

The Archaeology of Place

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It is suggested that if archaeologists are to be successful in understanding the organization of past cultural systems they must understand the organizational relationships among *places* which were differentially used during the operation of past systems. This point is illustrated by observations made among the Nunamiut Eskimo. Against this background it is demonstrated that the two most common forms of archaeological systematics, "assemblage"- versus "type"-based systematics, are not appropriate for the study of places. In the latter case, it is not possible to analyze places as such, while one cannot see places with different "content" as part of a single system in the former. It is concluded that current archaeological systematics are totally inappropriate for studying past systems of adaptation and their evolutionary modification.

Viewed from the perspective of a living system, an occupation can be defined as the uninterrupted use of a place by participants in a cultural system. The material consequences of an occupation represent a document regarding an organizational aspect or phase of operation of the cultural system under study. The association among different things "falling out" of a system during an occupation may inform about the organization of the human action which occurred at the site. In previous studies I have looked at the way various activities conditioned the internal structure of a site (Binford 1978a) and I have attempted to investigate how a complete system appeared when seen from the perspective of a class of items (bones) deposited during identified occupations (Binford 1978b). In both of these studies I was viewing "the archaeological record" of a living system from the perspective of its known occupations. In this study I assume a more "realistic" perspective, viewing a living system from the perspectives of "sites."

Archaeologists must begin their analyses on materials remaining at archaeological sites. Archaeological sites yield assemblages. Assemblages are sets of artifacts (both items and features) which are found in clustered association (normally defined stratigraphically) at or in archaeological sites. The degree to which such clustered associations may be treated as the results of occupations, or the material derivatives surviving from an

uninterrupted use of a single place by participants in a cultural system, is yet to be clarified (see Dunnell (1971:150–153) for a discussion of assemblage definition). The archaeologist “sees” the past segmentally from the perspective of fixed positions in space. The “fallout” from the events that “moved across” fixed places establishes the character of the archaeological remains on sites. To understand the past we must understand places.

I am interested in sites, the fixed places in the topography where man may periodically pause and carry out actions. I am concerned with *site patterning* both in the frequency with which occupations occur at different places, and in the processes which generate associations among archaeological materials at sites. *Site patterning* in both within-place and between-place contexts is a property of the archaeological record. The accuracy with which we are able to give meaning to the record is dependent upon our understanding of the processes which operated in the past to bring into being the observed patterning. Put another way, our accuracy depends upon our ability to correctly infer causes from observed effects.

The processes which cause site patterning are long-term repetitive patterns in the “positioning” of adaptive systems in geographic space. Site patterning derives from repetition, or lack thereof, in the spatial positioning of systems. It is suggested that the factors which condition the positioning of systems may be somewhat different from the factors which condition the internal operation of a system. In fact, humans may reposition their adaptive strategies in a landscape, a tactic which may generate variability in the archaeological record while serving to foster stability within the ongoing system.

ECONOMIC ZONATION

I will attempt to demonstrate that there are important consequences for site patterning arising from the interaction between *economic zonation*, which is always relative to specific places, and tactical mobility, which is the accommodation of a system to its broader *environmental geography*. Variability among systems in economic zonation and mobility is expected to result in diagnostic forms of chronological patterning at sites.

One of the more distinctive features of human systems is their spatial focus on a “home base” or a residential camp. At any one time the way in which a group uses its habitat is directly conditioned by the pattern of moving out and then returning to a residential camp. This means that, aside from certain “absolute” characteristics of the biogeography within the region, *there is always a “cultural geography”* which is relative to the

location of the residential camp. It is this "relative" character of the cultural geography which prompted the development of "catchment analysis" (Vita-Finzi and Higgs 1970) and the recognition by Lee (1969) and others that there tends to be a regular pattern of land use centered on a residential location. Higgs and Vita-Finzi (1972:30) use the term *site territory* to refer to "the area habitually exploited from a single site." In recognition of the mobility of some adaptations they noted that the overall unit of space exploited during a normal annual cycle represents the accumulative sum of the various site territories. Vita-Finzi and Higgs (1970) refer to this unit as the *annual territory*. I tend to acknowledge the intuitive value of the term territory, but also recognize that the use of the term is ambiguous in anthropology, having had a long history of usage with respect to social relationships linked with conspecific competition (see Stanner (1965), Heinz (1972), and Peterson (1975) for a review of concept usage). For this reason I prefer the more biologically useful term *range*. I will adopt the sense of Vita-Finzi and Higgs's concepts of site territory and annual territory but use instead the terms *camp range* and *annual range*.

I want to outline a particular model of economic zonation around sites drawn largely from my experiences with the Nunamiut Eskimo (Binford 1978b). We can begin to think of zonation in terms of the immediate surroundings of the camp, which are generally quickly overexploited and therefore may provide very little in the way of foods except, of course, in the event there is a highly aggregated, renewable resource near the site. This area is frequently the "campground" for visitors, and the *play radius* for children. Beyond the play radius there is the *foraging radius*, which rarely extends beyond 6 miles of the residential camp. This is the area searched and exploited by work parties who leave the camp to exploit the environment and return home in a single day. Archaeological sites produced in this zone are most commonly what I have called "locations" (Binford 1980:9), although in some circumstances there may be hunting blinds, and other special-use sites within the foraging radius.

Beyond the foraging radius is the *logistical radius*. This is the zone which is exploited by task groups who stay away from the residential camp at least one night before returning. In many cases groups may remain away from residential camps for considerable periods of time. (Among the Nunamiut Eskimo, hunting parties may operate out of a hunting camp for as long as 4 weeks, and trapping parties may operate out of a series of trapping camps for up to 3 months.)

Regardless of the duration of penetrations into the logistical zone, maintenance accommodations including food, shelter, etc., must be provided for the work party while it is away from the residential location.

Thus, the remains from exploitation and processing for transport, from consumption, and of creature comfort accommodations of the task group all contribute to the materials remaining at logistical camps. Beyond the logistical range lies an area with which persons are generally familiar, the area about which they attempt to keep informed with respect to resource distributions and changes in production, although they may not be exploiting the area at the time of observation. This area which is regularly monitored will be called the *extended range*.

Among the Nunamiut we could say that beyond the *logistical zone* or the *extended zone* is the *visiting zone*. This is the area contemporaneously occupied by relatives, trading partners, wife-sharing partners, etc., and hence within the foraging radius or logistical zone of another subsistence unit. Exploitation of resources in such a zone generally is dependent upon establishing temporary *residence* at the camp of other persons. Once this is done the "visitor" frequently participates in the exploitative strategies of the host group, joining foraging units and participating on special work groups penetrating the logistical zone for specific reasons. It is not uncommon for visitors to constitute "special work groups" as, for example, an all-male hunting party, a pair of partners widely ranging over the landscape trapping animals, etc., or a "walkabout" party engaged in teaching young men the characteristics of the environment.

