



Contents

Foreword ix

Preface xv

■ I. TOWARD A WORKING THEORY I

1. Anthropology without Informants (1977) 5

2. A Theoretical Framework for Interpreting Archeological
Materials (1968) 19

3. The Fat of the Land (Partial) (1981) 29

■ II. AN OVERVIEW OF THE PALEOLITHIC 41

4. By Their Works You Shall Know Them: Cultural Developments in the
Paleolithic (1975) 45

5. Paleolithic Polygons: Voronoi Tesserae and Settlement Hierarchies in
Cantabrian Spain (1994) 73

III. THE LOWER PALEOLITHIC	87
6. Torralba and Ambrona: A Review of Discoveries (1994)	89
7. Were There Scavengers at Torralba? (2001)	141
IV. THE MIDDLE PALEOLITHIC	159
8. Kaleidoscope or Tarnished Mirror? Thirty Years of Mousterian Investigations in Cantabria (1994)	161
9. The Mousterian, Present and Future of a Concept (A Personal View) (2006)	197
10. Research on the Middle Paleolithic in the Cantabrian Region (2005)	213
V. PALEOLITHIC ART	237
11. Meanders on the Byways of Paleolithic Art (1987)	241
12. The Many Faces of Altamira (1994)	277
13. Techniques of Figure Enhancement in Paleolithic Cave Art (1987)	295
14. The Cave as Paleolithic Sanctuary (2005)	315
15. Caves and Art: Rites of Initiation and Transcendence (2005)	329
VI. THE BENEFITS OF COOPERATION	343
16. The Participation of North Americans and Spaniards in Joint Prehistoric Research in Cantabria (2006)	345
<i>Afterword</i>	359
<i>Permissions</i>	363
<i>Index</i>	367

Anthropology without Informants

ANTHROPOLOGY AND THE SEVERAL ARCHEOLOGIES

Anthropology is unique among the disciplines which study mankind in the breadth and diversity of its approaches. This multiplicity of perspectives is its major strength, lending it a flexibility and adaptability few fields can rival. Ideally, continued feedback among its subfields should ensure that each periodically may come to new insights about the nature of our species. For that ideal to be realized, communication between the subfields must be kept easy and open.

Just a few years ago, ease of communication could be guaranteed by exposing students in depth to all branches of anthropology. Then, anthropologists shared a basic vocabulary and a common set of referents. With the tremendous increase in quantity of anthropological data that has accumulated in the last twenty years, anthropological subfields have tended to multiply, specialize, and diversify, developing unique interests and multiplying esoteric jargon. As a result of this fission, some anthropological subdisciplines have begun to lose sight of one another. The increased complexity of our field makes it ever more difficult for the individual to become a competent anthropological generalist.

Although the changes that have taken place make it considerably harder for individuals to learn each other's specialties, they are by no means to be regretted,

as some seem to think. Such changes always accompany the development of any discipline; they are a sign of the increasing maturity of anthropology. If we devote more attention to the growing differences between subfields in the process of individualization and force ourselves to be more fully aware of the uniqueness of each specialty, we shall eventually see the way to a new and more realistic synthesis. Only when we appreciate what each field has to offer will we be able to draw from the strengths of each what it is best equipped to contribute to the study of man.

These remarks apply fully to the archeological subfields. Although nonspecialists still regard archeology as one kind of beast fit to carry one kind of burden, its branches have become intriguingly diverse. Their evolution has been so rapid that different kinds of archeologists have begun to misunderstand one another and sometimes to hold very narrowly circumscribed views of the nature of archeology as a whole.

This essay attempts to provide a clearer picture of one emerging anthropological subfield—paleoanthropology, a relatively recent development fusing aspects of physical anthropology and prehistoric archeology. In particular, it examines the part of paleoanthropology which studies the evolution of human behavior.

