

MAN THE HUNTER

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Wenner-Gren Foundation for Anthropological Research.
Symposium. 1968

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1761



ALDINE PUBLISHING COMPANY/CHICAGO

I.

Problems in the Study of Hunters and Gatherers

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Cultural Man has been on earth for some 2,000,000 years; for over 99 per cent of this period he has lived as a hunter-gatherer. Only in the last 10,000 years has man begun to domesticate plants and animals, to use metals, and to harness energy sources other than the human body. *Homo sapiens* assumed an essentially modern form at least 50,000 years before he managed to do anything about improving his means of production. Of the estimated 80,000,000,000 men who have ever lived out a life span on earth, over 90 per cent have lived as hunters and gatherers; about 6 per cent have lived by agriculture and the remaining few per cent have lived in industrial societies.

To date, the hunting way of life has been the most successful and persistent adaptation man has ever achieved. Nor does this evaluation exclude the present precarious existence under the threat of nuclear annihilation and the population explosion. It is still an open question whether man will be able to survive the exceedingly complex and unstable ecological conditions he has created for himself. If he fails in this task, interplanetary archeologists of the future will classify our planet as one in which a very long and stable period of small-scale hunting and gathering was followed by an apparently instantaneous efflorescence of technology and society leading rapidly to extinction.

"Stratigraphically," the origin of agriculture and thermonuclear destruction will appear as essentially simultaneous.

On the other hand, if we succeed in establishing a sane and workable world order, the long evolution of man as a hunter in the past and the (hopefully) much longer era of technical civilization in the future will bracket an incredibly brief transitional phase of human history—a phase which included the rise of agriculture, animal domestication, tribes, states, cities, empires, nations, and the industrial revolution. These transitional stages are what cultural and social anthropologists have chosen as their particular sphere of study. We devote almost all of our professional attention to organizational forms that have emerged within the last 10,000 years and that are rapidly disappearing in the face of modernization.

It is appropriate that anthropologists take stock of the much older way of life of the hunters. This is not simply a study of biological evolution, since zoologists have come to regard behavior as central to the adaptation and evolution of all species. The emergence of economic, social, and ideological forms are as much a part of human evolution as are the developments in human anatomy and physiology.

The time is rapidly approaching when there

will be no hunters left to study. Our aim in convening the symposium on Man the Hunter was to bring together those who had recently done field work among the surviving hunters with other anthropologists, archeologists, and evolutionists who are interested in the results of these studies. But it was also clear that there were a series of issues among social anthropologists that required clarification before a dialogue with others could become meaningful. Therefore, the first half of this book is devoted to the presentation of new data on contemporary hunters, along with discussion and evaluation of current issues. The later chapters consider the relevance of these data to the reconstruction of life in the past.

A number of divergent viewpoints are represented in this volume and many of the issues to be raised remain unsolved. As both editors and partisans, it is our task to point out areas of general agreement while trying to avoid glossing over real differences where they occur. Considering the many points of view presented at the symposium, it would be impossible to touch on all of the interesting material. We make no apologies for our selection but offer it as a partial guide to the papers and discussions.

DEFINING HUNTERS

The symposium considered the definition of "hunters" but did not succeed in satisfying everyone. An evolutionary definition would have been ideal; this would confine hunters to those populations with strictly Pleistocene economies—no metal, firearms, dogs, or contact with non-hunting cultures. Unfortunately such a definition would effectively eliminate most, if not all, of the peoples reported at the symposium since, as Marshall Sahlins pointed out, nowhere today do we find hunters living in a world of hunters.

Murdock (Chapter 2, this volume) and others took an organizational view which equated hunting and gathering with the "band" level of social organization. However, not all hunters live in bands. Suttles, for example (Chapter 6), documents the quite substantial non-agricultural tribal societies of the Northwest coast of North America. Judging from recent archeological evidence from the

Paleolithic of France and of European Russia, a number of ancient hunting societies may have operated on a similar scale.

A further consideration was introduced by Lathrap (Chapter 3) and others who cited a number of hunting peoples who were "failed" agriculturalists. This *readaptation* to hunting, or "devolution" as it has been called, characterized such classic "hunters" as the Siriono of South America and the Veddas of Ceylon.

