

# Magdalenian

**ABSOLUTE TIME PERIOD:** 18,000–11,000 B.P.

**RELATIVE TIME PERIOD:** Last tradition of the European Upper Paleolithic, follows the Solutrean tradition, precedes the Mesolithic traditions of Europe.

**LOCATION:** Western Europe, from northern Spain to Poland, but concentrated in France, Spain, Belgium, and Germany.

**DIAGNOSTIC MATERIAL ATTRIBUTES:** A distinctive set of typologically defined tools, based on prepared core blade production, including numerous blacked blades, dihedral burins, burins on truncations, end-scrapers on blades, *perçoirs*, and *becs*. An elaborate bone tool technology, including beveled *sagaie* bone points, single- and double-row barbed harpoons, and eyed needles. Production of mobiliary art on utilitarian and nonutilitarian objects, including animal, human, and geometric motifs, and of parietal art, including many of the celebrated painted caves of Southwestern France.

**REGIONAL SUBTRADITIONS:** Paris Basin, Périgord, Pyrenees.

**IMPORTANT SITES:** Gönnersdorf, Pincevent, La Madeleine.

## CULTURAL SUMMARY

### Environment

**Climate.** The Magdalenian occurred during the final phases of the Pleistocene, following the Glacial Maximum about 18,000 B.P. Dynamic oscillations of glacial advance and retreat resulted in major changes during the Magdalenian period, although the climate can be characterized as predominantly cool to cold. Precipitation was generally very low, as much of the world's water was locked up in the continental glaciers. It must be realized that the climatic periods listed below are considered time-transgressive, that is, the actual dates of climatic and environmental changes vary from region to region, according to location and proximity to the major glacial phenomena. Warming events and interstadials were felt first in the southern regions and only later in the northern regions. This is further complicated during the Magdalenian by the notorious "radiocarbon plateau," which yields equivalent dates for a couple of thousand years (c. 13,000–11,000 B.P.) at the end of the Magdalenian period, when significant climatic oscillations (stadials and interstadials) were occurring. In general, the Lascaux interstadial, about 17,000 B.P., marks the beginning of the Tardiglacial, when the earliest Magdalenians appeared in the Périgord region. The Dryas I stadial marks a return to cold glacial climate, beginning about 16,000 B.P. It is followed by the temperate Bølling

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interstadial, beginning about 13,300 B.P. The Dryas II, about 12,300 B.P., is a very brief cold period. Finally, the Alleröd, beginning about 11,800 B.P., is a relatively long temperate period during which other cultural traditions began to supplant the Magdalenian, and which marks the end of the Pleistocene.

**Topography.** The Magdalenian settlements occurred over a wide variety of geological and topographic settings, from the deeply incised limestone valleys of the Périgord to the relatively open and exposed river valleys of the loess plains of northern Europe. The Magdalenian is characterized by a pioneering expansion out of the core area of the Périgord. During the extreme glacial conditions, much territory previously occupied by earlier Upper Paleolithic traditions had been abandoned. The Upper Paleolithic and earliest Magdalenian seem to have been concentrated in the sheltered valleys of the Périgord, which featured numerous caves and rock shelters. As climatic conditions ameliorated after the Dryas I, Magdalenians moved south into the Pyrenees and northern Cantabrian Spain, north into the Paris Basin, Belgium, and the Rhine valley, and east into the valleys of the Jura in Switzerland and Germany.

**Geology.** Magdalenian settlement was constrained by the presence of continental ice sheets to the north and by more localized mountain glaciers in the Alps and Pyrenees. This is a diverse region of loess plains in the north, high mountains in the south, and dissected limestone basins and plateaus between. The limestone and chalk bedrock of much of Europe offers rich resources of high-quality flint.

