

# Modern Nomads and Prehistoric Pastoralists: The Limits of Analogy

ALLAN S. GILBERT  
Columbia University

Pastoralism is a term which is used here to designate the various levels of control which man can exercise over an animal population for his own benefit. Archaeological evidence indicates that such control of animal resources originated well before the rise of civilization in the Near East; consequently, efforts to understand the earliest herding practices have utilized the methods of prehistory.<sup>1</sup> The present paper examines one of these methods, ethnographic analogy, and suggests that it fails to provide a direct means toward the reconstruction of the patterns and processes of prehistoric pastoralism if pastoral nomads of today are employed as an analog.

In the absence of written documentation, many methods have been devised to interpret archaeological remains. Analogy has figured prominently among them as a means of hypothesizing the functions of artifacts, estimating the significance of patterns of site distribution, and weighing the probability that certain kinds of human behavior, uninferable from the archaeological record, were practiced by a now defunct society.<sup>2</sup> Arguments by analogy proceed on the assumption that human activity observed in the ethnographic present may relate closely to the practices of defunct societies when a marked similarity can be demonstrated between the observed behavior patterns with their material remains and the archaeologically excavated artifacts, non-artifactual materials, and their context of discovery. Ascher adds the qualification, intended to help in the selection of more suitable analogs, that there is a greater likeli-

---

1 For summaries of faunal evidence relating to early pastoralism, see: D. Perkins, Jr. and P. Daly, "The Beginning of Food Production in the Near East," in R. Stigler, ed., *The Old World; Early Man to the Development of Agriculture* (New York, 1974), 71-97; C. A. Reed, "The Pattern of Animal Domestication in the Prehistoric Near East," in P. J. Ucko and G. W. Dimbleby, eds., *The Domestication and Exploitation of Plants and Animals* (Chicago, 1969), 361-80. Descriptions of the methods of faunal analysis can be found in P. Daly, "Approaches to Faunal Analysis in Archaeology," *American Antiquity* 34 (1969), 146-53; B. Hesse, "Faunal Analysis—A Tool for Early Historic Research," *JANES* 3 (1970/71), 38-45; H.-P. Uerpmann, "Animal Bone Finds and Economic Archaeology: A Critical Study of 'Osteo-archaeological' Method," *World Archaeology* 4 (1973), 307-22.

2 Analogy has been treated by R. Ascher, "Analogy in Archaeological Interpretation," *Southwestern Journal of Anthropology* 17 (1961), 317-25; L. R. Binford, "Smudge Pits and Hide Smoking: The Use of Analogy in Archaeological Reasoning," *American Antiquity* 32 (1967), 1-12; K. C. Chang, "Major Aspects of the Interrelationship of Archaeology and Ethnology," *Current Anthropology* 8 (1967), 227-43.

hood for analogous relationships between archaeological and ethnographic entities if analogies are sought among "cultures which manipulate similar environments in similar ways."<sup>3</sup>

At first glance, modern nomads seem to provide an apt model. Both prehistoric and historic peoples engaged in herding have occupied the mountain, steppe, and desert zones of Mesopotamia, but their continued association with the lands of the ancient Near East does not justify the use of the latter to infer the nature of the former. Further investigation of the social environment of herding peoples through time introduces manifestly different factors into the analogy. Animal husbandry practices have responded to rapid technological changes, the rise of state societies, extensive land reclamation for exclusively agricultural exploitation, the spread of Islam, and pressures to become sedentary. It can reasonably be expected that certain specific characteristics of contemporary pastoral nomadic behavior have remained substantially unchanged since antiquity, but under these circumstances, the herders themselves cannot be considered to occupy the same niches or fulfill the same social functions today as they did during prehistoric times. Stated another way, the functional linkages among members of a household, among different households, and among larger, more comprehensive groups of people are constantly rerouted and, at times, transformed; therefore, they cannot be expected to hold true for the purposes of analogy between peoples of the late prehistoric and modern eras in the Near East. It is thus imperative that pastoral groups be studied within the larger society of which they are a part, with the understanding that changes in society imply changes in the pastoral adaptation.

Four characteristics abstracted from contemporary pastoral societies have been chosen for examination and extrapolation into the past. These are (1) keeping animals in a state of *domestication*, (2) habitual exploitation of lands and resources considered to be *marginal*, (3) yearly *migrations over long distances* scheduled to correspond with *seasonal changes* in available resources, and (4) *tribal structure* based on kin ties, common ancestry, and segmented, quasi-independent groups united with varying degrees of loyalty under situational leaders. Each of these characteristics is discussed with respect to its relevance and feasibility of application to prehistoric pastoralism. It will be seen that the logic of the contemporary nomadic adaptation, specific to a number of environmental constraints existing today, suffers from a shift into the past. Environmental conditions, both natural and social, have offered quite different constraints through time, often rendering the modern structure inappropriate.<sup>4</sup>

A broadening of each characteristic into a range of potential variation is offered instead as a more productive method for constructing models of prehistoric pastoral systems. In this way, prehistorians may select from a number of alternative models of pastoral behavior those which seem most compatible with the constraints they assume to have existed. Strategies

---

3 Ascher, *Analogy in Archaeological Interpretation*, 319.

4 The argument presented in this article is not meant to challenge or refute those who may find analogous aspects among modern pastoral nomadic groups and ancient herders as interpreted from their material remains. The conclusions drawn indicate simply that the modern and prehistoric pastoral systems are in all likelihood quite different and that caution must be exercised in any attempts at analogical reasoning.

designed to test for the presence or absence in the archaeological record of these behavioral models may then be applied to the data-collecting stage of excavation, or to the reanalysis of previously excavated material. Results will presumably narrow down the number of alternative models and, while suggesting further avenues of research, give rise to more secure interpretations of the course of prehistoric pastoralism.

### 1. Domestication

The use of the term domestication has its most critical test when applied to the earliest appearance of man's control of natural resources. Exact definitions have been proposed, but they have tended to focus interpretations of the archaeological remains too narrowly. Animal domestication has been defined by Bökönyi as:

. . . the capture and taming by man of animals of a species with particular behavioural characteristics, their removal from their natural living area and breeding community, and their maintenance under controlled breeding conditions for profit.<sup>5</sup>

Bökönyi places his emphasis on essentially unnatural conditions of propagation in which man creates an artificial habitat and selects the mating pattern. Such a definition adequately characterizes most modern pastoral nomads who breed their domesticates for particular exploitable qualities. However, the implication that prehistoric hunter-gatherers must initially have involved themselves with such labor-intensive care of animal resources, and that archaeologists should actively be searching for supportive signs, limits the number of possible reconstructions of the archaeological record to those foreseen by the definition. Basic to a sufficient array of alternative models of prehistoric man's behavior is the recognition of a continuum of exploitation practices ranging from the hunting of a species through various levels of additional interference with the species's behavior. This additional interference may be called cultural control.<sup>6</sup> Control can occur within a number of categories such as:

- a. range of uses to which the species is to be put: *exploitation*,
- b. degree of isolation imposed upon the species: *containment*,
- c. degree of concern for perpetuating the species: *conservation*,
- d. degree of interference in the natural breeding behavior of the species: *selective breeding*.

