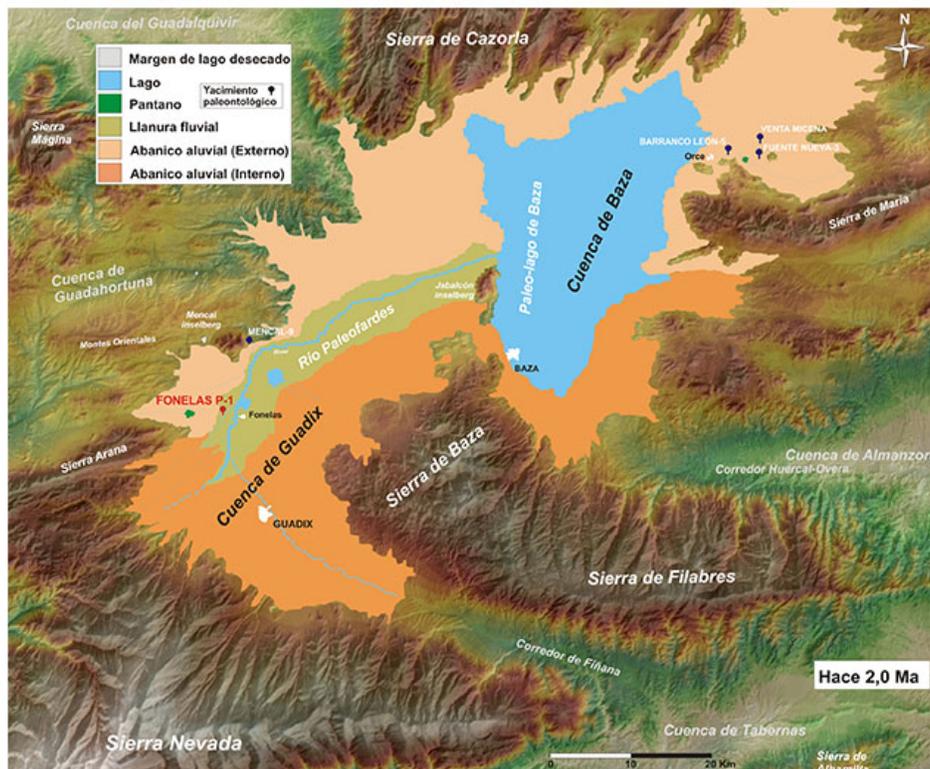


## The Long Cold Walk 1.4 mya – 25 kya

The human prehistory of Andalucía starts about 1.4 million years ago at Orce in Granada province. Succeeding generations of *Homo erectus* managed to migrate out of Africa, through the Middle East and thence into Asia and Europe. They were the first humans to achieve this and only did so then because a fluctuation in the climate and vegetation created a 'green corridor' through a normally arid Sinai Peninsula and Levant. One individual died at Orce. This early incursion into the Iberian Peninsula failed. Lack of numbers, lack of food resources, change of climate, who knows? *Homo erectus* lived on in Asia but not in Europe.



### Guadix – Baza Basin

In the north of Granada province, surrounded by some of the tallest mountains of the Iberian peninsula, what we know today as the Basin of Guadix or the Guadix - Baza depression or basin was, for 5 million years, a lake with no outlet to the sea, Lake Baza. Sediments, brought down by the mountain streams, were deposited in the basin in horizontal sheets. The lake drained about 500,000 years ago after earthquakes allowed the paleo-river Fardes, that flowed out of the lake in a westerly direction, to be captured by a tributary of the Rio Guadalquivir. During the period the lake existed, the area had a diverse and rich flora that attracted herbivores, predators, scavengers, and, if the human remains, a molar from Orce, are correctly dated, an early species of humans, from about 1.4 mya. Over the last 500,000 years, new streams have carved out the canyons, ravines and Badlands that characterise the area today, the most southerly desert in Europe.

Over many thousands of years the climate in any one area has changed many times. It is a complicated combination of the influence of monsoons, oceanic currents, the oscillation of the earth in its orbit, the position on earth of the maximum amount of sunlight and heat at any one time that has caused this climatic change in the past. On occasion a catastrophic event has had a more immediate effect on a climatic system. More recently, during the last few thousand years, human activity has also had an impact.

The effects of changing climate affect the vegetation. As previously arid lands become wetter and cooler so grasses, shrubs and eventually trees, colonise that land. Conversely as the weather becomes dryer and warmer so the trees give way to shrubs, then grasses and finally desert. This all happens in oscillating waves, think of the waxing and waning of the moon except over hundreds of thousands of years.

As the leading edges of the vegetation belts expand so to do the animals that prefer that particular environment. Following those animals, herbivores, come the hunters, the big cats and dogs, and following them you find the scavengers, hyenas jackals, vultures and humans. None are aware of this dispersal, they are simply staying, over many generations, within their own comfort zone. As those green comfort zones expand and contract, so too do the animal denizens of that zone. The idea of a tribe of humans trekking out of an arid zone into some sort of garden of Eden is totally wrong. So too in many cases is the image of the climate changing for the worse and the animals, including humans, simply lying down and dying, becoming extinct. Sure there are instances where the green comfort zones forced the inhabitants to retreat over many generations and occupy some sort of cul de sac from which there was no escape, the case of the Neanderthals in Gibraltar is one such instance, but in many more instances the zones retreated and its occupants merged with the occupants of other zones.

It is interesting that evidence from hunter gatherer tribes still around today and from those 'discovered' since western Europeans started exploring the planet, all indicates that, far from being in a constant state of conflict, hunter gatherers were equalitarian and naturally given to sharing, even with strangers. This makes sense. In small hunter gatherer groups, one person may bring home meat from the hunt that is then shared amongst the band. Similarly, one band may fair badly and be able to call on neighbouring bands to help out. As a survival strategy, helping others is a definite advantage.

It has been shown that many dispersals originated in Africa. As climate changed the green zones expanded north and east into the Middle East and from there into southern Europe, spreading into northern Europe and into Asia as far as China. Populations of animals moved with those zones and dispersed and spread into Europe and Asia. Individual groups of species became separated during this long journey and each started to evolve in its own way. Eventually the climate would change in such a way that the Middle East and north Africa again became impassable arid zones leaving populations of animals and humans roaming around Europe and Asia, each still within their green comfort zone. On some occasions the comfort zones lasted longer in Asia than Europe as ice came down from the north, forcing the green zones to move south. On occasion long separated species would meet again.

Lately it is this notion of fluid movement, separation, re-meeting and moving again that has caused archaeologists to rethink the concept of species and re-evaluate findings from DNA analysis. An altogether more complicated picture of evolution, particularly of humans, is emerging.

