From Sedentary Foragers to Village Hierarchies: The Emergence of Social Institutions

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THE AIM AND SCOPE

IDENTIFYING THE TRACES OF VARIOUS TYPES of social organizations and institutions in the archaeological residues by reference to those known to us from historical and ethnographic records is notoriously not a simple task. It is a particularly precarious research endeavour when we try to decipher the material evidence of prehistoric populations of Late Palaeolithic and Early Neolithic age in south-west Asia, among which the first chiefdoms and states emerged in later times. The realization that the Neolithic Revolution resulted in a complex socioeconomic evolution, which followed variable trajectories in various regions of Eurasia and North Africa, has recently accelerated research into the timing and causes of the transition from the foraging mode of production to agriculture. The initiation of intentional cultivation, which eventually culminated in plant and animal domestication, meant major changes not only in workloads, division of labour, and permanent storage facilities, but essentially in the establishment of communal and private property, and increased control over territories. Hence, the new social structures of sedentary groups that replaced the egalitarian mobile foragers enjoyed rapid population growth and an increase in social inequality. In addition, these larger village communities were substantially more vulnerable to the impact of abrupt climatic changes.

Before delving into 'when', 'where', and 'why' this process took place in south-western Asia, we need briefly to review the theoretical aspects involved in the study of those societies, often referred to as 'small-scale', 'intermediate', or 'middle range' societies (e.g. Arnold 1996, and papers therein; Earle 1997; Johnson 1987; Price & Gebauer 1995, and papers therein; Upham 1990).

The entire sequence of socioeconomic changes, whether leading towards social complexity with ranked and stratified societies, or reversing its course

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(a subject rarely discussed in the literature), was examined first by social anthropologists and more recently by archaeologists. The general notion is that the historical records, and by reference the archaeological evidence, document a global shift from egalitarian to non-egalitarian or complex societies that finally led to the emergence of chiefdoms and states. Therefore, in the context of this chapter, a short discussion of the implicit and/or explicit assumptions concerning the relationship between the primary sources of information such as the historical records and the secondary sources as derived from archaeological observations is needed. The recent advances emphasizing the role of human agency in the formation processes of social institutions will be mentioned, but the full treatment of the subject is beyond the scope of this chapter.

In the course of classifying the socioeconomic state of a given society and its place along the continuum from an egalitarian to a non-egalitarian society, most authors derive the terminology and models employed in their interpretations of the archaeology from the ethnographies of various world regions. Prominent among these are the North American, the New Guinean, and the Pacific Islands cases, as well as a few sub-Saharan African examples. Not surprisingly, while analysing the intricate social structure of non-egalitarian societies, whether related to power and labour (e.g. Arnold 1996; Earle 1997), or household sizes and social stability (e.g. Ames 1991, 1995; Coupland 1996), the authors rely on continuity between the regional ethno-historical information and the immediately preceding archaeological remains. However, in most, if not all of these cases, the transition from simple hunter-gatherers to non-egalitarian foragers is hardly explained, perhaps because the historical records, including oral traditions, do not provide ample evidence for the primordial time of a given group. We are therefore left with a quasi-static summary of the social components within non-egalitarian societies, be they of foragers or farmers, and the processes that led to increasing social complexity (e.g. Ames 1995; Hayden 1995; Johnson & Earle 1987; Price & Gebauer 1995).

From the presentations of the various basic models and the terminology for every step, phase, or grade of each organizational level, it becomes obvious that the social process and the region in which it took place could be homogeneous or heterogeneous. Hence, features of physical geography and the size of the region measured in square kilometres, as well as the nature of the resources, count. What distinguishes the Levant, as a sub-region of western Asia, is that within a short transect (e.g. 80–150 km) one finds an almost globally unmatched topographic and vegetational heterogeneity. This observation, for example, can be quantified by the number of plant species per km^2 (Danin 1988). The Levant has 0.0855 species per km^2, a little over twice the number found in coastal California, Greece, or countries in temperate Europe. Hence, as a region, the Levant differs in size, resources, and seasonality from those previously mentioned regions often employed by archaeologists as their main

sources of information for societal evolution. In addition, the Levant is about one-third the size of the north-west coast of North America and about one-fifth that of New Guinea. In sum, comparing the three of them, major differences emerge in the number, kind, and distribution of potential food resources, whether vegetal or animal, and in their seasonal availability. Therefore, apart from hunting, acquisition techniques also differ.

In describing the archaeological data from the Levant and their social interpretation, like other modellers, I recognize that the common denominator for all societies is human nature. When the latter is detailed at the level of simple hunting and gathering societies this means competition among individuals, the presence of alpha-males, the acceptance of temporary or permanent coercion by all members of the group, and active participation in all realms of daily life that are classified as social interaction, technology, subsistence, and ritual (e.g. Service 1962). The second type of social organization to be employed in this chapter will be that of the 'non-egalitarian society', as defined through a series of attributes by Kelly (1995). This stage in societal evolution was previously called 'complex society' (Price & Brown 1985). The chapters in that volume already exhibited the variability within this class. As pristine non-egalitarian societies (and those — dare I say? — in a 'core area') are generally semi- to fully sedentary, the next phase would be the emergence of the headman, probably as a hereditary position. Spatially, at that stage we notice hierarchies among villages and hamlets in which local headmen wield power, prior to their full control by a chief and the formation of a chiefdom.

Applying social interpretation to archaeological remains is far from being an easy task. It is well known that the archaeological evidence, even when preservation is excellent (i.e. littered with organic remains), and recording by the excavators meets the standards of the day, is open to diverse interpretations. Therefore there is an obligation on the interpreter explicitly to enumerate the archaeological attributes that signify a given social state (for the society) and/or the presumed status of the individual. For this purpose, archaeologists tend primarily to exploit information from graveyards, the size and contents of houses, inter-village organization, and the nature and degree of long-distance exchange (or trade). A few examples are in place.

Among sedentary or semi-sedentary foragers, the presence or absence of decorated skeletons (with the distinctions of male/female and age at death) is taken as reflecting their status. In village societies, a gradation from simple burials to elaborated ones with rich body decorations and grave offerings symbolizes the individual's and/or household's status within the community. The lack of decorated skeletal relics in a village community is seen in a recent archaeological case as motivated by the need to negotiate equality among members (e.g. Kuijt 1996). Variability in the size of domestic buildings is considered as expressing the wealth of a family or household (Byrd 2000).

Driven by the need to interpret phenomena on a larger scale than that of a particular site, archaeologists exploit information gathered from several sites. In such an overview we are fully aware that we may expect differences between a 'core area' and the 'periphery'. This socioeconomic distinction, which can, but does not always, overlap with a sociopolitical classification, relates not only to world systems and industrial advances, but also to socially constructed concepts, ideologies, and material elements. The notion that 'core areas' and 'peripheries' existed in the prehistoric past was not uniformly accepted. Three decades ago, archaeologists saw all past hunter-gatherer groups across the continents as forming a social and biological continuum. Every subdivision proposed on the basis of lithic analysis was considered as an artificial splitting of past societies by researchers who wanted to identify 'archaeological cultures'. The 'splitters' were often blamed for 'creating prehistoric ethnicities' while constructing a cultural-historical sequence that was reflected exclusively in material elements.

Recently, the realization that genes, languages, and material culture do not necessarily co-vary facilitated a return to the basic aim of investigating archaeological cultures, which do not necessarily represent past ethnicities, and their changes through time. Such studies are aided by advances in the anthropology of technology and the improved understanding of the role of human agency in the past (e.g. Dobres & Hoffman 1994; Lemonnier 1992). None of these approaches to 'archaeology as history' pretends to identify 'ethnicity', language, evidence for gene drift, or the direction of gene flow. While the investigation of material culture may seem tedious and unrewarding research, the scientific advances resulting from it have enabled us to identify various important aspects of human behaviours such as subsistence systems (e.g. seasonality, patterns of hunting and butchering), stone tool making and usage (e.g. raw material procurement, core reduction techniques, curation of selected artefacts and function), building techniques, and the variable use of natural shelters, home ranges, and territories.

In the following pages, I will try to demonstrate how modes of production, fluid and/or conservative societal structures, and environmental fluctuations intertwine to form a reasonably coherent social history portraying how in south-west Asia complex hierarchical village communities emerged from semi-sedentary and sedentary groups of foragers.

THE CYCLICAL NATURE OF SEDENTISM

The term 'sedentism' is defined as the permanent presence of humans in a given place, which is often the interpretation given to a locale incorporating a few dwellings and sufficient evidence for more than seasonal occupation.

Habitations range from natural caves, rockshelters, and pit-huts to built-up houses of variable dimensions, among which palaces are ranked at the top of the scale. Sedentism is seen as the essential first step in the evolution of complex societies. Unfortunately, not all built-up environments were created by permanent settlers. There are known cases of mobile groups such as herders investing in the construction of shelters within the boundaries of their anticipated year-round routes.