The field has always excited its share of public and professional interest, and rightly so. The immense majority of the history of humanity unfolds in the remote past and is known only from archeological remains. Paleoanthropology offers the only direct means of attaining any idea of the range of possible variation in the human condition, or of the prehistoric antecedents of its present state. To give a better idea of the nature and limits of the field, we may as well begin by explaining what paleoanthropology is not.

There are several kinds of archeology, not one. The only attribute all archeologists share is a reliance on the enduring material evidence of past human behavior. The largest distinction between archeological specialties, which will probably be familiar to most readers, sets the family of historical archeology off from the group of prehistoric archeologies. But that distinction is not the only one which must be made. Each family, in fact, encompasses a distinctive set of disciplines which are quite idiosyncratic, regardless of the general attributes they share.

Since all the historical archeologies deal with the very recent past, all may utilize documents written by contemporaries of the relics they study, whenever such documents are available. Nevertheless, the family is internally diverse. Its subfields may be very narrowly specialized by interest in a certain region (U.S. colonial archeology, Mesopotamian archeology), linguistic group (Slavic or Celtic archeology), or time period (medieval archeology) or focus on a specific aspect of economic life (nautical archeology, industrial archeology). Unlike the other subgroups, some of the specialized historical archeologies do not rely primarily on excavation as a data-gathering technique.

The various branches of historical archeology offer fascinating prospects when they can rely on eyewitness documents about their data. As a whole, they are finely focused "personal" kinds of archeology with the potential to capture remarkably specific details and to weave them into a surprisingly full and compelling fabric. If

that potential for bringing the past to life is seldom realized, it is because the written records are themselves often inadequate. The documents that survive mostly concern important personages: the few leading inventors, traders, statesmen, courtiers, soldiers, and churchmen of the day. Too often, historical archeology becomes the archeology of the historic, concerned with the pompous and monumental. Preserved documents tend to be incomplete, or biased, or simply unconcerned about the problems of greatest interest to us. But given a sufficient number of suitable texts to place a well-dated, closely spaced sequence of events in the context of their times, the historical archeologists have the greatest potential for the study of innovation, acculturation, and cultural process.

The research workers who have no contemporary written texts to draw on are usually called prehistoric archeologists. Paradoxically, however, some branches of the field have better documentation to rely on than the historical archeologists. In North America, Australia, parts of Asia, and the Pacific Islands, writing was unknown for millennia after other parts of the world had become literate. So, at the time they were first contacted by literate peoples, the inhabitants of those regions were "prehistoric" in a perfectly legitimate sense. But that contact took place only a few generations ago. A few of the peoples in question have been able to keep crucial portions of their ancestral beliefs and customs relatively intact, and these exceptionally conservative groups have now been well studied by ethnologists and social anthropologists, whose monographs are far better sources of anthropological data than historical documents or travelers' tales of any antiquity. In other cases, the prehistoric societies themselves have vanished, but living individuals learned about the traditional lifeways from their grandparents, who may even have lived in the very settlements now being excavated and analyzed by prehistoric archeologists. The paradox is obvious: this is a prehistory with the benefit of living informants.

As it happens, North American anthropologists pretty generally think of this very anomalous kind of archeology as prehistory *par excellence*, without recognizing just how unusual it is. That is to some extent understandable, since American ethnology and New World archeology grew up together, each contributing substantially to the development of the other. New World archeology eventually gave ethnology the chronological frame essential to rescue it from the tail-chasing of pseudohistorical reconstruction, but, in exchange, the theories and methods of American archeology have gained immeasurably because its conclusions have consistently had to be tested against hard ethnographic fact.

It is no accident that New World archeology has erected its sturdiest and most elegant structures in those areas where it has been able to rely on living informants or good ethnographic studies. Such sources provide it with much information about all aspects of culture, including those which leave the fewest durable material traces: the symbolic content of behavior or its material products, the social contexts in which those products were used, and the shape of the networks of social relations. Without informants or documentation, some of these aspects could not be inferred directly from archeological materials. With such evidence as a basis, reconstructions can, with caution, be pushed back in time on the order of several centuries without

losing their general validity. Since the total time depth of New World prehistory is extremely shallow, amounting to less than 1 percent of the hominid story, and since, as far as we know, all the prehistoric inhabitants of the New World are members of our own subspecies, *Homo sapiens sapiens*, there may even be justification for assuming broad behavioral continuities between any of them and living people.