One of the factors that makes humans unique in the animal kingdom is that they learned to adapt to an ever-broadening range of climates and utilise the resources associated with that ever increasing range. They learned to live in diverse green comfort zones as opposed to just one.

Between 2 million and 1.5 million years ago, megafauna from Africa arrived in the Iberian Peninsula along with suitably sized predators and scavengers. They had all taken advantage of a climate change to disperse through the Middle East. Following them came humans.

The landscape they saw was very different to that of today. The climate was much wetter and probably a little cooler than present day. The depression at Orce was a large lake, Lake Baza, surrounded by reeds and lush vegetation.

Archaeologists have taken pollen samples from various dated layers of strata to determine what the vegetation was like 1.5 million years ago. The predominant vegetation was not dissimilar to the Mediterranean flora we see today, cyprus, oak, wild olive and pine trees. In addition, there were plants that required more water and they would be in the gullies and ravines, birch, hazel, holly, ash and privet. You can still see that mix of vegetation in the nearby Sierra de Cazorla. On the margins of the lake there were willows and elms. There were also some trees not seen today in this part of Spain, cedar and red fir. Beneath the trees the herbaceous plants consisted of mugwort, plantain, thistles, flowering plants of the crucifera family and various grasses.

Grazing on these plants the archaeologists have found fossilised bones from many herbivores. At least five species of deer lived in the woodland and grasslands, one an extinct giant named *Megaceroides solilhacus* that stood over 2 metres tall at the shoulder, a species with huge antlers sometimes known as the Irish Elk – *Megaloceros*, a smaller deer native to Eurasia – *Cervus*, the other a smaller also extinct deer, *Pseudodama* sp, weighing 50 – 90 kilos.

Closer to the lake in the scrub and shallows would be found the megafauna.

An extinct mammoth (*Mammuthus meridionalis*) that stood 4 metres tall at the shoulder, one of the largest proboscideans ever to live, native to Europe and Asia, an extinct European Hippopotamus – *Hippopotamus antiquus*, rhinoceros – *Stephanorhinus etruscus*, a one toed horse – *Equus altidens*, and a number of large grazers such as the wild ox *Bovini bos*. In the woods were also a number of species of bear – *Ursus* sp and a crested porcupine – *Hystrix major*

This rich hunting ground naturally attracted the predators such as a sabre-toothed cat – *Megantereon whitei* and large scavengers, the giant hyena.

Smaller mammals spread throughout the landscape were hedgehogs, shrews, water rats, mice, voles and rabbits. Reptiles and amphibians were also abundant. Just the list of frogs and toads reveals a diverse ecological landscape. The Iberian painted frog toad, spadefoot toad, common parsley frog, common toad, natterjack toad and common frog all lived in the lake margins. Reptiles included the Iberian skink and several snakes.

A rich scavenging ground indeed for the early humans that occupied this area. Evidence of humans comes in two forms. Evidence of human activity and fossilised pieces of human bone. Two pieces of the human anatomy have been found at Orce, an upper molar tooth and a piece of skull. The latter is still unconfirmed, some say it is part of an equine skull, although the Orce team seem fairly adamant. Obtaining the age of artefacts in this case was done by taking samples from the strata in which the finds were made and using a technique called electron spin resonance (ESR) and secondly observing the palaeomagnetism of the strata. ESR gave a result of between 1.02 and 1.73 million years old and palaeomagnetism between 1.07 and 1.77 million years old. Between those years the magnetic poles were reversed and that can be seen in the polarity of certain minerals in rocks as they form. Statistically, we are due for another change any day.

Biochronologic evidence further indicates a date close to 1.4 million years ago.

Evidence of human activity came from two sources, manufactured stone tools of a style known as Oldowan, and fossilised animal bones showing striation marks made by stone tools. Again, samples of strata from just above and just below the artefacts were subjected to ESR. The results were in the same range as those for the tooth.

Further circumstantial evidence is provided by the biozone, the macro and micro faunal and flora which is what would be expected in the area at the time.

Who were these humans? By 1.9 million years ago *Homo erectus* was firmly established in East Africa. Due to climatic changes discussed above a window of opportunity, a green comfort zone, expanded from the south and east into central Africa and finally into the northeast and into the Middle East where they merged with similar green zones expanding from the east through Iraq and Iran and from the north and west from Europe. Early forms of *Homo erectus*, or later forms of *Homo habilis*, were the first hominids to disperse out of Africa in this way. Whether they had developed a food gathering strategy that involved actively following animals who themselves dispersed, or whether populations increased forcing those on the outer edges of 'civilisation' to break off and find new territory, thus moving a short distance every generation, is not known, but disperse they did.

If we accept that a green zone opened soon after *Homo erectus* appears on the archaeological horizon in East Africa, then he was very quick to reach Mojokerto in Java and Dmanisi in Georgia. Finds at both sites show that a hominid reached those places by 1.8 mya. By 1.6 mya he was at Sangiran in Java. Meanwhile, back in Europe hominids arrived at Orce about 1.4 mya and further north, still in the Iberian Peninsula, at Atapuerca by 1.25 mya. Finds made in Britain, that was connected to the continent then, indicate that hominids arrived at Happisburgh by 840,000 years ago or even as early as 950,000 years ago.

Once the early *Homo erectus* had left Africa there were effectively three groups evolving independently. One group dispersed through Asia, one group dispersed through Europe and one group remained in Africa. To differentiate between the African and Asian group, some archaeologists have called the European group *Homo antecessor*, a separate species, and the African group *Homo ergaster*, yet another species. All three species are in fact one and the Asian and European variants are just that, geographical variations of a single species.

All analyses have shown that *Homo erectus* represents a different grade of evolution than their more ancient African predecessors, his immediate ancestor, *Homo habilis* and the *Australopithecus* group. A grade is an evolutionary grouping of organisms showing a similar adaptive pattern. Increase in body size and robustness, changes in limb proportions, and greater encephalization all indicate that these *Homo erectus* hominids were more like modern humans in their adaptive pattern than their African ancestors were. The hominids discussed here are not only members of a new and distinct grade of human evolution; they are also closely related to each other. A major adaptive shift had taken place—one setting hominid evolution in a distinctly more human direction.

Since the finds at Orce are not enough to provide a picture of what the Iberian *Homo erectus* looked like, we have to go elsewhere and make some assumptions.

The oldest *Homo erectus* finds have been made at Dmanisi in Georgia and they date to about 1.8 mya. Not only is this a very early date they also look different to the 'standard' *Homo erectus* which may indicate they are either a very early *Homo erectus* or the remains of an earlier dispersal out of Africa.

