

The first *Homo sapiens* in Catalonia, hunters and gatherers from the old Upper Palaeolithic*

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ABSTRACT

At the end of the Middle Palaeolithic around 40,000 years ago, a population of archaic humans, Neanderthal men descended from the earliest settlers, lived in Europe. They were perfectly adapted to the land and its resources. They and their ancestors had survived all the climate and environmental changes that had occurred throughout the Pleistocene for hundreds of millennia, but they mysteriously disappeared upon the arrival of anatomically modern men, who originated in Africa. The latter were the humans from our own species, *Homo sapiens*, also called Cro-Magnon men in Europe, and they would gradually replace the archaic populations of the Old World. In Catalonia, archaeology shows how the old civilisation of the Neanderthal men, the Mousterian, which remained in place for many millennia with few changes, was swiftly replaced by another new civilisation which was very different and more dynamic, the Aurignacian, which was a civilisation of modern men. Over time, the Aurignacian evolved to give way to other civilisations of large-game hunters of the European Upper Palaeolithic. In Catalonia, the sites in Serinyà, among others, allow us to study the civilisation of the Neanderthal and Cro-Magnon men near the time of their replacement and to precisely date when this took place. They also provide us with the oldest remains of modern men found in Catalonia.

KEYWORDS: Middle Palaeolithic, *Homo neanderthalensis*, Upper Palaeolithic, *Homo sapiens*, Aurignacian

THE ARCHAIC HUMANS OF THE LOWER PALAEOLITHIC

For much of the Lower Palaeolithic,¹ there is a great deal of evidence of human presence in the lands that would one day be Catalonia. Even though until the 1970s it was believed that this settlement did not start until the Middle

Palaeolithic, today we know that Catalonia was occupied by the first humans quite early, back in the Early Pleistocene,² probably more than one million years ago. For the time being, we cannot be any more precise. Perhaps the earliest occupants arrived from the north, in the more likely scenario that they spread out from Africa via the Near East. Alternatively, perhaps they arrived from the south, a hypothesis which cannot be totally rejected, despite the fact that the stretch of sea in the Strait of Gibraltar has existed for millions of years, since some of the oldest sites in Europe are located on the southern portion of the Iberian Peninsula, on the Granada plateau, and Spain is also where the oldest human remains in Europe are found.

We have no information on the physical appearance of these pioneers, nor on which specific human species they were. However, the crania and other remains found in Dmanisi (Georgia), which are classified as *Homo georgicus*, the mandible fragment from La Sima del Elefante (Atapuerca, Burgos) and the numerous remains in La Gran Dolina, also in Atapuerca, which are attributed to *Homo antecessor*, do give us an idea. They are archaic humans who were anatomically rather different to today's humans.

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Nor do we know much about their ways of life and social organisation. They were most likely gatherers, scavengers and opportunistic hunters of small animals. The stone tools that they crafted, simple cutting flakes which they shaped from stone cores, were used to flay skins, quarter and pull the flesh off the animals hunted by more effective predators than they or which died naturally or accidentally. They used pebbles or rocks to break the bones of these animals, eat the bone marrow and exploit them more exhaustively than any other scavenger.

In Catalonia, just like in neighbouring lands, there must be sites from these faraway eras, but there is none about which we can be completely sure, nor any that provides information beyond the presence of a few stone tools and, in the best of cases, the remains of animals that might have been consumed.³

After a few hundred thousand years had elapsed, by the Middle Pleistocene,⁴ Catalonia was still occupied by bands of nomadic humans who lived on the land, but they left sites that quite explicitly showed their ways of life and also provided information on the climate, flora, fauna and, in general, the environment during that period.

We are now aware of the kind of human that lived there, who is called Heidelberg Man or Mauer Man (*Homo heidelbergensis*), whom we can regard as the European variety of Asia's *Homo erectus* and Africa's *Homo ergaster*. Their most comprehensive representation, because of the high number of individuals recovered, is in La Sima de los Huesos in Atapuerca. The civilisation or stone-cutting cultural tradition was found in most of Europe and the Iberian Peninsula, as was the Acheulean,⁵ which was characterised by bifaces, the most known tool of that period. Catalonia somehow stood apart from this tradition, because bifaces are relatively scarce at our sites and the industries tend to be archaic. However, large bifaces were recently found in the oldest levels from 700,000 years in Cauna de l'Aragó.

The most important of these sites, where the most work has been done and from which we have the most information, is the one we just mentioned, Cauna de l'Aragó (Talteüll, Roussillon). Around 700,000 years ago, this cave was intermittently occupied by bands of hunters who made it their base camp from which they dominated the valley of Talteüll and the rocky plains around it. They were no longer opportunistic scavengers but hunters of large herbivores who carried their prey to the cave, sometimes hunted in large numbers. This site, one of the most important in the world for this period, gives a very precise picture of the climatic conditions and flora and fauna in Roussillon and, by extension, Catalonia and southern Europe during the entire Middle Pleistocene. Its level G in particular, which was deposited around 450,000 years ago, has also yielded numerous human remains, the first ones found in Catalonia, including an almost complete *Homo heidelbergensis* cranium. The humans who lived at Cauna de l'Aragó did not yet know how to use fire and therefore ate the meat from their prey

raw. Only at the higher levels of the site after 300,000 years ago do we find ashes and charcoal that pay witness to their use of fire.⁶

Other sites in Catalonia also provide important information on this period, including Cau del Duc in Torroella de Montgrí and Cau del Duc in Ullà (Baix Empordà), Puig d'en Roca (Girona), numerous open air sites in the La Selva region, La Cansaladeta (La Riba, Alt Camp), Barranc de la Boella (La Canonja, Camp de Tarragona), Pla de Dalt (Sant Gregori, Gironès), Pla de la Bateria (Girona) and surface sites near the rivers in Roussillon, especially the fluvial terraces of the Têt River (Fig. 1).⁷

NEANDERTHAL MEN DURING THE MIDDLE PALAEOOLITHIC

The Heidelberg man from the previous period evolved to become Neanderthal man (*Homo neanderthalensis*), who occupied Catalonia during the Middle Palaeolithic.⁸ Neanderthal men were archaic humans adapted to live in any climate, including in the cold European climate of their day. They might have colonised from Europe territories in central Asia and the Middle East, although in Siberia there was a different kind of human. Both Neanderthal man and the similar species that populated the Old World, the descendants of *Homo erectus*, were still archaic humans.

Their remains have been found in Catalonia, including the mandibles in Banyoles and in Cova del Gegant (Sitges, Garraf), and teeth in Cova de Mollet and Cova de l'Arbreda (Serinyà, Pla de l'Estany).

Their civilisation, which shares common features all around Europe, was called Mousterian.⁹ The web of Mousterian sites in Catalonia is becoming increasingly complete, and they extend from the coast to the foothills of the Pyrenees. The sites in Nerets (Talarn) and Cova de les Llenes (Conca de Dalt, Pallars Jussà) and Cova de Mollet in Serinyà (Pla de l'Estany) all date from the transition from the Lower to the Middle Palaeolithic.

