STUDIES IN ANCIENT ORIENTAL CIVILIZATION • No. 59
THE ORIENTAL INSTITUTE OF THE UNIVERSITY OF CHICAGO

SERIES EDITORS

THOMAS A. HOLLAND
and
THOMAS G. URBAN

ASOR BOOKS Vol. 5
THE AMERICAN SCHOOLS OF ORIENTAL RESEARCH

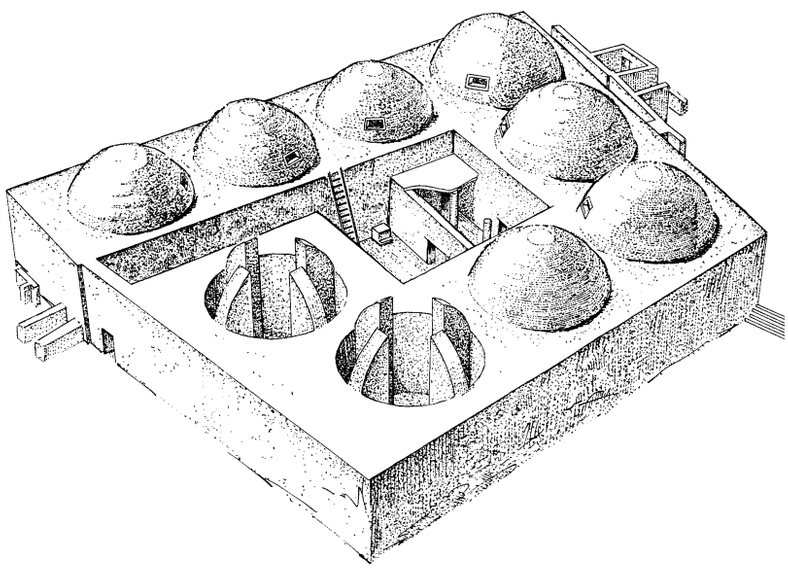
SERIES EDITOR

VICTOR H. MATTHEWS

Studies in the Archaeology of Israel and Neighboring Lands

in Memory of Douglas L. Esse

Edited by Samuel R. Wolff



THE ORIENTAL INSTITUTE OF THE UNIVERSITY OF CHICAGO
STUDIES IN ANCIENT ORIENTAL CIVILIZATION • No. 59
CHICAGO • ILLINOIS

THE AMERICAN SCHOOLS OF ORIENTAL RESEARCH
ASOR BOOKS Vol. 5
ATLANTA • GEORGIA

2

A RECONSIDERATION OF THE ORIGINS OF HUMAN SETTLEMENT AND SOCIAL DIFFERENTIATION

Guillermo Algaze and Daniel Fessler

SOCIAL EVOLUTION

Evolutionary biologists tell us that increasing complexity is not predetermined and that the observable order of life is largely a product of chance (Gould 1989). There are, however, significant differences between biological evolution and the evolution of human social forms (Geiger 1990). The most important is that human social evolution depends heavily on the transmission of acquired cultural traits and, therefore, operates through Lamarckian as well as Darwinian mechanisms (Cavalli-Sforza and Feldman 1981; Gould 1987; Rosenberg 1994). Thus, when considered in the aggregate, the evolution of human societies exhibits a trend toward increasing complexity and hierarchical differentiation through time. This trend has become particularly accentuated since the end of the Pleistocene period and the beginning of the Holocene era, starting some 12,000 years ago with the appearance, first, of permanent settlements possessing some degree of internal socio-economic differentiation—a phenomenon that took place over many areas of the world—and, second, with the emergence of a small number of early pristine urban civilizations—a later phenomenon that took root only in a more limited number of locations. This paper focuses on the earlier of these two transformations, and, in particular, on the role that conditions of resource abundance resulting from Holocene environmental changes may have had in creating a set of conditions promoting rapid social evolution in specific localities around the world.

For the four to five million years prior to the Holocene, human societies were based on the exploitation of seasonally shifting plant and animal resources. These hunter-gatherer groups must have had complex belief systems and rituals, as demonstrated by artistic representations of Ice Age cultures of western Europe of the Upper Paleolithic period (ca. 40,000 to 14/12,000 B.P.) (Bahn and Vertut 1988). Nevertheless, when the available archaeological evidence is weighed as a whole, we are still left with small bands of blood-related individuals organized largely along egalitarian lines (Conkey 1980) and characterized by more or less mobile lifestyles determined entirely by the productivity and seasonality of the individual ecological niches they exploited.[1]

1. To be sure, truly egalitarian societies have never existed. Every human group, no matter how simple, has natural elites that aspire to, and commonly achieve, some measure of power, wealth, and status in their lifetimes. By an "egalitarian" society we mean a society in which status and leadership are ephemeral, are based on personal achievement, and are shaped by individual factors such as intelligence, ambition, charisma, and luck. In short, an egalitarian society is one in which status is not inheritable and is not legitimized and reproduced through formal political or religious institutions.

By all accounts, the hunting and gathering way of life has been the most enduring form of social organization throughout the human career (Lee and DeVore 1968). It allowed human societies to colonize every continent on the planet, save Antarctica. However, this long-lived and uniquely successful subsistence strategy began to be radically transformed (though at sharply varying rates and times in different areas of the world) with the onset of the Holocene. At this time, we see the initial emergence of permanent human settlements and societies with varying degrees of internal differentiation above and beyond sex- and age-related roles. Throughout the world, this is closely followed by the institutionalization of differences in access to resources and control over labor, the beginnings of hereditary leadership, and the emergence of inherently asymmetrical economies based on the accumulation and redistribution of deployable wealth by elite groups (Service 1975; Flannery 1994).

EARLY SEDENTISM, CLIMATE, STORAGE, AND AGRICULTURE

To what degree were the fundamental transformations described above set into motion, in part, by environmental changes taking place across the world at the transition to the Holocene era? As the economist Joel Mokyr (1990) reminds us, there are two competing schools of thought regarding the connection between natural resources and the evolution of technological progress and social complexity. One school holds that abundant resources encourage complementary innovations. In contrast, the other school argues that it is the scarcity of natural resources that stimulates the search for substitutes.

In general, until recently it has been the latter position, scarcity, that has dominated research. Those who adhere to this position see the advent of agriculture as the key factor triggering the transition from egalitarian foraging societies to settled ranked communities. Agriculture is conceptualized as an attempt to correct for perceived deficiencies in the environment by achieving greater control over it. Agriculture is thus viewed as a social response to some sort of stress, such as climatic change (Childe 1951), environmental unpredictability (Flannery 1986), or population pressure (Cohen 1977).

Whatever the initial triggering stress or stresses, the arguments in support of the scarcity position generally run as follows: The domestication of plants and animals allowed for the creation of reliable food surpluses for the first time. Surpluses, in turn, have a variety of multiplier effects on social evolution. First, because of the reduction in mobility it necessitates, the need to store bulky agricultural produce increases territoriality and, eventually, makes fully sedentary occupations inevitable. Second, following Malthusian principles, storable surpluses are seen as the crucial variable allowing for substantially higher population levels than those practicable under less-productive technological regimes. Third, the managerial requirements associated with agricultural regimes are commonly thought to favor the growth and institutionalization of power in the hand of social elites (Wittfogel 1957). And, finally, because they are fungible, surpluses are seen as crucial in spurring intensified cross-cultural contacts and exchange on the one hand, and warfare on the other—spin-off effects which, in turn, also have a powerful impact on social development.

While the sequence of mutually reinforcing effects just outlined is certainly valid in many locations where early sedentary and ranked societies emerged, data from new excavations

around the world suggest that initial resource abundance, and not merely resource scarcity, can also trigger the chain of interdependent transformations leading to the creation of both sedentary and hierarchically organized societies. This is not a new idea. Over forty years ago Carl Sauer argued against conceptions current in his time and suggested that early agriculture was the consequence of sedentism rather than its cause (1969: 22). Unfortunately, Sauer's insight went largely unnoticed, possibly because of his insistence—now discredited—on Southeast Asia as the first and only location where agriculture emerged. It was not until the publication of two influential articles by Kent Flannery (1972, 1973) in the early 1970s that Sauer's insistence on the preeminence of sedentism over agriculture gained some currency.

