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Cro-Magnon

Itravel to Les Eyzies-de-Tayac, and find lodgings at Cro-Magnon itself. Les Eyzies lies in the hills of the Dordogne, in south-west France, a few hours' journey east of Bordeaux by local train. For anyone interested in studying Europe's Ice Age, this is the centre of the world. Tourists come in their hundreds of thousands to view archaeological sites, cave paintings and museums. The little village is well set up to accommodate all these Ice Age tourists.

Everything began with Cro-Magnon. A well-to-do local farmer, Magnon by name, planned to build a road across his land to the new railway station. His labourers gathered stones for the road from a rock shelter (*abri* in standard French, *cro* in the regional dialect). Such shelters are a common geological phenomenon in these hilly limestone regions. The hillside is hollowed out by groundwater percolating through and by frost erosion, leaving a sheltered space with a natural roof.

Several human skeletons of ancient appearance were discovered under the Cro-Magnon rock shelter. This happened in 1868, just a few years after the discovery of the Neanderthals in Germany. Charles Darwin's work *On the Origin of Species* had come out recently, and a broad section of society was beginning to understand that human beings had been in existence for much longer than the 6,000 years claimed by certain Bible scholars.

Examination revealed that the skeletons from Cro-Magnon were not Neanderthals; they were more like people living today. Europe's first anatomically modern humans were dubbed Cro-Magnons.

Today, the house nearest to the Cro-Magnon shelter is a guesthouse. It is built into the hillside, so some of the corridors have walls of rock. The actual site of the excavations, which

now counts among the less impressive ones in Les Eyzies, is just behind the landlady's laundry room.

The modern menu is rather easier on the jaw than the food of the Ice Age, with *café au lait* and buttery croissants for breakfast. The location is just as attractive as when the first people chose to live here. You can still bask in the evening sunlight and gaze out over the river – with a refreshing glass of kir these days.

Ice Age people often chose to live in the mouths of caves or under rock shelters facing south-west, where they were warmed by the sun and the hillside shielded them against the chill north wind. And they nearly always looked out over water.

There is some disagreement among archaeologists about whether the people who lived at Cro-Magnon belonged to the Aurignacian or the Gravettian culture. They lived at around the time of the transition between the two, and the earliest excavations were rather chaotic. However, there are many other sites nearby where work was more systematic, enabling the viewer to trace the whole of prehistory metre by metre and layer by layer.

Abri Pataud, just a few hundred metres from Cro-Magnon, is an example. There are traces of Neanderthals at the lowest level; then comes a level with no remains. The first modern humans, typical representatives of the Aurignacian culture, appeared about 35,000 years ago.

Archaeologists have found bones from six individuals at Abri Pataud: two women, each with a newborn baby; a five-year-old child; and an adult male. The best-preserved skeleton is that of a woman who was in her twenties and about 1.65 metres (5½ feet) tall. Her jawbone shows damage resulting from a very serious dental inflammation – so serious that it may have led to a painful death, if it was not childbirth that killed her. Ice Age hunters hardly ever suffered from caries – they consumed too little sugar and starch for that – but wear and tear and inflammation could cause other serious dental conditions.

As yet, no reliable DNA analyses are available from either Cro-Magnon or Abri Pataud. One attempt was made by a

German researcher called Johannes Krause, who started his investigations with the most famous skeleton of all, Cro-Magnon 1, which is kept at the *Musée de l'Homme* (Museum of Humankind) in Paris. Krause attempted to extract DNA from several bones, but only one of his analyses was successful. He then ran isotope tests on the bone in question. By comparing different forms of one of the elements present, nitrogen, he hoped to find out what kind of food the individual concerned had lived on.

As we have seen, the diet of European Ice Age people contained relatively little carbohydrate, but it was rich in protein from meat and fish. Yet the bone that supposedly belonged to Cro-Magnon 1 seemed more like one from a modern vegan – or a cow fed only on grass.

Krause then had the bone radiocarbon-dated, which revealed that it dated back only to the fourteenth century AD. The levels of nitrogen isotopes were entirely plausible for a poor individual living in the Middle Ages on a diet consisting almost exclusively of porridge, with practically no meat. The bone was rapidly removed from the collections at the *Musée de l'Homme*.