It was clear that there was much to be learned even from the ambiguous cases of tribal hunters, "devolved" hunters, and reformed hunters. To throw out impure cases was to lose the chance of gaining any significant understanding of modes of adaptation, group structure, social control, and settlement patterns. The symposium agreed to consider as hunters all cases presented, at least in the first instance. It was also generally agreed to use the term "hunters" as a convenient shorthand, despite the fact that the majority of peoples considered subsisted primarily on sources *other than meat*—mainly wild plants and fish.

THE REPRESENTATIVENESS OF OUR SAMPLE OF HUNTERS

There has been a burst of field research on hunting peoples in the last ten years, and this symposium was the first opportunity to bring together this diverse group of field workers.

The Australian contingent included L. R. Hiatt (Arnhem Land), M. J. Meggitt (Wal-biri), Arnold Pilling (Tiwi), and Aram Yengoyan, all of whom have done field work in the 1950's and 1960's, as well as Birdsell, Rose, and Sharp whose field work dates to the 1930's and 1940's. Workers from Africa included Bicchieri, Turnbull (Mbuti), Woodburn (Hadza), and Marshall, Lee, and DeVore on the !Kung Bushmen. Field work in Asia was reported by Dunn, Gardner, Sinha, Watanabe, and Williams. Lathrap and Crocker presented data on the part-time hunters of tropical South America. The largest group had done field work in North America: Balikci, Damas, and Laughlin on the Eskimos; Helm, Rogers, and Slobodin on subarctic Indians; and Owen and Suttles on Indians of the Pacific

coast. Julian H. Steward, in many ways the founder of modern hunter-gatherer studies, submitted a paper, but was prevented by illness from attending the conference itself.

One of the first questions considered at the symposium was whether the sample currently available to ethnographers is representative of the range of habitats which hunters occupied in the past. Ever since the origin of agriculture, Neolithic peoples have been steadily expanding at the expense of the hunters. Today the latter are often found in unattractive environments, in lands which are of no use to their neighbors and which pose difficult and dramatic problems of survival. The more favorable habitats have long ago been appropriated by peoples with stronger, more aggressive social systems.

Taking hunters as they are found, anthropologists have naturally been led to the conclusion that their life (and by implication the life of our ancestors) was a constant struggle for survival. The three maps presented in the frontispiece show a radically different picture. In 10,000 B.C., on the eve of agriculture, hunters covered most of the habitable globe, and appeared to be generally most successful in those areas which later supported the densest populations of agricultural peoples. By A.D. 1500 the area left to hunters had shrunk drastically and their distribution fell largely at the peripheries of the continents and in the inaccessible interiors. However, even at this late date, hunting peoples occupied all of Australia, most of western and northern North America, and large portions of South America and Africa. This situation rapidly changed with the era of colonial expansion, and by 1900, when serious ethnographic research got under way, much of this way of life had been destroyed. As a result, our notion of unacculturated hunter-gatherer life has been largely drawn from peoples no longer living in the optimum portion of their traditional range.

To mention a few examples, the Netsilik Eskimos, the Arunta, and the !Kung Bushmen are now classic cases in ethnography. However, the majority of the precontact Eskimos, Australian aborigines, and Bushmen lived in much better environments. Two-thirds of the Eskimos, according to Laughlin, lived *south* of the Arctic circle, and the populations in the Australian and Kalahari deserts were but a frac-

tion of the populations living in the well-watered regions of southeast Australia and the Cape Province of Africa. Thus, within a given region the "classic cases" may, in fact, be precisely the opposite: namely, the most isolated peoples who managed to avoid contact until the arrival of the ethnographers. In order to understand hunters better it may be more profitable to consider the few hunters in rich environments, since it is likely that these peoples will be more representative of the ecological conditions under which man evolved than are the dramatic and unusual cases that illustrate extreme environmental pressure. Such a perspective may better help us to understand the extraordinary persistence and success of the human adaptation.