Within the Upper Pleistocene, we can cite among others Pedra Dreta and Can Garriga (Sant Julià de Ramis), Cova del Rinoceront (Castelldefels, Baix Llobregat), Cova del Toll and Toixoneres (Moià, Bages), Cave 120 (Sales de Llierca, Garrotxa) and Cova de l'Arbreda (Serinyà, Pla de l'Estany).

Other sites date from the late Middle Palaeolithic, just before 40,000 years ago, and these are the ones we shall focus on here, since they are the testimony to the last occupations that can be attributed to Neanderthal man. They include Cova de l'Arbreda and Cova dels Ermitons (Sales de Llierca, Garrotxa), the latter a place from which the Neanderthals hunted wild goats.¹⁰ Other sites include Abric Romaní (Capellades, Anoia), the site that has yielded the most information thanks to the sound state of conservation of its archaeological evidence, as well as the different occupations which are clearly separated from each

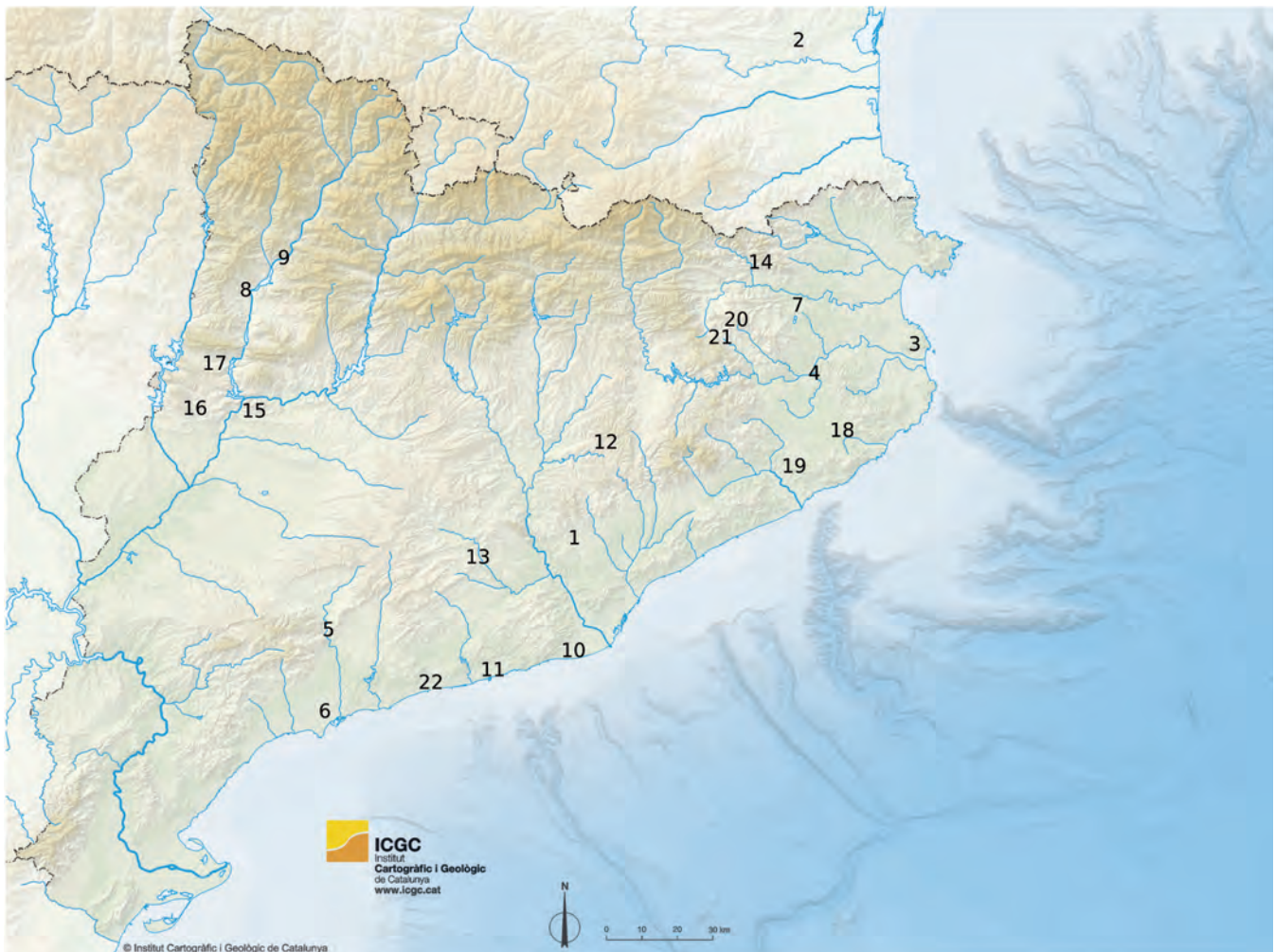


FIGURE 1. Palaeolithic sites in Catalonia. Location of the some of the sites mentioned in the text. 1- Vallparadís, 2- Cauna de l'Aragó, 3- Coves del Duc de Torroella de Montgrí and Ullà, 4- Puig d'en Roca, Pla de Dalt, Pla de la Bateria, Pedra Dreta, Can Garriga, 5- La Cansaladeta, 6- Barranc de la Boella, 7- Mollet, Mollet III, Arbreda, Pau, Reclau Viver, 8- Talarn, 9- Cova de les Llenes, 10- Cova del Rinoceront, 11- Cova del Gegant, 12- Cove del Toll and Cova de les Toixoneres, 13- Abric Romaní, 14- Cova dels Ermitons, 15- Roca dels Bous, 16- Estret de Tragó, 17- Cova Gran, 18- Can Crispins, Bruguera, 19- Cal Coix, 20- Roc de la Melca, 21- Castell Sa Sala, 22- Balma de la Griera.

other via sterile levels. The fact that the deposit at this site is made up of calcareous concretions makes it easier to date the different Mousterian occupations that succeeded each other there, which range from 60,000 years ago until 40,000 years ago.¹¹

One of the new developments in recent years is the discovery of important Mousterian sites in Terres de Ponent, in refuges in the foothills of the Pyrenees, such as Roca dels Bous (Camarasa), Estret de Tragó (Os de Balaguer) and Cova Gran (Avellanès-Santa Linya)¹² in La Noguera region. The majority of their occupations also date from the late Mousterian.

The evidence yielded by all these sites allows us to claim that Neanderthal man was a skilled hunter who occupied caves, refuges and open air encampments. The different kinds of homes identified in these sites reveal that they used fire for a variety of purposes, they made wooden tools and, through very well-organised nuclei they carved an industry of flakes which could later be shaped to be used as scrapers and denticulated scrapers. The fact that

local rocks were always used, given the lack of products transported from afar, leads us to believe that the radius of action of the nomadic bands of Neanderthals was smaller than what was common among modern humans. Another fact that draws our attention is the continuity of their cultural traditions, which lasted for tens of millennia without many signs of evolving.