Research by social anthropologists has demonstrated that the built environment of every society embodies the symbols for land ownership. Studies of basic architecture, kinship, and economic relationships within 'House Societies' (Lévi-Strauss 1983) were generally conducted in contemporary villages, or on cases known from historical contexts (e.g. Oliver 1971; Rapoport 1969). It is therefore not surprising that a cluster of houses, recognized as a hamlet or village, was often taken to represent a sedentary community (e.g. Rafferty 1985). However, given the ambiguities in the interpretation of the prehistoric remains, only houses in villages and more especially in towns from the time of the Bronze Age can be taken as evidence for year-round habitations. Prehistoric sites require a more careful approach. Following the pioneering work of Tchernov (1991a, 1993a), evidence for Late Pleistocene and Early Holocene sedentism is based on the presence of high frequencies of commensals ('self-domesticated species') among the bones of microvertebrates and birds, for example the house mouse, rat, and house sparrow. In semi-arid areas such as Sinai, the spiny mouse was found to be a commensal (Haim & Tchernov 1974). The archaeological attributes of sedentism, in descending order of confidence, are arranged in Figure 1.

All scholars agree that sedentism has both cultural and biological effects (Belfer-Cohen & Bar-Yosef 2000, and references therein; Rosenberg 1998, and references therein). However, investigators are divided on the issue of 'why' human groups became sedentary. Two alternative explanations are often mentioned. The first suggests that sedentism was caused by the attraction of humans to spatially restricted and rich resources where the 'law of least effort' would enhance the desire to stay for many months in the same locale. This process is known as the 'pull' model (e.g. Stark 1986). The second explanation proposes that economic and social circumstances enforced sedentism (Henry 1989; Keeley 1988; Kelly 1991; Rosenberg 1998, and references therein). The latter scenario is applicable, for example, to a situation in which abrupt climatic change and population densities in nearby territories impose reduced mobility, which results in social and technological changes. In both models, the decision to become sedentary seems to occur when a permanent camp allows for optimal exploitation of resources (both K- and r-selected). In addition, in both trajectories there is plenty of room for integrating the role of social concerns. For example, a rebellious decision by females and older members of the

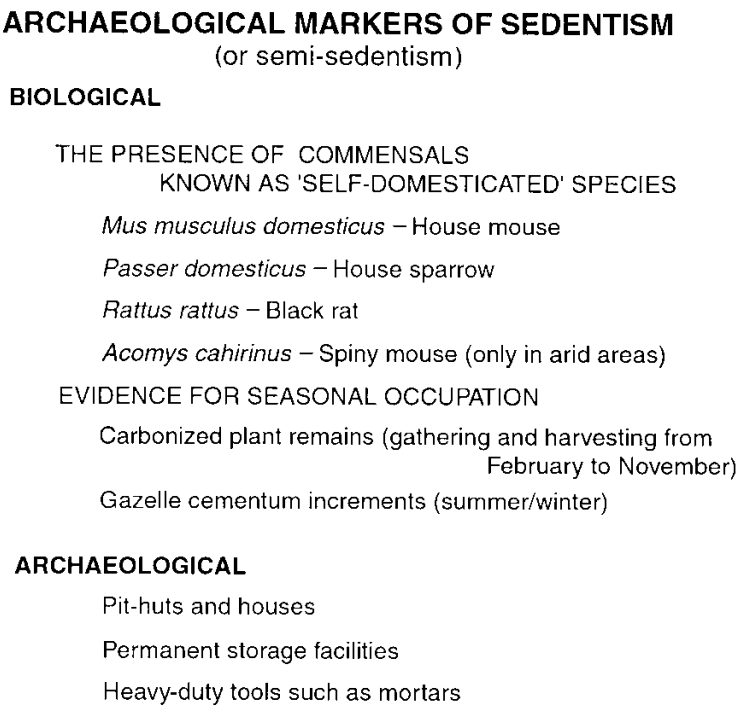

Figure 1. The archaeological markers of sedentism, in descending order of importance.

group might force younger, more active men to stay nearby. Another issue is the nature and degree of 'population pressure'. Archaeologists often took this to mean population growth, and acknowledged that foragers, as far as is known today, regulated their populations in order to survive in a given environment. Alternatively, low reproductive rates are mentioned (Bentley *et al.* 1993). The archaeological testing of the physical evidence for population increase, especially in the Late Pleistocene period, is plagued with uncertainties that emanate from the degree of sites' visibility, recovery techniques, and the risk of gross errors in estimating the number of humans at a given time. However, various archaeologists observed a population growth during this time in the Levant (e.g. Bar-Yosef & Belfer-Cohen 1989b; Henry 1989; Moore 1989). Under such circumstances, when mobility must be reduced within a given territory, people would choose either to settle down or to expand and face physical conflicts with their neighbours. Similar resolution may be reached among territorially bounded people in a situation when 'population pressure' is a culturally construed, but economically unjustified, perception. Today, for example, social concerns are reflected in road signs in the United States that cite a place

as being 'thickly settled' in areas that by Near Eastern standards would be considered as 'sparsely settled' (Bar-Yosef 1997b).

Sedentism has its price in sociopolitical, economic, and health tolls. Daily life in a village larger than a foragers' band heralds the restructuring of the social organization (Flannery 1972), as it imposes more limits on the individual as well as on entire households. To ensure the long-term predictability of habitable conditions in a village, members accept certain rules of conduct that include, among other things, the role of leaders or headmen (possibly the richest members of the community), active or passive participation in ceremonies (conducted publicly in an open space), and the like. The archaeological correlates for most of these aspects are commonly uncovered in Neolithic sites, as demonstrated by site reports and syntheses (e.g. Aurenche & Kozlowski 1999; Cauvin 1997; Kuijt 2000a, and papers therein; Voigt 1990).

The organizational resilience embedded in human societies, at least since the Upper Palaeolithic, demonstrates that among foragers sedentism may have been a temporary solution alternating with periods of mobility. The range of options within the system of residential and/or logistical mobility (Binford 1980) allowed, when conditions were right, the establishment of sedentary camps. It is suggested, for example, that the late Gravettian (24,000–20,000 BP uncalibrated) sites of Kostenki I and Avdeevo, where spatially organized pit-huts have a superstructure of mammoth bones and equidistant layout of hearths, were sedentary camps (Serguin 1999). The seasonal information is interpreted as supporting year-round presence and is based on evidence of newborn mammoths (in springtime), dental analysis of polar fox (indicating late autumn/winter), and summer plant remains. In addition, the accumulations of mammoth bones in Gravettian sites in Moravia (Jelinek 1999) may reflect long-term occupations (Svoboda *et al.* 1996). Similar proposals were suggested for the Late Palaeolithic (after 18,000 BP) sites along the Dnestr River (Borziyak 1993).

It might be assumed that when additional seasonal information from Upper Palaeolithic and later sites is gathered or re-analysed we will recognize that human occupation was cyclical and that sedentism occurred in the past in more than one region or at more than one time. Therefore, the decisive transition from sedentary communities of foragers to those of cultivators becomes an import juncture, a 'point of no return' causing an avalanche in the history of human settlements. This process, which must have been unique in every region, must be investigated before we can focus on the ensuing sociocultural changes. It seems that in the Near East, there was a close relationship between the worsening climatic conditions (which determine the geographic distribution of annual and permanent food resources) and the onset of cultivation by sedentary foragers.

CLIMATIC IMPACTS ON LATE PLEISTOCENE–EARLY HOLOCENE PAST SOCIETIES

In studying human responses to natural disasters such as droughts, floods, and sea-level rise — which are often expressed in famines, migrations out of the affected region, the collapse of communities, and death — researchers in modern relief programmes have found that each population negotiates the impacts of natural disaster in its own way. While physically abrupt climatic calamities may be similar, human reactions differ. In classifying the components of a safeguard or buffer mechanism against the effects of prolonged stress or an abrupt disaster of a given population, investigators identify the factors that would enable the individual and the group to cope and to reach an operative decision. The cultural components depend on the group's size and its social organisation (i.e. band, macro-band, tribe, or state), as well as on the size of the affected region (Glantz 1987, 1994; Glantz *et al.* 1998). In brief, in evaluating the impact of natural disasters, whether of long or short duration, we need to take into account the particular 'cultural filter' of the affected population. The application of this cumulative knowledge to the particular conditions of south-western Asia is already summarized in various forms in the literature (e.g. Bar-Yosef 1996; Bar-Yosef & Belfer-Cohen 1992; Goring-Morris & Belfer-Cohen 1997; Henry 1997; Moore & Hillman 1992; Sanlaville 1997).

The current review of the Terminal Pleistocene through the first half of the Holocene is based on calibrated BP dates calculated through INTCAL98 or Calib.4.2 (Stuiver *et al.* 1998). It incorporates the main archaeological entities of the Late Epi-Palaeolithic and the Early Neolithic (Figure 2). In order to keep the overall chronology in a simple form, a choice was made by the author. Most radiocarbon dates have more than one optional calibrated date, especially if calculated within two SD (95 per cent of probability). However, I have used the median figure produced by the software, as calculated with only one standard deviation. Obviously this procedure does not mean that the calibrated date is calendrically accurate. Despite these limitations, the proposed procedure facilitates testing the degree of correlation between the archaeological manifestations and the climatic fluctuations.