It is unrealistic to view the potential zonation around a residential camp as simply a series of concentric circles where the use which is made of each area is exclusively conditioned by the transport and labor costs of exploiting resources at differing distances from a locus of consumption (see Jochim 1976:51–56). The situation is more realistically visualized as a residential camp at the hub of a *foraging radius* and a *logistical radius* (see Fig. 1). The latter is conditioned in scale by concerns for supplying goods to consumers at the residential camp, but it is also conditioned by the need for information regarding a much broader area, the latter being critical for making decisions regarding future moves.

MOBILITY PATTERNING

Mobility is the way in which the above economic zones around a residential camp are differentially adjusted relative to the concrete distribution of resources in the habitat. *It is through mobility that a given place may be economically modified relative to the human system.*

I think it should be emphasized that there is an interaction between the degree of development of each zone and the degree of residential mobility characteristic of the group in question. For instance, a highly mobile foraging (see Binford 1980:5) group like the Punan (see Harrison 1949)

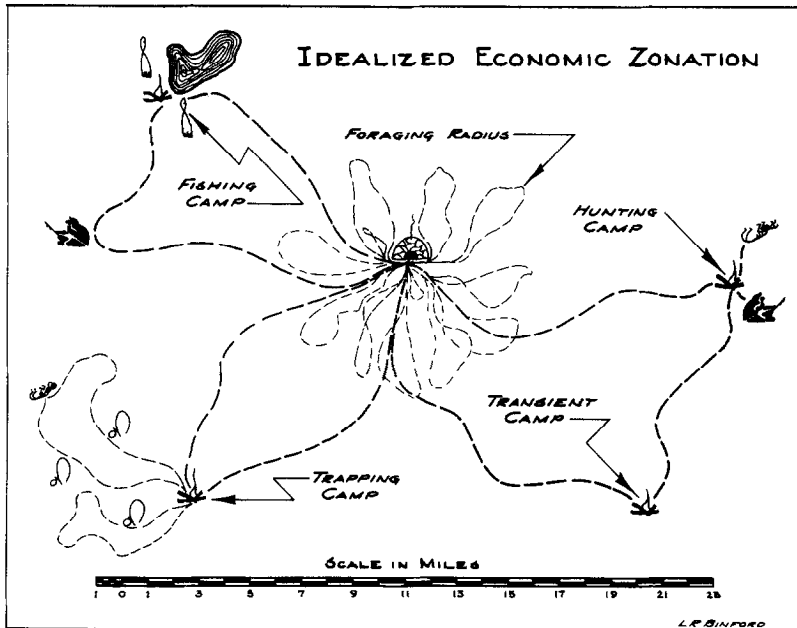


FIG. 1. Schematic representation of zones of economic activity around a residential camp.

has a pattern of movement which is so rapid that they characteristically cover only half of a foraging radius, with no development of a logistical zone. The residence is then moved to the outer perimeter of the radius previously covered, and through a search of the habitat a new half-foraging-radius "front" is developed from the residence. Once this "front" is covered, another residential move is made. This is what might be called a *half-radius continuous pattern* of movement (Fig. 2A). (This is the pattern illustrated by the high mobility of a San hunting party as summarized from Yellen by Binford (1980:8, Fig. 2).) Another pattern also characteristic of highly mobile hunter-gatherers is the *complete-radius leapfrog* pattern of movement (Fig. 2B). This is a pattern commonly seen in high-biomass environments. It is frequently linked with a classic encounter strategy (see Binford 1980) in which resources are exploited in proportion to their encounter frequencies, modified of course by the relative effectiveness of the "capture" techniques.

Much more common in lower-biomass settings is *point-to-point* (Fig. 2C) mobility, where a residence is moved from one relatively rare location providing access to food, water, and fuel to another such location within the region. In Australia and in the Kalahari, movement is frequently from one waterhole to another or one specific resource patch to another within

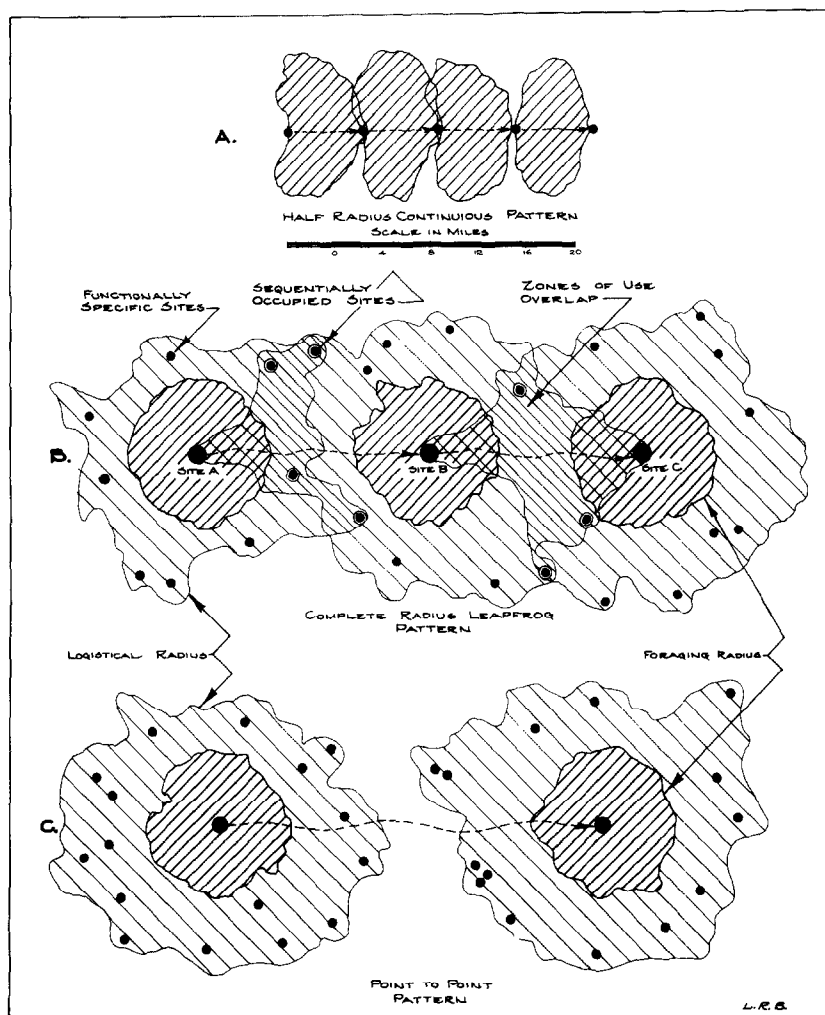


FIG. 2. Different idealized patterns of residential camp movement, with resultant spacing or overlap of foraging or logistical zones around camps.

the region. Distance between "camps" may be substantial on occasion, and, viewed annually, the distances may exhibit a wide range of variability. This is the pattern of movement most characteristic of residential moves made by the Nunamiut Eskimo. They tend to move camps to specific places prejudged as to the degree that there is an optimal congruence among foods, fuels, and water obtainable from the chosen location. Distances between such point-to-point moves may be many times the foraging radius.

