald tells us, for example, that *'These elaborate devices serve an important cognitive engineering function: they set up states in the individual mind that cannot otherwise be attained'* (Donald 1998: 15). These were the new capacities that made possible the symbolic cohesion of the new, large, permanently co-resident communities.

With these new cognitive and cultural faculties, people began to construct and inhabit dramatic built environments. Within these rich cultural environments, they could maintain social memory through 'commemorative ceremonies' and 'bodily acts' (Connerton 1989), in domestic rituals, in community buildings, in ceremonies with the bodies and heads of the dead, affirming a communal identity of place. These were the first 'imagined communities', but, unlike modern nations, they could be formed and maintained without social hierarchies of power.

Conclusion

Braidwood's hunch that the revolution could not have happened earlier because 'culture was not ready' was right. When it came, cognitive and cultural revolution made possible the symbolic construction of the first, large, permanent communities; this unleashed population growth that led in turn to the adoption of farming practices. From that alliance came the rapid spread of the new imagined societies, fed by mixed farming economies; and following that came the emergence of ascribed status, social hierarchies and inequalities of power. But those are other stories.

References

Aiello, L. & R. Dunbar. 1993. Neocortex size, group size and the evolution of language. *Current Anthropology* 36: 184–93.

Allaby, R.G., D.Q. Fuller & T.A. Brown. 2008. The genetic expectations of a protracted model for the origins of domesticated crops. *Proceedings of the National Academy of Sciences of the United States of America* 105(37): 13982–6.

Braidwood, R.J. 1960. The agricultural revolution. *Scientific American* 203: 130–41.

Braidwood, R.J. & G.R. Willey. 1962. Conclusions and afterthoughts, in G.R. Willey & R.J. Braidwood (ed.) *Courses towards urban life: archaeological considerations of some cultural alternatives*: 330–59. Chicago (IL): Aldine.

Byrd, B.F. & E.B. Banning. 1988. Southern Levant pier-houses: intersite architectural patterning during the Pre-Pottery Neolithic B. *Paléorient* 14(1): 65–72.

Cohen, A.P. 1985. *The symbolic construction of community*. London: Routledge.

Colledge, S. 2002. Identifying pre-domestication cultivation in the archaeobotanical record using multivariate analysis: presenting the case for quantification, in R.T.J. Cappers & S. Bottema (ed.) *The dawn of farming in the Near East*: 141–52. Berlin: Ex Oriente.

Connerton, P. 1989. *How societies remember*. Cambridge: Cambridge University Press.

Coqueugniot, E. 2000. Dja'de, Syrie: un village à la veille de la domestication (seconde moitié du IX^{e} millénaire av. J.-C.), in J. Guilaine (ed.) *Premiers paysans du monde: naissances des agricultures*: 63–79. Paris: Errance.

Davis, S.J.M. 2005. Why domesticate food animals? Some zoo-archaeological evidence from the Levant. *Journal of Archaeological Science* 32(9): 1408–16.

Donald, M. 1991. *Origins of the modern mind: three stages in the evolution of culture and cognition.* Cambridge (MA): Harvard University Press.

– 1998. Hominid enculturation and cognitive evolution, in C. Renfrew & C. Scarre (ed.) *Cognition and material culture: the archaeology of symbolic storage*: 7–17. Cambridge: McDonald Institute for Archaeological Research.

– 2001. *A mind so rare: the evolution of human consciousness*. New York: Norton.

Dunbar, R.I.M. 1997. *Grooming, gossip and the evolution of language*. London: Faber.

– 1998. The social brain hypothesis. *Evolutionary Anthropology* 6(3): 178–90.

Gamble, C. 1998. Palaeolithic society and the release from proximity: a network approach to intimate relations. *World Archaeology* 29(3): 426–49.

– 1999. *The Palaeolithic societies of Europe*. Cambridge: Cambridge University Press.

GORING-MORRIS, N. 2000. The quick and the dead: the social context of aceramic Neolithic mortuary practices as seen from Kfar HaHoresh', in I. Kuijt (ed.) *Life in Neolithic farming communities: social organization, identity, and differentiation*: 103–64. New York: Kluwer Academic/Plenum.

GORING-MORRIS, N. & L.K. HORWITZ. 2007. Funerals and feasts during the pre-pottery Neolithic B of the Near East. *Antiquity* 81: 902–19.

GORING-MORRIS, N., H. ASHKENAZI, O. BARZILAI, M. BIRKENFELD, V. ESHED, Y. GOREN, L.K. HORWITZ, M. ORON & J. WILLIAMS. 2008. The 2007–8 excavation seasons at Pre-Pottery Neolithic B Kfar HaHoresh, Israel. *Antiquity* 82. Available at: http://www.antiquity.ac.uk/projgall/goringmorris318.htm (accessed 20 April 2010).

GUERRERO, E., M. MOLIST, I. KUIJT & J. ANFRUNS. 2009. Seated memory: new insights into Near Eastern Neolithic mortuary variability from Tell Halula, Syria. *Current Anthropology* 50(3): 379–91.

HARDY-SMITH, T. & P.C. EDWARDS. 2004. The Garbage Crisis in prehistory: artefact discard patterns at the Early Natufian site of Wadi Harnmeh 27 and the origins of household refuse disposal strategies. *Journal of Anthropological Archaeology* 23(3): 253–89.