In recent years, the Greenland ice cores (GRIP and GISP) have become the main sources for proxy palaeoclimatic conditions during the Terminal Pleistocene and Early Holocene in the northern hemisphere (e.g. Alley *et al.* 1993; Mayewski & Bender 1995; O'Brien *et al.* 1995). Similar information is gathered from marine and terrestrial sources, and the degree of synchronization between all these data sets is repeatedly tested. This type of investigation uncovered a major caveat. In the eastern Mediterranean, dated pollen records from marine cores demonstrated a lack of synchronization with pollen sequences from lake cores in the order of hundreds or even thousands of years

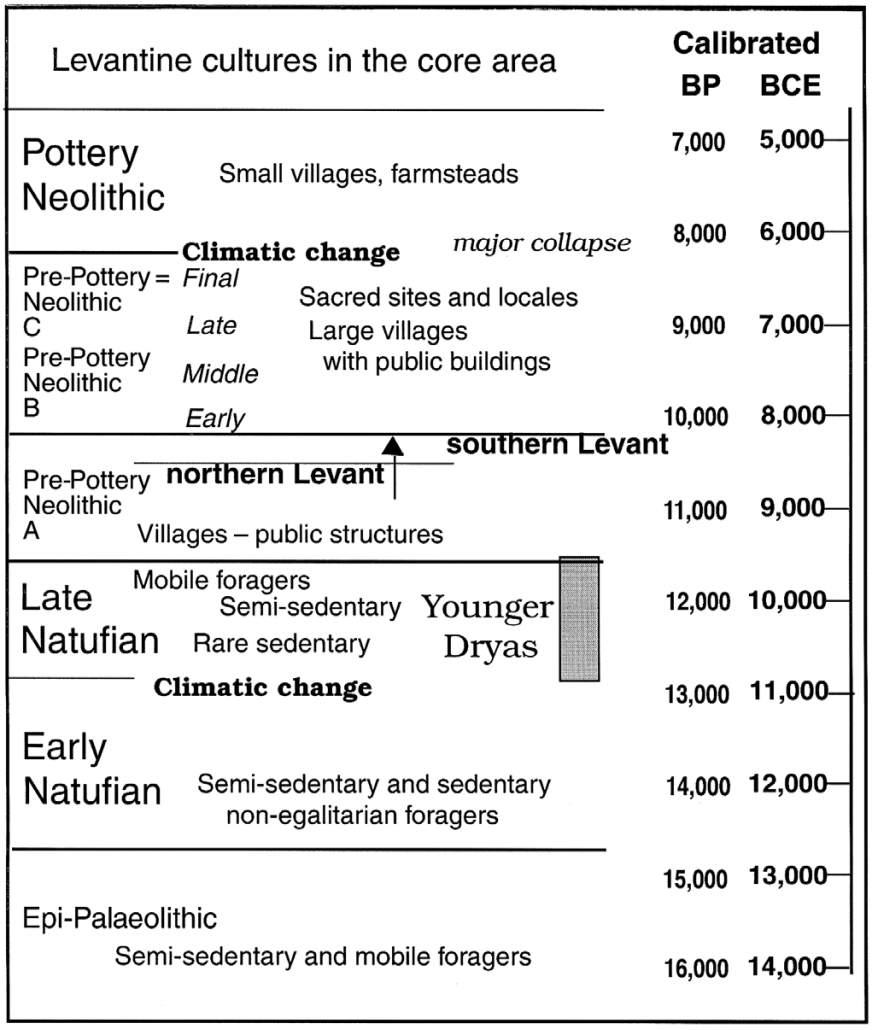

Figure 2. Chronological chart of calibrated BCE and BP dates, indicating the main archaeological periods and/or cultural entities.

(Rossignol-Strick 1995, 1997). This chronological discrepancy seems mainly to arise from the effects of hard water, the influx of old carbonates into lakes and their incorporation within the same organic-rich sediments that are commonly used for dating (e.g. Baruch 1994; Baruch & Bottema 1999; Cappers *et al.* 1998; van Zeist & Bottema 1991).

The general course of the palaeoclimatic changes in the Near East, often determined as a sequence of fluctuations between wet and dry phases, corresponds to the palaeoclimatic sequence of the North Atlantic, in spite of

some discrepancies between the available radiocarbon dates from the various sources (e.g. Bar-Mathews *et al.* 1997; Bar-Mathews *et al.* 1999; Frumkin *et al.* 1999; Henry 1997; Sanlaville 1996, 1997). Each of the climate-sensitive sources indicates abrupt climatic fluctuations within the long trend of change. The entire sequence can be summarized as follows.

During the Last Glacial Maximum (LGM, *c.* 24,000 to *c.* 18,000 BP) the climate of the region was cold and dry, although the coastal hilly and mountainous ridges enjoyed winter rains and were covered mostly by open forests. The parkland belt of terebinth and almond stretched over the eastern and northern margins, bordered by steppic and desertic vegetation. Numerous inland lakes shrank and some even turned into salty ponds. From 18,000 BP onwards, precipitation across the region slowly increased, and even more rapidly from around 15,000/14,500 BP, marking the onset of the Bölling–Allerød warmer period. The latter ended *c.* 13,000/12,800 BP with the onset of the Younger Dryas (YD). Coeval was the increase in the amount of CO_2 in the atmosphere, which generally favours annual plants with C3 pathways, such as the cereals (Sage 1995). A drop in the average annual temperature, a decrease in the availability of atmospheric CO_2, and the decrease of rains marked the YD. The reconstructed vegetational map for this period by Hillman (1996) shows the impacts of the new conditions. These are marked by the retraction of the vegetational belts and, although the decrease of CO_2 is less effective when trees are considered, the decrease in precipitation was probably more important. The end of the YD came with the climatic improvement at the onset of the Holocene (some 11,500 BP), which marked the expansion of the woodlands and steppic belts inland.

The return to pluvial conditions began around 11,500/11,300 BP. Rainfall in the southern Levant may have reached the levels of the previous peak (Bar-Mathews *et al.* 1997) and it also increased in Anatolia, penetrating gradually into the Zagros Mountains during the Early Holocene (Hillman 1996; van Zeist & Bottema 1991). The Early Holocene climate was moister than that of today, as is indicated by climatic proxies from the northern hemisphere such as the ice cores and various pollen records. An additional major climatic crisis is currently dated to 8,400–8,200 BP (Alley *et al.* 1997; Bar-Mathews *et al.* 1999). Not surprisingly, these centuries mark the end of the Pre-Pottery Neolithic B (PPNB).

The effects of the monsoon system were limited to a region encompassing a large part of the Arabian peninsula and portions of north-east Africa, as recorded in the numerous palaeo-lake deposits and Late PPNB occurrences (Hassan 1997). This meant that for a couple of millennia, certain areas of the Sahara and Arabian Desert enjoyed both winter and summer rains.

Sea-level rise after the LGM was gradual and continued until the Mid-Holocene, as evidenced by submerged PPNB and Early Pottery Neolithic sites

uncovered along the Israeli shoreline (e.g. Galili & Nir 1993). Independent of regional tectonic conditions, evidence for the same sea rise was recently obtained in the western Mediterranean (Lambeck & Bard 2000). During the Holocene, a stretch of land around 2 to 40 km wide and 600 km long from south-east Turkey to northern Sinai was lost. The coastal inundation affected the size of territories of both foragers and early farmers. Their vulnerability as a result of their dependence on the natural food sources meant that hunter-gatherers were definitely affected much more than later farmers. The shifting by the Natufians of the location of the main base camps from the central area of the coastal plain to the foothills, as will be described below, marks the shift of the ecotone. In this regard, it is worth mentioning that aquatic sources were always of minimal economic importance because the eastern Mediterranean Sea is and was more saline in comparison with its western side or the vicinity of the Nile Delta. Hence, the main impact of the sea-level rise could have been on the availability of particular marine shells such as *Dentalia*, which were used for decoration and often collected on the beaches.

In sum, in a geographically varied region such as the Near East, palaeo-climatic fluctuations could have played a major role in the spatial distribution of resources. Hence, evolutionary models that predict the social evolution in this region from mobile or semi-sedentary foragers to the emergence of sedentism must take into account the shifts in the reliability, predictability, and accessibility of resources.

LATE PLEISTOCENE FORAGERS AND THE EMERGENCE OF INEQUALITY

The archaeology of Late Palaeolithic (or Epi-Palaeolithic, *c*. 20,000–15/14,500 BP) foragers is relatively well known (e.g. Bar-Yosef & Belfer-Cohen 1989a, 1992; Bar-Yosef & Meadow 1995; Byrd 1994a, 1998; Fellner 1995; Garrard 1998; Garrard *et al*. 1994; Goring-Morris 1987, 1995; Goring-Morris & Belfer-Cohen 1997, and references therein; Henry 1989, 1995; Rabinovich 1998). Social entities within this world of foragers were identified on the basis of quantitative and qualitative stylistic differences among the microlithic tool types, which changed faster than the core reduction strategies (Goring-Morris *et al*. 1998). Cultural attributes such as spatial distribution of sites, site size and structure, intensity of occupation, and patterns of seasonal mobility are the components that facilitate the configuration of a socioeconomic map. In a west–east transect in the Levant, or south–north in Anatolia, semi-sedentary foragers occupied the Mediterranean vegetational belt while more mobile groups subsisted in the parkland, the steppic areas bordering the Syro-Arabian desert, or the high Anatolian plateau.