I have observed that the half-radius pattern is exclusive to foragers, while the complete-radius leapfrog pattern and the point-to-point pattern may be found among both foragers and logistically organized groups. It would also appear that point-to-point mobility is more characteristic of logistically organized tactics. The latter makes considerable sense since placement of camps under such an organization is always an accommodation to a prior understanding of resource distributions which are generally incongruent (see Binford 1980). Residential placement in logistical systems is a compromise strategy relative to already known resource distributions, while forager strategies emphasize tactics aimed at learning about the distribution of resources in a region. Foragers employ coverage tactics, while collector site patterning derives from positioning tactics relative to a prior knowledge of resource distributions.

It can also be shown that many human groups may move through seasonal phases in which their coverage and positioning tactics change. For instance, in some systems people may be dispersed in summer, behaving like foragers by employing a mobility strategy designed for coverage, seeking to maximize the "encounter" with resources, yet during the winter they may be living from stores at a site which was positioned in terms of logistical concerns. Mobility patterning may be both geographically variable and regionally complicated.

WITHIN- AND BETWEEN-SITE VARIABILITY

Recognizing that mobility and the tactical aspects of land use may be organizationally complex when viewed from the perspective of a living system, we must now shift to a perspective more appropriate to the archaeologist, the view of a complex living system as seen from the fixed place, the site.

Visualize the complications which may arise from there being a rather fixed radial zonation of land use surrounding a camp but variation in the tactics of camp movement. Mobility ensures that the site-centered pattern of land use will be modified relative to absolute geography as a simple function of residential mobility itself. Let me illustrate by way of Fig. 3, which shows a situation where at time t_1 a group is living in camp A. From an archaeological perspective we would expect *special use areas* in the play radius, primarily *locations* within the foraging radius, and in the zone of the logistical radius *field camps*, *stations*, and *caches* may in fact be the dominant types of sites generated. Now let's imagine that the residential camp is moved sequentially up a valley, as is illustrated in Fig. 2B. With each move the land use zonation is centered on the new camp. Several points emerge as important in this example:

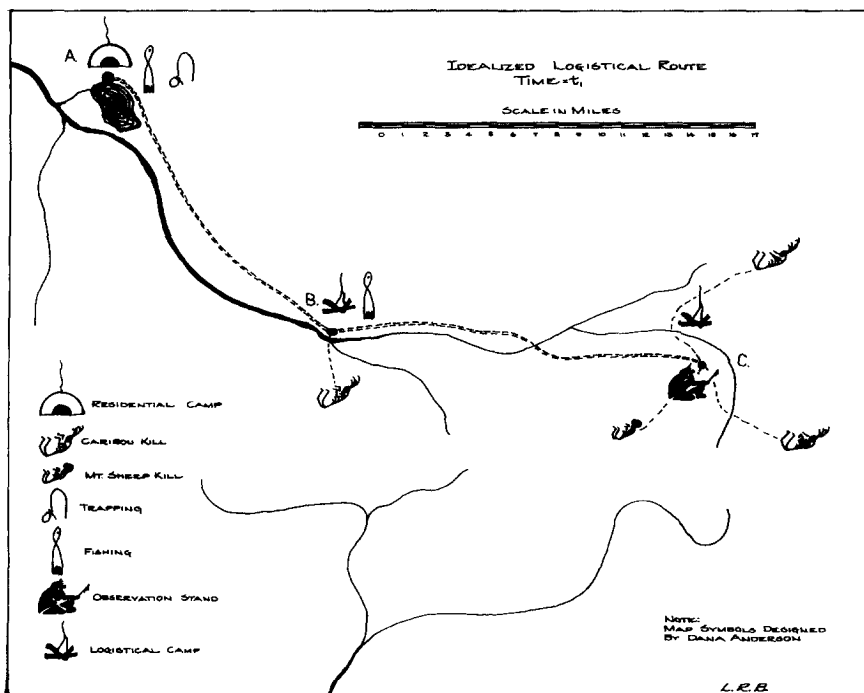


FIG. 3. Idealized pattern of site use and movement among sites at time t_1 (late summer).

(1) *The new residential camp is located in what was previously the "logistical zone."*

(2) *What was previously the foraging radius with "locations" is now in the logistical zone where camps may be expected, etc.*

What this means is that the same places have different economic potential relative to the sequence of base camp moves. They are different distances from the base camp, and some will be characterized by different use relative to parties coming and going from the sequence of base camps. Figs. 3–5 illustrate a simplified series of moves for a small group of Eskimo during late summer. In Fig. 3 the group was primarily engaged in fishing while male parties were moving out into the logistical zone hunting caribou with the goal of obtaining calves of the year and yearlings for their skins to be used as clothing the following winter. The residential camp was located at the junction of the major river and a minor tributary (site A). While living there the women had set numerous traps around the camp for the Arctic ground squirrel; young boys and women carried out extensive fishing for both grayling and white fish that penetrated the stream from the Arctic coast. Male parties were primarily hunting in an open valley at the drainage divide between the Arctic and Yukon drain-

ages (site C). There was a particularly well protected rock shelter in the face of a major limestone bluff at this site. Hunting parties could camp there and also use the mouth of the rock shelter as a hunting stand from which they could observe the movements of game in the valleys below. About halfway between this mountain hunting camp and stand (site C) and the residential site (site A) there was a transient camp and "rest stop" location (site B) at a river crossing. Animals tended to cross the river here so the site was also sometimes used as a nearby overnight hunting camp (meaning that hunting parties rarely took provisions with them to this location since it was very close to the residential site; see Binford (1978b:306–320)).

After living in the above situation for approximately $1\frac{1}{2}$ months, the Eskimo moved their residential camp to site B (Fig. 4), where a slightly different pattern of land use developed.