The last traces of the Gravettian culture petered out some 20,000 years ago in Les Eyzies, just as elsewhere in Europe. It was followed by a culture known as the Solutrean.

Abri Pataud and various other sites clearly show how the climate cooled down dramatically around this time. In the present day, the average temperature in Europe is about 12 degrees Celsius (54 degrees Fahrenheit). When the Ice Age was at its coldest, between 18,000 and 19,000 years ago, the average temperature was about minus four degrees (25 degrees Fahrenheit). Horses, which had previously been a common prey, became much rarer. The animals that remained were mainly reindeer, bison and a number of predators that were resistant to cold, such as Arctic foxes and wolves.

And humans. Curiously enough, human culture blossomed – as the great museum in Les Eyzies clearly shows.

The *Musée National de Préhistoire* in Les Eyzies-de-Tayac is a large, lavishly appointed museum run by the French state. It is partly built into the light-coloured limestone hillside, just like the Cro-Magnon guesthouse.

A whole floor of the museum is given over to Ice Age tools, most of them of stone, though there are also some made of antler, bone and ivory. They are systematically arranged in the display cabinets by chronological period and culture. It is quite difficult for an amateur like me to make out the transitions between Neanderthals and modern humans, and between the Aurignacian and the Gravettian. But the transition from the Gravettian to the Solutrean, which took place around 20,000 years ago, is striking, even for the most inexperienced observer.

The tools belonging to the Solutrean culture are dramatically different and far more sophisticated. They are wafer-thin, polished, sharp and aesthetically pleasing. Some of them are so beautifully fashioned and of such exaggerated size that they can hardly have been used for practical purposes; they must have been decorative objects. The flint of which they are made is of a particularly high quality and often came from rocky outcrops 50 kilometres (30 miles) away. These tools were probably made by skilled specialists; knapping flints to fashion these willow leaf-shaped points was not a task that could be performed by just anyone.

On the other hand, it does look as if just about everyone made their own spear-throwers out of antlers. That is apparent from their rather more amateurish shapes and the images incised in them. Spear-throwers, or atlatls, were an innovation that made it easier to hunt in the open landscape of the Ice Age. They enabled hunters to use the principle of leverage and put more power into throwing their spears.

Sewing needles also appeared for the first time in western Europe during the Solutrean period. The museum's display shows how they were fashioned step by step, starting with a mammoth tusk. Only in Russia have older finds emerged, as I mentioned earlier.

People have been wearing clothes for a long time. Mark Stoneking at the Max Planck Institute in Leipzig has used an unconventional method to calculate the age of clothes – analysing DNA from body lice. By comparing different species of body lice, and by making comparisons with head lice and the lice that live on chimpanzees, he has been able to estimate that the history of clothes goes back about 107,000 years. Admittedly, he gives his margin of error as several thousand years, but he is still more precise than any previous researcher has dared to be. Stoneking's analyses of louse DNA also show that people had already begun to wear clothes in Africa.

Archaeologists in many places have found stone scrapers that were probably used to prepare animal skins for making clothes. Even Neanderthals possessed this technology. This skill was a precondition for anyone attempting to live in any region other than the tropics. Clothes must have been absolutely essential, both in cooler parts of Africa and the Middle East, and for the first inhabitants of Europe.

But cloaking oneself in an animal hide and piercing a few holes with an awl so as to join two pieces of hide together, forming a simple tunic, is one thing. Using needles to make anoraks with fur-lined hoods, well-fitting leggings and watertight boots is quite another.

Needles with eyes may not sound particularly impressive to modern-day people, but during the coldest periods of the Ice Age they meant the difference between life and death. Warm, weatherproof clothes made of hide must have been absolutely vital in such a bitterly cold climate, and eyed needles facilitated the task of making them. Needles could also be used to make nets and fish traps. This made it possible to fish and hunt in a more flexible way, enabling all the members of a group to join in, regardless of their physical capabilities. Needles may well be among humankind's most significant inventions.

Clearly there was a technological leap forward in the development of western Europeans here in south-western Europe, at the very point when the Ice Age was at its coldest.