In some respects, the Dmanisi crania are similar to those of the standard *Homo erectus* for example, a long, low braincase, wide base, and sagittal keeling. However other characteristics of the Dmanisi individuals are different to other hominid finds outside of Africa. In particular, the most complete specimen has a less robust and thinner brow ridge, a projecting lower face, and a relatively large upper canine. At least when viewed from the front, this skull is more reminiscent of the smaller early *Homo* specimens from East Africa, *Homo habilis*, than it is of *Homo erectus*. Also, this individual's cranial capacity is very small, estimated at only 600 cm<sup>3</sup>, well within the range of early *Homo*. In fact, the four Dmanisi crania so far described in the literature have relatively small cranial capacities—the other three were estimated at 630 cm<sup>3</sup>, 650 cm<sup>3</sup>, and 775 cm<sup>3</sup>.

The most recent evidence from Dmanisi includes several postcranial bones, coming from at least four individuals. This new evidence is especially important because it allows us to make comparisons with what is known of *Homo erectus* from other areas. The Dmanisi fossils have an unusual combination of traits. These hominins were not especially tall, with an estimated height ranging from about 4 feet 9 inches to 5 feet 5 inches. Certainly, based on this evidence, they seem much smaller than the standard *Homo erectus* from East Africa or from Asia. Yet, although very short in stature, they still show body proportions such as leg length like that of *Homo erectus* (and *Homo sapiens*) and quite different from that seen in earlier hominids.

Which leaves us with a problem as you will soon realize. Let us look first at the Atapuerca discoveries. Just one specimen has been found, a partial jaw with a few teeth. Provisional analysis shows that it is closer to the Dmanisi fossils than the standard *Homo erectus*. As with Dmanisi the tools found associated with the fossil were Oldowan and there are cut marks on animal bones found in the same strata. These finds have been dated to 1.25 mya.

At Orce 1,244 stone artefacts have been discovered along with animal bones displaying striation marks associated with just one human tooth, until the partial skull bone is confirmed human then we should ignore it. These finds have been dated to 1.4 mya making them the oldest proof of human activity in western Europe. The tooth naturally, has been subject to intense scrutiny,

analysis and examination. Features of the tooth were found that are displayed in those of the genus Homo and the earlier Australopithecus. Other features are found in the much later Homo heidelbergensis.

Whoever they were the hominids that lived on the shores of Lake Baza scavenged for their meat rather than hunted. Their diet consisted primarily of seeds, nuts and tuberous roots. No evidence of the use of fire has yet been found. Their toolkit took the simplest form, the Oldowan. Flakes of rock were struck off a core. The results were used as multi-purpose tools rather than trying for one design to perform one job.

The next evidence of human activity in Andalusia occurs about 500 kya when the ancestors of the Neanderthals show up. The common ancestor of Homo neanderthalis and Homo sapiens is Homo heidelbergensis who left Africa about 700 kya, following what was by then a well-trodden path through the Middle East. The DNA evidence suggests that they met and bred with earlier migrants and carried those genes with them to the Iberian Peninsula. In Europe Homo heidelbergensis evolved into Neanderthal, whilst in Africa Homo heidelbergensis evolved into Homo sapiens. It is important to remember that Homo sapiens, Homo neanderthalis and Homo heidelbergensis are all variants of the same species. Remains of Homo heidelbergensis have been found at Atapuerca in northern Spain, dating back to about 500 kya.

Definite signs of the evolved Homo neanderthalis, his Mousterian toolkit, start to appear about 106 kya in northern Spain.

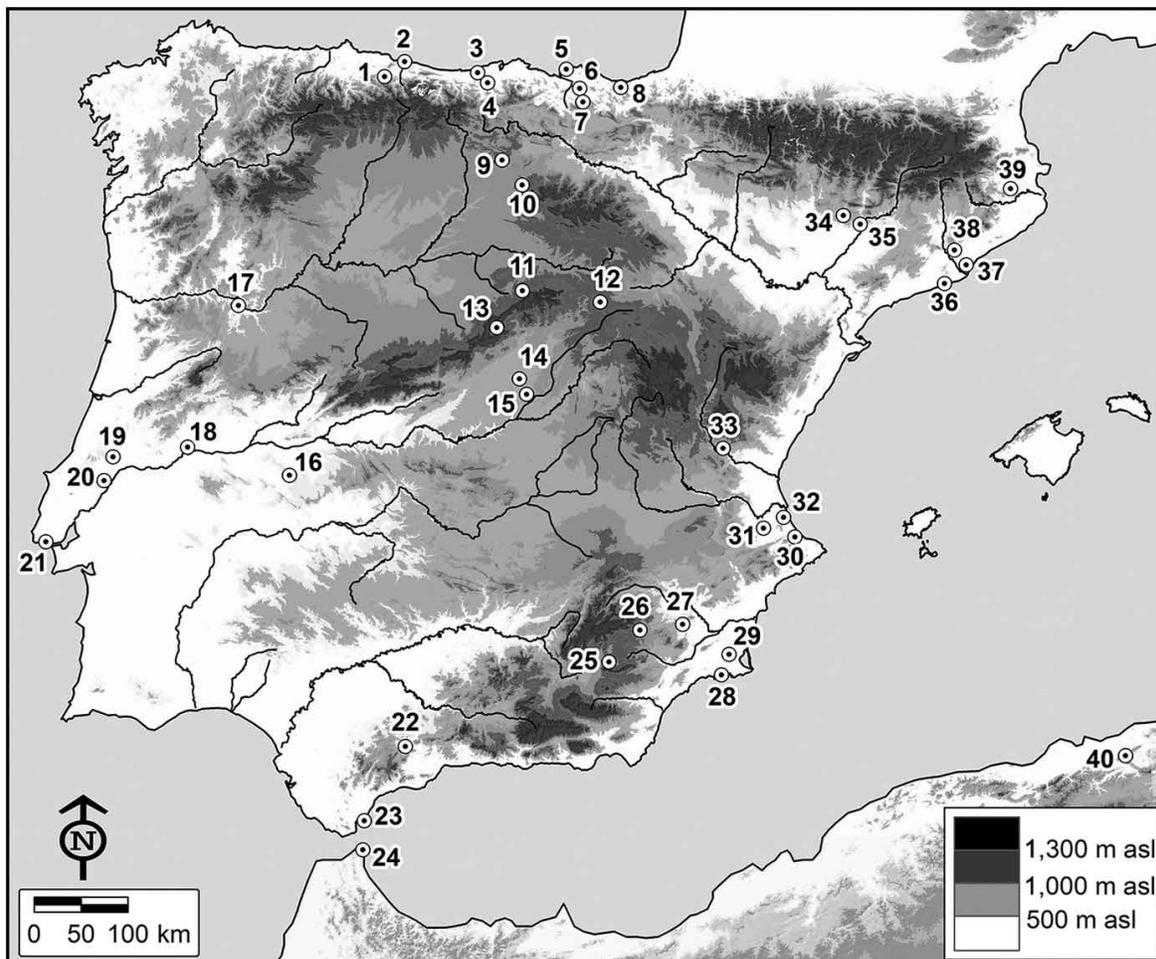
The Mousterian toolkit consists of hand axes, side scrapers and spear points. They were sometimes made by taking a stone and reducing it to a shape from which the finished tool could easily be struck off and thence require little finishing. The Levallois technique is a refinement of this method. Apart from being a better way of producing stone tools than anything that went before, the Levallois technique also demonstrates that Neanderthals could 'see' a finished article in a lump of stone, just as a sculptor can today.