The previous residential site at site A was now used as a hunting camp; the residential site itself was "on top of" the earlier transient stopping place at the river crossing, which had also been used earlier as a nearby hunting camp. The valleys below site C continued to be a favorite hunting

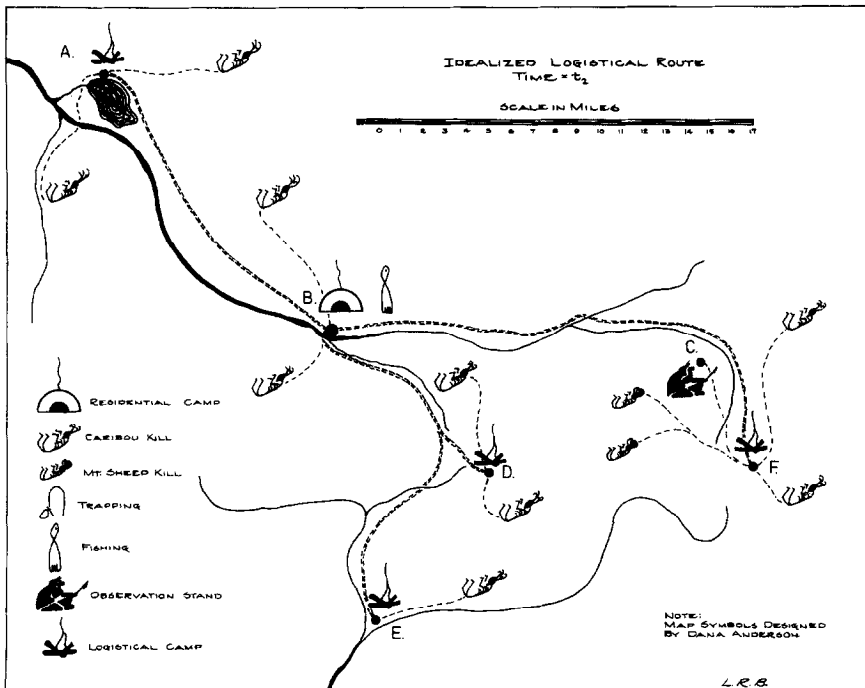


FIG. 4. Idealized pattern of site use and movement among sites at time t_2 (approximately $1\frac{1}{2}$ months later than t_1).

ground, but the sun had shifted seasonally so that the rock shelter at C no longer received direct rays of the sun and hence never warmed up during the gradually shortening days of late summer. This meant that the "cost" of dragging fuel up to the shelter was no longer reasonable since it remained cold and damp all the time now. Consequently it was only used as an observation stand, and the hunting camp was located at a much lower location (site F), where fuel was more accessible. Hunting camps were occupied at sites D and E by parties operating out of the residential camp at site B. In early fall, in anticipation of caribou migration, the residential camp was moved across the divide to site E (Fig. 5), where there was a continuation of fishing, but sheep hunting and caribou hunting dominated the subsistence activities at this camp. The previous residential camp was now used regularly as a hunting camp since animals in increasing numbers were expected to cross the river at the ford. Hunting activities were concentrated out of site B and out of site F. Although parties camped at site F as when they had been living at site B they now observed a region from a high ridge (observation stand site G) along a tributary draining ultimately into the Yukon system. Some minor hunting continued from site D but now the target was almost exclusively sheep.

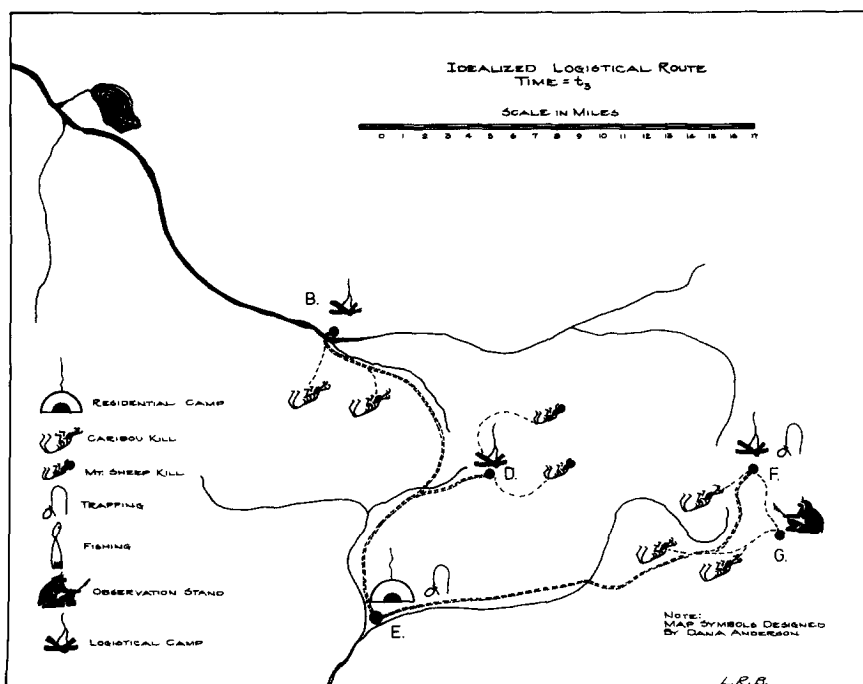


FIG. 5. Idealized pattern of site use and movement among sites at time t_3 (early fall).

CONSEQUENCES OF VARIABLE SITE UTILIZATION

Table 1 summarizes the differing uses of the sites discussed in the series of three documented moves. Several points should be clear:

(1) *The locations preferred for residential camps can be expected to yield a most complex mix of archaeological remains since they were commonly also utilized logistically when the residential camps were elsewhere. This is further expected not only because the functional integrity of associated remains may be low, given both residential and logistical usage, but, in addition, because the contrasts of residential functions with special purpose sites will contribute to a more complex or at least heterogeneous assemblage at the residentially used sites (see Binford 1978b:486–488).*

(2) *There may be seasonally correlated shifts in the activities conducted at both residential and logistical sites. An example is the shift from predominantly fishing activities at the summer residential camp (site A) to the predominantly caribou hunting activities conducted out of the early fall residential camp (site E). An analogous seasonal shift was*

TABLE 1

Time of occupation	Site	Function
Time 1	A	Residential camp—fishing, minor hunting
Time 2	A	Caribou hunting camp
Time 3	A	Transient camp
Time 1	B	River crossing and transient stop and hunting camp
Time 2	B	Residential camp—fishing, moderate hunting
Time 3	B	River crossing and hunting camp
Time 1	C	Hunting camp and observation stand
Time 2	C	Observation stand only
Time 3	C	Not occupied
Time 1	D	Not occupied
Time 2	D	Hunting camp, caribou—sheep
Time 3	D	Hunting camp, sheep only
Time 1	E	Not occupied
Time 2	E	Hunting camp
Time 3	E	Residential camp—hunting with minor fishing
Time 1	F	Kill site
Time 2	F	Hunting camp
Time 3	F	Hunting camp
Time 1	G	Not occupied
Time 2	G	Not occupied
Time 3	G	Observation stand

noted at site D, used initially for taking caribou bulls in late summer, while early fall hunting from the location was almost exclusively for mountain sheep.