The reasons for applying any combination of categories to the maintenance of an animal population are contingent upon the herders' needs, the needs of the herded species, and the herders' ability to satisfy both through a management strategy.

---

5 S. Bökönyi, "Archaeological Problems and Methods of Recognizing Animal Domestication," in Ucko and Dimbleby, *Domestication and Exploitation*, 219.

6 The term "cultural control" was suggested by H. Hecker with reference to early animal management strategies at Beidha. See H. M. Hecker, *The Faunal Analysis of the Primary Food Animals from Pre-Pottery Neolithic Beidha (Jordan)*, (Ph. D. dissertation, Columbia University, 1975), 316–22.

a. Exploitation

Contemporary exploitations that may have existed in the past include the procuring of animals for food in the form of meat, milk, or blood, and for raw materials in the form of bone, horn/antler, sinew, fat/oil, hair, fur, wool, and hide. Animals also perform a great number of services, among which may be noted some of the more ethnographically common: transport, draft, burden, decoy or aid in killing or capturing other animals, ritual, barter, prestige, and the storage of accumulatable wealth/food resources in maintainable and transferable form. None of these, except perhaps for wool, necessarily imply Bökönyi's controlled breeding, although some require a fair degree of taming.

b. Containment

Containment implies physically restricting the area available to an animal population, but it can also refer to the directing of the animals' movements. With increased containment, there is increased control,

One very common method of hunting utilizes an enclosure or trap into which wild animals are driven. Mendelssohn describes the Bedouin use of desert kites to catch wild gazelles in Sinai and eastern Jordan.<sup>7</sup> As seen from the air, these stone-built structures are large, open-ended, funnel-like corrals. The name kite was given to them because of the strange resemblance in shape. The gazelles were easily herded through the wide opening and dispatched at the narrow end. These corrals are undoubtedly prehistoric; an early representation of one appears in relief on the famous slate palette of the Egyptian king Narmer, who is dated as early as the end of the 4th millennium B.C.<sup>8</sup> Other kites of Chalcolithic date have been published by Rothenberg,<sup>9</sup> and Helms describes one associated with a Late Chalcolithic (3750–3350 B.C.) town at Jawa in northern Jordan.<sup>10</sup> This latter structure, although itself undated, was probably a trap prior to the establishment of the fortified settlement not 200 meters away. Its subsequent use as a herding corral may be postulated.

The hunter's use of containment seems to be primarily for capture. Ethnographic reports indicate that hunters do not appear to be concerned about storage. They feel rather that the natural environment "keeps" most resources very well and that the dispensing of sufficient numbers of prey for subsistence is a matter dictated by the spirit world.<sup>11</sup> As a result, hunting societies usually do not lay legal claim to their prey species. In the absence of ownership rights, a wild herd is wild because its human predators consider containment unnecessary to

7 H. Mendelssohn, "The Development of the Populations of Gazelles in Israel and their Behavioural Adaptations," in V. Geist and F. Walther, eds., *The Behaviour of Ungulates and Its Relation to Management* (Morges, 1974), 725–28.

8 W. S. Smith, *The Art and Architecture of Ancient Egypt* (Harmondsworth, 1958), pl. 7.

9 B. Rothenberg, *Were These King Solomon's Mines?* (New York, 1972), 53–54.

10 S. W. Helms, "Jawa 1973: A Preliminary Report," *Levant* 7 (1975), 36.

11 R. Paine, "Animals as Capital: Comparisons Among Northern Nomadic Herders and Hunters," *Anthropological Quarterly* 44 (1971), 157–72. See also M. D. Sahlins, *Stone Age Economics* (Chicago, 1972) and contributions to R. B. Lee and I. deVore, eds., *Man the Hunter* (Chicago, 1968).

insure continued access to the resource. The initiation of containment for storage and capital maintenance may then represent the point at which usufruct of natural resources is transformed into concepts of personal and group property.

The immediate slaughter of trapped animals may be contrasted with the retention of live animals by their captors as in the case of the Indian elephants of Assam related by Zeuner:

On a large scale elephants are caught by the stockade method . . . A large funnel-shaped stockade is built which ends up in a small enclosure. A wild herd is slowly driven into it. This may take many days, since the animals must not become suspicious until the last moment, when it is too late to turn back. They are extracted from the enclosure with the aid of tame elephants. Since in this manner entire herds can be captured, the erection of an expensive stockade and the driving are well worth while.<sup>12</sup>

Zeuner explains that elephants are generally captured rather than bred in captivity in order to avoid the cost of supporting both the unproductive cows during their two-year pregnancy and one year of nursing, and the young elephant which cannot be employed until maturity at 14–16 years.<sup>13</sup> Once tame, elephants can be employed as if they were domesticated, but without the attendant controlled breeding by man stipulated by the definition. It is perhaps improper to say that the beasts are hunted simply because they are captured from the wild. Rather, the variable of containment has been extended to a wild species and the resultant service to an agricultural population has been favorable and beneficial. Domestication as defined does not precisely fit this situation, and one should be alert to the possibility of yet more variant cases throughout prehistoric and historic time.

Containment of domesticates within enclosures or stables is widely practiced, normally for purposes of sheltering against predators, theft, pests, and climatic extremes. But modern herders often do not adopt strict containment measures when the herd's well-being is not threatened by environmental factors. The degree of control which they exercise can vary depending upon how close the supervision must be in order to achieve desired conditions of maintenance or produce desired physical qualities among the animals. The recent introduction of a market economy in livestock among Lapp reindeer pastoralists of Finland and Norway has brought about a system of herd management in which animals are left alone to graze during certain periods of the year.<sup>14</sup> Under the intensive system of close control, the herdsman remains with the herd the year round. He breeds and selects for slaughter the animals he needs, sells the better-priced cuts of meat, and keeps for his family the lower-priced cuts and other reindeer products such as bone, blood, sinew, hide, and fat. Extensive management, however, requires herd surveillance only at strategic times, prior to marketing, to gain information about the herd's welfare. Because live animals are sold, the herdsman relinquishes claim to the pro-

---

<sup>12</sup> F. E. Zeuner, *A History of Domesticated Animals* (New York, 1963), 284.