The main cultural change is marked by the appearance of what is called the Natufian culture (Figure 3), which is traditionally divided on the basis of stratigraphies and radiocarbon measurements into Early and Late Natufian (*c.* 15,000/14,500–11,500 BP: e.g. Bar-Yosef 1998; Belfer-Cohen 1991b; Valla 1995). The Early Natufian is known for the various aspects of hamlet or village

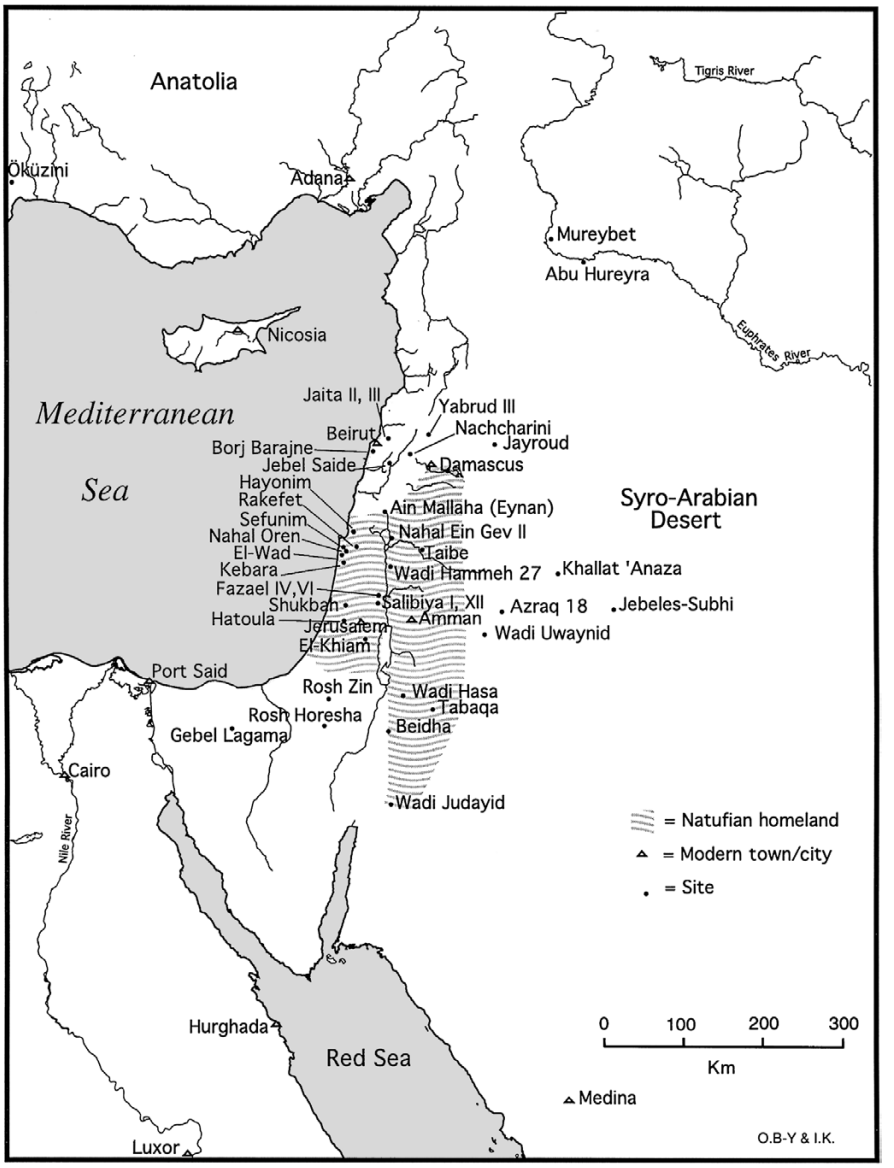

Figure 3. The Natufian homeland with additional, contemporary sites.

life, an interpretation based on the uncovering of pit-houses, burials, imagery objects, and numerous pounding and grinding stones, as well as rich lithic and bone industries. The full array of the cultural components characterizes the larger Natufian sites (*c.* >1000 m^2) in the homeland in the central Levant (Figure 3), and rarely the small (15–100 m^2) seasonal camps (Bar-Yosef 1998, and references therein; Bar-Yosef & Belfer-Cohen 1992; Belfer-Cohen & Bar-Yosef 2000; Byrd 1994a; Henry 1989).

It is the presence of commensals, as mentioned above, that defines the Early Natufian hamlets as sedentary (e.g. Tchernov 1991b, 1993a). The cause of Natufian sedentism is still debated. Henry (1989) advocated that it was brought about by intensification of cereal exploitation. Alternatives include the environmental impact caused by a short and cold period (Dryas II) on the increasing population of foragers. There was also the climatic amelioration of the Bölling–Allerød, and the attraction of stable and expanding vegetal resources (e.g. Bar-Yosef & Belfer-Cohen 1991; Garrard 1999). In addition, McCorriston and Hole (1991) proposed that sedentism enhanced the propagation of annuals such as cereals. However, Early Natufian sedentism lasted only for about two and a half millennia, and site stratigraphies testify to intervals of abandonment, the lengths of which are unknown (Valla 1991; Valla *et al.* 1998). These short gaps may constitute the evidence for the cyclical nature of sedentism.

The Natufian economy is better known from animal bones than from plant remains. The latter are rare in *terra rossa* soils, but are present in loamy and ashy deposits such as in the lower layers of Abu Hureyra and at Mureybet (Colledge 1998; Hillman *et al.* 1989; van Zeist & Bakker-Herres 1986). Wild cereals, legumes, and fruits such as almonds and pistachios were gathered with other numerous species. The older, but well-preserved assemblage of Ohalo II, dated to *c.* 21,000 BP, indicates that the full vegetarian menu of the Natufian (Kislev *et al.* 1992) was available several millennia earlier. However, the main difference was that the Natufians harvested the cereals with sickles. This new tool type was composed of shaped flint blades, which were inserted in grooved bone or wooden handles. Experimental and microscopic studies (Anderson 1998; Unger-Hamilton 1991; Yamada 2000) demonstrate that the sickles were mainly employed in cutting cereals. Their use, instead of that of basket and beaters, can be interpreted as showing either that higher yields per harvested area were thereby obtained or that the gathering was done when most ears were still green and the seeds were thus more firmly attached. Harvesting at this earlier stage required parching as a major step in food preparation. The scarcity or lack of storage facilities in Natufian sites is intriguing. Ain Mallaha is the only site where underground pits, partially coated with plaster, were reported (Perrot 1966). Instead, it seems that baskets fulfilled this need. The presence of baskets is indicated by use wear on bone tools (Campana 1989). Baskets probably served for transporting seeds and fruits to the hamlet, as well as for

storage. Basket remains from PPNA and PPNB contexts hint that it is only a matter of time until similar finds are discovered in a Natufian site. Finally, the overall exploitation of plants and animals reflects a 'broad spectrum' subsistence. Hunting and trapping of mammals, such as rare aurochs, numerous gazelles, fallow deer, roe deer, and hares, and of reptiles such as tortoises took place, as did some fishing (e.g. Davis 1982; Tchernov 1993b). Hunting tools probably included bows and arrows. Grooved 'shaft straighteners' made of basalt and limestone bear burn marks that resulted from rubbing heated wooden shafts and these support the notion that the Natufians already knew archery (e.g. Valla 1987).

Kitchen equipment included bedrock mortars, portable mortars, bowls of various types, cup-holes, mullers, and pestles. Many small mortars and numerous pestles were made from basalt. The latter originated from the lava outcrops in the eastern Galilee and the Golan, some 60–100 km away from Mt Carmel (Weinstein-Evron 1997; Weinstein-Evron *et al*. 1995). Unique boulder mortars weighing up to 100 kg and with a 70–80 cm deep hole — sometimes called 'stone pipes' — were considered as special tools and have often been found in an upright position, with breached base, only in graves. One possible explanation was their use as a means for communicating with the dead.

The Natufians used a large number of bones and horn cores to shape various objects. Many pieces were employed in daily tasks such as hide-working and basketry (Campana 1989). Barbed items served as parts of hunting devices (spears or arrows). Hooks are few, but gorgets are numerous, and both are assumed to have been made for fishing.

Large collections of unique bone implements decorated with incised patterns or carved animals (Bar-Yosef & Belfer-Cohen 1998) are often found in special contexts, such as in Hayonim and El-Wad caves. The special stone structures in both caves (although they are not well recognized at El-Wad) are interpreted as locations for particular activities, perhaps carried out by the shamans. Hence, unique objects, including the decorated sickle hafts with three-dimensional carved young ungulates, were found there. Other special finds are the limestone slabs uncovered in Hayonim cave (Belfer-Cohen 1991a). These were often incised with the 'ladder' pattern interpreted as notation marks (Marshack 1997). A recently found small slab depicts distinct incised units made by a series of parallel lines. Their overall arrangement conveys the impression of territories or 'fields' of some kind (Bar-Yosef & Belfer-Cohen 1999). This interpretation corroborates the material evidence for 'localization' of Natufian groups mentioned above, which probably signals their perception of 'territorialism' and ownership. Different incised slabs with a carved meander pattern were uncovered in probably a domestic context, in Wadi Hammeh 27 (Jordan). The wavy pattern, which may symbolize water, is a motif also known from large carved basalt bowls from Mallaha and Shukbah.