In some well-studied regions of the New World, the density of excavated or decently tested sites occupied during the last millennium is impressively high: sometimes there are a score or more sites per century. Coupling the thickness of the archeological record with the density of the ethnographic detail available, late New World archeology and its analogues elsewhere in the world can provide more insight into relevant aspects of social and cultural change—long-range cultural process—and more specific evidence about the enduring corporate fabric of social relations among ordinary men than any of the historical archeologies. Nevertheless, the very factors which give this paradoxical “prehistory” its robustness for the testing of method and the development of theory often make it hard to apply its findings outside its home area.

In the Old World true prehistorians leave to others the study of the shadowy “protohistoric” zone where “prehistory” gives way to “history.” Normally they are concerned with nothing more recent than the local Neolithic. Ordinarily, those who study Paleolithic and Mesolithic remains are considered to have the only unblemished claim to the title “prehistorian.” Of course, New World archeologists who analyze Paleo-Indian or Archaic remains and those who work on the early archeology of preagricultural peoples anywhere in the world should have an equal right to the title, but the use of the single, unqualified term “prehistory” for what are really very different studies is awkward, at best. So, a few professionals have adopted the designation “paleoanthropology” specifically for the study of early man (especially fossil man) in the Old World, including the examination of skeletal remains as well as the study of behavioral residues. That usage seems to me to have much to recommend it: it designates a kind of prehistory with unusual characteristics, limits, and potentials.

■ THE QUALITY OF PALEOANTHROPOLOGICAL DATA

Paleoanthropology is a unique kind of prehistory because the things it studies are so old and odd, scarce and scattered. The paleoanthropologist’s world, as we now see it, begins four million years ago or somewhat more and lasts through the appearance of the earliest true modern human beings. There is some haziness at both boundaries, but most of what we study is at least thirty thousand years old and we almost never treat anything less than ten thousand years old. For more than 90 percent of that remote time, we are dealing with the products of fossil men whose skeletons were so different from ours that it would be foolish to assume extensive behavioral continuities between them and us. (In fact, there is some reason to think that early *Homo sapiens sapiens* was probably quite unlike us behaviorally.)

It is no accident that archeologists working with more recent material can sometimes make very penetrating guesses about the behavior of their human subjects,

based on a shrewd appreciation of human nature. There is much empirical evidence suggesting that, in some general ways, all living human beings are pretty much alike, even though the specifics of their behavior differ tremendously. Such observations are the basis for the doctrine of “the psychic unity of mankind,” which is especially fundamental to structuralist anthropology today. But man attained his modern physical structure gradually, and all evidence indicates that his present psychic unity is a recent phenomenon. Thus paleoanthropologists cannot assume that extinct populations thought like living men, or that long-vanished cultural systems are simply stochastic transformations of modern ones. Other archeologists, even some prehistorians, may fill gaps in the archeological record with guesswork or direct ethnographic analogy, with some chance of success. Paleoanthropologists cannot make use of these tools except to formulate hypotheses susceptible to evaluation, verification, or rejection on the basis of the hard evidence they find in the ground.

The oddness of paleoanthropological data is manifest in another fundamental way. Over the millennia, the present world landscapes, vegetation patterns, and animal communities to which cultural systems are adapted have gradually evolved from earlier states. Those states were so different that it requires the collaboration of a great number of specialized natural scientists to reconstruct them. Without specialist cooperation to re-create past natural settings, meaningful paleoanthropological research is impossible.

