

Part II. HUMAN NATURAL HISTORY

Chapter 3. Hunting and Gathering Societies

Chapter 4. Horticultural Societies

Chapter 5. Pastoral Societies

Chapter 6. Agrarian Societies

Chapter 7. Commercial/Industrial Societies

Chapter 3. HUNTING AND GATHERING SOCIETIES

Life before civilization was “nasty, brutish, and short!”

Thomas Hobbes 1650

Hunters and gatherers are the “original affluent society!”

Marshall Sahlins 1969

Introduction to Part II

A. Plan for next five chapters:

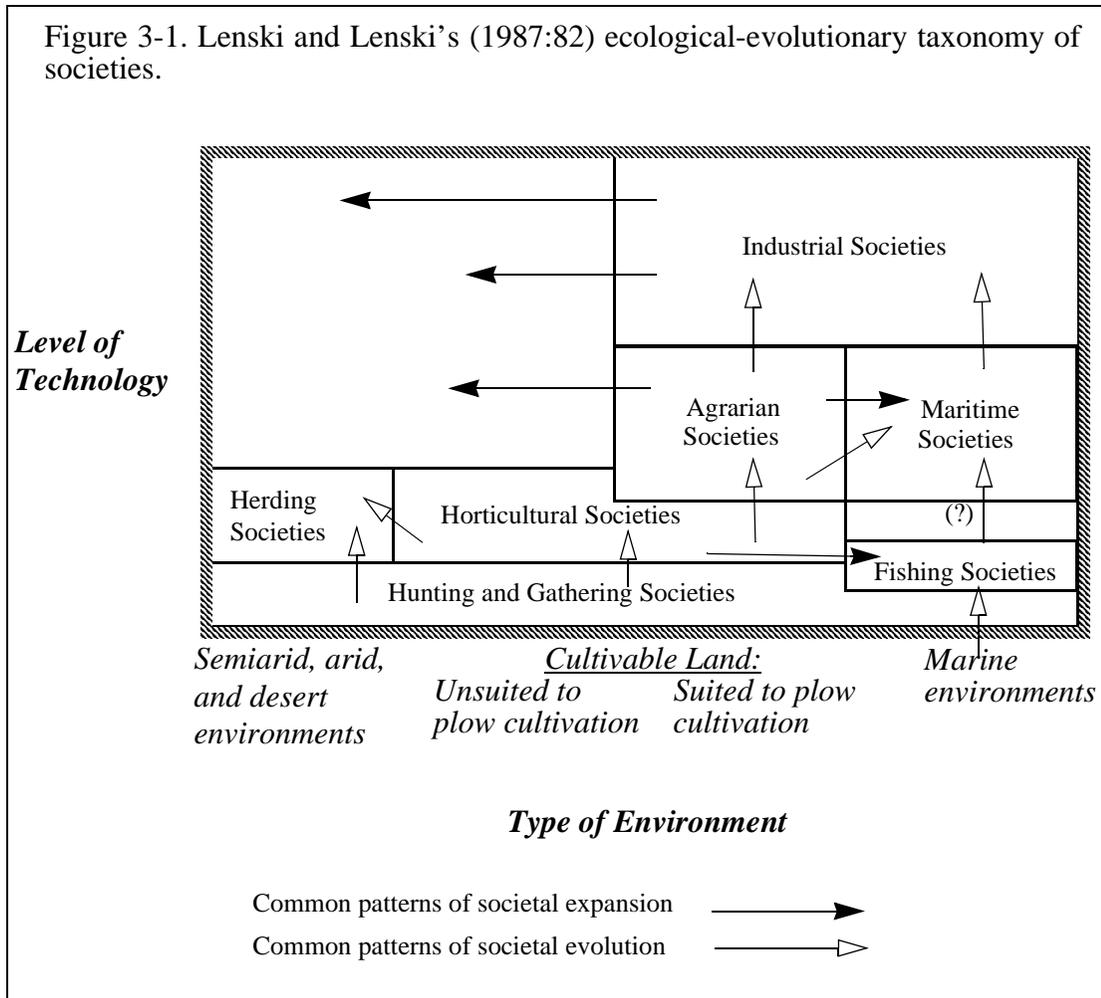
The chapters in Part II will follow closely the traditional division of societies into technological types. We will emphasize the effects of environmental variation on the adaptations of human cultures, following Steward. For present purposes, we will take the basic types of societies as historical givens. The last series of chapters in the course will return to the problems of the evolutionary transformation of one kind of society into another after we have considered evolutionary mechanisms and the nature of systemic interactions with environments in more detail.

The discussion will focus on five basic types of societies, defined initially in terms of their basic subsistence technology (mode of production):

- (a) Hunting and Gathering Societies. Those peoples whose technology is designed to use primarily wild game and plant resources.
- (b) Horticultural Societies. Societies that depend primarily on cultivated plants for subsistence, but that lack the use of draft animals and the plow.
- (c) Pastoral Societies. People who emphasize the raising of livestock.
- (d) Agrarian Societies. Societies that depend mainly on plant cultivation, and that use draft animals and plows.
- (e) Commercial/Industrial Societies. Societies with a majority of the population engaged in trade and manufacturing.