(3) *There may be seasonal changes in the characteristics of places which conditioned their appropriateness for various uses.* An example is site C, where during one season of the year the rockshelter was warmed by the sun, making it a desirable location for camping. As the sun moved on the horizon relative to the site, however, it became less and less desirable as a camp and was then used only as an observation stand.

(4) *The logistically used sites exhibit less functional shifting with each residential move than other sites.* Sites C, D, F and G exhibited minor changes, but all maintained some functional integrity through a series of residential moves.

OCCUPATION AND DEPOSITION

Finally, archaeologists must realize that *there is no necessary relationship between depositional episodes and occupational episodes.* Rates and magnitudes of "burial" of archaeological remains are generally consequences of processes operating independently or at least semi-independently of occupational episodes. The primary determinants of the "burial" of archaeological remains are the rates of geological dynamics resulting in surficial deposition of matter. Floods, exfoliation of the walls of a rock shelter, loess deposition, slope wash, etc., are the major determinants of the "provenience" packages in terms of which we "see" archaeological associations.

Only in "high-energy" cultural contexts where the actions of man actually bury artifacts can we relate provenience units which represent unit burial events to unit human actions. Even in such contexts the more likely situation is that the artifacts included in matrix units actually deposited by man were derived from earlier deposits or surficial distributions. (This is a point frequently stressed by Schiffer (1976).) Returning to the condition of interfacing between occupational episodes and processes of burial, I think that it can be appreciated that, given certain depositional dynamics, the *tempo of land use*, or how frequently a place is utilized, conditions how discretely occupational episodes may be buried and therefore preserved as event-specific associations among artifacts. Given relatively intensive use such as site F, which was occupied seven times during the course of 4.5 months (Figs. 3, 4, 5), there seems little likelihood that the different occupational episodes would be discretely buried and hence preserved as occupational units. It is much more likely that the debris from all seven occupations would appear as a single depositional unit. It may even be the situation that several yearly accumulations would be combined to pro-

duce a palimpsest "assemblage" occurring as a thin lens on a stabilized land surface which was occupied on numerous occasions over a considerable number of years. This example emphasizes that *the composition of assemblages and their "grain" does not generally derive from the operation and hence organization of a cultural system but instead from the interaction between the cultural system and the processes which are conditioning burial of cultural debris*. Put another way, the burial of cultural debris is not necessarily a cultural process. Since it is the burial processes which strongly condition the character of associations in buried deposits, it should be clear that assemblages defined in terms of depositional criteria (excavated in so-called natural units) are not likely to refer to discrete occupational episodes. Any repetitive patterning which might be demonstrable between depositionally defined "assemblages" is likely to derive from factors conditioning stable repetitive sequences or patterns of place use at the site. In addition, the *associations* among classes of things in depositionally defined "assemblages" would derive from the regular associations among different occupations at the place, and not necessarily from regular performance of sets of activities during any one occupation. In reality, the compositional character of the depositionally associated assemblage would derive from both organizational properties characteristic of given occupations and the particular serial occupational pattern.

For example, let's imagine that the variability in utilization of the different sites listed in Table 1 was also accompanied by differences in the debris remaining from each functionally distinct occupation. Let's further imagine that no burial or different occupations occurred during the 4.5-month period so that the accumulations at each site were occupationally undifferentiated in any depositional sense.

A classification of the gross "assemblage" occurring on each site would tend to group those assemblages which had similar combinations of occupations in a functional sense. Sites D and F would most likely constitute a group; sites G and C another group; and the "assemblage" from sites A, B, and D a third distinct but internally variable class. These three assemblage types would not refer directly to any specific activities, but instead to the combinational pattern of occupations which occurred at the several locations. It is true that some activities would tend to dominate one or more classes—hunting camp derivatives in the type made up of sites D and F—while "observation stand" derivatives would dominate the assemblage type defined by sites C and G; nevertheless, hunting camp debris would be submerged in the assemblage from site C while kill site activities would be swamped by the hunting camp materials at site F.

It is perhaps shocking to realize that a recurrent pattern of association among artifacts may derive from regularities in the history of site use. *The demonstrably associated things may never have occurred together as an*

organized body of material during any given occupation.

If we are to have confidence in our techniques for making inferences regarding the past, our techniques should accurately anticipate the dynamics of a system known to have produced patterned statics at archaeological sites. This is not a question of whether the past was like the Nunamiut Eskimo but whether our inferential strategies are adequate to inform about a case like the Nunamiut.

In this paper I have discussed conditions under which we could expect to recover different things at different places which were in fact referable to a single cultural system. The observations presented, as well as the discussions of land use, have led us to anticipate a number of patterns in the archaeological record.

SUMMARY OF ETHNOARCHAEOLOGICAL OBSERVATIONS

- I. It has been demonstrated that:
 - (a) In a logistically organized system of exploitation (collectors), different places in the habitat of a single system are used differentially and occupied for different purposes.
 - (b) There are fundamental organizational differences between residential camps and special purpose sites occupied in the context of a logistically organized system. (See Binford 1978b:483–497.)
 - (c) Given (a) and (b) above, the economic potential of other fixed places within the habitat changes with any change in the placement of the residential hub.
- II. It is expected that:
 - (a) There would be some correspondence between material items entering the archaeological record and the activities and tasks carried out during an occupation.
 - (b) There would be some correspondence between the economic potential of a place and the character of the activities normally conducted there during any given occupation.
 - (c) There would be some bias in the environmental characteristics favored for residential usage.
- III. Given the conditions and expectations outlined in I and II above we can anticipate some of the following patterns to be generated in the archaeological record:
 - (1) Different assemblage forms to be recovered from contemporary sites located within the region occupied by a single cultural system.
 - (2) Chronologically sequential changes in assemblage content occurring at fixed sites within the region. These may be in response to

changes in the economic potential of the place relative to mobile residential camps.

If so:

- (a) Such sequential changes do not represent organizational change in the system, only shifts in the economic potential of the place itself and as such could result in:
 - (1) Occasional chronological reversals in the forms of assemblage deposited at different sites as well as different sequences of assemblage forms at different sites within a region.
 - (2) Occasional nonsequential reoccurrences of similar forms of assemblage at a given site (alternation of industries). (Note: Both conditions could arise from simple vagaries in the relative positioning of different residential sites vis-à-vis the site in question.)
 - (3) Some potential independence among contemporary assemblage types with regard to their micro-environmental associations within the region. (Simple but different types of assemblages can be expected to show some environmental correlates even within a relatively localized region.)

All of these expected patterns of interassemblage variability, as well as implied regional and chronological patterns, could arise from simple internally differentiated systems of action which were not static in geographic space. The realization that we might see shifts in site function as indicated by assemblage composition in the absence of environmental change or change in the organizational character of the cultural system itself has perhaps not been widely recognized by archaeologists.