Because it must wring the maximum information from rare material archeological remains, paleoanthropology has turned increasingly to quantification to make analysis more rigorous. Most professionals were not adequately prepared for this development, and as a result there has been much trial-and-error learning, involving many mistakes. Still, despite the fumbling, we can now define problems more concisely and approach their solution with an order and precision impossible before quantification.

The scarce and scattered nature of paleoanthropological data has other important implications for research. Since immense periods of time are involved, we usually find far less perishable material than our colleagues in the other archeological specialties. More important, ages of action of normal geological processes have swept away most sites and disturbed most of those that remain. For the first three million years of the hominid story, we have only a few score undisturbed sites in all. The later Paleolithic record has fewer gaps, but it is still incomplete. As a result, we are usually faced with the task of reconstructing an extinct socio-cultural system from the materials produced by only part of its members operating in only one or a very few of the many modes the system could assume. For example, in Spain during the whole of the mid-Pleistocene we have only Acheulean hunting and butchering camps: not one contemporary “base camp” has ever been recovered. So far, we cannot generate one verifiable reconstruction of the total subsistence and settlement system of a single Paleolithic society, let alone discuss sensibly any cultural system which left less tangible evidence.

The natural forces which destroy sites do not operate uniformly over the whole land surface. For millennia, there may be sporadic sites in Africa only. Then, suddenly,

the African record gives out, while a clump of five or six later sites will be found in Asia or Europe. There are vast temporal gaps where we have not yet found any sites at all. Where we do have a record it is always skewed. Sometimes all the undisturbed sites are in river valleys; at other times all may be on seacoasts or lakeshores. Since there are so few sites in any case, these erratic geographic shifts of the archeological record through time make it impossible to follow the continuous development of any prehistoric cultural system in any of its functional modes for more than a very brief period. If prehistorians are supposed to produce a kind of history of cultures—to delineate connected sequences of events in the past—then there is a sense in which one can reasonably maintain that paleoanthropologists are not prehistorians at all, for the history of any past sociocultural system eludes them.

PALEOANTHROPOLOGY AND PROCESS

One popular school of thought has it that archeology's major potential for anthropological theory is its unique perspective on the long-term operation of "cultural process." According to this view, social anthropologists see only relatively static, instantaneous slices through the constantly changing spectrum of behavior. On the other hand, the much greater time depth afforded by the archeological record shows the striking results of long-continued action of forces of cultural change and thus permits a special facility for understanding those forces.

One kind of "cultural process" is certainly accessible to the prehistorian. Process is sometimes defined as the set of dynamic relationships which characterize the operation of one of the system's functional modes, or which integrate those modes, without causing noticeable permanent change in the structure or functioning of the system as a whole. For example, the sequence of events and behavior characteristic of a religious ceremony, the context and meaning of that particular ceremony and the purpose it is meant to achieve, the organization of the participants and the effect of the ceremony on their status, all are processual in this sense. I grant that paleoanthropologists may study aspects of process so defined. However, the cultural anthropologist who observes the dynamics of the living system can do a better job. I am less confident of the paleoanthropologist's ability to study process defined as those dynamic operations which bring about a permanent alteration of one or more parts of the system and, consequently, change the functioning of the system as a whole, despite the vast time depth accessible to us. After all, if we do not produce a kind of history, how can we study cultural change?

Perhaps nothing seems more logical than that great differences between prehistoric assemblages of distinct ages are "caused by" age difference—that they result from cultural change over the interim. But even the greatest differences need not indicate this kind of change. Difference between archeological assemblages can also be due to sampling error, the influence of raw materials, variations in performance by individuals, stylistic boundaries between societies or their segments, or the suitability of distinct toolkits for the performance of specific tasks. Unless we can evaluate the contribution of each of these factors, something which has not to my knowl-

edge been done in the past, our conclusions about “cultural change” are bound to be unwarranted and misleading. The revisions made in the supposedly well-established sequences of European Paleolithic industrial evolution during the past twenty-five years clearly illustrate the insecurity of our reconstructions of “cultural change.” In fact, it is the paleoanthropologist, not the ethnographer, who observes frozen, instantaneous slices of behavior. Our great time depth will not restore fossilized data to life so that we may watch the system change. There is no guarantee that the few available, widely spaced windows on the remote past illuminate episodes from the same unfolding drama. Regardless of assertions to the contrary, our contribution to the study of cultural process consists mostly of a series of untestable speculations and unanswered (and perhaps unanswerable) questions.