Climatic conditions had started to deteriorate about 120 kya, reaching a glacial maximum about 22 kya, after which temperatures started to rise. During that 100,000 year period, the temperatures oscillated with periods of warmth interspersed with periods of intense cold. Vegetation, birds, animals and humans moved around to try to remain within their own comfort zones. Generally, movement was in a southwards direction during the onset of cold spells.

As a matter of interest, the last permanent ice from the last glaciation, on Mulhacen in the Sierra Nevada range - the highest mountain in Andalusia and the Iberian Peninsula, did not melt until the 1980s (AD) – *longue durée* indeed.

The Neanderthals were a very successful group, weathering several extreme climatic changes. However, the Neanderthal reaction to climatic deterioration was to retreat, rather than adapt in situ. They were highly mobile. So, although evidence of Neanderthal activity can be found generously spread across the Iberian Peninsula, it may be assumed that such activity only occurred when the climate was reasonably clement in that area. An example may be found at Los Casares, a cave situated in the interior of the Iberian Peninsula between Madrid and Zaragoza. Between 42,899 BC and 40,175 BC, the cave was occupied by Neanderthals during a relatively warm and humid episode. The weather deteriorated and, archaeologically, the Neanderthal record

disappeared. Los Casares provides the last record of Neanderthals in the interior of the peninsula. The next record of human habitation at Las Casares appears in the form of cave art created by modern man dated to between 23,000 and 13,000 years ago. Later, we shall see that this retreat strategy did not help Neanderthal survival after modern humans arrived on the scene.



Lower and Middle Paleolithic sites discussed in the text (key sites). 1. El Sidrón; 2. Tito Bustillo; 3. Altamira; 4. El Castillo & La Pasiega; 5. Aranbaltza III; 6. Arlanpe; 7. Axlor; 8. Amalda; 9. Valdegoba; 10. Sierra de Atapuerca; 11. Abrigo del Molino; 12. Torralba & Ambrona; 13. Pinilla del Valle; 14. El Cañaveral; 15. Áridos; 16. Maltravieso; 17. Côa Valley; 18. Foz do Enxarrique & Vilas Ruivas; 19. Lapedo Valley & Gruta de Aroeira; 20. Almonda; 21. Alto de Leião; 22. Ardales; 23. Forbes' Quarry, Gorham's & Vanguard Caves; 24. Benzú; 25. Guadix-Baza sites; 26. Cueva Negra; 27. Cueva Antón; 28. Cueva de los Aviones; 29. Sima de las Palomas; 30. Cova Foradà; 31. Cova Negra; 32. Bolomor; 33. Quebrada; 34. Tragó; 35. Roca dels Bous & Cova Gran; 36. Cova del Gegant; 37. Abric Romaní; 38. Vallparadís; 39. Bañolas; 40. Ain Hanech & El-Kherba. Map: Antonio Blanco-González

There are approximately 30 sites in the Iberian Peninsula with evidence of a Neanderthal presence. Older finds tend to be in the north of the Peninsula. In 2018, researchers working at a site in Barrika, on the Biscay coast, discovered waterlogged wooden tools, including a 15 cm long digging stick dating to 90 kya. The point had been hardened by heating it. Wooden artefacts from

this period are very rare because wood degrades quickly. Remains are normally only found in waterlogged sediments.

Their remains or evidence of their presence, normally Mousterian stone tools, or art of sufficient antiquity that it can be nothing other than Neanderthal, have been found in Andalucia at Ardales Caves in Malaga province (art dated 65.5 kya – 45 kya), Carihuela Cave in Granada province (Mousterian tools dated 51,000 to 23 kya), and in Gorhams Cave at Gibraltar (where there are occupation layers from 100 kya to 30 kya). The latest dated find in the whole of Europe is a mandible from a Neanderthal, found in Cueva del Boquete at Zafarraya in Granada province that was dated to 30 kya. Tools of the Mousterian type were also found dating to as late as 27 kya. An ambiguous date of 42 kya for paintings in Nerja cave may also indicate Neanderthal presence.

The last well-dated Neanderthal remains in Cantabrian Spain are the cannibalised individuals from El Sidrón Cave in Asturias, 48 – 49 kya. Cannibalisation is, by the way, a sign of severe stress within a society. Remains from a similar age occur on the south side of the Cantabrian Cordillera in Valdegoba (Burgos). The last Mousterian artefacts at El Castillo in Cantabria, L'Arbreda and Romani in Catalunya (on the Mediterranean coast in the Barcelona area), seem to date from 44 – 43 kya between Heinrich events 5 and 4.

In southern Spain, outside of Andalucia, Neanderthals from Sima de la Palomas de Cabezo Gordo in Murcia, date to between 43 and 40 kya and in Cueva Anton at Mula, again in Murcia, to 36 kya.

In Portugal it is acknowledged that the several sites in central and southern Portugal have evidence of Mousterian assemblages with dates between 39 and 34 kya that require recalibration. In 2020, a research team from the University of Barcelona, announced they had found evidence of Neanderthal's eating seafood in a known Neanderthal cave site, Figueira Brava.

Figueira Brava is on the coast at the foot of the Arrabida uplands, west of Sesimbra, between Alpertuche and Portinho da Arrabida. Researchers report that about 50% of the diet, based on the remains of animals, birds and fish, was composed of mussels, crabs, seabirds and fish including sharks, eels, sea bream, dolphins and seals. The other half were the remains of deer, goats, horses, aurochs and tortoises. What is remarkable is the age attributed to the remains, between 106 and 86 kya, making this find one of the earliest Neanderthal sites in the Iberian Peninsula. The cave is now at the water's edge, at the time it was occupied the coast would have been about 2 kilometres away.

Exploitation of seafood by Neanderthals was also reported from Gorham's Cave and Vanguard Cave in Gibraltar. In Vanguard Cave, a layer of ash and mussel shells indicated Neanderthals were cooking their seafood, probably using heat to open the shells. At lower levels, amongst the bones of ibex, red deer, wild boar and cave bears, were the remains of monk seals, bottlenose dolphins, and short beaked dolphins, seabream, tortoise and birds. The remains from Vanguard are dated between 70 and 39 kya. Remains from Gorham's Cave are more accurately dated to between 32 and 30 kya and include earless seals. Interestingly, at the Gibraltar sites, archaeologists found the remains of *Stephanorhinus*, a now extinct rhinoceros that stood over 2 metres tall.