<sup>13</sup> *Ibid.*, 283.

<sup>14</sup> R. Paine, "The Herd Management of Lapp Reindeer Pastoralists," in W. Irons and N. Dyson-Hudson, eds., *Perspectives on Nomadism* (Leiden, 1972), 81–86.

ducts he usually receives and obtains the necessities by cash outlay from the sale of his livestock. The need to be in constant touch with the animals is no longer as great. Among other factors, familiarity with reindeer grazing behavior allows the herder to limit close control to the critical periods of spring and autumn when the animals are most likely to disperse as they forage. During the winter, herds remain consolidated, grazing in wooded upland pastures on lichens found beneath the snow cover. Summer grazing areas are near the coast where small headland peninsulas are fenced off to contain the herds. Such situations, in which extensively herded animals are allowed to calve and graze with more independence, may become increasingly difficult to distinguish from selective hunting in which some control of the wild herds is exercised.

### c. Conservation

Pastoralists practice conservation when they select a number of males specifically for breeding while killing or selling off the rest. In this manner, herds are kept down to sizes which are manageable by the herding personnel and which remain within the limit that the available pasturage can support. Barth mentions this practice as characteristic of the sheep-herding south Iranian Basseri, who consider one ram for every five ewes to be sufficient for optimum reproduction of herds ranging in size from 60 to 200.<sup>15</sup> For different situations, however, it must be made clear what is being conserved. According to Johnson, the reasons for keeping any combination of species, age, or sex classes will depend upon their "ability to confer capital, prestige, power, or all three together on their owners."<sup>16</sup> Herd composition will vary depending upon which animals are being saved for which purposes. For example, Stauffer describes the proportion of sheep to goats in Iranian pastoralist groups as a function of the group's distance from market centers.<sup>17</sup> Sheep, valued as a source of marketable wool and lamb, are preferred when distances are small. Conversely, goats are more highly favored by groups living outside the influence of markets because they are adaptable to many more kinds of vegetation, are more tolerant of aridity, are better negotiators of rugged terrain, and are able to produce 50 to 100 percent more milk than sheep.

Conscious desire to conserve need not be a characteristic universally applicable to hunting and gathering societies. Yet, conserving tendencies certainly exist which allow hunters to prey upon animal populations without overexploiting them. In large part, these tendencies involve nomadic movement to distribute the pressures of predation over large areas instead of concentrating them within small localities<sup>18</sup> and selectivity for special kinds of prey. Heizer has collected examples of conservation from post-contact North American Indian societies,<sup>19</sup> and among them he cites Flannery's study of the Iroquois, who spared the female of every

---

15 F. Barth, *Nomads of South Persia* (New York, 1961), 6-7, 16-17.

16 D. L. Johnson, *The Nature of Nomadism* (Chicago, 1969), 8.

17 T. R. Stauffer, "The Economics of Nomadism in Iran," *Middle East Journal* 19 (1965), 292.

18 R. Paine, *Animals as Capital*, 159-60.

19 R. F. Heizer, "Primitive Man as an Ecologic Factor," *Kroeber Anthropological Society Papers* 13 (1955), 4-8.

species during the breeding season.<sup>20</sup> Jarman and Wilkinson have emphasized the conscious and unconscious selection patterns of hunters.<sup>21</sup> Such factors as the size and behavior of the species hunted, rules of conduct (often spiritually derived) which govern the hunt, and ease of access to the prey appear to be important. Jarman and Wilkinson also mention that adult male herd animals are frequently preferred targets because they are larger and generally less wary, thus more vulnerable, than others of their species.<sup>22</sup>

#### d. Selective Breeding

Selective breeding of animals, the major criterion of full domestication as defined by Bökönyi,<sup>23</sup> has been identified in the archaeological record by the presence of morphological changes in anatomy of the species in question. Although many of these changes may have been induced by isolation and in-breeding, it is difficult to say whether they were intended or accidental. The mutation in sheep toward a non-molting, unpigmented fleece composed more of wool fibers than of hair has been attributed by Ryder to the consciously directed selection practices of prehistoric shepherds.<sup>24</sup> Flannery has proposed, to the contrary, that the early selection for sheep with whiter and woolier fleeces was perhaps the evolution of a reflectant and insulating body covering as a response to the hot desert environment of lowland Mesopotamia in which the sheep were kept.<sup>25</sup> For changes such as horn core flattening and twisting among goats<sup>26</sup> and size reduction among cattle<sup>27</sup> it is likewise difficult to ascertain whether the changes wrought by human management were products or by-products of the domestication process. Jarman and Wilkinson have commented in further detail upon these uncertainties.<sup>28</sup>

In summing up the problems of the term domestication and its significance for early pastoralism, it is instructive to observe the complexities of prehistoric behavior in two archaeological examples. The eighth millennium B.C. Mesolithic site of Star Carr in Yorkshire, England,

---

20 R. Flannery, "An Analysis of Coastal Algonquian Culture," *Catholic University of America Anthropological Series* 7 (1939), 15-16.

21 M. R. Jarman and P. F. Wilkinson, "Criteria of Animal Domestication," in E. S. Higgs, ed., *Papers in Economic Prehistory* (Cambridge, 1972), 94-95.

22 Loc. cit.

23 See n. 5, above.

24 M. R. Ryder, "Changes in the Fleece of Sheep Following Domestication," in Ucko and Dimbleby, *Domestication and Exploitation*, 496-97.

25 K. V. Flannery, "Origins and Ecological Effects of Early Domestication in Iran and in the Near East," in Ucko and Dimbleby, *Domestication and Exploitation*, 91-92.

26 F. E. Zeuner, "The Goats of Early Jericho," *Palestine Exploration Quarterly* 87 (1955), 70-86.

27 J. Boessneck, "Die Tierreste aus der Argissa-Magula vom präkeramischen Neolithikum bis zur mittleren Bronzezeit," in V. Milošević, J. Boessneck, and M. Hopf, *Die Deutschen Ausgrabungen auf der Argissa-Magula in Thessalien* (Bonn, 1962), 1:40-42; E. S. Higgs, "Fauna," in R. J. Rodden, "Excavations at the Early Neolithic Site at Nea Nikomedeia, Greek Macedonia," *Proceedings of the Prehistoric Society* 28 (1962), 271-74; D. Perkins, Jr., "Fauna of Çatal Hüyük: Evidence for Early Cattle Domestication in Anatolia," *Science* 164 (1969), 177-79.