ETHNOGRAPHIC RECONSTRUCTION

Many of the best-known studies of hunter-gatherers have relied on ethnographic reconstructions of situations that were no longer intact. In the early years of field anthropology, Kroeber in California, Boas on the Northwest coast, and Radcliffe-Brown in the Andaman islands and Australia compiled the recollections of older informants to produce a picture of the culture and society. The "facts" of the case were thought to include the verbalized cultural tradition—language, myths, folktales, and kin terms—and concrete expressions—rituals, house types, tools, dress, and religious objects. As anthropology developed, however, a different view emerged about what constituted the ethnographic facts. More attention was paid to the study of individuals and groups in ongoing social systems. The interest in ideology was retained, but this was tempered by the task of comparing stated norms with observed behavior. When discrepancies between "real" and "ideal" came to light, the ethnographer could then make further inquiries and observations and attempt to explain "how the system really works."

The shortcoming of the reconstructive method is that there is no means of testing and rechecking hypotheses. After the socio-economic system ceases to function, the only check available is the test of internal consistency, and the early ethnographers were more

or less successful in constructing models of social systems that were self-consistent.

The controversy on this question is very much alive in current social anthropology and the issue forms a central theme in this volume (Chapters 10, 17a, 17c, 17h, 18, 19, 22b, and 22c). The relevance for methodology hinges on the question of how much of an ongoing system can be reconstructed 25-50 years after the event, solely on the basis of informants' accounts. Birdsell and others take the pessimistic view that such important features as group structure and territorial relations vanish with contact (Chapter 17a). Williams, in the same vein, reports that he was unable to reconstruct the residence arrangements of a Birhor group whose campsite had been mapped in detail by another anthropologist only six years previously. Woodburn notes that the Hadza present themselves as having a matrilineal descent system, when in fact the kinship and the group structure are bilateral; the fiction is used by the Hadza to emulate their agricultural, matrilineal neighbors. This fact is significant in itself, but more important, it would make impossible an accurate reconstruction of Hadza social organization at a later date, if one had to rely solely on the memory of informants.

On the other hand, several participants were more sanguine about the persistence of cultural traditions into the postcontact period. Lévi-Strauss cited the example of the retention of marriage ideology by Australian aborigines in the face of acculturation and demographic reverses (Chapter 17b, 17c). In addition, careful reconstructions of precontact ecological situations were presented by Watanabe, for the Ainu of the 1880's (Chapter 7), and by Balikci, for the Netsilik Eskimos in 1919-20 (Chapter 8).

Finally, June Helm pointed out that the group structure of such diverse peoples as the Dogrib Indians, the !Kung Bushmen, and the Nambikwara showed striking similarities in spite of widely differing social ideologies (Chapter 13). This suggests that small-scale societies may arrive independently at similar solutions to similar demographic and ecological problems. Without the opportunity of observing behavior, however, such an important point would be impossible to establish. This problem is discussed further by Anderson (Chapter 17c).

THE SUBSISTENCE BASE

Strictly speaking, hunting and gathering refers to a mode of subsistence, and many of the conference papers discussed problems of ecology and economic organization. Several field workers pointed out that the subsistence base of hunters was much more substantial than had been previously supposed. It came as a surprise to some that even the "marginal" hunters studied by ethnographers actually work short hours and exploit abundant food sources. Several hunting peoples lived well on two to four hours of subsistence effort per day and were not observed to undergo the periodic crises that have been commonly attributed to hunters in general (Chapters 4, 5, and 9b). Other peoples for whom detailed activity data were unavailable were nevertheless reported to show a "lack of concern" about the problem of finding food. This led the conference participants to speculate whether lack of "future orientation" brought happiness to the members of hunting societies, an idyllic attitude that faded when changing subsistence patterns forced men to amass food surpluses to bank against future shortages (Chapter 9c).

Dissenting views were reported. Balikci spoke of a "constant ecological pressure" which caused real hardship and anxiety among the Netsilik Eskimos (Chapter 8). Williams (Chapter 9c) found that the Birhor of India not only worked hard for their food but often went hungry. It was clear that Sahlins' characterization of the hunters (Chapter 9b) as the "original affluent society" would not apply in all cases. However Sahlins' argument served to underline the point that anthropologists have tended to view the hunters from the vantage point of the economics of scarcity. Viewed on their own terms, the hunters appear to know the food resources of their habitats and are quite capable of taking the necessary steps to feed themselves. It is unlikely that hunters would have deliberately chosen the catch-as-catch-can existence that has been ascribed to them. Since a routine and reliable food base appears to be a common feature among modern hunter-gatherers, we suspect that the ancient hunters living in much better environments would have enjoyed an even more substantial food supply.