The Neanderthal environment at Gibraltar is one of the most researched in the world and now provides an accurate picture of Neanderthal life. In 2016, the cave complex and the slope behind, up to the top of The Rock, were declared a World Heritage Site.

32kya, the last of the Neanderthals in Europe died at Gibraltar. It would be 4,000 years before another human set eyes on the same view, a view very different to that of today. For much of the time that Gorham's Cave was occupied, first by Neanderthals and then modern humans, the sea levels had been up to 120 metres lower. From the mouth of the cave, which is now lapped by the waters of the Mediterranean Sea, the shore sloped gently in an easterly direction up to 4.5 kilometres to the sea. The shoreline narrowed sharply until it came to what is now Europa Point, barely half a kilometre south, where the coastal cliffs fell sharply into deep water, as they do today.

On the thinly wooded plain before them the inhabitants of the cave would have found fresh water springs, water that had percolated through the pervious limestone of The Rock before emerging to provide a resource not just for humans but plants and animals, including the Ibex, a native goat, that in turn fed and clothed those cave dwelling Neanderthals.

Neanderthals would also have utilised an outcrop of quartz, a prominent feature on the coastal plain, now below the waves, to make weapons. The cliffs to the south, encrusted with mussels and other crustaceans, provided a useful food supply when other sources failed. Their diet would have been enhanced occasionally by seals and dolphins, probably stranded on shore rather than being deliberately caught. Later Neanderthals, towards the end of their tenancy of the Iberian Peninsula, made bracelets and necklaces from birds' claws and shells and adorned themselves with the long wing feathers of birds including those from eagles and vultures.

There is evidence of early expressionism on a rock towards the back of Gorham's cave. Deliberately engraved lines dubbed the Neanderthal hashtag representing something we cannot envisage today. The etching has been dated from the charcoal of a fire found at the same level nearby and appears to have been created at the very end of the Neanderthal tenancy period. Perhaps it is a desperate cry by the artist at the inevitable fate of this slowly decreasing population, a last record of ancestors. Perhaps it is more mundane, a copy of a tattoo that identified the band. Interestingly, a modern human, a member of staff at the Gibraltar National Museum, had a copy of the hash mark tattooed on her ankle to associate herself with the team that found the engraving. Whatever it does represent, it is, at the moment, unique in the Neanderthal world.

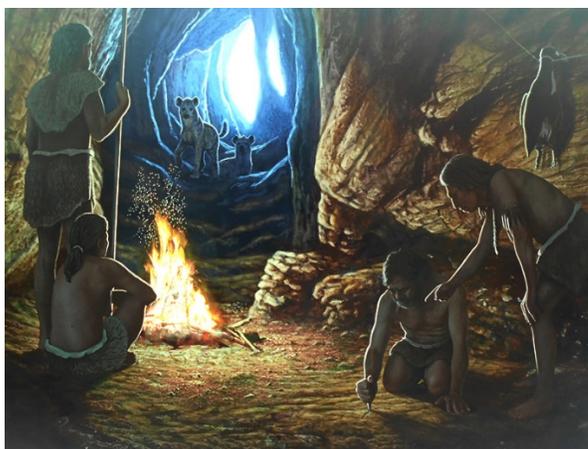
The Neanderthals lived in small family groups, eight to twelve in number, and were nomadic. Even though Gibraltar had the resources necessary for a comfortable sedentary life, they still periodically moved on to other cave sites in southern Spain. Whilst on their travels they picked up flint that was used to make high quality tools that still, 32,000 years later, retain a sharp edge that will cut through 7 sheets of paper with ease. The style of tools changed little between the archaeological levels in Gorham's Cave that record the last Neanderthal occupation and those that record the first modern human.

The Neanderthals also compartmentalised their living area. The cave dwelling was divided into two areas by a fire used for cooking and defence against predatory animals such as the hyena. The forward area was an observation platform during the day whilst the area behind the fire was a warm secure location after dark. Compartmentalisation extended to the environment surrounding the cave. Alongside Gorham's Cave is a second cave, Vanguard Cave, equally suitable for occupation yet to date the indications are it was used primarily for seafood preparation. Further

away, part of the way up The Rock, Ibx Cave is the scene of animal butchery where the animals would be dissected before being brought down to Gorham's Cave.

There is no evidence of any burials or cremated remains in either Gorham's Cave or Vanguard Cave. The famous skull, now known as Gibraltar Woman, was found at Forbes Quarry in 1848, well away from the inhabited caves. A second partial skull, of a female child, was found in 1926 at Devil's Tower Mousterian rock shelter, only tens of metres away from Forbes Quarry.

The first find at Gibraltar predated the find of remains in the Neanderthal valley that gave Neanderthals their name by eight years. Unfortunately, the Gibraltar skull was labelled as "an ancient human, died before the universal flood" and lay forgotten inside a cupboard at the Garrison Library in Gibraltar for many years. After the 1859 publication of *Origin of Species*, by Charles Darwin, a renewed interest in fossil human remains led to the skull being brought out of obscurity and presented at a meeting in the British Association for the Advancement of Science in 1864. Darwin was not present at the meeting, but the skull was later examined by both Darwin and Thomas Huxley, who concluded the skull was that of an extinct human species. Darwin made fleeting reference to Gibraltar 1 in the 1871 *Descent of Man*. A cast of the skull can be viewed at the Gibraltar Museum – the original is on display in the Human Evolution gallery of the Natural History Museum in London.



In 2016, Gibraltar Museum commissioned paleo-artists to recreate Gibraltar Woman and Devil's Tower Child from the original skulls. The finished work, 'Nana and Flint' can be seen at the museum.

In 2018 the museum commissioned a series of Paleoanthropological illustrations from Mauricio Anton that illustrate Neanderthals engaged in various activities.

A surprising find by a first-year archaeological student in 2016 was that of a Neanderthal child's tooth in excavated material brought from Gorham's Cave. Still attached to part of the jawbone the indications are that the child was taken into the cave by a hyena and consumed there.

The work done at Gibraltar has given us the most complete and graphic view of the Neanderthals and their lifestyle.