In his 1972 article, Flannery reviewed the advent of early sedentary communities in the Near East and Mesoamerica and concluded that (1) localized areas of concentrated strategic (wild) resources could act as a powerful magnet for the growth of nucleated communities in their environs, and (2) this growth was instrumental in the development of territoriality and the establishment and maintenance of unequal rights to limited areas of high resource potential (1972: 28–29). While many scholars now accept Flannery's arguments with respect to the development of social complexity in sedentary hunting and gathering populations exploiting rich maritime resources (Yesner 1980), with a few exceptions (e.g., Bender 1978; Gebauer and Price 1992) Flannery's position is not generally seen as widely applicable to the development of complex societies exploiting more fragile, non-maritime environments. However, recent data from excavations around the world suggest that Flannery's insights apply to both coastal and terrestrial environments. In the pages that follow, we argue that more often than not cases of initial sedentism and social complexity in disparate areas of the world were triggered, in part, by resource abundance—an abundance that commonly was the result of environmental shifts at the onset of the Holocene era.

Two constraints help explain why the initial transformations toward sedentism and inherently unequal societies are more likely to occur in a context of abundant rather than scarce resources. The first is one of logistics. This constraint was explained by Sauer, who argued that "People living in the shadow of famine do not have the means or time to undertake the slow and leisurely steps out of which a better and different food supply is to develop in a somewhat distant future" (1969: 20–21). The second constraint is implicit in the nature of social relations in mobile foraging egalitarian societies. In such societies, the social costs to rank-striving individuals who try to circumvent cultural leveling mechanisms are commonly too steep in marginal environments, where risk-leveling behaviors such as generalized reciprocity are a necessary precondition for individual and communal survival (Kelly 1995: 164–81; Sahlins 1972: 191–221; Winterhalder 1986). Would-be elites engaging in self-aggrandizing activities against the grain of the communal egalitarian ethos would hardly dare to do so unless the environment offered enough resources to guarantee their survival, and that of their families and faction members, should the community reject their advances.

We turn now to a discussion of a small number of case studies drawn from some of the earliest sedentary societies around the world in order to illustrate the contention that resource abundance is a universally valid destabilizing force that helped drive the transition from egalitarian, mobile hunting and gathering groups to sedentary communities possessing some degree of internal social differentiation.

CASE STUDY: THE NATUFIAN/PPNA SEQUENCE OF THE LEVANT

Our first example is drawn from the earliest sedentary societies of the Old World: the Natufian and Pre-pottery Neolithic A (PPNA) cultures that developed in areas of the Levantine coast that today comprise most of Israel and the western portions of Jordan. These cultures arose between ca. 12,500–10,200 and 10,200–9,300 B.P., respectively (radiocarbon years). What makes them unique is the presence, for the first time in history, of permanent settlements (Tchernov 1991) comprised of closely packed semi-subterranean circular or oval houses, commonly containing hearths, mortars, pounding and grinding stones, and flint sickles. Initially, in the Natufian period, houses had superstructures made of perishable materials, but by the end of the sequence, in the PPNA period, more permanent superstructures built of mudbrick had been developed. Throughout the sequence, houses were surrounded by numerous pits, sometimes lined with slabs, which appear to have been used to store surplus food (Valla 1995; Bar-Yosef 1995).

What was the nature of social relations within Natufian/PPNA societies, the earliest sedentary communities in the world? We can address this question by drawing inferences from analyses of (1) the spatial distribution of Natufian and PPNA period sites across the Levantine landscape, (2) the degree of internal differentiation characteristic of sites from both periods, and (3) mortuary data from Natufian and PPNA sites.

Spatial Distribution

The settlement pattern of Natufian/PPNA sites became increasingly differentiated over time. Permanent base camps of the Natufian period are restricted to areas of the Levantine highlands squarely within the Mediterranean climatic zone. These camps do not exhibit evidence of regional site-size hierarchies. However, by the later part of the sequence, significant changes are evident. While some PPNA sites are found in the highlands, many sites of the period, including most of the larger and more complex ones, are found in lowland alluvial terraces in more arid areas of the Levant, such as the Jordan River valley, commonly at the transition between the Mediterranean and the Irano-Turanian vegetational zones (Bar-Yosef and Belfer-Cohen 1992). Furthermore, unlike their Natufian predecessors, PPNA sites exhibit a clear regional settlement hierarchy. This latter point is highlighted in a recent synthesis of available data by I. Kuijt (1994). He notes that PPNA sites in the fertile alluvial terraces of the Jordan Valley (e.g., Jericho, Netiv Hagdud, and Gilgal I) are larger (and presumably more complex) by several orders of magnitude than contemporary sedentary sites in the highlands. The patterned settlement distribution that emerged by the end of the Natufian/PPNA cultural sequence is highly relevant for understanding the transformation of social relations taking place at the time. Geographers have consistently found that clearly definable site-size hierarchies tend to correlate closely with patterned ideology (ritual), power, and economic differentials, both between communities and among individuals within a single community (Smith 1976a, 1976b).

Internal Differentiation

The emerging complexity of the earliest sedentary societies in the Levant is also demonstrated by the increasing internal differentiation within sites of the Natufian/PPNA periods. While Natufian sites are characterized by more or less homogeneous distributions of domestic

structures and associated features, by the PPNA period some of the largest sites have, in addition, specialized structures that are clearly not domestic in nature. This is most evident at the PPNA site of Jericho, one of the larger (2.5 ha) PPNA sites identified thus far.

The site is situated near a substantial spring in the west bank of the Jordan River. Kenyon's excavations revealed only a minute portion of the PPNA levels of the settlement, but the well-known monumental round stone tower and nearby wall, identified in Trench I, contrast dramatically in both scale and function with the more modest houses typical for the PPNA period at the site. It is clear that these massive features must have required community-wide efforts for their construction, irrespective of whether they represent part of an elaborate fortification system, as Kenyon originally claimed, or protection against flooding and an unrelated ritual construction, as Bar-Yosef (1986) has recently argued.

Further evidence for the emergence of socioeconomic differentiation within the early sedentary societies of the Levant is provided by the incidence of nonlocal, imported materials within PPNA sites. Though comparisons of the relative incidence of imports at different sites are difficult because of varying excavation and recording standards and differences in the extent of exposures in the various sites, it is clear that, on the whole, exotic nonlocal resources are found more frequently in the large PPNA sites in the Jordan Valley area than in smaller PPNA sites elsewhere. Among the imported materials found in these sites are obsidian from several sources in Anatolia, various semiprecious stones brought in from a number of locations within the Levant itself or the Sinai, various types of shell from the Mediterranean or Red seas, and asphalt from Dead Sea seepages (Kuijt 1994: 181).

Mortuary Data

Although more equivocal in its meaning, the corpus of available mortuary data for the Natufian/PPNA periods can also be interpreted as reflecting the beginnings of unequal access to restricted resources within these early sedentary societies. Over 400 burials are known from several sites of the Natufian period (Byrd and Monahan 1995), and about 300 are attested for the succeeding PPNA period (Kuijt 1994: 181–82; but the greater majority of the PPNA burials come from a single site, Jericho). Natufian burial practices show significant variability, both spatially (between sites) and chronologically. For the Early Natufian period, both single primary interments and communal burials are attested, the latter including both primary and secondary interments. Burial gifts are common and are found in association with both types of burials, though they tend to be more common in single interments of young adults of both sexes (Byrd and Monahan 1995). An important innovation at this time was the appearance of formal segregated burial areas where only a portion of the population was interred. This is clearest at the site of Ein Mallaha, near Lake Hula in northern Israel, where two contemporary but separate burial grounds at the periphery of the site were continually reused for centuries (Perrot and Ladiray 1988: 84, fig. 8). Important differences in mortuary practice appeared by the end of the Natufian period: offerings virtually disappeared from burials, individual interments became the norm, and some individuals were buried with their skulls missing (Byrd 1994: 236). These characteristics also typify PPNA burial practices. Only some adults (of both sexes) had their crania removed in that period. The missing skulls are often found cached inside houses (Bar-Yosef 1989). Significantly, this practice appears highly correlated only with some of the larger PPNA sites in the Jordan Valley (Kuijt 1994: 183, table 3).