It was Jiří Svoboda, the archaeologist from Brno, who gave me the best explanation for this. He believes that groups of people from more northerly regions of Europe were forced by the cold to move southwards. The various groups met in the new, cold and challenging environment and pooled their knowledge. This conglomeration of people with different skills became an ideal breeding ground for development and innovation.

Genetic research supports the hypothesis that people migrated from northern Europe to warmer places of refuge during the coldest period of the Ice Age, between 25,000 and 18,000 years ago. The locations where they took refuge were in various regions of southern Europe, such as the area around the Black Sea, present-day Greece and Italy, and further east in Siberia.

I have reason to believe that people related to me in the direct maternal line spent the coldest years of the Ice Age here, near Les Eyzies-de-Tayac in south-west France, or in northern Spain.

The results from the Icelandic company deCODE Genetics told me that I, in common with about 1 in every 10 Europeans,

Source: Malyarchuk 2010

*Figure 3 **Ursula's daughters.** The woman called U5 or 'Ursula' lived in Ice Age Europe over 30,000 years ago. The branch labelled U5b1 probably originated in Spain or south-west France during the coldest phase of the Ice Age.*

belong to the U5 group. But in the summer of 2011 I got in touch with some Swedish family history researchers who had started to take an interest in the opportunities offered by DNA analysis. We took a closer look at the results I had received from deCODE and worked out that I belong to one of the two subgroups of U5, namely the one called U5b. That, in its turn, is divided into three smaller subgroups, and I belong to the first of these, U5b1.

There is much to suggest that U5b1 emerged within the group that sought refuge in south-west Europe during the coldest period of the Ice Age; that is, when the region was dominated by the culture we know as the Solutrean. One important clue is where the most variation exists among present-day people. In the case of U5b1, variation appears to be greatest in the regions around the Pyrenees, in south-western France and northern Spain.

Another quite unexpected piece of evidence was published in 2005. In this, a group of Italian researchers showed that a subgroup of U5b1 found in nearly half of all Sami people is closely related to one found among the Berbers, the original inhabitants of North Africa. Their lineages seem to have diverged a few thousand years ago. This new information was startling, as there are 4,000 kilometres (2,500 miles) between North Africa and northern Scandinavia. The most credible explanation is that people belonging to the U5b1 group migrated in different directions; some went northwards when the Ice Age loosened its grip somewhat, so that some of their descendants ended up in northern Scandinavia. Others went southwards, crossing the Strait of Gibraltar and migrating into Africa.

A third line in the evidence is provided by DNA analyses of fossilised human bones from western Europe. At the moment there are only a few such analyses of sufficiently high quality, and they are from a period later than the Solutrean. However, these analyses lend some support to the idea that U5b1 was common in south-west Europe during the coldest phase of the Ice Age.

One of the very best sources of finds from the Solutrean culture is called Laugerie Haute. It took me about half an

hour to walk there from the Cro-Magnon guesthouse. Laugerie Haute is, in fact, one of the very best sources of finds from all the cultures that have existed in the region over at least the last 20,000 years. Archaeologists have excavated 43 layers, ranging from the Aurignacian culture to the Solutrean and the Magdalenian culture that succeeded it.

The huge rock shelter seems to have provided a shared camping area, a spot where several smallish groups congregated for part of the year, especially in the autumn, when they had best access to their prey. About 100 people seem to have lived here at any one time, corresponding to three, four or five smaller groups. There was no need for them to live under cramped conditions; the sheltered area under the rock overhang is the size of two tennis courts. Most of the roof has fallen in now. The ground is strewn with enormous rocks.

Like so many other Ice Age dwelling places, Laugerie Haute is just a few metres away from a river. The people who stayed here enjoyed evening sunshine and a waterside view – as in the most desirable residences on the books of a modern estate agent.

One can try to imagine how the people of the Solutrean felt when they gathered here in the depths of the Ice Age. I fancy it must have been a pleasure to come here. The various small groups probably lived in isolation for much of the year, hemmed in by the bitter cold. At Laugerie Haute they could meet other people, celebrate and hold ceremonies. The young had an opportunity to meet a partner, people could sit by the fireside sharing experiences and everyone had enough to eat.

