

# Modern science catches up with Neandertal man

**The Neanderthals Rediscovered: How modern science is rewriting their story**

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Winner of the Society for American Archaeology Book Award in 2015, this seven-chapter book tells how the way Neandertals have been viewed by evolutionary anthropology has advanced since their discovery more than 150 years ago. Because of the interesting subject matter, discussed by a leading scientific association, a review of this book is well warranted. The book is 199 pages long, with 77 illustrations, 20 of them in colour. The book describes how the views of the Neandertals have changed, regarding their morphology, their geographical distribution, and, also, very interestingly, their behaviour and cognitive abilities.

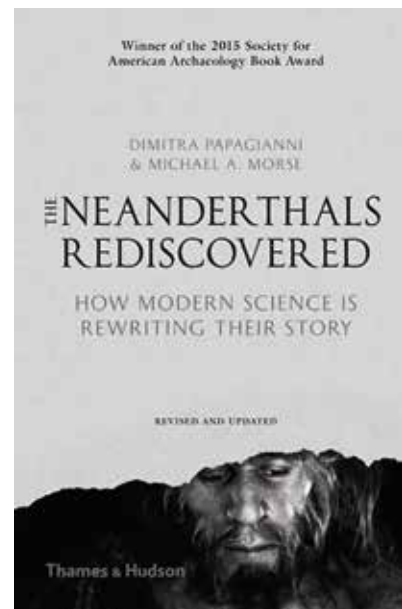
The first chapter of the book starts with how the Neandertals were a type of human that has been long misunderstood. This is expanded upon in the last chapter of the book, which describes the popular, but false, imagery that Neandertals have in our society today. The Neandertals were first presented during the 1863 meeting of the British Association for the Advancement of Science at Newcastle-upon-Tyne. Professor William King of Queen's College, Galway, Ireland, was the name giver of this type of archaic human, based on the place where its first fossils were discovered,

in Neander Valley in 1856 (named after the famous hymn writer Joachim Neander (1650–1680)).

Based on its thick bones, and a protruding crest above the eyes, the Neandertals were taken to be a species of humans halfway between chimpanzees and modern humans. Marcellin Boule (1861–1942) of the Museum of Natural History in Paris suggested that Neandertals walked with a stooped posture, based on a specimen from La Chapelle-aux-Saints, although later on it turned out that this specimen had arthritis and premature bone degeneration. Even *Homo erectus* was taken to be closer to modern humans because of its upright, erect posture. The Neandertal skull was much longer and flatter, with a protruding chin and stronger jawbones. The upper limit of the endocranial volume of Neandertals is up to 1,740 ml with a mass of 1.7 kg (p. 131).

## The forerunners of the Neandertals

Chapters two and three describe the dispersal of other human species before the Neandertals, some of whom were their forerunners. The Neandertals themselves are supposed to have lived from 500,000 to 20,000 years ago, with the distinctive Neandertal form first appearing 250,000 years ago (p. 48, 73). Neandertals are known from several hundred fossil specimens all over the world. They ranged as far as Spain and western Asia, possibly even southern Siberia. At times, their geographical distribution overlapped with that of modern humans in some places. Noteworthy fossil sites of Neandertals and their close relatives