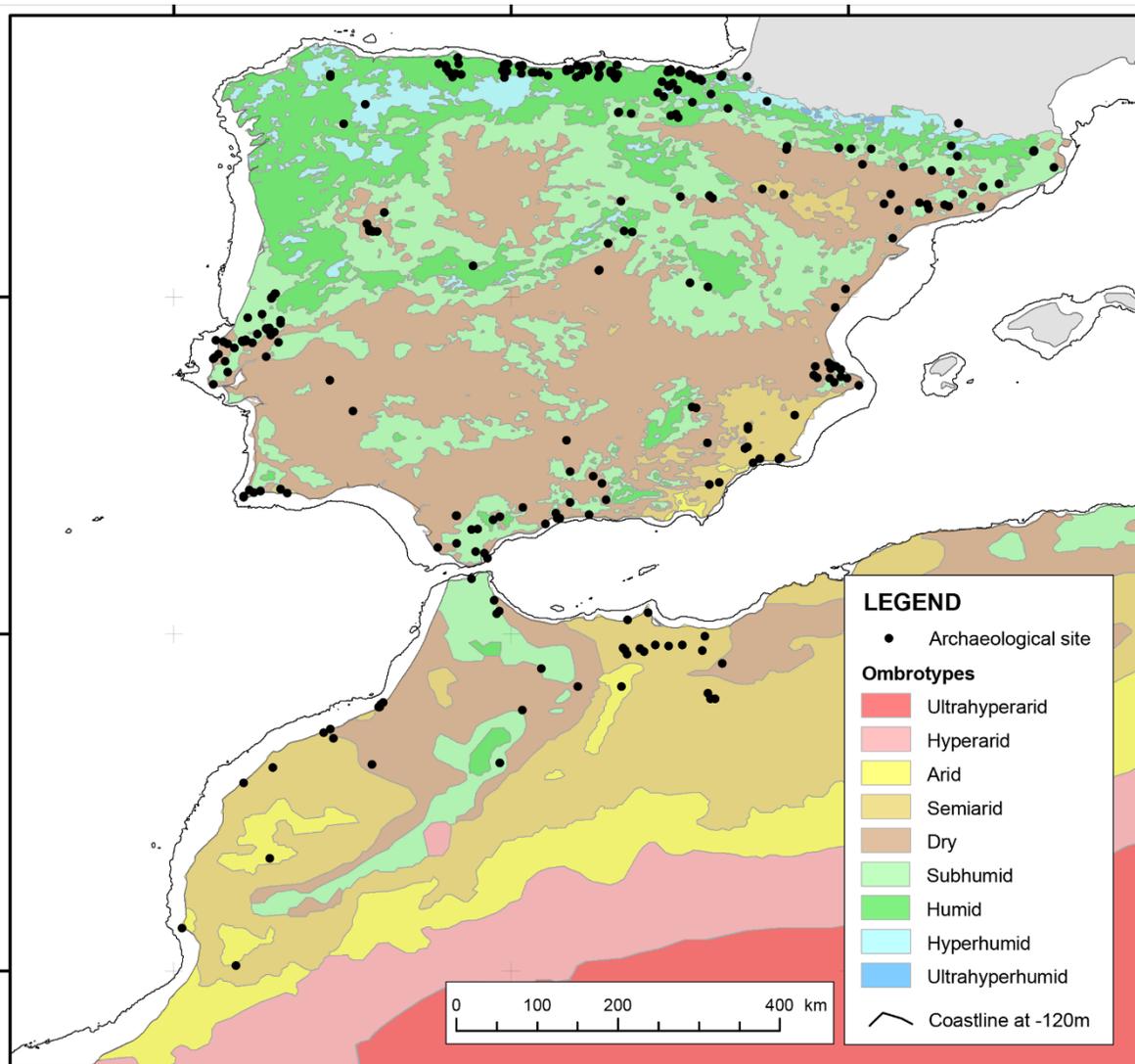


Even before Neanderthals were showing a definite presence in the Iberian Peninsula, Homo sapiens, in Africa had become restless and they in turn had started to migrate, in small numbers into the Middle East about 185 kya, taking advantage of an interglacial period. The early migrations, from the archaeological evidence, did not appear to penetrate much further than Israel. However, about 100kya, as the climate was deteriorating, one group travelled out of the Middle East and into Europe. They met and interacted with existing groups of humans and eventually arrived in the Iberian Peninsula about 45 kya, at a time when temperatures were approaching the all-time lows of the Last Glacial Maximum. The high mountains of the Pyrenees were snow and ice bound and acted as a barrier running from west to east across the 'wrist' of the peninsula thus restricting the access to two coastal strips, one to the west along the Biscay coast and one to the east, along the Mediterranean coast.

#### Physical Map of the Iberian Peninsula



The Andalusia from which the Neanderthals were departing and into which modern humans were arriving was very different to that of today. An extended coastal strip, from 5 to 15 kilometres wide, caused by lower sea levels during the glaciation, ran from Gibraltar round to Almeria, with certain exceptions such as, the coast from Nerja to Almuñecar, the Cabo de Gata coast, and the coast immediately north of Villaricos where the mountains fall sheer into the sea and a 120 metre drop in sea level only made the cliffs that much higher than they seem today. The coast from Gibraltar to the Algarve had an even wider coastal plain. At Europa Point, the southernmost tip of Gibraltar, cliffs fell vertically into the Mediterranean Sea. A very narrow, to non-existent plain west of Gibraltar suddenly expanded to up to 50 kilometres wide north of Tarifa up the entire length of the Costa de la Luz.



During the Last Glacial Period, the Iberian Peninsula, especially Andalusia, had become a refuge for plants as well as humans. Further north, beyond the Sierra Morena, the Meseta, was an inhospitable plateau of tundra - fauna and flora. These conditions were replicated in the Sierras that traverse Andalusia until, at altitude, ice and snow took over. At lower altitudes, below the tundra type landscape, the species seen today in the high Sierras, grew down to sea level, Quercus

ilex (holm oak), and *Quercus suber* (cork oak), *Abies* (fir) and *Pinus nigra* (European black pine). The *Pinus nigra* is now fairly rare. One still exists, along with other species that survived in the lower altitudes of Andalucia, in the high reaches of the Rio Gor, in Granada province.



This somewhat bleak landscape was sometimes relieved. Many typically Mediterranean species managed to survive in isolated enclaves, for instance the olive tree, and elm, walnut and birch trees. Within those enclaves, red deer and ibex flourished along with the occasional stray reindeer from the Meseta.

That however is not the full story. The zone in the north of the Iberian Peninsula, Cantabria, is classified as Euro-Siberian during this period, whilst the Mediterranean coast was Subtropical, creating widely diverse climatic and vegetation zones over a relatively short distance. Temperature and humidity-wise, the ten millennia between 45 and 35kya was volatile. Grasses and trees, other than pine, colonised areas during clement periods whilst open woodland, parkland, wooded steppe and open steppe created a mosaic of landscapes that moved around the Peninsula according to the climate at that time and the altitude.

