



THE UNIVERSITY OF CHICAGO PRESS JOURNALS

The Evolution of Chiefdoms

Author(s): Timothy Earle

Source: *Current Anthropology*, Vol. 30, No. 1 (Feb., 1989), pp. 84-88

Published by: The University of Chicago Press on behalf of Wenner-Gren Foundation for Anthropological Research

Stable URL: <http://www.jstor.org/stable/2743311>

Accessed: 26-06-2017 00:03 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://about.jstor.org/terms>



Wenner-Gren Foundation for Anthropological Research, The University of Chicago Press are collaborating with JSTOR to digitize, preserve and extend access to *Current Anthropology*

- the centenary of his birth*. Edited by W. Goldschmidt, pp. 4–28. San Francisco: Howard Chandler.
- KROEBER, A. L. 1923. *Anthropology*. New York: Harcourt, Brace.
- . 1948. *Anthropology*. New York: Harcourt, Brace.
- LESSER, A. 1968. "Franz Boas," in *International encyclopedia of the social sciences*, vol. 2, pp. 99–110.
- MAYR, E. 1980. "Prologue: Some thoughts on the history of the evolutionary synthesis," in *The evolutionary synthesis*. Edited by E. Mayr and W. Provine, pp. 1–48. Cambridge: Harvard University Press.
- MAYR, E., AND W. PROVINE. 1980. *The evolutionary synthesis*. Cambridge: Harvard University Press.
- MONTAGU, M. F. A. 1944. Aleš Hrdlička, 1869–1943. *American Anthropologist* 46:112–17.
- NORDENSKIÖLD, E. 1928. *The history of biology*. New York: Tudor.
- PROVINE, W. B. 1971. *The origins of theoretical population genetics*. Chicago: University of Chicago Press.
- . 1986. *Sewall Wright and evolutionary biology*. Chicago: University of Chicago Press.
- RIPLEY, W. Z. 1910 (1899). *The races of Europe: A sociological study*. New York: Appleton.
- SHAPIRO, H. L. 1939. *Migration and environment*. New York: Oxford University Press.
- SPENCER, F. 1981. The rise of academic physical anthropology in the United States (1880–1980): A historical overview. *American Journal of Physical Anthropology* 56:353–64.
- STOCKING, G. 1968. *Race, culture, and evolution*. Chicago: University of Chicago Press.
- TANNER, J. M. 1959. "Boas' contribution to knowledge of human growth and form," in *The anthropology of Franz Boas: Essays on the centenary of his birth*. Edited by W. Goldschmidt, pp. 76–111. San Francisco: Chandler.
- TOPINARD, P. 1890. *Anthropology*. London: Chapman and Hall.

The Evolution of Chieftdoms¹

TIMOTHY EARLE

Department of Anthropology, University of California, Los Angeles, Calif. 90024, U.S.A. 22 v 88

The principal goal of the seminar on chieftdoms held at the School of American Research January 18–22, 1988, was to understand the dynamics of chieftdoms. A chieftdom was rather loosely defined as a centralized polity that organizes a regional population in the thousands (Carneiro 1981, Earle 1987). Some degree of heritable social ranking and economic stratification was considered characteristic. The focus of discussion was on the origin of these polities, their development, and their eventual collapse, stasis, or transformation into states.

1. © 1989 by The Wenner-Gren Foundation for Anthropological Research. All rights reserved 0011-3204/89/3001-0006\$1.00. This paper summarizes the discussions and conclusions of an advanced seminar whose participants were as follows: Richard Bradley (Archaeology, Reading), Robert Drennan (Anthropology, Pittsburgh), Timothy Earle (Anthropology, UCLA), Gary Feinman (Anthropology, Wisconsin–Madison), Yale Ferguson (Political Science, Rutgers), Antonio Gilman (Anthropology, California State–Northridge), Jonathan Haas (*ex officio*, School of American Research), Patrick Kirch (Burke Museum, Washington), Kristian Kristiansen (Center for Research in the Humanities, Copenhagen), Candelario Saenz (Anthropology, Texas–Austin), and Vincas Steponaitis (Anthropology, North Carolina–Chapel Hill).