THE CHÂTELPERRONEAN AND THE LAST NEANDERTHALS

At the end of the Middle Palaeolithic, the Neanderthals occupied all of inhabitable Europe and carried on their Mousterian traditions. However, in some places industries can be found that reveal some differentiation from the Mousterian substratum. The lithic tradition or civilisation called Châtelperronean was found in southern France and as far away as the Cantabrian region.¹³ For a long time, this civilisation was believed to be the work of modern

man and proof of continuity between the Middle and Upper Palaeolithic. However, today we know that the Châtelperroneans were the last Neanderthals in Western Europe at the time, around 35,000 years ago, when the first modern men had arrived. Since they shared the same territory for millennia, they might have noticed modern men's behaviour and changed the way they did things, imitating what they saw their modern counterparts do.

Thus, the Châtelperroneans incorporated the use of symbolic objects, as modern men did. There is a debate regarding they were the outcome of the internal evolution of the Neanderthal or whether they were an imitation of the ones used by modern men. In the case of the ones in Grotte du Renne (Arcy-sur-Cure, Bourgogne), a painstaking study of the Châtelperroneans' symbolic artefacts led to the conclusion that they were crafted differently than those of the earliest modern men.¹⁴ Even though the paradigm is that only the latter were capable of using objects symbolically, there is more and more evidence in which the Neanderthals are also shown to have occasionally done so.

Châtelperronean culture is also present in Catalonia in a testimonial fashion. Its most characteristic tools, points with a curved side by abrupt retouch, or Châtelperron points, have been found in the late Mousterian level in Cova de l'Arbreda and Cova dels Ermitons. These points are the only testimony of this industry in the western Mediterranean, as it is more common on the Atlantic coast.

The Neanderthal men showed well-defined features that distinguished them from anatomically modern men. They were shorter, sturdier and had more bowed legs, and their faces jutted forward; they had thicker bones under the eyebrows and their foreheads sloped back. Physical anthropologists do not think that they could have evolved into modern men in just a few millennia. In fact, even though last century both were regarded as two subspecies of *Homo sapiens* (*Homo sapiens neanderthalensis* and *Homo sapiens sapiens*), today they are generally considered two different species. Geneticists find substantial differences between the genomes of these two species, although it is not clear to what extent Neanderthal genetic material might have been incorporated into the genome of modern men. In short, there is not believed to be continuity between the Neanderthal populations in the Upper Palaeolithic.

THE AURIGNACIAN, THE FIRST CIVILISATION OF MODERN MEN IN EUROPE

At the same time that Châtelperronean culture was developing, a very different industry was already quite well established in Europe; it was clearly part of the Upper Palaeolithic and has been called Aurignacian.¹⁵ When the predominant paradigm was anatomical and cultural continuity, an origin was sought in Mousterian variants in

Western Europe. However, today this local origin has very few supporters.

In some of the sites where there are occupations from the Late Mousterian or the Châtelperronean, other Aurignacian occupations are superimposed on top. The contrast between the two traditions is so clear that it leads us to believe that the replacement of the Mousterian by the Aurignacian was a relatively rapid phenomenon, without the possibility of either transition or continuity.

The Aurignacian presents what would become the characteristics of all the cultural traditions of the Upper Palaeolithic. The first is a lithic industry made by prismatic cores prepared to extract elongated flakes with parallel edges, called blades, which were used to craft a wide range of tools that were more standardised than the tools from the Mousterian. They included a plethora of end-scrapers, burins and retouched blades. Another one is the use of a bone or antler industry with tools that are clearly characterised and standardised, quite different to those of the Mousterian, which were opportunistic or by chance. While the symbolic capacity of Neanderthal tools has been debated because of the absence of symbolic objects in their rare gravesites and the poverty of the symbolic materials found in Mousterian sites, now, in Aurignacian sites, perforated teeth and sea snails are relatively abundant, while we can also find engraved or painted artistic expressions which from the very start were as elaborate as the art from the late Upper Palaeolithic.

Given all of these new features, we cannot doubt that the Aurignacians were modern men, even though there is a relative dearth of human remains in the first few millennia to confirm this.

These first modern men have been called Cro-Magnon man.¹⁶ Their foreheads were high and their chins pointed. Their faces were broad and short, with low, rectangular, elongated eye sockets. Their post-cranial skeleton was very sturdy, with elongated articulations. Despite the greater robustness of the bones and joints than today, they are anatomically modern and can be considered the ancestors of much of Europe's population today.

According to the model accepted by the majority of researchers, called "Out of Africa", around 200,000 years ago modern men must have originated in some place in Africa based on an isolated ancestral population, as indicated by genetic analyses. Africa, too, is where their oldest industries and symbolic objects are found, as they must have first gradually replaced the archaic populations on that continent. They were present in Ethiopia 100,000 years ago, as shown by the quite explicit human remains found there. Shortly thereafter, they must have spread towards the Near East, where for centuries they lived alongside the Neanderthals, and from there to the rest of Asia as far as Australia, which they reached 60,000 years ago, as well as towards Europe. Apparently, they were constantly replacing the indigenous archaic populations. Some of the last might have remained isolated and lasted a longer time, such as on Flores Island (Indonesia).¹⁷

THE AURIGNACIAN IN CATALONIA

Aurignacian sites are still rare on the Iberian Peninsula. They are relatively well represented only in the northern parts, especially Catalonia and Cantabria. This leads us to believe that the Peninsula might have served as a redoubt where the Neanderthals held out, and there have even been claims of the possibility that the Ebro River served as a boundary between the two worlds for some time.¹⁸ This idea was based on the fact that some Mousterian sites offer relatively advanced dates that would situate them in a period which already corresponded to the Upper Palaeolithic in the rest of Europe. It also aligned with an old hypothesis that upheld that the Aurignacians had had a scarce presence on the Peninsula, which might have been entirely populated by the men of the Upper Palaeolithic only in the following period, the Gravettian. However, recently many of these dates have been reconsidered and the sites have aged. It is reasonable to believe that if modern man entered the Iberian Peninsula through the passes in the Pyrenees, the oldest sites are still in the northern parts and from there radiated southward. We know nothing about how this process occurred. Today we believe that the standard Aurignacian is present in Andalusia. In any event, even now there are advocates of the longstanding continuity of the Neanderthals, whose last redoubt might have been the Rock of Gibraltar.¹⁹

The Aurignacian spread all over Europe and the Near East. It must have originated among the modern men of the Near East. It lasted many millennia, approximately from 38,000 to 28,000 BC.

This long evolution has enabled us to distinguish between an Archaic Aurignacian, which represents the cultural traditions of the new arrivals, and a standard Aurignacian, which, as its name implies, shows the features common to most of the sites in Western Europe. The latter can be divided into the early standard Aurignacian and the evolved standard Aurignacian.

Despite this evolution in time and the geographic variability common in a territory as large as what it occupied, its industries and symbolism showed surprising unity. We may posit that the nomadic bands of Aurignacian hunters and gatherers kept up contact among far-flung territories for millennia, which would allow this uniformity of cultural and even symbolic traits to be maintained. However, another way of seeing it is that keeping this common symbolism fostered the continuity of contacts and cultural homogeneity, unlike what might have happened with the Neanderthals. During the entire Upper Palaeolithic, which dovetails with the second part of the last glaciation, long-distance contacts were favoured by vast extensions of prairies, the rarity of forest stands and the low level of marine waters.



