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LANDSCAPES IN TRANSITION

edited by

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10. Changing People, Changing Environments: How Hunter-Gatherers Became Communities that Changed the World

Trevor Watkins

It is simplistic to imagine that environmental changes that adversely affected the food resources of the hunter-gatherers of the Epipaleolithic and earliest Neolithic of Southwest Asia directly caused the adaptation to the cultivation of plants and the herding of animals. These sophisticated hunters and harvesters, who were trending towards sedentism, exploited their territories quite differently from their mobile hunter-gatherer forebears. We also need to take into account the implications of the new kind of large-scale, permanent community that they constructed and maintained. In effect, communities were creating richly symbolic cultural environments. Thus the environments within which communities operated changed significantly around the end of the Pleistocene or the beginning of the Holocene period, and cultural responses to changes in the bio-environment became the prime among various kinds of environmental challenge and response.

Introduction

We are accustomed to an orthodox view of hunter-gatherers being required to adjust to reduction in food resources as a result of climatic change. That is now the standard account of final Epipalaeolithic hunter-gatherers in the Levantine corridor adopting cultivation in response to the constrictions of the Younger Dryas phase (e.g. Moore and Hillman 1992; Bar-Yosef and Meadow 1995; Bar-Yosef and Belfer-Cohen 2002; Bar-Yosef 2002). An alternative scenario is based on the notion that the environment can 'push' as well as 'pull'. Thus Epipalaeolithic hunter-gatherers in the same Levantine corridor are said to have been able to adopt new economic strategies of harvesting and storing grasses, cereals and legumes when post-Last Glacial Maximum (LGM) climatic amelioration brought about increased bio-diversity, greater bio-mass or different and richer environments. However valid such a simple ecological model may be for earlier periods of pre-*Homo sapiens* prehistory, for the period in which we are interested – in Southwest Asia, the Epipalaeolithic period and into the Neolithic – there were two critically important changes in the ways that hunter-gatherer groups began to operate that were more important than climatic and environmental change in the final Pleistocene.

In the first place, hunter-gatherer groups of the Epipalaeolithic period increasingly focused on harvesting, storing and processing cereals, grasses and legumes; correspondingly, they tended towards sedentism. The range of such groups reduced in extent, as they used stored food resources and relied on a territory that was exploitable from their increasingly permanent home-base. Whereas a mobile hunter-gatherer group might range seasonally over several thousand square kilometres, a sedentary hunter-gatherer group would rely on the intensive exploitation of a territory of a few hundred square kilometres. This change in the way that they moved in, and exploited the food-resources of, the physical environment was more than a matter of geographical range.

Secondly, hunter-gatherer groups changed their nature. In parallel with the trend towards reduced mobility and longer seasonal settlement, transhumance and sedentism, groups became larger. Whereas typical mobile hunter-gatherer groups known from the ethnographic record amount to a small number of tens of persons (except for brief seasonal gatherings, where many small groups may congregate), through the Epipalaeolithic and Early Neolithic periods in Southwest Asia groups not only became more sedentary but also much larger. Communities in the hundreds began to appear in the late Epipalaeolithic period, and permanently co-resident communities of thousands became increasingly common through the Early Neolithic period. These changes in permanence of residence and community size were not simply numerical. The process of producing and maintaining permanent communities that were ten times larger in the Epipalaeolithic, and one hundred times larger in the Early Neolithic, required cultural and symbolizing skills that drove the development of the relevant cognitive skills and symbolic cultural faculties (or, alternately, the development of the capacity for fully symbolic culture opened the way for hunter-gatherer groups to concentrate in larger and larger numbers). Allied to the emergence of larger, permanently co-resident communities was a trend to more and more extensive and intensive networks of social exchange that bound the new communities into powerful interaction spheres.

