

# Regional Approaches to Adaptation in Late Pleistocene Western Europe

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# Readaptation: Changes in Magdalenian Subsistence and Social Organization

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## ABSTRACT

While lithic technology and typology appear to link Magdalenian culture over a large area of western Europe, there are differences apparent in site size, duration of occupation, production of art, faunal exploitation, and subsistence among the various regions occupied during the Magdalenian. Many of these differences may be linked to adaptations to slightly or radically different environments. The resource species available in these different environments may actually be the same, but the patterns of exploitation of those resources may constitute significantly different adaptations. This may be manifest archaeologically by more variation in functions between sites.

Mellars (1994) suggested that Magdalenians pioneered regions of northern Europe at the end of the Pleistocene in order to maintain exploitation of reindeer and horse in open environments as the glaciers retreated. Magdalenian occupations of these regions, such as the Paris Basin, differ from those of the classic sites in the Périgord. There are no large aggregation sites. Sites are small and highly seasonal, suggesting increased mobility. Elaborate art is much more poorly represented. These suggest decreased social complexity and changes in subsistence. Faunal data from sites in the Paris Basin are contrasted with data from sites in the Périgord to evaluate differential site function and how different site functions relate to situational adaptations in new environments.

## INTRODUCTION

The Magdalenian has often been characterized as the greatest florescence of the Upper Paleolithic of western Europe. It is best known for its spectacular displays of parietal art, as at Lascaux and Altamira. Among the earliest scientific excavation in the history of Paleolithic archaeology was the work of Lartet and Christy (1877) at La Madeleine, spurred in large part by the search for mobiliary art work.

Not all Magdalenian sites offer such spectacular finds, of course. The quotidian tasks of daily life resulted in the accumulation of lithic debitage, animal bones, fire-cracked rock, and other cultural debris that represent the bulk of the archaeological record for this, as for any other, culture or period. Further, regional differentiation may have shaped the degree to which art treasures played a major role in the people's interactions or adaptations. Therefore, it may be more productive to look at subsistence, which probably varied more from region to region than would have cultural practices that served to integrate people.

The Magdalenian is most heavily represented in the Périgord. It has been characterized as pioneering, spreading out from its center of origin to occupy previously unoccupied territories, including the Pyrenees to the south and the Paris Basin to the north. We will concern ourselves here with adaptation to new environment to the north, the Paris Basin. Upper Paleolithic occupation in the Paris basin is sparse, compared to that of the Périgord, with very few sites dating to the early Upper Paleolithic (Schmider 1984). The pathway from the Périgord to the Paris Basin can be traced in Badegoulian sites across the upper valley of the Loire, at the Abri Fritsch, La Pluch,

Saint-Fiacre, Grand-Pressigny Silo, and La-Chapelle-Saint-Mesmin, and into the southern reaches of the tributaries of the Seine, at Beauregards, le Grand Surplomb, Deuxième Redan, and Ballancourt-sur-Essonne (Hemingway 1980; Schmider 1984). The occupation of the Paris Basin is much better known during the Late Magdalenian, at such sites as Pincevent, Etiolles, Marsangy, and Verberie (Audouze 1987; Enloe and Audouze 1997).

While the lithic industries show clear technological (Le Licon 1997) and typological (Otte 1997) continuity and consistency with the Périgord (Laville et al. 1980), the Magdalenian occupation of the Paris Basin differs from that of the classic sites in the Périgord. First of all, the Paris Basin lacks the dense concentration of large rock shelters with preserved stratified deposits that have attracted archaeologists for over a century. It might be suggested that much of the archaeological richness of the Périgord is a function of conservation and investigation, rather than greater abundance in food resources for Paleolithic hunter-gatherers; we cannot address that question here. At any rate, the richness of the Paris Basin lies in well preserved open-air sites. There appear to be no large aggregation sites. Sites are small and highly seasonal, suggesting increased mobility. Elaborate art is very poorly represented. Art is restricted to a very few mobiliary pieces, often not elaborated to any degree. For example, at Pincevent, there are really only two pieces of representational art: a rudimentary sketch of a cervid head on a pierced baton and a horse head scratched on a flint core. At Verberie, one single pierced fox tooth and one pierced shell comprise the totality of adornment or art. These might suggest decreased social complexity and changes or differences in subsistence.