FIGURE 2. External appearance of Cova de l'Arbreda (Serinyà, Pla de l'Estany).

THE ARCHAIC AND EARLY AURIGNACIAN

In Catalonia, the Archaic Aurignacian is present in some of the Reclau sites (Serinyà, Pla de l'Estany): Cova del Reclau Viver, Cova de Mollet and especially Cova de l'Arbreda (Fig. 2). Abric Romani, Reclau Viver, Arbreda and Abric Romani are also the sites of some of the oldest dates in Europe, which proves the swift spread of this civilisation, which probably reached them by tracing the Mediterranean coastline.

Cova de l'Arbreda

This site has a stratigraphy more than 12 metres deep, with numerous anthropic occupations from the Middle and Upper Palaeolithic. Here we shall focus on level I, which dates from the late Mousterian; level H, which dates from the Archaic Aurignacian; and level G, which dates from the Evolved Aurignacian (Fig. 3).

Level I is the last Mousterian level, and there we can find the typical industry from that period. Flint is very

rare there, and almost all the industry is carved from local rock (Fig. 4), the same material that had been used during the older Mousterian levels. The level is quite powerful and its upper reaches are the last occupation of the cave by the Neanderthal men, who left industry and animal remains there. The industry includes the Châtelperron points mentioned above.

The first dates from that period in the late Mousterian place it at round 40,000 BP.²⁰ Recently, we have gotten new radiocarbon results using the ultrafiltration method applied on animal remains with anthropic signs. They provide a less clear view of this issue and on the dating of level I in particular: 32,100 ± 450 (OxA-21663), 32,300 ± 450 (OxA-21703), 39,200 ± 1,000 (OxA-21704), 44,400 ± 1,900 (OxA-21702) and 37,300 ± 800 (OxA-21662).²¹ Another result using charcoal has provided the date of 38,350 ± 400 (OxA-19994).²²

Level H is located immediately above the last Mousterian occupations in level I. Several occupations are found there which correspond to the Archaic Aurignacian,

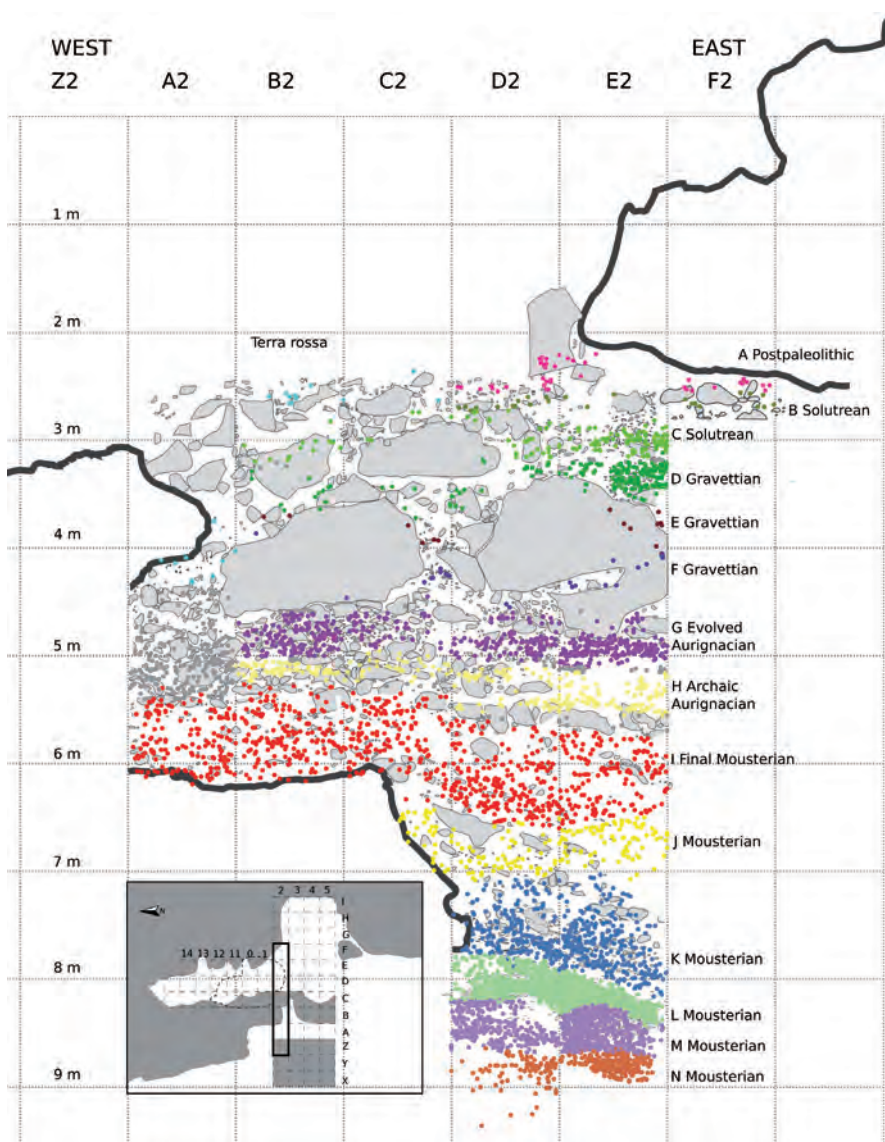


FIGURE 3. Stratigraphy of Cova de l'Arbreda.



FIGURE 4. Flakes from the late Mousterian in Cova de l'Arbreda, carved from local rock.

which is characterised by the presence of numerous bladelets with alternated semiabrupt retouch (Dufour bladelets) carved from pyramidal or prismatic cores (Fig. 5). They are accompanied by nuclei, burins and large flint blades which might have been retouched²³ (Fig. 6). The stone tools are made almost exclusively of flint from the Corberes mountains.²⁴ The bone industry includes three bone points with a split base, quite common tools around Europe since the earliest Aurignacian (Fig. 7). They are the only ones found in the Iberian Mediterranean except for two others from Cova del Reclau Viver. They may date from the Archaic Aurignacian or from some sporadic occupation from the early Aurignacian located towards the upper part of that level.

