



THE NEANDERTHAL ENIGMA

As we can see from chapter two, there are many controversies surrounding the rise of humans. What after all does it mean to be human? Is it linked to language, the use of tools, or the rise of culture? We argue that the rise of spirituality distinguishes humans. In this chapter we will take a look at two types of humans that arose - the Neanderthals and Cro Magnon man. However, as we shall see, their separation is by no means completely clear. However, before reaching that point we will need to delve back into a more remote past - back to the very originals of mankind as we did in chapter two. In the crudest summary we can suggest that a small African ape living around six million years ago was the last animal whose descendants would include both modern humans and their closest relatives, the bonobos, and chimpanzees. Only two branches of its family tree have surviving descendants. Very soon after the split, for reasons that are still debated, apes in one branch developed the ability to walk upright. Brain size increased rapidly, and by 2 million years ago, the very first animals classified in the genus Homo had appeared.

The Homo Genus

Homo is the genus that includes modern humans and their close relatives. The genus is estimated to be about 2.5 million years old, evolving from Australopithecine ancestors with the appearance of Homo habilis. Appearance of Homo coincides with the first evidence of stone tools and thus by definition with the beginning of the Lower Paleolithic. All species except Homo sapiens (modern humans) are extinct. Homo neanderthalensis, traditionally considered the last surviving relative, died out 24,000 years ago while a recent discovery suggests that another species, Homo floresiensis, may have lived as recently as 12,000 years ago.

A minority of zoologists consider that the two species of chimpanzees (usually treated in the genus Pan), and maybe the gorillas (usually treated in the genus Gorilla) should also be included in the genus based on genetic similarities. Most scientists argue that chimpanzees and gorillas have too many anatomical differences between themselves and humans to be part

of Homo. Given the large number of morphological similarities exhibited, Homo is closely related to several extinct hominin genera, most notably Kenyanthropus, Paranthropus and Australopithecus. As of 2008, there is no universally accepted recognition of which taxa Homo radiated from. Thus we can see that in our discussion of God and Nature there is still much to be discovered. It is not a simple dichotomy between creation and evolution when we know so little about the latter.

Homo Species

As we saw in chapter two the exact species status of Homo rudolfensis, ergaster, georgicus, antecessor, cepranensis, rhodesiensis and floresiensis remains under debate. H. heidelbergensis and H. neanderthalensis are closely related to each other and have been considered to be subspecies of H. sapiens, but analysis of mitochondrial DNA from Homo neanderthalensis fossils shows that H. neanderthalensis is more closely related to chimpanzees than H. sapiens is, thereby suggesting that H. sapiens is the more derived of the two.

Of course, the line between different species or even genera is rather arbitrary as organisms continuously change over generations. Around the same time, the other branch split into the ancestors of the common chimpanzee and the ancestors of the bonobo as evolution continued simultaneously in all life forms. Anatomically modern humans Homo sapiens are believed to have originated somewhere around 200,000 years ago or earlier in Africa; the oldest fossils date back to around 160,000 years ago. An excellent summary can be found in Roger Lewin's "Human Evolution".

Fire, Language and Spirituality

So how do we define the rise of man? Was it when one of our distant ancestors picked up the first smoldering branch from a wildfire, or when they began to communicate via language or use tools? The use of fire is unique but other animals are tool users and have language. The ability to control fire likely began

in *Homo erectus* (or *Homo ergaster*), probably at least 790,000 years ago but perhaps as early as 1.5 million years ago. In addition it has sometimes been suggested that the use and discovery of controlled fire may even predate *Homo erectus*. Fire was possibly used by the early Lower Paleolithic (Oldowan) hominid *Homo habilis* and/or by robust australopithecines such as *Paranthropus*.



However it is more difficult to establish the origin of language; it is unclear whether *Homo erectus* could speak or if that capability had not begun until *Homo sapiens*. As brain size increased, babies were born sooner, before their heads grew too large to pass through the pelvis. As a result, they exhibited more plasticity, and thus possessed an increased capacity to learn and required a longer period of dependence. Social skills became more complex, language became more advanced, and tools became more elaborate. This contributed to further cooperation and brain development.

The first to show evidence of spirituality as far as we can see are the Neanderthals (usually classified as a separate species with no surviving descendants); they buried their dead, often apparently with food or tools. Were the Neanderthals then the first spiritual beings?