There are several more specialized types; e.g., Lenski and Lenski (1987) also list fishing, and maritime societies. These are of minor importance generally, although maritime societies such as the Greek city-states of ancient times and Venice at the beginning of the modern period do play an important role in theoretical discussions because they precociously resemble modern societies. Figure 3-1 reproduces a diagram from Lenski and Lenski's (1987:82) that summarizes the *most common*, but not the only, evolutionary pathways

among these types:



The Big Question is: does human ecology provide a useful taxonomy? To the extent that Steward's concept of the culture core is useful, we expect to find a complex of associated traits that surround the technology and vary as technology and environment vary. In essence, we are testing the utility of the ecological/evolutionary approach to human behavior by organizing the grand sweep of the data on human diversity into a few categories using the culture core concept. If this exercise results in a compact, informative taxonomy, there must be something to the idea.

With regard to cultural traits, aside from the toolkit itself, that are candidates for inclusion in the cultural core, we will focus on the following:

- (a) Demographic variables, including average human density, settlement size, and degree of mobility.
- (b) Social and political organization, including patterns of relations between individuals, degree of stratification, degree of occupational specialization, patterns of leadership, institutions of social control and collective decision-making.

ing, etc.

(c) Symbolic culture, natural and supernatural belief systems, political ideology, art, public ritual, and the like.

Taxonomy is always a difficult business, and ecological (functional rather than lineage-based) taxonomies are always very messy in detail. Let us agree to take our classification system a bit lightly. There is no nice neat branching pattern such as is furnished by organic evolution as it makes species. Humans are all the same species; races and cultures fairly freely exchange ideas and genes. Mixed types, borderline cases, and the like are bound to be common. The analogy between the historical and contemporary variants is especially likely to be rather imperfect. Ancient Rome and modern India are not exactly comparable, even if they are agrarian societies in our scheme. We will often have trouble finding the best criterion to classify given examples at any level of a functional classification scheme. To take a concrete example, how do we classify the African forest Pygmies? They gain about half their subsistence hunting and gathering in the forest and about half from horticultural crops obtained by working for Bantu horticulturalists. We can avoid endless terminological hassles here only by agreeing to use the classification as a means to an end, not as an end in itself.

Does a culture core exist that varies as a function of environment, given technology? If the Stewardian hypothesis is correct, and especially if the enlarged culture core of modern ecological anthropologists is correct, we expect to find strong statistical associations with these variables and technology especially when the environmental variation within basic technical categories is taken into account. We also expect to be able to interpret much of the variation in the culture core in adaptive terms. In the last lecture we did see that the associations in Western North America were fairly strong.

At a given level of technology, culture core variables should be a strong function of environment; environmental determinism should work well enough within sets of societies deploying a similar technology. To test the Stewardian hypothesis, we will look for situations where there is a strong environmental gradient being exploited by people using the same basic technology. If the people are neighbors, technology can be borrowed back and forth, so that we can largely control for the effects of historical differences in technological level. If Steward was right, we should see the effects of environmental variation quite clearly on such gradients.

Demography is a key variable relating environment to many culture core features. Technology and environment determine how much food can be produced by a soci-

ety. Food production per unit land determines overall population size and density. Food production per human producer (labor efficiency) determines how many people can be released from food production for specialized occupations, like potters, priests, and policemen. Transport technology determines how easily food can be moved from the countryside to support city folk, hence population concentration.

I. Hunting and Gathering: Background

A. History

This form of technology is the oldest and most widely distributed in time and space. The ancient hominids were probably hunters and gatherers in some sense from about 2.5 million years ago, when stone tools first appear in the archaeological record. Thus, humans were hunters and gatherers for by far the largest fraction of human evolutionary history. However, the development of the technology was relatively slow until about an acceleration in evolutionary developments began about 100,000 years ago. During the early Pleistocene (ca. 2 million to 1 million years ago) hominids were restricted to Africa. After about 1 million years ago *Homo erectus* type hominids with a kit of stone tools called the Acheulean industry, spread to most of warm and temperate Eurasia. About 100,000 years ago more sophisticated industries appeared, along with Neanderthal hominids and their relatives. These people penetrated into quite cold environments. Although ancient hominids hunted or scavenged animals and gathered plant resources, we do not know very precisely what their lifeways were like. Neanderthals, and other relatively recent but archaic hominids, had brains as big as ours but very robust skeletons and a considerably different stone tool technology than later anatomically modern humans. Neanderthals had many healed injuries to their skeletons resembling those seen in rodeo cowboys, suggesting some very rough activities, perhaps killing large animals with hand-held weapons instead of projectiles like hurled spears or arrows. Fully modern humans evolved between about 100,000 and 50,000 years ago, but the toolkit of Late Pleistocene peoples suggests a somewhat different style of life than among contemporary hunters and gatherers. Late Pleistocene peoples (50,000-10,000 BP-Before Present) had a relatively greater emphasis on big game relative to fish, shellfish and plants (especially plants that require heavy investment in grinding, leaching and other processing) than is common in the Holocene (the last 10,000 years) among the hunters and gatherers we know from the present and recent past.