HUNTING VS. GATHERING

The hunting of mammals has been considered the characteristic feature of the subsistence of early man, and two chapters in this volume explore the implications of hunting for human evolution (Washburn and Lancaster, Chapter 32; and Laughlin, Chapter 33). Modern hunters, however, depend for most of their subsistence on sources other than meat, mainly vegetable foods, fish, and shell fish. Only in the arctic and subarctic areas where vegetable foods are unavailable do we find the textbook examples of mammal hunters. Over the rest of the world, hunting appears to provide only 20 to 40 per cent of the diet (Lee, Chapter 4).

Binford, Washburn and Lancaster, and others expressed the view that fishing, seed-grinding, and hunting with dogs are late adaptations, dating from the Mesolithic and therefore not characteristic of Pleistocene conditions. Thus, the eclectic diet of the modern hunters may tell us little about the food habits of early man. Our own view is that vegetable foods in the form of nuts, berries, and roots were always available to early man and were easily exploited by even the simplest of technologies. It is also likely that early woman would not have remained idle during the Pleistocene and that plant foods which are so important in the diet of inland hunter-gatherers today would have played a similar role in the diet of early peoples. We agree, however, that hunting would become increasingly important as populations migrated out of the tropics into areas where plant foods are scarce. In addition, hunting is so universal and is so consistently a male activity that it must have been a basic part of the early cultural adaptation, even if it provided only a modest proportion of the food supplies.

SOCIAL AND TERRITORIAL ORGANIZATION

The analysis of the social structure of the hunting and gathering peoples proved to be a particularly difficult area of investigation because of the ambiguous conditions in which hunters are currently found. Fluidity of band composition appeared to be the most characteristic

feature of the modern hunters, but participants disagreed on whether this flexibility was basic to the hunting way of life or whether it was a product of recent acculturation. We will briefly outline the history of band theory from Radcliffe-Brown, through Steward to Service and then go on to consider the evidence from recent field research.

THE PATRILocal BAND

Radcliffe-Brown gave this concept its modern expression in "Social Organization of Australian Tribes," where he described the patrilineal, patrilocal, territorial, exogamous horde as "the important local group throughout Australia" (1931, p. 35). The horde was a group of patrilocally related males who lived and worked within their totemic estate and exchanged women with other such male-centered groups. Steward, in a general review of hunter-gatherers, admitted the horde or "patrilineal band" as one of three types of group structure, but he added the composite bands of the Northern Athapaskans and the family bands of Great Basin Shoshoneans (1936, 1955). This three-part division was later called into question by Elman Service (1962), who took the view that the "patrilocal band," as he called it, was not only the characteristic form of local organization in Australia but was also the basic form for *all* hunter-gatherers in the past (1962, pp. 65-67, 107-109). The composite and family bands, in Service's view, were artifacts of recent acculturation and breakdown.

Recent research has cast doubt on the model of the patrilocal band. Hiatt, reviewing the literature on Australian local organization (1962), failed to find a single indisputable example of patrilineal totemic clans has been well documented, but these functioned in ritual contexts and not as residential or economic units. Hiatt concludes:

It is now clear that over a great deal of the continent the male members of totemic descent groups did not live together on separate pieces of land. They commonly lived in communities that contained male members of several totemic descent groups and regularly sought food over

areas that included totemic sites other than their own. Investigators that failed to find the horde in particular tribes were not (as some of them thought) observing aberrant forms of local organization. They were probably looking for something that never existed in any tribe (1962, p. 286).

Other ethnographers who had worked among "patrilocal band" peoples also failed to find this form of organization operating now or at any discoverable period in the past. Turnbull among the Mbuti Pygmies (Chapter 15), Lee and Marshall among the Bushmen (Chapters 4 and 17c) and Meggitt (Chapter 19) all report the occurrence of composite and flexible local groups. Others have studied the ethnohistoric record of peoples that Service claimed had patrilocal organization in the past. Helm on the Athapaskans (Chapter 13), Damas on the Eskimo (Chapter 12), and Pilling on the southeastern Australians (Chapter 16) present evidence that the composite bands observed in the present were characteristic of the earliest contact periods as well.