The lower part of the level yielded 14C AMS dates obtained from samples taken around 10 cm over the recent Mousterian underneath it, which, as mentioned above, was dated from the same time, around 40,000 years ago. The ones from the Aurignacian yielded dates of an average of 38,000 BP.²⁵ These dates lead us to believe that not only was the replacement of Neanderthal man by anatomically modern man abrupt, it was also quick. Even though they may concur with other similar dates from Cueva del Castillo (Puente Viesgo, Cantabria) and, as we shall see below, Abric Romani (Capellades, Anoia, Barcelona), such old dates for the Archaic Aurignacian aroused doubts as to their validity.²⁶ Regardless, we have later proven that the samples were taken from places that were unquestionably part of level I in an industrial context that brooked no doubts.²⁷ We have recently published results from the 14C method improved with ultrafiltration used on the samples of bone industry and animal remains with anthropic signs from the same level H, which yielded slightly more recent dates: 34,800 ± 760 (SANU-29017), 35,900 ± 860 (SANU-29019), 35,700 ± 830 (SANU-29016), 31,900 ± 530 (SANU-29014), 33,800 ± 500 (OxA-21674), 35,850 ± 700 (OxA-21665), 36,000 ± 700 (OxA-21784) and 35,900 ± 650 (OxA-21664).²⁸ These dates and others from all over the Iberian Peninsula allow us to bring the problem into focus and to posit that, generally



FIGURE 5. Dufour bladelets from the Archaic Aurignacian in Cova de l'Arbreda.

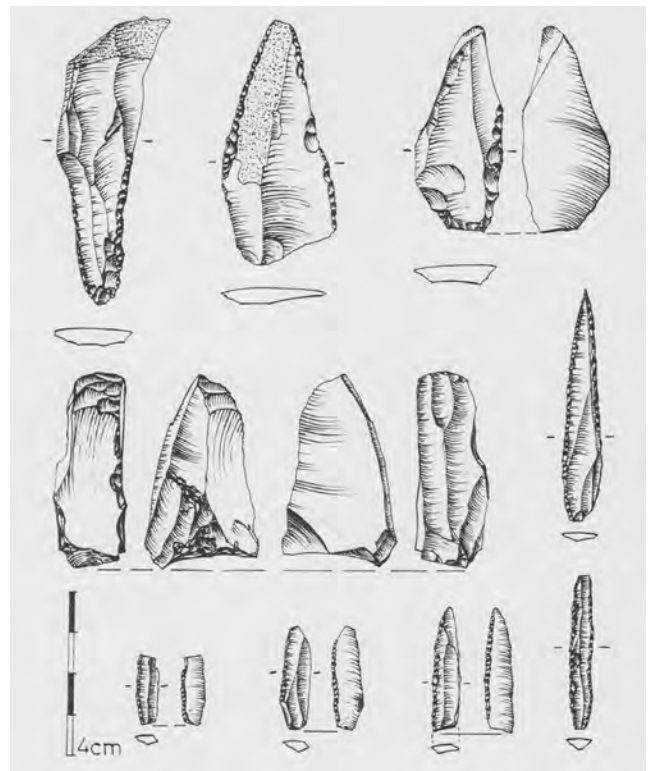


FIGURE 6. Industry from the Archaic Aurignacian in Cova de l'Arbreda, carved from flint.



FIGURE 7. Split base points from the Aurignacian in Cova de l'Arbreda.

speaking, it was possible that archaic and modern men lived side by side for a period.²⁹

From the archaeological standpoint, the Mousterian and Aurignacian occupations are clearly distinct. The Mousterian industry from the latest period in level I is made up of flakes derived from Levallois and discoid cores. The raw material of this industry is local rocks from the stony areas near Centenys or the Ser or Fluvià Rivers, and it is not too different from the Mousterian levels preceding it. Flint, a rare rock in northern Catalonia, is only present exceptionally.

In contrast, the Aurignacian level H has a totally different stone industry. Most of it is carved from high-quality flint from the Sigean basin in Corberes mountains, 140 km to the north. The nuclei are prismatic and from them have been extracted blades and thinner bladelets, comprising the majority of the industry. We can also find objects made of bone, along with symbolic items, such as perforated beads.

Cova del Reclau Viver

The site was excavated by J. M. Corominas from 1944 to 1948³⁰ and it became the first site in Catalonia where a stratigraphy from the Upper Palaeolithic, which precisely started with the Aurignacian, was identified. The lower part of level A contains an industry similar to level H in Cova de l'Arbreda with similar dates, and it can also be attributed to the Archaic Aurignacian.

Abric Romani

In the top of this site there was a level or Layer 2 which was located above many important levels from the Mousterian period. Layer 2 was thoroughly excavated by Amador Romani in the early 20th century. It contained evidence of different occupations from the Upper Palaeolithic. One of the occupations corresponded to the Archaic Aurignacian, as seen by an industry identical to that of level H in Cova de l'Arbreda. The dates for this layer 2 based on samples of tufa and charcoal extracted from the wall of the shelter at the height where layer 2 had been located yielded dates comparable to those of level H in Cova de l'Arbreda.³¹

We can match the first Aurignacian occupations with the arrival of the first anatomically modern men in Catalonia and the disappearance of Neanderthal men. The stone and bone industry shows greater technical complexity in the sense that there is a wider variety of types (specialised tools), some of which were apparently not designed to be used in isolation but in combination with others in the guise of compound artefacts. It is quite clear that these modern men had a large radius of action which allowed them to get resources from faraway locations. In their hunting and gathering expeditions, they covered a large territory and engaged in periodic contact with other groups. The sites mentioned above were occupied only sporadically for part of the year. None of them seems to be a long-term encampment.

In both Reclau Viver and Cova de l'Arbreda, the Aurignacian occupations succeeded each other in time. At level B in Reclau Viver and the end of level H in Cova de l'Arbreda most of the tools found are from the standard Aurignacian. Bone points with a split base can be found in both sites.

One of the new discoveries in recent years is the early presence of the Aurignacian and therefore of modern man in the foothills of the Pyrenees in Western Catalonia. Their presence was notable in Cova Gran (Santa Linya, Noguera), also over a Mousterian level in one of the probes performed in this vast cavern.³² Therefore, modern humans seem to have occupied the entire territory in just a few centuries.

THE EVOLVED AURIGNACIAN

The modern men of the Evolved Aurignacian lived at level G, above level H, in Cova de l'Arbreda for a long time, and they built numerous hearths of different kinds. They are paved with selected sandstone plaquettes which served as refractory material. Next to one of the hearths, there was a small paved vat whose interior might have served as an oven.

The stone industry was primarily carved of dark grey flint, like the kind found in the Corberes mountains. It is a very microlithic industry, with small nuclei in the guise of carinated end-scrapers or multiple burins from which tiny twisted bladelets were yielded which were modified with a direct or inverse semiabrupt retouch, usually direct on one side and inverse on the other. They are 5-6 mm in length and they account for 80-90% of the retouched tools. The bone industry, made of losangic bone points with an oval cross-section, is also characteristic of the Evolved Aurignacian. The animal remains, generally anthropic in origin, were found very fragmented. The predominant species is the deer. The palynological and anthracological analyses indicate a relatively warm climate, with thermophilic plant species, which enables us to posit that the forests were more extensive during that period.³³

This characteristic time does not exist in any other of the sites in Reclau, and in the entire western Mediterranean we only know of a similar one in Cova Beneito (Muro, El Comtat).³⁴

We currently have reliable dates for this level. The first is a direct dating from one of the typical bone losangic assegais which perfectly characterise this level, and it yielded $32,100 \pm 450$ BP (OxA-21783). The other two results were obtained from bone chips with anthropic signs of the flesh having been removed, and they yielded ages of $32,250 \pm 450$ (OxA-21667) and $32,750 \pm 450$ BP (OxA-21666), respectively.³⁵

In Catalonia, there are also open air sites which can be attributed to the Aurignacian because of their industry, despite the lack of dates and animal remains. Can Crispins (Llagostera, Gironès)³⁶ is a good example of the stand-

ard Aurignacian, and Cal Coix (Maçanet de la Selva)³⁷ and Bruguera (Llagostera, Gironès)³⁸ are good examples of the Evolved Aurignacian.

