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The Significance of Food Storage among Hunter-Gatherers: Residence Patterns, Population Densities, and Social Inequalities

by Alain Testart

HUNTING-AND-GATHERING SOCIETIES have often been viewed as forming a single category about which it is easy to generalize: it will be sufficient here to recall the concept of the "band level of integration" of Steward (1955) and Service (1966) or the rather tentative notion of "nomadic style" of Lee and DeVore (1968). Such general approaches can be upheld only if a number of food-gathering societies are treated as exceptions and discarded. Northwest Coast societies are often considered to be such exceptions. As Suttles (1968:56) puts it, "the Northwest Coast peoples seem to have attained the highest known levels of cultural complexity achieved on a food-gathering base and among the highest known levels of population density. The Northwest Coast refutes many seemingly easy generalizations about people without horticulture or herds." California is another case in point: "The abundance of plant and animal resources and the development of storage techniques and other truly skilled applications of human ingenuity allowed these people to develop beyond the normal parameters of hunting and gathering, particularly in the sociological, philosophical, and religious realms" (Bean and Lawton 1973:36; for similar remarks on California Indians, see also King 1972, Kunkel 1974, Gould 1975, and others). These facts have been well known for a long time. As early as the end of the last century, Grosse (1896) made a distinction between two kinds of hunters: the "lower" and the "upper." He classified the Northwest Coast and California Indians among the latter. From a materialist point of view, such a dichotomy raises a problem: how to account for the fact that, with the same basic food-gathering economy, two very different levels of social complexity can be attained. Grosse (p. 27) sought a solution to this problem with reference to ecology: according to his pioneering study, "upper hunters" were able to raise their cultural level above that of the others because of a richer and more stable production "owing mainly to advantageous natural conditions" (translation mine).[1] Neoevolutionists or cultural ecologists years later resorted to the same type of explanation (e.g., Steward 1955:175; Service 1962:47; 1966:3; Goldschmidt 1959:190).

I intend to present here a different solution: I will argue that the reason there are two different kinds of food-gathering societies is that there are two radically distinct types of economy. The first, which is found among nomadic hunter-gatherers such as the Bushmen and the Australian Aborigines, is based on the immediate use of food resources. This economy is flexible and relies on multiple alternative strategies. The second, which is found among more sedentary foragers such as the Northwest Coast and California Indians, is based on large-scale seasonal food storage. In the first part of this paper, I shall point out the conditions underlying the latter type of economy and delineate its consequences for the society as a whole. In the second part, I shall use the cross-cultural codes published by Murdock and others to show how a distinction between storing and nonstoring types of economies may account for the observed differences among hunting-and-gathering societies.

THE STORING HUNTER-GATHERER ECONOMY

A Definition

Where some natural food resources are *bountiful* but *seasonal*, they can be gathered en masse while available and stored *on a large scale* once transformed through appropriate food preservation techniques, thus becoming the staple food year-round. This possibility lies at the intersection of four conditions, two ecological (abundance and seasonality of resources) and two technical (efficient food-getting and food-storage techniques). The presence of these four conditions determines an economy

[1] "vor Allem dank einer besonderen Gunst der natürlichen Bedingungen."

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in which storage provides the bulk of food during the season of scarcity. This economy has two main characteristics.

The first is a conspicuous seasonal variation in the intensity of food-getting activities. During the season of plenty, when the natural environment abounds in food resources, these have to be gathered in sufficiently large quantities not only to satisfy the immediate nutritional needs of the community, but also to be stored in order to cope with the next season of scarcity: this is the time when productive activities, such as food-getting, be it hunting, fishing, or gathering, *and* food preparation for preservation, are at their peak. During the season of scarcity, the bulk of subsistence is ensured by the stored food already at hand: food production is then at its lowest. The season of scarcity is thus a time of leisure, of enjoyment and festivities; it is also the time when the biggest and most important rituals are usually performed. This specific seasonal alternation in the intensity of work is a distinctive feature of the storing economy. In the economy in which food storage plays an unimportant role, food production is a day-to-day preoccupation corresponding to physiological needs. The intensity of this activity may vary slightly from one season to another, but there is no reason to think that there will be a decrease in the intensity of work during the season in which food resources are scarcer and harder to get.

The second characteristic of the storing economy is its relative rigidity. The general flexibility of the economy based on the immediate consumption of food arises from the fact that it relies on a multiplicity of alternative strategies for the exploitation of the environment. In the storing economy, planning plays a crucial role. Central to the economic cycle is the seasonal establishment of food stores; an abundant harvest and the adequate handling of the product for preservation are both essential for the survival of the community until the next harvest. If the products deteriorate over time or if winter lasts too long, famine threatens the community.

These two characteristics suffice to show how the storing economy differs from the general model which has been attributed to hunter-gatherers. For a society with such an economy, further and more fundamental characteristics are to be expected with regard to residence patterns (sedentarism or nomadism), population density, and socioeconomic inequalities.

1. A sedentary way of life. Large reserves of food are incompatible with residential mobility (Sahlins 1972:31–32; Jordan 1974): on the one hand, nomadic people are reluctant to preserve and store food to any significant extent; on the other hand, the accumulation of stocks urges people to adopt a settled way of life. However, this well-known aspect of the relationship between storage and sedentarism masks another important aspect.

In an environment in which there are seasonal variations, nomadic hunter-gatherers move from one site to another according to seasonal fluctuations in food resources. Group migrations generally follow natural rhythms and often reproduce those of previous years. At each period of the year the group settles in a location to tap the resources known to be bountiful in this specific place at this particular time: when this resource becomes scarce, another is sought, thus calling for a camp shift. Two exceptions to this rule can be postulated. The first occurs when the different resources exploited throughout the year are geographically concentrated in the same area, so that the group can exploit them from a single base camp (Watanabe 1968: 72; King 1974:40). The second has its foundation in the practice of storage: if a resource is sufficiently abundant to be harvested and stored on a scale large enough to feed the group until the next harvest, the group can settle down.

Thus, the accumulation of substantial food reserves has a double effect on the residence pattern: on the one hand, it inhibits the *possibility* of residential mobility; on the other, it suppresses its *necessity*. Except in the case of geographical concentration of resources mentioned above, whenever resources are highly seasonal, sedentarism and large-scale storage imply each other: storage brings forth sedentarism, and sedentarism presupposes storage. Which historically precedes the other is a chicken-and-egg question.

The usual residence of hunter-gatherers practicing storage is a village or a permanent camp built around food reserves from which seasonal expeditions requiring a certain mobility, such as hunting, are launched. What characterizes this residence pattern is not so much the total absence of mobility, but, first, a greater sedentarism than in the case of nonstoring hunter-gatherers, which is frequently reflected in the nature of dwellings, and secondly, permanence of residence during the season of scarcity.

It is important to stress that we are concerned here only with intensive storage of basic food items. Other kinds of storage may be practiced by hunters and gatherers—for instance, the storage of nonfood items such as raw materials, completed or partly completed products, and so on, or of food items, subsidiary or basic, that are limited in quantity. Limited food storage does not entail a sedentary way of life, since the bulk of subsistence is still ensured by periodic shifts. In addition, such storage is not incompatible with nomadism, either because it consists of small quantities of preserved foods carried by the members of the group or because it constitutes a stock left behind as a kind of insurance against misfortune to which the community returns as a last resort.

The importance of storage is widely acknowledged by prehistorians (Flannery 1969:78; 1973:280–81; Reed 1977*a:* 550; 1977*b:* 900, 942–43; Redman 1977:528, 537; Hassan 1977:595) first as a preadaptive feature leading to the invention of agriculture in the Near East and second as a practice tied to sedentarism in the case of prehistoric food-gathering groups such as the Natufians. Reed (1969:367, n. 21) indicates that village life implies the existence of an established food resource which can be gathered in quantity and stored in special places: "The first simple villages may have grown around such storage places." Flannery (1972:28) suggests "that the origin of 'sedentary life' had more to do with the installation and maintenance of permanent facilities . . . than it did with agriculture *per se*." So does Smith (1976:27–28): "Except under unusual circumstances, when adequate supplies of food are locally available all year round, the degree of sedentism of a community is related to the maintenance of food reserves." Taylor (1973) considers storage one of the most fundamental aspects of the Neolithic Revolution. On the other hand, the topic of storage has been of little interest to anthropologists concerned with hunter-gatherers. J. Lips (1928) and E. Lips (1951–52, 1956), however, have put forward the notion of "harvesting people" (*Erntevölker*) characterized among other things by an important form of storage and a greater sedentarism. More recently, Binford (1980) has distinguished two exploitative strategies among hunter-gatherers for which the presence or absence of storage is a relevant factor.

2. A high population density. Storing hunter-gatherers may be expected to have a peculiar demographic structure. In order to clarify this point, we must begin by considering their settled way of life.

Among mobile hunter-gatherers, women have two main tasks. As producers, they are in charge of plant gathering, a basic food-getting activity sometimes providing more than half of the total food supply. As reproducers, they not only bear but also care for children: they breast-feed and carry them until they are about four years old. The work load of a woman with more than one infant would be so heavy as to interfere with food-getting activities requiring a high degree of mobility. This mobility is considered (Birdsell 1968:236; Lee 1972) one of the major explanatory factors for birth spacing (three to five years between successive births) among nomadic hunter-gatherers. The !Kung Bushmen say that "a woman who gives birth like an animal to one offspring after another has a permanent back-

ache." Lee (1972), who reports this saying, also calculates the work effort of a woman involved in food gathering according to different intervals between births and convincingly argues that, with shorter intervals, the number of infants to be carried increases and the work load rapidly becomes unbearable. We do not need to specify here the nature of the mechanisms regulating such birth spacing: abortion or contraception, postpartum taboo or other prohibitions on sexual intercourse, possible inhibition of fertility occasioned by prolonged lactation, infanticide, child mortality, and so on. What we are concerned with is that one or several of these mechanisms, whatever they may be, exist, that they are brought about by a mobile way of life, and that they account for the low population density of nomadic hunter-gatherers.