The patrilocal band, however, is not an empty category; cases are presented in which a patrilocal organization was in evidence, including the Ona of South America (Bridges, 1949, cited by Lathrap in Chapter 9d), the Kaiadilt of Australia (Tindale, 1962b, cited by Birdsell in Chapter 17a) and the Birhor of India (Williams in Chapter 14).

On the basis of present evidence, it appears that the patrilocal band is certainly not the universal form of hunter group structure that Service thought it was. Anderson (Chapter 17c), Turnbull (Chapter 15), Eggan (Chapter 17i), and others pointed out that the fluid organization of recent hunters has certain adaptive advantages, including the adjustment of group size to resources, the leveling out of demographic variance, and the resolution of conflict by fission. These features are independent of the effects of acculturation and would have been no less adaptive in precontact situations. Given these advantages, few of the conferees would endorse Service's view that the patrilocal band "seems almost an inevitable kind of organization" or that "the composite band . . . is obviously a product of the near destruction of aboriginal bands after contact

with civilization" (1962, p. 108). In fact Service himself has recently revised his opinion that the patrilocal band is inevitable.

Service has correctly drawn attention to the effects of contact on hunter-gatherer social organization, and this remains a difficult problem for the ethnographers. Although fluid organization makes ecological sense for many hunters, and could be shown to be more adaptive than patrilocal organization, in itself this is not evidence for aboriginal conditions. Since all hunting societies have suffered to some extent from contact, we may never be able to prove conclusively that one form or another was typical of the past in any specific case.

THE PROBLEM OF CORPORATION

Sharp (Chapter 17h) warns against the use of "prefabricated constructs" in the study of band organization. The prevalence of such constructs may derive from the application of concepts developed in tribal societies to the study of simpler and smaller-scale societies. The social units of tribal societies are based on the control and husbandry of real property usually in the form of agricultural land or livestock (Fortes, 1953). In addition, the formal political institutions such as courts, councils, and chieftainships lends a distinctive character to social relations of tribesmen that is lacking in the smaller-scale societies of hunters and gatherers. Radcliffe-Brown's well-known views on the universal importance of lineal descent and corporation (1952) may have led him to impose a corporate unilineal model on Australian local groups.

However, the reports in this volume make it clear that the hunter-gatherer band is not a corporation of persons who are bound together by the necessity of maintaining property. A corporation requires two conditions: a group of people must have some resource to incorporate about and there must be some means of defining who is to have rights over this resource. Among most hunter-gatherers one or both of these conditions are lacking. In Australia and among the Birhor, the patrilineal descent groups are present but these groups do not maintain exclusive rights to territorial resources (Hiatt in Chapter 10, Williams in

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Chapter 14). Among the Mbuti Pygmies the territories are well-defined but the membership in the resource-using group is open and changes frequently (Turnbull in Chapter 15). Among the Dogrib (Helm in Chapter 13), the Bushmen (Lee in Chapter 4), the central Eskimo (Damas in Chapter 12 and Balikci in Chapter 8) and the Hadza (Woodburn in Chapter 11), both the composition of the group and the range they exploit may vary from season to season. The existence of this variety makes it difficult to accept a model of hunter local groups that encapsulates each group of males within a territory, with exchange of women as the primary mode of communication between groups.

FLEXIBILITY AND THE RESOLUTION OF CONFLICT BY FISSION

Turnbull (1965b and Chapter 15) has defined an important means of social control among the Mbuti Pygmies. When disputes arise within the band, the principals simply part company rather than allow the argument to cross the threshold of violence. By this seemingly simple device, harmony is maintained within the co-operating group without recourse to fighting or to formal modes of litigation. The essential condition seems to be the lack of exclusive rights to resources; thus it is a relatively simple matter for individuals and groups to separate when harmony is threatened. The effect of this practice is to keep the population circulating between band territories. Such a form of conflict resolution would not be possible in situations where social units are strictly defined and firmly attached to parcels of real estate. Woodburn and Lee reported a similar mode of conflict resolution among the Hadza and !Kung Bushmen; judging from their generally flexible group structure, resolution of conflict by fission may well be a common property of nomadic hunting societies.