THE GRAVETTIAN IN CATALONIA

The Aurignacian gradually gave way to a new stage which we call the Gravettian,³⁹ which is characterised by industries which differ from the previous ones, especially because of the widespread presence of points and blades with one side beaten by abrupt or back retouch, a new feature that from now on would be present in practically all the industries from the Upper Palaeolithic. During the Gravettian, in addition to the usual differences due to its very evolution over the millennia that it lasted, approximately from 28,000 to 21,000 BP, there are many other changes due to different regional facies.

This is found in Catalonia primarily in the sites in Serinyà, which are the only ones where levels that contain evidence of the Gravettian can be found in the stratigraphy, since they are superimposed upon the Aurignacian and precede the Solutrean. Despite this, in all these sites there are important solutions of continuity in the occupations, and we do not have solid representations of either the initial periods or many other of the millennia through which the Gravettian lasted.

Cova del Reclau Viver

At this important site, the Gravettian was already stratified between the Aurignacian (levels A and B) and the Solutrean (level F), and its excavator, J. M. Corominas, identified three Gravettian levels, from the oldest to the most recent (C, D and E).

Level C, which is separated from the standard Aurignacian by a sterile layer, dates from the Middle Gravettian. It is relatively poor, characterised by the presence of small backed points (14%) and backed blades (32%). End-scrapers (14.7%) are more common than burins (10.3%), although burins are generally more common in the Gravettian than end-scrapers. The sum of backed points and backed blades means that the percentage of tools with abrupt retouch is 48%, and in this sense level C is more clearly Gravettian than level D above it, even though level D contains the best examples of Gravette points. Level C is also poor in animal remains compared to the rich level D, yet nonetheless it has yielded remains such as a leporid tibia with cut marks which has been dated with 14C AMS at 23,070 ± 120 BP (KIA-33239). From the typological standpoint, and because of its dating as well, level C is comparable to the Gravettian level E from the neighbouring Cova de l'Arbreda.

Level D has no parallel with any other Palaeolithic site in Catalonia. It is rich and complex and signals a turning point towards an intensive use of the cavity, which would be sustained throughout the Solutrean. From the standpoint of industry, it is characterised by a decline in the

number of little backed points and backed bladelets and an increase in the size of the artefacts, along with the presence of a more abundant bone industry. The pieces with abrupt retouch now only account for 23% of the total (backed bladelets 11%, backed points 10%) and they include standard Gravette points. The site also contains a considerable number of end-scrapers (14%), slightly more than burins (13.4%).

There is an abundance of ornamental objects, with numerous perforated carnivore and deer teeth, as well as examples of sea molluscs, especially *Dentalium*. The bone industry is characterised by the presence of robust assegaes, some with an oblique or bevelled base and others with a lateral depression that can be found naturally in the equid metapods from which they were crafted. They all have parallels in Occitania from the late Gravettian. Four perforated deer femur heads have also been found. We know of a parallel from the late Gravettian in Abric Pataud (Las Eisiás de Taiac, Perigord), which we believe demonstrates yet again the breadth of the long-distance relations in this period,⁴⁰ along with the existence of a unit of civilisation on either side of the Pyrenees.

Standard pieces clearly from this period have been dated at level D in Reclau Viver. The base fragment of an assegai made of a mono-bevelled cylindrical bone, typical of the late Gravettian and coming from the base of level D, has been AMS radiocarbon dated at 20,830 ± 90 BP (KIA-33243). The distal end of a point from a bone assegai in a planoconvex cross-section, made from a metapod – probably equid – has been directly dated by 14C AMS and yielded a result of 19,730 ± 90 (KIA-33238). Therefore, based on the bone types, level D shows a certain diachrony which radiocarbon dating seems to confirm, and it can be dated from approximately 21,000 to 20,000 years BP.

Level E lies over level D, and even though it contains some standard Gravettian points, we believe that it should be considered more Proto-Solutrean than Gravettian. It is dated only slightly more recently, but we shall not discuss that here. Levels D (Gravettian), E (Proto-Solutrean) and F (Solutrean) represent an era when the site was intensely occupied and numerous remains were left. It is precisely in these confusing times prior to the rich standard Solutrean in level F when thousands of perforated sea molluscs appear, most of them specimens from the species *Homalopoma sanguineum*.⁴¹ Human remains were also found – primarily from the lower extremities – towards the northern side of the cavity, accompanied by a considerable number of decorative objects, especially lynx teeth, from what must have been one or several graves that had been disturbed before they were excavated.

Cova de l'Arbreda

The Gravettian in this site is poorer in finds than Reclau Viver, but they come from more modern excavations that are more accurately dated. Just as in Reclau Viver, it is found between the Aurignacian and the Solutrean. Above the Evolved Aurignacian in level G and under the Solutrean

are three Gravettian levels – D, E and F – but only one is significant in terms of the number of objects it contains.

The archaeological remains are found in the midst of large blocks of tufa coming from part of the roof of the cavity which collapsed shortly after the occupations in the Evolved Aurignacian, and are few because the occupations in Cova de l'Arbreda were infrequent or took place in a zone that has not yet been excavated. Despite this, we can pinpoint Gravettian level F, which is quite poor. Among its stone industry there are only 34 retouched tools, including seven end-scrapers, five burins, five backed points, eight fragments of backed artifacts and seven scrapers. There is also a bone punch and a perforated deer tooth. Recently we have gotten two results on two deer remains: $28,280 \pm 290$ (OxA-21782) and $28,260 \pm 280$ (OxA21781).⁴² Therefore, this is from the early Gravettian.

Level E, which is located above level F, is much more explicit, and it can be used to represent the Gravettian in Cova de l'Arbreda. It is a highly disperse occupation in most of the Beta sector, amidst the fallen ceiling blocks, and it was concentrated towards the northeast, where it was powerful and dense with a heavy accumulation of ashes, stone industry and fauna with anthropic origins, most likely because it was the protected area under the roof of the cavity.

Most of the stone industry is carved from flint (96.6%) in a wide variety of colours and appearances, much more than during the Aurignacian, a detail that indicates very different origins of this raw material and therefore a much larger radius of action among the Gravettians, who were hunters of large herbivores. Only 3.4% of the industry is carved of other raw materials (quartz, quartzite, cornian, schist, dike rock, etc.). It is typically Gravettian, characterised by the presence of numerous backed points. Only in the Alpha section are there 237 retouched pieces, all made of flint. The abrupt retouched artifacts account for 70.4% (fragments of backed points and blades, 37.1%; backed points, 24%; backed blades, 8%).