Anatomically modern humans spread to Australia and America, the last major habitable land areas of the Earth. The world was full of people, if rather thinly populated, by the eve of the evolution of horticulture 10,000 years ago. The relatively recent shift from

technologies that emphasize animals as the major caloric resource to those that make major use of plant resources is termed the *broad spectrum revolution* by archaeologists. Some of the most sophisticated hunter gatherer technologies, such as those of the high arctic Eskimo, also developed during the last few thousand years. We will enlarge upon this evolutionary pattern in Chapter 25. The tremendous environmental and temporal range of hunting and gathering societies led to a wide range of subsistence technologies and other cultural features. Steward developed his culture core concept to explain both this range of variation within subsistence types, as well as the differences between subsistence types.

B. Ethnographic Knowledge

The food foragers known from contemporary ethnographies (i.e., those that survived long enough to receive reasonable description by professional anthropologists) are a poorish sample of this variation. Most of the cases are peoples who live in, or recently lived in environments so marginal the expanding farmers had not evicted them. The best known studies of relatively unacculturated peoples are from desert dwellers like the Australian Aborigines, the African Bushmen, and tropical forest hunters from South America, Africa, and SE Asia. North America had a great variety of hunters and gatherers until the mid 19th century, many living in quite productive environments, but professional anthropology arrived a little too late to observe them in a pristine state. The societies of aboriginal California are an example. By judiciously combining explorers' accounts, and the ethnographic and archaeological evidence, we can obtain some idea of earlier hunter-gatherer societies and those from richer environments. But the story of late Pleistocene hunters in their full glory, hunting Mammoths and Cave Bears, will always have a bit of the imaginative reconstruction about it! That style of life mostly disappeared with the climatic changes and waves of big game extinctions about 10,000 years BP which we will discuss more in Chapters 22 & 23.

C. Mythologizing Hunters

Because hunting and gathering subsistence characterized humans as we evolved, and because we have practiced this form of subsistence for more of our history than any other, hunting and gathering peoples are prime candidates for mythologizing. This is Original Man, wild and free, just as evolution fashioned him (sic). For a sweeping critique of contemporary society, what more effective technique than to portray hunters and gatherers as happy, healthy, peaceable, moral, wise, etc., and moderns as pale, corrupt shadows of Natural Man and Woman? For a sweeping defense of modern society with its many petty frustrations, what is more effective than to portray hunters and gatherers as ignorant, superstitious, violent, dirty, miserable wretches, barely more than animals? Neither portrayal

necessarily has much to do with the nature and variety of hunting and gathering subsistence as it was actually practiced in so many places over such a span of time. But as you can see from our epigraphs, quite respectable thinkers have succumbed to the tendency to mythologize hunters and gatherers in the quest for a theory of human nature that supported their whiggish purposes.

II. Technology

The toolkit of most hunter-gatherer peoples is quite simple. Light killing weapons, spears, atlatls, bows and arrows, and simple choppers and knives for processing the carcasses are all that many groups use. Food collection equipment is often no more than a digging stick and a slab of bark or a simple wooden bowl (Figure 3-2). Food preparation is likely to be quite rudimentary, as simple as roasting a small animal by throwing it skin and all into an open fire. Shelters are often very simple windbreaks or huts. Some toolkits were considerably more elaborate than this minimum. For example, the Eskimo had sophisticated winter clothing, kayaks, dog sleds, igloos, barbed harpoons, and other advanced items. California Indians had basketry tight enough to hold and boil water (using red-hot stones dropped into the basket). The more sophisticated toolkits were restricted to extreme environments on the one hand, where nothing less would do (the arctic), or to more provident environments for reasons we will see below (California).

Simple tools are used in sophisticated ways. To hunt and gather successfully requires considerable knowledge of natural history, and a good level of physical hardihood. Think backpacking and living in a tent 365 days/year with no storebought food. Ethnoecologists (students of the ecological knowledge of hunters and gatherers) have shown that they recognize a huge variety of plant and animal species and have an intimate understanding of animal behavior and patterns of plant growth, flowering and fruiting. The tracking ability of hunters is legendary. A human or animal can be followed on the basis of the most obscure signs. Such skills are quite useful to people whose weapons are so weak that an outright kill is much less probable than a debilitating wound that may take hours or even days to kill a large animal. Hunters will follow an injured large animal for days until it weakens enough to be finished off.

In the most recent hunting and gathering societies, plant products supply the bulk of the calories, while fish and game supply a major share of the protein. This is well demonstrated in the case of the well-studied !Kung Bushmen¹, where plant foods supply 60-80% of calories (Tanaka, in Lee and DeVore, 1976). Plant collecting also requires fairly sophisticated technical and natural-historical skill to find and process. For example, the acorn-

processing equipment of the California peoples, and the fine-seed gathering and processing equipment of Great Basin peoples were quite elaborate.