Modern man first penetrated the Iberian Peninsula via the western gap between the Pyrenees and the Biscay coast. Here, along the northern flanks of the Cantabrian Cordillera he lived in caves and rock shelters. Some such as Altamira, El Castillo, and Tito Bustillo were decorated with cave art dating back to about 40,000 BC. These early migrants brought with them a toolkit called Aurignacian. The Aurignacian tool industry is characterized by worked bone or antler points with grooves cut in the bottom. Their flint tools include fine blades and bladelets struck from prepared cores rather than using crude flakes. However, the early modern humans entering the Iberian Peninsula were already refining their tools and dispensing with some of the Aurignacian traditions considered ubiquitous by modern archaeologists. The Venus figurines, often carved out of mammoth ivory, were prevalent in Central and Eastern Europe but have never been found in the Iberian Peninsula.

It took modern man upwards of 20,000 years to populate the Iberian Peninsula and this inordinate length of time requires some explanation. One obvious reason is that the presence of Neanderthals prevented a rapid occupation. This situation was not unique, the peninsula of Italy

was also a Neanderthal refuge and took a correspondingly greater length of time to occupy than areas of Europe with little or no discernible Neanderthal presence.

The mechanics of that occupation are still hotly debated. DNA evidence suggests that at least some interbreeding took place.

Controversy still rages that evidence of a shared, more advanced technique for making stone tools, known as Châtelperronian (a technique between Neanderthal Mousterian technology and the modern human Aurignacian technology), suggests communication between the two groups took place about 40,000 years ago in the vicinity of Cova Foradada at Oliva in the Valencia region. Cova Foradada is also the site of the most complete Neanderthal skeleton found to date in the Iberian Peninsula in 2010 and a 37,000 year old eagle talon necklace. Work is still progressing to date the skeleton.

Archaeological evidence indicates that Neanderthals were living in the area, in ever decreasing numbers until about 28 kya. The evidence also suggests that the extreme southwest of the Iberian Peninsula, modern day Andalucia, became their last stronghold. Carihuela Cave in Granada province is 100 kilometres inland on the northern flank of the Sierra Nevada, Zafarraya is 25 kilometres inland from the coast at Velez Malaga, Ardales cave is 55 kilometres from the coast at Malaga, Nerja and Gorham's Cave are on the coast.

During the 20,000 years it took modern humans to trek through the Iberian Peninsula there were at least 9 climatic fluctuations, sudden colder snaps in an already chilly climate. From warmer peak to warmer peak, in some cases was less than 1000 years. The Neanderthal record disappears entirely, between 28 and 24 kya, coincident with a severe cold snap.

During these colder periods, Neanderthals retreated south. As the weather became more clement modern humans, with their better child survival rate, hunting efficiency and social connections, moved into the vacated territory before the Neanderthals had built up enough numbers to move back to the areas they had abandoned. Each time there was a cold snap, a little more territory would be lost, and dispersed bands of Neanderthals would become isolated in pockets separated by mountains, eroding their overall viability. Once established, it seems that modern man was capable of adapting to variations in climate.

Ancient hunter gatherer populations are reckoned to require an average of 60 square kilometres per person. A band consisting of 12 – 30 individuals would need between 720 and 1,800 square kilometres. In favoured areas this would be a little less, in unfavourable areas, a little more.

The hunter gatherer's nirvana is a mixed landscape of wooded craggy high ground for game, valley sides for tubers, fruit and nuts, a river or an estuarine or coastal environment for fish and shellfish.

Areas favoured by Neanderthals would also be looked upon by modern man as good areas to be as they were all hunter gatherers. Modern man entering the Iberian Peninsula therefore had to absorb a greater concentration of Neanderthals into their ranks than elsewhere in Europe.

This explanation could account for the perceived archaeological time delay between the last Neanderthal levels and evidence of the first modern human, particularly at sites such as Gorham's Cave on Gibraltar.

The possible routes taken by modern man should also be considered because those routes became the first communication channels. Socially, these first modern hunter gatherers lived most of the year within their own band of 12 to 30 people. Food was shared and there would have been little or no sense of personal ownership. These individual bands were tied, culturally and socially, with other bands. At certain times and presumably, places, bands would congregate in order to increase the choice of mating partners. These meetings would be the opportunity to exchange information, skills and materials. These were the first networks, delineated connections that, due to the low density of the hunter gatherers, spread over long distances, despite overland mobility being pedestrian.

We have already seen that some of the earliest records of the presence of modern man is cave art, along the Cantabrian Cordillera. They also left some of their Aurignacian tools in El Castillo, Cueva de Morin and La Vina, in Cantabria, dated to 42-40 kya. From the eastern end of the Cordillera, a route southeast, down the Ebro river, takes you to the Mediterranean coast at Catalonia where Aurignacian tools have been found at L'Arbreda and Romani, again dated to between 42 and 40 kya.

A second route southwest from the eastern end of the Cordillera, takes you into the River Duero valley and thence to the Atlantic. From the Atlantic coast, easy coastal routes take you down the full length of Portugal with a diversion up the Tagus valley. The Duero valley residents would then be in close proximity in the next valley to the north. The dates for Aurignacian assemblages found in Portugal are currently under review. One exciting development, reported in 2015, is a potential overlap of Mousterian and Gravettian (a tool industry that developed from the Aurignacian) tools dated to 34 – 32 kya, at Foz do Enxarrique in southern Portugal.

From the Mediterranean coast at Catalonia, a coastal route can be followed to just south of Murcia. Aurignacian tools dated to 34.5 kya have been found at Les Mallaetes in Valencia. At Cova Foradada near Alicante there is evidence of Aurignacian activity at two levels corresponding to 40 kya and 35 – 31 kya.

Currently there is little evidence for Aurignacian presence in Murcia, which brings us to the eastern reaches of Andalucia roughly 30,000 years ago.

Here the situation becomes interesting. The Neanderthal's final stronghold was basically a wide strip down the coast of Andalucia that extended up to 100 kilometres inland at the eastern end down to 2 kilometres at Gibraltar. It appears as though modern man initially ignored this triangle and diverted inland, heading west to the Cordillera Subbeticas and then south west down the northern flanks. Only later would he venture into what had been, exclusively, Neanderthal territory. The central Meseta was neatly bypassed and it would be some time before this inhospitable tundra region was populated.

Whilst this route and timeline seems logical and in accordance with the evidence so far, it is by no means fixed in stone. A study carried out in Bajondillo Cave (Torremolinos, Malaga province) published in 2019, indicates that modern humans with their Aurignacian tools were established there between 45,000 and 43,000 years ago. It is difficult to explain this very isolated, early, occurrence. We shall return to this matter at the end of this chapter.