The bone industry is quite poor. There are only fragments of assegai, two fragments of punches and an awl made of deer antler. There are also very few ornamental pieces. There are perforated deer and carnivore canines and a few perforated shells from three species: *Cardium* sp., *Pecten jacobaeus* and *Pecten maximus*.

The fauna at level E is well conserved. It is dominated by rabbits (*Oryctolagus cuniculus*), many of which are anthropic in origin. The most common large mammals are horses (*Equus caballus*), followed by large bovids (*Bos primigenius*-bison) and deer (*Cervus elaphus*). There are more sporadic examples of the ass (*Equus hydruntinus*), chamois (*Rupicapra rupicapra*), red fox (*Vulpes vulpes*) and hedgehog (*Erinaceus europaeus*).⁴³ Among the fish remains, eel (*Anguilla anguilla*), brown trout (*Salmo trutta fario*), barbus (*Barbus* sp.) and others have been identified.⁴⁴ Birds, small rodents, insectivores and chiropters are also well represented.

As level E was being deposited, outside the cavity there

were few trees and the landscape was dominated by prairies, where *Artemisia* and Asteraceae dominated on wild Poaceae or Gramineae.⁴⁵ The anthracological analysis of this level has yielded only two taxa: *Pinus sylvestris* and *Betula verrucosa*.⁴⁶ Therefore, the landscape corresponded to that of a cold steppe with a few pine forests and riverbank trees. All the analyses seem to indicate that when level E was being deposited, the climate was cold and dry. Along with the Solutrean period, this was most likely the coldest and driest of the Upper Palaeolithic sequences in Cova de l'Arbreda.

The first radiocarbon dating obtained from this level, from $20,130 \pm 220$ BP (Gif-6420),⁴⁷ was too recent. We currently have three new dates. One of them was obtained using the ultrafiltration method on a bone chip with anthropic marks of butchering cuts, which yielded results of $25,780 \pm 210$ (OxA-21669) and $26,100 \pm 210$ (OxA-21668) (Wood et al., 2014). A new 14C AMS result on charcoal from the same level has yielded an age of $24,840 \pm 120$ (GrA-57326), and a third one, also 14C AMS on another chip, yielded $25,240 \pm 120$ (GrA-47351).⁴⁸

Above level E, yet partly still amidst the large fallen blocks, is another layer that is poor in archaeological evidence which we call level D. Currently, at least its lower part can be attributed to the Gravettian, since we have gotten the first radiocarbon dating on a horse femur with butchering marks which yielded $22,630 \pm 100$ (GrA-47323). They must be poor indications from the same late Gravettian that was excavated in Cova del Reclau Viver (level D), where it was extraordinarily rich and varied, as discussed above.⁴⁹

La Cova d'en Pau

The excavation that J. M. Corominas undertook in front of Cova d'en Pau showed the existence of a Gravettian level there, also located under the Solutrean (Soler, 1986). There are backed points, including a standard Gravettian point. A whistle on a corvid ulna was also found there,⁵⁰ the oldest musical instrument ever found in Catalonia.

L'Abric Romani

In its layer 2, mentioned above, next to the standard pieces from the Archaic Aurignacian, several Gravettian pieces were found as well.⁵¹ All told, six backed points were found, including standard Gravettian blades and bladelets. Therefore, there was a mix in the collection conserved from the old excavation.

Other sites in Catalonia can be attributed to the Gravettian based on their industry or dates, such as Roc de la Melca, Castell Sa Sala, La Griera and a few superficial finds.

L'Abric del Roc de la Melca (Sant Aniol de Finestres, Garrotxa)

This contained just a single archaeological level which has been dated at $20,900 \pm 400$ BP (MC-2219).⁵² The stone industry contains many scrapers (13%) and denticulates (31.6%). The artifacts with abrupt retouch account for

33.1% of those found. End-scrapers account for 4.6% and burins, most of them on retouched truncation, account for 13.9% of the whole.

Castell Sa Sala (Vilanova de Sau, Osona)

This shelter yielded local hobbyists a great deal of industry from the Upper Palaeolithic. We attribute it to the Gravettian because of the presence of several micro-gravettes and numerous burins, but it has also been assigned to the early Magdalenian.⁵³

La Balma de la Griera (Calafell, Baix Penedès)

The lower levels of this shelter have yielded a stone industry without any standard pieces, along with remains of deer and horse. It has been dated by 14CAMS at $21,255 \pm 350$ (AA-8649), the only evidence that leads us to believe it is Gravettian.⁵⁴

Based on the sites in Serinyà, bearing in mind the industrial sequence and raw materials used, along with the fact that the Gravettian is always located above the Aurignacian, we have the impression that the Gravettian is the natural evolution of the Aurignacian. We have to wait until the Magdalenian to see a solution of continuity in the Upper Palaeolithic sequence in the sites in Serinyà, since the Magdalenian does not occupy the Reclau sites and uses flint exclusively, which does not occur in the Aurignacian, the Gravettian and the Solutrean, when local rocks were also used.

Generally speaking, the Gravettian in Serinyà is strictly the standard Gravettian which is primarily characterised by the presence of Gravettian points, which are backed points with the distal end very tapered thanks to a retouch opposite to the backed border, and the base whittled with the aid of a flat retouch (Fig. 8). These points are also present in Abric Romaní, and we can therefore posit that the Gravettian facies from Serinyà was present all over Catalonia.

THE FIRST REMAINS OF ANATOMICALLY MODERN HUMANS IN MOLLET III AND IN RECLAU VIVER

Mollet III cave, one of the caves ones in the Reclau in Serinyà which should also be included among the Gravettian sites, has yielded the oldest remains of modern humans found in Catalonia. It is a cavity which is made of tufa, just like all the others in this site. Its roof is collapsed and we are only recently beginning to learn about its morphology with the resumption of excavations. J. M. Corominas partly excavated it in 1972 and identified three archaeological levels with somewhat imprecise boundaries. The upper one contains many human remains and ceramic shards which indicate that the cavity had been used for burials during the Chalcolithic and Bronze Age. Under it was a layer with few archaeological remains which can be attributed to the Upper Palaeolithic. The lower layer, which is also poorly known, corresponds to the Middle Palaeolithic. In one of

the probes performed there, J. M. Corominas found a human cranial calotte in the middle level and posited that it must have been an individual from the Upper Palaeolithic. Later, this hypothesis was rejected and the cranium was added to the human remains from the Bronze Age.

The study of the archaeological remains in the middle level leads us to consider it Gravettian because of the presence of a Gravettian point and other characteristic pieces similar to those in the Gravettian levels in Cova de l'Arbreda, Reclau Viver and Cova d'en Pau. The animal remains in this level are horse (*Equus ferus*), ass (*Equus hydruntinus*), deer (*Cervus elaphus*), roe deer (*Rupicapra rupicapra*), aurochs (*Bos primigenius*), wild boar (*Sus scrofa*), red fox (*Vulpes vulpes*), wolf (*Canis lupus*), lynx (*Lynx spelaea*), hyena (*Crocota crocuta*), rabbit (*Oryctolagus cuniculus*) and bird species.⁵⁵ These species confirm that we should situate this site in the Upper Palaeolithic.