ORDER AND CHAOS IN HUNTER-GATHERER SOCIETY

One of the attractions of the patrilocal band model is the neatness of its formulation. In such a model the society is structured by the opera-

tion of a small number of fundamental jural rules: territorial ownership by males, band exogamy, and viripatrilocal postmarital residence. However, the model leaves scant room either for local and seasonal variations in food supply or for variance in sex ratios and family size within and between local groups. Nor does the model, in many cases, accord with the observed facts, and in this light it appears to be more a convenience for the analyst than a workable socioeconomic system.

Flexibility of living arrangements presents at first a confusing and disorderly picture. Brothers may be united or divided, marriage may take place within or outside the local group, and local groups may vary in numbers from one week to the next. Helm (1965a and Chapter 13) has made a valuable contribution to the methodology of band-composition analysis. By tabulating the primary relative linkages within Athapaskan groups, she has been able to show that married couples always join groups in which a sibling, parent, or child of one of the spouses is already resident. This produces a local group whose members are joined by a series of links through brothers, sisters, and spouses, often centered around a strong core of male siblings. However, the orientation is bilateral rather than lineal and serves to unite persons into effective work groups regardless of whether the kinship ties are patrilateral, matrilineal, or affinal. Application of this method to other hunters reveals a similar mode of affiliation among the Nambikwara, Bushmen, Hadza, and Arnhem Land aborigines. The bilateral nature of hunter local groups is not simply a matter of people failing to conform to their stated jural rules; several of the peoples just mentioned do not express an ideology of fixed membership groups. There is order in hunter-gatherer society, although not necessarily an order imposed by the operation of residence and descent rules.

MARRIAGE ARRANGEMENTS IN AUSTRALIA

The way Australian aborigines marry has held a central place in the anthropological study of kinship. The articulation between kin terms and cross-cousin marriage on the one hand, and moieties, sections and subsections on the

other, have provided materials for a number of analysts, including Radcliffe-Brown, Leach, Murdock, Needham, and Lévi-Strauss. Since the symposium was concerned with the hunting way of life and not with the study of marriage *per se*, the several papers on the subject attempted to place Australian marriage and section systems into the general context of hunter-gatherer ecology and demography. Hiatt, for example (Chapter 18) presents a model of the operation of an eight-section system and then goes on to show that, given the small population of the Gidjingali of Arnhem Land, only a fraction of the marriages can be contracted between the cross-cousins specified by the model. The lack of women of the appropriate kin position makes it necessary for most men to seek a spouse elsewhere. Although over 90 per cent of the marriages are "morally proper," in other words contracted between persons of the correct subsections, the net result is that women do not function as a medium of exchange between descent groups. In his comment (Chapter 22b) Lévi-Strauss acknowledges the importance of relating stated norms to demographic variables but he goes on to say that his work in Australian kinship has been "concerned with a different problem: to ascertain what was the meaning of the rules, whether they be applied or not." He expresses the view that the evidence of a "collapsing Australian tribe" is not sufficient to make us discard the earlier formulations of Radcliffe-Brown and others which demonstrated that marriage was indeed regarded by the natives as an exchange of women between descent groups.

Meggitt (Chapter 19) and Yengoyan (Chapter 20) both bring demographic data to bear on the study of section systems, but they arrive at different conclusions. Meggitt notes that a series of fifteen central Australian tribes all exhibit a division into eight subsections, despite the fact that the populations of several of the tribes are less than 200 persons, too small for marriages to be contracted only between the members of appropriate subsections. This fact leads Meggitt to conclude that "among the Australian aborigines, subsections are not necessarily concerned in . . . the regulation of marriage" (Chapter 19). Yengoyan argues that subsections do regulate marriage, but only very

large tribes can successfully operate an eight-section system. A tribe of 1,100 persons, for example, would have no difficulty in arranging "proper" marriages since each of the eight divisions would contain about 25 eligible mates. On the other hand, a tribe numbering 200 persons or less would not be able to arrange marriages without considerable deviation from the stated rules and, in fact, few of the small tribes in Yengoyan's sample exhibited an eight-section organization.