In what follows, we begin by considering briefly how the subject of environmental relations has developed over recent years. In particular, I am concerned to examine critically the notion that a change such as the adoption of farming, which saw the domestication of both plants and animals, can be explained simply as a response to environmental pressures. Then we can turn to the changing subsistence and settlement strategies of hunter-gatherers of the final Palaeolithic and earliest Neolithic and their changing relations to the territories that they exploited. Thirdly, we can explore the implications of the new kind of community that were constructed by Epipalaeolithic and Early Neolithic hunter-gatherer groups in Southwest Asia. The conclusion of this paper is that the emergence of *Homo sapiens* was predicated on novel cognitive and cultural faculties with symbolic representation, and that a steep upward turn in the graph of cognitive and symbolic cultural abilities coincided with the emergence of novel forms of community that required advanced symbolic modes of construction. Thus, as the cultural environment of everyday life was intensified and deeply enriched, the effective environment within which communities operated changed significantly around the end of the Pleistocene or the beginning of the Holocene period, and cultural responses to changes in the bio-environment became only one among various kinds of environmental challenge and response.

Environmental causes – cultural responses

We can trace back to and beyond Gordon Childe the idea that hunter-gatherers responded to the challenge of environmental pressures driven by climatic change by becoming the first farmers. Childe sought to integrate the thinking of geographers such as Darrell Forde (1934) and the geologist Raphael Pumpelly (1908) on climatic and environmental change and its effects on human affairs with his own ideas on social evolution and a Marxist interpretation of prehistory. A new generation of archaeologists in the 1960s dismissed Childe's work because he wrote 'culture-history', because he was a 'diffusionist' and because his model of desiccation at the end of the Pleistocene had been undermined both by radiometric dating and by improved environmental data. Binford (1968) and Flannery (1969), founder members of the new scientific archaeology, followed Robert Braidwood and H. E. Wright, who had concluded that there was no evidence of climatic change at the time when farming began to be adopted (Braidwood 1960; Braidwood *et al.* 1983; Wright 1968). Binford and Flannery both opted for an alternative ecological variable in the form of levels of human population, and argued for population growth within a scenario of finite environmental resources as the driver for the adaptation of farming. However, there were always those who preferred a climatic change and the reduction of food resources in the environment, and their time came in the 1990s with the identification of the Younger Dryas phenomenon in the final millennium of the Pleistocene period (Alley *et al.* 1993; Berger 1990; Dansgaard *et al.* 1989). It became a dramatically exciting topic among environmental scientists because detailed study of the evidence from Greenland ice cores and the radiocarbon dating evidence showed that its onset and its end were very rapid.

Within Southwest Asia, the focus of researchers had shifted from northeast Iraq and western Iran, where Braidwood and his followers had set it, to the Levant. Gordon Hillman, who had spent many years working on the botanical material recovered in Andrew Moore's excavations at Tell Abu Hureyra, was aware that the site had gone out of occupation around the end of this dramatic climatic reversal (Moore and Hillman 1992; Hillman 1996). He searched for signs of the impact of the Younger Dryas generally in Southwest Asia, and pointed to the decline in tree pollen in the cores from Lake Huleh in northern Israel. The significance of the Mediterranean woodland zone is that it is also the habitat of grasses, cereals and legumes. In a series of maps Hillman modelled the situation at the end of the LGM and the re-colonization of areas by the spreading woodland and associated grasses, cereals and legumes that followed the climatic recovery. Then he modelled the impact of the Younger Dryas based on the Huleh lake core and, most importantly, archaeobotanical evidence from Tell Abu Hureyra, which was sited on the Euphrates in a marginal situation that would be severely affected by any environmental deterioration. In his last map, he showed the remarkably rapid recovery from the Younger Dryas. The version of events written by the major synthesizers of the last two decades is based on this interpretation of the environmental data, and it has become the orthodox account. Robinson and his collaborators have recently reviewed all the data sources, terrestrial from the Levant and marine from the east Mediterranean (Robinson *et al.*, this volume; Robinson *et al.* 2006). As far as the Younger Dryas phenomenon is concerned, they conclude from the terrestrial evidence that there was a significant reduction in rainfall in the southern Levant, but the marine data shows remarkably little evidence for climatic cooling. It is unclear, in their view, whether the ambiguities in the evidence represent a problem with the data or differing responses by different indicators in different environments (Robinson *et al.* 2006, 1537). Building a reconstruction of the changing availability of large-seeded grasses, cereals and legumes in the Levant on such foundations seems risky; and extrapolating to further parts of Southwest Asia (except for the Anatolian plateau, for which there is pollen from lake-bed cores) must be highly speculative. The standard account that supposes that the Younger Dryas caused a severe bottleneck, restricting the availability of storable harvests to the Levant, may be termed the Levantine primacy illusion; the environmental model of a huge Younger Dryas impact cannot be clearly substantiated, and the adoption of cultivation leading to plant domestication cannot be causally linked to climate change.