The seminar participants accepted two important positions to guide their consideration of the evolution of chieftdoms: that research must focus on sequences of long-term change documented archaeologically and historically (Kirch 1984, Kristiansen 1982) and that chieftdoms vary in complexity/scale of development (simple vs. complex [Steponaitis 1978]), mode of financing (staple vs. wealth [D'Altroy and Earle 1985]), structure (group-oriented vs. individualizing [Renfrew 1974]), and specific history. With this accord, participants concentrated on understanding the dynamics of chieftdoms as political institutions. This required outlining the various strategies by which rulers tried to extend and maintain political control and the conditions that affected the success of these strategies. The unstable and cyclical character of most chieftdoms was apparent in the cases discussed.

Discussions of power relationships frequently returned to followers' evaluation of the cost of compliance with a leader's demands relative to the cost of refusal (Haas 1982). Constructing a complex polity requires a leader to bind a following to himself. Simply, he must control people's labor (Feinman and Nicholas 1987). What keeps them from "voting with their feet"—moving away from the centers of power and extraction? Larger groups do not form naturally; technological and social adjustments are necessary to concentrate and coordinate increasing numbers of people (Johnson 1982). The traditional answer to this question has been to point to the management functions that leaders perform. Much of neo-evolutionary thought since the 1950s (see Steward 1955, Service 1962) has emphasized the function of leaders in maintaining their groups. To understand the evolution of chieftdoms is thus simply to identify the new conditions created by technology or population growth that require central management for their effective and efficient operation.

Population growth has received considerable attention since Boserup's (1965) work and serves as a motor in the most recent general synthesis of cultural evolution (Johnson and Earle 1987). In the seminar discussions, however, it received little support as a prime mover. Drennan, Feinman, and Steponaitis emphasized the very low population densities that have been documented by intensive surveys for the chieftdoms in the Oaxaca Valley of highland Mesoamerica, for the Black Warrior Valley of Alabama, and for the Valle de la Plata in Colombia. Population density appears also to have been low for the early chieftdoms of southern England (Bradley). Population increase was certainly associated, however, with the evolution of political systems in the Marquesas, Greece, and medieval Italy. On the Marquesas, population growth and resulting environmental deterioration created a susceptibility to drought that bound a local population to its leader and his breadfruit stores (Kirch). In Greece, population growth accompanied Mycenaean state formation and, following the precipitous "Dark Age" decline, contributed to the emergence of the polis (Ferguson).

Generally seminar participants were willing to accept

that demographic pressure was a cause of social change, especially where, as in the Marquesan case, resulting pressure could be demonstrated to intensify circumscription. The largely unspoken consensus, however, favored Cowgill's (1975) argument against population as a prime mover. As Feinman and others emphasized, population growth rates are highly variable in prehistory, and changing rates must themselves be explained. Referring to the basic Darwinian model of natural selection, Gilman reminded the seminar that as far as the family was concerned, population pressure was constant, the size of the family always pressing against its ability to feed itself. Any suggestion of an ecological or economic prime mover seemed to meet with discrediting counterexamples ("But among the ———").

Instead, participants focused on the political process responsible for the creation and maintenance of regional polities—as Gilman put it, what the bosses do to gain and extend power. Steponaitis offered a listing of ten political strategies:

1. Giving (inflicting debt); feasting and prestations.
2. Improving the infrastructure of subsistence production.
3. Encouraging circumscription.
4. Applying force.
5. Forging external ties.
6. Expanding the dependent population.
7. Seizing control of existing principles of legitimacy (supernatural and natural).
8. Creating or appropriating new principles of legitimacy.
9. Seizing control of internal wealth production and distribution.
10. Seizing control of external wealth procurement.