The contents of the graves, as mentioned above, are taken as indicators for social inequality during the Early Natufian. In most cases, graves were dug in deserted pit-huts, in open spaces, and not under the floors (Belfer-Cohen 1995; Byrd & Monahan 1995). The relationship between the living and the dead is therefore less straightforward than was previously considered. Grave pits were shallow or deep, and rarely were paved with stones or lime-coated. The burials, which reflect variable mortuary practices, include supine, semi-flexed or flexed positions with various orientations of the head. The number of inhumations varies from single to collective, although the latter are more common in Early Natufian contexts. Secondary burials were either in special graves or mixed with primary burials. About 8 to 10 per cent of Early Natufian skeletons had body decorations of marine shells (mainly *Dentalia*), and bone and animal teeth pendants which mark the remains of garments, belts, headgear, and the like (Belfer-Cohen 1995; Byrd & Monahan 1995). In a few cases, objects recognized as grave offerings were found. In addition, joint inhumations of humans and domestic dogs occurred in two graves, one at Ain Mallaha and one in Hayonim Terrace (Davis & Valla 1978; Tchernov & Valla 1997; Valla 1990).

The decorated burials raise the issue of social status within Early Natufian communities (Wright 1978). Although recent analyses do not support the contention that they reflect a ranked society (Belfer-Cohen 1995; Byrd & Monahan 1995), the fact that in each site the decorated skeletons of individuals of all ages form only a portion of the entire buried population suggests otherwise. In addition, the differences in the composition and types of the common elements of body decoration (bone beads and pendants) between the sites is interpreted as marking the identity of particular local groups (Belfer-Cohen 1995).

A cultural change is observed in Late Natufian burials, such as in the large cemetery at Nahal Oren (Mt Carmel), where decorated burials are lacking and only a few grave goods were found (Belfer-Cohen 1995; Byrd & Monahan 1995). Moreover, there are more secondary burials in these contexts, as well as a few cases of skull removals, which herald a custom common in the ensuing Early Neolithic period (Belfer-Cohen 1988).

Most authorities agree that Late Natufian society was more mobile in comparison with its ancestors, probably because of the harsher and less stable environmental conditions created by the Younger Dryas. Under these conditions, mortuary practices convey a shift from a non-egalitarian society back to a more egalitarian one (Kuijt 1996).

During both social phases of Natufian society, long-distance connections or even alliances are indicated by the presence of marine shells. Most items were collected from the shores of the Mediterranean Sea, and some were brought from the Red Sea (D.E. Bar-Yosef 1989, 1991; Reese 1991). Among the rare, but most informative finds are a freshwater clam, *Aspatharia* sp.,

which originated in the Nile Valley, and a few pieces of Anatolian obsidian from the upper layer at Ain Mallaha.

Among the mobiliary art objects, the shift from the non-egalitarian Early Natufian to a simpler society in the Late Natufian leads to the increasing presence of personal items (known mainly from the burials at Nahal Oren). Among these, it is worth noting the double-headed objects with carvings at the extreme ends of each item depicting an owl and a dog's head, or an ungulate and a human head. A rare item is the 'baboon' head, which may hint at an African connection. All portable objects could have served as transferable items, thus acquiring an additional symbolic value.

THE YOUNGER DRYAS AND THE INITIATION OF INTENTIONAL CULTIVATION

The climatic crisis of the Younger Dryas, mentioned above, is best known from the climatic proxies gathered in the northern hemisphere (e.g. Broecker 1999; Zolitschka *et al.* 1992). The length of this period, according to the ice core chronology, is *c*. 1,300±70 years (Alley *et al.* 1993; Mayewski & Bender 1995; Taylor *et al.* 1997), from 12,900 to 11,600 or 12,800 to 11,500 BP. However, there is a certain discrepancy between the European varve chronology, the calibrated radiocarbon and ice core dates and local records such as in Lake Van, where varve counting suggested dates of 12,600 to 11,000 or 10,510 BP (Lemcke & Sturm 1997). In spite of these reservations, what concerns us is the reaction of human societies to an abrupt climatic change, even if, when filtered through the environment, the effects seem to be slow on the scale of a human lifetime. The case of the Natufian is probably the oldest for which we can test the relationship between environmental and cultural changes in the Near East.

Complex hunter-gatherer societies such as the Early Natufian lasted for two and a half millennia, but are considered as unstable social entities (Arnold 1996, and references therein; Henry 1991). It seems that the crisis of the YD, by imposing drier and colder conditions, caused populations of many but not all hamlets to disperse and become more mobile. Apparently, a sedentary mode of production became incompatible with the previous trend of population growth, especially among those who occupied the marginal belts of terebinth/almond woodland and steppic vegetation. Under conditions of intense competition, cost considerations favour smaller groups, which are economically advantageous when marginal returns diminish (Belfer-Cohen & Bar-Yosef 2000; Kosse 1994). Therefore, the Natufian and other social entities in the Near East faced a variety of choices (Bar-Yosef & Belfer-Cohen 1991), and the archaeological records reflect the implementation of their decisions. In the Natufian homeland, increasing mobility between base camps was a

partial solution. The greater mobility of the Late Natufian marks a return to egalitarian society and is indicated by the disappearance of decorated burials and the larger number of multi-individual graves. Kuijt (1996) considers this shift in mortuary practices an attempt to erase social differentiation between kin-groups and to emphasize the unity of the population by giving similar treatment to all community members. In addition, skeletal data indicate conditions of physical stress (Belfer-Cohen *et al.* 1991).

Natufian groups in the steppic areas of the Negev and northern Sinai developed a special adaptation labelled archaeologically as the Harifian culture (Bar-Yosef 1987; Goring-Morris 1991). The exploitation strategy of the Harifian incorporated extensive seasonal movements between lowlands in the winter and highlands in the summer and autumn. These groups also enjoyed an enhanced exchange relationship with their neighbours, reflected in the marine shell jewellery, which was collected from both the Mediterranean and the Red Sea shores. In spite of their efforts, this cultural entity lasted only a few centuries. Despite ambiguities in interpreting the calibrated dates, it is probable that the last Harifians died or joined the PPNA cultivating communities in the Jordan Valley.

A different socioeconomic solution emerged in the face of the worsening conditions in the Taurus and Zagros foothills. On the Tigris tributary, the hamlets of Hallan Çemi Tepesi (12,900–10,900 BP) and further east Zawi Chemi Shanidar in Iraqi Kurdistan indicate that sometime between *c.* 13,000 and 11,200 BP groups shifted from mobile hunting and gathering to semi-sedentary settlements. Their rounded pit-houses do not seem to differ from those of the Natufian (Rosenberg 1998; Solecki 1981), but their lithic industry, rich in triangles, ties them with the Trialetian culture, further north (Kozlowski 1999). The maintenance of long-distance connections is indicated by the chlorite stone bowls, which were produced and transported along the eastern Taurus and Zagros foothills (Aurenche & Kozlowski 1999). In addition, the resemblance of the architectural remains of the pit-houses of Hallan Çemi to those of the Early Natufian hamlets, as well as the presence of an open public space, indicates that it was a village of a non-egalitarian social group.

THE FIRST FARMING VILLAGES

The current archaeobotanical remains bear witness, during the later centuries of the Younger Dryas or immediately after, to the onset of intentional cultivation of wild cereals and legumes. It may be hypothesized that it was due to the annually reduced yields in the natural stands of einkorn and emmer wheats, rye, and barley that those groups which had previously exploited these 'r-resources' and knew the nature of the species began planting them. The

reduction in wild cereal production could have been the result of decreasing atmospheric CO_2 or a response to increasing human demands. Such a stressful situation was created when natural fields shrank under the cold and dry conditions of the Younger Dryas.

Colledge (1998) analysed the relationship between the occurrence of the various plant taxa and their ecological classification by applying correspondence analysis to available carbonized plant assemblages. That from PPNA Mureybet led her to conclude that cultivation of wild cereals was practised near the site. Similar conclusions concerning wild barley were reached by Kislev (1997) in reporting the plant collection from Netiv Hagdud, a PPNA site in the Jordan Valley. Hence, because of a lack of sufficient evidence, it is as yet uncertain whether the initiation of cultivation took place within what is archaeologically defined as the Late Natufian and its contemporaries (such as in Abu Hureyra I), or in the Khiamian.

The Khiamian is the first Neolithic archaeological manifestation in the Levant (Figure 2). This entity is still poorly known, perhaps because of its short timespan of barely a few centuries (*c*. 11,700–11,200 BP: Aurenche & Kozlowski 1999; Kozlowski 1999; Kozlowski & Gebel 1996). In addition, the available information on the Khiamian was obtained from very limited soundings and sites in which a mixture with earlier layers is likely to have occurred. The lithic industry of the Khiamian comprises of the aerodynamically shaped el-Khiam arrowheads, asphalt-hafted sickle blades, some microliths, and high frequencies of perforators. Bifacial or polished celts, considered Neolithic 'markers', are absent from the reported contexts.