The phrase Levantine primacy was coined, as far as I am aware, by Patty Jo Watson (1995). The perspective on Southwest Asia taken by the Levantine primacy school is based on the idea that there are environmental reasons why the earliest complex hunter-gatherer societies are to be found in the Mediterranean woodland zone of the Levantine corridor; and that it is within that corridor that complex hunter-gatherers became the earliest cultivators and, later, mixed farmers, again in response to environmental pressures (see also Maher, this volume). The hypothesis is based on the notion that environmental constraints at the LGM and afterwards made the Mediterranean woodland corridor, with its grasses, cereals and legumes, a refugium within which the emergence of more complex strategies of hunter-gatherer subsistence and settlement were possible. It is a very convenient view, because it limits the significant area of Southwest Asia to a relatively small zone of environmental coherence that can also be seen as a single cultural unit. Thus innovations adopted within the Mediterranean corridor are the property of a single cultural group, usually termed successively Natufian, PPNA and PPNB. In consequence, the spread of farming is usually seen as cognate with the spread of the PPNB culture, or of its influence on other, marginal and poorly defined and usually unnamed cultural groups in other parts of the region of Southwest Asia.

However, I assert that a) the environmental evidence for the restrictive view of a Mediterranean woodland refugium is low on data, high on dramatic interpretation and generally unconvincing; b) the archaeological evidence from outside the Levantine corridor contradicts the orthodox interpretation of the environmental data; and c) the hypothesis of Levantine primacy is in fact an untested, but testable, assertion. I have recently rehearsed the criticism of the generally accepted environmental reconstruction in a paper at the 5th International Congress for the Archaeology of the Ancient Near East in Madrid, and give two references (Watkins 2008; 2009a). The archaeological and palaeobotanical evidence that contradicts the Levantine primacy case can be briefly summarized, because so little work has been done across the far southeast of Turkey and the north and northeast of Iraq. At the end of the Epipalaeolithic period there was an occupation of Shanidar cave, in a valley of the Zagros mountains in the far northeast of Iraq, and a small, open village site nearby as Zawi Chemi (Solecki 1981; Solecki 1963; Solecki and Solecki 1983). Both sites produced significant numbers of groundstone implements for pounding and grinding foodstuffs, and Zawi Chemi contained some circular stone structures built within an accumulation of occupation debris that amounted to a couple of metres or more. At the beginning of the Early Neolithic there were several sedentary hunter-gatherer sites outside the Levantine corridor, three of which (Qermez Dere, Nemrik and M'lefaat) are in north Iraq. These three communities existed at or beyond the very limit of the distribution of the necessary plant resources according to Hillman's map for the period, and yet there is good archaeobotanical evidence from M'lefaat (Savard *et al.* 2003) and Qermez Dere (Nesbitt in Watkins *et al.* 1991, Watkins *et al.* 1995) that pulses, wild grasses and some wild barley were in use, and that an open *Pistacia* woodland environment remained despite the Younger Dryas reversal. In southeast Turkey, east of Diyarbakır, the sedentary village site of Hallan Çemi was, likewise, established at the Epipalaeolithic–Neolithic boundary. There, too, there is evidence of the use of pulses and some wild grasses, while the carbonized remains make it clear that oak–*Pistacia* woodland existed in the area (Rosenberg *et al.* 1995, Rosenberg *et al.* 1998).