How these strategies are viewed by the population of course radically affects their success (Drennan). In Strategies 1 and 2 leaders attempt to seize the power that comes from control over the means of production and/or distribution. To the degree that a people's subsistence is controlled, its capacity to reject central decisions is limited. Such control may result in a system of staple finance in which the surplus generated as rent is used to support a nonproducing sector of the population. The ownership of the irrigation systems in southeastern Spain (Gilman) is such a circumstance. The development of field systems in the European Iron Age (Earle) may well represent an attempt to control subsistence production through landownership. In pastoral chiefdoms such as those of the African Twareg (Saenz) and the European Neolithic and Bronze Age societies (Bradley, Kristiansen), ownership of animals offered another basis for control. Alternatively, chiefs' domination of long-distance exchange with external urban markets may offer control over productive technology and staple foods (Saenz). Such exchange relationships were certainly important in the Aegean, where an export economy directed at the Eastern Mediterranean civilizations contributed significantly to Minoan and Mycenaean state formation (Gilman).

Strategies 3–6 may involve the extension of control

through conquest and alliances. Warfare has been recognized as a common characteristic of chiefdoms (Carneiro 1981), with warriors being used to conquer new communities (and their tribute base) and to intimidate communities reluctant to give up their full share to the overlord. At the end of the Greek Dark Age, for example, Sparta expanded through conquest (Ferguson). Interestingly, the potential for control based on military force seems quite limited and unstable. In the Iron Age of Europe (Bradley, Kristiansen), the Argaric Bronze Age of southeastern Spain (Gilman), and the pre-Columbian Mantaro Valley in Peru (Earle), warfare was prevalent but local chiefdoms were apparently unable to expand spatially to incorporate sizable regional populations. Many of the small Greek poleis remained politically independent of the expanding states for a long time. Local groups seem to have been able to retain political autonomy by defending themselves in fortified locations virtually unassailable with the tactics that characterize chiefdoms.

Strategies 7–10 depend primarily on an ideology that legitimizes the position of leaders as necessary for maintaining the "natural" order of the world. In many cases this involves the leaders' securely connecting themselves to the past. The English Neolithic and early Bronze Age burial mounds seem to plant a community's leadership line on an eminence that dominates the landscape (Bradley 1984). Equally important is competition for ties to a new ideology from outside, often associated with an "international style," that is used to set off the ruling elite as a separate order (cf. Flannery 1968, Helms 1979). For example, the warrior elite of northern Europe used such symbols as war chariots and stools from the distant Mediterranean states to define its status (Kristiansen 1987). The increasing control of long-distance wealth exchange and the use of exotic wealth to attract/control local labor appear to be important facets of chiefdom development in highland Mesoamerica (Feinman); a similar pattern would appear to exist for the Mississippian chiefdoms (Steponaitis). Elites justified their positions with reference to external sources of power inaccessible to others. The special wealth objects were often associated with powers that both symbolized and encapsulated the elites' divinity or at least nonlocal legitimacy.

The importance of ideology as a source of chiefly power has several historical examples. State ideologies derived from the Roman texts held by the church following the collapse of Rome were used to "civilize" the invading barbarians and then to legitimize the emerging ruling system of small Italian city-states (Ferguson). Again, in the emergence of the polis, the myth of a Golden Age served as a ruling ideology; each polis had myths of heroes and patron gods important in creating its political identity. The Saharan nomadic chiefs similarly used the external Islamic state ideology in their political maneuverings (Saenz).

Exotic wealth, with associated external ideologies, can serve as a status-defining marker and as political currency for materializing political relationships. Control

of the distribution of foreign objects can be used to draw in a local population and reward its participation. An ideology derived from external relations is, however, vulnerable to changing international conditions of trade and exchange and therefore inherently less stable than a staple-finance system. The character of the finance system may thus give distinct dynamics to the chiefdom in terms of scale of integration and stability of control. Some stability may be gained by linking exotic objects to local ceremonies, as in their association with ceremonial architecture in the Formative cultures of highland Mesoamerica (Feinman) and in the Mississippian culture (Steponaitis). Here, as in the Wessex case (Earle), ceremonial places may have been tied to landownership. It is probably not coincidental that the first ceremonial architecture seems to have been for activities creating and reinforcing community bonds rather than stressing status differences (Drennan). Many early chiefdoms appear to fit comfortably within Renfrew's model of the group-oriented chiefdom.