From these considerations, it follows that the adoption of a sedentary way of life will be sufficient to trigger a demographic expansion. This idea has been widely acknowledged by scholars studying demographic change through specific case studies concerned either with hunter-gatherers undergoing acculturation, such as Bushmen (Lee 1972:329), Australian Aborigines (Harris 1977*b:* 412–14), and Eskimos (Binford and Chasko 1976), or with prehistoric groups (Dumond 1972*b:* 311) and through the elaboration of broad evolutionary models (Dumond 1972*a:* 290–91; Harris 1977*a:* 188–97; 1977*b;* Reed 1977*a:* 551; 1977*b:* 894–95).

The consequences of storage for population density have already been noted (Bartholomew and Birdsell 1953:488; Birdsell 1968:230; Smith 1972:8; Hassan 1975:32). I assume that they have not been more regularly invoked only because of the underestimation of the importance of storage in nonagricultural contexts. On the one hand, Liebig's law stipulates that the population level in a specific community is regulated not by the yearly total amount of exploited resources, but by the smallest quantity of food available during the leanest season: storage is a means of increasing the latter, thus allowing a rise in the population level. On the other hand, if a natural resource is available only during a short span of time, however bountiful it may be it will help feed the community only for this period unless it is stored. If storage is practiced, however, the same resource will provide a staple food for a much longer period of time: accordingly, it will be exploited much more intensively, thus increasing the yearly total amount of food available to the community. The high population densities recorded for some hunting-and-gathering groups have commonly been explained with reference to the generosity of the natural environment. The latter is an obvious prerequisite, but, when nature's abundance is only seasonal, as on the Northwest Coast, high population densities are best explained by the presence of a storing economy.

To sum up, sedentarism triggers population increase, and intensive food storage enables the population to stabilize at a higher level of density.

3. Socioeconomic inequalities. The Neolithic Revolution is believed to have paved the way for civilization, class society, and the state. The basic assumption is always that only agriculture was able to generate a regular economic surplus sufficient to maintain a nonproductive class, such as priests, warriors, bureaucrats, and the like. This idea was clearly stated in Childe's works (e.g., 1954:41–48) and has since become commonplace. The argument has been taken over by Marxist writers. The key notion is that of surplus product, i.e., production beyond the needs of the producers. Hunter-gatherers, who are said to be perpetually in quest of food, supposedly have no time to produce a surplus. According to this view, it is only with the development of the productive forces brought about by agriculture that the production of a surplus becomes feasible, thereby opening the way for possible control of this surplus by a class of nonproducers and thus giving birth to the exploitation of one man by another and class societies. In a nutshell, this is the current view of Soviet writers (Kajdan n.d.:51–52, 56–57; Nikitin 1966, quoted by Beaucage 1976:398) and Marxists of all persuasions (Suret-Canale 1969:106; Mandel 1962:26, 43; Beaucage 1976:409–10).

This view, however, can no longer be maintained, for quantitative studies (e.g., Lee 1968, 1969) show that, contrary to what has generally been assumed, hunter-gatherers do not work hard to make a living. Sahlins (1972: chap. 1) has popularized these findings by referring to hunter-gatherer societies as "affluent societies." If a hunter needs to work only three or four hours a day on the average to ensure his subsistence, he would need to work only a little more to create a surplus product and lay the basis for the exploitation of one man by another.

Thus one cannot so easily explain why hunting-and-gathering societies are classless, egalitarian, and based on generalized reciprocity. The explanation in terms of surplus definitely has to be replaced by a new one. Moreover, not all hunting-and-gathering societies are egalitarian, and this too will have to be accounted for. Northwest Coast societies, for instance, are rank societies, and, although to a lesser extent, stratification or wealth disparities are reported from various groups of hunter-gatherers in California and Siberia. It seems that only nomadic hunting-and-gathering societies which do not practice intensive storage are egalitarian, while important social inequalities similar to those exhibited in agricultural societies are present among sedentary, food-storing hunter-gatherer societies. This preliminary evidence suggests that the relevant factor for the development of inequalities is not the presence or absence of agriculture, but the presence or absence of a storing economy, whether it be hunting-gathering or agricultural. How both a settled way of life and intensive food storing are likely to lead to the emergence of socioeconomic inequalities is what remains to be explained.

In the first place, sedentarism is a prerequisite to the accumulation of material goods. While the development of means of transportation makes ownership of material wealth compatible, to a certain extent, with a nomadic way of life, generally speaking hunter-gatherers travel on foot and carry their loads themselves. Thus, wealth is generally limited to light, easily transportable possessions. Apart from the implements, weapons, and tools required for subsistence activities, possessions are mainly confined to clothes or bodily ornaments: belts, headbands, necklaces, armbands, pendants, labrets, and so forth. Other items regarded as precious often pertain to tools even if they have no functional value, such as carefully chipped spearheads or painstakingly polished axes. The incompatibility of nomadism and material wealth has been underlined by Sahlins (1972:11–12). Owen Lattimore's comment "The pure nomad is the poor nomad," although referring to pastoralists, applies as well to hunter-gatherers.

Sedentarization makes possible the accumulation of an unlimited number of light and portable goods. It also permits the development of heavy and nontransportable equipment for food processing and food storage. The Australian Aborigines leave their large grinding slabs behind when they move, along with small stocks to which they come back in time of need. Village life, on the other hand, allows the multiplication of mortars and grinding stones. It allows also the fabrication of containers of all shapes and dimensions: in some places, there is an unprecedented development of basketry; in others pottery is adopted or invented; everywhere, granaries, storage pits, or other storage bins appear. To all this technical equipment, which may also confer prestige on those who use it, we must add fixed assets. The simple lean-to or windbreak, the branch hut, or the tent, the typical dwellings of nomads, are replaced among sedentary groups by elaborate houses which in some cases require a considerable amount of work as far as wood cutting and transportation of slabs are concerned. Other buildings, such as magnificent

ceremonial houses or ostentatious tombs, foreshadow the large-scale public works so frequent in other historical contexts.

While sedentarism may bring an increase in material wealth, it does not necessarily do so. In contrast, large-scale food storage does entail such an increase, since it converts the products of hunting and gathering, that is, the bulk of the total output of a hunting-gathering economy, into lasting goods. Thus it becomes conceivable to hoard food: in the history of mankind, a full granary has always been the most obvious sign of its owner's wealth. Furthermore, once food can be preserved, its accumulation, even over and above the needs it is meant to satisfy, is not absurd.

However, while the advantages of accumulating grain are obvious to people in our society, it is a different matter among hunter-gatherers. What can be done with an excess of well-preserved food? We cannot reply that its owner can keep it for later use, since defining it as excess means that his present and future needs are already taken care of. He can pile it up; however, in spite of the fact that food can sometimes be kept for a very long time, pests and other natural agents will eventually get the better of this precarious treasure. He can exchange it for other goods. Such exchange can occur with foreign groups living in different environments and exploiting different natural resources. Generally speaking, however, for this exchange to become regular and of some magnitude it has to take place within the community itself, and this presupposes two things: first, other members of the group must want to acquire food, which means they do not have it, and second, they must possess goods which the owner of excess food does not produce. In other words, it implies a social division of labor within the community itself and not only between regions. In a different historical context than that of hunter-gatherers or pristine agriculturalists, bronze metallurgy represents the first significant social division of labor and provides a type of durable wealth which can be kept much longer than any foodstuff. These social and technical novelties give hoarding its full meaning, and, indeed, the European Bronze Age witnesses the accumulation of treasures. In the absence of metallurgy, however, the primitive hoarder can exchange his food excess for various products: stone blades, furs, shells, hammered coppers, and other rare items made by part-time specialists or imported from distant regions. These luxury objects, devoid of any practical value, are useful only in the sense that they concentrate a large exchange value in a small volume, thus being easily stored. In fact, their use value is to confer prestige on their owner. There is, however, another means of converting a food excess into prestige, namely, giving it away without immediate return. The gift creates an obligation for the receiver, and therefore the giver may expect reciprocity even if it is postponed. Moreover, beyond this calculating strategy, the prestige gained by the donor allows him to establish his ascendancy over his peers.

Such a development is intimately connected with a tradition of food sharing common among nonstoring hunter-gatherers: the food brought back to the camp by the hunter is totally or partially shared out, thus bringing prestige to the successful hunter. This custom, however, acquires a different meaning when food is stored. Among nonstoring people, the only way excess food can be used is to give it away. Among storing people, on the contrary, it can be individually appropriated by the producer insofar as it can be converted into a lasting product: in this context the prestige tied to a gift of food has an utterly different quality. It is the quest for prestige which is the primary motivation of this act, since the goods given could be profitably kept by their owner. Because of the part played by prestige, the custom of food giving takes on a very different meaning among food-storing people. There is another basic difference. Perishable foodstuffs that have not been processed for preservation can be given only to those who have an immediate need for it and who do not live too far away or can be reached in a reasonable time. The transformation of foodstuffs into lasting goods stretches to an unprecedented extent the possibilities of exchange and gift and thus enhances the advantages of accumulating food. Great quantities of goods can then be accumulated for redistribution in the remote future or for long-distance trade: the volume, area, and duration of the circulation of the goods take on different dimensions. No wonder, then, that the old custom of food giving manifests itself most strongly in a society practicing large-scale storage.