While the contradictory evidence is often not recognized, there is a more serious methodological flaw in the orthodox 'Levantine primacy' account of the emergence and development of Neolithic societies in Southwest Asia, for it is an hypothesis that has been elevated to the status of orthodox account without testing. Further work in the Mediterranean woodland zone and its margins (in Jordan, the Palestinian territories, Israel, the Lebanon, western Syria and around the Euphrates in southeast Turkey) does not test the hypothesis. If we wish to define the area in Southwest Asia within which sedentary and semi-sedentary hunter-gatherers operated in the Epipalaeolithic and earliest Neolithic periods, we need to be able to demonstrate its extent by showing which areas were not part of the core area. Following the widely accepted ideas of the philosopher of science Karl Popper, in order to demonstrate a hypothesis we need to apply a test that is capable of falsifying the hypothesis (Popper 1960). How could we falsify the hypothesis? We need to find sites of the appropriate date outside the assumed core area of the Levantine corridor (and not just in the semi-arid areas immediately to the east of the Mediterranean woodland zone); if, like Hallan Çemi and the three sites in northern Iraq, those sites are like those within the core area, then the hypothesis is shown to be false, and it needs revision: that is, the core area needs to be drawn larger. If we find sites of the appropriate date that were formed by non-sedentary, non-storing hunter-gatherers, then we know that we are outside the core area, and we are beginning to define the extent of that core area.

Changing hunter-gatherer subsistence and settlement strategies

Archaeologists and anthropologists began to recognize the social, as well as the economic, implications of the differences between the strategies employed by hunter-gatherers more than 25 years ago. For example, Woodburn wrote of the emergence of investment and delayed return, contrasting with earlier, simpler, hunter-gatherer societies which had operated an immediate return strategy (Woodburn 1968a; 1968b; 1982). Lewis Binford made a distinction between foragers and collectors (Binford 1980; 1990). Foragers operated in small, highly mobile groups, with a strategy that Woodburn would label one of immediate, as opposed to delayed, returns. Collectors, as described by Binford, on the other hand, engage in investment, storage and delayed returns. The French anthropologist Alain Testart wrote of the implications of storage (and inequality) among hunter-gatherers (Testart 1982a; 1982b). He argued that the social implications of storage made those hunter-gatherers who engaged in the practice more similar to farmers than to immediate-return foraging hunter-gatherers. Tim Ingold responded to these discussions, writing about what he defined as practical and social storage (Ingold 1983). Ingold wrote that social storage refers to 'the appropriation of materials in such a way that rights over their future distribution or consumption converge upon a single interest' (Ingold 1983, 561); under these conditions what is stored is considered as property or wealth, and storage becomes part of 'the social relations of distribution'. Ingold (1983, 568) believed that it was the practices of pastoralists and cultivators that, in their different ways, exhibited the characteristics of social storage. In other words, he thought that delayed return and storage as documented in ethnographically observed hunter-gatherer societies do not have a social component of ownership, control and social management. He conceded, however, that the Pacific Northwest Coast peoples seemed to be an exception in this regard, as in so many other ways.

In the Epipalaeolithic of Southwest Asia we see: a) the collection of storable harvests of dry plant foods; b) decreasing group mobility in favour of a trend towards sedentary life; and c) a trend towards larger co-resident group size. We are in fact seeing the emergence of the type of hunter-gatherer subsistence and settlement strategies that Woodburn, Binford and Testart have defined, and 'social storage' as described by Ingold. The social implications of these changes in settlement and subsistence strategy will be discussed below, but we should first consider the implications for the territories exploited by these new hunter-gatherer groups. Let us leave aside two knotty problems. First, it is impossible to estimate the number of locations used by a group of hunter-gatherers over a single year, or over what period (a couple of days, a couple of weeks or several months) any particular location was in use. The ethnographic record tells us that small mobile hunter-gatherer groups might have an annual cycle of 12 (on average, each location representing a month's stay) or even 24 locations each year (moving every two or three weeks) (Binford 1980; 1990; Kelly 1995). Archaeologically, we have a real difficulty in detecting the trend towards sedentism, and there has been a long-running controversy over how to recognize year-round sedentism in the archaeological record. There is little consensus on the question of which groups of Epipalaeolithic hunter-gatherers in Southwest Asia were sedentary or almost sedentary. By the last two millennia of the Epipalaeolithic period, at least in the Mediterranean woodland zone of the Levant and adjacent areas, there are archaeologically and stratigraphically substantial village sites that most archaeologists accept as permanent settlements occupied year-round over many years – and sometimes many centuries or even more than a millennium. On the other hand, at the opposite end of the Epipalaeolithic period the site of Ohalo II, with its unique water-logged deposits and extraordinary organic preservation, exhibits evidence of the harvesting and processing of an extensive range of grasses, cereals and legumes, and seasonality indicators of occupation at every month of the year (Kislev *et al.* 1992; Nadel and Hershkovitz 1991; Piperno *et al.* 2004; Weiss *et al.* 2004). What we can say is that, in some parts of Southwest Asia, at some time in the last 10 millennia of the Pleistocene period, effectively sedentary hunter-gatherer communities became established.