To those who believe that paleoanthropologists must write history, because that is *all* they can hope to do, this view will seem pessimistic. I think that judgment is wrong. No doubt, some branches of anthropology do attempt historical reconstruction above all, but that is not the overriding aim of most of the field. Many social and cultural anthropologists, physical anthropologists, and linguists are not mostly or even peripherally concerned with historical reconstruction. I think archeologists sometimes let the looming presence of time blind them to more important aspects of their data. Certainly some archeologists (especially those who deal with abundantly documented recent products of fully modern man) can make and have made important additions to our knowledge of culture history, but not all archeologists should necessarily try to. Paleoanthropology is one of the fields whose primary potential lies in other directions.

REASONING FROM GARBAGE TO CULTURE

Having presented these negative observations, I must now indicate where the productive dimensions of paleoanthropological research may, in fact, be found. For this exposition, certain general assumptions about the relationship between functioning socio-cultural systems and the archeological record must be stipulated. First, cultures are systemic: their elements are inextricably interrelated, so that change in any element must bring about a concomitant change in at least some of the others. (There is abundant proof of this assertion in the ethnographic literature on technological change and its effects on other aspects of culture.) Second, socio-cultural systems are adaptive. It is not necessary to stipulate that all elements have a direct and immediate relationship to the survival of the society, just that some elements do function to adapt the personnel to each other, to the natural setting, and to other human groups nearby.

Next, culture is manifest in shared and observable behavior patterns. Since we are forced to deal with material residues of behavior, the currently popular definition of culture as models in people’s heads is inappropriate. In fact, it is naive. Even the cultural anthropologists who subscribe to this view cannot observe ideas in their informants’ heads until they come out of those heads and into concrete words and behavior. For paleoanthropologists, ideas which are never manifest in behavior are

irrelevant. Most ideas are, in fact, frequently expressed in some aspect of behavior, and most have multiple behavioral manifestations. Last, by studying patterned occurrences of material residues in relatively undisturbed sites we must assume that paleoanthropologists can identify significant aspects of the behavior which produced those residues. There are certainly limits beyond which their reconstructions cannot be pushed. While we do not yet know exactly where these limits lie, we do know that these limits permit them far more interpretive scope than we suspected ten years ago.

As we are all aware, human beings live today in organized groups (societies), and each modern society has a distinctive set of shared behavior patterns, beliefs, and values which it communicates to new members by the socialization process. These shared behavior patterns and attitudes enable group members to deal effectively with their natural and social environments: they provide sets of routine and predictable responses to recurrent situations, even for situations which recur only rarely and seldom to the same individuals. Living societies have relatively large and complex behavioral inventories. Some of these are more appropriate to some members than others (that is, sex roles and roles that require especial strength, wisdom, or maturity), and all societies simplify the learning task by apportioning different sets of specialized behavior patterns (roles) to those defined as especially suited to those patterns. This provides for adequate performance of essential tasks with a minimum of duplicated effort and without requiring every individual to learn the whole cultural repertoire.

The inventory of learned beliefs and behavior may be broken down into convenient analytical units in more than one way. When one is interested in the patterns assigned to the several positions in a society that an individual may occupy, roles are the most appropriate behavioral sets. If on the other hand, one focuses on the purposes of the behavior, individual performers and their positions are less pertinent than the patterns themselves, and the behavioral categories of greatest relevance are sets of responses culturally defined as appropriate to identifiable and recurrent situations. These sets of responses may be called the "functional modes" of a social group. Curing, dancing, mourning, hunting, toolmaking, fighting, trading, feasting, burying, butchering, housekeeping, and gossiping are examples of functional modes of behavior. The concept of the functional mode is deliberately flexible; no attempt is made to stipulate its minimal or maximal scope. Gossip as a functional mode is a subset of the more inclusive functional mode of "social control." Any attempt to refine the concept further runs counter to the fact that neither living human behavior nor patterned archeological residues are ever packaged in minimal, nonoverlapping sets.