We have seen that the accumulation of wealth is *made possible* by sedentarism, *realized* by the transformation of food into lasting goods, and *rendered potentially unlimited* by the exchangeable nature of stored food. This last point is especially important, since only those who have at their disposal an excess can be classified as "rich." This brings us to economic inequalities. These can only develop with the existence of material goods, but such goods cannot engender a differentiation between rich and poor if they are appropriated by the community as a whole. This is generally the case among nomadic hunter-gatherers as far as food is concerned: indeed, there is a universal rule which stipulates that the products of hunting and, to a lesser extent, those of gathering must be shared by all members of the community. The social relations prevailing among people who store food must therefore be radically different if their food reserves are to be privately appropriated. In order to account for this difference, we will investigate the connection between social relations and the practice of storage.

Food sharing among nonstoring hunter-gatherers is linked with the material basis of the society. First, the hunter who has shot more game than he needs can only give what he cannot eat to others for fear of wasting it. This would appear to be a truism only if we overlook the fact that the rule of sharing applies mostly to big game and tends to be disregarded in the case of small animals. Second, as a result of the enforcement of the rule of sharing, the empty-handed hunter can hope for a share from the more fortunate one. Food sharing functions, therefore, as a kind of social insurance against bad luck. Here again, we observe that the rule applies more to haphazard activities such as hunting than to more regular activities such as gathering. I do not intend to reduce the rule of sharing to these material considerations only: on the contrary, I think that the ostentatious character it assumes among many hunter-gatherers aims above all at displaying the specific nature of the social relations prevailing in a society based on cooperation. However, these material considerations do play a part. When storage has become a common practice, it makes sense for the hunter not to share and to keep his game for himself. Food reserves then constitute a kind of insurance for the future and a regulating mechanism which diminishes the advantages of sharing. In order to offset an eventual shortage, people rely more on their food stocks than on the help of others or on the solidarity which links them to each other. We may therefore expect that food sharing will tend to fall into disuse with the development of intensive food storage.

In this context it is important to underline the total change in mentality brought about by the adoption of food storage. Among nomadic people such as the Bushmen, accumulation or storage has the immoral connotation of hoarding (Lee 1969: 75). In societies in which sharing is the rule, goods must circulate among all members of the group for immediate consumption. Thus the decision to store food implies a change in ideology: a change in customs (the rule of food-sharing has to be either transformed or given up), in attitudes towards other people (less reliance on kinship, affinity, or friendship to secure the future), in attitudes towards time (the past, that is, the goods already accumulated, is of greater consequence than the present for ensuring subsistence), in attitudes towards work (work invested in the means of production, such as storage facilities or stocks, may prove to be of greater importance than present capacity to work), and in attitudes towards nature (people rely more on the results of their own past work than on

ever-providing nature). Nomadic hunter-gatherers consider storage superfluous insofar as they trust the generosity of nature to supply them with wild resources at any time. Nature is, as Marx said, "their primitive store of foods." A Dene hunter states: "Whites always have money in the bank. I will never have any. All I can put aside is in nature and it allows me to make a living. This is my bank. This is my savings account" (Berger 1977:101, translation mine).[2] Thus storage expresses a distrust of nature, and whenever nature is viewed as a divinity whose blessing and unlimited generosity is praised the act of storing is irreverent or sacrilegious at the same time as it constitutes in the social order a transgression of the rule of sharing.

In addition to a fundamental alteration in ideology and social relations, storage is often, though not always, connected with a tendency towards the development of individual ownership. Where there is individual property, the development of wealth leads to the emergence of economic inequalities. Gould (1975: 149–50) opposes the classical hunter-gatherers who enforce the rule of sharing to those who individually appropriate and accumulate resources and goods. Among the latter, incipient or developed status or class hierarchies are to be found, "since such accumulations are generally unequal and become more or less concentrated in the hands of certain individuals or families." Sedentarism also means an exclusive or privileged exploitation of the territory in which the group has settled. Disparities in resources between areas and the abandonment of a flexible social structure, which implies high population pressure for some groups, bring about differences in wealth from one group to another (Smith 1976:49–50). Sedentarism also limits the possibility of resolving conflicts through splitting of local groups, hence the emergence of mediation, a new opportunity for leaders to strengthen their social position (Bender 1978: 213).

Up to this point, we have assumed that wealth originates only in the work of those who amass it. We now have to discuss what may be viewed as the major source of social inequalities throughout history, i.e., the exploitation of one man by another. We must ask whether or not the presence of a storing economy provides a basis for the emergence of this exploitation.

When consumption is delayed, the products stored acquire a certain distance from the producers, and this distance seems to foreshadow the separation of producer and product that is typical of class societies. The process of production is not followed by immediate consumption; the appropriation of the product by the producer is postponed. Further, it may never happen, since this product, transformed by adequate techniques of preservation, has become a lasting good which can be exchanged and handled and with which the producer or someone else can "play." The longer the period of conservation, the more opportunities there are to divert the product from its producer: stored food is the primary object of raids, and it may be stolen, monopolized by men of high status, or made the subject of rent or tribute.

In some nomadic societies, for instance, in Australia, the elders enjoy special privileges with regard to food, men have similar privileges in opposition to women, or individuals are obligated to make gifts of food to kin or affines: from these facts it can be argued that some forms of exploitation may exist among nomadic hunter-gatherers. These forms of exploitation will, however, be very limited. For this exploitation to become massive and regular, in the absence of preservation of food, a daily supply would have to be surrendered to those wishing to exploit others. Such day-to-day exploitation is not unthinkable, since instances of worse forms of exploitation are known. These, however, all postdate the emergence of classes and political constraint, and it is likely that no large-scale exploitation originated with this daily form. Therefore, exploitation among nonstoring hunter-gatherers can only be sporadic and limited. It may occur only between people of the same local group or, perhaps, among a small number of kin living far from each other. Moreover, it may occur only on rare occasions, so that the amount of work remains within reasonable limits. On the other hand, large-scale preservation of food makes it possible to exceed the limits of this daily exploitation. Stocks are already at hand, and their very existence provides an opportunity for the exploitation not only of daily labor, but of the entire labor input required for their accumulation. In brief, the extortion of a surplus product may be realized on a very different scale than among nonstoring hunters and gatherers.

I have already said that, because stored food is a lasting good, the longing for wealth may give rise to an intensification of food production beyond the needs of the producers. This intensification is also a result of the technical requirements of a storing economy. Among nomadic hunter-gatherers, the equilibrium between human needs and natural resources is achieved through a flexible daily adaptation. It is otherwise in the case of storing food-gatherers, whose well-being during the season of scarcity depends on the food stocks previously accumulated. This implies some planning, but we cannot expect hunter-gatherers to predict all the hazards likely to appear, such as, on the one hand, a possible diminution of the amount of the stored food, should a portion of it be destroyed by biological or climatic agents or in warfare, and, on the other hand, an increase in the needs to be satisfied by these stores, should other resources run short, the next harvest be delayed, or the size of the group increase. Thus, in order to be prepared for any eventuality, there will be a tendency to store a little more than the quantity usually needed. This excess is as necessary economically as, for example, the seeds that the cultivator puts aside for the next sowing: it has use value for the producer. Therefore, it does not represent a surplus (contrary to what I have written elsewhere [Testart 1979:183]), and there is no reason to think that any surplus could *first* be accumulated and *then* diverted from its producers. The generation of a surplus above the consumption needs of the producers and above the technical prerequisites of production is meaningful only if it is aimed at the maintenance of a class of nonproducers. Surplus and exploitation are indissociable. Now, the excess over the quantity usually needed will be utilized as food only in the case of an unexpected calamity. At the end of a good year, this excess will not have been consumed. It will nevertheless have been useful to the extent that it has served as insurance against calamities. Since this function will not have destroyed it, it is available for other possible uses but without immediate utility, since, according to our hypothesis, the food needs have been satisfied and its role as insurance has come to an end. Obviously, its owner can hoard it, in keeping with the tendency I have already mentioned; but, to the extent that this excess is without immediate usefulness, it may be one of the first products appropriated by persons who did not produce it. This extortion will be all the easier in that it does not require any labor in addition to that already embodied in the product and does not infringe on the ability of the producer to satisfy his own basic needs.

In addition, the existence of collective stores provides an opportunity for the emergence of this exploitation. People who are important because of their religious status or their kinship ties will assume the management of the stores, control their utilization by members of the community, preside over their redistribution, orient their use in accordance with their own interests or those of their own group, and justify both the share they appropriate of the communal stores and their poor contribution to it in terms of the importance of their function. Even-

[2] "Les Blancs ont toujours de l'argent à la banque. Moi, je n'en aurai jamais. Tout ce que je peux mettre de côté se trouve dans la nature et me permet de subsister. C'est là ma banque. C'est là mon compte d'épargne."

tually, they will divert a share of the stores to their own personal ends. We are not concerned here with who controls and how; what I want to stress is that collective stores can become the material basis for exploitation.

Furthermore, exploitation is connected with the fact that an economy based on storage entails sedentarism. Among nomadic hunter-gatherers, the flexibility of the social organization, the ease with which the group splits up, and the general mobility prevent exploitation from going beyond certain limits: the exploited move away to settle elsewhere. Sedentary existence, permanent living quarters, and storage facilities all restrict the mobility of people. Since the dissatisfied cannot leave so easily, exploitation can become more intensive. Sedentarization can thus be viewed as the first step towards the development of the political constraint without which a fully developed form of exploitation cannot be realized.