**Biota.** The flora and fauna during the cold periods, which are best represented in the archaeological record, are consistent with a steppe tundra, a biotype of mid-latitude cold climate that does not have a proper analog in current climates. Pleistocene biomes can be characterized as “plaids” including a consistent but rich mixture of species that is not found together in today’s latitudinally or altitudinally “striped” environmental zones. The steppe tundra featured open grasslands, including artemisia and grasses, with sparse wooded zones, including relatively small willow, scotch, and birch along watercourses or in protected valleys. Fauna included big game herd species, principally reindeer and horse in the faunal assemblages of many archaeological sites, but also ibex and chamois in the mountain sites. Large bovids, bison and aurochs, figure prominently in cave motifs, as do mammoth and woolly rhinoceros. Smaller faunal species are consistent with cold steppe

environments, including Arctic hare and fox, collared lemmings, and Arctic ground squirrels.

### Settlements

**Settlement System.** Mobile or nomadic hunter gatherers may leave a varied signature across the landscape. Both preservation and archaeological sampling probably bias the archaeological record of the Magdalenian. The history of prehistory began in the Périgord, where deeply stratified cave mouths and rock shelters have attracted both prehistoric hunter gatherers and modern prehistorians. Thus those sites that yielded long stratigraphic sequences indicated by qualitative and quantitative changes in stone tool typology dominate the archaeological record in the literature. More recent investigations have demonstrated the information potential of open-air sites in other regions, when preservation has permitted analyses of faunal remains and spatial configurations. The cave and rock shelter sites may frequently have represented longer-term or multi-seasonal residential sites. Some of them may have served as aggregation locations, where dispersed groups could have come together for ritual and social purposes. The open-air sites in other regions appear to have more restricted seasonality and were likely to have been shorter-term seasonal camps of mobile groups exploiting a variety of resources across fairly large regions.

**Community Organization.** Magdalenians left a wide variety of small-scale archaeological sites across the landscape. The visibility of community organization depends on the geological context and archaeological investigation of the sites. Cave and rock shelter sites are physically constrained by the walls and roofs; their excavation has often been concentrated on vertical stratigraphy rather than by horizontal expanse. Open-air sites are spatially unrestricted and, when excavation procedures have been concentrated on spatial structure, have yielded a variety of campsite organizational patterns consistent with the variety of modern hunter gatherer campsites. Short-term hunting camps, longer seasonal occupations at residential sites, and lithic raw material procurement and exploitation sites have been identified.

**Housing.** Nomadic hunters have not invested heavily in permanent settlements or architecture. The majority of sites in the Périgord occur in cave mouths and rock shelters, which provide sufficient shelter without constructed housing. Internal features depend on the spatial layout of the natural setting and generally consist of hearths, flint-knapping areas, and trash dumps. In open-

air sites, the situation is quite different. Housing is rarely preserved to any extent and must be inferred from the presence and distribution of other artifactual remains. In the Isle valley, rectangular to oval distributions of pebbles and cobbles have been interpreted as temporary house floors. The concept of “negative evidence” has been utilized to infer tent locations at Pincevent, where neither post molds nor architectural remains were present. Slightly more substantial circles of stones around hearths suggest tent bases at Etiolles and Gönnersdorf. It is probable that these tents were constructed of animal skins placed over light wood and/or antler structures. Campsite structure varies according to the role or type of site; a seasonal occupation site at Pincevent features several residential units, each with a major hearth, adjacent tool maintenance and food preparation areas, sleeping areas, and associated external hearths, knapping areas, and trash dumps. Verberie features distinct butchering areas, knapping locations, hearths, and dense trash dumps.

**Population, Health, and Disease.** Human populations in mid-latitude Pleistocene landscapes were never very large. This may be especially true for much of the Magdalenian outside the Périgord. Human population is inversely proportional to its dependence on reindeer. Some have argued for dense late Paleolithic populations, based on the density of sites and the quantity of materials in those sites. They argue that the diverse faunal resources in regions such as the Périgord are indicative of rich food sources, and that Magdalenian exploitation of reindeer was directed toward aggregations of relatively dense populations during certain times of the year. Evidence from large-scale excavations at open-air sites suggests camp populations in the dozens rather than hundreds, consistent with expectations for mobile or nomadic hunter gatherers in such environments. Skeletal remains from several hundred individuals are known for the Magdalenian. Although many of these are quite fragmentary, they exhibit continuity with some degree of gracilization since the early Upper Paleolithic and homogeneity among Magdalenian populations. Paleopathology includes evidence of arthritis, scoliosis, and varied trauma.