In any society some functional modes are manifest in the behavioral usages of lone individuals; others require cooperation by several persons; and some may involve participation by all members of society. The personnel who participate in some functional modes (such as hunting) may form loosely constituted, temporary groups which dissolve as the purpose of action is accomplished or as they fail. Other functional modes require participation by more rigidly structured, long-enduring

corporate bodies (such as lineages). Several functional modes may simultaneously be manifest in the behavior of a single individual or group.

Each functional mode has a cultural apparatus, consisting in the total range of permissible behavioral alternatives open to the performers, the attitudes and values which guide performance, and (only sometimes) a set of physical equipment used by the performers, which we may call the *matériel*. A single type of artifact may be part of the *matériel* of several functional modes. The behavior actually produced by the performers from the larger culturally defined inventory of appropriate alternatives may be called the set of activities generated (on that occasion) by the social unit operating in the specific functional mode. Even in cases where the functional mode of behavior requires no durable *matériel*, its activities often alter the natural surroundings in lasting and recognizable ways.

The paleoanthropologist, excavating undisturbed occupation layers, recovers durable artifacts in association with particular contextual material, such as fungal spores, chemical traces, isotopes, phytoliths, animal and plant remains, sediments, and information about the location and the relative position and abundance of each category of recovered evidence. A quantitative search for significant, patterned relationships between artifactual and contextual data can optimally define related constellations of *matériel* that vary together, independent of other sets. These represent the *matériel* and by-products of activities associated with distinct functional modes of behavior: some are toolkits and products of extractive processes or technological activities; others mostly reflect organizational or ideological elements.

Because of idiosyncrasies in individual behavior, the artifacts and by-products produced by different performers may be expected to exhibit recognizable differences, and the *matériel* used by one team may vary stylistically from that used by others engaged in the same activities. A careful analysis of the durable residues of behavior may therefore give information about the composition of teams and about overlap in team membership. When sufficient overlap in characteristics can be discerned in the residues of activities specific to several different functional modes, we may be able to demonstrate the presence of enduring, multipurpose social units. Once we have recognized specific and recurrent functional modes we can proceed to make reliable comparisons between the *matériel* appropriate to a particular functional mode through time. Where a sufficient number of contemporary occupations exists in a small region, stylistic similarities in the *matériel* of distinct functional modes may permit the recognition that all those modes are aspects of a single cultural system, and the spatial and temporal extent of the system may be delineated.

I have no desire to give the reader the impression that this sort of analysis is easy in practice, but neither is it an unattainable dream. A few prehistoric occupations have begun to be studied in this way, and with improvements in technique suggested by our struggles with these cases such analyses will become increasingly feasible and their results more reliable in the future. By the diligent application of such techniques we may hope to squeeze the maximum information about past lifeways out of archeological materials.

SHIFTS IN PERSPECTIVE

Due to its new interests, paleoanthropology needs to supersede some analytic practices that are customary among other kinds of prehistorians. In the last few decades, Old World prehistory abandoned an earlier concern with the geographic and temporal spread of a few supposedly diagnostic “guide fossils”; it has turned to the comparison of whole artifact assemblages to delineate chronological and “cultural” relationships. To recognize basic similarities between tools used at different times and places, certain peculiarities of the tools are ignored so that assemblages from all over the Paleolithic world may be discussed in the same terms. The key to maximizing the points of comparison between assemblages has been the development of a generally applicable scheme for assemblage classification consisting of a clearly defined set of nonoverlapping formal categories into which any Paleolithic artifacts may be sorted and a set of rules for the objective and systematic comparison of the relative abundance of each tool type in different assemblages. Prehistorians interested in describing past lifeways commonly speak of the whole occupation level or the whole site as the smallest spatial unit of practical relevance for analysis. Productive as these developments have been, they must themselves now yield to more refined approaches.