Thus all the material, social, ideological, or political prerequisites for the emergence of social inequalities seem to be present in societies with a storing economy. This view does not imply any determinism by the technical and economic basis, since one has to ask why intensive storage is adopted in the first place, and I have briefly mentioned various factors pertaining to the ideology or the nature of the social relations which either slow down or speed up this process. Although I have stressed the importance of technique, it is the pursuit of wealth and the will to increase inequality and exploitation that determines the intensification of food production above basic needs. This determination, however, requires that food first be transformed into lasting goods by adequate preservation techniques. We have paid attention to the material basis inasmuch as it makes *possible* certain social developments. Only a concrete analysis of specific cases will tell us whether or not these developments actually occur in a given society. This analysis will call for the establishment of the degree of sedentarism and the importance of storage, the examination of the various structures, economic, political, or ideological, and the assessment of the various social forces for the specific society under study. Inequalities can develop only with the separation of privileged social classes from other strata that are disadvantaged, exploited, subjected, or reduced to slavery, the interests of the one being antagonistic to that of the other. It is upon the carrying out of these struggles that the level of social differentiation of a society at a specific point in its history depends.

Examples and Geographical Distribution

Elsewhere (Testart n.d.) I have attempted to identify the hunter-gatherers practicing intensive storage. Here I shall briefly summarize my main conclusions. The best examples come from the Northwest Coast Indians, the peoples of southeastern Siberia and northern Japan (Ainu, Gilyaks, Itelmens, and others), and the California Indians: various species of migratory salmon provide the bulk of the food in the first two cases, and, in the third highly seasonal acorns are the staple. All these peoples possess important storage facilities, either in special buildings such as the pile granaries in California and Siberia or in various containers kept inside houses as on the Northwest Coast. All are essentially sedentary in the sense that they live in true villages with permanent dwellings, from which they may undertake periodic expeditions but in which they spend most of the year. Their population density is much higher than is considered standard among hunter-gatherers: in America north of Mexico, for example, the cultural area in which population density is the highest is not an agricultural area, but a region of hunter-gatherers, California, immediately followed by the Northwest Coast. All these peoples exhibit socioeconomic inequalities, Northwest Coast ranks being but the best-known exemplification of this tendency. Other more or less typical instances of storing hunter-gatherers are some Alaskan Eskimo groups, the Aleuts, the maritime Chukchi and Koryaks, the Finmark Lapps, some groups in western Siberia between the Ob and the Yenisei Rivers, the western Athabascans, the Plateau Indians, a few groups in the Great Basin area, and perhaps the Warrau of the Orinoco delta. More examples are to be found in recent postglacial prehistory. The Natufians in Palestine and Syria are a case in point: their staple food was derived from wild cereals stored in pits in permanent villages.

Storing hunter-gatherers are absent (with one possible exception) from deserts and tropical lands. The reason is that one or the other of the natural prerequisites for the establishment of a storing economy is absent. As a rule, in deserts, natural food resources are not bountiful, and, in the tropics, there is no period of extreme scarcity and seasonality is not marked enough to induce storage. As a result, storing hunter-gatherers are distributed over the high and medium latitudes. Such areas are very few in number in the southern hemisphere, and this may be the reason the storing economy does not occur there. Hunter-gatherers practicing intensive storage include mainly peoples that are primarily fishermen or plant gatherers and incidentally Arctic sea hunters, but not peoples that are, first of all, land hunters. Why land hunters do not adopt such practices cannot be discussed in any detail here, but the likely explanation runs as follows: In the specific case of the Arctic regions, freezing provides an easy way of preserving food. In other areas the long-term preservation of animal flesh requires more elaborate processing than that needed for fish and much more than that needed for grains or nuts. This difference in labor input probably explains why, although techniques for the preservation of game are widely known and occasionally practiced, there is no land hunting economy based on large-scale storage. This phenomenon has significant theoretical consequences. If we consider the hunter-gatherers of the world in the ethnographic present, excluding those inhabiting desert and tropical areas as well as those for whom land hunting provides the major source of food, we find that almost all are of the storing type. They can in no way be viewed as exceptions.

DISTINGUISHING STORING HUNTER-GATHERERS IN A SAMPLE OF 40 SOCIETIES

The idea of using the cross-cultural codes to test the views presented above originates directly from the publication by Murdock and Morrow (1970) of a set of codes and a body of coded cultural data pertaining to food preservation and storage in 186 societies. I selected the hunting-and-gathering societies from these 186 societies. Since Murdock and White (1969) consider these latter "a representative sample of the world's known cultures," it is likely that the sample taken here is representative of the hunter-gatherers of the world.

Out of these 186 societies, I selected as hunting-gathering societies only those in which agriculture and animal husbandry are not practiced or are unimportant, i.e., yield less than 10% of the local food supply (in Murdock and Morrow [1970] these societies are coded O, N, or U in the second and third columns). The society of Manus has been excluded because of the crucial importance of intercommunity trade. The result is a sample of 40 societies.

Murdock and Morrow (1970:306) distinguish "5 particular configurations of ecological and technical conditions together with types of adjustment to each." The set of codes they elaborate is shown in table 1 (from which I omit their Condition 5, which does not occur among hunter-gatherers). The codes attributed by Murdock and Morrow to each of the 40 societies of our sample are reproduced in the first column of table 2. However, as far as California is concerned, it seems to me necessary to modify the codes. By coding Californian societies

TABLE 1

CODES (SIMPLIFIED) FROM MURDOCK AND MORROW (1979) PERTAINING TO PRESERVATION AND STORAGE OF FOOD

	CONDITIONS			
	1	2	3	4
SOCIETAL ADJUSTMENTS	Food Resources Constant	Food Resources Variable from Day to Day	Food Resources Variable from Season to Season	Food Resources Variable from Year to Year
Lacks significant techniques or has at best techniques that are barely adequate	A	E	I	O
Has a few simple techniques adequate to tide over times of shortage	B	F	J	P
Has techniques for the accumulation of substantial surpluses for other than subsistence purposes	C	G	K	Q

as B, Murdock and Morrow classify them in Configuration 1, "Food Resources Constant." In fact, acorns, which represent the staple food of Central California Indians (e.g., Baumhoff 1963), are seasonal: the gathering of acorns lasts only one month in autumn. For the Pomo, for example, Kniffen (1939: 366) writes: "The midwinter months were ones of little activity. Generally there was a sufficient supply of stored food to go with the fresh game. However, there was an occasional famine when the very important acorn crop was a failure." Salmon, another staple food in north and northwestern California, is also seasonal. Seasonal variations and storage appear to be essential in the whole of aboriginal California (Testart 1981). Therefore I have replaced code B with code J for the three Californian societies, Yurok, Pomo, and Yokuts.

How do these codes allow us to detect storing hunter-gatherers? When the ecological conditions are constant over time (codes A, B, C), there is little need for storage, and a minus appears in the second column of table 2. When techniques are lacking or barely adequate (codes A, E, I, O), intensive storage is unlikely, and a minus appears in the third column. A storing economy can only arise when it is simultaneously required by seasonal variations and made possible by adequate techniques. These conditions, though necessary, are not sufficient. We have already noted that no storing economy occurs where land hunting is the primary subsistence activity. The importance of land hunting in each society of the sample is indicated in column 4 by the figure pertaining to this activity given by the Ethnographic Atlas (Murdock 1967). When this figure is greater than 3, which means more than 35% dependence on land hunting. I have assumed that the storing economy is impossible and entered a minus in column 5. Societies can be expected to be of the storing type only when there is a plus in each of columns 2, 3, and 5. This occurs in the following cases: Ainu, Gilyak, Aleuts, Eyak, Haida, Bellacoola, Twana, Yurok, Pomo, Yokuts, and Kutenai. Leaving aside the last case, which is a doubtful one, the first ten cases are *typical* storing food-gathering societies. I shall refer to these ten cases as storing societies. With one exception, these societies are in Configuration 3, "Food Resources Variable from Season to Season"; only Gilyak is in Configuration 4, "Food Resources Variable from Year to Year" (which does not mean that there is no seasonal variation).

Where the signs in columns 2 and 3 are the same (++ or −−), there is a correspondence between the presence or absence of preservation techniques and ecological conditions. Where we find −+, ecological conditions do not call for intensive storage, but adequate preservation techniques actually exist: this does not pose a problem, since storage may be practiced for reasons other than immediate subsistence concern, for instance, prestige or exchange. Where we find +−, however, we have to explain why ecological conditions call for intensive storage but there are no adequate preservation techniques. Out of fourteen such cases, ten are societies in which land hunting provides more than 35% of the total food supply: as mentioned, this seems to be sufficient to preclude any large-scale storage. In two cases (Aranda and Paiute) the environment is desertic: resources are certainly too scarce to induce intensive storage. This probably holds also for some groups from the Plateau and the Subarctic. Either one of these reasons accounts for the absence of a storing economy in the cases under examination: should it be too difficult to maintain a significant food stock to cope with the next season of scarcity, people would probably prefer not to store at all and resort to the flexible adaptive strategy typical of mobile hunter-gatherers.

Column 6 contains the codes for residence patterns as given by Murdock and Wilson (1972). These are, in order of increasing sedentarism, B, S, R, T, and P. We can easily verify that nonstoring societies are significantly more nomadic than storing ones: all of the former are B, S, or R, while, of the ten latter, eight are T or P and only two are S.

Column 7 gives the codes for population density as given by Murdock and Wilson: A, less than 0.2 person per square mile; B, from 0.2 to 1 person per square mile; C, from 1.1 to 5 persons per square mile; D, from 5.1 to 25 persons per square mile. Leaving aside such islanders as the Andamanese, for which the calculation of the population density is meaningless and always in excess, all other nonstoring societies exhibit population densities A or B. Of the ten storing societies, six have population densities C or D; the other four have lower population densities, probably because of the unfavorable environment of the high latitudes in which they are located.