Large site size has been used to indicate higher population during the Upper Paleolithic, with concomitant inferences for social complexity, particularly for the Magdalenian (Mellars 1973; Boyle 1996). White (1982:171) suggested that Mellars (1973) exaggerated the size of Upper Paleolithic sites, especially for the Magdalenian, and he recorded 57 sites less than 500 m<sup>2</sup>, five sites between 500 and 1000 m<sup>2</sup>, and eight sites larger than 1000 m<sup>2</sup>. Boyle (1996:483) used a Rank Size Rule analysis to argue that a few very large sites dominated the Magdalenian settlement system in the Vézère valley of the Périgord. Were large sites, generally identified as aggregation sites (Conkey 1980), necessarily occupied by large numbers of people? As White (1982:171) pointed out in reference to Upper Paleolithic site size, Yellen's (1977:125) ethnoarchaeological research indicates a strong correlation between overall site size and length of occupation. We cannot, of course, directly compare the sizes of rock shelter and cave sites with those of open-air sites. Radically different constraints on the use of space pertain. La Madeleine's size has been estimated between 3000 m<sup>2</sup> (White 1985:185) and 10,000 m<sup>2</sup> (Laville et al. 1980:137; de Lumley 1984:303). Reignac extends over an area of 2000 m<sup>2</sup> (Boyle 1993:151). Limeuil is an open-air site reported to cover 450 m<sup>2</sup> (White 1980:286). Sites in the Paris Basin tend to be either small sites or sites with low population. Verberie covers less than 400 m<sup>2</sup>. Although level IV<sub>20</sub> of Pincevent has been excavated over 4500 m<sup>2</sup>, this represents the living space of half a dozen households, probably 25 to 50 people at most. This is surely not an aggregation site in Conkey's (1980) sense.

Mellars (1994:76) has suggested that Magdalenians pioneered the Paris Basin at the end of the Pleistocene in order to maintain exploitation of reindeer and horse in open environments as the glaciers retreated. This suggestion implies that the Magdalenians were attempting to continue to exploit those species in the same manner that they had in the Périgord, as a key element in their culture. It would be useful to examine the patterns of subsistence by utilizing recent analyses of faunal assemblages of several late Magdalenian sites in the Périgord and in the Paris Basin. While Mellars (1973, 1989) has contended that specialized hunting of reindeer was an intrinsic part of the Upper Paleolithic from its very beginning, recent work has suggested that apparent specialization may be more related to climatic regimen than to overt strategy (Enloe 1993). The question that must be posed is not "What percentage of a people's food is derived from a given species?" but rather "What is the availability of a species in the region, and how are people exploiting them?" (Enloe 1998).

To address this question, this article will draw on selected levels of sites from the late Magdalenian of the Périgord and Paris Basin, in which reindeer was clearly the predominant species exploited. Several Late Magdalenian sites from the Périgord have been recently analyzed. Those considered include La Madeleine (Boyle 1994, 1997), Reignac (Boyle 1997), Limeuil (Boyle 1997), and Flageolet II (Deplano 1994). These sites are compared to Late Magdalenian sites in the Paris Basin which have good preservation of fauna: Pincevent (David and Enloe 1993), Verberie (Audouze and

Enloe 1997; Enloe 1997; Enloe and David 1997), and Tureau des Gardes (Bridault 1996, 1997).

## MAGDALENIAN IN THE PÉRIGORD

In the Magdalenian occupation of couche IX of Flageolet II (Deplano 1994), the fauna is numerically dominated by reindeer, with 17 individuals making up 96% of the specimens; minimal percentages of remains indicate the presence of three chamois, one red deer, one bovid, one horse, and one saiga antelope. Skeletal representation is dominated by the mandible, metatarsal, tibia, femur, humerus, and metacarpal. Accurate counts of elements are difficult to discern. Deplano (1994:35) considered that taphonomic and excavation recovery problems probably accounted for most of the differential representation and concluded that entire carcasses had been transported to the site. At least two individuals are represented by fetal bones. Crania with and without antlers are present. Males and females appear to be represented. Filleting marks are most common, followed by skinning, and, finally, by disarticulation. Long bones were systematically fractured for marrow extraction. Deplano (1994:80) concluded that these data indicate, first, a specialized hunting strategy, primarily for nutrition, but also for raw materials from skin, tendons, and antlers; and, second, year-round occupation by a small group of people.

At La Madeleine (Boyle 1994), the Magdalenian VI assemblage is composed of 94% reindeer, representing at least 86 individuals; eight horses are present. Of the reindeer, the metatarsal, astragalus, humerus, metacarpal, mandible, and scapula are best represented. Seasonality for the reindeer, according to Gordon (1988:64), was primarily spring and winter; Burke's (1993:147) analysis of the horse teeth indicated an overwhelming summer mortality. At Limeuil, 92% of the faunal assemblage consists of reindeer, at least 158 individuals, with astragalus, humerus, tibia, metacarpal, scapula, and radiocubitus best represented (Boyle 1993:142). I have no seasonality information for Limeuil. At Reignac, 92% is also reindeer, best represented by metatarsal, tibia, scapula, mandible, metacarpal, and humerus (Boyle 1993:152). There were at least 307 reindeer and six horses. Seasonality for the reindeer is primarily winter (Gordon 1988:64); only one horse tooth gave a legible reading, for summer (Burke 1993:147).