In an initial review of the corpus of Natufian mortuary practices, Gary Wright (1978) argued that differences in types of Natufian burials (primary vs. secondary and group vs. single interments) and in associated burial offerings reflected entrenched rank differences. Though initially widely accepted (e.g., Henry 1989: 206), Wright's conclusions are now disputed by Byrd and Monahan (1995) who review a larger corpus of data than was available at the time of Wright's analysis. They conclude that burial gifts, when they occur, appear in association with both single and multiple interments, and that these gifts are not often found with older individuals, as would be expected if they were to mark clearly defined social classes, as Wright had argued.

While Byrd and Monahan (1995) are correct in pointing to the lack of conclusive proof for systematic social ranking within Natufian burials, there are nevertheless indications of the emergence of patterned asymmetries in access to crucial resources by different lineages within Natufian/PPNA societies. Evidence for this is provided by (1) the appearance of spatially segregated burial areas within some Natufian sites, and (2) the Late/Natufian/PPNA practice of skull-caching within houses. These practices are simply variant expressions of the establishment of clearly bounded areas for the disposal of the dead (intramural burial being the ultimate form of boundedness). The significance of this becomes clear in light of ethnographic studies correlating various patterned aspects of mortuary behavior and social structure. For example, building on the earlier work of Arthur Saxe (1970: 119), Lynn Goldstein (1981) reviewed thirty ethnographic examples bearing on the relationship between levels of asymmetry in access to crucial resources within societies, and the degree of boundedness which those societies practice in the disposal of their dead. She found that while not all corporate groups with exclusive control of crucial resources have distinct burial areas, all groups with formal segregated areas for the disposal of their dead share rights over the use or control of crucial but restricted resources. This correlation is very significant given that formal segregated extramural cemeteries are already present by the beginning of the Natufian period. Furthermore, Goldstein found that such asymmetrical rights are transmitted by means of a system of lineal descent from the dead. This finding helps to explain the Late Natufian/PPNA practice of secondary decapitation and skull caching noted earlier, which is commonly interpreted as evidence for ancestor worship (Cauvin 1994). The connection between this practice and the development of unequal access to resources by corporate groups within early sedentary societies is explicitly made by Flannery (1972: 29), who argues that "In a world without written deeds, the presence of the ancestors serves as a group's best evidence that the land had been theirs since time began."

Discussion

At first glance, the evidence outlined above for the earliest sedentary cultures of the Levant appears to be consistent with the model of transformations triggered by scarcity, namely, agriculture leading to sedentism, followed by the emergence of social inequality and trade. However, available data fail to support such a developmental sequence: studies of plant and animal remains found in Natufian contexts show that they are invariably morphologically wild (Henry 1989; Valla 1995). Agriculture does not come into play until late in the Natufian/PPNA developmental sequence. The earliest (morphologically) domesticated grains and legumes, for instance, do not appear until the PPNA period (Bar-Yosef and Belfer-Cohen

1992; Zohary and Hopf 1994). This explains the observed differences in the settlement patterns of Natufian and PPNA sites: whereas Natufian base camps are only found in areas within the natural habitat of wild grain and legumes in the Levantine highlands, large PPNA sites actually concentrate in the alluvial terraces of the Jordan valley, an area hundreds of meters below sea level and well outside the natural area of distribution of the wild progenitors.

Agriculture is thus a late development in the Natufian/PPNA developmental sequence. Resource abundance rather than resource scarcity appears to be the context within which the social transformations that manifest themselves in the Levant by the PPNA period take place. A series of recent pollen cores from lakes in northern Israel shows that the first Natufian villages flourished at a time of substantial environmental change—the Continental-type climate characteristic of the Near East at the end of the Pleistocene changed to a Mediterranean-type climate, such as still prevails in the area today (Baruch and Bottema 1991; H. E. Wright 1993). As McCorriston and Hole (1991) note, Mediterranean climates are characterized by sharply seasonal precipitation patterns which would have promoted the expansion of plant communities able to thrive in the shortened growing seasons typical for the Holocene, including the wild grasses that formed the core of the earliest domestic plants in the Near East. What this meant for early Holocene communities of the Levant was that, in comparison with the previous period, high and reliable yields of wild grains and legumes (and of the ungulates dependent on them) could be obtained during the growing season, thus favoring the creation of difficult-to-transport surpluses requiring long-term storage. In a now famous experiment, Jack Harlan (1967), a botanist, harvested one of the few remaining stands of wild wheat in southeastern Turkey using a crude sickle made with flint blades like those available to the early village communities of the Near East. With this tool, Harlan was able to harvest just over six pounds per hour, on average. After processing in a mortar, this was converted to about two pounds of clean wheat. From this, Harlan concluded that a small nuclear family could have easily gathered a year's supply of protein—about a ton of protein-rich wild grain—in about four weeks.

Harlan's findings help us understand the processes of change taking place in Natufian/PPNA societies. As discussed below in greater detail, ethnographic studies show that long-term food storage is often a deeply destabilizing factor for egalitarian societies because it (1) reduces mobility and promotes sedentism, and (2) provides rank-striving individuals within the newly sedentary societies with the opportunity to manipulate surpluses in order to consolidate and extend their power. Agriculture is one way of creating manipulable surpluses in preindustrial societies, but it is by no means the only way. In the Natufian case, surpluses were made possible, and investments in long-term storage were made necessary, by the shift to a Mediterranean climatic regime, a regime that provided abundant, easily exploited, and storable resources in the spring, but few resources in the long dry months that followed.

CASE STUDY: AŞIKLI HÖYÜK IN CENTRAL ANATOLIA

The Natufian/PPNA case showing a correlation between abundant resources, sedentism, and initial social complexity is far from unique. Various other sedentary communities exploiting particularly rich environmental niches in the Near East were also able to achieve substantial social complexity in the Early Holocene largely on the basis of hunting and gathering.

This point has recently been reiterated by Mehmet Özdoğan (1995), who notes that, in fact, most known cases of early sedentism in Anatolia, such as Hallan Çemi (Rosenberg 1995), Suberde (Perkins and Daly 1968), and the basal layers of Çayonu (A. Özdoğan 1995: 83–84) are based principally on intensive hunting of wild animals.

No site demonstrates Özdoğan's point more strikingly than Aşıklı Höyük, a remarkably large (minimum of 8 ha) and fully sedentary site near the modern town of Aksaray in Central Turkey. Excavated since 1989 by a team from Istanbul University under the direction of Ufuk Esin, Aşıklı is situated along the banks of the Melendiz Su River. The river has carved a narrow green valley within an otherwise relatively barren volcanic tufa landscape, acting as a magnet for plant and animal life in the region. Moreover, the site is not far from the then forested bottom slopes of Hasan Dağ and is also situated near important obsidian sources (Esin et al. 1991; Esin 1994). Available radiocarbon dates suggest that Aşıklı was occupied for about 400–500 years sometime around the transition from the tenth to the ninth millennium B.P. (Esin 1995: fig. 11). The site is thus only slightly later than the Levantine PPNA sequence discussed earlier.