Their diet consisted chiefly of meat and bone marrow from reindeer. The numbers of other prey, such as horses, fell dramatically in the region when the cold was most severe. Ice Age people did eat plants, as evidenced by microscopic traces on their teeth. But the growing season was short, especially during the cold Solutrean.

With all due respect to excavations and stone tools, it is the cave paintings that are the main draw for the hundreds of

thousands of tourists who visit Les Eyzies every year. I, too, set off on an art tour of the region's caves.

Laugerie Haute feels like visiting the remains of a huge party venue where my forebears used to hold their biggest celebrations. The Cap Blanc rock shelter (Abri du Cap Blanc), which lies about six kilometres (3¾ miles) east of Les Eyzies, has a more intimate feel to it. Coming here is more like visiting an individual family and admiring their interior decor.

Just six of us have gathered together here at the small museum, with our pre-booked entrance tickets. There is no room for any more visitors. We will be allowed in to look at the site for a few minutes. Having checked carefully that none of us have smuggled a camera in, the guide unlocks a heavy iron door.

Archaeologists have argued about when the friezes running along the rock walls were actually created; nowadays they are assigned to the Solutrean period. They are unusually well-preserved examples of how Ice Age people decorated the places where they lived from day to day. At most other sites, the rock walls that once bore these decorations have been eroded away.

The Cap Blanc friezes are reliefs chiselled directly into the rock wall, forming a long parade of horses and bison. Oddly enough, these animals were not particularly common in people's diet. That can be seen from the animal bones that archaeologists have discovered at the site. Almost 95 per cent of them come from reindeer, which were people's most common prey during the coldest periods. Horses and bison clearly had great emotional significance. The artists of the Ice Age often chose to depict quite different animals from those they hunted day to day.

From the homelike setting of Cap Blanc, I make my way down the valley to Font-de-Gaume. I am about to experience something entirely different that, far from reflecting everyday

life, verges on the spiritual. This is art of the most exclusive kind, hidden deep within a cave. The Ice Age artists who created these images must have been the Rembrandts and Leonardos of their time.

I go in with a French-speaking group of 10. Just a few steps into the mountainside all sensory impressions from the outside world cease. The light of the sun is extinguished. There is no birdsong, no breeze to be heard now. My skin registers only cold and damp. A low humming sound arises in my head, as my hearing tries to compensate for the silence within the mountain. I blink as my eyes attempt to adjust to the dark.

Although the passageways in Font-de-Gaume are narrow, at least we modern visitors can walk upright, as the floor has been lowered for the sake of our comfort. Moreover, we have electric torches, which the guide carefully switches off as soon as we leave each section of the cave. He is anxious to protect the pictures as much as possible, both from electric light and against the acid produced by visitors' breath.

The Ice Age artists were obliged to crawl through certain sections. But those who painted the images in this cave had access to an important new invention – lamps. That meant they were no longer restricted to using simple wooden torches, as previous generations had been. The artists in Font-de-Gaume lit their way using stone lamps with small hollows, in which they burned animal fat and wicks made of vegetable matter.

Font-de-Gaume, located on the periphery of Les Eyzies, was in use some 17,000 years ago, at the time of the Magdalenian culture. A continuation of the Solutrean culture, the Magdalenian was an undramatic transitional phase. While tools became slightly more sophisticated, the people seem to have been essentially the same. The cold of the Ice Age was gradually beginning to loosen its harshest grip, and the climate was becoming slightly milder.

The artists of Font-de-Gaume painted their pictures with mixed pigments: yellow, red, brown, black and many intermediate shades. They produced these colours from

reddish iron oxides and black manganese oxide from the mountains nearby. Sometimes they would burn stones to create particular colours. The artists ground the pigments in mortars and mixed colours on palettes, just like their modern counterparts. They applied the paint to the cave walls in many different ways, using their fingers, sticks, brushes made of animal hair, or feathers. They also blew powdered pigment directly onto a damp surface, just like the fresco painters of the Renaissance.

