Spatial Patterning of Middle Paleolithic Sites

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Spatial analysis of ancient paleolithic sites usually involves analyzing the distribution of artifacts or bones on a hypothetical “living floor.” From these distributions archaeologists look for “structures.” They typically find at least two different types of structure. Concrete or visually obvious examples, such as fireplaces or huts, and more abstract (nonobvious) structures, those that are created through analysis. Once these structures have been identified and described, archaeologists possess a great deal of data that allow them to speak about lifeways, behavior, human group organization in small domestic units, etc. Often, papers are concluded at this point, and several hypotheses about site functions are proposed. Analysis of the spatial patterns of artifacts, for example, often leads to anthropological and ethnographic styles of interpretation. In this article we show that most properly analyzed Middle Paleolithic sites are reconstructible as palimpsests, strongly suggesting that small groups commonly returned to the same locations through many generations, perhaps over more than a hundred years. In the case of these sites, examining spatial patterning is a way to study behavior diachronically rather than the organization and use of space synchronically. © 1994 Academic Press, Inc.

INTRODUCTION

Analyses that derive site function from spatial patterning are always largely theoretical in nature: human occupations are rarely short enough or well preserved enough for more than weak direct reconstructions and inferences. In some cases, such as those Magdalenian dwellings from the Paris Basin, relatively short-term occupations are preserved in thin alluvial deposits, so that even if humans came repeatedly to the same location on a yearly or perhaps seasonal time scale, enough sediment generally accumulated to prevent occupations from occurring on the same surface. They are, therefore, largely unmixed and separable. In these Late Upper Paleolithic cases we have extremely well-separated activity areas, a clear social organization of these activities, and foundations or structures which distinctly indicate the living floors (Enloe et al., this issue; Leroi-Gourhan and Brézillon 1972). However, in order to recover and understand even these very clear patterns, human groups had to have performed separate activities at different locations on the occupied surface. Many interesting patterns have actually been recovered and reconstructed, for example: huts with bedding areas, fire places, consumption or butchering activity areas, skin-working areas, knapping areas, and so on. It is reasonable to state that if the different activities of a group are truly and systematically separated, then under these kinds of depositional regimes it will be possible to find some trace of them on the living surface even if postdepositional processes have moved things to some extent.

But what do we know about the periods that come before the Upper Paleolithic? Many distinct spatial structures have been described from these time periods, especially in Western Europe: the huts from Lazaret and Terra Amata, pavements from caves (Aldène) or open air sites (Venosa, Isernia), low walls thought to be intended to provide protection from the wind (Soleilhac), and accumulations of artifacts in and around stone piles (many sites). However, Lower and Middle Paleolithic rock shelters and open air sites rarely con-
tain structures that are not substantially created in the archaeologist's mind. Unfortunately very few of these readily observable structures have been excavated or described in a satisfactory manner. In general four main problems are encountered in examining structures from these time periods: (1) the structures are presented for interpretation before the artifact and spatial analyses are complete (Soleilhac, Mas des Caves), (2) the amount of excavated area is too small and is not meaningful as far as the extent of the human deposit is concerned, (3) the analysis is a biased one (le Lazaret), or (4) the smallest artifacts are only preserved in specific areas because of the presence of large stones and thus the possibility that large portions of the deposit are no longer present cannot be ruled out (Soleilhac, Gélétan, Vaufre, for instance).

A more general problem, and one that is especially serious in caves and rockshelters, is that, until recently, archaeologists have always focused on defining stratigraphic layers. Stratigraphy was the key to chronology, and for a long time establishing a chronology was considered the most important goal in any excavation. For this purpose a small excavation was sufficient to sample artifacts and faunal remains from each level and to get quickly to the bottom of the deposit. Unfortunately, just as no stratigraphic geologist would seriously consider working on small sections with no significant depth, it is not possible to accurately examine spatial patterns from excavations that are too restricted in their horizontal extent.