Early Neolithic settlements (Figure 4) are better known from the Jordan Valley, the Damascus Basin, the Euphrates Valley and beyond (such as Qermez Dereh: Watkins *et al*. 1989), or the lower level at Çayönü (Özdogan 1999). Most, but not all of these hamlets and villages (0.2 to 2.5 hectares in size) are three to eight times larger than the largest Natufian sites, thus reflecting a rapid population growth.

Three cultural entities of farmers-hunters were identified in the Levant, including the Mureybetian in the north, Aswadian in the centre, and the Sultanian in the south. In addition, foragers continued to survive in Anatolia as well as in the semi-arid areas of the Syro-Arabian desert, the Negev and Sinai. The domestic architecture of farming communities is characterized by pithouses with stone foundations and walls built of plano-convex unbaked mudbricks or adobe. In time they became rectangular (Stordeur *et al*. 1997). Storage facilities are found in every site, either as small, stone-built bins or larger, mud-brick constructed installations (Bar-Yosef & Gopher 1997; Cauvin 1977).

In the Neolithic contexts, special buildings, carved stelae, mortuary practices, modelled statues, and figurines are considered as indicators of ceremonial

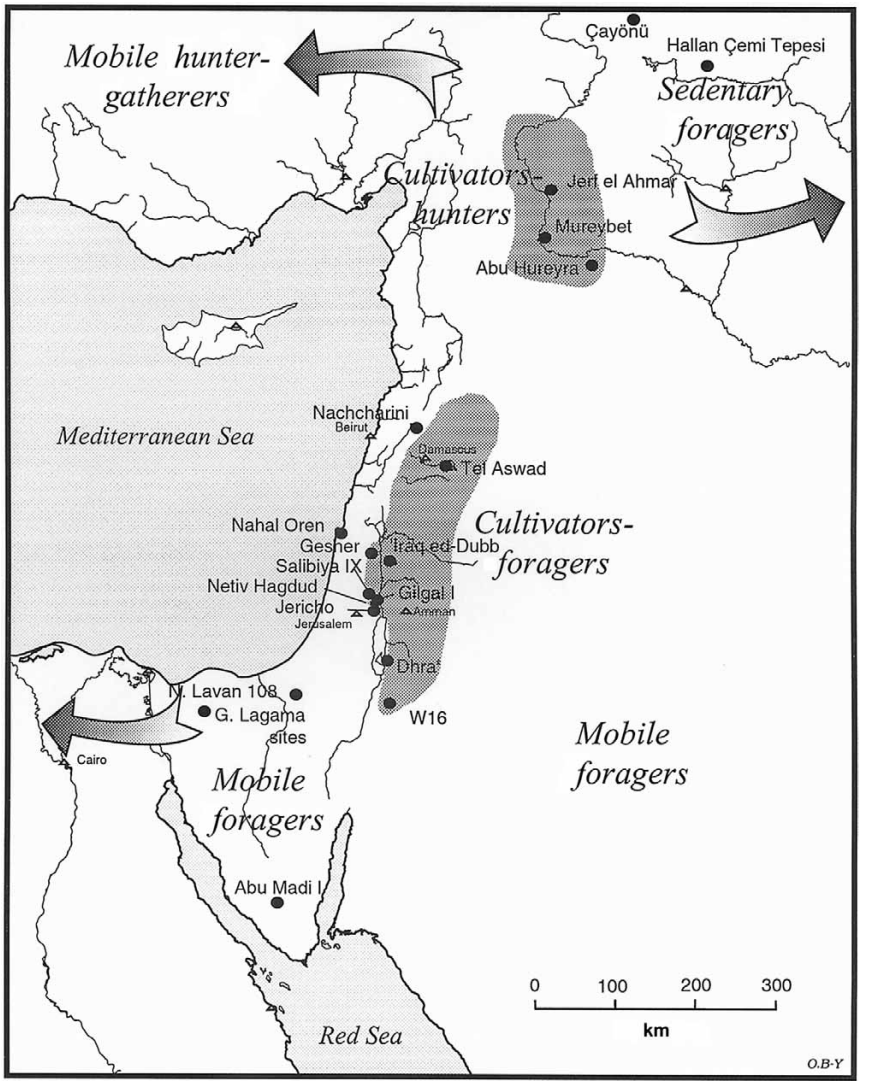

Figure 4. The Early Neolithic of the Levant. The stippled areas show the core regions of early cultivation. The arrows mark the geographic advent of the Neolithic Revolution.

centres, belief systems, and rituals. One of the first signs of emerging social complexity is communal building efforts, such as the walls and the tower of Jericho, orchestrated by a leader or headman. These architectural elements were interpreted by Kenyon (1957) as parts of a defensive system against raids by human groups. Unfortunately, Kenyon disregarded the fact that a tower, as an integral part of a defence system, must be built on the outer face of the walls

to enable the defenders to shoot sideways at the climbing attackers. An alternative interpretation (Bar-Yosef 1986) suggests that the wall was erected on the western side of the site to protect the settlement against mudflows and flash floods. In addition, there is a sound basis to the proposal that there was probably only one tower in Jericho. Although its function is unknown, it probably accommodated a small, mud-brick shrine on top. True, unequivocal evidence for public ritual is missing, but the open space north of the tower (Area M) may have been similar to the 'plaza' in Çayönü (Turkey), which served for public gatherings (Özdogan 1999).

In the Sultanian of the Jordan Valley, most burials are single, with no grave goods. Skull removal was performed usually only on adults, while child burials were left intact. Isolated crania are sometimes found in domestic areas or special-purpose buildings. The differentiated treatment along age lines reflects changes in attitudes towards the dead within Early Neolithic society (Kenyon & Holland 1981; Kuijt 1996). It seems that greater social value was attributed to adults, as evidenced by the conservation of their skulls, while children were not valued in the same manner. This is rather surprising in a society where additional workers were needed. It also marks a departure from the Natufian tradition.

The appearance of human figurines shaped from either limestone or clay along gender lines is a cultural novelty. They depict either standing or kneeling females. Those classified as the 'seated woman' type may herald more elaborate manifestations of the same subject in the succeeding PPNB civilization. Common interpretations view the explicit expression of gender, which was not evident in the Natufian, as indicating the emerging distinct role of women in a society of farmers-hunters. Some suggest that this shift brought about the cult of the 'mother goddess' in later centuries (Cauvin 1985).

Finally, an important shift from the Natufian tradition of food preparation is gleaned from the abundant pounding tools, including flat slabs with cup-holes, rounded shallow grinding bowls, and hand stones, often loaf-shaped. Only rare mortars or deep bowls reflect the previous tradition of heavy-duty kitchen equipment. The full array of consumed food is known from the high frequencies of carbonized seeds of barley, wheat, and legumes. Current research favours the interpretation that the seeds were obtained mostly through intentional cultivation. The debate concerning the morphological features which traditionally were considered as attributes of domesticated species seems to favour the interpretation that the harvested species were still mostly wild (Colledge 1998; Kislev 1989, 1997; Zohary 1992). Moreover, Early Neolithic villages departed from Natufian locations in numerous cases and preferred the alluvial soils of fans and river terraces.

Worth mentioning is the fact that Early Neolithic villagers continued to gather wild fruits and seeds, and to hunt and trap. Gazelle, equids, and cattle

were hunted in the middle Euphrates area, while gazelle, fox, a few fallow deer, wild boar, and wild cattle were the main game animals in the Jordan Valley (e.g. Tchernov 1994). Large numbers of birds, especially ducks, were trapped by the occupants of all sites. Lizards and tortoises were also gathered. The overall picture is one of a 'broad spectrum' subsistence strategy, similar to that of the Natufians.

The desire for foreign commodities is witnessed in the long-distance importing of obsidian found in several villages in the southern Levant, some 500 km south of its source area in central Anatolia. However, not all settlements were able to obtain such precious goods. Marine shells were brought from the Mediterranean coast, with fewer coming from the Red Sea. There is a clear shift in the type of shells selected for exchange. *Glycymeris* and cowries become important, but *Dentalia* shells (yielded where excavated deposits were sieved) were still in use (D.E. Bar-Yosef 1991).

In sum, the archaeology of PPNA sites clearly demonstrates the emergence of a non-egalitarian agricultural society, which continued to rely on hunting and gathering. Signs of social ranking are expressed in mortuary practices, frequencies of foreign imports such as obsidian, and the appearance of the first public structures that testify to communal ceremonies.

THE PPNB CIVILIZATION

Excavations of PPNB sites (defined on the basis of radiocarbon dates and lithic assemblages) in the Levant and Anatolia during the past decade have uncovered the presence of a major civilization. Large village sites, elaborate building techniques, ceremonial centres, carved stone stelae, and the like demonstrate that the 'PPNB civilization' deserves to have a different status in our archaeological literature and social interpretations.