By the same token, we can expect that some locations, particularly special purpose sites, may exhibit little if any change in the functional characteristics of site use in spite of organizational change in the cultural system and/or shifts in its regional positioning. This point has been made previously (Vierra 1975; Binford 1978b, 1981).

I am proposing that we can regularly expect variability in chronological sequences at different sites within regions. Contemporary "levels" should frequently be different. The sequence of change through a deposit may be related to function and therefore different at different sites as a simple function of use differences which may arise from simple shifts in regional positioning. At the same time the possibility exists for there to be functionally related stability, in that particular places may continue to be used in similar ways in spite of overall organizational change in the system (e.g., a good sheep-hunting camp in the mountains remains such regard-

less of changes in the role which sheep may play in the overall organization of the settlement subsistence system).

BETWEEN-SYSTEM VARIABILITY

If we shift perspective again to that of an observer "high in the sky" capable of "seeing" variability among systems differentially distributed spatially and perhaps in terms of change through time, how might we anticipate the character of changed patterning from the perspective of the "observer" at the bottom of a "site" looking up as the dynamics of human systems pass over, resulting in a "fallout" of matter?

The interesting example of variability or change in the scale of movement practiced by organizationally different systems is a case in point. If the reader has followed the arguments thus far it should be clear that there would be a quantitative scaling in variability with differing magnitudes of movement. The greater the distance between residential camps the greater the likely change in economic potential for any given fixed point in the habitat. Similarly, the more seasonally repetitive the movement of residential sites, the greater the chance for repetitive types of occupations at particular logistical sites. On the other hand if the scale of residential mobility is large and not geographically repetitive, so that the places utilized during one year are not necessarily used again in succeeding years, the pattern of occupational differentiation and hence assemblage heterogeneity might be greater at a given site than if the pattern of seasonal mobility were repetitive or "smaller" in scale.

I expect that the degree of change in the economic potential of particular places will vary with the scale of movement characteristic of the human group making use of the location. We may anticipate increasing repetition in the use of particular places when the system is becoming more sedentary. It should be clear that when residential mobility is at a minimum the economic potential of fixed places in the surrounding habitat will remain basically the same, other things being equal. This means that a system changing in the direction of increased sedentism should generate ancillary sites with increasing content homogeneity. This should have the cumulative effect of yielding a regional archaeological record characterized by greater intersite diversity among ancillary or non-residentially used sites but less intrasite diversity arising in the context of multiple occupations.

Stated in a less formal manner we can imagine a group of hunter-gatherers moving about the landscape. A particular place may be used as a hunting camp at one time, a transient camp at another, and a short-term observation stand at still another, depending on the relative placement of the residential camps. As the system changes and a more

permanent residential settlement is established such situational variations would be reduced. The relative "economic potential" of different places becomes increasingly stabilized as a function of the increasing permanence of the residential camp. Correspondingly, the use made of ancillary places becomes increasingly repetitive. A given cave might now be used almost exclusively as a hunting camp, while another place in the habitat may become a functionally specific lithic procurement site, etc. By way of contrast, under the more mobile system lithic materials might have been obtained incidentally to the carrying out of hunting and gathering activities (see Binford 1979), and the site now used exclusively as a hunting camp might have been occupied for multiple purposes, given shifts in the utility of the places relative to the changing locations of residential camps under earlier conditions.

The overall effect of reduced residential mobility among logistically organized hunters and gatherers, from the standpoint of patterning, would be an archaeological record characterized by better defined "types" of sites giving the appearance of greater specialization in functions, when in fact all that may have gone on is that the same activities were increasingly located in the same places.

IMPLICATIONS OF THIS STUDY

I hopefully have demonstrated that assemblage variability can be expected within deposits and between sites. When viewed from a higher level of organization, differences in both the scale and the actual patterns of mobility between major regions can be expected to be manifest in the form and patterns of both within- and between-site assemblage variability.

Stated another way, the consequences of the dynamics described here would condition patterns of assemblage content, or the overall form of complete inventories recovered from deposits judged to have had some depositional integrity. There is really only one approach in common use, "la Méthode Bordes" (de Sonneville-Bordes 1974-1975), which yields an assemblage-based systematics. With this approach the summary content of a complete assemblage is taken as the unit for comparison.

The use of this method became widely known through F. Bordes' (1950, 1961) studies of the Mousterian materials from Europe. There he demonstrated a number of patterns which most archaeologists had neither expected nor really "seen" previously. Bordes illustrated new and convincing cases of "parallel phyla," that is, very different assemblage types co-occurring in a similar region over long periods of time. In addition he illustrated for the first time convincing cases of "alternating industries." That is, through a sequence, sometimes at a single site, the pattern of assemblage variability was *not directional* through the stratigraphic col-

umn. Assemblage types might reoccur at various points in the column, with very different assemblages interstratified between nearly identical assemblages. Finally, Bordes demonstrated that when stratigraphic sequences from several sites in a region were cross-correlated temporally, that is, when rough contemporaneity could be established between levels from different sites in the same region, contemporary assemblages might be very different in formal content. This has been interpreted as the presence of culturally distinct peoples living side by side and maintaining their cultural distinctiveness either in the absence of interaction or in spite of interaction. I term this the idea of "tenacious cultures."

The reader must realize that these patterns are consistent with the expectations derived from the ethnoarchaeological example from the Nunamiut given here. In this case we saw how different assemblages could occur in a single region, how different assemblage sequencing could occur within sites, and how different assemblage configurations could be contemporary within a region. It would be nice to move directly to the conclusion that the dynamics observed among the Nunamiut were the type responsible for the patterning observed by Bordes in the archaeological remains of the Mousterian. This is not possible. There are several problems which must be cleared up before the relevance of this example to problems of prehistoric interpretation can be assessed.

Problem 1. The example is drawn from an Eskimo system which is certainly a product of modern men. The type of patterning described by Bordes for the Mousterian has not been widely recognized in the remains of demonstrable modern men from the Old World. The patterns which Bordes made so famous are from the Middle Paleolithic of Europe and are referable to hominid ancestors living before the appearance of fully modern man. If you take this situation at face value, it might appear that the patterns which Bordes discovered were characteristic of the Middle Paleolithic. Such a view would certainly be supported by claims for the absence of such patterns from both the Upper Paleolithic and more recent materials of Europe (de Sonneville-Bordes 1966). I might note that such patterning is not normally recognized in the New World.

The conditions illustrated by the example presented here would lead us to expect the presence of such patterns. Of equal interest are other implications for differing views of the past which this case renders explicit.