Perhaps the most heated discussion in the seminar focused on the bases of power. Drennan, Feinman, and Steponaitis held that in the Mesoamerican and Mississippian chiefdoms no convincing argument could be made for such strict economic control as would be seen in ownership of land or central storage. Rather, populations seem to have been drawn into sociopolitical systems in part by "smoke and mirrors"—an ideology of religiously sanctioned centrality symbolized by ceremonial constructions and exchanges of foreign objects with probable sacred significance. The argument here was that in simple chiefdoms the amount of labor and goods being extracted from a dependent population was small enough to present a low cost of compliance; the question of economic coercion became moot, as the cost of refusal could be minimal and ideologically based. On the other side, Gilman and I insisted that power, even though ceremonially sanctioned, depends on control over subsistence. At least in some circumstances, as in the Polynesian cases and those from southeastern Spain, control through ownership of land, productive technology, and storage is evident.

I argued that the development of complex political systems relies not simply on access to a source of power but on the ability to *control* it. Although ideology and military might are potent forces (cf. Mann 1986), systems based on them cannot be expected to become stable and regionally organized; they will continually fragment in the course of the competition for central positions that characterizes any hierarchically structured society. The maintenance of power relationships would seem to involve economic control over people's everyday lives. This position was eventually somewhat grudgingly accepted, but the question remained what, after all, constituted "economic control." Kristiansen argued that, prior to true class formation, ideology penetrated social life as a cosmology of natural order and therefore was a necessary element in the control of labor and production. For example, in Mesoamerica, economic power seems to have derived from a complex system of

ceremony, exotic wealth obtained from long distances, craft production, and local markets (Drennan, Feinman). Several felt that the strict economic controls that Gilman and I discussed became important for understanding the origins of chiefdoms only with more complex ones in which a virtual class system already existed.

The resolution of this debate was based on a recognition by all participants that the three components of power (control over the economy, military force, and ideology) are to some degree alternatives that can set up opposing factions within a chiefdom. The Marquesan case (Kirch) illustrates how chiefs, warriors, and inspirational priests, with their different power bases, competed with each other without being able to dominate. Domination would seem to depend on interlocking the different strategies to concentrate power. For example, in the European Neolithic and Bronze Ages, the basis for economic control was probably animal herds, and the ideological element involved the use of the animals as food for feasts (Bradley). Ceremonial constructions associated with both funerary and cosmic ritual defined the productive territories controlled by chiefs (Earle), who could retain leadership by affirming their roles in maintaining the subsistence economy through that ritual. Essentially the monuments materialized a social and ritual landscape that could be owned by those maintaining and defending rights to them. Through long-distance exchange, elites entered into an international style and ideology that both legitimized their status and, in the case of metals, created a technology of warrior domination through force (Kristiansen). Thus the different sources of power fit together. Where they do not, competition will be resolved in the long run by a test of strength. In the Wessex case, an apparent opposition existed between the ideology represented by the traditional ceremonies at the henge monuments and the military force of emerging warrior elites identified with the bell beakers; eventually the successful warriors appropriated the earlier ceremonial places (Bradley).

The success or failure of the various political strategies (and ultimately of the chiefly institutions that employ them) would appear to be in part determined by ecological and social conditions. The nine "environmental" conditions most responsible for differences in trajectories are (1) natural productivity and potential for intensification, (2) regional population density, (3) existence of external markets, (4) natural circumscription, (5) concentration of productive resources, (6) proximity to needed nonfood resources, (7) proximity to avenues of trade and communication, (8) social circumscription, and (9) structural preconditions of hierarchy. As Steponaitis emphasized in offering this list, these conditions are certainly not sufficient causes.