The diversity of hunting and gathering strategies is great. For example, the production of fruits, nuts, and starch storage organs--the parts of plants that people can readily eat--is relatively high in tropical environments, but declines toward the poles. On the other hand, higher latitude environments often produce a seasonal flush of rough forage that is efficiently processed by ungulates (cows, sheep, antelope etc.) and other large herbivores (elephants, horses, giraffe). These animals have sophisticated guts that harbor microbes that help them digest cellulose and the chewing apparatus to reduce roughages to small particles so that the microbes can attack them efficiently. Temperate and polar seas similarly often have huge seasonal plankton blooms that sustain high production of fish, shellfish and marine mammals and birds. Higher latitude people usually eat more meat and animal fat than lower latitude people. At the extreme, the Eskimo and other polar people lived almost entirely on fish, meat, and blubber. Kelly (1995) and Binford (2001) treat hunter-gather variability with sophistication.

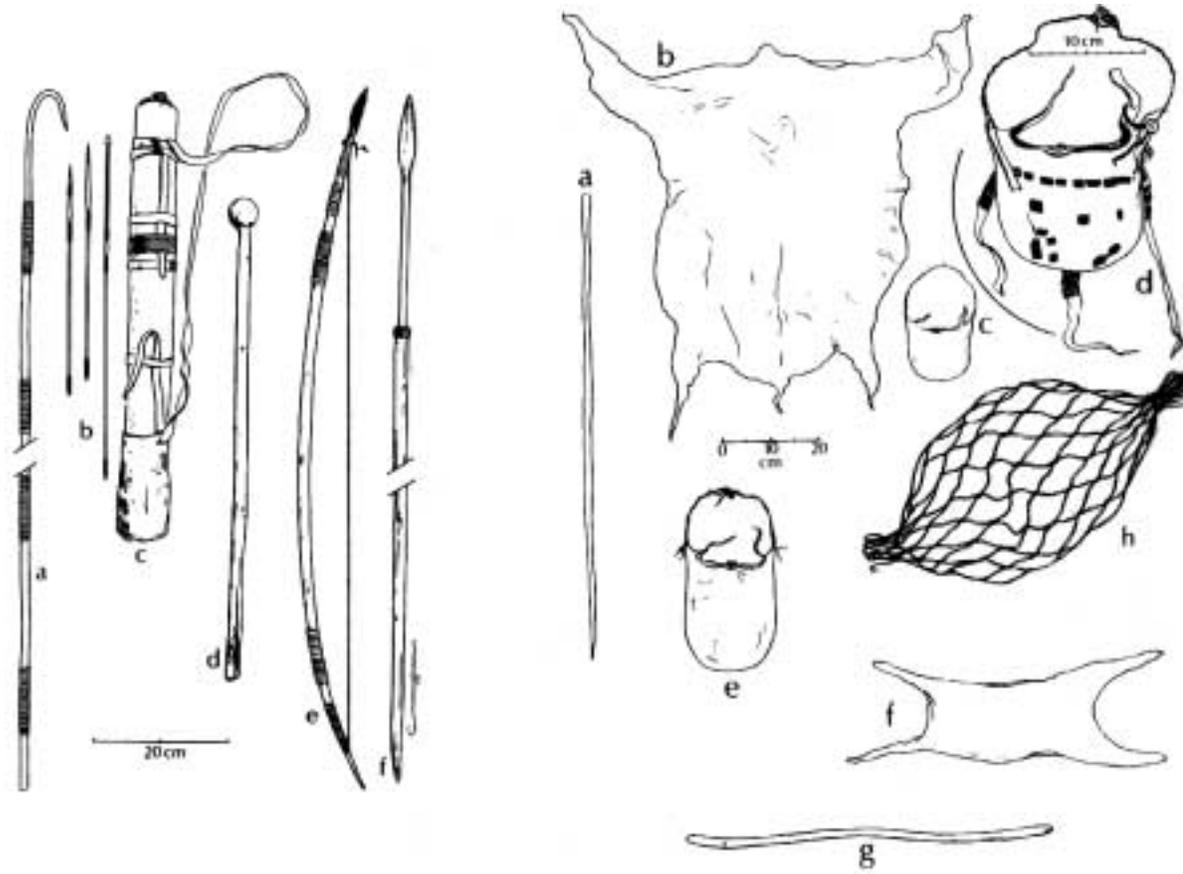
The effort required to gain a subsistence by hunting and gathering is a point of contention. Lee (1979) reported quite low work effort for the !Kung, on the order of 3-4 hours per day. Hill et al (1985) report that the Ache of Paraguay work essentially full 8 hour days routinely. Hill et al argue that Lee's widely cited figures are anomalously low. The sample size is still rather small and the variation rather high. Truswell and Hansen (in Lee and DeVore, 1976) present evidence that !Kung Bushmen have a quite slender margin of calories, especially during the hard dry season. Even in the best of times, Bushmen are very lean. Their low work effort may be a function of the low quality of plant foods available, and the long distances between high-quality patches. Humans can only process so much roughage, and Bushmen have distended bellies from eating so much cellulose-rich plant food. When it is a long, hot walk to collect some poorish chow, one may be better off to go a little hungry. How hungry would you have to be to walk 10 miles for a bowl of boiled whole oats, no milk and no sugar?