### Economy

**Subsistence.** The Magdalenian, more than any other Upper Paleolithic Tradition, was characterized by specialized big game hunting. In many cases, the dominant species was reindeer, leading Lartet and Christy to label the Magdalenian the Age of the Reindeer. It has been

argued that such specialized hunting throughout the Upper Paleolithic was evidence of logistical organization, that is, systematic dependence on a single resource for subsistence throughout the year, regardless of the presence of other potential resources. Mellars points to faunal assemblages from the earliest Upper Paleolithic in which reindeer made up 90–95 percent of the faunal remains. Others have argued that, although climatic regimes may explain monospecific assemblages in early Upper Paleolithic assemblages, it is only in the Magdalenian that cultural preference for single species exploitation truly exists. In high-altitude Pyrenean sites, such as La Vache or Les Eglises, the dominant species was ibex, whereas on the Cantabrian coast faunal assemblages are dominated by red deer. In many sites, horse was the dominant species during the Magdalenian. Seasonal variation in species and the fashion in which they were exploited differ from region to region.

**Wild Foods.** There is very little evidence for the use of vegetal foods. The archaeological record is dominated by the remains of wild animals, notably large herd animals, including reindeer, horse, saiga antelope, bison, ibex, chamois, and red deer. Fox and wolf were taken for their fur. Small mammals, such as hare and ground squirrel, were also eaten. In the southwest of France, salmon runs constituted an important food resource.

**Industrial Arts.** Magdalenian tools, like those of many other nomadic hunters, were lightweight and portable. The stone tool industry was based on very standardized blades and bladelets. Direct percussion of prepared cores was a highly skilled activity. High-quality raw materials were frequently transported long distances to provide an adequate technical basis for this blade production. Bone and antler raw materials for more plastic production were obtained as byproducts of hunting, particularly of reindeer.

**Utensils.** There was a variety of cutting, scraping, grooving, and piercing tools. There was also an abundant bone industry, which includes pierced batons, points, and barbed harpoons, made on antler, bone, and ivory. Very significant in Magdalenian technology are compound tools, with multiple-edge shapes on the same blade, and composite tools made from backed bladelets mounted laterally on bone points. These latter barbed points were probably themselves components of compound projectiles, propelled by spear throwers.

**Ornaments.** Stone, ivory, and shell beads, pierced animal teeth, and pendants are not uncommon, particularly

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in the Périgord region. Many utilitarian objects were decorated. The Magdalenian is particularly well known for its carved spear throwers, harpoons, and pierced batons. Engraved plaquettes are known from Gönnersdorf in Germany, Parpallon in Spain, and several sites in the Périgord.

**Trade.** There may have been considerable exchange of lithic raw materials, as well as marine shells from the Atlantic and Mediterranean and fossil shells from Aquitaine, but their presence in sites far from their points of origin could also be a result of high mobility by the nomadic groups.

### Sociopolitical Organization

**Social Organization.** Social organization of nomadic hunter gatherers with low populations was probably egalitarian, with no permanent authority positions. Membership in local groups was probably flexible, as people reorganized themselves across the landscape following the seasons, according to resource availability. Kinship was probably an important factor in economic and social organization.

**Arts.** The Magdalenians are particularly famous for their rich tradition of mobiliary and parietal art. The marvelously executed cave paintings of such sites as Lascaux, Altamira, and Niaux are attributed to this tradition. These are very sophisticated monochromatic and polychromatic paintings, deep inside relatively inaccessible caves, suggesting an esoteric role of these arts in their society. Paintings are realistically done and are primarily of game animals, particularly bison, aurochs, horse, mammoth, rhinoceros, ibex, and reindeer. Human figures are rare, highly stylized or abstract.