It is convenient to recognize two aspects of these environmental conditions that especially affect the development of chiefdoms. First are the conditions that permit the generation and extraction of a surplus. This surplus, on which the new institutions of chiefdoms depend, is the product of the productive potential of the land (Condition 1), the human labor to make it fruitful (Condition

2), and external markets (Condition 3) that offer alternative sources of energy. Second are the conditions that limit a people's options and thus permit a surplus to be channeled toward a center. Circumscription, as Carneiro (1970) has described it, essentially limits the opportunities available to a human population. Environments differ in degree of circumscription (Condition 4), as of course is evident in the contrast between the isolated islands of the Pacific and the broad continental areas of Europe or Mesoamerica. To some extent this circumscription is locally a product of the concentration and thus ease of control of the most productive lands (Condition 5), necessary nonfood resources (Condition 6), and trading opportunities (Condition 7). Beyond these are the external political environment (Condition 8), including antagonistic groups whose control of land in effect socially circumscribes the group.

Internal sociopolitical structure (Condition 9) may also exclude much of the population from political action, as in the case of the Polynesian chiefdoms. The inherent and accepted basis for social stratification continued to structure and constrain political behavior in Europe well after the fall of the Roman empire (Ferguson).

The discussions made clear that environmental conditions are not something simply presented to a human population. Rather, they are both cultural and natural and are constantly being modified by human intervention (Bargatzky 1984). For example, in the Valley of Oaxaca, the early concentration of social and economic activities including ceremonies, craft specialization, and the like attracted population to the center and made labor control possible (Feinman). Although the concentration of natural productivity is initially derived from soil, rainfall, vegetative cover, and the like, the resource base is quickly altered by human intervention—improved by irrigation, terracing, and drainage, degraded by overuse and induced erosion. In Hawaii and in Europe, the two processes together had the effect of concentrating productive resources in limited zones that came to be owned by the elites. Some of this intervention may have been part of a strategy to increase economic control, as in the Hawaii case (Earle); some is the unforeseen consequence of the efforts of individual households and communities to improve their lot, as in the Danish case (Kristiansen).

Other examples of changing conditions have to do with circumscription. In a continental area such as Europe, natural circumscription may originally be low but increase as the landscape is filled in and divided into owned territories. Ferguson made the interesting suggestion that warfare between polities in the Aegean Dark Age may have been encouraged at times as a strategy to increase social circumscription. Thus regional extension could actually weaken a chiefdom by eliminating an external threat. Similarly, it was suggested that the fortifications of a European hillfort or a medieval city-state could act as much to enclose (circumscribe) a population as to protect it from an enemy.

Different environments probably present different op-

portunities for control and finance, and these differences create different trajectories for development. The potential for intense irrigation, as in Hawaii or southeastern Spain, permits strong local control over staple resource production, but in the absence of movable wealth the system tends to remain limited in scale. The development of a wealth-finance system linked with an exotic ideology and/or military superiority can overcome this localism, but it makes the system dependent on external relations that can disrupt local patterns of domination. Although we are only beginning to understand the developmental dynamics of stateless societies, the potential for understanding social process from this perspective is exciting.

In studying the dynamics of chiefdoms, researchers have focused almost exclusively on the polity. An understanding of their operation should consider multiple levels of analysis—the household, the community, the polity, and the region (Johnson and Earle 1987). The household and the community must be understood as semiautonomous units that may compete with each other and with the polity. The chiefdom must therefore be viewed as a fragile, negotiated institution held together by economic interdependence, ideology, and force. Centers of power in a region shift, and integration increases only to collapse. Sustaining integration requires the leadership to maintain the balance between the costs of compliance and of refusal. Given constantly changing local and regional conditions, this will be a continuing struggle. Further, chiefdoms, with their few high-status positions, are inherently competitive in their political dynamics. A centralizing tendency as individuals seek to concentrate power and eliminate the opportunities for rebellion is opposed by a fragmenting tendency as local leaders seek to establish their independent authority. It is perhaps more surprising that some chiefdoms are able to sustain themselves than that others disintegrate, and here economic control would seem of paramount importance.