Bison, with over 80 individual animals depicted, are the most frequent motif at Font-de-Gaume. Each is painted in such a way as to reveal its individual characteristics. The artists knew the sex of the animal they were painting, its age, the season and the situation in which the animal found itself. With skill and foresight, they exploited the shapes of the rock wall to achieve three-dimensional effects. In one of the chambers, some of the paintings are five metres (16½ feet) above the floor of the cave. To reach that high, the artists must have stood on each others' shoulders.

Polychrome paintings can be found in only a few Ice Age caves. The best known are at Altamira (Spain); Lascaux, near Les Eyzies; and Chauvet, in the mountains west of Lyon. The public is no longer allowed into these three caves at all. The only option is to look at copies.

At the time of writing, members of the public can still enter Font-de-Gaume and view the original polychrome cave paintings, provided that they queue up on the spot and buy tickets the same morning. Whether Font-de-Gaume should also be closed, to protect the paintings against the depredations of lighting and visitors' breath, is under discussion.

I am grateful that I came in time to wander around in the cool, damp darkness and see bison, mammoths and horses appearing in the dim light, a little worn after all these thousands of years, but still so skilfully executed that they almost come alive.

The pictures from a few thousand years later are simpler, still skilfully executed, but more stylised. In the cave at Les Combarelles, a few kilometres away from Font-de-Gaume,

horses predominate. There are drawings of cave lions, cave bears and mammoths as well, but horses are the most common motif. In some cases, their shapes are simply incised into the rock wall, in others they are filled in with black pigment made from manganese oxide.

The guide who escorts a French family and me through the long, narrow passageways believes that Les Combarelles was used by a clan whose totem animal was the horse. They returned to the same cave again and again over a few thousand years and drew hundreds of pictures. This was a way for the clan's shaman to gather spiritual powers, or so he believes.

To reach the cave at Rouffignac, I have to hire a car and drive about half an hour from Les Eyzies through a landscape of hillsides covered in deciduous woods and vineyards. The pictures here also date back to the Magdalenian and are approximately 15,000 years old. They recall the incised, monochrome horses at Les Combarelles.

But it is images of mammoths that predominate at Rouffignac. There are over 150 of them. The first one meets you right at the entrance – a cheerful, rotund little woolly mammoth drawn only about a metre (3¼ feet) above ground level. It might well have been drawn specially for children. Further into the cave you can also see bison, horses, mountain goats, woolly rhinoceroses and a cave bear. At an inaccessible spot, far down in a hollow, there is even a picture of a human being, a roughly sketched head in semi-profile.

A total of nearly 10 kilometres (6¼ miles) of tunnels meander within the mountain. We visitors trundle round on a little electric train. The lighting comes on automatically at each stopping point, just for the few minutes when the train comes to a halt. This minimises our impact on the pictures.

The cave, which is located on a large farming estate, is managed by the family that owns the estate. Locals have known of it for several hundred years, and generation after generation has visited it to scrawl their names on the walls. But systematic archaeological research began only in the 1950s.

Frédéric Plassard, the son of the present family, grew up near the cave. He now works here full-time, but has also earned a doctorate in archaeology at the University of Bordeaux. We sit talking for a long time on a bench in the mouth of the cave, in the cool shade of the oak trees, and I try to understand what impelled people 15,000 years ago to make their way into the darkness of the cave to produce these works of art.

There's nothing particularly odd about the fact that they went into the cave, says Plassard. That can be put down to normal human curiosity. People have always wandered around in the cave; we can see that from the eighteenth and nineteenth century scribblings. The Magdalenians had lamps just as we do, although they were simple stone lamps that burned animal fat, and it only takes about half an hour to walk a kilometre ($\frac{2}{3}$ mile) into the mountainside.

The remarkable thing is the art. It is so well executed that it must have been produced by highly specialised artists. Plassard thinks there were only three or four of them. They may have produced all the works of art on a single occasion, in the course of a few hectic hours. Their work didn't necessarily have to be seen. Creating the pictures was more important than viewing them.

The European cave paintings represented something very special for the people of the time, of that Plassard is convinced. He points out that there are only about 20,000 known cave paintings in the whole of Europe, although the people of the Ice Age lived here for 30,000 years – fewer than one a year for the entire European population of several thousand people. By comparison, the Aboriginal people of Australia have produced millions of rock paintings.