Neanderthal

There has perhaps been some preoccupation with Neanderthals as there are many more fossils of them than any other hominid. Neanderthals interest us as they seem to be the first to have formed some spiritual awareness. The Neanderthal paleoanthropological specimens are classified as Pleistocene species of the *Homo* genus (*Homo neanderthalensis* or *Homo sapiens neanderthalensis*) which inhabited Europe and parts of western and central Asia. The first proto-Neanderthal traits appeared in Europe as early as 350-

500 thousand years ago. Complete Neanderthal characteristics had appeared 130,000 years ago and disappeared from Asia by 50,000 years ago and from Europe by 30,000 years ago. The latest skeletal remains with Neanderthal traits were found in Lagar Velho in Southern Iberia and dated to 24,500 years ago. This 'neanderthal period' (to 24.5 kya) in Europe evolved Mousterian, Chatelperronian, Aurignacian and Gravettian archaeological cultures. Gravettian culture extends 2,500 years longer up to 22,000 years ago.

Neanderthal coexisted with modern humans up to 15,000 years after *Homo sapiens* had migrated into Europe from east or south. Steven L. Kuhn and Mary C. Stiner believed that the population of Neanderthals was never much more than 10,000 individuals. Neanderthals had many adaptations to a cold climate: short, robust builds, and rather large noses - traits selected by evolution in cold climates. Their cranial capacity was larger than modern humans, indicating that their brains may have been larger. They were almost exclusively carnivorous and top predators. On average, the height of Neanderthals was comparable to contemporaneous *Homo sapiens*. Neanderthal males stood about 165–168 cm tall and were heavily built with robust bone structure. They were much stronger, having particularly strong arms and hands. Females stood about 152–156 cm tall.

For some time, professionals debated whether Neanderthals should be classified as *Homo neanderthalensis* or as *Homo sapiens neanderthalensis*, the latter placing Neanderthals as a subspecies of *Homo sapiens*. Genetic statistical calculation (2006 results) suggested that at least 5% of human modern gene pool can be attributed to ancient admixture and the European contribution may have been the Neanderthal. Some morphological studies support that *Homo neanderthalensis* is a separate species and not a subspecies. Some suggests inherited admixture. Others, for example Professor Paul Mellars, say "no evidence has been found of cultural interaction" and evidence from mitochondrial DNA studies have been interpreted as evidence that Neanderthals were not a subspecies of *H. sapiens*. *Homo*



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sapiens mtDNA from Australia (Mungo Man 40ky) is also not found in recent human genomic pool and mtDNA sequences for temporally comparative African specimens are not yet available.

The original Neanderthal discovery is now considered the beginning of paleoanthropology. These and other discoveries led to the idea that these remains were from ancient Europeans who had played an important role in modern human origins. The bones of over 400 Neanderthals have been found since. As we said compared to modern humans, Neanderthals were similar in height but with more robust bodies, and had distinct morphological features, especially of the cranium, which gradually accumulated more derived aspects, particularly in certain relatively isolated geographic regions. Controversy rages over the exact relationship between Neanderthals and modern humans.

In November 2006, Science Daily published an interview that suggested that Neanderthals and ancient humans probably did not interbreed. Edward M. Rubin, director of the U.S. Department of Energy's Lawrence Berkeley National Laboratory and the Joint

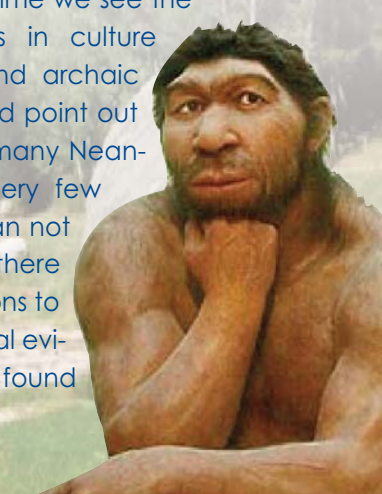


Genome Institute (JGI), sequenced a fraction (0.00002) of genomic nuclear DNA (nDNA) from a 38,000-year-old Vindija Neanderthal femur bone. They calculated the common ancestor to be about 353,000 years ago, and a complete separation of the ancestors of the species about 188,000 years ago. Their results show the genomes of modern humans and Neanderthals are at least 99.5% identical, but despite this genetic similarity, and despite the two species having coexisted in the same geographic region for thousands of years, Rubin and his team did not find any evidence of any significant crossbreeding between the two. Rubin said, "While unable to definitively conclude that interbreeding between the two species of humans did not occur, analysis of the nuclear DNA from the Neanderthal suggests the low likelihood of it having occurred at any appreciable level."