II. Demography

The single most important consequence of hunter-gatherer technology is that it ordinarily supports very low human population densities. It is not a very efficient system of

1. If you're wondering what on earth !Kung represents, here's the answer: the exclamation point is used to represent the tongue click with which the !Kung San precede the word! Some languages use several such unusual sounds.

Figure 3-1. A basic hunter-gatherer toolkit. These are the implements used by Dobe !Kung men and women. (Source: R. B. Lee 1979:38 & 46.)



subsistence on a *per hectare* basis even when it is as efficient on a *per capita* basis as in the !Kung case. On the hunting side, being at the top of the food chain results in relatively small flows of energy to hunting. On the gathering side, humans are not biologically adapted to do well on the bulk of plant materials. We cannot digest cellulose like ruminants nor detoxify many plant poisons. Plants, for the most part, are well adapted to deal with much more effective herbivores. Thus humans are restricted to fruits, large seeds, tubers, and other relatively scarce high energy plant resources. More sophisticated processing can improve yields rather substantially (e.g. the leaching² of acorns to make palatable meal free of tannin by California peoples), but such technologies are rare and late in time.

Thus, human population densities under hunting and gathering technology range from the order of one person/30 km² in deserts, unproductive forests and the arctic to perhaps three people/km² in the relatively provident oak forests of aboriginal Central California. Yolo County, Central California, is roughly 2,000 km². Under desert conditions it would support roughly 65 people—two or three small bands. As it was, Yolo County probably supported a few thousand people (Heizer and Elsasser, 1980, quote a figure of 79,000 for the whole Sacramento Valley). Under modern circumstances this small rural county has a population of 141,000. In a few highly unusual cases, local densities were much higher, such as among the North-western Coastal peoples of North America, where river runs of salmon and other marine resources were locally very rich, and canoe transport allowed transport of food resources to large villages. The pre-agricultural peoples who exploited dense stands of wild grains in the Old and New Worlds may have had similarly high densities. Again, these adaptations are generally quite late in prehistory.

Not only were the densities of most hunters and gatherers low, but typical settlement sizes are also small. We reviewed the data in the last chapter for several types of bands. The low average productivity per unit area of hunting and gathering technology means that settlements must be small and highly dispersed, excepting again special cases like the salmon fishermen, where fairly large settlements could collect around an especially concentrated, transportable resource.

The typical hunting and gathering band must move frequently, often as frequently as every few days. Mobility is another consequence of low productivity per unit of land. A given area is hunted and gathered out to such a distance that it is easier to move camp than to forage at greater distances and return daily to the same home base. The usual situation

2. In this process, mashed acorns are soaked in water and rinsed to remove the tannin. Tannin tastes bitter and binds proteins, inhibiting their digestion, thus serving to discourage herbivores by making acorns a less attractive food source.

seems to have been a seasonal round of movement to exploit the variable resources of a large area. Some groups could occupy particularly rich resources for variable lengths of time and be more sedentary.

Yellen (in Lee and DeVore, 1976) gives a travel diary for the Dobe group of !Kung, showing 38 moves in a five and a half month period. The longest continuous stay in one place was 26 days. However, about 2/5 of the total time was spent at their base camp (in 6 periods). The basic pattern was one of more or less brief excursions to distant areas followed by a return to the base camp. The !Kung are in some ways less mobile than many hunter-gatherers because, especially during the dry season, they are tied to the relatively few permanent waterholes in the Kalahari.

Any substantial movement at all puts severe limits on the sophistication of toolkits if all one's belongings must be hand carried from place to place every few days. Imagine what a Shoshone woman in the Great Basin, who might have had to walk several km. to a new camp every few days, would do with a ceramic pot. Throw the fragile, heavy monster away! It also means that food storage is difficult. Once a group has to move much at all, long-term food storage is impossible. Food is heavy and bulky in quantity and left unguarded it is vulnerable to pests and pilferage. Thus most lower latitude hunter-gatherers do not even use simple food storage techniques such as making dried meat to any extent (Figure 3-3). Groups like the North-Western salmon fishermen and the Central California acorn leachers who were sedentary enough to make accumulating stores worthwhile. Arctic people can freeze meat, though the incidence of botulism fatalities from consuming putrid meat is said to have been one of the hazards of their subsistence system.

The need to move frequently also puts a direct damper on population growth rates. Movement on foot limits each woman to one dependent child at a time. !Kung San space children deliberately so that they only have to carry one at a time, using infanticide or abortion, if necessary, to space children about 4 years apart. N. Blurton-Jones at UCLA (cites are in Chapter 9) has calculated from !Kung San data just how limiting it is to have to deal with small children while moving camp and foraging. Anyone who has traveled with small children under the best of modern conditions will have the dimmest inkling of what hiking 10 km with a toddler, a 5 year old, and all your worldly possessions would be like. Analysis of the time budgets of Ache forest hunters show similar constraints (see, for example, Hill et al. 1985). Thus, such constraints are probably common in mobile groups. Hunter-gathers also probably tended to nurse children to the age of 4 or so, and lactation tends to suppress ovulation. Hunter-gathers, at least tropical ones, lack the highly concentrated calories fats and processed carbohydrates) that young children need to thrive.