As Kristiansen kept reminding the group, however, chiefdoms can only be understood as broadly interacting polities linked into regional interaction spheres (peer polity interaction [Renfrew 1982]) and world economic systems (core-periphery relations [Rowlands, Larsen, and Kristiansen 1987]). Thus system evolution and collapse must often be interpreted in terms of political competition, long-distance exchange, and international ideologies that bind elites more to each other than to the local groups they dominate.

Our discussions were at once exciting and discouraging. It was apparent that much progress had been made in understanding chiefdom development, but each attempt at simple synthesis was met with criticism. Drennan, cast in the role of spoiler, was especially critical of the formulations offered. Drawing evidence from six prehistoric sequences in Mesoamerica, Panama, and Colombia, he argued convincingly that the differences between them had not been adequately explained. Some of these differences appeared early in the respective sequences and conditioned later developments. This led

him to stress differences as opposed to similarities. Problems in identifying the economic basis of social complexity in the well-documented archaeological record for Oaxaca and the Black Warrior Valley kept being referred to, and Kristiansen pointed to the need to identify the structural principles generating the apparently contrasting archaeological sequences.

The synthesis that emerged from the seminar discussions is ultimately more powerful because it recognizes the extreme complexity and interdependence of the sources of power in society and the forces of instability and division that constantly threaten to tear it apart. Of particular interest are long-term local and regional patterns of expansion and collapse. All accepted that to understand the development of chiefdoms we must examine the ways in which finance, control, and ideology empower an emerging ruling class. While the linear causality that we once felt comfortable with has certainly been outgrown, the new synthesis offers a rich and varied interpretation of sociopolitical process.

References Cited

- BARGATZKY, THOMAS. 1984. Culture, environment, and the ills of adaptationism. *CURRENT ANTHROPOLOGY* 25:399–415.
- BOSERUP, ESTER. 1966. *The conditions of agricultural growth*. Chicago: Aldine.
- BRADLEY, RICHARD. 1984. *The social foundations of prehistoric Britain*. London: Harlow.
- CARNEIRO, ROBERT. 1970. A theory of the origin of the state. *Science* 169:733–38.
- . 1981. "The chiefdom as precursor of the state," in *The transition to statehood in the New World*. Edited by G. Jones and R. Krautz, pp. 37–79. Cambridge: Cambridge University Press.
- COWGILL, GEORGE. 1975. On causes and consequences of ancient and modern population changes. *American Anthropologist* 77:505–25.
- D'ALTROY, TERENCE, AND TIMOTHY EARLE. 1985. Staple finance, wealth finance, and storage in the Inca political economy. *CURRENT ANTHROPOLOGY* 26:187–206.
- EARLE, TIMOTHY. 1987. Chiefdoms in archaeological and ethnohistorical perspective. *Annual Reviews in Anthropology* 16:279–308.
- FEINMAN, GARY, AND LINDA NICHOLAS. 1987. "Labor, surplus, and production: A regional analysis of Formative Oaxaca socioeconomic organization," in *Anthropological research papers*. Edited by G. A. Clark. Tempe: Arizona State University Press.
- FLANNERY, KENT. 1968. "The Olmec and the Valley of Oaxaca: A model for interregional interaction in Formative times," in *Dumbarton Oaks conference on the Olmec*. Edited by E. Benson, pp. 79–110. Washington, D.C.: Dumbarton Oaks.
- HAAS, JONATHAN. 1982. *The evolution of the prehistoric state*. New York: Columbia University Press.
- HELMS, MARY. 1979. *Ancient Panama*. Austin: University of Texas Press.
- JOHNSON, ALLEN, AND TIMOTHY EARLE. 1987. *The evolution of human society: From forager group to agrarian state*. Stanford: Stanford University Press.
- JOHNSON, GREGORY. 1982. "Organizational structure and scalar stress," in *Theory and explanation in archaeology: The Southampton Conference*. Edited by C. Renfrew, M. Rowlands, and B. Seagrave, pp. 389–421. New York: Academic Press.
- KIRCH, PATRICK. 1984. *The evolution of the Polynesian chiefdoms*. Cambridge: Cambridge University Press.
- KRISTIANSEN, KRISTIAN. 1982. "The formation of tribal systems in later European prehistory: Northern Europe 4000–500 B.C.," in *Theory and explanation in archaeology: The Southampton Conference*. Edited by C. Renfrew, M. Rowlands, and B. Seagrave, pp. 241–80. New York: Academic Press.
- . 1987. "From Stone to Bronze: The evolution of social complexity in northern Europe, 2300–1200 B.C.," in *Specialization, exchange, and complex society*. Edited by E. Brumfiel and T. Earle, pp. 30–51. Cambridge: Cambridge University Press.
- MANN, MICHAEL. 1986. *The sources of social power: A history of power from the beginning to A.D. 1760*. Cambridge: Cambridge University Press.
- RENFREW, COLIN. 1974. "Beyond a subsistence economy: The evolution of social organization in prehistoric Europe," in *Reconstructing complex society*. Edited by C. B. Moore, pp. 69–95. *Bulletin of the American School of Oriental Research* 20.
- . 1982. "Socio-economic change in ranked society," in *Ranking, resources, and exchange*. Edited by C. Renfrew and S. Shennan, pp. 1–9. Cambridge: Cambridge University Press.
- ROWLANDS, MICHAEL, MOGENS LARSEN, AND KRISTIAN KRISTIANSEN. 1987. *Centre and periphery in the ancient world*. Cambridge: Cambridge University Press.
- SERVICE, ELMAN. 1962. *Primitive social organization*. New York: Random House.
- STEPONAITIS, VINCAS. 1978. "Locational theory and complex chiefdoms: A Mississippian example," in *Mississippian settlement patterns*. Edited by B. Smith, pp. 417–53. New York: Academic Press.
- STEWART, JULIAN. 1955. *Theory of culture change*. Urbana: University of Illinois Press.