Column 8 reproduces the Ethnographic Atlas codes for class stratification: O, absence of significant class distinctions among freemen; W, wealth distinctions; D, dual stratification into a hereditary aristocracy and a lower class. Societies which are not of the storing type have no stratification except in two cases. Of the ten storing societies, eight are stratified.

The main results of the above discussion are summed up in the last four columns:

Column 9, Storage: + when + at the same time in columns 2, 3, and 5, − in the opposite case

Column 10, Sedentarism: + T or P, − B, S, or R

Column 11, Population: + C or D, − A or B

Column 12, Stratification: + W or D, − O

In conformity with the main expectations of our dichotomization of hunting-gathering societies, we find that each row corresponding to a society which is not of the storing type exhibits a majority of minus signs in these last four columns. Still leaving aside the Andamanese, there are only three cases with one plus sign: Ingalik, which belongs to the western Athabascan Subarctic area, and Klamath and Kutenai, which are located on the Plateau. This illustrates the fact that, in these areas, the storing economy, although not prevalent, does occur. The rows corresponding to the storing societies have a majority of plus signs except for the two southeastern Siberian and northern Japanese societies, Ainu and Gilyak. These appear to be atypical, but I wonder whether the codes should not be revised. For instance, Gilyak society can certainly not be considered nonstratified. Black (1973:77) describes wealth accumulation as a significant aspect of the society: "Individual

TABLE 2

DATA RELEVANT TO THE STORING ECONOMY FOR A SAMPLE OF 40 FOOD-GATHERING SOCIETIES

	Code for storage	Ecological conditions of storage	Techniques of storage	Dependence on land hunting	Dependence on land hunting less than 35%	Settlement pattern	Population density	Class stratification	Storage	Sedentarism	Population	Stratification
!Kung	A	−	−	2	+	B	A	O	−	−	−	−
Hadza	A	−	−	5	−	B	B	O	−	−	−	−
Mbuti	A	−	−	3	+	B	B	O	−	−	−	−
Semang	A	−	−	3	+	B	A	O	−	−	−	−
Andamanese	B	−	+	2	+	S	C	O	−	−	+	−
Vedda	E	+	−	3	+	S	A	O	−	−	−	−
Badjau	B	−	+	1	+	B	A	O	−	−	−	−
Tiwi	A	−	−	3	+	B	B	O	−	−	−	−
Aranda	E	+	−	4	−	B	B	O	−	−	−	−
*Ainu	J	+	+	3	+	T	B	O	+	+	−	−
*Gilyak	P	+	+	3	+	S	A	O	+	−	−	−
Yukaghir	E	+	−	5	−	B	A	O	−	−	−	−
Ingalik	C	−	+	4	−	R	A	W	−	−	−	+
*Aleut	J	+	+	3	+	T	D	D	+	+	+	+
Copper	F	+	+	4	−	S	A	O	−	−	−	−
Montagnais	I	+	−	6	−	S	A	O	−	−	−	−
Micmac	I	+	−	5	−	S	A	O	−	−	−	−
Saulteaux	O	+	−	4	−	S	A	O	−	−	−	−
Slave	F	+	+	5	−	R	B	O	−	−	−	−
Kaska	I	+	−	4	−	S	A	O	−	−	−	−
*Eyak	K	+	+	3	+	T	A	W	+	+	−	+
*Haida	K	+	+	2	+	T	B	D	+	+	−	+
*Bellacoola	K	+	+	2	+	P	C	D	+	+	+	+
*Twana	J	+	+	3	+	S	C	W	+	−	+	+
*Yurok	J	+	+	1	+	P	C	W	+	+	+	+
*Pomo	J	+	+	3	+	T	C	W	+	+	+	+
*Yokuts	J	+	+	3	+	T	D	W	+	+	+	+
Paiute	I	+	−	3	+	S	A	O	−	−	−	−
Klamath	I	+	−	2	+	S	B	W	−	−	−	+
Kutenai	K	+	+	3	+	S	A	O	+	−	−	−
Gros Ventre	B	−	+	8	−	B	A	O	−	−	−	−
Comanche	J	+	+	9	−	B	A	O	−	−	−	−
Chiricahua	J	+	+	4	−	B	A	O	−	−	−	−
Warrau	E	+	−	3	+	S	B	O	−	−	−	−
Siriono	E	+	−	5	−	S	A	O	−	−	−	−
Botocudo	E	+	−	4	−	B	A	O	−	−	−	−
Shavante	A	−	−	3	+	S	A	O	−	−	−	−
Aweikoma	I	+	−	6	−	B	A	O	−	−	−	−
Tehuelche	E	+	−	7	−	B	A	O	−	−	−	−
Yaghan	A	−	−	2	+	B	B	O	−	−	−	−

* Storing societies.

property, especially the class of prestige goods, the *shagund*, gave a man status in the community."

CONCLUSIONS

What are the theoretical implications of a category of storing hunter-gatherers? The adoption of an agricultural way of life is currently considered a turning point in history comparable in importance to the Industrial Revolution: hence, the notion of "Neolithic Revolution" associated with Childe's works. This conception has its roots in the idea that there is a neat opposition between hunter-gatherers and agriculturalist-pastoralists, the basis of this opposition being the presence or absence of the domestication of plants and animals. Now, storing hunter-gatherer societies exhibit three characteristics—sedentarism, a high population density, and the development of socioeconomic inequalities—which have been considered typical of agricultural societies and possible only with an agricultural way of life. Furthermore, their economic cycle—massive harvest and intensive storage of a seasonal resource—is the same as that of societies based on the cultivation of cereals. The difference between storing hunter-gatherers and agriculturalists lies in whether the staple food species are wild or domesticated: this proves to be only a minor difference, since it does not affect the main aspects of society. Agriculturalists and storing hunter-gatherers together are neatly in opposition to nonstoring hunter-gatherers. The conclusion to be drawn is that it is certainly not the presence of agriculture or its absence which is the relevant factor when dealing with such societies, but rather the presence or absence of an economy with intensive storage as its cornerstone.

Comments

by RICHARD G. FORBIS
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Testart has presented an intriguing case for the importance of storing foods both among agriculturalists and among certain groups of hunter-gatherers. I am, however, in total disagree-

ment with his statement that the difference between storing wild and storing domesticated foods is "minor." Childe's view that the cultivation of plants was a turning point in human history still holds, in my opinion. Clearly, storage is a concomitant of agriculture. To the best of my knowledge, however, no culture has attained a state of "civilization" without agriculture, while, as Testart notes, there are many societies that stored food without practising agriculture.

Testart asserts that peoples who stored food are in neat opposition to nonstoring hunters and gatherers and that these differences are reflected in sedentism, social stratification based on wealth, and population density. These are features that he apparently considers to be the "main aspects" of society (without really saying why). It seems to me that certain intellectual achievements (e.g., writing) and technological advances (e.g., steel-making) might qualify, but I assume that he considers his factors to be fundamental. These "main aspects" may be examined in relation to the Blackfoot of the early historic period (before the bison had been virtually exterminated). The Blackfoot were most certainly not sedentary, except during the hard winter months, and population density on the Northern Plains was low relative to that of many other regions of North America. In these two respects, then, Testart can hardly be faulted. It is clear, however, that the Blackfoot had well-defined notions of wealth (in the form of horses) and of social stratification. They divided themselves into three social classes, rich, middle, and poor (Ewers 1955:240–45), and were emphatically *not* egalitarians. Nor did they live a hand-to-mouth existence; they stored food. Pemmican, kept dry, could last for years. It was compact, nutritious, and readily transported. It was not designed for immediate consumption. Probably monotonous as a day-by-day comestible, it nevertheless reduced the threat of starvation and served as a travelling grocery store, particularly for the wealthy, who had many wives to prepare it and many horses to cart it around.

Testart may take the Blackfoot case as an example of an incipient stage of food storing, sharing some traits with the food-storing society but not others. Or he may not. My instincts, in any case, tell me that the Blackfoot more closely resemble the storing hunter-gatherers then they do the agriculturalists (and vice versa) and that Testart's sharp dichotomy between food storers and nonstorers does not universally apply if storers must necessarily be sedentary throughout the year.

by BRIAN HAYDEN
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Testart has drawn attention to an important aspect of the evolution of stratified society. However, much of the article presents ideas which have been current in the literature over the last decade or two (Harris 1971 and the numerous references cited by Testart). In addition, in regard to the development of social stratification, it seems that Testart is attempting to claim a causal role for storage, or at least a much greater role than I think it merits. Storage is certainly highly associated with social stratification—indeed, it would be difficult to imagine a stratified society without it. However, storage must be viewed as a necessary rather than a sufficient condition. There are hunter-gatherers who store large quantities of food yet are strongly egalitarian (e.g., the Inuit and Athapaskan groups). The real causal factors, as Testart himself notes, are "the pursuit of wealth and the will to increase inequality and exploitation," resulting in "the intensification of food production above basic needs." Storage and other factors (such as resource abundance, resource stability, and the potential for individual control over important resources) only constitute the permissive conditions for the expression of the human pursuit of wealth and power. I view these tendencies as largely being held in check by the majority of the populace in most societies. Testart's portrayal of the use of surplus as "extortion" is a great distortion of incipient stratification. Few egalitarian communities would permit extortion. Rather, positive incentives forming a symbiotic relationship in which all members of communities profited were almost certainly the major motivation for the initial production of surplus food.

I must also register strong disagreement with the idea that sedentism produced major population increases. As this is treated elsewhere (Hayden 1981), I will not go into details here. I have further reservations about the statistical manipulations of the hunter-gatherer data, but I think Testart's major points are basically correct.