The horizontal exposures that have already been achieved at Aşıklı are unique in their extent (over 35,000 m^2), and excavations are still ongoing. These exposures give us a much clearer view of the structure of the community than is available for any comparable site elsewhere in the Near East. Although only preliminary reports are available, even a cursory examination of the available plan of the area exposed thus far reveals that the settlement was divided into two clearly distinct quarters or neighborhoods separated by a pebble-paved road (Esin 1995: fig. 5). The largest quarter is north of the road and is comprised of many small two- or three-roomed rectangular houses, often with associated burials under house floors, and built entirely in mudbrick. In contrast, the area south of the road is characterized by larger structures of more elaborate plan, which sometimes have substantial stone foundations. Some of the rooms within the structures in this area of the site had carefully plastered walls and floors, often decorated in colors.[2]

Only preliminary studies of the paleobotanical and faunal data from the site are available thus far, but these indicate that this astonishing level of social differentiation was based largely on intense hunting and gathering of the abundant wild resources available in the Melendiz Su area. The hunting of wild sheep, goats, pigs, cattle, onager, hare, and deer was particularly important and may have been the most economically significant subsistence activity at the site. Various types of fruits and nuts were also collected. Cereals appear to have been only a small part of the diet. Full animal and plant domestication were not present at the site, although the relative frequencies of young sheep and goat individuals in the samples analyzed thus far suggest that those species were being intensively manipulated (Esin et al. 1991).

A full assessment of the significance of Aşıklı must await the end of the excavations and the completion of the pertinent artifactual and ecofactual analyses. However, it is already clear from the patterned spatial differences observable within the exposed plan that the site illus-

2. These comments are based on the available published reports for Aşıklı (Esin 1994, 1995; Esin et al. 1991) and on observations by Algaze during a visit to the Aşıklı in August 1994. We are grateful to Professor Esin for her kindness in showing Algaze some of the pertinent materials at that time.

trates a more advanced stage of the processes of internal social differentiation than that observed in the Natufian/PPNA sequence discussed earlier. Aşıklı shows, once again, that sedentism and the initial emergence of social complexity in the ancient Near East need not be directly connected with agriculture (M. Özdoğan 1995).

CASE STUDY: THE ANDEAN COASTAL PRECERAMIC

The connection between abundant resources, sedentism, and social complexity illuminated by the Near Eastern case studies discussed above is also apparent at a variety of other locations around the world. In recent years, as archaeologists have started to focus more on coastal adaptations of human populations, it has become increasingly apparent that in many cases early complex societies developed in connection with the exploitation of abundant marine resources, commonly on or near estuary and marsh areas that have a high biomass of varied and easily exploitable resources and a high potential for self-regeneration (Yesner 1980).

All around the Pacific Rim we see a strong correlation between initial sedentism, early social complexity, and the exploitation of estuarine or marine resources (Aikens and Rhee 1992). This is the case with the development of the earliest sedentary societies in places as disparate as eastern coastal Japan (Middle Jomon period; Akazawa and Aikens 1986) and Korea (Chulmun period; Barnes 1993), the Gulf of Siam in modern-day Thailand (Khok Phanom-Di; Higham 1994), the Pacific coastal lowlands of Chiapas in Mesoamerica (Early Formative period: Blake 1991), and the Andean coastal fringe in South America (below). The emergence of early complex societies in the latter area is of particular interest with regard to the issue of the connection between resource abundance and social complexity. This initial process of evolution did not take place in well-watered highland valleys where later Andean civilizations such as the Inca were to develop, but rather on the Andean coast, one of the driest deserts in the world, an area where few potential domesticates of dietary significance existed (Moseley 1975).

Andean Preceramic Complexity

Unless pertinent data have been destroyed by Holocene increases in sea level affecting the western coast of South America, it would appear that the earliest fully or semisedentary villages in the Andean coast date to the late fifth and fourth millennia B.C. Early villages in the area were largely undifferentiated and comprised of round, semisubterranean houses (e.g., Chilca, La Paloma). The inhabitants exploited marine resources along the coast and seasonally available plants in fog-shrouded Lomas environments slightly inland (Moseley 1975, 1992; Quilter 1989). Starting sometime around 5,000 B.P., at the onset of the so-called Preceramic period, population levels rose exponentially along the Andean coast (Moseley 1992: 107) and numerous large settlements were established in the area. These settlements were commonly located at the point where rivers draining the nearby mountains meet the ocean and were centered around massive architectural complexes that appear to be of a ceremonial nature (i.e., characterized by platforms and sunken courts).

At one of the earliest of these sites, Aspero, Robert Feldman (1985) and his coworkers have uncovered a series of small habitation mounds and middens surrounding larger ceremonial structures. Several of these have been excavated, and in each case they consisted of a

large pyramidal masonry platform accessible by means of steep stairs and capped by a structure. These constructions are clearly distinct in both scale and organization from the much more ephemeral domestic structures of the period. The buildings on the top of the platforms generally lack domestic refuse, and the objects found in association with them come mainly from cached dedicatory offerings, commonly including a variety of imported exotic items. At least one of the structures (Huaca de los Sacrificios) had several associated sacrificial burials incorporated into its construction and also contained the burial of a high-status child accompanied by numerous offerings. Similar sacrificial and high-status burials are normally found within ceremonial architecture in a variety of later well-documented Andean civilizations (Verano 1995).

More impressive still is the largest known Preceramic site in the Andean coast, El Paraiso. Radiocarbon dating indicates that El Paraiso was occupied toward the end of the Preceramic period (ca. 3,800 B.P.). The site is four or five times larger than Aspero, about 58 hectares in extent, and it is estimated that about 100,000 tons of quarried stone make up its ruins. Nine large mounds suggest as many platforms and massive buildings. These form a U-shaped architectural complex surrounding a central plaza, an arrangement that marks the beginning of an architectural form that will remain typical for Andean ceremonial complexes for millennia (Williams 1985). Only one of the nine mounds has been exposed by archaeologists. This was a building complex rebuilt in a number of distinct stages over a long period of time (Moseley 1975; Quilter 1985).

The sizable extent common to the coastal Preceramic settlements just described, the magnitude of their ruins, and the organized nature of the initial construction and subsequent rebuildings (using standardized bundles of fill, a practice well attested much later in the Andes in association with the use of compulsory state labor [M'ita]) are interpreted by some scholars (e.g., Moseley 1975; Feldman 1985) as an indication that institutions able to command substantial labor resources on a regional scale were already common to the earliest sedentary coastal societies in the Andes.

Preceramic Subsistence

What was the economic base that supported the impressive scale and organizational complexity of the larger Andean Preceramic coastal settlements? When archaeologists first noted the large and obviously complex coastal Preceramic settlements earlier in this century, they automatically presumed that their subsistence base was agricultural, in part because of their location near rivers. More recently, however, new controlled excavations at some of these sites (e.g., El Paraiso) have yielded direct paleoeconomic data for the subsistence strategies of their inhabitants. These data show that agriculture was largely limited to industrial purpose crops such as cotton. Domesticated plants of dietary value represent only a small and economically unimportant component of the overall nutritional intake of the Preceramic populations along the coast (Pearsall 1992: table 9.2). In fact, agriculture did not become an important component of the subsistence economy of societies on the Andean coast until canal irrigation was developed in the second and first millennia B.C., well after the Preceramic period. Instead, as Michael Moseley (1975) and various other scholars (Moseley and Feldman 1988; Quilter and Stocker 1983) have noted, the early complex societies of the Preceramic period in the Andean desert coast were overwhelmingly based on the exploitation of fish (mainly ancho-

vies) from the Humboldt Current (but for a contrary view, see Wilson 1981). This plankton-rich current supports one of the densest marine biomasses found anywhere in the world (Schrader 1992), and its abundant and renewable resources were exploitable with simple technologies available to Preceramic societies, such as reed boats, fishhooks, and cotton nets floated on gourds (Quilter and Stocker 1983). To be sure, the bounty of the sea that formed the basis for early social complexity on the Andean coast would have been severely disrupted, sometimes for many months at a time, by recurring El Niño events (Parsons 1970). However, while this adds an important element of risk that must be taken into account in trying to explain the development of complex societies in the Andean area (Isbell 1978), the difficult-to-predict El Niño phenomena present less of a threat to the long-term continuity of Andean coastal societies than doubters of Moseley's Maritime Hypothesis (e.g., Wilson 1981) would have us believe. Problems introduced by the unpredictability of the Andean maritime environment could have been surmounted by the accumulation and management of surpluses. One well-documented case showing how unpredictable but recurring climatic catastrophes can be surmounted is that of the Trobiand islanders, who developed a cultural emphasis on the production of surpluses in order to overcome the risk of catastrophic drought through overproduction and storage (Malinowsky 1935). Similar surpluses were easily achievable in the Andean case. As Moseley and Feldman note (1988), fishmeal stores just as well as threshed grain (or yams). Moreover, as discussed in greater detail below, surpluses constitute a means whereby rank-striving individuals can manipulate social relationships so as to rise in power and prestige.