In each large village, domestic buildings reflect the basic social units. Thus nuclear families probably occupied the rectangular houses that were later subdivided into smaller rooms, while extended families shared accommodations in compounds such as those in Bouqras (Akkermans *et al.* 1983). Houses with two storeys were more common in the later part of the PPNB, reflecting both population growth and increased material richness. Among these are the corridor houses in Beidha and the well-preserved two-storey houses of the 'cell' type in Basta. The existence of larger houses alongside smaller ones expresses unequal wealth and social status. These are only known from sites where the excavated area is large, such as in Çayönü, where over 5,000 m^2 were exposed (Özdogan 1999; Özdogan & Özdogan 1998).

The presence of ceremonial areas or special buildings for rituals that served as shrines is now recognized in several sites, and in particular if the edge

of the village was uncovered. Examples include Çayönü, Nevali Çori, and Beidha (Byrd 1994b; Kirkbride 1968; Özdogan & Özdogan 1998). In addition, within each of the 'tribal territories' we may expect a sacred settlement, such as Göbekli Tepe (Hauptmann 1999; Schmidt 1999) and Kefar HaHoresh (Goring-Morris *et al.* 1995). It is not impossible that the site of Çatalhöyük, or a certain portion of it, served the same purpose (e.g. Hodder 1999). In each of these sites the archaeological context reflects both domestic and ritual activities, forming a continuum from the sacred to the mundane. The sculptures at Göbekli Tepe and Nevali Çori, as well as the reconstructed buildings at Çatalhöyük, exemplify in their animal and human depictions the complexity of symbols, which are not easy to decipher.

No less important are the caches of plaster statues depicting human figures uncovered in Jericho and 'Ain Ghazal (Rollefson 1983). Their archaeological context testifies to the intentional burial of used cultic objects (Garfinkel 1994). The breakage of such holy items prior to their interment is a well-known phenomenon from historical periods in the Near East. The interpretation of the plaster statues, some of which are only busts, is not easy. According to the position of their hands, those holding the lower part of the belly are considered female representations (Aurenche & Kozlowski 1999). All have eyes encircled with asphalt lines, and stripes of red colour on their bodies. By employing archaeological analogy to later millennia, the statues seem to represent a pantheon of deities, in which the human figure represents both the real and the mythological image. Amiran (1962) suggested that the mode of production of these statues — which were constructed with reeds, cloth, and plaster — resembled the creation of Man as depicted in the Gilgamesh epic. Hence, it is quite probable that the cosmology of the PPNB civilization, orally transmitted in the Near Eastern world, found its written expression several millennia later.

The territories of the kinship-based entities (tribes?) were marked by sacred localities that symbolize, in a similar way to Sheikh tombs in southern Sinai (Marx 1977), ownership of the land. Such a special locality is the dark cave filled with paraphernalia in Nahal Hemar. The location of the site marks the geographic boundary between the Judean hills and desert and the northern Negev. It seems that each area was occupied by a different Neolithic group. Among the objects in the cave are skulls modelled with asphalt mixed with collagen, stone masks, and small human figurines, as well as other broken items (Bar-Yosef & Alon 1988; Bar-Yosef & Belfer-Cohen 1989b).

The Levantine PPNB knapping operational sequences are employed, together with the radiocarbon chronology, in order to subdivide the period into phases and to distinguish territorially defined groups (e.g. Bar-Yosef 1981; Cauvin 1978, 1997; Cauvin & Stordeur 1978; Gopher 1994a; Quintero & Wilke 1995; Wilke & Quintero 1994). Because of the large size of the common arrowheads, they are considered as markers of what S. Kozlowski named the Big

Arrowhead Industry (Aurenche & Kozlowski 1999; Kozlowski 1999). Their geographic expansion marked the advent of PPNB communities into Anatolia, thus establishing a different historical trajectory from the one that took place in the Zagros foothills (Figure 5). In the latter region (mostly in western Iran) the production of microliths by the local farmers continued through Early Neolithic times (Hole 1994; Kozlowski 1994). Hence, we can suggest schematically that, while the Neolithic villages in the Anatolian plateau were established by colonizers, the inhabitants of the Zagros foothills adopted the new food-producing techniques and a suite of crops.

Assuming that the chronological determinations are correct, the PPNB civilization emerged in the northern Levant, which is geographically a larger area than the southern part. Thus, the cultural variability that is expected between the eastern Taurus foothills, the Amuq basin, the Euphrates River and its tributaries (the Balikh and the Khabur), and the upper Tigris Valley is greater than in the southern Levant. In addition, this province was also the area in which interactions between the foragers beyond the Taurus and the Zagros foothills occurred and therefore certain sites preserve the mixed characteristics

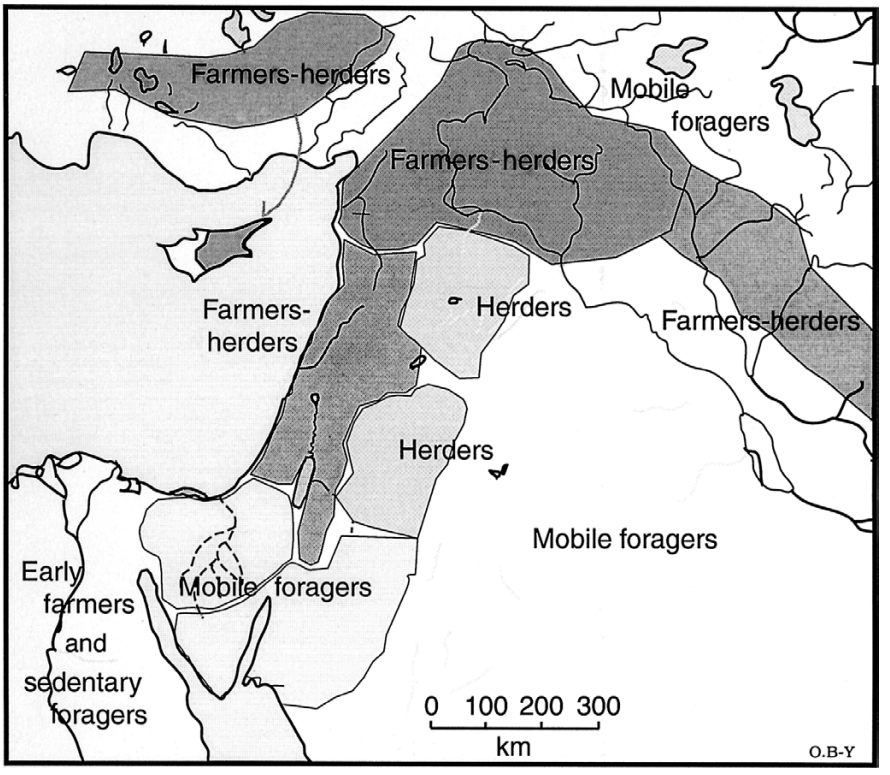

Figure 5. The territories of the various entities within the PPNB civilization.

of both cultural spheres (e.g. Bar-Yosef 1997a; Cauvin *et al.* 1999; Kozlowski & Gebel 1996).

The economy of the PPNB settlements was based on the full suite of annual crops such as barley, wheat, rye, flax, and legumes (later including broad beans and chick peas), which were already domesticated (e.g. Aurenche & Kozlowski 1999; Garrard 1999). Storage facilities were common (Kuijt 2000b). Animal bones reflect the domestication of goats and sheep, which were the predominant game of foragers in the Taurus–Zagros ranges. At least in the first millennium of the PPNB, the tended animals do not demonstrate the change in size that was previously seen as a morphological marker for domestication (Hesse 1984; Legge 1996; Vigne *et al*. 1999; Zeder & Hesse 2000). Following the primary penning and herding of goats and sheep, both were introduced into villages of the central and southern Levant (Garrard *et al.* 1996). It was only during the later times of the Pottery Neolithic period that herding was adopted by the inhabitants of the steppic belt, and not before the early Chalcolithic that fully fledged pastoral nomadism became a common way of life in the Levantine deserts.

The domestication of pigs and cattle followed that of goats and sheep. The penning of pigs seems to have been tried at earlier times in Hallan Çemi (Rosenberg *et al.* 1998). It is not before the Middle and Late PPNB that the faunal evidence testifies to the intentional raising of pigs, mostly in the more humid areas of the north (such as Çayönü) and the coastal Levant (Bar-Yosef & Meadow 1995).

Cattle domestication seems to have taken a different course. There is general agreement that, at least in the case of south-west Asia, the incorporation of the aurochs was motivated by religious reasons no less than simply by basic dietary needs. This interpretation is based on the contexts in which cattle remains were uncovered in various sites in the northern Levant and Anatolia. Skulls with horns were found intact in dwellings and trash pits, and are known from the by now famous examples of the Çatalhöyük buildings (e.g. Hodder 1999; Mellaart 1967).

PPNB farming communities were flourishing and expanding. In the Levantine region this is seen in the size of sites, which range from 2.5 to 12 hectares. Similar sizes were recorded in the Anatolian province in Asikli Hüyük and Çatalhöyük. Among the sites themselves there is a clear size hierarchy. Although ethno-archaeological studies (e.g. Kramer 1983) demonstrated that surface area cannot be translated by a simple formula into the number of inhabitants, we consider the measures of hectares as providing a relative scale that exemplifies differences in population sizes. Assuming that the largest tested sites accommodated a viable biological unit of about 400–500 people, it could mean that 'tribal' territories (Figure 5) were inhabited by about 1,500–2,500 people.