My principal reservation concerning this article is that by overemphasizing the importance of storage and by defining the conditions giving rise to agriculture and stratified societies in terms of a "storing-type" economy with "storage as its cornerstone," it leads readers to view storage as the only important variable worth looking at rather than as only symptomatic of much more fundamental changes in the infrastructure of the societies in question. Storage by itself will not get us very far in the search for the reasons for change in the past, although it may be useful for monitoring those changes.

by TIM INGOLD
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I welcome Testart's raising of the issue of storage among hunter-gatherers, but I consider his argument profoundly wrong. As regards the relation between storage, sedentarism, and population density, Testart reiterates two well-worn but mistaken views: that intensive storage of basic foods is incompatible with nomadic movement and that sedentary settlement promotes demographic expansion by eliminating the need for women to space successive births. On the first point, we have to refine the concept of nomadism. Storage may be incompatible with a nomadism which recognizes no fixed points in the landscape, but in many cases hunter-gatherers move around a "circuit" of fixed points, each strategically located for the exploitation of particular resources in season. Often such points are marked by permanent or semipermanent structures, including facilities for storage. Substantial reserves may be left on departure from each point so that there is food to be had on arrival the next time around. On the second point, Testart is not alone in confusing the movement entailed in foraging with that entailed in residential relocation. Permanent settlement, tied to intensive storage, does not in itself reduce the distance that women have to walk as they gather food. It may have just the opposite effect. All it means is that they return each day to the same point. Hence, if they have to carry their small children around, there will be just as much of an incentive to space births. True, these pressures are relaxed when, during seasons of scarcity, the group lives off stored supplies. But there must be a period of every year when supplies have to be brought in, and then there can be no relief for the female gatherer who has more than one infant to carry—*unless the living resources are themselves concentrated in the vicinity of the settlement.* This, rather than the concentration of harvested resources in stores, is the precondition for demographic expansion.

Where Testart attempts to relate storage to the rise of social inequality, my disagreement with him is yet more fundamental. The crux of his argument is the supposition that intensive food storage must tend to undermine relations of sharing and promote the individual appropriation of reserves to the exclusion of others in the community. Here Testart is at his most equivocal. "I do not intend to reduce the rule of sharing to . . .

material conditions only. . . . However, these material conditions do *play a part.*" What part? "When storage has become a common practice, it *makes sense* for the hunter not to share and to keep his game for himself." Why? Testart, in common with most other writers on the subject, is confusing two quite distinct meanings of both sharing and storage. In its most general sense, sharing (*in*) refers to a social principle whereby the resources on which a community depends are to be enjoyed collectively. In a more limited sense, sharing (*out*) refers to the distribution of food from hand to hand throughout the community: in this sense only does it represent an aggregate of generalized reciprocities. Material factors such as the size, rarity, and concentration of game will affect the degree to which harvested produce must be shared *out* for everyone to have a share *in* what nature has to offer. The fact that, as Testart remarks, small and abundant animals which anyone can catch are not usually shared out does not in the least infringe upon the principle of collective appropriation of natural resources. The same applies in the case of storage. When the supply of basic resources is subject to pronounced seasonal fluctuation, it is obviously prudent to store, and as long as supplies last there is no need for food to change hands. But if one person's supplies are exhausted whilst another has something left, the latter will be expected to share out what remains. Thus there is no contradiction between the practice of storage and the collective appropriation of nature.

The contradiction is only apparent on account of a confusion between *practical* and *social* senses of storage. The first refers to the setting aside of stocks of food for the future, which is a function of the scheduling in *time* of resource extraction and consumption. The second refers to the convergence of rights to specific resources (living or dead) upon a specific interest and is governed by the perception of the *scarcity* of those resources conceived as property or wealth. Only in this latter sense is storage equivalent to hoarding, the direct negation of the principle of sharing. Practical storage does *not* in itself represent a transgression of this principle, nor does it express any "distrust of nature," on whose generosity hunter-gatherers regard themselves as dependent even if they do not consume immediately all that they receive. From their point of view, what is "irreverent or sacrilegious" is the attempt by particular persons or groups to appropriate for themselves the world of *living* things. Only when man assumes custodianship of living nature is the social principle of sharing displaced by a principle of exclusive or divided access to resources. This, and not the mere *practice* of storage, introduces the possibility for hoarding and accumulation and underlies the emergence of socio-economic inequalities.

by STEPHEN M. PERLMAN
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Few anthropologists, if any, would disagree with Testart. Nonegalitarian societies, including the hunter-gatherers in his study, employ food storage. However, there is a gap between a correlation like Testart's and an explanation. Without an explanation for the development of food storage, Testart's correlations produce little more than another hunter-gatherer typology (Binford 1980, Service 1962, Lee and DeVore 1968). By describing two types of hunter-gatherer societies, one flexible and transhumant and the other rigid and sedentary with food storage, he appears to suggest that storing economies are *always* a response to subsistence stress. Food storage, therefore, implies the existence of a labor-intensive social system. A further analysis of Testart's approach indicates that this is not necessarily true.

Populations are limited by the season of minimum yield, unless that season's yield can be counteracted. A group can utilize storage to achieve this objective by transferring the costs and benefits from one feeding period to another. However, this transfer does not necessarily indicate an increase in subsistence and other social costs. For example, storing anadromous fish could reduce winter, or even total year-round, subsistence costs. Assuming constant cooking times, at least four hours (and possibly more) could be spent processing every hour's catch of fish for storage before its return rate would be reduced to that of winter small game hunting (Perlman 1976, 1980). Storing this resource could be beneficial.

Storage does, as Testart states, provide a subsistence base for the formation of larger, sedentary groups. This combination, however, does not indicate an increase in social costs. Testart defines transhumant groups as flexible, capable of living on a day-to-day basis. In contrast, storing groups are rigidly fixed in space, and without careful planning of activities they may perish. This dichotomy is misleading and inaccurate. First, transhumance is not flexible and unplanned behavior. Groups shift their locations in accordance with environmental rhythms (Lee and DeVore 1968). Failure to do so, particularly in an environment in which resources are too scarce to store, may be more costly than failure to store sufficient amounts. Insufficient storage can be counteracted by switching to lower-return-rate resources. In contrast, switching resources may not be possible in an environment with scarce resources; therefore, one *must* move to obtain the daily requirement of food. Transhumance is not a sign of a flexible life-style. Second, transhumance is a labor cost which may involve others as well. Ecological and anthropological research suggests that the benefits of transhumance may be outweighed by these costs (Hirth 1977, Caraco and Wolf 1975, Perlman 1980, Yesner 1977). Finally, larger sedentary groups are often maintained by storage. What are the costs and benefits of these larger group sizes? A few studies suggest both that benefits do exist and that an *optimal* group size is much higher than the modal 25 of Testart's flexible and transhumant hunter-gatherer type. When relative abundance exists, representatives of this type form larger groups and become sedentary (Carneiro 1967, Stewart 1938, Harpending and Davis 1977).

Costs and benefits exist for the factors on both sides of Testart's typology. I have focused on the possible advantages of storage and associated behaviors, Testart on the disadvantages. Ultimately, a model is required which weighs the costs and benefits of these factors simultaneously. Just as storage can transfer seasonal costs for food, similar kinds of transfers can be made by other components or between various components of a social system. Slightly higher subsistence inputs might reduce the system's total operating cost.

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This paper is a valuable and in many ways stimulating contribution to our understanding of hunter-gatherer lifeways and adaptations, although I disagree with some of its assumptions or arguments. I commend Testart for using the kind of approach that explicitly recognizes diversity among hunter-gatherers. The utility of such a perspective has been demonstrated by Martin (1974); it is a welcome and much needed change from the many attempts to formulate general models of hunter-gatherer band societies that either ignore or explain away the "classic" exceptions to the modal lifeway (e.g., Service 1962, Williams 1974, Jochim 1976). While Testart has been able to demonstrate a dichotomy between hunter-gatherers practicing intensive storage and those who do not, this pattern has yet to be adequately explained. The implication here is that ecological and social processes responsible for such differences can best be understood through comparative analysis of recent hunter-gatherers. Such a synchronic, classi-

ficatory approach does have predictive value but is only a partial solution to the problem of what really is a dynamic process which requires the consideration of the archaeological record. This problem has been recognized by Ember (1978:447): "We need to discover what predicts variation among recent hunter-gatherers. And then, using archaeological indicators, we need to discover the past prevalence of those predictors and their presumed effects." While in basic agreement with the hypothesized relationships of intensive storage with settlement patterns and demography, I am somewhat uncomfortable with the social-inequality explanation, mainly because many of the variables posited (e.g., ideational variables such as the "longing for wealth" and what seems to be regarded as an innate tendency of the human species to hoard when given the chance) cannot be argued or objectively demonstrated from an archaeological context.

From a more substantive perspective, the delineation of a category of hunter-gatherers practicing intensive storage has important implications for archaeological studies. This lifeway is considerably underrepresented among recent groups, given the loss of optimum habitat, particularly along the Atlantic and Pacific coasts of North America, through culture contact. It probably had a broader distribution in prehistory. It is unfortunate that data for Salishan groups of the Canadian Interior Plateau (Thompson, Shuswap, Lillooet) were not available for cross-cultural analysis, as they would have provided a better representation of Plateau lifeways and resolved some of the problems presented by the groups included in the study.

by PETER ROWLEY-CONWY
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Testart's article provides a valuable discussion of the dichotomy between those hunter-gatherers who store food and those who do not. Many points emerge similar to those raised by Woodburn (1980), although Testart does not see the development of storage purely in Woodburn's ideological terms. Environmental factors are brought in to supplement the socio-ideological ones; but the insufficient integration of these two sets of factors renders Testart's discussion difficult to convert into a generally useful model.