Using the ethnographic evidence, we may suppose that Epipalaeolithic sedentary hunter-gatherer communities intensively used a territory within two hours' walk of their village homes; it makes the arithmetic easy if we calculate a little generously on a 10-km radius, and we end up with a figure of around 320 sq km for the territory around the village site that was regularly, indeed constantly, exploited. Whereas the mobile hunter-gatherer band employed a strategy of seasonal movement from one prime location to another, the sedentary hunter-gatherer community needed to intensify their extraction of resources from within their immediate territory. This total reliance on a relatively small territory that was used year-round and year after year must have changed the way that hunter-gatherer groups related to and perceived their effective environment (Watkins 1997). Flannery proposed the 'broad spectrum' strategy, involving the more intensive pursuit of small mammals, birds, fish, shellfish and amphibians (Flannery 1969), and, while the claim of a broad spectrum revolution has been questioned (Edwards 1989), detailed analysis of faunal remains from a sample of Epipalaeolithic sites from the Levant has shown the shifts within the spectrum that characterize the Epipalaeolithic period (Stiner *et al.* 1999; Stiner *et al.* 2000). The floral evidence was lacking when Flannery first proposed his broad spectrum revolution, but the material from Ohalo II has allowed us a brilliantly detailed insight into the intensive use of plant food resources at the beginning of the Epipalaeolithic period (Weiss *et al.* 2004).

As well as investing in storage (delayed return) and greater labour inputs (in the hunting of small game and birds, and in the processing of many of the stored plant foods that required pounding, grinding or soaking to remove toxins), the (semi-)sedentary hunter-gatherers of the Epipalaeolithic period exchanged the flexibility and risk-reduction of the mobile group for greater risks. Living in larger, permanent groups in one place, and relying on a tightly defined territory immediately accessible from that base, Epipalaeolithic sedentary communities were at risk if changing environmental conditions brought about a reduction in the productivity of their food sources, or if their own population numbers grew over the centuries, or if they chanced to over-hunt important species or harvest too exhaustively. We can see the consequences of trying to maintain this critical equilibrium over the long term in the changes in the spectrum of plant foods at Abu Hureyra on the middle Euphrates in Syria towards the end of the Younger Dryas, which ended in the abandonment of the settlement (difficulties and finally failure that did not affect the nearby site of Tell Mureybet, as it happens) (Hillman 1996; Hillman *et al.* 2001; Moore *et al.* 2000). Similar adjustments, involving greater investment of labour, have been charted through the end of the Epipalaeolithic and the Early Neolithic at Hatula in Israel, as gazelle availability declined and lengthy fishing trips to the Mediterranean shore began (Davis *et al.* 1994).

The symbolic construction of community

Why should hunter-gatherers with tens of millennia of accumulated experience choose to hazard themselves with increased risks? Why should they compound their difficulties by opting for greater concentration on food resources that required more labour investment? And why did they opt for more demanding rules in their social lives, as they turned to the substantial social storage of harvests of legumes, grasses and cereals? Rather than seeking a cause in pressures exerted by changes in the physical environment and its resources, we should look to a different aspect of the environment, the built environment.

It was Peter Wilson who drew attention to the critical significance of the adoption of buildings and village life (Wilson 1988). He distinguishes the 'open society' (the traditional, small-scale, mobile hunter-gatherer band society) and sedentary hunter-gatherer societies, who live in permanent buildings in village societies, which he regards as 'domesticated' societies. For Wilson, domestication is the consequence of living in houses, living in villages. 'Domestication' challenged people's natural, evolved dependence on paying constant attention to one another. As well as presenting a cognitive challenge, domestication could be seen as offering stimulating opportunities for the development of structure, physical and architectural, shaping and modelling the social organization of a new way of life. Wilson reviews many instances in the ethnographic literature of contemporary small-scale sedentary societies that use architecture for the elaboration of thinking about the structure of the world, and the articulation of links between their social world and the cosmos. What Wilson does not do is set this transformation of human psychology in the context of the evolution of human cognitive and cultural faculties.