In sum, when the evidence for site size, public ceremonial and domestic ritual activities, mortuary practices, and amount of transportable commodities, as well as other features, are taken into account, the comprehensive list demonstrates the variable degrees of social complexity within the PPNB civilization and its various tribal territories. While within certain regions human societies could have enjoyed a more egalitarian structure, the evolving inequality within most areas made these Neolithic populations ready for the emergence of chiefdom. The climatic disaster *c*. 8,400/8,200 BP resulted in a major collapse.

THE PPNB FORAGERS

The importance of the PPNB civilization is particularly noticeable in comparison with what happened in the geographically marginal areas which had been an integral part of the larger interaction sphere (Bar-Yosef & Belfer-Cohen 1989a; Cauvin 1997). At the edges of the PPNB *koine,* Neolithic sites contain rounded pit-houses, rich assemblages of lithics with numerous arrowheads, and grinding stones. The fauna reflects hunting in the local environment and the plant remains, where preserved, testify to gathering. These were the remains of the contemporary foragers (Bar-Yosef 1984; Garrard *et al*. 1988, 1994). The occupied sites are of various sizes, up to 1,000 m^2. Certain sites, such as Ujrat el Mehed in southern Sinai, revealed evidence for ritual secondary burials of adults (complete with skulls) in underground storage facilities (Hershkovitz *et al*. 1994), thus representing a belief system different from that of the farmers. This site occupies a topographic location that could have been a focal point for annual aggregations, a proposal supported by the lithic analysis, which demonstrated that most if not all the lithics were brought in. About 20,000 pieces, including 6,000 projectile points, were found with only two dozen cores (Gopher 1994b). Other curated objects include large collections of marine shells, which were mostly shaped to serve as both items of jewellery and elements of barter and exchange (Bar-Yosef Mayer 1997).

Human societal interactions are constantly changing. These prehistoric societies of farmers and foragers, especially as they differed in their economic base, could have maintained amicable relationships, which may have led to intermarriage, but could infrequently have led to physical conflict. An interesting aspect, as yet not fully explored, is the role of mobile foragers in implementing trade or exchange. The presence of marine shells from the Red Sea among the inland farming communities and the 'down the line' movement of obsidian from central Anatolia into the Levant, to mention but two examples, could have been in part accomplished by the more mobile groups of hunter-gatherers.

In this respect the special type of game drives known as the 'desert kites' are an important feature. These were probably laid out by PPNB foragers in order

to hunt *en masse* (Meshel 1974). Employing such a technique, by which numerous gazelles and onagers were hunted, could have been the response to demands for extra traded-in meat by large farming communities, who capitalized on their flocks. In one case, the foundation of a rectangular house in a foragers' camp (Garrard *et al.* 1988) littered with rounded pit-houses could be interpreted as the 'merchant's temporary home'.

From peaceful interactions, we move to the possibility of intercommunal conflicts. As argued by L. Keeley (1996: 18), archaeologists during the past three decades 'have increasingly pacified the past', mostly because concrete evidence for warfare has not been recovered. Even the suggestion mentioned above, that the PPNA Neolithic tower in Jericho and the wall on its outside perimeter were not elements of a fortification scheme, was taken to mean something that was not originally intended (Otterbein 1997). Among PPNB sites only one example of the burning of an entire village was recorded (Ganj Dareh: Smith 1976), for which the reason is unknown. Pre-state societies engaged from time to time in warfare for various motives such as for obtaining booty, vengeance, and glory, but not for political control. This type of warfare could sometimes have characterized farmer–forager interactions in the context of emerging social complexity and concentration of wealth among the PPNB tribal societies as demonstrated above.

THE COLLAPSE OF THE PPNB CIVILIZATION

Stratigraphical unconformities and temporary site abandonment were not uncommon during the PPNB period. Only very few settlements survived for many centuries. Various reasons account for the abandoning of houses in a living village, from the death of the head of the family to the outcome of verbal and physical conflicts (e.g. Cameron & Tomka 1993, and papers therein). However, when the entire village is deserted the reasons could be more complex, from over-exploitation of the immediate environment or societal conflicts to the impact of consecutive droughts. Under any circumstance, the abandonment of one site and/or several may precipitate societal restructuring, especially among farming communities such as those of the PPNB. It is therefore imperative first to document the timing of abandonment, and whether it was only local or encompassed an entire region. We then need to search for the reasons, which, as with every inquiry into the 'why' question, are open to disagreements.

The stratigraphic gap between the PPNB layers and those labelled as Pottery Neolithic is well established in the Levant and eastern Anatolia (Aurenche & Kozlowski 1999; Gopher & Gophna 1993). Further support for the observation concerning the abandonment of PPNB villages was gleaned

from the establishment of new hamlets and farmsteads in the southern Levant which contained characteristic ceramics and a lithic industry identified as the Yarmukian (Garfinkel 1993, 1999; Stekelis 1972).

Worth noting is that the presence of pottery production, which began during the Late PPNB in the northern Levant, reached the southern Levant only in the so-called 'Pottery Neolithic' period. This observation served as a basis for recognizing a cultural gap of unknown duration. Originally, this cultural change was seen as due to a climatic crisis which caused the depopulation of the southern Levant (Perrot 1968). Subsequent field research demonstrated that the cultural gap reflects a major shift in settlement pattern, which is also evidenced in the northern Levant (Akkermans *et al.* 1983; Akkermans & Duistermaat 1996; Özdogan & Basgelen 1999), as well as on the Anatolian plateau.

Other proposals for explaining the collapse of the PPNB were derived from comparisons with the contemporary ecological hardships caused by the Industrial Revolution and the ensuing rapid land development and population increase during the nineteenth and twentieth centuries. For example, the change within the sequence of 'Ain Ghazal was interpreted as occurring as a result of over-exploitation of pastures and tree felling (Rollefson 1990; Rollefson & Köhler-Rollefson 1989; Rollefson *et al.* 1992). To expect that the same processes took place in both Anatolia and the Levant is to employ the same cause across every ecological belt within the entire region.

Another perspective views the collapse as motivated by societal over-exploitation among powerfully unequal villages. Unfortunately we have no conspicuous archaeological evidence for the presence of a particular 'Big Man' or other kind of chief. In addition, in spite of the intricate exchange systems, there is as yet no material expression of the enslaving of smaller communities by larger, richer ones. This is not to say that there is no evidence of social ranking. Clear signs within communities are seen in the finds of isolated stamps, signifying the existence of personal property. Perhaps future excavations will record the presence of slaves, a known phenomenon from the sedentary villages of the north-west coast of North America (Ames 1995).

Today, as the image of the PPNB civilization is more developed than before, its collapse throughout the entire region should, as mentioned in the introductory comments, lead us to examine the possibility that an abrupt climatic change was responsible for the rapid worsening of the environmental conditions. It does seem that the climatic crisis around 8,400–8,200 BP as recorded in the ice cores, was the culprit. The impact of the change is reflected in various pollen cores in Greece (Rossignol-Strick 1995), in Anatolia (van Zeist & Bottema 1991), and the Levant (Baruch & Bottema 1999). Under the new circumstances, a complex society that subsisted on farming and herding, in which the demands of better-off individuals (or families) drove the flow of

foreign commodities, could not continue to accumulate surplus. The shift in the pattern of seasonal precipitation imposed the need for a search for pastures further away and resulted in lower yields of summer harvests. Finally, the economic deterioration resulted in a societal change expressed in the disappearance of previously large villages and the establishment of smaller villages or hamlets. The new conditions probably enhanced the reliance on the more flexible subsistence strategy of pastoral nomads. However, a more detailed discussion of the cultural changes remains beyond the scope of this chapter.

FINAL COMMENT

Describing and interpreting social history through the interpretation of archaeological documents is a notoriously difficult task and the published results are open to criticism. Each interpreter employs his or her imagination to describe how things happened in the past. Personally I prefer to adhere to the archaeological observations and minimize the amount and scope of interpretative speculations. However, even the most cautious interpretation is a subject for debate. The lack of written documents is often considered as hampering the sound reconstruction of past social forms and institutions. Similarities between the Neolithic societies and their cultural expressions and the aspects of Mesopotamian societies as reflected in the literary sources indicate that this is an as yet untapped source for additional interpretation. However, as we move deeper into the past, we are left solely with the archaeological remains. Hence, viewing the Late Palaeolithic human groups as simple foragers seems the most parsimonious interpretation. The cyclical shifts from egalitarian to non-egalitarian societies, as expressed in the archaeological sequence of the Late Palaeolithic to the early Natufian, and then the Late Natufian to the Early Neolithic (PPNA) villages, seem to repeat in the Near East after the collapse of the PPNB civilization. The current challenge, as previously stated, would be to identify archaeologically the more particular social institutions such as shamans, leaders, or headmen, the presence of early priesthood, the economic elite, and the like. This chapter thus joins other papers (as cited throughout) in contributing to efforts to reconstruct the social history of the Near East prior to the emergence of chiefdoms and states.

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