HODDER, I. 2006. *Çatalhöyük: the leopards tale: revealing the mysteries of Turkey's ancient 'town'*. London: Thames & Hudson.

KUIJT, I. 2000a. Keeping the peace: ritual, skull caching and community integration in the Levantine Neolithic, in I. Kuijt (ed.) *Life in Neolithic farming communities: social organization, identity, and differentiation*: 137–62. New York: Kluwer Academic/Plenum.

–2000b. People and space in early agricultural villages: exploring daily lives, community size and architecture in the late Pre-Pottery Neolithic A period mortuary practices. *Journal of Anthropological Archaeology* 19(1): 75–102.

–2008. The regeneration of life: Neolithic structures of symbolic remembering and forgetting. *Current Anthropology* 49(2): 171–97.

NADEL, D. & I. HERSHKOVITZ. 1991. New subsistence data and human remains from the earliest Levantine Epipalaeolithic. *Current Anthropology* 32: 631–5.

ÖZDOĞAN, A. 1999. Çayönü in M. Özdoğan & N. Başgelen (ed.) *Neolithic in Turkey. The cradle of civilization, new discoveries*: 35–63. Istanbul: Arkeoloji ve Sanat Yayınları.

RENFREW, C. 1986. Introduction: peer polity interaction and social change, in C. Renfrew & J.F. Cherry (ed.) *Peer polity interaction and social change*: 1–18. Cambridge: Cambridge University Press.

–1998. Mind and matter: cognitive archaeology and external symbolic storage, in C. Renfrew & C. Scarre (ed.) *Cognition and material culture: the archaeology of symbolic storage*: 1–6. Cambridge: McDonald Institute for Archaeological Research.

ROLLEFSON, G.O. 2000. Ritual and social structure at Neolithic 'Ain Ghazal, in I. Kuijt (ed.) *Life in Neolithic farming communities: social organization, identity, and differentiation*: 165–90. New York: Kluwer Academic/Plenum.

SCHIRMER, W. 1990. Some aspects of the building in the 'aceramic Neolithic' settlement at Çayönü Tepesi. *World Archaeology* 21(3): 363–87.

SCHMIDT, K. 2006. *Sie bauten die ersten Tempel. Das rätselhafte Heiligtum der Steinzeitjäger*. Munich: Beck.

SEARLE, J. 1995. *The construction of social reality*. London: Penguin.

STINER, M.C., N.D. MUNRO & T.A. SUROVELL. 2000. The tortoise and the hare: small-game use, the broad-spectrum revolution, and Paleolithic demography. *Current Anthropology* 41(1): 39–73.

STORDEUR, D. & R. KHAWAM. 2006. L'aire funéraire de Tell Aswad (PPNB). *Syria* 83: 39–62.

–2007. Les crânes surmodelés de Tell Aswad (PPNB, Syrie): premier regard sur l'ensemble, premières réflexions. *Syria* 84: 5–32.

–2009. Une place pour les morts dans les maisons de Tell Aswad (Syrie). (Horizon PPNB Ancien et PPNB Moyen), in J. Córdoba, M. Molist, C. Pérez, I. Rubio & S. Martínez (ed.) *Procedings of the 5th International Congress on the Archaeology of the Ancient Near East*: 561–90. Madrid: Universidad Autónoma de Madrid.

STORDEUR, D., M. BRENET, G. DER APRAHAMIAN & J.-C. ROUX. 2000. Les bâtiments communautaires de Jerf el Ahmar et Mureybet, horizon PPNA (Syrie). *Paléorient* 26(1): 29–44.

VALLA, F. 2008. *L'homme et l'habitat: l'invention de la maison durant la Préhistoire*. Paris: CNRS.

WATKINS, T. 1990. The origins of house and home? *World Archaeology* 21(3): 336–47.

–2004. Building houses, framing concepts, constructing worlds. *Paléorient* 30(1): 5–24.

–2005. Architecture and 'Theatres of Memory' in the Neolithic south west Asia, in E. DeMarrais, C. Gosden & C. Renfrew (ed.) *Rethinking materiality: the engagement of mind with the material world*: 97–106. Cambridge: McDonald Institute of Archaeological Research.

–2006. Architecture and the symbolic construction of new worlds, in E.B. Banning & M. Chazan (ed.) *Domesticating space: construction, community, and cosmology in the late prehistoric Near East*: 15–24. Berlin: Ex Oriente.

–2008. Supra-regional networks in the Neolithic of southwest Asia. *Journal of World Prehistory* 21(1): 139–71.

Weiss, E., W. Wetterstrom, D. Nadel & O. Bar-Yosef. 2004. The broad spectrum revisited: evidence from plant remains. *Proceedings of the National Academy of Sciences of the United States of America* 101(26): 9551–5.

Weiss, E., M.E. Kislev, O. Simchoni, D. Nadel & H. Tschauner, 2008. Plant-food preparation area on an Upper Paleolithic brush hut floor at Ohalo II, Israel. *Journal of Archaeological Science* 35(8): 2400-14.

Wilk, R. 2004. Miss Universe, the Olmec and the Valley of Oaxaca. *Journal of Social Archaeology* 4(1): 81–98.

Willcox, G., S. Fornite & L. Herveux. 2008. Early Holocene cultivation before domestication in northern Syria. *Vegetation History and Archaeobotany* 17(3): 313–25.