In a series of conference papers and articles over recent years, I have sought to explore how the ideas of the psychologist Merlin Donald (1991; 2001) on the evolution of human cognition and culture can be set within the archaeological record of the Epipalaeolithic and Neolithic periods of Southwest Asia (Watkins 2003; 2004a; 2004b; 2005; 2006). This task involves recognizing that symbolic culture can operate as a system of symbolic representation generically similar to language. After a first revolution in hominid communication that Donald calls 'mimetic' (not dissimilar to Mithen's 'Singing Neanderthals' (Mithen 2005; 2006)), the second of Donald's stages is the emergence of full modern language, while the third and final stage is the emergence of alphabetic writing systems. We can easily underestimate the massive complexity, subtlety and sophistication of language, and the cognitive power required of our brains to manage speech and the comprehension of utterances that we hear. The critical factor in language as it exists in every human society around the world is that it is a system of symbolic representation. In other words, language consists in more than the accumulation of a series of dictionary definitions of the words used; we put together strings of words so that the meaning of what we say depends on the relations, syntactic and semantic, between those words, and any utterance adds up to much more than the sum of its constituent words (see, for example, Terence Deacon's *The Symbolic Species: The Co-Evolution of Language and the Human Brain* (1997) for a discussion of the complexity of symbolic manipulation involved in ordinary speech). Written language extends the cognitive power of the human brain through the potential of what Donald calls 'external symbolic storage'. The significance of the externalization of memory storage is that the modes of memory are fundamentally different from the brain's memory. For example, the amount of information that can be stored in an external storage system such as written language is virtually unlimited, is more permanent, and can be 'read' by others who see it at some other time or in some other place (telecommunication). Along with Colin Renfrew (1998), I take the view that, between the emergence of full modern language (around 50,000 years ago) and the emergence of writing systems (beginning in some parts of the world around 5000 years ago), there was a critically important intermediate step that took the form of the development of the fully symbolic usage of material culture. Thus the 'revolution in symbols' to which Jacques Cauvin pointed (Cauvin 1994) should be understood as the emergence of the cognitive and cultural ability to create symbolic vocabularies and formulate and 'read' symbolic constructions using material culture (as distinct from spoken or written language).

Early *Homo sapiens* began to use symbolic reference more than 75,000 years ago, and had been carrying out symbolic, ritual actions in the form of ceremonialized burial even earlier. By 50,000 years ago, the linguists tell us, modern humans had evolved fully modern language. From the early Upper Palaeolithic there is evidence of two- and three-dimensional symbolic representation. What is different in the Epipalaeolithic of Southwest Asia is the construction of built environments that were inhabited worlds of symbolism. In the past I have gone along with Jacques Cauvin (1994) in his insistence on a revolution in symbolism at the beginning of the Neolithic, but a good case can be made for symbolic built environments at least as early as the Late Epipalaeolithic period. Two things are important about such symbolically significant built environments. First, as already mentioned, the built environment is inhabited, and it frames the way of life and even the way of thinking of its inhabitants. Architecture can create the arenas within which other objects or actions find their meaningful place. It provides a rich and structured environment within which we think and act. Second, the new kind of environment represented by the early village communities would have had a profound effect on the children who were born and grew up in them. Developmental psychologists emphasize the critical importance of the social and cultural context within which human infants are brought up. Infant experience influences the formation of neural networks, and children brought up in rich cultural environments thrive. The rich symbolic cultural environment of the settlement, therefore, would have become an important driver of rapid cultural development within communities.