28 Jarman and Wilkinson, *Criteria* 83-96.

revealed the winter occupation of small bands subsisting primarily on red deer.<sup>29</sup> As studies of wild populations suggest,<sup>30</sup> the red deer herds probably grazed in a somewhat dispersed pattern in the upland pastures north of the site during the summer and descended in two separate groups—stags and hinds with young—to the sheltered lowland territories near Star Carr for the winter.<sup>31</sup> Of the red deer bones recovered at the site, those of adult males predominated, indicating that principally males were being culled from the herds. In addition, many antlers, worn only by the male, were recovered with evidence of their having been splintered and worked into projectile points.<sup>32</sup> The preferential killing of stags for antler probably spared the hinds from exploitation as a food source, and this conserving gesture may have been recognized by the hunters. Containment strategies would probably have been unnecessary because of the relative dependability of the animals' yearly migrations. The long range of time throughout which red deer formed the main subsistence base for prehistoric man suggests that little over-exploitation took place, and consequently that either the predatory pressures of small prehistoric hunting populations balanced with the ability of the prey species to reproduce or that the hunters applied some forms of conscious conserving measures to insure a secure source of food and raw material. Jarman has commented on the likelihood that some form of control over red deer existed in pre-Neolithic Europe in view of the great economic dependence on the species.<sup>33</sup> He has stated further that selective hunting and herding are equally feasible interpretations given the difficulties of distinguishing the two archaeologically.<sup>34</sup> Bökönyi presents a similar situation at the ninth millennium B.C. Neolithic site of Asiab in the Iranian Zagros Mountains.<sup>35</sup> The recovered bones of wild goats are identified as four-fifths male, with 19 of the 20 horn cores also representing the male. Although he possesses no evidence for domestication other than one slightly flattened and twisted horn core and two fragments and no information is given by him on the nature of the total sample, Bökönyi suggests that conscious selection of "particularly the superfluous males" was exercised by the inhabitants of Asiab who may have tamed the young to attract and capture wild adults.<sup>36</sup>

However one may be inclined to view goats, and not red deer, as "domesticable," the archaeological evidence equivocates on the nature and degree of control in both cases. In the confused situation at Asiab, appeal seems to be made to herd conserving techniques of modern pastoralists to explain the presence of males in the excavated faunal collection, and no consideration is given to exploitation for horn (of which the male bears the larger sizes) or the

---

29 J. G. D. Clark, *Excavations at Star Carr, An Early Mesolithic Site at Seamer, near Scarborough, Yorkshire* (Cambridge, 1954); idem, "Star Carr: A Case Study in Bioarchaeology," *Addison-Wesley Modular Publication* 10 (1972).

30 F. F. Darling, *A Herd of Red Deer* (Oxford, 1937).

31 Clark, *Star Carr: A Case Study*, 28–29.

32 Ibid.

33 M. R. Jarman, "European Deer Economies and the Advent of the Neolithic," in E. S. Higgs, ed., *Papers in Economic Prehistory*, 132–33.

34 See also Higgs and Jarman, "The Origins of Plant and Animal Husbandry," in Higgs, ed., *Papers*, 3–13.

35 Bökönyi, "Some Problems of Animal Domestication in the Near East," in J. Matolsci, ed., *Domestikationsforschung und Geschichte der Haustiere* (Budapest, 1973), 69–75.

36 Ibid., 71.

simple ease and efficiency in slaughtering larger individuals from the male herds. The neatly argued hunting pattern at Star Carr does not eliminate all possibility of some cultural control given the importance of the resource, and the lack of clear information recoverable from archaeological faunas which might relate more directly to degrees of control is somewhat unsettling.

In conclusion, revolving about the poles of a hunting-herding dichotomy for explanations by analogy must be avoided. Adopting the broader concept of cultural control and considering the many variations on the themes of exploitation, containment, conservation, and selective breeding opens up a great number of new possibilities which permit hypotheses concerning the changing natural and social environment to be reflected in the explanatory models we choose.

## 2. Marginality

It often has been stated that modern pastoralists utilize land which is not suitable for agriculture and is thus marginal.<sup>37</sup> The contrast of arable to arid land has, in historic times, encouraged specialized use of each by different peoples. As a result, polarized concepts of the relationships and interactions between "the desert and the sown" have crystallized out. However, studies of prehistoric land use have not substantiated these concepts. Many reconstructions of prehistoric economic systems have linked together different ecologic zones and indicated the boundaries between them as favorable locations for man's exploitation of both:

In the central part of the Near East four main environmental zones were used by prehistoric man. . . . Man used each of these zones in different ways, and at an early time began to exchange or otherwise exploit the products of several zones. . . . One approach to understanding Near Eastern prehistory, therefore, is to view it in terms of zonal adaptations and interzonal networks of interaction.<sup>38</sup>

. . . the basic difference between peoples who subsist on wild foods and those who dwell in permanent villages is that the former must exploit a wide variety of small ecological niches in a seasonal pattern—niches which are usually scattered over a wide range of territory—while the latter may, because of an effective food production, concentrate on one or on only a few microenvironments which lie relatively close at hand.<sup>39</sup>

The boundaries between zones and microzones are quite permeable to pastoralists and hunter-gatherers. Their yearly rounds depend upon the succession of seasonally available resources.

Another difficulty involving the label "marginal" is that it can be indiscriminately extended to most arid regions from the present day all the way back to the end of the Pleistocene.

---

<sup>37</sup> D. L. Johnson, *The Nature of Nomadism*, 2.

<sup>38</sup> F. Hole and K. V. Flannery, "The Prehistory of Southwestern Iran: A Preliminary Report," *Proceedings of the Prehistoric Society* 33 (1967), 148.

<sup>39</sup> M. D. Coe and K. V. Flannery, "Microenvironments and Mesoamerican Prehistory," *Science* 143 (1964), 654.

Marginality is not, however, a geographic issue; it is culturally defined. A region is considered marginal to agriculture if the farming population does not possess the means or the inclination to cultivate it. Many of the earliest villages of the Near East were located within the intermontane valleys of the Zagros-Taurus arc, and no agricultural communities have yet been found within the piedmont steppe of northern Mesopotamia before the occupations at Hassuna<sup>40</sup> and Yarim Tepe<sup>41</sup> in the sixth millennium B.C.<sup>42</sup> Prior to the sixth millennium, the piedmont steppe may have been marginal. When irrigation techniques permitted agricultural growth in the middle Tigris<sup>43</sup> and in Khuzistan<sup>44</sup> toward the end of the sixth millennium, and when finally in the fifth and fourth millennia the alluvial plain of southern Mesopotamia supported a steady increase in population,<sup>45</sup> these regions ceased to be marginal. Thus, the agricultural potential realized in southern Mesopotamia at the beginning of history remained unexploited during the full range of earlier prehistoric time. One is left to ponder the kinds of pastoral adaptations which might have been possible in areas which, through time and increasing technological capability, lost their marginality. Greater abundance of water and vegetation and cooler summer temperatures may have been extremely influential in shaping alternate forms of pastoralism with which modern pastoral nomadism would hardly be comparable.