NECESSARY AND SUFFICIENT CONDITIONS: CROSS-CULTURAL PERSPECTIVES

Years ago, Robert Braidwood (1975: 94) criticized V. Gordon Childe's (1951) insistence on climatic change as the crucial trigger unleashing the social transformations of the Near Eastern Neolithic by pointing out that environmental changes roughly comparable to those taking place at the Pleistocene-Holocene transition had taken place in the same area in earlier interglacial periods without leading to similar social consequences. The same principle also holds true elsewhere. For instance, the marine resources that supported the earliest sedentary societies on the Andean coastal fringe had existed well before the Holocene. Moreover, recent sedimentological studies off the coast of Peru suggest that, if anything, the Humboldt Current was less productive on average in the Holocene than it had been in earlier peak glacial periods (Schrader 1992). Braidwood's comment thus forcefully reminds us that any attempt to explain the origins of human settlement and social differentiation in the Holocene era must go beyond specific single "prime movers" and must focus instead on conjunctures of mutually reinforcing factors present in the Holocene but not before, at least not as a package.

One contributing factor must have been that in many cases the climatic changes at the onset of the Holocene increased the spatial concentration of exploitable resources available to human societies, thus helping reduce their mobility. One aspect of this phenomenon was noted years ago by both Kent Flannery (1969) and Lewis Binford (1968), who argued that the extinction of megafauna at the end of the Pleistocene decreased the availability of large, seasonally migrating animals exploitable by humans (Bell and Walker 1992: 148–54) and helped

focus human attention on the utilization of new, more localized subsistence resources, such as smaller game (with shorter migratory patterns), marine and lacustrine resources, invertebrates, and various plant resources, including grasses, nuts, and fruits (the "Broad Spectrum Revolution"). A further example of how climatic changes after the end of the Pleistocene promoted the creation of spatially concentrated resources is provided by the environmental impact of the slow sea-level transgressions that characterized the Early and Middle Holocene. In many coastal areas of the world, these transgressions contributed to the creation of new estuary and marsh areas, and to the expansion of preexisting ones, as low-lying alluvial plains, shallow river valleys, and creeks were flooded (Roberts 1989: 65, 125). As noted, such estuary/marsh areas commonly provide varied, rich, stable, and easily exploitable resources for human populations and were commonly the foci around which early sedentary and socially differentiated societies first developed in many parts of the world (particularly in middle latitude tropical and monsoonal environments).

A second contributing factor was worldwide population levels that, though difficult to measure, must have been higher in the Holocene than those prevalent in earlier interglacials. As noted earlier, some scholars of the scarcity camp see population pressure as the crucial trigger toward sedentism and eventual agriculture. This is problematic because arguments based on population pressure commonly disregard the possibility of cultural controls on population growth, a factor that is prominent in the ethnographic record (Kelly 1995: 205–59). Nevertheless, higher regional population densities, while not a trigger in and of themselves, are still significant for a number of reasons. First, they increase intergroup competition for available resources, which normally leads to reduced group mobility and increased territoriality. Second, higher population levels would increase the potential for conflict between Holocene communities above levels characteristic for earlier groups. The social impact of this increased competition is discussed by both Carneiro (1970) and Webster (1975). Both emphasize the important role of conflict in providing opportunities for early forms of social stratification to emerge, as successful military leaders manipulate wealth acquired from outside their own traditional social system (plunder) to dampen dissension and attract supporters. Third, on the domestic side, higher population levels would increase intragroup competition over available resources, thus favoring (1) the creation of formal modes of resource management if the tragedy of the commons (Hardin 1968) is to be avoided, and (2) the adoption of new, more productive, technologies, or (3) more efficient modes of control over available labor (Johnson and Earle 1987).

A third factor affecting societies in the Holocene is that of variability in the year-round availability of resources. In some cases this variability was the direct result of climatic changes brought in by the Holocene that promoted the expansion of high seasonality resources, such as the wild grains and legumes of the Near Eastern highlands. In other cases, such as the Peruvian coast, the variability was the result of the intrinsic unpredictability of the environmental framework because recurring El Niño events were inherently irregular in their timing, intensity, and effect.

Irrespective of whether resource variability was the result of predictable (i.e., seasonal) or stochastic processes, it would have necessitated substantial investments in storage in order to assure that resources be available at all times. This is very relevant indeed, because, as both Flannery (1972) and Testart (1982) have noted, cross-culturally the establishment of perma-

nent storage facilities correlates with the emergence of territoriality, sedentism, and, ultimately, with the establishment and maintenance of hereditary ownership of limited areas of high resource potential. Of these aspects, we want to focus here on the social impact of sedentism. Coming on the heels of earlier decreases in human mobility caused by natural increases in human population densities and by the increased localization of exploitable resources typical of the Holocene, investments in permanent storage facilities and housing would have further (and, possibly, decisively) reduced the ability of commoners to escape the demands of rank-striving individuals. The social evolutionary impact of this can hardly be underestimated. Ethnographic studies consistently show that social fissioning is one of the most important mechanisms by which self-aggrandizing individuals are thwarted in mobile foraging societies (Boehm 1993; Carneiro 1968). Equally important, decreased mobility also normally leads to environmental degradation of areas surrounding human settlements, thus reducing the overall carrying capacity of the easily exploitable environment. At the same time, however, sedentism often leads to significant increases in population density. Demographic studies consistently show that, cross-culturally, sedentism commonly results in a significant shortening of the spacing between live births (Armelagos, Goodman, and Jacobs 1991; Bentley, Goldberg, and Jasienska 1993). Under such diametrically opposed but mutually reinforcing environmental and demographic stresses put into play by sedentism, subsistence agriculture, with its promise of increased and consistent yields of exploitable plants and animals, provides a logical way out. This is why agriculture is often a secondary development in areas that initially possessed abundant exploitable resources: it does not appear in the Near East until the PPNA period, 2,000 years or so after the initial sedentism of the Natufians, and it was not an important factor in Andean coast until the so-called Initial period, a thousand years or so after the exponential increases in population that accompanied the first emergence of complex societies in the area (Moseley 1992).

A fourth factor is one recently discussed by Joy McCorriston and Frank Hole (1991). This is the pre-development of the technologies that would eventually become necessary to take full advantage of the new opportunities made available by Holocene environmental changes promoting abundance—technologies with consequences surely unforeseen at the time of their initial introduction. In the Near East, for instance, while the climatic conditions occurring at the onset of the Holocene had existed several times before, the technology to produce the blades and the grinding and pounding stones necessary to cut and process the new seasonal (and highly nutritious) wild grasses that flourished under Early Holocene conditions did not exist before the Upper Palaeolithic period (ca. 40,000–12,000 B.P.) (Gilead 1991). Similarly, the achievements on the Andean coast would have been impossible without, first, the domestication of cotton and gourds, crops that had nothing to do with diet, and, second, the emergence of weaving technologies. These technological breakthroughs had already occurred by the end of the Archaic period, a thousand years or so before the emergence of Preceramic social complexity (Engel 1976: 95; Pearsall 1992: table 9.2). Both were necessary preconditions for making the nets and floats that made possible the large fish catches supporting Preceramic period centers along the coast.