Of course, there are many other general problems that typify older approaches. Faunal remains, for example, were often studied only from a paleontological and chronological point of view. We now require additional information from faunal remains, and so they are examined from many different points of view. Commonly, for example, in older analyses faunal remains are said to derive from hunting, but frequently this assertion remains unsupported by either argument or fact. The proper analysis of fauna is a lengthy and fastidious process, one in which preliminary results are often revised substantially. One must know the MNI of each species, the mortality curve and whether it might relate to carnivores and/or other causes, which bones are present and which missing, what the economic utility of specific body parts was, how much actual meat is represented, and so on. Only with this type of information can we make well-grounded inferences.

One of the greater difficulties of spatial analysis is that the excavation must, from the beginning, be designed to recover information necessary to understand the distribution of artifacts and other remains on the occupation floor. It is essential that this design be put in place while the excavation is still in progress; it cannot happen afterward in the laboratory. Important questions must be recognized and answered properly during the excavation. In the meantime, analysis of the different assemblages (lithic, fauna, middens, etc.) has to be accomplished simultaneously so that details of the research design may change depending on the results from these studies. Because "décapage" excavation techniques have become more or less standard in rockshelter and open-air sites if faunal remains are preserved, the rhythm of the excavation is slow and the excavation itself is difficult because the fauna commonly cannot be exposed to air for too long without being destroyed. While this perhaps facilitates implementing a flexible research design, time and effort that might have been applied to analysis must often be expended in excavation. This is one reason that horizontally large, modern excavations are still scarce.

Prior to the adoption of "décapage" techniques, artifacts would be removed individually after each was uncovered. This was a faster technique perhaps, but it made the definition of living floors very
difficult. Unfortunately, there are not often even photographs of the excavated areas from these older projects to work with. Why is it so important to be able to see a large part of an archaeological deposit with the artifacts in situ? Perhaps the best answer is that exposing a large surface allows the excavator to see sediment changes, both natural and artificial. Lateral changes in the sediment can be an especially important factor, because they may affect artifact and/or faunal preservation, and can reveal gaps, holes or post depositional disturbance that may be due to human activities. The “de visu” observation of a deposit can reveal, among other things: (1) mechanical breakage due to soil movement, rockfall or tectonic effects, (2) anatomical connections (bison leg articulations for example), (3) frost broken lithics, (4) polygons linked to frost action, and (5) wall effects.

THE LOWER AND MIDDLE PALEOLITHIC RECORD

Over the past 10 years, several Lower and Middle Paleolithic open-air sites have been excavated in Southern Spain, Southern England, Northern and Southern France, Middle and Southern Italy, and Eastern Germany. Few of them have been published, but even with only preliminary information most show great differences between the Lower and Middle Paleolithic. Those from meridional areas tend to have a mammoth or bovid dominated fauna and very few lithic artifacts. Examples are sites such as Aridos (Santonja et al. 1980), La Polledrara (Fig. 1), and Castel di Guido (Pigorini 1985). Another group more typically has a large number of both lithic artifacts and faunal remains. Isernia la Pineta (Peretto et al. 1983) where bovids are numerous with some Dicerorhinus hemitoechus and Ursus Deningeri, is a good example. Artifacts on both flint and calcareous raw material are numerous there as well (Fig. 2). Two separate sectors have been excavated at this site, one providing most of the denticulates, the other most of the pebble tools. The site is dated to approximately 700,000 years B.P., but the large accumulation of faunal remains and lithics, and the clear association between bison and denticulates, suggests that the site may be much more recent.

The time period around 270,000 years B.P. marks the beginning of the Middle Paleolithic. Several sites from approximately this time are somewhat better known: la Cotte de St. Brelade (Callow and Cornford 1986) or Biache-Saint-Vaast

![Fig. 1. Close-up view of a typical portion of the deposits at La Polledrara.](image-url)
(Tuffreau and Sommé 1988) are good examples.