Figure 3-2. Since foodstuffs, tools, and young children must be carried, the need of most hunter-gatherers for mobility is reflected in the many ways in which they utilize their limited toolkit. (Source: R. B. Lee 1979:42-43.)



*Despite rather low birth rates and fairly high infant mortality rates, hunter-gathering seems to be a fairly dependable mode of subsistence. Many low-quality wild foods remain to be exploited during droughts and bad winters. It doesn't seem as if sedentary agricultural or "rich" food foragers do much, if any, better in this respect in spite of their ability to store food much more effectively. The greater densities and narrower specialization of richer peoples increase risks even while storage reduces them. As we will see in Chapter 26, some scholars have hypothesized that human diets *deteriorated* after agriculture was developed. The evidence is ambiguous; most ancient peoples seem to have suffered at least seasonal or irregular bouts of poor nutrition during the worst time of year, and/or in bad years.*

III. Social and Political Organization

Hunting and gathering technology typically results in very simple social systems. Most bands, except the very largest, are organized largely on the basis of kinship, usually reckoned through the male line, but usually not rigidly so. Kinship is the single most important means of social organization by far, and the simplest societies have little more than extended kinship as a basis for cooperative activities. Specialized, permanent roles are normally absent. A few individuals are recognized as shamen, arrowmakers and the like, but none can earn a living from such activities; all able-bodied individuals must hunt or gather. Only the very richest hunting and gathering societies exhibit occupational role specialization (canoe builders, chiefs, etc.) The exception is a strong division of labor by sex. Men hunt and women gather although there is some flexibility in this. Hunting is not compatible with the care of small children to the extent that gathering is, and as is perhaps required by the need to nurse young as well, so men play a limited role in child care but a big role in hunting larger and more distant game resources. Women, usually with kids in tow, forage for plant resources, easily caught small game, shellfish, and other things that can be exploited while looking after kids. Frank Marlowe's (2001) survey of the literature suggests that in the tropics women provide around 75% of calories in the family diet and men about 25%, whereas in the Arctic men's contribution rises to 100%. Arctic women's work is critical nevertheless. For example the time consuming and skilled labor of women is needed to produce the sophisticated tailored clothing without which men could not hunt for most months of the year. Men in tropical societies often produce most of the protein and fat in the diet. All known hunter-gather subsistence systems require the contribution of men and women to succeed.

The extensive sharing of food and other resources is usually organized around kin-

ship and friendship lines. Every band takes care to have a web of kinship bonds linking to its neighbors, most often through arranged marriages of the patrilineage's women into other bands. These webs of alliance and sharing are usually interpreted as adaptations to the uncertainty of hunting and gathering subsistence (Kaplan, et al., 1984). On any given day, a hunter is likely to return home empty-handed, but someone is likely to have gotten enough to give everyone a share. If times are tough at home, kin in other groups will generally permit another band to seek resources in their territory, or perhaps a nuclear family or two will go off to live with the luckier in-laws in a different band. This sort of movement of nuclear families from band to band characterizes the !Kung, and probably many other less well studied societies. The !Kung and the desert people of the Australian interior had elaborate institutions to link people together beyond the bounds of normal kinship. The !Kung, according to Polly Wiessner, used a gift exchange system to cultivate friendships with people in distant bands. Women exchanged fancy beadwork and men arrows. The Central Australians had elaborate "section" systems of extended kinship that classified marriage with all but a few women as incestuous. Men might have travel hundreds of kilometers to find an eligible mate. According to Aram Yengoyan and Wiessner the effect of these institutions was to ensure that every family had friends and inlaws scattered everywhere. When subsistence or political problems occurred, people could seek aid from any of a number of kin or friends in a number of different environments. Yengoyan argues that the odd fact that section systems were more complex in the arid interior of Australia and less so along the more productive coasts owes to the fact that subsistence was more precarious in the interior. In better environments one was less likely to need distant allies, but in the desert much effort had to be invested in developing the widest network possible. In a sense, hunter-gatherers in unpredictable environments were investing in a kind of social insurance. By cultivating friends and distant relatives and helping them when they got in trouble, one could seek help in turn. As we shall see in Chapter 25, in the last ice age ('125,000-10,000 years ago), all environments on earth were highly variable, and the success of modern humans during that period and the eclipse of earlier human species like Neanderthals likely owed a lot to our ability to organize such social insurance institutions.

Political organization is extremely rudimentary in most hunting and gathering societies. A headman may be recognized, usually because he is the senior male of the band lineage or because of outstanding personal qualities (hunting ability, general good sense). Usually such a "leader" can only cajole and persuade, not command. This style of leadership is familiar to us faculty through the typical University committee; you have probably had similar experiences. The chairman typically has slightly more power than the average member, usually because the appointer of the committee tries to get respected individuals

as chairs. But formally everything is quite egalitarian, and the chair usually tries to engineer a harmonious consensus (formal votes are divisive in small groups). Everybody's opinion is politely heard, even those boorish loudmouths whose nutty opinions no one is likely to take seriously. Woe be unto the chair who tries to dictate to his committee.