Binford has employed marginality to point out the unevenness in distribution of wild resources over a given territory and the essentially mosaic-like pattern of microenvironments.<sup>46</sup> In his scheme, the triggering mechanism for groups to move into marginal or less favorable niches is population pressure on available natural resources within the more favorable ones. Marginality thus becomes a key factor in the intensification of food resource management under conditions of less abundance, and events are presumed to culminate in some kind of cultural control and food production. Without the increased population pressure, therefore, marginality would assume less importance as a stimulus to increased control. Most groups would be assured a minimum level of subsistence within the optimum zone. If no special adaptation to an agriculturally marginal environment is postulated for societies already involved in food production, then all traces of the contemporary dichotomy may be removed by combining farmer and herder into a mixed farming community. Neolithic Jarmo is a logical candi-

---

40 S. Lloyd and F. Safar, "Tell Hassuna," *JNES* 4 (1945), 255-89.

41 N. Y. Merpert and R. M. Munchaev, "Early Agricultural Settlements in the Sinjar Plain, Northern Iraq," *Iraq* 35 (1973), 93-113.

42 See however the remains from Umm Dabaghiyah which may predate Hassuna: D. Kirkbride, "Umm Dabaghiyah 1974: A Fourth Preliminary Report," *Iraq* 37 (1975), 3-10.

43 J. Oates, "Choga Mami, 1967-68: A Preliminary Report," *Iraq* 31 (1969), 115-52; H. Helbaek, "Samaran Irrigation Agriculture at Choga Mami in Iraq," *Iraq* 34 (1972), 35-48.

44 R. McC. Adams, "Agriculture and Urban Life in Early Southwestern Iran," *Science* 136 (1962), 112-13; F. Hole, K. V. Flannery and J. A. Neely, *Prehistory and Human Ecology of the Deb Luran Plain* (Ann Arbor, 1969), 354-58.

45 R. McC. Adams and H. J. Nissen, *The Uruk Countryside* (Chicago, 1972), 9.

46 L. R. Binford, "Post-Pleistocene Adaptations," in S. R. Binford and L. R. Binford, eds., *New Perspectives in Archeology* (Chicago, 1968), 313-41.

date for this kind of economic organization,<sup>47</sup> but it is possible that many early farming villages which reveal both animal and plant domestication functioned similarly.

### 3. Long-Distance Migrations and Seasonal Change

The long distances travelled by many nomadic peoples today are impressive; however, the adaptation of nomadic pastoralism does not of necessity require substantial migrations. Mobility is important because of the need to move from areas of low grazing potential to areas of higher potential, and the distances involved may be long or short. Migrations are almost always regularly scheduled events, correlated with the changing seasons. Variability of climate from year to year brings with it fluctuations in precipitation which are notorious for the arid zones and which influence the distribution of good pasturage. The nomads understand the need to be flexible, and survival requires that, through scouting or some form of social exchange, they receive information about the quality of pastures and water sources they usually exploit. In bad years, alternate pastures and wells are used or drought-stricken areas are passed through quickly.

Nomadic adaptations in use today have been classified into horizontal and vertical types.<sup>48</sup> Horizontal movements generally make use of seasonal changes in pasturage across areas of varying precipitation. Summers are spent near permanent wells or other year-round water sources. With the start of winter rains, animals are moved away from exhausted summer pastures and are driven out to graze on the new grasses of the more arid steppes and deserts. These areas are grazed as much and as long as possible to allow summer pastures to regenerate. When the desert vegetation begins to wither in spring, the nomads return to their permanent wells to wait out the dry season. Examples of this kind of movement are seen among the Rwala Bedouin of the North Arabian desert<sup>49</sup> and the Kababish Arabs of the Sudan.<sup>50</sup>

Vertical movements utilize altitudinal differences as well as seasonal changes. The mountain nomads of Iran, such as the Lurs, Bakhtiari, and Qashqai,<sup>51</sup> winter at the foot of the western slopes of the Zagros Mountains. When the rains stop in the spring and the sun parches the lowland grasses, they ascend into the alpine zones where run-off from the winter's snowfall usually maintains thick and lush ground cover for pasturing. They return to the lowlands in the fall when run-off dwindles, pastures dry up, and the advancing cold of winter sets in.

The length of seasonal movements varies considerably from group to group. The Arab herders of the Khamsah Confederation migrate through arid regions of southern Iran up to

47 R. J. Braidwood and B. Howe, *Prehistoric Investigations in Iraqi Kurdistan* (Chicago, 1960), 38–50.

48 C. S. Coon, *Caravan: The Story of the Middle East*, rev. ed. (New York, 1958), 191–225; Johnson, *The Nature of Nomadism*, 165–75.

49 A. Musil, *The Manners and Customs of the Rwala Bedouins* (New York, 1928); C. D. Forde, *Habitat, Economy and Society*, 5th ed. (New York, 1963), 308–27.

50 T. Asad, "Seasonal Movements of the Kababish Arabs of Northern Kordofan," *Sudan Notes and Records* 45 (1964), 48–58.

51 F. Barth, "Nomadism in the Mountain and Plateau Areas of South West Asia," in UNESCO, *The Problems of the Arid Zone* (Paris, 1962), 341–55.

350 miles each way,<sup>52</sup> whereas some Tuareg groups of the Ahaggar Massif in Algeria cover no more than 30 miles during the entire year as they alternate between summer and winter pastures.<sup>53</sup> What appears to be essential is that the best possible pastures be utilized at a minimum cost to the herds.

Different migratory patterns may also arise due to the splitting up of the herding group, a common practice for pastoralists who herd two or more species. Thus, the Kababish Arabs keep their goats with the household for meat and milk, but allow sheep and camel segments to fission off at certain times, the former to exploit new pastures more quickly and the latter to graze on vegetation far out in the desert.<sup>54</sup> Rubel has commented upon the concomitant changes in social structure which may be brought about by changes in herd composition.<sup>55</sup> It is interesting that, as Perkins and Daly have noted,<sup>56</sup> the earliest evidence for cultural control of animals in the Near East dates to the period between 9000 and 7000 B. C. at sites where only one species appears to have been so exploited: sheep at Zawi Chemi Shanidar<sup>57</sup> and Çayönü,<sup>58</sup> and goats at Ganj Dareh<sup>59</sup> and Ali Kosh.<sup>60</sup> Later in the seventh millennium at Jarmo, domestic goats and possibly sheep appear together with pigs in the upper ceramic levels of the site.<sup>61</sup> Sheep and goats forage well in combined herds, and the small pigs were probably few in number and likely not herded at all. At about 6000 B. C., the site of Erbaba<sup>62</sup> in Anatolia reveals evidence of sheep, goat, and cattle husbandry, a considerably more complex situation. At least two different modes of organization for animal and plant food production would be required by this mixed farming community, and the restricting of one animal species to daily pasturing and the seasonal nomadizing of the others implies two pastoral segments, one for each herd. To illustrate the feasibility of such organization, Flannery has

---

52 G. Demorgny, "Les réformes administratives en Perse: les tribus de Fars," *Revue du monde musulman* 22 (1913), 104.

53 R. Capot-Rey, "Le nomadisme pastoral dans le Sahara français," *Travaux de l'Institut de Recherches Sabariennes* 1 (1942), 74.