Paleoanthropologists, too, are concerned with artifacts, and, to communicate with other prehistorians, they will undoubtedly have to continue to use the current classificatory schemes up to a point. However, they are more interested in determining just what types of artifacts were significant in the cultural systems of the prehistoric occupants of a single horizon and in defining the characteristic attributes of functionally equivalent artifacts made by different individuals, groups, and societies. Typologies which were designed to be universally applicable and to maximize the recognition of similarities between assemblages must necessarily be insensitive to the sorts of distinctions paleoanthropologists wish to make. As a result, for paleoanthropologists’ own particular purposes they must first develop a separate classification for each occupation based solely on artifacts from that level. As it becomes pertinent to compare different occupations, the statistical descriptions of the individual assemblages are pooled, building out from the specific case to greater generalizations. This is the inverse of the practice most Old World prehistorians accept: they begin with a set of preestablished general categories and add specific detail to describe the peculiarities of real tools which do not conform exactly to the “ideal” types. (The results of the two processes are distinct and should prove complementary.)

The minimal spatial unit of interest to paleoanthropologists must logically become the smallest space in which distinct functional modes were manifest: activity-specific areas within a single occupation level rather than the undivided level as a whole. So far, new techniques for artifact classification and the analysis of spatial distributions are still in the developmental stages, but there have been encouraging preliminary results.

■ THE PRESENT AND FUTURE OF THE STUDY OF THE PAST

Studies of the behavior of early humans have already produced data which other anthropologists find relevant and interesting, but paleoanthropology is such a young field that most of present knowledge is based on the findings of more traditional prehistorians. While specific details are always being added so that the picture of past adaptations changes, some general conclusions seem firmly established.

It is often said that tools made our species, and while that is broadly true, tools did not make us what we are today all at once. The ability to manufacture rudimentary stone tools does not indicate that the toolmakers had attained a fully efficient cultural means of adaptation. The first stone tools are not much more consistently patterned than the termiting sticks and sponges used by living chimps, but they are more durable and thus they strike our attention in the archeological record.

The “cultural” gulf between the first toolmaking hominids and some living apes was apparently not great. Had stone tools immediately conveyed an overwhelming competitive advantage on their makers, the first stone-chippers should have radiated with extreme rapidity over much of the temperate and tropical world, and they apparently did not. Had tools been the most crucial means of adaptation, one would also expect that the record would show a rapid increase in consistent patterning of stone artifacts, and an immediate selective advantage for control, perfection, and diversification of the artifact forms produced. That did not happen either. If stone tools were so efficient, the first species of hominid to make them should have displaced the rest virtually overnight. Yet for a million years after the first stone tools were chipped, several different kinds of hominids survived in Africa—and no one of them got the upper adaptive hand. Taken all together, this evidence suggests that the advantage stone tools conveyed was not what one would expect if they signaled the appearance of fully effective cultural systems as we know them today. Several hominid groups may have experimented with stone toolmaking, and only eventually did other factors, probably involving increased efficiency of communication and more effective social organization, begin the kind of feedback between tools, the brain, society, and culture that started one species down the long track toward the modern human condition.

For a long time, the processes of socialization and communication must have been much different from their present counterparts. For millions of years, the variability tolerated in the manufacture of any particular kind of tool to a pattern was very great, and there was little evident stylistic difference in the products of distinct societies. Mostly the study of the earliest tools shows the latitude permitted in performance.

Lithic artifacts give little indication by themselves of the kinds of complex, controlled behavior that would require articulate speech. That is probably so because flaked stone is inherently limited as an indicator of behavioral complexity. When total systems of artifact and context are examined, however, the earliest European Acheulean sites provide evidence of intricate kinds of organization, planning, and

programming of activities which seem highly unlikely without well-developed systems of articulate speech.