This example has been drawn from a subsistence settlement system which I have termed "logistical" (Binford 1978b, 1980) in its organization. It is recognized that there are other forms of systems largely representing differing tactical mixes of consumer versus producer mobility in a variable setting of temporally and spatially differentiated distributions of resources. In an earlier paper I contrasted the systems organized so as to

move consumers to goods rather than, as in the examples given in this paper, to move goods to consumers. (In a logistical system, residential mobility still positions consumers relative to goods in a long-term sense, but the short-term supply is commonly handled with logistical tactics.) Ironically I see no reason to suspect that the Mousterian systems studied by Bordes were logistically organized.

I currently consider the contrasts between the Mousterian and the Upper Paleolithic to be so great that the systems must have been fundamentally different in an organizational sense. In turn the Upper Paleolithic appears to me to represent no greater range of organizational differences than are currently known among contemporary hunter-gatherers. For this reason I consider the details of site formation described here to be of greater relevance to hunter-gatherer societies of fully modern man living in environments with relatively short growing seasons, and organized logistically, at least seasonally, as were the Nunamiut Eskimo.

This means that some form of patterning similar to "parallel phyla," "alternation of industries," and "tenacious cultures" should be manifest in the Upper Paleolithic, that is, given that our methods of arranging observations do not obscure the types of variability expected when an assemblage is the unit of comparison and its classificatory status is evaluated with a procedure similar to Bordes' type list.

Interestingly, everywhere in the Paleolithic world where "la Méthode Bordes" (de Sonnevile-Bordes 1974-1975) has been employed over any length of time, regional workers have been forced to the conclusion that there were "parallel phyla," sometimes "alternating industries" and "tenacious cultures." As more work is done, particularly survey, increasingly complex patterns of association are recognized between the "phyla" and local habitat differences. Finally, as still more work is done, particularly more stratigraphic work, it generally develops that similar "assemblages" are not necessarily contemporary and the "classic sequence" as defined from the earliest modern excavations appears not to be robotically repeated in each new site! This situation is apt to produce great consternation among the workers in the region since their expectations for "culture" are normally (a) gradual, continuous directional change, (b) graded variability across geographical regions, and (c) graded transformational change through time, where similar things belong in similar time periods.

... les types et leurs proportions sont stables et constants à l'intérieur d'une même culture pour une période donnée dans une région donnée. ... (de Sonnevile-Bordes 1975:3)

Radical change within a sequence is accommodated by a post hoc argument which tends to "save" the view of culture outlined above,

namely, that a migration of different people entered the region, abruptly replacing an earlier population. Alternation of industries is accommodated by the post hoc argument that an earlier population returned to the region. Parallel phyla is a little more difficult, demanding that the above expectation for a graded pattern of cultural variability across a region be abandoned in favor of a different view of "culture."

. . . man is more ready to exchange his genes than his customs, as the whole history of Europe demonstrates. (Bordes 1968:144)

This is the view of culture which postulates a kind of tenacious holding on to one's way of doing things in spite of the types of social milieu that may be "around" a "people." This is an idea of culture much more consistent with "ethnic" phenomena characteristic of societal segments within complex systems rather than the types of graded regional patterns ethnographically described for small-scale societies (see Wissler 1914; Kroeber 1939; Milke 1949; Hodder 1977). Nevertheless, the conventions commonly used as ad hoc arguments in many cases tend to "save" the view of culture believed by the researcher. Nonsynchronous chronological patterning is the most difficult for most archaeologists to accommodate by ad hoc arguments about "culture." When faced with what appear to be "alternating industries" most are apt to question the accuracy of the "facts"; e.g., the excavator must have mixed levels, the C-14 date must be wrong, etc.

It is suggested that the problems of prehistory as illustrated by the well-documented sites of south-central France are "classic," but not in the sense in which French prehistorians tend to use the word; rather they are classic in the sense of the "predictions" given above.

It was in the pioneer area of research into man's prehistoric past, the Dordogne area of France, that the idea of a "classic sequence" or a basic chrono-stratigraphic sequence became popular. The French prehistorians viewed the stratigraphic sequence as observed in a given site as a document regarding the evolution of culture in general. Situations where there appeared to be no easy transition from one form to another were conventionally interpreted as referable to historical shifts in the geographic distribution of differing cultural "phyla" or, in layman's terms, in the distribution of different prehistoric "tribes." The view of parallel phyla as originally proposed by Peyrony ("two great industrial traditions which coexisted in the Perigord and which evolved over time through a succession of more or less synchronous . . . stages of development"; Laville et al. 1980:282) has been stated in more popular language by F. Bordes as follows:

The Aurignacian and Perigordian people seem to have lived 'side by side' during the Wurm III period, without influencing each other to any greater extent than the various Mousterians did during Wurm I and II. (Bordes 1968:157)

The old idea of a "classic" sequence of Paleolithic cultures revealed through careful stratigraphic research at a limited number of sites (de Sonneville-Bordes 1966), is no longer tenable. In fact, as new work is done, the single site—single chronological sequence view of the past is challenged.

... Upper Perigordian systematics can no longer be viewed in terms of a simple linear model of successive assemblage types. (Laville et al. 1980:287)

Similarly, the later Solutrean—Magdalenian sequence is also presenting problems.

Perhaps its [the Magdalenian] industries do not belong to a single continuum of change and thus, in reality, there exists no simple succession of tool forms over time. (Laville et al. 1980:340).

While the debates regarding such challenges to the traditional view are quite colorful (see, for instance, F. Bordes' characterization of the dates from Level IX at Flageolet II as forcing us to imagine Charlemagne riding on a motorcycle (F. Bordes 1979:81)), the fact remains that with almost every new excavation the old "classic" sequence is being challenged in that the newly excavated sites do not exhibit the same sequences (Straus and Clark 1978:456; Straus 1980:625; Laville et al. 1980:312, Fig. 9.8). Nor do typologically similar assemblages appear to be necessarily contemporary as would be "expected" under conventional views (Laville and Rigaud 1973; Montet-White 1973:131–132).

Even more interesting in this regard is the recent "recognition" of multiple phyla among both Middle and Upper Paleolithic materials from the Near East (see Bar-Yosef (1980:115–118) for a summary of the Upper Paleolithic situations) and in North Africa. Needless to say, the archaeologists who "recognized" the different "cultures" were using approaches similar to "la Méthode Bordes" for classifying their materials.

... the Kom Ombo Plain [was] a mosaic of cultures in late Paleolithic times where groups bearing a number of industrial traditions, both indigenous and intrusive, frequented the environmental zones of this attractive region. . . . (Smith 1967:150)

... the apparent presence of more than one Upper Paleolithic tradition in the Avdat/Aqev area. This is seen most clearly at Boker, where areas BE and C contain three technologically distinct assemblages which are more or less contemporaneous. (Marks 1977:78)

Almost simultaneously there has developed a series of arguments regarding the possible alternation of assemblages in sequences and the likelihood of parallel phyla as characteristic of the prehistoric past in South Africa (see Parkington 1980)!