We can thus understand the uniqueness of the Holocene as opposed to earlier interglacials as a result of the conjuncture of the various necessary conditions just discussed: (1) the increased localization of exploitable resources, (2) increased population levels, (3) the social

impact of large-scale storage systems necessitated by either high seasonality or unpredictably variable environments, and (4) the pre-development of necessary processing and exploitation technologies. However, in and of itself, this conjuncture of factors is not a sufficient explanation for the observed transformations. No doubt, many other societies around the world failed to respond in ways that promoted differentiation and social complexity when confronted by conjunctures of similar necessary preconditions in the Holocene. Furthermore, there is no shortage of well-attested cases of fully sedentary groups of hunters and gatherers who managed, in spite of sedentism, to keep their population levels below the natural regenerative capacity of the environmental niche(s) they exploited, societies which did not go on to develop agriculture—at least not within the time-frame of the observations (e.g., the Calusa chiefdom, which developed on the southwest coastal lowlands of Florida between the 9th and sixteenth centuries A.D. [Widmer 1988] or the various tribal groups of relatively recent times along the northwestern coast of the U.S. and Canada [Druker 1965]). And, finally, cases of mobile hunting and gathering societies which practice some form of seasonal high-yield agriculture but refuse to become sedentary are also common (e.g., the Raramuri of northern Mexico, see Graham 1994).

The final factor, therefore, and possibly the only sufficient condition in the conjuncture, must be the culturally determined element of individual and communal perceptions of opportunities and threats (i.e., assessments of the social benefits and costs of behaviors such as self-aggrandizement, risk taking, and innovation). The details of this cultural framework must necessarily remain elusive in the case of the prehistoric societies that have been the focus of this paper. However, in trying to understand why different societies responded differently to similar conjunctures of demographic, ecologic, and technologic determinants, we would do well to remember Maurice Godelier's (1970: 120) suggestion as to the central role that social competition has in driving social evolution: ". . . social competition in primitive societies, as in class societies, provides the major incentive for the production of surplus. . . ." Surpluses, in turn, are important not only because they necessitate the construction of permanent storage facilities but also, and more importantly, because stored surpluses are deployable surpluses—and such surpluses are a crucial factor in the eventual institutionalization of rank hierarchies. The reason for this is simple: surpluses allow aspiring elites to attract, reward, and maintain followers by bestowing material, social, or even spiritual benefits (asymmetrical reciprocity), thus creating at the same time social obligations and political legitimacy (Bailey 1988; Orenstein 1980). In so doing, surpluses create a situation in which the masses perceive their interests to be coterminous with those of emerging elites and help them to consolidate, extend, and, ultimately, institutionalize their power, both within their own group and vis-à-vis local rivals (Hayden 1990; Clark and Blake 1993).

CONCLUSIONS

In the final analysis, when considering the origins of human settlement and social differentiation we must envision a complex scenario in which varying paths and multiple co-occurring factors led, in otherwise disparate areas, toward convergent social forms (fig. 2.1). Within this scenario, one of the disequilibrating factors that until now has not received the attention it deserves as a cross-cultural trigger for early instances of surplus formation, sedentism, and

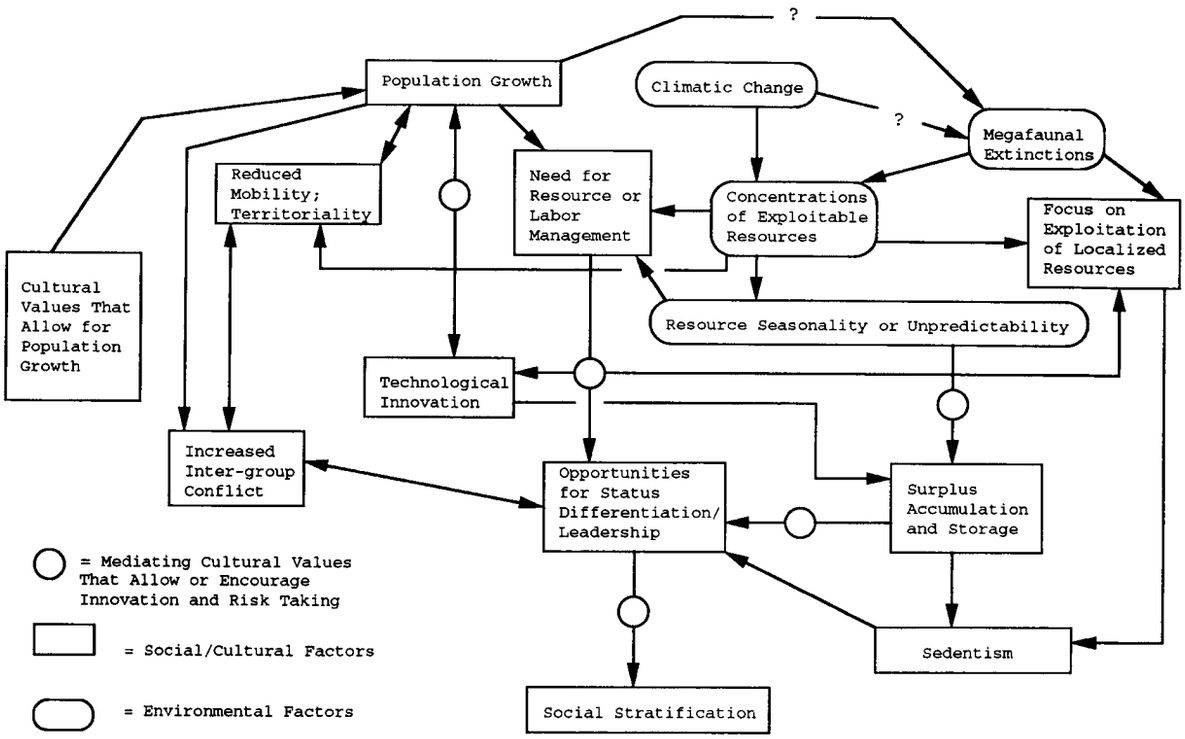


FIGURE 2.1. Factors promoting sedentism and initial social stratification.

social differentiation is resource abundance—an abundance which constituted a type of circumscription in the sense described by Carneiro (1970). However, resource abundance served as a trigger only in the presence of the necessary ecological, demographic, technological, and cultural preconditions discussed above. In some cases, the enabling abundance was the result of environmental shifts triggered by the onset of the Holocene. However, in and of themselves, these environmental changes did not determine social evolution. Rather, they merely provided a context within which the sort of individual risk taking and factional competition (Brumfiel 1994) that ultimately drive social evolution could thrive.

ACKNOWLEDGMENTS

Earlier drafts have been read and criticized in detail by Drs. Thomas Levy, University of California, San Diego, Naomi Miller, University of Pennsylvania, and Karen Wise, Museum of Natural History of Los Angeles County. Each contributed substantive criticism, important editorial comments, and crucial missing references. Their valuable contributions are acknowledged with gratitude, but remaining errors of omission and interpretation are entirely our own.

REFERENCES

Aikens, C. M., and Rhee, S. N., eds.
1992 *Pacific Northeast in Prehistory: Hunter Fisher-Gatherers, Farmers, and Sociopolitical Elites.* Pullman: Washington State University Press.

Akazawa, T., and Aikens, C. M.
1986 *Prehistoric Hunter-Gatherers in Japan: New Research Methods.* Tokyo: University of Tokyo Press.

Armelagos, G.; Goodman, A. H.; and Jacobs, K. H.
1991 The Origins of Agriculture: Population Growth During a Period of Declining Health. *Population and Environment* 13: 9–22.