We have recently resumed studies of the archaeological context of the find. Along with the cranium, ornamental objects were also found, including six perforated deer canines and sea molluscs: twelve *Dentalium*, a *Glycymeris* sp., a *Nucella lapillus* and a *Phalium* sp. In a nearby zone, four more deer canines with identical perforations to the

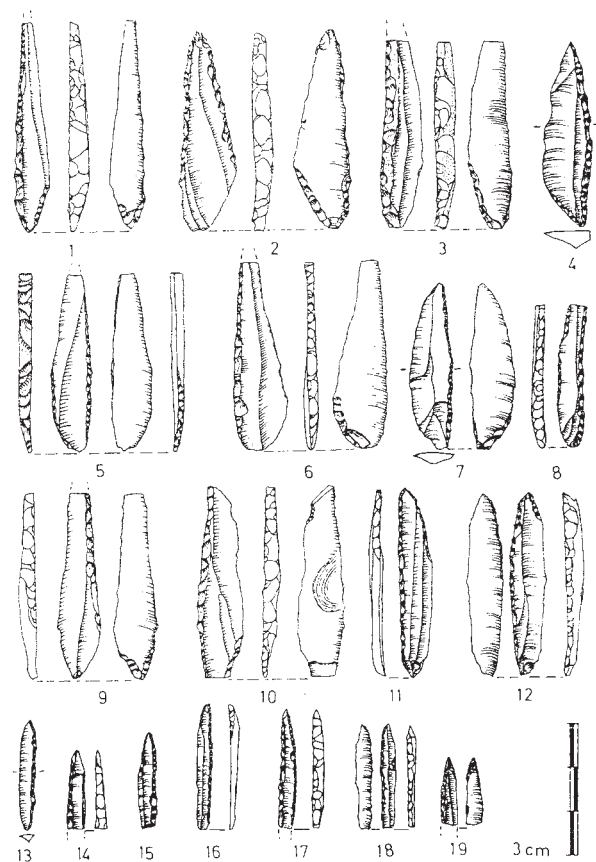


FIGURE 8. Gravettian points and backed blades from the Reclau sites in Serinyà. 1, 2, 8: Reclau Viver, level D; 3-4, 11-19: Reclau Viver, level C; 7: Reclau Viver, vestibule; 5: Davant Pau; 6, 9, 10: Arbreda.



FIGURE 9. Symbolic ornamental objects that accompanied the cranium in Mollet III.

other six were found (Fig. 9). These perforated deer teeth were common in the Palaeolithic levels of the caves of Serinyà since the Archaic Aurignacian, and they are generally found throughout the entire Upper Palaeolithic and Mesolithic in Europe. Of the ten perforated canines found in Mollet III, six were dyed red. J. M. Corominas noted the presence of fragments of iron rust at the Upper Palaeolithic level, as well as the red colour of the sediment around the cranium.

We have a direct date via a small temporal fragment that was extracted from it. The result, $22,330 \pm 90$ BP (GrA-43783) without calibration, confirms the Gravettian age of the fossil.

The cranial calotte is made up of the front bone, the two parietal bones, an occipital bone and a fragment of the temporal bone. The muscle insertions it shows are not very pronounced, so we might posit that it belonged to a woman (Fig. 10). Despite its fragmented state, it is the most complete of those found from the Gravettian on the Iberian Peninsula. The comparable remains in Parpalló and Cova Beneito⁵⁶ are more recent. The cranial remains from Malladetes⁵⁷ and Lagar Velho⁵⁸ are more incomplete and belong to younger individuals.

Therefore, at Mollet III we have been able to identify the remains of the oldest anatomically modern human in Catalonia, which is also one of the oldest on the Iberian

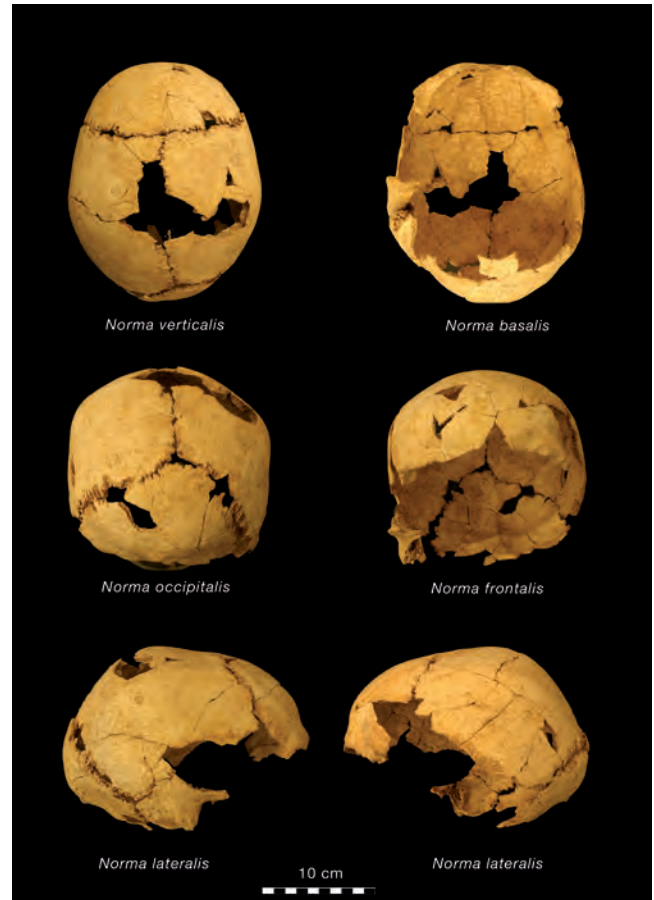


FIGURE 10. Cranium from Mollet III, the oldest *Homo sapiens* remains in Catalonia.

Peninsula. Because of the presence of numerous troves of symbolic objects, deer teeth and perforated marine snails, some of which are dyed red, and because the calotte was found in sediment that was also dyed red, we can posit that it was a burial that has reached us in poor condition and perhaps altered from its original state. In this case, it would be the oldest gravesite in Catalonia.⁵⁹ The most Palaeolithic gravesites have been found precisely during the Gravettian, which are particularly plentiful in Italy, many of which have a skeleton that has been reddened because of the presence of red ochre which was sprinkled on the corpse, and with grave goods that lead us to posit the existence of beliefs in life after death.

We should also mention that in the Gravettian in Reclau Viver, J. M. Corominas identified some rather vague human remains, which tend to be parts of the lower extremities, which may also come from a gravesite. We have been able to confirm the Gravettian age of some of them, similar to the cranial calotte in Mollet III.

Modern humans continued to develop vast civilisations during the Upper, Middle and Late Palaeolithic, including the Solutrean and the Magdalenian. Particularly the latter, the classic era of the hunters and gatherers, is well represented in Catalonia. In all of them, and during the Epipalaeolithic as well, human remains are quite rare. In fact, they do not begin to become abundant until the Neolithic.

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