**Death and Afterlife.** Intentional burial in shallow graves and the presence of grave goods, particularly in the form of personal adornment, suggest ritual and perhaps belief in an afterlife. Ocher is frequently present on the body and in the grave.

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### SUBTRADITIONS

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## Paris Basin

**TIME PERIOD:** 11,000–10,000 B.P.

**LOCATION:** Paris basin, Seine valley, and its tributaries in north-central France.

**DIAGNOSTIC MATERIAL ATTRIBUTES:** Open-air sites with hearths and dense artifactual material. Typical Magdalenian stone tool industry of dihedral burins, end scrapers and backed bladelets, and simple bone tool industry.

### CULTURAL SUMMARY

#### Environment

At the end of the Dryas I, when the climate began to ameliorate in the Bølling, the Magdalenian spread north up the Loire valley into the southern part of the Paris basin (Hemingway 1980; Schmider 1984). During the Dryas II, that settlement spread into the northern basin

and beyond (Taborin 1994). Magdalenian sites in the Paris basin are particularly well known for their excellent preservation and for the quality of excavation. Professor André Leroi-Gourhan founded a school of paléolithologie, where the emphasis was placed on broad horizontal excavations of open-air sites, rather than deep stratigraphic excavations. Gentle, overbank flooding of the Seine and Oise rivers resulted in the low-energy deposition of silts on open-air campsites, preserving faunal as well as lithic artifacts, and, most important, preserving the spatial integrity of their distributions. This allowed a contemporary observation of the interaction of many different classes of data and the reconstruction of many social and economic aspects of the lives of their prehistoric occupants. Large surfaces were exposed, with all of the artifactual material left in place for vertical photographic documentation and even latex molds of large areas. This meticulous documentation has allowed later researchers to pose new analytical questions of older data in a fashion that was rarely possible for the frequently jumbled palimpsest depositions of deeply stratified cave sites. This excavation and recording procedure was first perfected at Pincevent (Leroi-Gourhan 1984; Leroi-Gourhan et Brézillon 1966, 1972) and allowed a number of subsequent mathematical and statistical analyses based on the published site maps (Carr 1984; Enloe 1983; Enloe et al. 1994; Johnson 1984; Simek 1984; Simek and Larick 1983). Almost 5,000 sq m of a single occupation level have been excavated at Pincevent, a revolutionary scale in hunter-gatherer archaeology. The methods pioneered at Pincevent have well served similar depositional environments at Etiolles on the Seine, Verberie on the Oise, and Marsangy on the Yonne.

### Settlements

The open-air sites of the Paris basin include Etiolles (Pigeot 1978; Poplin 1994), Pincevent (Enloe and David 1992; Leroi-Gourhan 1984; Leroi-Gourhan et Brézillon 1966, 1972), Verberie (Audouze 1987; Audouze and Enloe 1997), Marsangy (Schmider 1993). These all appear to be relatively short-term seasonal occupations. The oldest, Etiolles, dates to about 13,000 B.P. It is a location with extraordinary lithic raw material, large nodules of high-quality flint. Blades of up to 60 cm in length have been found there. The fauna is relatively scarce. Habitation units are characterized by large stone-lined hearths, with concentrations of stone tools and flaking debris around them (Pigeot 1978). Pincevent, dating to 12,000 B.P., is characterized by multiple households, each featuring slab-lined central hearths,

adjacent tents, technical activities, and trash dumps. These household modules exhibit redundant spatial structure, and their contemporaneity is supported by multiple refits of flint, fire-cracked rock, and reindeer bones (Enloe and David 1992; Enloe et al. 1994; Leroi-Gourhan 1984; Leroi-Gourhan et Brézillon 1966, 1972). Verberie, also dating to 12,000 B.P., appears to have a slightly less residential character than Pincevent, with reindeer skeletal elements characteristic of kill sites and distinctive butchering areas evident in the spatial organization (Audouze 1987, 1992; Audouze and Enloe 1991, 1997; Enloe and Audouze 1997). Marsangy, dating to 11,600 B.P., features circular habitations around central hearths, reminiscent of those at Etiolles.