A main proponent of the interbreeding hypothesis is Erik Trinkaus of Washington University. In a 2006 study Trinkaus and his co-authors report a possibility that Neanderthals and humans did interbreed. The study claims to settle the extinction controversy; according to researchers, the human and neanderthal populations blended together through sexual reproduction. Trinkaus states, "Extinction through absorption is a common phenomenon" and "From my perspective, the replacement vs. continuity debate that raged through the 1990s is now dead".

Recently, Richard E. Green et al. from Max Planck Institute for Evolutionary Anthropology published the full sequence of Neanderthal mitochondrial DNA (mtDNA) and suggested that Neanderthals had a long-term effective population size smaller than that of modern humans. While reporting in Nature Journal about the same publication, James Morgan asserted that the mtDNA sequence contained clues that Neanderthals lived in "small and isolated populations, and probably did not interbreed with their human neighbours."

There is a possibility Neanderthals and Cro-Magnons interbred but left little genetic evidence. There is an ongoing debate about whether the hunter-gatherers of the middle stone age started farming when they came in contact with agriculture, or were completely replaced by the farmers moving in from the Middle East. If modern Europeans are mainly descendants of these farming people with little or no genetic input from the foragers of the middle stone age, then possible interbreeding between them and the Neanderthals would not have had a great effect on the modern gene pool. However, as you can see, the main point to be gleaned from these studies is that much more research still needs to be done. Of more interest to us is that fact that it is during this time that we seem to glimpse the first rise of spirituality. To me it is less important whether Neanderthals form one part of our ancestry (the evidence seems against) than that it is during this time we see the rise of spiritual aspects in culture among Neanderthals and archaic sapiens. However, I should point out that we have relatively many Neanderthal skeletons and very few other examples so we can not absolutely state that there were no spiritual dimensions to earlier groups. The physical evidence has just not been found yet.



Neanderthals and Language

I think that the initial work of Boule may have reduced Neanderthals capability in the public mind. The idea that Neanderthals lacked complex language was widespread, despite concerns about the accuracy of reconstructions of the Neanderthal vocal tract, until 1983, when a Neanderthal hyoid bone was found at the Kebara Cave in Israel. The hyoid is a small bone which connects the musculature of the tongue and larynx, and by bracing these structures against each other, allows a wider range of tongue and laryngeal movements than would otherwise be possible. The presence of this bone implies that speech was anatomically possible. The bone which was found is virtually identical to that of modern humans.

The morphology of the outer and middle ear of Neanderthal ancestors, *Homo heidelbergensis* found in Spain, suggests they had an auditory sensitivity similar to modern humans and very different from chimpanzees. They were probably able to differentiate between many different sounds. Neurological evidence for potential speech in neanderthalensis exists in the form of the hypoglossal canal. The canal of neanderthalensis is the same size or larger than in modern humans, which are significantly larger than the canal of australopithecines and modern chimpanzees. The canal carries the hypoglossal nerve, which controls the muscles of the tongue. This indicates that neanderthalensis had vocal capabilities similar to modern humans. In addition a recent extraction of DNA from Neanderthal bones indicates that Neanderthals had the same version of the FOXP2 gene as modern humans. This gene is known to play a role in human language. Steve Mithen (2006) proposes that the Neanderthals had an elaborate proto-linguistic system of communication which was more musical than modern human language, and which predated the separation of language and music into two separate modes of cognition. We would definitely associate the use of language as a human trait but in reality it is not a determining one as other species have the use of language. However, we would argue that language is one definite way of communicating spirituality.

Tools



Neanderthal and Middle Paleolithic archaeological sites show a smaller and different toolkit than those which have been found in Upper Paleolithic sites, which were perhaps occupied by modern humans which superseded them. Fossil evidence, indicating who may have made the tools found in Early Upper Paleolithic sites, is still missing.