54 Asad, *Seasonal Movements of the Kababish Arabs*, 51–53.

55 P. Rubel, "Herd Composition and Social Structure: On Building Models of Nomadic Pastoral Societies," *Man* 4 (1969), 268–73.

56 Perkins, and Daly, *The Beginning of Food Production*, 80–82.

57 R. L. Solecki, "Zawi Chemi Shanidar, A Post-Pleistocene Village Site in Northern Iraq," *Reports, VIth International Congress on the Quaternary* (Lodz, 1964), 4:405–12; D. Perkins Jr., "Prehistoric Fauna from Shanidar, Iraq," *Science* 144 (1964), 1565–66.

58 R. J. Braidwood, H. Çambel, C. L. Redman, and P. J. Watson, "Beginnings of Village-Farming Communities in Southeastern Turkey," *Proceedings of the National Academy of Science, U. S. A.* 68 (1971), 1236–40; Reed, *The Pattern of Animal Domestication*, 371.

59 P. E. L. Smith, "Ganj Dareh Tepe," *Iran* 10 (1972), 167–68; 13 (1975), 179.

60 Hole, Flannery and Neely, *Prehistory and Human Ecology*, 262f.

61 Reed, *Pattern* 371–72.

62 J. Bordaz, "A Preliminary Report of the 1969 Excavations at Erbaba, A Neolithic Site near Beyşehir, Turkey," *Türk Arkeoloji Dergisi* 18/2 (1969), 59–64; Perkins and Daly, *The Beginning of Food Production*, 93.

suggested a model of transhumance for the seventh millennium based upon combinations of permanent farming villages in the lower foothills and seasonal campsites in the higher fold belt of the Zagros Mountains.<sup>63</sup> Further separation of farming and herding segments has been postulated by Lees and Bates, who propose that the increasing use of irrigation in the Mesopotamian alluvium and the ensuing high labor demands for its maintenance were instrumental in encouraging long distance migrations to the better upland pastures by specialized groups which in time split off to become pastoral nomads.<sup>64</sup>

The social environment can further shape the nomadic pattern. Large blocks of farm land often attenuate herd movements and force detours or constrictions in the migratory path. Barth describes the narrow file through agricultural lands which Basseri and other groups must follow in order to pass from winter to summer grazing grounds.<sup>65</sup> Nomads may converge on various market centers for industrial and agricultural products and thus skew migratory tracks toward sedentary areas.<sup>66</sup> Governmental pressure to settle mobile peoples raises yet another potential factor this time serving to shorten the yearly circuit.<sup>67</sup>

Nomadic migrations can be characterized as practical responses to periodic availability of resources in different localities. The length of migration of modern pastoral nomads depends upon the richness and duration of seasonal pastures, access to water sources, size of the herds to be grazed, animals' tolerance of temperature and aridity extremes, topographic considerations, and social barriers. Wide-ranging mobility in order to exploit seasonal resources was almost certainly important for prehistoric hunter-gatherers. The trend toward sedentarization and village life in the millennia following 9000 B. C.<sup>68</sup> suggests that the intensification of food production may have replaced the need for constant mobility. Without moving very far, the earliest pastoralists may have exploited seasonal changes in pasturage locally within favorable microenvironments or stored fodder for the lean periods.

A mixed farming model which postulates cultural control by the same social unit exerted simultaneously over both plant and animal resources appears to be a logical hypothesis for the many Neolithic village farms excavated within the Zagros-Taurus arc. The substantial archaeological remains of more sedentary sites usually yield larger samples of data for which interpretations are more securely furnished. Another model, however, may be proposed to include the more insubstantial deposits of transitory occupations such as Asiab or level E at

---

63 Flannery, "The Ecology of Early Food Production in Mesopotamia," *Science* 147 (1965), 1254-55.

64 S. H. Lees and D. G. Bates, "The Origins of Specialized Nomadic Pastoralism: A Systemic Model," *American Antiquity* 39 (1974), 187-93.

65 F. Barth, *Nomads of South Persia*, 5.

66 See Iranian examples of Jahrom in *ibid.* and Dizful in C. J. Edmonds, "Luristan: Pish-i-Kuh and Bala Gariveh," *Geographical Journal* 59 (1922), 437.

67 See especially M. Awad, "Nomadism in the Arab Lands of the Middle East," in UNESCO, *Problems*, 336-38.

68 A recent summary of early villages in the Near East is R. J. Braidwood, "The Early Village in South-western Asia," *JNES* 32 (1973), 34-39.

Ganj Dareh.<sup>69</sup> In such a model, the pioneers of pastoralism may be seen as mobile peoples who moved closely with the wild herds, controlling them intermittently by capture and containment. These peoples may have gathered wild plant resources and thus remained economically independent of incipient cultivators or they may have remained rather loosely attached segments of a more sedentary plant-exploiting community. The result of increasing success at cultural control of both plants and animals by these segments may have led finally to their concentration together within the context of early village farms.

#### 4. Tribal Structure

The final difficulty with a modern nomadic analogy to prehistoric pastoralism is the tribal structure which usually accompanies ecologic, economic, and technological considerations. The existence of tribes has been acknowledged throughout most of recorded history; however, the term has been exceedingly hard to define because of wide variability in the identifying criteria of language, common beliefs and customs, political autonomy, self-identity, and territorial occupation. Apparently, the boundaries between groups based on such criteria are blurry more often than not.<sup>70</sup>

Modern tribal structures may be significantly evolved entities whose characteristics, especially the political and territorial, may bear little resemblance to those of their predecessors. It has been Fried's thesis that the contemporary phenomenon, referred to as "secondary tribalism," is intimately related to the growth of highly organized state societies:

... the most massive and familiar phenomena of tribalism occur as a consequence of the impinging on simple cultures of much more complexly organized societies.<sup>71</sup>

With the rise of states in southern Mesopotamia, outlying areas may have come under the scrutiny, influence, or control of the more powerful central institutions. As Mesopotamia was without many natural resources, colonization and exploitation beyond its frontiers were inevitable. The proliferation of tribes may have occurred as a consequence of the organization of loosely-knit groups into governable provinces by state authority. Levine's historical geography of the Zagros Mountains during the first half of the first millennium B. C. identifies the ancient toponyms which appear in Assyrian texts,<sup>72</sup> and it presents some interesting references to political organization. Concerning the kingdom which the Assyrians called Mannea, Levine states:

69 For Asiab, see R. J. Braidwood and B. Howe, "The Iranian Prehistoric Project," *Science* 133 (1961), 2008–10; and Braidwood, "Seeking the World's First Farmers in Persian Kurdistan: A Full-Scale Investigation of Prehistoric Sites Near Kermanshah," *Illustrated London News* 237 (Oct. 22, 1960), 695–97; for Ganj Dareh, see n. 59, above.