Bahn, P., and Vertut, J.
1988 *Images of the Ice Age.* New York: Facts on File.

Bailey, F. G.
1988 *Humbuggery and Manipulation.* Ithaca: Cornell University Press.

Barnes, G. L.
1993 *China, Korea, and Japan: The Rise of Civilization in East Asia.* London: Thames and Hudson.

Baruch, U., and Bottema, S.
1991 Palynological Evidence for Climatic Changes in the Levant ca. 17,000 (9,000 B.P.). Pp. 11–21 in *The Natufian Culture in the Levant,* eds. O. Bar-Yosef and F. Valla. Ann Arbor: International Monographs in Prehistory.

Bar-Yosef, O.
1986 The Walls of Jericho: An Alternative Interpretation. *Current Anthropology* 27: 157–62.
1989 The PPNA in the Levant: An Overview. *Paléorient* 15: 57–63.
1995 Earliest Food Producers: Pre-Pottery Neolithic (8000–5500). Pp. 190–204 in *The Archaeology of Society in the Holy Land,* ed. T. E. Levy. New York: Facts on File.

Bar-Yosef, O., and Belfer-Cohen, A.
1992 From Foraging to Farming in the Mediterranean Levant. Pp. 21–48 in *Transitions to Agriculture in Prehistory*, eds. A. B. Gebauer and T. D. Price. Madison: Prehistory Press.

Bell, M., and Walker, M. J. C.
1992 *Late Quaternary Environmental Change.* London: Longman.

Bender, B.
1978 Gatherer-Hunter to Farmer: A Social Perspective. *World Archaeology* 10: 204–22.

Bentley, G. R.; Goldberg, T.; and Jasienska, G.
1993 The Fertility of Agricultural and Non-Agricultural Traditional Societies. *Population Studies* 47: 269–81.

Binford, L.
1968 Post-Pleistocene Adaptations. Pp. 313–41 in *New Perspectives in Archaeology*, eds. L. Binford and S. Binford. Chicago: Aldine.

Blake, M.
1991 An Emerging Early Formative Chiefdom at Paso de la Amada, Chiapas, Mexico. Pp. 27–46 in *The Formation of Complex Society in Southeastern Mesoamerica,* ed. W. R. Fowler, Jr. Boca Raton: CRC Press.

Boehm, C.
1993 Egalitarian Behavior and Reverse Dominance Hierarchy. *Current Anthropology* 34: 227–54.

Braidwood, R. J.
1975 *Prehistoric Men.* 8th ed. Glenview: Scott, Foresman.

Brumfiel, E. M.
1994 Factional Competition and Political Development in the New World: An Introduction. Pp. 3–14 in *Factional Competition and Political Development in the New World,* eds. E. M. Brumfiel and J. W. Fox. Cambridge: Cambridge University Press.

Byrd, B. F.
1994 From Early Humans to Farmers and Herders: Recent Progress on Key Transitions in Southwest Asia. *Journal of Archaeological Research* 2: 221–53.

Byrd, B. F., and Monahan, C. M.
1995 Death, Mortuary Ritual, and Natufian Social Structure. *Journal of Anthropological Archaeology* 14: 251–87.

Carneiro, R.
1968 Slash and Burn Cultivation among the Kuikuru and Its Implications for Cultural Development in the Amazon Basin. Pp. 132–45 in *Man in Adaptation,* ed. Y. Cohen. Chicago: Aldine.
1970 A Theory of the Origin of the State. *Science* 169: 733–38.

Cauvin, J.
1994 *Naissance des divinités, Naissance de l'agriculture.* Paris: Éditions des Centre National de la Recherche Scientifique.

Cavalli-Sforza, L., and Feldman, M. W.
1981 *Cultural Transmission and Evolution.* Princeton: Princeton University Press.

Childe, V. G.
1951 *Man Makes Himself.* New York: Mentor.

Clark, J. E., and Blake, M.
1994 The Power of Prestige: Competitive Generosity and the Emergence of Rank Societies in Lowland Mesoamerica. Pp. 17–30 in *Factional Competition and Political Development in the New World,* eds. E. M. Brumfiel and J. W. Fox. Cambridge: Cambridge University Press.

Cohen, M. N.
1977 *The Food Crisis in Prehistory.* New Haven: Yale University Press.

Conkey, M.
1980 The Identification of Prehistoric Hunter Gatherer Aggregation Sites: The Case of Altamira. *Current Anthropology* 21: 609–30.

Druker, P.
1965 *Cultures of the North Pacific Coast.* New York: Harper Row.

Engel, F. A.
1976 *An Ancient World Preserved.* New York: Crown.

Esin, U.
1994 1992 Asıklı Höyük (Kızılkaya-Aksaray) Kurtarma Kazısı. *Kazı Sonuçları Toplantısı* (Ankara) 15: 77–96.
1995 Early Metallurgy at the Pre-pottery Site of Asıklı. Pp. 61–77 in *Readings in Prehistory: Studies Presented to Halet Çambel*. Istanbul: Graphis Yayınları.

Esin, U.; Özbasaran, M.; Balkan Atlı, N.; Berker, D.; Yağmur, I.; and Korhut Atlı, A.
1991 Salvage Excavations at the Pre-Pottery Site of Asıklı Höyük in Central Anatolia. *Anatolica* 17: 123–74.

Feldman, R. A.
1985 Preceramic Corporate Architecture: Evidence for the Development of Non-Egalitarian Social Systems in Peru. Pp. 71–92 in *Early Ceremonial Architecture in the Andes,* ed. C. B. Donnan. Washington, DC: Dumbarton Oaks.

Flannery, K.
1969 Origins and Ecological Effects of Early Domestication in Iran and the Near East. Pp. 73–100 in *The Domestication and Exploitation of Plants and Animals,* eds. P. J. Ucko and G. W. Dimbleby. Chicago: Aldine.
1972 The Origins of the Village as a Settlement Type in Mesoamerica and the Near East: A Comparative Study. Pp. 23–54 in *Man, Settlement, and Urbanism,* eds. P. J. Ucko, R. Tringham, and G. W. Dimbleby. London: Duckworth.
1973 The Origins of Agriculture. *Annual Review of Anthropology* 2: 271–310.
1986 *Guila Naquitz*. Orlando: Academic Press.
1994 Childe the Evolutionist: A Perspective from Nuclear America. Pp. 101–20 in *The Archaeology of V. Gordon Childe,* ed. D. R. Harris. Chicago: University of Chicago Press.

Gebauer, A. B., and Price, T. D.
1992 Foragers to Farmers: An Introduction. Pp. 1–10 in *Transitions to Agriculture in Prehistory*, eds. A. B. Gebauer and T. D. Price. Madison: Prehistory Press.

Geiger, G.
1990 *Evolutionary Instability.* Berlin: Springer.

Gilead, I.
1991 The Upper Palaeolithic Period in the Levant. *Journal of World Prehistory* 5: 105–54.

Godelier, M.
1970 *Sur les societés précapitalistes*. Paris: Centre d'Études et de Recherches Marxistes.

Goldstein, L.
1981 One Dimensional Archaeology and Multi-dimensional People: Spatial Organization and Mortuary Analysis. Pp. 53–69 in *The Archaeology of Death*, R. Chapman et al., eds. Cambridge: Cambridge University Press.

Gould, S. J.
1987 The Panda's Thumb of Technology. *Natural History* 96: 14–23.
1989 *Wonderful Life: The Burgess Shale and the Nature of History.* New York: W. W. Norton.

Graham, M.
1994 *Mobile Farmers: An Ethnoarchaeological Approach to Settlement Organization Among the Rarámuri of Northwestern Mexico.* Ann Arbor: International Monographs in Prehistory.

Hardin, G.
1968 The Tragedy of the Commons. *Science* 162: 1243–48.