Some hunting and gathering societies are exceptions to the generalization about the simplicity of social and political organization. The Northwest Coast salmon fishing peoples are the best known ethnographically. The Kwakiutl are a famous example. As we have already noted, these people lived at higher densities because of the huge salmon resources available in the big rivers of Puget Sound and similar areas. These groups were semi-sedentary, and stored dried salmon and other food products. They accumulated non-portable possessions and lived in plank houses. Their political system was based on powerful "chiefs," actually "bigmen," full time political specialists. Because this system is characteristic of horticultural societies, we will investigate it in more detail in the next chapter. Bigmen played a ritual role, redistributed surplus goods, conducted warfare, and the like. Although dependent upon popular support, bigmen had quite a lot of formal authority.

Control of within-group conflict is not easy in the absence of real authority. Single deviant individuals are ostracized, and being outside the sharing network will be fatal unless the culprit reforms. Larger scale disputes between families can often be solved by the disaffected splitting to form their own band, if the party is large enough, or moving to a related group if small. Petty disputes are a serious problem; violence is typically not all that uncommon at the level of feuds between families.

Knauff (1988) has recently emphasized that the murder rate is remarkably high in all the well-known politically very simple societies due to the use of self-help violence. (This category includes some tropical horticulturalists, and most contemporary hunter-gatherer groups, that are characterized by very small settlements, low population density, and strongly egalitarian social systems.) These groups tend to have strongly peaceful norms, but a statistically high rate of individual murder. He cites rates of ca. 300 to 800 murders/100,000 population/yr. in several such groups. This compares to 142/100,000/yr. for Cleveland Black Males 1969-74 and 0.5/100,000/yr for Great Britain in 1959, to place such numbers in context. This picture contrasts very sharply with the conventional wisdom about such societies. Anthropologists have apparently been misled by the peaceful norms of such groups, and by the fact that even high rates of murder do not result in very many dead bodies per year per small group. However, in the group Knauff studied, the Gebusi of New Guinea, these deaths added up. In a very unhealthy environment, homicide accounted for 1/3 of all adult deaths. His interpretation of this pattern is that in politically very simple so-

cieties there is no authority to settle disputes. If you've got a beef with someone, it is up to you to settle it. The danger of unrestrained violence favors norms of good fellowship and peaceableness. But, ultimately, the norms are an imperfect substitute for some form of political authority, and murder is the only solution to disagreements that a chief or headman might mediate in even slightly more complex societies.

Between-band or between-culture relations can also cause serious "foreign affairs" problems. Probably, the high degree of kin connections with most immediate neighbors keeps between-band feuds in bounds most of the time, but feuding on this scale seems to be a frequent problem. With no formal authority, each band must depend on its own ability to defend itself or to threaten and carry out violence to enforce conformance with rules. With distantly related groups a generalized hostility or suspicion seems to have been common, but alliances between ethnically distinct groups were also common. Warfare among hunting and gathering peoples seems seldom to have been nearly as well developed as among more "sophisticated" folk. Once again, we must beware of mythologizing. Conflicts over resources seem to have been endemic. The distribution of language groups in North America, where the situation is well studied, clearly shows that groups expanded and contracted over time. For example, Bettinger and Baumhoff (1982) in the Anthropology Department at U.C. Davis have shown how the present inhabitants of the Great Basin must have spread into that region in the last few hundred years as their improved seed processing technology allowed them to out-compete earlier big game hunting specialists. One wonders if this competition would have been completely pacific. The reports of the first commentators to reach hunting and gathering often describe a fair amount of inter-ethnic warfare (anthropologists typically arrived after such people were pacified). Most hunting and gathering societies lived at suspicious peace with their unrelated neighbors most of the time, but that incursions on recognized boundaries likely would bring a violent response.

The scale and duration of warfare would, however, tend to be limited by the lack of effective political institutions (a war chief with the power to command, or even lead by the example of his prestige), and the logistical limitations of conducting war in the face of a daily need to forage. Also, the lack of much stored food or material possessions among hunters means that the one motivation for predatory raiding, booty, is greatly reduced. It is notable that richer and more sedentary peoples seemed to have warred more. The Northwest Coast peoples had quite well organized warfare in contact times, and possibly before, over resources and trade routes, and to acquire slaves.

In spite of hostile relations, trade was often moderately important to hunter-gatherers. Some of it was luxury trade. In California, for example, shell moved from the coast in-

land, while things like colorful bird feathers moved coastward in return. Some foodstuffs also moved in trade in California, and good stone, such as obsidian, moved considerable distances. The Northwest coast slave trade reached as far south as the Northeastern part of California.

IV. Socialization Practices and Cultural Dynamics

The socialization practices of hunter-gatherers are notable for being fairly relaxed, light on corporal punishment, and encouraging of individual self-reliance. Cross-cultural psychologists believe that the relatively high demands on individual initiative in hunting and gathering activities, and the lack of a need to socialize children to respect powerful arbitrary authorities favors this style of socialization and related independent personality type. (See the work of Berry, cited in Chapter 1.)

Small societies without role specialists and writing may be limited in the number of cultural traits they can keep in a culture. Those things that only a few happen to learn are likely to be lost by accident. There is some evidence from Tasmania to suggest that the small, isolated population there lost a number of traits they brought over from Australia due to this process (Diamond, 1978). If this line of argument is correct, the sheer size of a culture will have important effects on its sophistication.