Changing people, changing environments

Finally, we return to the title of this contribution to a book entitled *Landscapes in Transition*. The purpose of this essay is to argue that, at least in certain parts of Southwest Asia, there was a steep upward turn in the graph of cognitive and symbolic cultural abilities in the final Pleistocene and earliest Holocene. That coincided with – opened the way for – the emergence of novel forms of community that required advanced symbolic modes of construction. Thus the environments within which communities operated changed significantly, and cultural responses to changes in the bio-environment became less significant than the culturally constructed environment itself. As people and their cognitive faculties changed, they began to construct, both literally and conceptually, their own environments. Thus during the Epipalaeolithic and Early Neolithic periods in at least some parts of Southwest Asia it was the built environment, rich in symbolic values, that became the effective environment, rather than, or as much as, the physical environment from which subsistence resources were taken. Within these settlements, we find striking new uses of architecture, sculpture, modelling and ritualized practices of various kinds; the cultural changes that we can chart may be understood as responses to the cultural environments in which people lived. In these settlements, new, large communities that numbered several hundred and, in the Neolithic period, several thousand inhabitants began to develop rapidly, responding to the rich cultural environment and the density of personal interaction. While we think little of living in urban centres numbering millions of individuals, we should remember that the cognitive and cultural load involved in forming and maintaining communities is very considerable (see Cohen 1985 for a succinct examination of the issue). It was only from the time of the LGM, close to the end of the Pleistocene period, that modern humans had evolved the cognitive and symbolic cultural faculties necessary for the construction of communities that transcended the biological capacity of the human brain (Watkins 2008).

Beyond the settlement, the land that supported its inhabitants constituted an economic resource that belonged exclusively to (constituent groups within) the community. Whether the harvests were of wild plants or cultivated and domesticated crops, the intensively used lands around the settlement were to an extent managed. Further afield there were other communities, and each community was at pains to ensure that it was linked to its neighbours through exchange and sharing (Watkins 2009a). Such networks were in one sense not new, but in scale and intensity they were novel, and they created regional and supra-regional cultural environments. In this regard, we should turn to the work of Clive Gamble on early hominin to Upper Palaeolithic societies and his discussion of human networks (Gamble 1999). Gamble has used recent sociological research on networks, talking in terms of intimate, effective and extensive networks (the last of which is important for us). The individual's intimate network ranges between three and seven, with an average of five, mostly kin. The effective network extends beyond kin and includes those people with whom the individual operates or on whom he/she depends in the course of everyday life. The average size of an effective network is 20 individuals, but may be greater. In mobile hunter-gatherer societies, the effective network equates with the basic 'band'. Bands have a general range of 20 to 40 members. Gamble argues that our early ancestors had intimate and effective networks, but that extensive networks emerged, in Europe at least, only in the Upper Palaeolithic. From a survey of the literature, Gamble suggests that the typical extensive network is in the range of 200–400 persons (Gamble 1999, 60). The formation and maintenance of relations between people who cannot relate to each other face-to-face and, frequently, that is between people who are distant, who rarely see each other, or who may not be known personally to one another, requires the use of symbolic/stylistic signalling. While there is evidence for the movement of stone raw materials over tens of kilometres earlier in the Palaeolithic, the Upper Palaeolithic sees much more intensive movement of high-quality raw materials and also the exchange of items of symbolic value over very long distances. This interpretation of the exchange of marine shells as evidence of new cognitive capacities in modern humans fits with the widely held view among Palaeolithic specialists that the period from about 80,000 to 30,000 years ago saw the emergence of new symbolizing abilities in human cognition and cultural capacity. This capacity allowed humans to build extended networks of relations (of several hundred people) that transcended the fundamental limits of the brain (at around 120–150 persons).

In the Upper Palaeolithic, these new extended networks were spread across the landscape, linking together small, mobile bands. In the Epipalaeolithic period communities began to grow in numbers, so that the extended network became the individual settlement. The far-flung groups who scarcely knew of each other became neighbours. Such large co-resident groups demanded greatly increased cognitive and symbolic cultural skills for the construction and maintenance of the sense of community that enabled them to live together over many years, generations, even centuries. However, these symbolically constructed communities extended their efforts in order to join up into extensive networks of communities that traded materials and goods, replacing the networks of exchange of earlier times. In addition, in subtle and complex ways, they constructed and expressed multi-layered identities through shared symbolic values and practices (Watkins 2008). For us here, thinking about landscapes in transition, the Epipalaeolithic and Early Neolithic communities of Southwest Asia not only transformed the settlement landscape through their changes in subsistence and settlement strategies, but also created symbolic, culturally constructed landscapes that were unlike anything that their Palaeolithic predecessors had known.

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