Boyle (1994, 1997) examined carcass management strategies at the late Magdalenian sites of Reignac, Limeuil, and La Madeleine, considering contrasts between the treatment of reindeer and that of other species. In the Late Magdalenian, reindeer predominate, with up to ten times the number of individuals of any other species; the most prevalent secondary species is often horse. She noted separate strategies for each species, with consistent patterning of reindeer exploitation at the sites she examined. She also noted strong statistical correlations in body part representation with the additional Magdalenian sites of Gare de Couze and Les Eyzies (Boyle 1994:59). She concluded that there was selection primarily of high general utility parts. Gourmet utilization curves (*sensu*

Binford 1978) are seen for the major species, where one species clearly dominates the assemblage—reindeer in all cases. Boyle (1994) interpreted this as reflecting the abundance of reindeer, which are relatively predictable on a seasonal basis. Although there are more filleting marks seen on reindeer than on secondary species, she attributed their relative paucity to the abundance of meat; when there were "... multiple kills, some parts of carcasses may not have been processed at all" (Boyle 1997:290).

Secondary species, especially horse, exhibit more complete skeletal representation of fewer individuals, interpreted as bulk curves (*sensu* Binford 1978), along with more complete processing and fragmentation. Burke (1993) reported a marked seasonality in horse dentition, indicating kills in summer.

Boyle (1994, 1997) calculated that the total meat weight of all levels at La Madeleine derived from reindeer was 5200 kg and horse was 5000 kg, a result similar to Spiess' (1979) meat weight calculations for relative dependence on reindeer and bovids from earlier levels at the Abri Pataud. In sum, these sites suggest year-round occupation, with seasonal shifts in not only the species exploited, but also in the manner in which they were used.

### MAGDALENIAN IN THE PARIS BASIN

At Pincevent, 98% of the faunal assemblage is reindeer, representing at least 52 individuals, with cranium, mandible, metacarpal, metatarsal, radiocubitus, pelvis, and tibia very well represented. Significantly missing are vertebrae, suggesting that this was a transported assemblage, but the rest of the skeleton is well represented, which suggests that the distance for transport was not very far. Cutmarks are approximately evenly divided between disarticulation and filleting (Enloe 1991). Seasonality is indicated by male and female *bois de massacre* and is particularly well documented by deciduous dentition of first- and second-year individuals, clearly peaking in the fall (David and Enloe 1993; Enloe and David 1997). This suggests exploitation during the migration. Abundant other data indicate that Pincevent was a residential site, with multiple households (Enloe 1992); it was a consumption location for prey from fall hunting.

Verberie is also characterized by over 98% reindeer in the faunal assemblage. Although analyses are not yet complete, skeletal element representation is similar or slightly higher than at Pincevent. A significant difference is the presence of vertebrae. Numerous articulated vertebral columns are present. These strongly suggest initial butchering. The seasonality is again clearly indicated by antlers and particularly by deciduous dentition, which would have been restricted to a very short period in the fall (Enloe 1997). This site is only shallowly buried; abundant root vermiculation has obscured the surfaces of most of the bones, making cutmark determination difficult or unreliable. A few cutmarks indicating disarticulation and filleting have been discerned. The seasonality and body parts strongly suggest that Verberie was a hunting camp for a fall migration interception.

Tureau des Gardes at Marolles near Pincevent, 75 m<sup>2</sup> over four successive occupations (Bridault 1996), probably dates to a slightly later period than Pincevent or Verberie. This site, like those in the Périgord, is dominated by two species, over 98% of the faunal assemblage, including 33 horse and 23 reindeer. Skeletal representation of horse includes almost all elements, with mandible, tibia, metacarpal, and metatarsal most frequent. Reindeer element representation also includes most of the skeleton, with humerus, radius, metacarpal, tarsal, and metatarsal most frequent. Scant evidence for seasonality suggests early spring for the reindeer, but direct evidence for horse seasonality is lacking. This leads Bridault (1996:150) to suggest repeated small-scale hunts for the horse; similar treatment of carcasses may indicate that the reindeer were exploited like the horse, in contrast to the cases at Pincevent and Verberie. In another article, Bridault (1997:170) cited Poplin's (1994) seasonality determination of beginning of spring for horse mortality at Etiolles to suggest a winter-spring horse hunting season in the Paris Basin, which would complement late summer/autumn reindeer hunting.