V. Ideology

Typical mobile food foragers have relatively simple ritual practices and religious beliefs. Formalization is relatively weak. More sedentary groups, like the California people, seem to have had more elaborate and formal ones. However, the Australians are noted for their very elaborate ritual and spiritual beliefs, while Bushmen, living in relatively similar environments, seem more “secular”. The Bushmen do have a series of dance disciplines that induce mystical experiences (Katz in Lee and DeVore, 1976). A case might be made on the basis of this contrast that ideological variables are outside the culture core. All foragers for the last 35,000 years have had some art objects, often quite elegant ones. Clearly, sedentarism at least allows these to be multiplied (e.g. Bushmen don’t make totem poles, but sedentary fishermen of the Northwest Coast did). Score a point for Kroeber’s possibilism here.

VI. Conclusion: The Gradient Test

The culture core idea works for hunter-gatherer societies. Since we have just begun

a comparative exercise, it is too early to reach any definitive conclusions about the adequacy of the neo-Stewardian argument. Notice, however, that within the variation of hunting-gathering technology itself, it seems possible to generalize Steward's argument about the effect of environmental variation to several more variables besides band structure. Hunting and gathering societies that live in typical environments (recently at least) are limited to very small, usually migratory residential units. These small units in turn enforce a simple culture in respect to toolkit, social organization, and political relations. However, in those cases of denser resources, especially those that allow a measure of sedentarism, these constraints (determinants?) are relaxed and more complex culture cores tend to emerge (Price and Brown, 1985). Even if average densities remain low, the ability to aggregate even temporarily, as in the case of composite bands, has important effects.

Consider the gradient in Western North America starting in the arid inland Great Basin, moving to the semi-arid California coast, and then up the coast to the Puget Sound area. Refer back to figure 2-1. On this gradient the productivity of the environment for hunting and gathering increases. The interior Great Basin peoples were highly mobile and were Steward's primary example of societies organized by family bands that could associate with other bands only for limited periods of time because of the very low density of food resources. There was virtually no political organization beyond the leaders of the family bands. The Californians of the coast and valley lived in a much more provident environment, and were semi-sedentary. Villages of 100 or more people were established as headquarters, from which people radiated on hunting and collecting trips. Senior members of lineages provided leadership of the villages, and sometimes, as in the Pomo, access to leadership was formalized and leaders had some real powers to coerce. In California, there were typically extra-kinship organizations called "sodalities" that drew people from many villages in the same ethnic unit for ceremonial purposes. Sodalities are roughly akin to American lodges and service fraternities like the Masons, Moose Lodge, and Rotary Club. Often they have a religious cast too. Sodality functionaries are often political leaders. We have seen that the Northwest Coast groups of North America are an example of hunting and gathering peoples achieving densities more typical of simple horticultural groups. Some but not all of these groups also had quite highly organized political systems led by Big Men (chiefs whose role was more achieved by reputation for generosity, wisdom, coercive power and oratory prowess than by a strict rule of descent) who organized quite complex economic enterprises. Many of the generalizations that apply to simple horticulturalists also apply to the Northwest Coast as far south as Northwestern California (Johnson and Earle, 1987). Semi-sedentary, relatively dense populations, such as those that characterized California, were in between "typical" hunter-gatherers like the !Kung we know from the poor

ethnographic record and the Northwest Coast people. These societies also had populations of intermediate density, of intermediate complexity, toolkits, and social organization, and the like to match. Thus, as Steward argued, there does seem to be a pretty good relationship between environment and many culture core aspects of society, as long as we focus, as in this case, on a given technological type. The main intervening variable seems to be demography. Hunting and gathering in many environments allows only low human densities and small, mobile bands. In environments where greater average densities are possible, and where larger and more permanent settlements are possible, social and political complexity also increase. As we shall see in the next chapters, this pattern holds for other technological types.

Jorgensen (1980) notes that correlation between environment and social organization is imperfect for Western North American hunters and gatherers, the gross fit with Stewardian expectations notwithstanding. Part of the failure to fit is due to the relatively rapid ongoing evolution in this region. In the Northwest, politically more centralized groups seemed to have been spreading at the expense of less centralized ones. The ongoing intensification of production using harder-to-process foods like acorns and grass seed was ongoing at contact. The spread of intensive plant using strategies into the Great Basin occurred only about 500-700 years ago according to Bettinger and Baumhoff. Maize agriculture was on the move in the Southwest. Thus, a significant element of historical variation overlays the environment-technology-culture core pattern.

Whether the hunting and gathering way of life is as rosy as some students of this type of society have sometimes thought is debatable. Just in the last 20 years, opinion has fluctuated between the “nasty brutish, and short” and “civilization was the big mistake” schools of thought. We used to champion the latter, but Knauff’s paper and other neo-Hobbesian observations have shaken our faith. It is good to beware of mythologizing! Keep your hypotheses multiple and don’t get overly fond of any one!

V. Bibliographic Notes

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Some useful general references:

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