### Economy

Magdalenian economy, in those sites in which fauna are well preserved, Pincevent and Verberie, was focused on reindeer hunting during the fall migration (Audouze 1987, 1992; Audouze and Enloe 1991, 1997; Enloe 1994; Enloe and Audouze 1997; Enloe and David 1997). Lithic resources were expediently exploited for immediate uses and limited preparation for successive stops on a seasonal round. Fauna is poorly represented or preserved at Etiolles and Marsangy. At Etiolles, clearly the emphasis of the occupation is the extraction and preparation of flint cores.

### Sociopolitical Organization

Pigeot (1978) has used arguments of privileged access to high-quality flint nodules and to preferred space adjacent to central hearths to suggest some level of hierarchical social organization in the Magdalenian campsite at Etiolles. This may not extend beyond age, sex, and skill criteria that are common in otherwise egalitarian hunter gatherers. The multiple contemporary households at Pincevent show little difference in kinds or amounts of material goods, suggesting egalitarian social structure. Refitting of fire-cracked rock and flint have demonstrated the contemporaneity of the household units. Identification and refitting of bones from individual reindeer carcasses have allowed the first demonstration of food sharing in the Paleolithic (Enloe 1991, 1992; Enloe and David 1992) and documented reciprocal kinds of sharing patterns that are typical in egalitarian hunter gatherer societies.

### Religion and Expressive Culture

There is relatively little information on religion and expressive culture. Human burial or skeletal material is

very rare. Lacking caves, there is no parietal art. A limited amount of mobiliary art is present, primarily in the form of isolated shell or tooth beads (Taborin 1993).

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## Périgord

TIME PERIOD: 18,000–11,000 B.P.

LOCATION: Périgord region of southwestern France, concentrated in the valleys of the Dordogne and its

tributaries, particularly the Couze and the Vézère, in the vicinity of the modern town of Les Eyzies.

**DIAGNOSTIC MATERIAL ATTRIBUTES:** Typical Magdalenian stone tool industry and abundant bone tool industry. Mobiliary art works are fairly common.

## CULTURAL SUMMARY

### Environment

The Périgordian region consists of deeply incised river valleys in a limestone plateau. In the limestone cliffs are located many deeply stratified cave mouths and rock shelters, preserving long sequences of Paleolithic prehistoric deposits. The sheltered valleys provided refuge for a variety of plant and animal life during glacial periods and offered major deposits of high-quality lithic raw materials. Climate during the Magdalenian occupation of the region ranged from moderate interglacials to severely cold glacial periods.

### Settlements

The abundant caves and rock shelters provided a significant attraction for prehistoric inhabitants of the region. Comparatively little is known about the upland or open-air occupation, because archaeological attention has been focused on the deeply stratified sites in the cave sites, although Jean Gausson (1980, 1992) has documented locations of open-air settlements in the Isle valley. The caves and rock shelters vary greatly in size and intensity of occupation, from small, limited area hunting or other temporary camps to large, deep sites, such as La Madeleine and Laugerie Haute, where aggregations are suggested to have occurred (Conkey 1980, 1992). Also significant are the numerous painted and engraved cave and rock shelter sites concentrated around Les Eyzies, including Lascaux, Font de Gaume, les Combarelles, and Rouffignac.

### Economy

Magdalenians hunted a variety of herd animals in the river valleys of the Périgord, where the diverse fauna is thought by many to reflect a rich food resource (Gamble 1986; Laville et al. 1980; Olsen 1987). There is some evidence that faunal diversity was a function of different seasonal exploitation patterns (Boyle 1993, 1994, 1997), or that the food resources may not have

been as rich as claimed and that varied resources reflect long-term accumulations in rock shelter deposits by relatively low human populations (Enloe 1998). Lithic raw resources are abundant and of high quality, although some appear to have been imported from the Bergerac area, about 50 km away.