Food resources must of course be both seasonal (so that storage for later use is necessary) and abundant (so that a sufficiency may be taken and stored). Absence of resources with these attributes is held to account for the rarity of more sedentary, food-storing economies among low-latitude hunter-gatherers. Resources with the necessary attributes are available to most higher-latitude hunter-gatherers, and Testart argues that factors of ideology and social relations are central in determining whether storage will occur. Ideological differences between societies that do and do not store are stressed; but it is symptomatic of the argument as a whole that the quoted example of a society which regards hoarding as immoral is the Bushmen: low-latitude hunter-gatherers are elsewhere stated not to hoard food because the environment does not contain species with the necessary attributes.

If we are to take a general view of storage, the resources must be examined in greater detail. It would be theoretically possible for a group to live on nothing but, say, briefly available Atlantic salmon, storing sufficient to provide food throughout the year. To do this would, however, be to render the group vulnerable to interannual fluctuations—a bad salmon year would be disastrous. To guard against risks of this kind, more sedentary, food-storing hunter-gatherers must be able to exploit *several* migratory species, so that fluctuations in any one of them are less of a problem. Storage of these resources is added to the seasonal use of continuously available local resources (e.g., deer among the Ainu or shellfish among the Tlingit) to plug gaps in the migratory resource availability cycle (Rowley-Conwy n.d.). Each higher-latitude environment is unique and must be independently evaluated with regard to productivity and (particularly) risk. Consideration of such factors suggests a possible framework within which ideological factors might usefully be re-embedded in the environment.

O'Shea (1981) demonstrates that proximate motivations for exchange do not conflict with the notion that such "social storage" can serve to redistribute food supplies in environments in which productivity is spatially and temporally variable—i.e., that the broad context of exchange may be *adaptation*. His work provides an example of how proximate causation (such as Testart's "social division of labour" as an explanation for exchange or, for that matter, ideological factors as an explanation for storage) can be fused with the more general type of causation argued for here to provide more generally applicable models of human behaviour.

by DAVID E. STUART
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Testart's subject is both interesting and fundamentally important. He first defines, then uses the comparative method to support differences between storing and nonstoring hunter-gatherers. He views storing hunter-gatherer societies as structural analogs to agricultural ones and points out that it is the presence of storage, not the mode of production, which permits transformation to stratified society. He shows that a substantial literature incorrectly tends to view most hunter-gatherers as demographically conservative, egalitarian, and fully nomadic.

I agree with Testart's conclusions in their most general sense but reject particular points of his argument. More importantly, he fails to offer an unambiguous glimpse of how the egalitarian, nonstoring hunter-gatherer is transformed into the storing society.

Testart views both resource abundance and seasonality as essential to the food-storing society. Lack of seasonality accounts for the alleged scarcity of storing societies in the tropics. He then observes that the storing society is seasonally labor-intensive whereas the "classic" hunter-gatherer is not. While periodic labor peaks, temporary surplus, and storage are more likely in a markedly seasonal environment, stratified horticultural societies are not rare in tropical areas. What, then, induces labor intensity in those areas? Testart states, "sedentarism triggers population increase, and intensive food storage enables the population to stabilize at a higher level of density." This explanatory chain is weak, since it requires one to conjure up a plausible cause for sedentism in "nonseasonal" environments where it occurs.

Too much uncritical credit is given to classic hunter-gatherer social techniques which inhibit demographic increase and to sedentism's efficiency in lightening the demographic "load." When female body fat falls below about 22% of body weight, ovulation is either suppressed or irregular. Notable swings in body fat are more typical of markedly seasonal subsistence regimes. In those, food storage would minimize fluctuations in body fat and enhance raw fertility. Thereafter, sedentism would act to suppress social techniques of population control. In the human male, insufficient dietary zinc will prevent viable sperm production in as little as six months, and zinc deficiency is most common in bulk vegetal diets. Any statement about "automatic demographic increase" should read: if chronic caloric insufficiency is avoided, dietary zinc is adequate, and unsanitary conditions do not enhance infant mortality, then sedentism and storage will likely trigger a demographic increase. Certainly, sedentism itself plays a role in demographic increase, for canoe nomads like the Yahgan are relatively free of the "transport problem" and do bring forth more live births

per woman than neighboring terrestrial bands (Stuart 1980). Rather, the equation which transforms demographically conservative populations into fecund ones is much more complex than portrayed by Testart. We do not yet even possess the full dietary facts to refine that equation.

Testart's discussion of "socioeconomic" inequalities is overly concerned with material goods and therefore fails to consider an important point. Not all nonstoring hunter-gatherers are egalitarian, for the most fundamental form of social inequality is often present. Hunter-gatherers award wives first, and plural wives nearly always, to successful hunters. Thus, successful hunting, polygyny, and enhanced reproductive potential go together and form the basis of inequality in hunter-gatherer society. Unsuccessful hunting, monogamy or celibacy, and limited reproductive potential form the pattern of the "underclass" among hunter-gatherers. Hunting—not plant collecting—is the high-status occupation. One can argue that *initially* the *unsuccessful* hunter and wife would have collected low-status plant foods and stored them against a poor season. Where this was the case, families of unsuccessful hunters would have "sat out" a poor season, reduced their dependence on game, and opened up additional space to successful hunters. Once that space was yielded to the successful, necessity rather than the desire for wealth or prestige dictated continued seasonal storage. The unsuccessful hunter and wife would have been more loath than others to practice abortion and/or female infanticide, female labor being so necessary in the collecting season. But they would have lost daughters at maturity to successful hunters whose wives more often practiced female infanticide. This, I argue, is the wedge of social inequality which initially split classic hunter-gatherer society asunder to produce both storing and nonstoring patterns (see Stuart and Gauthier 1981).

In sum, I agree with Testart on the importance of storage and anthropology's generally uncritical view of hunter-gatherer society as conservative and egalitarian. I disagree about how one most fruitfully models the transformation of that society. Surely, however, neither of us has had the final word on this subject.

Reply

by ALAIN TESTART
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These comments raise questions which may be grouped around three main themes: (1) storage and economic structure, (2) sedentarism, population density, and social inequalities, and (3) the relevance of storage for a reconsideration of the socioeconomic evolution of societies.

1. *Storage and economic structure.* First of all, I must stress the fact that I have not considered storage only as a technical phenomenon. This is not to say that preservation techniques are unimportant; on the contrary, anthropology has traditionally given too much importance to food acquisition techniques (hunting, gathering, and so on) and paid too little attention to food preservation techniques. This, however, is not the main point of my paper. Whatever the importance of storage within the productive forces, it should, in my opinion, be viewed not as a technical phenomenon which in itself has explanatory value, but rather as a clue to the understanding of a specific economic structure. This is the economic structure which I define in the first part of my paper; its realisation presupposes four conditions, all equally necessary. I have stressed the importance of storage and referred to this type of economy as a "storing economy" because (1) the three other conditions (i.e., abundance of resources, seasonality of resources, and efficient food-getting techniques) are well known and have been overemphasized, for instance, in the case of the Northwest Coast societies, and (2) this label serves to distinguish the type of society I am dealing with from other hunter-gatherer societies.

Several of the objections raised by the commentators stem directly from the fact that they act as if I were dealing with food storage in general when I deal with it only in the precise sense defined at the beginning of my paper. Forbis, for instance, mentions the case of the Plains Indians and wonders whether or not I would consider their societies "food-storing societies." Of course not. Even though the Plains Indians practice food storage, they do not constitute a storing society as I have defined it. This is apparent in table 2, where Plains Indians such as the Gros Ventre and the Comanche are classified as nonstoring societies. Among these Indians the prime subsistence activity is hunting, and I have already indicated the probable reasons food storage cannot be intensive in such a case. The preparation of pemmican is painstaking and time-consuming: "sun-dried slices of meat, pounded fine with a maul, were mixed with melted fat, marrow, and the dry paste from wild cherries that had been crushed, pits and all" (Lowie 1963:27); finally, this product is made compact and wrapped up. This preparation, which calls for various means of preservation (drying, mixing with fat, making compact, and so on), aims at obtaining a high-quality product: only the best parts of the buffalo are used to make pemmican, which can then last for years (Gerard 1910:223–24; Wissler 1920:22; Driver and Massey 1957:245). The amounts stored can only be limited compared with those of the sedentary storing hunter-gatherers, Moreover, the purposes these stores are meant to serve are different from those of storing hunter-gatherers. On the one hand, the fact that pemmican can last a very long time seems to indicate a wish to reduce hazards in the years to come rather than to provide food only during the next seasonal scarcity. On the other hand, as Jenness (1932:50) noted, the pemmican is a kind of concentrated meat (through desiccation and compression) that is easy to carry and perfectly suited to nomadic hunters.

Ingold brings up the case of nomadic hunter-gatherers who "move around a 'circuit' of fixed points . . . often . . . marked by permanent or semipermanent structures, including facilities for storage." Although he presents this case as if it were a common occurrence, he does not give an example. Now, if it is indeed common for nomadic hunter-gatherers to move around a circuit of fixed points, they seldom leave "substantial reserves," and I doubt whether there is a single case in which we could talk of intensive food storage. I have discussed elsewhere (Testart 1981:185–86) the case of the Australian Aborigines, who occasionally leave behind small stores of vegetable products that serve as "insurance" against adverse circumstances but cannot under any circumstances insure the subsistence of the group for a whole season. The Aborigines rely above all on their mobility and their knowledge of the environment to secure their daily food.