Rose (1960b and Chapter 21) adds a further demographic variable by demonstrating that among the Australians, men tended to marry women a generation younger than themselves. In combination with polygyny, this practice allows men in their forties and fifties to monopolize the majority of women of marriageable age. The function of this "gerontocracy" as Rose calls it, is to combine the women into effective food-producing units, centered around a male at the peak of his "political" career.

Recent demographic research has added a new dimension to the study of Australian systems. Aboriginal marriage now appears to be more explicable in terms of the economic conditions under which the people actually lived. Yet the basic question raised by Lévi-Strauss remains: How are the stated rules of social life articulated into a meaningful whole? It is clear that more work is urgently required in Australia, although we suspect that it may already be too late to establish the relation of ideological forms to the behavior of persons on the ground.

DEMOGRAPHY AND POPULATION ECOLOGY

Many of the peoples discussed at the symposium live in small-scale societies in which the total population numbers a thousand persons or less. The social and ecological consequences of "smallness" were considered in several papers. Dunn (Chapter 23) made the interesting point that small groups of nomadic peoples living at low population densities would be much more resistant to epidemic diseases than farming peoples who live at higher densities in settled villages. Others speculated on the ideal sizes of hunter local groups and breeding populations, and two figures in particular came

successfully operate an eight-tribe of 1,100 persons, for there is no difficulty in arranging this since each of the eight tribes contains about 25 eligible persons. On the other hand, a tribe numbering 100 would not be able to arrange for a considerable deviation from the ideal, in fact, few of the small tribes in our sample exhibited an eight-tribe structure.

Chapter 21) adds a further dimension by demonstrating that in many cases, men tended to marry women younger than themselves. In addition, with polygyny, this practice could range from a few women in the twenties and thirties to monogamy and women of marriagable age. This "gerontocracy" as we call it, combine the women into social units, centered around the life of his "political" career.

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to be called the "magic numbers" of hunter-gatherer demography (Chapter 25c). Birdsell (Chapter 24) cites a figure of 500 as the modal size of tribes in aboriginal Australia; such a population was large enough to insure an adequate recruitment of mates and yet small enough for everyone to know everyone else. There was some evidence that tribes of larger size tended to subdivide into smaller and more manageable units. Twenty-five to fifty persons were the figures most frequently reported for the size of local groups or bands among modern hunter-gatherers, although we failed to arrive at any satisfactory explanation for this central tendency.

Perhaps the most important demographic issue was the question of what are the factors that keep the populations of hunters in check. Throughout the world hunter densities rarely exceed one person per square mile; most of the accurate figures reported at the conference ranged between one and 25 persons per hundred square miles. We feel that the one-per-square-mile figure is a useful estimate of Pleistocene carrying capacity. It was not until the development of agriculture that human populations were able to break this limit for the first time, while present agricultural densities in most parts of the world exceed the highest hunter densities by a factor of ten to one thousand.

Disease, malnutrition, and infanticide were each considered as possible control mechanisms for hunter-gatherer populations. Since food supply appears to be abundant in modern cases, the constant threat of famine has probably been overestimated as a population control. On the other hand, the management of fertility by means of long lactation, birth control, the killing of twins, and systematic infanticide may have been as frequent in early populations as they are among hunters today. Birdsell and Deevey (Chapters 22b, 22d) went so far as to suggest that a 15-50 per cent incidence of infanticide may have existed throughout the preagricultural history of man.

Helm and Washburn (Chapter 9a) following Bartholomew and Birdsell (1953) suggested that we consider what works in the long run. A population may thrive for several generations and give every appearance of being successfully adapted, only to be cut back severely by an

ecological reverse once in a hundred years. Probably the most successful long-term situation is for a population to become stabilized at 20 or 30 per cent of carrying capacity, but at the present it is not possible to determine how such an equilibrium may be achieved. Fortunately, it is still possible to gather the necessary demographic data among some of the modern hunter-gatherers, and we hope that these data, plus computer simulation of population models, will yield exceptionally useful results.