The behavioral complexity and functional specialization manifest in modern cultural systems—the number of recognizably different functional modes—have increased through time and continue to increase at present. Many still maintain that the behavioral gulf between nonhuman primates and modern industrial humanity was bridged by a series of quantum jumps; the invention of fire, the “blade-and-burin revolution,” and the agricultural revolution are examples. As we learn more about the past, these revolutions seem more likely to have been long, gradual sequences of almost imperceptible adaptive readjustments rather than cataclysmic changes.

It was formerly suggested that revolutionary advances accompanied the appearance of new forms of hominids and that the advent of the *Homo erectus* grade or the spread of *Homo sapiens sapiens* was correlated with marked progress in behavior. Now it seems that was not the case. Mid-Pleistocene *Homo erectus* is found associated with both chopper-chopping tool complexes and Acheulean industries. The authors of Mousterian assemblages were sometimes Neandertals, sometimes anatomically modern people. The significant behavioral innovations we can define do not coincide with the appearance of new hominid forms, and, as a corollary, we may affirm that there was no necessary connection between body form and cultural type or behavioral sophistication in the remote past, any more than there is a necessary connection between race and culture today. Interestingly, there is no convincing evidence that Pleistocene hominids of either the same or different species were ever particularly hostile toward their neighbors. The comparative lack of evidence for interpersonal violence contrasts rather markedly with some later situations and contradicts popular misconceptions about man's inborn aggressiveness.

In this brief outline, I have presented conclusions about past behavior of direct relevance to social anthropologists, physical anthropologists, and linguists. Many other similarly interesting observations could have been discussed. For example, future investigations of the constitution and functions of temporary, goal-oriented social groups will be pertinent to social anthropologists studying the characteristics of hunting parties, trapping teams, boating crews, and similar groups based on flexible bonds of partnership. Certainly our intensive analyses of the specifics of cultural adaptations to a variety of natural settings will be relevant to all other anthropologists.

Paleoanthropology's goal, which it is showing it can attain, is the reconstruction of vanished lifeways from durable archeological residues. The universe of behavior of fossil hominids has many aspects which are unrepresented among living societies. Paleoanthropologists can study variations in behavioral complexes that today are invariant. That is their major strength. Paleoanthropology need not justify its research by claiming to contribute to the definition of universal laws governing cultural behavior. Whether we eventually learn that such universal laws do or do not exist, the description of the vast spectrum of cultural variation is a worthwhile end in and of itself. As Clifford Geertz so aptly put it: “If we want to discover what man amounts to, we can only find it in what men are: and what men are, above all other things,

is various. It is in understanding that variousness—its range, its nature, its basis and its implications—that we shall come to reconstruct a concept of human nature that, more than a statistical shadow and less than a primitivist dream, has both substance and truth.”

It is in contributing to that understanding that paleoanthropology achieves full partnership with the other sciences of mankind.

■ BIBLIOGRAPHICAL NOTE

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Several works by social anthropologists and ethnologists have influenced the writer's thinking about the place of paleoanthropology and its potential contribution to the broader study of man. Specific works which have conditioned this presentation include Homer Barnett, *Innovation: The Basis of Cultural Change* (New York, McGraw-Hill Book Co., 1963), Clifford Geertz, *The Interpretation of Cultures* (New York, Basic Books, Inc., 1973), Claude Lévi-Strauss, *Structural Anthropology* (New York, Basic Books, Inc., 1963), and V. Turner, *The Forest of Symbols: Aspects of Ndembu Ritual* (Ithaca N.Y., Cornell University Press, 1967).

My discussion of functional modes is based in part on a permutation of Frederick O. Gearing's concept of the structural pose, which can be found in *Priests and Warriors* (Memoir 93, Washington, D.C., American Anthropological Association, 1962).