Neanderthals are thought to have used tools of the Mousterian class, which were often produced using soft hammer percussion, with hammers made of materials like bones, antlers, and wood, rather than hard hammer percussion, using stone hammers. A result of this is that their bone industry was relatively simple. However, there is good evidence that they routinely constructed a variety of stone implements. Neanderthal tools most often consisted of sophisticated stone-flakes, task-specific hand axes and spears. Many of these tools were very sharp. There is also good evidence that they used a lot of wood, objects which are unlikely to have been preserved until today.



Also, while they had weapons, whether they had implements which were used as projectile weapons is controversial. They had spears, made of long wooden shafts with spearheads firmly attached, but they are thought by some to have been thrusting spears. Still, a Levallois point embedded in a vertebra shows an angle of impact suggesting that it entered by a "parabolic trajectory" suggesting that it was the tip of a projectile. Moreover, a number of 400,000 year old wooden projectile spears were found at Schoningen in northern Germany. These are thought to have been made by the Neanderthal's ancestors, *Homo erectus* or *Homo heidelbergensis*. Generally, projectile weapons are more commonly associated with *H. sapiens*. The lack of projectile weaponry is an indication of different sustenance methods, rather than inferior technology or abilities. The situation is identical to that of native New Zealand Maori - modern *Homo sapiens*, who also rarely threw objects, but used spears and clubs instead. However, tools may have raised our ancestors above the local carnivore competition - along with fire and language and allowed us to develop imagination and other cognitive abilities and even some leisure - all of which could have assisted the rise of spirituality.



Spiritual Development

Although much has been made of the Neanderthal's burial of their dead, their burials were less elaborate than those of anatomically modern humans. The interpretation of the Shanidar IV burials as including flowers, and therefore being a form of ritual burial, has been questioned. On the other hand, five of the six flower pollens found with Shanidar IV are known to have had 'traditional' medical uses, even among relatively recent 'modern' populations. In some cases Neanderthal burials include grave goods, such as bison and aurochs bones, tools, and the pigment ochre. We feel that this does show evidence of the rise of spirituality in Neanderthals.

Neanderthals also performed many sophisticated tasks which are normally associated only with humans. For example, it is known that they controlled fire, constructed complex shelters, and skinned animals. A trap excavated at La Cotte de St Brelade in Jersey gives testament to their intelligence and success as hunters. Particularly intriguing is a hollowed-out bear femur with holes which may have been deliberately bored into it. This bone was found in western Slovenia in 1995, near a Mousterian fireplace, but its significance is still a matter of dispute. Some paleoanthropologists have hypothesized that it was a flute, while others believe it was created by accident through the chomping action of another bear. Pendants and other jewelry showing traces of ochre dye and of deliberate grooving have also been found with later finds, particularly in France but whether or not they were created by Neanderthals or traded to them by Cro-Magnons is a matter of controversy.

As far as spiritual development is concerned it is worth quoting from Roger Lewin "chance would have to be evoked in too many other cases to explain associations of bodies and stone tools, of alignments of bodies, and so on. The evidence is convincing that Neanderthals and probably other archaic sapiens, occasionally buried their dead with a degree of ritual that we recognize as human. The act of burial is probably one reason why so many Neanderthal skeletons have been recovered." So we can see from this and chapter two that the development of spirituality occurred in archaic sapiens.

Habitat, Range and Fate of the Neanderthals

Early Neanderthals lived in the Last Glacial age for a span of about 100,000 years. Because of the damaging effects which the glacial period had on the Neanderthal sites, not much is known about the early

species. Classic Neanderthal fossils have been found over a large area, from northern Germany to Israel and Mediterranean countries like Spain and Italy in the south and from England in the west to Uzbekistan in the east. This area probably was not occupied all at the same time; the northern border of their range in particular would have contracted frequently with the onset of cold periods. On the other hand, the northern border of their range as represented by fossils may not be the real northern border of the area they occupied, since Middle-Palaeolithic looking artifacts have been found even further north, up to 60° on the Russian plain. Recent evidence has extended the Neanderthal range by about 1,250 miles (2,010 km) east into southern Siberia's Altay Mountains.