La Cotte de St. Brelade

The Saalian deposits from la Cotte de St. Brelade contain both faunal remains and lithics. There are two distinct archaeological deposits: (1) a dense concentration of small bone splinters from a wide variety of species (probably indicating intensive processing) and numerous artifacts, and (2) an area of mostly large bones, often broken, but primarily mammoth and woolly rhinoceros, and relatively few artifacts. The first type of deposit is interpreted as an intensely occupied site, while the second suggests a kill or scavenging butchery site. These two types of deposit might indicate different patterns of behavior. In the dense occupation layers, no specific animal species seems to have been the focus of hunting; perhaps any prey would do. In contrast, the concentration of large herbivore remains in other areas shows that la Cotte might also have been used as a “pitfall” for trapping animals. At the bottom of the deposit, the tool types are dominated by notches and denticulates; only later are convex side-scrappers the most important group of types.

Callow and Cornford’s (1986) study suggests the successive adoption of several distinct strategies for the procurement and use of flint. Raw material was scarce, and intense resharpening and importation of finished tools were indicated. Human occupation of this site required a sea level low enough to allow access from the mainland and a climate that was not too inhospitable.

Biache

The open-air site of Biache-Saint-Vaast (Northern France) has been excavated over more than 600 square meters and contains several layers with distinct flint industries, tools, and faunal remains. These demonstrate that prehistoric humans were present (in the north of France) during climatic optimums when herbivores grazed on a large Middle Pleistocene alluvial plain. At the bottom of the sequence ursids are dominant. Moving up through the sequence, equus increases while bovids become rare, and cervids and rhinoceros decrease. Ultimately, ursids disappear in the higher levels. The faunal remains seem to have been hunted, as they show many flint marks and have been disarticulated and eaten. The flint industry from the ma-
Major level has been compared to a Ferrassie Mousterian, having many elongated and convergent side scrapers. We are still examining the spatial distribution of the different kinds of artifacts and faunal remains and so have not yet achieved a global interpretation of the site.

Mauran

At the late Middle Paleolithic site of Mauran (Haute-Garonne) we have excavated a relatively small area of some 25 square meters from a site that extends over more than 1000 square meters. We can, however, discuss this site because analysis and excavation were essentially simultaneous (Farizy et al., in press). Once the technical processes that occurred at the site have been identified, it becomes possible to discuss the social processes and degree of social cohesion that are represented here. A variety of technical processes are required to gain access to food resources, while social processes and some degree of social cohesion are required for efficient use of those resources: to allow individual members of the group to eat (so to speak). Our conclusions were reached through the analysis of many distinct data sets and, in general, show clearly the degree to which behavior (as far as lithics and faunal remains are concerned) remained unchanged throughout the deposit.

Human use of this location seems closely linked to its proximity to a cliff, a water source, and at a certain time of year, small bison herds. At least one discontinuity in the deposit was shown during the excavation. Analysis of the faunal remains demonstrates that the same type of dismembering and butchering occurred from the bottom to the top of the richest layer. In the 25 square meters excavated we found over 137 bison, extrapolating to the known size of the deposit, a minimum of 900 bison were killed at Mauran. If each animal’s mass can be estimated at 300 kg, more than 1100 metric tons of meat have been processed on the site. A lengthy and complicated chain of inference provides arguments to suggest that each year, at the beginning of autumn, one to three bison were killed and eaten by a group of around 30 people (men, women, and children).

Many different kinds of raw material were used at Mauran, some of which might have been used in an unmodified form to break the bones. Heavy quartzite choppers are typically found together with small flint denticulates. The reduction sequences evident at this site show a close relation between the type of raw material and the methods used to work it. Refitting studies show a high proportion of debitage (unutilized stone) on the kill site. The spatial distribution of artifacts and faunal remains (when grouped by element), suggests that the flint reduction sequences and butchering patterns are geared toward providing for future requirements, and so demonstrate some planning depth (Fig. 3). The site, of course, constitutes only one location in a wide subsistence system.