There is one myth that Plassard would like to scotch straight away. Archaeologists used to think that Ice Age artists grew increasingly skilful over the millennia. The animals at Font-de-Gaume, for instance, with their perfect proportions and perspective, are more sophisticated than the clumsier horses in the cave at Pech Merle, which is a few thousand years older. However, the 1990s saw the discovery

of the cave at Chauvet, further east in southern France. The art there is peerless – a multiplicity of skilfully depicted polychrome animals. The painting of these pictures may have started 32,000 years ago, as far back as the time of the Aurignacian culture.

This means that we humans have had full potential to produce figurative art for at least that long. Nor should we forget the ivory flutes and tiny statuettes from the Swabian Jura, the oldest being over 40,000 years old. There have been masters, as well as less high-calibre artists, for as long as humans have inhabited Europe.

Sitting in the mouth of the cave, we also discuss theories advanced by the French archaeologist Jean Clottes and his South African colleague David Lewis-Williams. This duo seem to be the main ideologues represented in the region around Les Eyzies. Jean Clottes's books, above all – both the popular science books and the more academic works – are on sale everywhere in shops and museum gift shops. Their theories can be summarised just as the guide in the horse cave of Les Combarelles put it: creating pictures in caves was a way for shamans to acquire spiritual powers.

Frédéric Plassard agrees that the shaman hypothesis is reasonable, though very hard to prove. He urges caution. There may have been different kinds of motive in the course of a period lasting over 30,000 years, in an area stretching from the Atlantic seaboard to Siberia.

Jean Clottes and David Lewis-Williams deploy three lines of evidence in their arguments. The first of these is their own profound knowledge of such images. That is uncontested. Clottes, for example, was one of the leaders of the research carried out in the Chauvet cave.

The second part of their argument is more or less accepted by most archaeologists and anthropologists. Clottes and Lewis-Williams draw parallels between the European artists of the Ice Age and traditional hunter-gatherer peoples in the nineteenth and twentieth centuries. Their books draw on sources including descriptions of Siberian nomads in the anthropological literature, and their own visits to Native

Americans in California and the San people (Bushmen) of South Africa. One of the most important documents comprises over 12,000 pages of interviews of San people, from the end of the nineteenth century to a few decades later by the German linguist Wilhelm Bleek, his sister-in-law Lucy Lloyd and Bleek's daughter Dorothea.

Many of the parallels described by Clottes and Lewis-Williams are undeniably striking. In the shamanistic world view, the universe is often divided into three layers: earth, the domain of us ordinary mortals; the heavens; and the underworld and/or the dark waters of the underworld. Certain animals have the power to reach the heavens or the underworld. Waterfowl, for instance, have access to all three levels, as they can fly and swim, and snakes can slither down into the underworld. Such animals can help shamans to travel to the spirit world.

The caves could represent a way of approaching the underworld, and thereby the spirits and the dead. Lewis-Williams writes about how the rock wall in the cave could act as a membrane – indeed, as the very border between the human and the spirit world. He believes that the artists literally saw the images of animals projected on the walls. All they really needed to do was fill in their internal images. Maybe they had worked themselves up into a trance through lack of sleep, drugs, rhythmic music and frenetic dancing, through the high levels of carbon dioxide in some of the caves, or simply through the sensory deprivation that affects anyone who spends a significant amount of time alone in a dark cave. Although they may not have been in a trance while they were actually painting the pictures, he believes they were reproducing images that had appeared to them in a trance.

The third aspect of the evidence presented by Clottes and Lewis-Williams is the most controversial. They believe that the first art originated not only in the trance of the shamans, but – above all – in the way the human brain typically functions when in a state of hallucination or psychosis. For

example, they interpret the zigzag patterns found on 70,000-year-old stones in the South African cave of Blombos as representing light phenomena that appear to many people suffering from an attack of migraine. According to Clottes and Lewis-Williams, these phenomena are a kind of mild hallucination. In their view, the mammoths, horses and bison found in cave art represent more profound hallucinations.

Personally, I am sceptical about whether these cave paintings represent hallucinations. In my view, simple human creativity is quite sufficient as an explanation, possibly intensified by a trance-like state.