Harlan, J.
1967 A Wild Wheat Harvest in Turkey. *Archaeology* 20: 197–201.

Hayden, B.
1990 Nimrods, Piscators, Pluckers, and Planters: The Origin of Food Production. *Journal of Anthropological Archaeology* 9: 31–69.

Henry, D. O.
1989 *From Foraging to Agriculture: The Levant at the End of the Ice Age.* Philadelphia: University of Pennsylvania Press.

Higham, C.
1994 *Khok Phanom Di.* Fort Worth: Harcourt Brace.

Isbell, W.
1978 Environmental Perturbations and the Origin of the Andean State. Pp. 303–14 in *Social Archeology: Beyond Subsistence and Dating,* eds. C. L. Redman et al. London: Academic Press.

Johnson, A.W., and Earle, T.
1987 *The Evolution of Human Societies.* Stanford: Stanford University Press.

Kelly, R. L.
1995 *The Foraging Spectrum.* Washington, DC: Smithsonian Institution.

Kuijt, I.
1994 Pre-Pottery Neolithic A Settlement Variability: Evidence for Sociopolitical Developments in the Southern Levant. *Journal of Mediterranean Archaeology* 7: 165–92.

Lee, R., and DeVore, I.
1968 Problems in the Study of Hunters and Gatherers. Pp. 3–20 in *Man the Hunter,* eds. R. Lee and I. DeVore. Chicago: Aldine.

Malinowsky, B.
1935 *Coral Gardens and Their Magic.* London: Allen and Unwin.

McCorriston, J., and Hole, F.
1991 The Ecology of Seasonal Stress and the Origins of Agriculture in the Near East. *American Anthropologist* 93: 46–69.

Mokyr, J.
1990 *The Lever of Riches.* New York: Oxford University Press.

Moseley, M. E.
1975 *The Maritime Foundations of Andean Civilization.* Menlo Park: Cummins.
1992 *The Incas and Their Ancestors.* New York: Thames and Hudson.

Moseley, M. E., and Feldman, R. A.
1988 Fishing, Farming and the Foundation of Andean Civilization. Pp. 125–34 in *The Archaeology of Prehistoric Coastlines,* eds. G. Bailey and J. Parkington. Cambridge: Cambridge University Press.

Orenstein, H.
1980 Asymmetrical Reciprocity: A Contribution to the Theory of Political Legitimacy. *Current Anthropology* 21: 69–91.

Özdoğan, A.
1995 Life at Çayönü During the Pre-Pottery Neolithic Period. Pp. 79–100 in *Readings in Prehistory: Studies Presented to Halet Çambel.* Istanbul: Graphis Yayınları.

Özdoğan, M.
1995 Neolithic in Turkey: Status of Research. Pp. 41–60 in *Readings in Prehistory: Studies Presented to Halet Çambel.* Istanbul: Graphis Yayınları.

Parsons, M. H.
1970 Preceramic Subsistence on the Peruvian Coast. *American Antiquity* 35: 292–304.

Pearsall, D. M.
1992 The Origins of Plant Cultivation in South America. Pp. 173–206 in *The Origins of Agriculture,* eds. C. W. Cowan and P. J. Watson. Washington, DC: Smithsonian Institution.

Perkins, D., Jr., and Daly, P.
1968 A Hunter's Village in Neolithic Turkey. *Scientific American* 219: 96–106.

Perrot, J., and Ladiray, D.
1988 *Les hommes de Mallaha (Eynan), les sepulcres.* Memoires et Travaux de le Centre Française de Jerusalem 7. Paris: Association Paléorient.

Quilter, J.
1985 Architecture and Chronology at El Paraíso, Peru. *Journal of Field Archaeology* 12: 279–97.
1989 *Life and Death at La Paloma.* Iowa City: University of Iowa Press.

Quilter, J., and Stocker, T.
1983 Subsistence Economies and the Origins of Andean Complex Societies. *American Anthropologist* 85: 545–62.

Roberts, N.
1989 *The Holocene, An Environmental History.* Oxford: Blackwell.

Rosenberg, M.
1994 Pattern, Process, and Hierarchy in the Evolution of Culture. *Journal of Anthropological Archaeology* 13: 307–40.
1995 The Hallan Çemi Excavations, 1993. *Kazı Sonuçları Toplantısı* (Ankara) 16: 79–94.

Sahlins, M.
1972 *Stone Age Economics.* Chicago: Aldine.

Sauer, C. O.
1969 *Agricultural Origins and Dispersals.* 2nd ed. [1st ed. 1952] Cambridge: Massachusetts Institute of Technology.

Saxe, A.
1970 Social Dimensions of Mortuary Practices. Unpublished Ph.D. dissertation, Department of Anthropology, University of Michigan Press.

Schrader, H.
1992 Peruvian Coastal Primary Palaeo-Productivity during the Last 200,000 Years. Pp. 391–410 in *Upwelling Systems: Evolution Since the Early Miocene,* eds. C. P. Summerhayes, W. L. Prell, and K. C. Emeis. London: Geological Society.

Service, E. R.
1975 *Origins of the State and Civilization.* New York: Norton.

Smith, C. T.
1976a Regional Economic Systems: Linking Geographical Models and Socio-economic Problems. Pp. 3–63 in *Regional Analysis,* ed. C. A. Smith. London: Academic Press.
1976b Exchange Systems and the Spatial Distribution of Elites. Pp. 309–74 in *Regional Analysis,* ed. C. A. Smith. London: Academic Press.

Tchernov, E.
1991 Biological Evidence for Human Sedentism in Southwest Asia During the Natufian. Pp. 315–40 in *The Natufian Culture in the Levant,* eds. O. Bar-Yosef and F. Valla. Ann Arbor: International Monographs in Prehistory.

Testart, A.
1982 The Significance of Food Storage among Hunter Gatherers: Residence Patterns, Population Densities, and Social Inequalities. *Current Anthropology* 23: 523–37.

Valla, F.
1995 The First Settled Societies: Natufian (12,500–10,200 B.P.). Pp. 169–89 in *The Archaeology of Society in the Holy Land,* ed. T. E. Levy. New York: Facts on File.

Verano, J. W.
1995 Where Do They Rest? The Treatment of Human Offerings and Trophies in Ancient Peru. Pp. 189–228 in *Tombs for the Living: Andean Mortuary Practices,* ed. T. D. Dillehay. Washington, DC: Dumbarton Oaks.

Webster, D.
1975 Warfare and the Evolution of the State. *American Antiquity* 40: 646–70.

Widmer, R. J.
1988 *The Evolution of the Calusa.* Tuscaloosa: University of Alabama Press.

Williams, C.
1985 A Scheme for the Early Monumental Architecture of the Central Coast of Peru. Pp. 227–41 in *Early Ceremonial Architecture in the Andes,* ed. C. B. Donnan. Washington, DC: Dumbarton Oaks.

Wilson, D. J.
1981 Of Maize and Men: A Critique of the Maritime Hypothesis of State Origins on the Coast of Peru. *American Anthropologist* 83: 93–120.

Winterhalder, B.
1986 Diet Choice, Risk, and Food-Sharing in a Stochastic Environment. *Journal of Anthropological Archaeology* 5: 369–92.

Wittfogel, K.
1957 *Oriental Despotism*. New Haven: Yale University Press.

Wright, G. A.
1978 Social Differentiation in the Early Natufian. Pp. 201–24 in *Social Archeology: Beyond Subsistence and Dating,* eds. C. L. Redman et al. London: Academic Press.

Wright, H. E.
1993 Environmental Determinism in Near Eastern Prehistory. *Current Anthropology* 34: 458–69.

Yesner, D. R.
1980 Maritime Hunter-Gatherers: Ecology and Prehistory. *Current Anthropology* 21: 727–50.

Zohary, D., and Hopf, M.
1994 *Domestication of Plants in the Old World.* 2nd ed. Oxford: Clarendon Press.