By about 25,000 BC, modern man was in sole occupancy of the Iberian Peninsula. The population levels would have been similar to that of the departed Neanderthals during their heyday, about 1,200 square kilometres for each band of 12 - 30 individuals. With a land area of 87,500 square kilometres, the overall population of Andalucia could have been about 1,500. However, not all of Andalucia was populated during this early hunter gatherer phase. Archaeology has failed to find much trace of modern hunter gatherers in the Guadalquivir valley itself, or the Sierra Morena that forms the northern border of Andalucia. It could be that the latter was too cold, being adjacent to the central Meseta, and the former did not support the range of food required by a healthy hunter gatherer band, except on its southern and eastern margins, the foothills of the Cordillera Subbética. In any case the land area actually occupied amounted to about a third of the overall area, reducing the potential population in Andalucia, to just 500 people, the lower limit for the number of people required to reproduce in a genetically viable group.

A study published in 2011 claimed to show that, at the time of the transition from Neanderthal to modern human, there was a tenfold increase in the population. Whilst this is likely to be an exaggerated claim it does give some credence to DNA and skeletal studies now coming to light that indicate that late Neanderthals were breeding with close relatives, a habit known as consanguinity. Published in 2019, a study of 50,000 year old skeletal remains of Neanderthals from El Sidrón cave in Asturias, Spain, shows evidence for consanguinity. The team identified 17 bones, belonging to at least 4 individuals, showing congenital abnormalities. These are conditions present at birth, as opposed to ones developed during life through injury, infection or nutritional deficiencies. In the El Sidrón remains, the congenital features included cleft or asymmetric vertebrae, a misshapen kneecap and a baby tooth retained into adulthood. The identified conditions are rare in living humans and may be harmless, but they do occur more frequently in cases of inbreeding. In other words, these skeletal features suggest the parents were kin. Consanguinity could be a result of a reduced population causing lack of suitable breeding partners.

Adapting to the climate forced modern man to adopt new strategies to survive. He did this by inventing new types of clothing. Bone needles appear during the early part of this period, used for stitching together leather and fur garments. Leather and fur shoes or boots, evidenced by changing morphology of feet, became a necessity. It is likely that light, transportable shelters were also used to augment more permanent bases in caves and rock shelters. They developed more efficient hunting methods to such a degree that many of the larger game animals started to disappear from the archaeological record. Deer, horses, ibex and aurochs became less populous although research suggest that none became totally extinct in the Iberian Peninsula. Even so, humans were forced to develop methods of catching smaller game, rabbits, hares and game birds. Nets, traps and snares were invented, and it is likely that the woven basket was first used to make the collecting of tubers, fruits and nuts easier. These strategies allowed the young and elderly to take part in the food gathering routine. It is also likely that women may have started to become differentiated by an association with lower risk forms of meat acquisition, food gathering and the manufacture of shelters and clothing.

Blades and bladelets were used to make decorations and bone tools from animal remains. Tools developed, blunt-back knives, tanged arrowheads and boomerangs. It is also thought that oil lamps made of stone appeared during this period, the fuel being oil from olives that had survived the fluctuations of climate in sheltered enclaves. The whole ensemble is usually referred to as the

Gravettian culture. It did not suddenly appear overnight, the overlap between Aurignacian and Gravettian lasted as long as the Gravettian did in some instances but it can safely be said that the innovative and clearly recognisable parts of the Gravettian were in place soon after modern humans entered Andalucia.

It may be imagined that, as each innovative idea or product was tried and tested, the techniques and skills would slowly move backwards and forwards, up and down the communication networks, passed from hand to hand and mouth to mouth. It could take many generations for an idea formulated at one end of the chain to percolate through to the other end, many hundreds, even thousands of kilometres away. In the meantime, improvements would be made that would in turn pass through the system. This capability for notional communication whilst far apart was a key factor in the survival of modern humans. Sometimes links in the chain were lost and an arm of the network was cut off. This is what happened about 20,000 BC, when as we shall see, close to the last glacial maximum, communication with Europe east and north of the Pyrenees was lost and the two areas developed in slightly different ways.

Let us not forget the Neanderthals. They too continued to change, at least culturally, during their final few thousand years in the Iberian Peninsula. The hash marks found at Gorham's Cave in Gibraltar, the paintings at Ardales Cave and the eagle talon necklace found at Cova Foradado all indicate they were developing artistically. They could also of course have been developing their tools, either independently or as a result of assimilation of ideas from modern humans; the Châtelperronian that produced denticulate stone tools and also a distinctive flint knife with a single cutting edge and a blunt, curved back, is suspiciously similar to the Gravettian toolkit. Interestingly, the principle area for so called Châtelperronian tools is just around the Pyrenees corner from Valencia and Catalonia, straight up one of our communication channels.

As the Neanderthals finally depart from Andalucia during an intense cold period during the Last Glacial Maximum, it is worth noting that the skeletal remains from this early period (found elsewhere, the record from Andalucia at this time is bleak), it seems as though these first modern humans were tall, up to 190 centimetres, with heavily musculature, particularly to the legs; a gracile figure inherited from their ancestors in Africa. Over the thousands of years of the remaining glaciation, modern humans became squatter and shorter, their bodies adapting to the cold. By 25 kya, any observer would have been hard pressed to differentiate between a modern human and a Neanderthal.

Whilst the Châtelperronian tools remain a speculative cargo along our networks, another set of tools most certainly are not. Without so much as drawing breath, the Gravettian merged into the Solutrean south of the Pyrenees. The dividing line is usually set at 25,000 BC, just after modern man became sole proprietor of Andalucia and at the start of the Last Glacial Maximum.

Finally, returning to Bajondillo Cave, Torremolinos, the anomalous finds dating to 45 to 43 kya mentioned earlier. Across the Gibraltar Strait, in North Africa, in the Maghreb region, during this precise period when temperatures fell rapidly and then recovered just as rapidly, humans were experiencing a crisis. Links between the two major habitable areas, the Maghreb and, further east, Cyrenaica, had been cut. The climatic conditions resulted in an arid expanse between the two areas. Even in those two areas, populations were dwindling to the point of invisibility. It is possible that the northern shore across the Strait, only 6 kilometres wide during this time, with a couple of

islands to act as steppingstones, looked like a haven. The concentration of Neanderthals then occupying Gibraltar could well have encouraged them to try their luck 120 kilometres down the coast. The Aterian people of North Africa, named after the stone tool industry, used tanged and leaf shaped tools very similar to the Aurignacian tools wielded by Iberians.

If the Bajondilla Cave dates are accurate then, whether the tools were carried there from North Africa or by people migrating into the Iberian Peninsula from Europe, the small group responsible for them do not appear to have survived the long winter.

We leave the Iberian Peninsula about 25 kya. The Neanderthals have been and gone and modern humans have managed to establish a fragile toe hold in preferred areas around the perimeter of the central Meseta.

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