The Périgord region and the center of France are the areas where the Magdalenian was first recognized. They also appear to be the longest occupied, featuring the entire Magdalenian sequence, dating from 18,260 B.P. at Laugerie Haute to 12,640 B.P. at La Madeleine and 11,750 B.P. at Gare de Couze. The stratified deposits at La Madeleine, le Placard, and Villepin allowed the Abbé Breuil (1912) to develop a detailed evolutionary sequence of artifact types in the Magdalenian, based primarily on *sagaie* points and harpoons. Dennis Peyrony (1938) added lithic typology from his excavations at Laugerie Haute to refine Breuil's sequence of Phases I to VI. More recent excavation has demonstrated that the proposed evolutionary sequence is not entirely correct, but new complications have replaced it. The earliest Magdalenian, from Laugerie Haute and the Abri Fritsch, is characterized by a lithic industry on flakes from small flint nodules. This yields rather thick tools, including transverse burins, *becs*, and side scrapers. Above that level at the Abri Fritsch, Levels 5d, 4, and 3 furnished tools called *raclettes*, edge-trimmed polyhedrals on flakes, which are the hallmark of the Badegoulian during the Lascaux temperate episode. The Badegoulian is argued to be either part of or contemporary with the early Magdalenian, as defined by Breuil through the presence of single bevel base *sagaies*. The Magdalenian II features the development of backed bladelets and triangles, most importantly introducing long blades as the base of most of the stone tool industry. This latter characteristic dominates all later Magdalenian industries. De Sonneville-Bordes (1960) considers that all subsequent Magdalenian lithic industries are very homogeneous. The presence or absence of barbed harpoons, Breuil's type fossils for the Magdalénien supérieur, seems to be more a matter of regional or functional variation. At the advent of the Bølling temperate phase, the Magdalenian began to expand out of its core area, pioneering new regions that had been abandoned during the climatic rigors of the glacial maximum. It carried with it the typical Magdalenian blade production techniques, dihedral burins, end scrapers, backed bladelets, and bone tool industry. At the very end of the sequence, new tool forms are added: parrot-beak burins, Azilian points, Teyjat points, and nordic types of *becs* and *zinkens*.

## Religion and Expressive Culture

Perhaps the best-known aspect of the Magdalenian tradition in the Périgord regions is expressed in the painted and engraved caves. Most famous of these is probably Lascaux, dating to 17,000 B.P., known for its exquisite polychrome representations of aurochs, horse, and bison. Painted and engraved caves are concentrated around Les Eyzies, and many are open to public visits, including Font de Gaume, les Combarelles, and Rouffignac.

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## Pyrenees

TIME PERIOD: 14,200–11,000 B.P.

LOCATION: Along the Pyrenees mountain chain between Spain and France, and along the north Cantabrian coast of Spain.

DIAGNOSTIC MATERIAL ATTRIBUTES: Typical Magdalenian stone and bone tool industry and diverse art.

## CULTURAL SUMMARY

### Environment

The Pyrenees mountains included prominent mountain glaciers, which precluded settlement in the higher altitudes during the cold phases. Once the climate had somewhat ameliorated, these regions were occupied, at least for hunting. On the Spanish side of the mountains, the climate was milder; many of the sheltered valleys served during cold phases as refuges for thermophilous species of plants and animals, which spread out northward during warmer phases.

### Settlements

A particular concentration of Magdalenian sites is located in the central French Pyrenees. Large cave sites and more aggregated populations were restricted to lower elevations. Hunting campsites can be found in higher elevations up to 1,000 m (Bahn 1984; Sieveking 1976; Straus and Clark 1986; Utrilla and Mazo 1992).