Possible hypotheses for the fate of Neanderthals include the following:

1. Neanderthals evolved to a separate species which became extinct and were replaced by early modern humans traveling from Africa.
2. Neanderthals was a contemporary subspecies which incidentally bred with Homo sapiens and disappeared through absorption.
3. Neanderthals never split from Homo sapiens and most of their populations transformed into anatomically modern humans between 50-30 kya .

According to the oldest view (#1), modern humans Homo sapiens began replacing Neanderthals around 45,000 years ago, as the Cro Magnon people appeared in Europe, pushing populations of Neanderthals into regional pockets, where they held on for thousands of years, such as modern-day Croatia, Iberia and the Crimean peninsula. The last Neanderthal traces have been found in specimens found around a cave system on the remote south-facing coast of Gibraltar, and dated 30,000 to 24,500 years ago.



The validity of such an extensive period of cornered Neanderthal groups is recently questioned. There is no longer certainty regarding the identity of the humans

who produced the Aurignacian culture, even though the presumed westward spread of anatomically modern humans (AMHs) across Europe is still based on the controversial first dates of the Aurignacian. Currently, the oldest European anatomically modern *Homo sapiens* is represented by a robust modern human mandible discovered at Pesteracu Oase (south-west Romania), dated to 34–36 kya (thousand years ago). Human skeletal remains from the German site of Vogelherd, so far regarded the best association between anatomically modern *Homo sapiens* and Aurignacian culture, were revealed to represent Neolithic burials that dug into the Aurignacian levels and subsequently all the key Vogelherd fossils are now dated to 3.9–5.0 thousand years ago instead. As for now, the expansion of the first anatomically modern humans into Europe can't be located by diagnostic and well-dated anatomically modern human fossils "west of the Iron Gates of the Danube" before 32 kya. Moreover, researchers have recently found in Pestera Muierii, Romania, remains of European humans from 30 kya who possessed mostly diagnostic "modern" anatomical features, but also had distinct Neanderthal features not present in ancestral modern humans in Africa, including a large bulge at the back of the skull, a more prominent projection around the elbow joint, and a narrow socket at the shoulder joint. Analysis of one skeleton's shoulder showed that these humans, like Neanderthal, did not have the full capability for throwing spears. Consequently, the exact nature of biological and cultural interactions between Neanderthals and other human groups between 50 and 30 thousand years ago is currently hotly contested. A new proposal resolves the issue by taking the Gravettians rather than the Aurignacians as the anatomically modern humans which contributed to the post-30 kya Eurasian genetic pool. Correspondingly, the human skull fragment found at the Elbe River bank at Hahnöfersand near Hamburg was once radiocarbon dated to 36,000 years ago and seen as possible evidence for the intermixing of Neanderthals and anatomically modern humans. It is now dated to the more recent Mesolithic.

Modern human findings in Abrigo do Lagar Velho, Portugal of 24,500 years ago, allegedly featuring Neanderthal admixtures, have been published. The paleontological analysis of modern human emergence in Europe has been shifting from considerations of the Neanderthals to assessments of the biology and chronology of the earliest modern humans in western

Eurasia. This focus, involving morphologically modern humans before 28,000 years ago shows accumulating evidence that they present a variable mosaic of derived modern human, archaic human, and Neanderthal features.

On the other hand, a mtDNA analysis has shown no evidence for Neanderthal contributions to the gene pool of modern humans. The authors of the study concede that this does not exclude Neanderthal contributions of other genes. They nevertheless argue that other genetic and morphological data also suggest little or no Neanderthal contribution. A study of Cro-Magnon mitochondrial DNA published in 2008 found that it was radically different from that of almost contemporary Neanderthals. As we stated earlier though, to us, it is less important what the exact relationship was between Neanderthals and Cro Magnon than that we have physical evidence from burials for the rise of spirituality in this era.

However, evidence of more sophisticated beliefs, such as the early Cro-Magnon cave paintings (probably with magical or religious significance) did not appear until some 32,000 years ago. Cro-Magnons also left behind stone figurines such as Venus of Willendorf, probably also signifying religious belief. By 11,000 years ago, *Homo sapiens* had reached the southern tip of South America, the last of the uninhabited continents. Tool use and language continued to improve; interpersonal relationships became more complex. In the next chapter we shall discuss the rise of civilization from these beginnings to the industrial period and come to the core of this work which can be summed up in one sentence by C.S.Lewis: "History is a story written by the finger of God".

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