70 Cf. J. Helm, ed. *Essays on the Problem of Tribe* (Seattle, 1968).

71 M. H. Fried, *The Notion of Tribe* (Menlo Park, 1975), 10; see also idem, "On the Concepts of 'Tribe' and 'Tribal Society'," *Transactions, New York Academy of Science* 28/4 (1966), 527–40; and idem, "The Myth of Tribe," *Natural History* 84/4 (1975), 12–20.

72 L. D. Levine, "Geographical Studies in the Neo-Assyrian Zagros," *Iran* 11 (1973), 1–27; 12 (1974), 99–124.

Mannea was divided into districts, the southernmost being Missi, and proceeding north, Surikash, perhaps Zikirtu and finally Uishdish. Other Mannean districts cannot at present be located in any but the most general terms, and the borders between the known districts are uncertain. Finally, there is no assurance that the entire area from Urmia to Zeribor was wholly Mannean. The Assyrian and Urartian texts mention many other groups, some of whom were certainly located among the Mannean districts described above.<sup>73</sup>

Uncertainty about the borders of a neighbor kingdom to Assyria may arise from the ambiguities of textual references. That many additional peoples seem to have fit into the governed regions strongly suggests cultural diversity. Whether the group names alluded to reflect the self-identity of group members or Assyrian and Urartian labels for simpler societies remains to be discovered.

The threat of encroachment by a major power can encourage small groups to incorporate and establish internal political hierarchies to organize resistance. The principality of Parsua, located by Levine within the buckled ridges of northern Luristan, was not politically unified on the level of Assyria,<sup>74</sup> but Levine's reference to a tablet relating to tribute from the 27 "kings" of Parsua<sup>75</sup> suggests corporate and politically autonomous units situated in the penumbra of Assyrian power.

In addition to intentional intervention, other pressures indirectly generated by the state may have contributed to the formation of tighter political and economic bonds within more loosely organized groups. In his description of agricultural diffusion from Mesopotamia to Europe, Clark sustains some pertinent issues:

In general it may be urged that once development in any region had gone far enough to give rise to the zoning of societies at varying levels of economy, the mounting needs of the more highly integrated ones affected to an ever-growing degree the history of all the simpler ones within their spheres of influence. . . . The influence of higher on lower economies was by no means limited to the territories actually incorporated, but through the mechanism of trade spread far beyond these, disturbing the economic—and often the ecological—balance even of distant communities.<sup>76</sup>

Fried cites as a New World example the burgeoning trade in pelts, initiated by European demand, which reoriented native Indian societies of northeastern North America from a hunting to a marketing economy with highly structured tribal characteristics.<sup>77</sup> Concomitant changes included colonial restrictions on land tenure and resource allocation which had been absent in pre-contact times. Similar changes may have occurred across prehistoric northern Iran and Afghanistan connected with the initiation of trade in lapis lazuli.<sup>78</sup> From Late Ubaid

---

73 *Iran* 12 (1974), 116.

74 *Ibid.*, 110.

75 Levine's reference to E. Michel, "Die Assur-Texte Salmanassars III. (858–824)," *Die Welt des Orients* 2/2 (1955), 156–57, lines 119–20.

76 J. G. D. Clark, *Prehistoric Europe: The Economic Basis* (London, 1952), 8.

77 Fried, *The Myth of Tribe*, 18.

78 G. Hermann, "Lapis Lazuli: The Early Phases of Its Trade," *Iraq* 30 (1968), 21–57.

to Uruk times, northern Mesopotamia seems to direct such trade, but there appears subsequently a shift in the cultural affinities of Iranian sites such as Sialk suggesting a takeover of the lapis lazuli trade by Elam. The suggestion is supported by the sudden appearance of the stone in southern Mesopotamia with the Jemdet Nasr period. Hermann postulates "that the trade monopoly passed from north to south as a result of internal politics and that the Iranian repercussions echoed the Mesopotamian shift of power."<sup>79</sup> Although she does not rule out other explanations, Hermann has pointed out the control over hinterlands exerted by early complex societies.

Therefore, in periods of late prehistory, there might have been fewer politically autonomous groups above the level of the individual household. The household probably assumed the burden of economic production for its own consumption, regulating both the affairs of farming and herding. There was perhaps no ethnic differentiation as it is recognized today, but only the fundamental distinction between members of the household or community and all outsiders. Without interference from the state and with demographic pressures low, territorial defense may have been next to non-existent. Disputes could have been settled by conflict or mutual separation, or mediated by kin, and little appeal except perhaps of a religious nature would be made to persons of special status. Cooperative efforts in building, harvesting, or transporting could have been supervised, but such organization does not imply authority over other aspects of the community.<sup>80</sup>

Archaeological documentation of such a hypothesis is difficult to obtain because political structures (or their absence) do not translate easily into material remains. Artifactual data must be analyzed with broader aims than simply the identification of technological, economic, or stylistic entities. These entities may not have existed within the political or territorial framework implied by the use of the term tribe.

Modern situations differ radically from the proposed hypothetical reconstruction of late prehistoric society. Contemporary pastoral nomads must respond to strict control by centralized governments and the generally high population pressures of their sedentary neighbors. The dependence of the nomad upon the farmer for certain products immediately brings the two into close contact. Where disputes arise between them, special institutions are required because of the nomadic schedule and the threat to survival of the herds should the routine be broken for lengthy legal involvements. The main importance of tribal chieftains in the case of the Basseri, for example, lies in their ability to represent the tribe in legal matters with the state and sedentary population:

Where conflicts arise between tribesman and villager, the chief can represent the interests of the tribe, just as the landowner or local administrator can represent that of the villagers. . . . The two parties have thus on this level become comparable, and their conflicting interests amenable to negotiation and settlement in a political or legal framework.<sup>81</sup>

---

<sup>79</sup> Ibid., 53.