### Economy

Specialized hunting characterizes many of the cave and rock shelter sites with good faunal preservation. The dominant species is often ibex or horse instead of reindeer. The lithic industry is characterized by its relatively small size and the lack of the late Magdalenian specialized tools, like the parrot-beak burin.

### Sociopolitical Organization

The artistic repetitiveness in painted and carved media and the exchange or transport of lithic raw materials and marine shells along the axis of the Pyrenees have suggested to many (Bahn 1984; Clottes

1989) that the relative contemporaneity of many of the Pyrenean sites is a function of cultural or social unity. Conkey (1980) first suggested the presence of aggregation sites based on the remains at Altamira, although she has more recently (1992) cautioned against overly simplistic settlement system models. The concentration of painted caves corresponds to the concentration of other sites, suggesting even further the cultural unity of the Pyrenean Magdalenian.

### Religion and Expressive Culture

The artistic tradition of the Pyrenean Magdalenian is very rich. The sophistication and artistic excellence of sites such as Niaux and Altamira rival those of Lascaux. The mobiliary art, carved spear throwers, pierced batons, harpoons, and beads of shell, teeth, and fossil amber, are as distinguished by quantity as quality.

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### SITES

## Gönnersdorf

**TIME PERIOD:** c. 12,600 B.P.

**LOCATION:** In the Neuwied basin of the middle Rhine valley in western Germany.

### DESCRIPTIVE SUMMARY

Gönnersdorf was occupied at the end of the Bolling warm period, and is one of the most northern of all Magdalenian sites. It is an open-air hunting camp, occupied during the winter according to the fauna (Poplin 1976, 1978). Horse was the primary prey, as well as reindeer and fox. The number of individuals who hunted fox during the winter suggests that fur procurement was a major preoccupation at this site.

### Local Environment

**Physical Features.** The open-air campsite includes evidence of numerous habitations, indicated by rock-lined central hearths, surrounded by stone slabs and dense artifactual debris (Bosinski 1979; Terberger 1992, 1997). Their contemporaneity is undemonstrated, but the richness of artifactual and artistic material suggests repeated long-term occupation of the site.

### Cultural Aspects

The stone tool industry is rich in burins, backed bladelets, and end scrapers. The bone industry includes double-beveled *sagaie* points and harpoons. Exceptional finds include stone lamps, usually only known from deep cave sites. Mobile art includes shell beads from as far as the Mediterranean, ivory and antler statuettes, and over 400 engraved schist plaquettes, primarily with horse motifs, but also including deer, elk, aurochs, bison, seal, wolf, bear, lion, and rhinoceros.

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## La Madeleine

**TIME PERIOD:** 18,000–11,000 B.P.

**LOCATION:** On the right bank of Vézère river, in the Périgord region of southwestern France, in the vicinity of the modern town of Les Eyzies.

### DESCRIPTIVE SUMMARY

La Madeleine is the type site for the Magdalenian. It was known in the 19th century for its rich mobiliary art. Serious scientific excavations were undertaken by Denis Peyrony beginning in 1911. Breuil (1912) and Peyrony (1938) used the stratigraphic succession of rich artifactual levels in those excavations to establish the Magdalenian cultural sequence from 18,000–11,000 B.P.

### Physical Features

La Madeleine is a long rock shelter, covering several hundred square meters. The deposits were deep and well stratified (Laville et al. 1980), but much was removed by clandestine excavations during the 19th century and by the not particularly meticulous procedures of archaeologists of the early 20th century.

### Cultural Aspects

There is evidence of substantial occupation through much of the year. Hunting concentrated on reindeer and horse (Boyle 1994, 1997). La Madeleine may have been an aggregation site for Magdaleniens (Conkey 1980). The flint industry is rather homogeneous, consisting of a strong blade tool industry, including dihedral burins, end scrapers, backed bladelets (de Sonneville-Bordes 1960). The rich bone tool industry allowed Breuil to develop the initial sequence of Magdalenian I–VI, progressing from simple single bevel-based *sagaie* points to double-row barbed harpoons. The magnificent mobiliary art includes carved harpoons, spear throwers, and pierced batons. One exceptionally fine and well-known piece is the bison licking its shoulder. The motifs are identical to those in the parietal art of the painted caves in the region. One child burial was found by Peyrony in 1926, which included numerous pierced shell and tooth beads around the ankles, knees, wrists, elbows, neck, and head.