### DISCUSSION

If we consider the pattern of carcass exploitation at both of the Paris Basin sites, there is a clear contrast with the pattern we see in the reindeer in the Périgord. In the Périgord, there is evidence for longer term, perhaps year-round, occupation of sites. The large rock shelters, equally attractive for prehistoric hunter-gatherers as for archaeologists, may have been magnets for occupation over the centuries or millennia. We have little fine-grained, large-scale, modern excavations of the classic aggregation sites such as La Madeleine or Laugerie-Haute, particularly when compared to the amount of dirt moved and art objects discovered during the 19<sup>th</sup> and early 20<sup>th</sup> centuries. Do aggregation sites exist? I don't know. The question may be more one of numbers and proximity of sites with relatively small populations in each, rather than large numbers of people at any one place. The faunal analyses do not suggest numbers of prey animals of vastly greater orders of magnitude than are present in the very short-term occupations of the open-air sites of the Paris Basin.

As Boyle (1993, 1994, 1997) has suggested, the contrast may be in the fashion in which the prey were exploited. One glaring difference appears to be in the seasonality of reindeer exploitation; in the Périgord, reindeer was exploited in the winter to spring, while it was exploited in the fall in the Paris Basin. As a function of their different seasonality, the prey offered different kind of resources and were exploited using different strategies. Boyle (1993, 1994, 1997) suggested that the fauna from La Madeline, Reignac, and Limeuil indicate gourmet selection of only a small part of each reindeer carcass. Whether this was due to an overabundance of available or killed prey, or to degradation of the fat content and nutritional utility of certain carcass portions compared to other portions, will require more detailed research to answer. Either possibility would be consistent with the structure and nature of availability at the end of the late winter dispersal and the beginning of the spring migration. Even though the bone

surface preservation is very good, filleting on the reindeer is relatively minor, suggesting that the food was immediately or shortly thereafter consumed. There is no indication of mass kills for longer-term storage. This does have implications for the availability or exploitation of other resources. Secondary species, particularly horse, have seasonality that is complementary to that of the reindeer and could provide nutrition when the reindeer were no longer present—if, for example, they had migrated out of the region. Each individual of these species appears to have been much more completely exploited, suggesting they were hunted as individual encounters.

In contrast, the Paris Basin sites of Pincevent and Verberie have very restricted seasonality; mortality occurred in the fall, obviously the best time and place for acquiring large quantities of meat to be stored for the winter. Carcasses are more complete and much closer to the bulk curve that Boyle (1993, 1994, 1997) saw for the Périgordian horses. Other resources were very limited in their availability, as far as we know from the few sites available. The sites are different because, as open-air sites, they did not have the geographic constant of the rock shelter to anchor the settlement pattern. The sites occupying them, therefore, imply lower population densities. With lower population, we may have decreased social complexity, smaller groups, and more mobility, perhaps as a result of a less abundant resource base or at least fewer options in non-optimal seasons.

The Magdalenians were not moving north to the Paris Basin simply to continue preying on reindeer and horse. Whatever the reason for the pioneering thrusts into previously unoccupied or underutilized regions, it resulted in adaptational changes in fundamental aspects of Magdalenian culture in the new regions. Such changes can be seen in the Magdalenian occupation of the Allier and Loire valleys in Auvergne, with seasonal and regional alternation of prey species (Fontana 1998). Every adaptation is local. A culture does not merely copy itself onto a new territory; it must meet the problems posed by the physical and social environment, taking advantages of the structure of resource availability as it exists in the new region, and, via the flexibility that culture offers as an adaptational means, readapt itself.

I am inclined to think that the differences between the Périgord and the Paris Basin are closely related to differences in population density. Although I remain unconvinced that the Périgord was the Garden of Eden or otherwise extraordinarily abundant in food resources, I nonetheless suspect that the Paris Basin was relatively poorer or less abundant. The reindeer were exploited in a less diverse, less vegetatively productive environment than in the south, and there is less evidence for alternative resources to provide substantial subsistence. We have very minor use of other species, including butchered microfauna and birds. I think that the Magdalenians of the Paris Basin, of necessity, exploited their reindeer prey in a more logistical manner than was necessary in the Périgord. While the prey remained largely the same, i.e., reindeer, the structure of the adaptation was changed, with concomitant greater mobility over a larger territory and supporting

relatively fewer people. This may be the basis for the much less elaborated production of art—the more thinly stretched population at a peripheral location not exactly at the heart of the Magdalenian symbolic interaction sphere. As such, I cannot agree with Mellars's (1994) contention that the Magdalenians moved into the Paris Basin to continue the same kind of exploitation of species that they had practiced and continued to practice in the Périgord. This is adaptation in its most evolutionary, non-teleological sense.

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