"NOMADIC STYLE":

A TRIAL FORMULATION

Although the conference on Man the Hunter raised more questions than it answered, there seemed to be a widespread feeling among the participants that a useful beginning had been made in understanding the hunters better. A number of older theories were corrected in light of new data and, where issues were unresolved, we came away at least with a clearer appreciation of our differences. To attempt to draw a general picture of the hunters at this time would certainly be premature; we would, however, like to offer a trial formulation of our views to serve as a starting point for future research and discussion.

We make two basic assumptions about hunters and gatherers: (1) they live in small groups and (2) they move around a lot. Each local group is associated with a geographical range but these groups do not function as closed social systems. Probably from the very beginning there was communication between groups, including reciprocal visiting and marriage alliances, so that the basic hunting society consisted of a series of local "bands" which were part of a larger breeding and linguistic community. The economic system is based on several core features including a home base or camp, a division of labor—with males hunting and females gathering—and, most important, a pattern of sharing out the collected food resources.

These few broadly defined features provide an organizational base line of the small-scale society from which subsequent developments can be derived. We visualize a social system

with the following characteristics. First, if individuals and groups have to move around in order to get food there is an important implication: the amount of personal property has to be kept to a very low level. Constraints on the possession of property also serve to keep wealth differences between individuals to a minimum and we postulate a generally egalitarian system for the hunters.

Second, the nature of the food supply keeps the living groups small, usually under fifty persons. Large concentrations of population would rapidly exhaust the immediate resources, and members would be forced to disperse into smaller foraging units. It is likely, as Mauss observed (1906), that several bands would come together on a seasonal basis, resulting in a division of the year into "public" and "private" periods. Because of the small size of the living groups and the wide variance of family size, bands wax and wane in numbers. It is probably necessary to continually redistribute the population between bands in order to maintain food-gathering units at an effective level.

Third, the local groups as groups do not ordinarily maintain exclusive rights to resources. Variations in food supply from region to region and from year to year create a fluid situation that can best be met by flexible organizations that allow people to move from one area to another. The visiting patterns create intergroup obligations, so that the hosts in one season become the guests in another. We think that reciprocal access to food resources would rank as equal in importance with exchange of spouses as a means of communication between groups. It is likely that food may antedate women as the original medium of exchange (cf. Lévi-Strauss, 1949).

Fourth, food surpluses are not a prominent feature of the small-scale society. If inventories of food on hand are minimal, then a fairly constant work effort has to be kept up throughout the year. Since everyone knows where the food is, in effect the environment itself is the storehouse; and since everyone knows the movements of everyone else, there is a lack of concern that food resources will fail or be appropriated by others.

Fifth, frequent visiting between resource areas prevents any one group from becoming too strongly attached to any single area. Ritual

sites are commonly associated with specific groups, but the livelihood of the people does not depend on such sites. Further, the lack of impediments in the form of personal and collective property allows a considerable degree of freedom of movement. Individuals and groups can change residence without relinquishing vital interests in land or goods, and when arguments break out it is a simple matter to part company in order to avoid serious conflict. This is not to say that violence is unknown; both homicide and sorcery are found among a number of current hunter-gatherers. The resolution of conflict by fission, however, may help to explain how order can be maintained in a society without superordinate means of social control.

At the symposium we presented some of these ideas under the general heading of the "Nomadic Style." Several others found this view plausible and suggested ways in which specific cases might have developed out of this baseline. L. Binford noted that northern adaptations required a more elaborate material basis, including fixed facilities such as fish weirs and game fences, and more substantial dwellings, clothing, and tool kits. Steward pointed out that the development of traction and water transport would allow northern peoples to own more and yet still retain mobility (Chapter 34). And Suttles (Chapter 6) showed how the fisherman of the Northwest coast may have originally started out in small nomadic bands, but were subsequently led into surplus accumulation, heavy facilities, and ceremonial exchange by the necessity to bank against vagaries in salmon supply.

It seems clear that when the means of production come to depend upon the exclusive control of resources and facilities, then the loose non-corporate nature of the small-scale society cannot be maintained. If this view is correct, then a major trend in human affairs has been the transformations of social relations as advanced technologies and formal institutions have come to play a more and more dominant role in the human adaptation. The institutions of property, of clan organization, of government, and of the state did not spring full-blown in a divine creation. The study of the hunters may help to understand how these things came into being.