It seems that everywhere an assemblage approach to prehistory is used, a past with independent cultures living side by side in the same regions over vast spans of time is created! I feel quite confident that, as "la

Méthode Bordes" is being increasingly adopted in both Japanese and Indian research, we can anticipate the "recognition" of parallel phyla in the Paleolithic of both these regions.

Problem 2. The dynamics described here were observed among logistically organized systems of contemporary Eskimo—how does this illuminate the Mousterian, where there is apparently analogous patterning?

The first observation which I ever made with regard to patterning within Mousterian materials was a surprise (Binford 1972:88). I had been unable to demonstrate a statistically "significant" difference between tool frequencies within samples recovered from the bottom of a deposit approximately 1 m deep and those recovered from arbitrary levels within the deposit, or even differences between the bottom and the top of the deposit. In my experience, that was new. Working with New World materials the reverse situation was generally present, namely, that comparison between any combination of recovery units, natural levels or arbitrary levels within a geological deposit generally yielded "significant" differences. Clearly the descriptions of formation dynamics described here are much more consistent with my "New World" experiences than this Mousterian experience. Since my first brush with Mousterian materials I have had many additional opportunities to examine Mousterian assemblages. I have partitioned the deposits from Levels K, L, and M at the site of Combe Grenal and found that there were no "significant" differences between the arbitrarily defined "assemblages" from the bottom of the levels and the top. We have once again the picture of incredible internal homogeneity among the occupational episodes contributing to the buildup of a deposit over a considerable period of time.

This type of internal "couche" homogeneity would seem to be inconsistent with the formation dynamics currently described for foragers (see Yellen 1977:73–84), and it is certainly inconsistent with the formation dynamics as described here and in earlier accounts (Binford 1978b:451–497, 1980:5–19). Some might argue that the Mousterian situation reflects an increasing repetitiveness in the character of site use conditioned by decreased mobility. Certainly some have thought the Mousterian represented essentially sedentary hunter–gatherer systems (see Bordes 1968:144; Marks and Freidel 1977). At least in terms of characteristics normally associated with high degrees of sedentism, such as regular trash disposal and cleanup of sites, increased investment in facilities, and intensification of subsistence practices—obtaining food from less space than when mobility is high, and an increase in logistical tactics for obtaining widely scattered resources—I find it very hard to view the Mousterian as a system of sedentary hunter–gatherers. We might be able to model some of the intersite variability documented from

the Mousterian given the understanding of formation dynamics provided here, but I find it very hard to model the intrasite, or intra-“couche” variability or lack thereof from the perspective of our current understanding of sedentism.

The situation of seeming “I-N-C-O-N-S-I-S-T-E-N-C-Y” between what we think we understand about site formation, and the demonstrable pattern of both within- and between-site variability in the Mousterian is the signal that we still have considerable growth potential as a science. We don’t have a comprehensive understanding of the conditions which bring into being patterning in the archaeological record. Mousterian patterning remains a challenge yet to be “decoded.” The simple answer is that I don’t understand the Mousterian patterning.

Problem 3. This example was drawn from a contemporary group of New World hunters. Why have patterns similar to those described here not been regularly reported from the New World?

The simplest answer to this problem is that in the New World archaeologists rarely describe “assemblages,” and, even if they do, New World systematics is not based on “assemblage” units. The type of variability being discussed is reflected in content summaries for artifact inventories recovered from depositionally defined levels or from sites considered to have some minimal degree of occupational integrity. New World archaeologists work with different kinds of units. The basic unit of observation is most commonly the “type” (Krieger 1944; Ford 1954), considered to be a demonstrated cohesion of properties or attributes regularly associated on analogous artifacts recovered from a number of different sites (therefore demonstrating continuity). This approach yields what Dunnell has called nonclassificatory arrangements or, as Hodder (1977:294) has called them, “association groups.” Cultures are then conceived as recurrent “bundles” of types. Patterns of repetitive association at different sites of a number of different “types” illustrate a “cohesion” of traits said to represent a “cultural” unit. This is thought to be a meaningful way of conceptualizing the past.

In a limited but growing number of cases where assemblage-based comparisons have been attempted using “type list” approaches analogous to “la Méthode Bordes,” patterns of tenacious cultures (Vierra 1975; Irwin and Wormington 1970) and “parallel phyla” (Winters 1963a, 1963b, 1969; Judge 1973) have been suggested. These studies illustrate nicely how dependent our views of the past are upon the particular *conventions* which we employ for ordering our observations. Put another way, most New World archaeologists did not “see” the patterned variability described in this article *because their analytical conventions render it invisible*.

CONCLUSIONS

The conclusions to be drawn from this study reflect directly on the state of the art in archaeology.

(1) The types of patterning illustrated here derive from the basic organizational properties of mobile human adaptations. I have suggested how different patterns studied comparatively might well inform us regarding differences in the fundamental organizational properties of past cultural systems.

(2) This type of variability is at present only "visible" in terms of inventory differences among assemblages recovered from depositional units at different sites in a region.

(3) An assemblage-based systematics is really only common among European Paleolithic archaeologists, and their work does yield patterning of the forms illustrated here. These archaeologists insist that the patterning is telling them about "culture" instead of the organizational functioning of cultural systems. The use made of their observations is, therefore, never directed toward the elucidation of evolutionary processes or the study of systems change and diversification. Their observations are "explained away" with ad hoc arguments which then become their constructed "culture histories."

(4) New World archaeologists, by tradition, use a "type"-based systematics which renders it impossible to "see" the kind of variability described here. The result is that, in the main, New World systematic summaries tell us little of interest for studying processes of evolutionary change and diversification.

Among mobile peoples the differentiation of activities among places in both form and frequency of use carries direct information about the organization of a past system of adaptation, as do patterns of occupational redundancy. *The facts of interest are the ways in which places are differentiated one from another, and how this differentiation is related to patterns of seasonal environmental dynamics as well as to longer-term cycles and shifts in environmental conditions. All of these facts of interest are facts which differentiate one place from another.*

Until we turn our serious attention to the design of reliable methods for monitoring past conditions of interest, we will never be able to address interesting questions through the investigation of archaeological remains. Our current systematics is rooted in misguided ideas of "inductive objectivity" and is based on limited experiences believed to be informative as to the "nature of culture." These impressionistic ideas then guide our judgments as to how to observe and, in turn, how to interpret observations once they are made. I frequently hear the call for the development of "interesting" theory dealing with the "big" issues of cultural evolution,

etc. Given the current state of our "observational language," our classifications and systematics, we simply cannot generate facts of relevance to these issues, much less move to the evaluation of theories designed to explain events of the past which we are unable to accurately recognize. In short we must turn our analytical attention to understanding the role of different places in the organization of past systems.

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