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## Pincevent

**TIME PERIOD:** c. 12,000 B.P.

**LOCATION:** Pincevent is located on the left bank of the Seine, about 100 km upstream of modern Paris.

### DESCRIPTIVE SUMMARY

Pincevent is a site that is as important for the development of archaeological methods as it is for the well-preserved artifactual and faunal remains. It consists of a number of well-preserved open-air occupations. Professor André Leroi-Gourhan founded a school of paléoethnologie, where the emphasis was placed on broad horizontal excavations of open-air sites, rather than deep stratigraphic excavations. Gentle, overbank flooding of the Seine resulted in the low-energy deposition of silts on the open-air campsite, preserving faunal as well as lithic artifacts, and, most important, preserving the spatial integrity of their distributions. This allowed a contemporary observation of the interaction of many different classes of data and the reconstruction of many social and economic aspects of the lives of the prehistoric occupants. Large surfaces were exposed, with all of the artifactual material left in place for vertical photographic documentation and even latex molds of large areas. This meticulous documentation has allowed later researchers to pose new analytical questions of older data in a fashion that was rarely

possible for the frequently jumbled palimpsest depositions of deeply stratified cave sites. This excavation and recording procedure was first perfected at Pincevent (Leroi-Gourhan 1984; Leroi-Gourhan et Brézillon 1966, 1972) and allowed a number of subsequent mathematical and statistical analyses based on the published site maps (Carr 1984; Enloe 1983; Enloe et al. 1994; Johnson 1984; Simek 1984; Simek and Larick 1983). Almost 5,000 sq m of a single occupation level have been excavated at Pincevent, a revolutionary scale in hunter-gatherer archaeology.

### Local Environment

Pincevent was occupied during the Dryas II cold period. It is in a moderately entrenched valley bottom, with open and gently rolling upland plateaus around. It is probable that a narrowing of the valley bottom just downstream of the site made it a propitious reindeer crossing during the fall migration and further was probably responsible for the formation of ice dams that resulted in the gentle flooding and sedimentation preserving the site and its structure.

### Cultural Aspects

Activities at the site focused on reindeer hunting during the fall migration (Audouze and Enloe 1991; Enloe 1994; Enloe and Audouze 1997, Enloe and David 1997). Lithic resources were expediently exploited for immediate uses and limited preparation for successive stops on a seasonal round. Refitting of cores and debitage from flint-knapping areas has demonstrated not only the well-developed prepared core reduction sequence, but has also allowed demonstration of different levels of technical ability, apprenticeship, and technical education.

### Physical Features

The open-air campsite consists of remains of multiple households, each featuring slab-lined central hearths, adjacent tents, technical activities, and trash dumps. These household modules exhibit redundant spatial structure, and their contemporaneity is supported by multiple refits of flint, fire-cracked rock, and reindeer bones (Enloe and David 1992; Enloe et al. 1994; Leroi-Gourhan 1984; Leroi-Gourhan et Brézillon 1966, 1972).

The multiple contemporary households at Pincevent show little difference in kinds or amounts of material goods, suggesting egalitarian social structure. Identification and refitting of bones from individual reindeer

carcasses have allowed the first demonstration of food sharing in the Paleolithic (Enloe 1991, 1992; Enloe and David 1992) and documented reciprocal kinds of sharing patterns that are typical in egalitarian hunter-gatherer societies.

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JAMES ENLOE  
*Department of Anthropology*  
*University of Iowa*  
*Iowa City, Iowa*  
*United States*