All hunter-gatherers do store or preserve food to some extent. However, these practices do not play the same role everywhere, and they are part and parcel of very different economic structures. On the one hand, hunter-gatherers who practice intensive storage of abundant seasonal resources every year live off these stores during an entire season. On the other hand, the Plains Indians make pemmican because its characteristics suit the needs of a fundamentally nomadic society; pemmican can last for years because storing in this case is not aimed essentially at insuring subsistence during the next season of scarcity. Stores of pemmican can be used at any time. African Pygmies process meat in order that it may last for a few days (Bahuchet and Thomas n.d.); here preservation has yet another function which is explained by the importance of the exchanges with the neighboring agriculturalists. To sum up, I would say that the study of food preservation and food storage is crucial because it reveals the most significant characteristics

of different types of hunting-and-gathering economy, whether it is their patterns of exploitation of the natural environment, their exchanges with neighboring groups, or even their residence patterns.

Perlman's comments seem to be concerned only with costs and benefits, a question which is only peripheral to the issue of my paper. I cannot see where he has found the grounds to maintain that I focus on the disadvantages of storage. In an environment characterized by strong seasonal variations it is *obviously* beneficial to store, if only because, as I mention in my paper, intensive storage transforms the season of scarcity into a long period of leisure and increases the yearly total amount of food available to the community.

Rowley-Conwy insists on the fact that food-storing hunter-gatherers must exploit *several* migratory species. I have never supposed the contrary, since all along I talk about resources. On the Northwest Coast, five species of Pacific salmon can be distinguished; in California, nine species of oaks are economically important (Rostlund 1952; Baumhoff 1963:162). Moreover, nobody is simpleminded enough to believe that the Indians could live only on salmon or acorns.

2. *Sedentarism, population density, and social inequalities.* According to Ingold, storage is not incompatible with a nomadism that recognizes fixed points in the landscape. From the above discussion, it is clear that I agree with him insofar as limited storage is concerned. I disagree with him, however, if he means to include intensive storage, the only type of storage with which I am concerned in this paper. If hunter-gatherers store on a large scale, why should they have to go on moving about? Once they have accumulated sufficient amounts of food to subsist for a long period, why would they leave these behind to seek their subsistence elsewhere? I have insisted enough on this point: large-scale storage removes the *need* for nomadism. Ingold does not reply to this argument, however. Rather, he accuses me of resorting to the notion of the incompatibility between storage and nomadism, which he qualifies as "well-worn" even though I mention it only to stress that it "masks another important aspect" of the relationship between storage and sedentarism. Stuart criticizes me for not providing "a plausible cause for sedentism in 'nonseasonal' environments where it occurs" and mentions the "stratified horticultural societies" of tropical areas, but nowhere have I claimed to provide a general explanatory model of sedentarism valid for all societies in all environments. Sedentarism among cultivators has different causes, but this is totally outside the scope of my topic.

Hayden and Ingold reject the idea that sedentarism results in population increase. Hayden claims he has refuted this idea in his 1981 article. Although I do not find his arguments altogether convincing, it would take too much space to discuss them in detail here. Whatever the case may be, he should not consider the question settled, since he deals solely with the link between sedentarism and population density and not with the relation between storage and population density, which is of course decisive for my argument. Ingold wonders why women should have less distance to travel where the group is sedentary. There are at least two reasons. The first, which Ingold acknowledges, is that during the season of scarcity there is little need for the women to move about to gather food because the group lives off stored supplies. The second, which he ignores, is that during the season of plenty the pattern of exploitation of vegetable resources may be different in storing and in non-storing economies: in the latter, gathering trips are almost daily because the women gather each time only as much as is needed for the next few days; in the former, it is the whole group (often including the men, as in California, for instance) that moves about to gather the food and transport it on a large scale, and the women probably make many fewer trips. In any case, the reduced mobility of women is not the only explanation for high population density among storing hunter-gatherers. I also mention the fact that storage increases the yearly total amount of food available to the community. Neither Hayden nor Ingold takes this argument into consideration.

With regard to social inequalities, the most frequent reproach (Hayden and Ingold) is that I make storage the causal factor for the development of inequalities. I have already said that storage should be taken as the *basis* for a *possible* development of inequalities, and it does not seem necessary to go over this again here. As for Stuart's idea that the unsuccessful hunters form an "underclass" among nomadic hunter-gatherers, this is a very strange idea indeed; the least we can say is that it is contrary to what has generally been observed (see, for instance, Lee 1979:243–49), and therefore I am curious to know what groups he has in mind.

3. *The relevance of storage for a reconsideration of the socio-economic evolution of societies.* I am glad that Forbis has raised the question of the difference between storing hunter-gatherers and agriculturalists. This is obviously the main question emerging from my reconsideration of current anthropological views on hunter-gatherers. Of course there are evolutionary differences between hunter-gatherers and agriculturalists. I do not mean to say that agriculture is of no importance. I do believe, however, that the importance of agriculture has been overemphasized. In my opinion, the Neolithic revolution has to be reappraised as follows:

In my paper I have talked about three aspects of society, namely, sedentarism, population density, and social inequality. Forbis wonders why I single out these features as the "main aspects" of society. I do so because these features have generally been associated with the Neolithic, that is, the first societies to have adopted an agricultural way of life. Now, as I have shown in this paper, we find these three features in nonagricultural societies. We must conclude, then, that they result not from the presence of agriculture, but from something else: I have tried to show that they result from an economic structure in which the storage of resources, *domesticated or not*, is basic.

Agriculture, however, acquires its fundamental character later in history. It is indeed well-known, as Forbis notes, that achievements such as writing or steel-making occur only among agriculturalists. State societies are agricultural societies. Why do these developments take place only in agricultural contexts? I suggest that the explanation runs as follows: Once hunter-gatherers are practicing intensive storage and living a sedentary life, they can, without any immediate major changes in their way of life, adopt agriculture. Perhaps they do so because population increase induces them to intensify the exploitation of their environment (Binford 1968). Probably they do so because it is in the interest of the incipient dominant class to intensify production so as to be able to divert an increasing share to its own advantage (Bender 1978). Thus, it seems that many of the prehistoric hunter-gatherers with a storing economy (such as, probably, the Natufians of Palestine, the Jomon people of Japan, and perhaps some groups of the Woodlands of eastern North America) have come to adopt agriculture. I do not, then, see agriculture as the sole initial factor of evolution, as Childe thought when he talked about the Neolithic revolution; rather, I conceive of agriculture as an intensification factor in a process which can arise independently. It is only owing to this intensification that the incipient class stratification linked with storing economies can evolve into full-fledged class societies, with all the achievements currently associated with civilization.

I do not mean to replace the former views with a sequence which would postulate a uniform succession from nomadic hunter-gatherers to storing hunter-gatherers and finally to agriculturalists. In California and on the Northwest Coast, Indians have remained storing hunter-gatherers to this day,

probably because the cultivation of maize was ill-suited to these areas. In regions such as Mesoamerica or Southeast Asia, the evolution is yet different, since it seems that there were never any storing hunter-gatherers. In these regions the first sedentary storing economies come into existence once agriculture is well developed. I have already sufficiently stressed the importance of environmental factors in my paper to make it obvious that I do not believe evolution could everywhere follow the same path.

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Our Readers Write

I should like to warn against one possible further step in economizing for CA. You should not seek to reduce the cost of the system of accepting manuscripts by simply asking the corresponding editors for their evaluations. As one who has participated in the evaluation of CA manuscripts at least a dozen times (and the ultimate decision was not always the same as mine!), I appreciate very much a system in which 20 (or, more recently, 15) referees rather than one corresponding editor decide upon publication. One person is biased; 15 persons are 15 times more biased, but their views correspond to different backgrounds and, since most do not know the writer personally, are less likely to be characterized by sympathy or antipathy. However, you should find someone to be corresponding editor from the U.S.S.R. Collecting and sending manuscripts and critical remarks from the Soviet Union is a task in itself.

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The so-called CA☆ treatment is not worth the cost involved. Evaluation of an article is up to each reacher. A manuscript may be distributed to several very competent scholars to decide on its eligibility for CA, but the comments are in most cases superficial eloquence or argument for argument's sake. Save the space for more articles, please.

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I think more selectivity in the acceptance of comments on articles would improve the journal. Articles must pass through a process of close scrutiny, which is generally successful in weeding out the poorer articles. However, the quality of the comments is very uneven. Quality is often sacrificed, apparently, in the interest of geographic dispersal.

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Some months ago I happened to read *The Man-eating Myth*, by W. Arens, and I would be very much interested in the reactions of professional anthropologists to the book, especially to the possible proofs of the existence of cannibalism. I have so far read only one review of it, which appeared in *Anthropos*. My own opinion is that the belief in cannibalism in people very different from us is firmly entrenched in our civilization: we need to justify our civilization by contrasting it with "savagery." A recurrent theme in European popular literature and philosophy is keeping the distance between ourselves and animals and savages as great as possible. We must always have something (abstract thinking, arithmetic, monotheism, civilization . . .) that savages do not. And if Arens has succeeded in showing something important, it is that anthropology has played a part in creating a special kind of man totally different from ourselves—the savage (and cannibal). It seems to me that there has always been a (sometimes very clever and subtle) tendency to represent savages in an alienated way. Once it was the fashion to concentrate on the exotic, strange, and terrible. Now it is sometimes the fashion to treat savages as subjects of abstract scientific analysis, devoid of any humanity. Anthropologists who have succeeded in coupling poetic insight with scientific correctness and abstraction are perhaps more the exception than the rule. There have been several among the Russian and Finnish ethnographers of the past. In America, I think Paul Radin is close to the ideal (of course, according to the standards of the social sciences of his day).

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