The Epi-Palaeolithic Southern Levant and the Origins of Cultivation¹

ROMANA UNGER-HAMILTON
Institute of Archaeology, University College London,
31–34 Gordon Square, London WC1 0PY, England.
22 IV 88

It has for some time been generally accepted that the origins of Old World cereal agriculture are to be sought somewhere in the Fertile Crescent (Gill and Vear 1980:46) sometime towards the end of the Epi-Palaeolithic,² ca. 17,000–8000 B.C. (here and throughout, see

1. © 1989 by The Wenner-Gren Foundation for Anthropological Research. All rights reserved 0011-3204/89/3001-0005\$1.00. I thank Gordon C. Hillman, D. R. Harris, M. H. Newcomer, F. R. Hodson, C. Orton, and Kathryn Ataman (Institute of Archaeology, London), D. Zohary, O. Bar-Yosef, P. Goldberg, A. Belfer-Cohen, N. Goren, N. Goring-Morris, and Y. Garfinkel (Hebrew University, Jerusalem), M. Kislev (Bar-Ilan University), A. Ronen and E. Nevo (Haifa University), D. Joel (Ministry of Agriculture Research Centre, Neve Yaar), Z. Naveh and M. Blumler (Technion, Haifa), F. Valla (CNRS, Jerusalem), G. de G. Sieveking (British Museum), P. Carter (Museum of Anthropology and Archaeology, Cambridge), J. Crowfoot-Payne (Ashmolean Museum), J. Zias (Rockefeller Museum), T. Noy and staff (Israel Museum), the Harpers (British School of Archaeology in Jerusalem), and John Hope Mason. The research was funded by the Science and Engineering Research Council of Great Britain and by travel grants from the British Academy and the British School of Archaeology in Jerusalem.

2. The Epi-Palaeolithic in the southern Levant is divided into Kebaran (from ca. 17,000 B.C.) and Natufian (10,000–8000 B.C.) techno-complexes.