Champlost

Examining another open-air site, Champlost (Northern Burgundy), we can observe an apparently homogenous distribution of artifacts (Figs. 4 and 5). Does this mean that there were no specialized activities on the site? Or, that many specific activities are now mixed together and that the archaeological deposit is a palimpsest? This is not an easy problem to resolve.

Unfortunately, the analysis of Champlost is also incomplete. However, results so far indicate that lithic tools, cores, and small flakes coming from retouched tools are very numerous. Refitting is difficult at this site because tools are very numerous. In addition, the process of sorting the debitage by reduction stage so that its distribution on the occupation floor can be seen is still in progress. Still, preliminary results
Fig. 3. Mauran, bison bone fragments, and quartzite cobbles in close association.

indicate that many of the larger flakes have been broken into two or three pieces, each of which was then retouched into a tool. This intense utilization suggests that raw material was rare or "expensive."

The distribution of faunal remains has only been examined over a small area (50 square meters). Three species are present: bison, reindeer, and horse. They are mainly represented by long bone shafts that have been broken for marrow consumption. Clear impact points are frequent, but flint cutmarks are not preserved. An analysis of the different elements present seems to suggest a homogeneous assemblage over large areas, but comparisons between sectors show clear differences.

Artifact distribution maps of the earliest occupations show close spatial relationships between resharpened tools and faunal remains. In addition there are many areas that suggest the presence of huts or other structures. Very small fireplaces are

Fig. 4. Plan view of the excavated area at Champlost showing tools (black) and faunal remains (outline).
common. Burnt bones are also very frequent, suggesting that they might have been used as a fuel. The small hearths usually contain substantial amounts of burnt bone, flint, and sediment. They may well have been used for warmth and/or cooking, but they do not seem to have played any clear role as the principal focus of activity for group life, as appears to be the case with similar hearths in the Upper Paleolithic.

The extent of this site (more than 3000 square meters) makes it seem probable that it was not a single, huge camp, which would be unique in this time period. Instead, it is likely to represent the accumulation of deposits from many short stays by the same, or a similar sized group, over a large area. The lithic industry is quite homogeneous and nearly identical from the different excavated sectors. Analysis of the faunal remains is not yet complete, so they cannot productively be discussed here. It is however, possible to draw a conclusion about this site similar to that which we arrived at for Mauan, i.e. that the site as a whole, represents the accumulation of materials over a lengthy time period. Undoubtedly, several generations came to this site, perhaps as often as once or twice a year (we cannot be more precise at this time), to hunt bison, reindeer and horse. This is not a kill site, but a consumption and living area.

Champlost is an excellent example of the difficulties encountered with sites from this time period. We cannot yet reconstruct the living surface from a precise span of time. Instead, we must examine the behavior of a group that is apparently repetitive over a lengthy period of time. We need to know why they used their open-air site in this way, more like a cave would be used. That is, why was a fixed point on the landscape used so repetitively, when presumably the local area contained many locations that were just as good?

Apparently, good raw material was available at distances of one to three kilometers from the site. This does not appear to have been of major importance however, as there is strong evidence for very intense use of the raw material present at the site. These people often began with very large flakes (18 × 8 cm) and discarded exhausted cores typically smaller than 3 × 3 cm. This factor does not help narrow down the possible reasons for their choice.

**DISCUSSION**

To progress further with these investi-
gations we need many comparable analyses on different kinds of sites. Unfortunately the record so far is very limited. As stated earlier, the analysis of faunal remains is a lengthy process: it is necessary to refit bone fragments to understand the original breakage, to study each small splinter and understand which part of the animal is present and which is missing, and so on. The same is true of the lithic industry, if we want to understand behavior and how it is similar and different at each site, we must reconstruct the reduction sequences present on an occupation floor in order to know what is present and what is missing and how the different kinds of raw material were used. Only then we can examine spatial patterning and ultimately infer behavior.

In conclusion we can point out that working on the spatial patterning of Middle Paleolithic (or older) sites may lead us to focus on the repetitiveness of behavior across human generations, rather than on the ways that people organized their space in any single occupation.

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