<sup>80</sup> Some of the ideas here presented derive from the publications of M. H. Fried (see n. 71) and M. D. Sahlins: *Tribesmen* (Englewood Cliffs, 1968); *Stone Age Economics* (see n. 11).

<sup>81</sup> Barth, *Nomads of South Persia*, 80.

The mediating institution of the chief permits the tribe a certain degree of autonomy precisely because it manages in that way to work within the dictates of a legal structure established by an encroaching sedentary society. In the absence of such mediation, tribal practices would clash too frequently with the requirements of the stronger governing body.

Transformations in patterns of land use have undoubtedly also occurred since the emergence of the state. Traditional migratory routes are the rule rather than the exception in the world today. Barth refers to the Basseri *il-rab* as the "tribal road," a yearly route taken between seasonal pastures which provides the herding groups continuous passage and usufruct of resources along the way provided that the traditionally allotted seasonal schedule is maintained and over-grazing is avoided.<sup>82</sup> Localities along the *il-rab* are not defended by herding groups after they depart; pastures shift hands and are further exploited by subsequent groups.<sup>83</sup> The massive movement of animals entails close coordination among herding groups of the same or different tribes. Interference with the smooth circulation is not only a nuisance to disentangle, but pasturage is unduly reduced and livestock as well as men's lives may be lost when conflicts break out over grazing rights. Strong chiefs again provide the level for negotiation of such scheduling as will maintain order.<sup>84</sup>

Barth has noted another case of territorial allotment which reveals the interlocking nature of three different ethnic groups exploiting different niches within the same headwater region of the Indus and Swat Rivers in Pakistan.<sup>85</sup> Here, each group is specialized to exploit ecological niches left unused by the others. Thus, the militarily powerful Pathan farmers of the alluvial plains permit the pastoral Gujars to graze their herds for a fee on the wooded slopes of the lower valleys. At a certain point upriver, the Pathan form of agriculture becomes impossible, and another group of mixed farmers, the Kohistanis, maintain an existence terracing the higher valleys, irrigating with summer run-off, and storing fodder for herd consumption during the winter. Both Gujar and Kohistani herds make use of the higher slopes of the Swat headwaters, but the Gujars refrain from entering the nearby Indus region because it is already occupied by a greater number of herding segments of Kohistanis. The complex picture indicates that specialized groups which appear to intermingle are in fact maintaining a rather rigid attachment to the particular ecological niches which they exploit. The maintenance of territorial blocks is possible only for the more powerful Pathans, who leave the less desirable terrain to the Kohistanis and engage the lesser Gujars to "fill in" the unused portions of their domain.

The present conditions of high demographic pressure and encroaching state authority have most certainly reoriented pastoral adaptations to a great extent by tribalizing them. Modern

---

82 Ibid., 5.

83 Barth, "The Land Use Patterns of Migratory Tribes of South Persia," *Norsk Geografisk Tidsskrift* 17 (1960), 3.

84 Ibid., 9–10.

85 Barth, "Ecologic Relationships of Ethnic Groups in Swat, North Pakistan," *American Anthropologist* 58 (1956), 1079–89.

nomads seem to be primarily a product of their own time and place, and the cultural institutions which preceded them during the darker periods before civilized society are still largely unknown.

### Summary

This paper has shown that modern pastoral nomadism does not provide a valid analog to late prehistoric forms of animal management. Four general characteristics of nomads today, domestication, marginality, seasonal long-distance migrations, and tribal structure, were examined. These characteristics represent appropriate adaptations to a modern context but are at variance with current notions about the natural and social climate of the Near East before the emergence of civilization.

The following conclusions are offered:

#### 1. Domestication

- a. Domestication has been too narrowly defined and restricted to the most labor-intensive kind of animal management. It is unlikely that Pleistocene hunters would have shifted abruptly from the collection of natural resources to the maintenance of herd capital without several less intensive intermediary forms. The processes which encouraged intensification probably created forms mid-way between hunting and herding which are not adequately served by a wild-domesticated dichotomy.
- b. The term cultural control appears to provide a more flexible concept with which to treat the potentially wide range of prehistoric management practices leading to full domestication.

#### 2. Marginality

- a. Marginality refers to the restriction of modern pastoral nomadic societies to areas left unexploited by farming peoples. Nomads have been forced into desert or mountain areas by expanding agricultural economies, and their herd maintenance strategies are almost certainly evolved from earlier forms in which climatic and geographic extremes as well as population pressures exerted less force and thus imposed fewer constraints.
- b. Evidence of early cultural control is frequently associated with village-farm sites. It is possible that the fauna excavated from these sites represents livestock obtained from nomadic peoples distinct from the villagers, but a simpler interpretation indicates a mixed farming economy in which members of the community (households?) are functionally segmented to deal simultaneously with the businesses of plant and

---

86 On the relationship between population and intensity of production, see: E. Boserup, *The Conditions of Agricultural Growth* (Chicago, 1965); and its application to Near Eastern prehistory in P. E. L. Smith and T. C. Young, "The Evolution of Early Agriculture and Culture in Greater Mesopotamia: A Trial Model," in B. Spooner, ed., *Population Growth: Anthropological Implications* (Cambridge, Mass., 1972), 1-59.

animal husbandry. The increased labor demand for such a complex economy would perhaps trigger a population increase which would in turn stimulate a reintensification of food production.<sup>86</sup>

### 3. Long-Distance Migration and Seasonal Factors

- a. Long-distance migrations are characteristic of many pastoral nomads today because their marginal habitat has encouraged increased mobility as an adaptation to sparse and widely distributed pasturage. A less marginal environment would support a denser growth of vegetation which the succession of seasons would not appreciably reduce. Extensive yearly movements are thus seen as less important.

### 4. Tribal Structure

- a. The term tribe represents a very loosely defined entity which has been used to characterize many modern and historic societies. The word does not seem to be used systematically in its ethnographic context, and its use for describing prehistoric cultures is consequently seen as equally unsystematic.
- b. Fried's discussion of the secondary tribe suggests for political organization what Clark indicates for economic organization: Larger, more complexly integrated societies stimulate cohesiveness within and among smaller neighboring groups. Prior to the rise of complex state societies, pastoral peoples probably existed in the absence of such political and economic constraints, and as a consequence may have organized themselves in ways vastly different from their modern counterparts.<sup>87</sup>

---

<sup>87</sup> Appreciation is expressed to Profs. R. S. Solecki, A. Rosman, P. Rubel, and to Messrs. B. Hesse and P. Steinfeld who read and offered helpful comments on drafts of this manuscript. Also gratefully acknowledged is the editing by Mrs. Trudy Steinfeld.