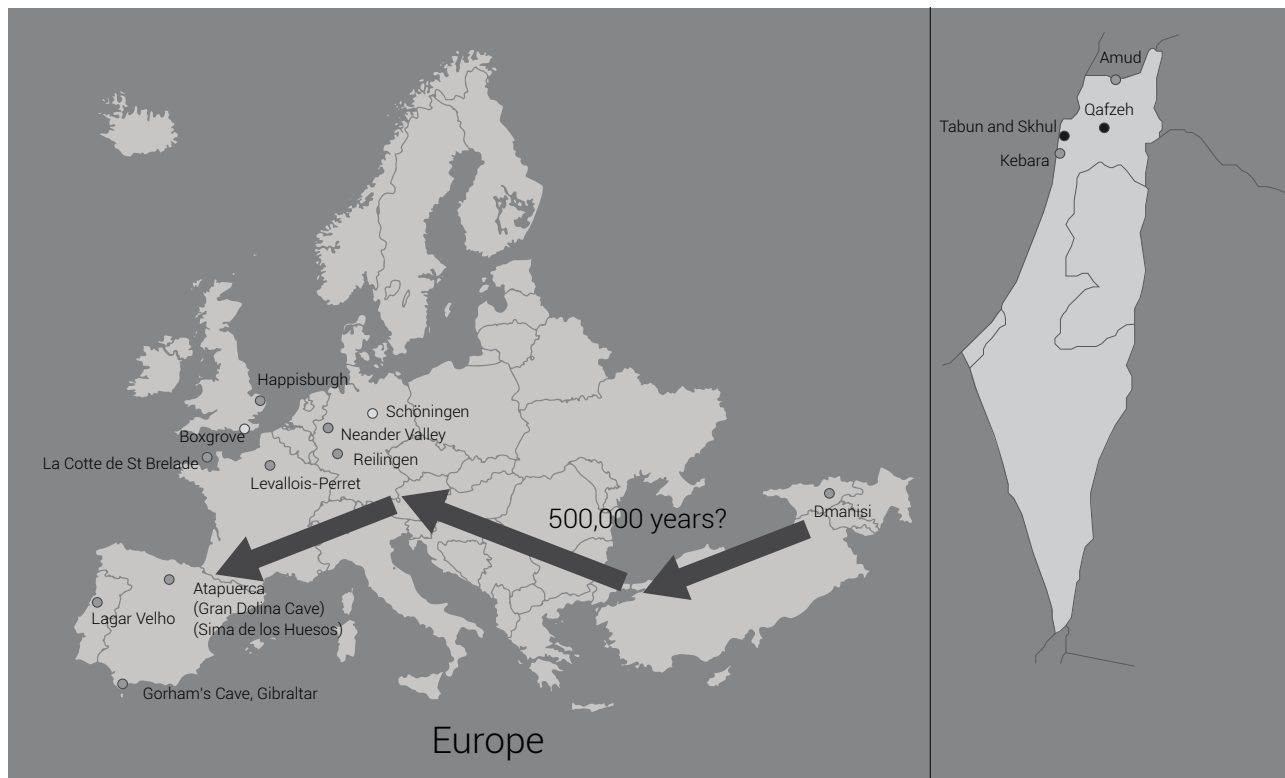


in Europe and Israel are depicted in figure 1.

The first exit out of Africa supposedly took place 1.9 million years ago, but it is disputed as to which species left first, *Homo habilis* or *H. erectus* (p. 27). This was due to the climate in Africa becoming drier, forcing humans to change their diet from a plant-based one to one richer in meat. Here, the authors state that the evidence is so scattered that some anthropologists claim the genus *Homo* first evolved in Asia and back-migrated into Africa.<sup>1</sup>

Between 1 million and 600,000 years ago, the first members of the genus *Homo* appeared in southern Europe, such as in Atapuerca in Spain, and as far north as a site near Happisburgh (pronounced “HAYSbra”) in Norfolk, England. The Atapuerca site had remains of two-horned rhinoceroses, hippopotamuses, bison, sabre-toothed cats, lynxes, bears, and hyenas—a very different fauna from that of today (p. 37).

What is peculiar is that the authors say that it took more than half a million years to reach these supposedly early southern European sites from Dmanisi, Georgia, in the Caucasus, which was



**Figure 1.** Fossil sites in Europe and Israel of different kinds of archaic and modern humans mentioned in this review. White (orange in illustration): *H. heidelbergensis*, grey (red in illustration): *H. sapiens neanderthalensis*, Black: modern humans.

initially occupied by humans, since the authors do not include the possibility that early humans crossed over the strait of Gibraltar, and that there was no land bridge at that time. Thus, it is presumed, without evidence, that there must be early human sites in central and Eastern Europe, waiting to be discovered.

The last common ancestor between Neandertals and modern humans was supposed to have lived at Gran Dolina Cave (at Atapuerca) (pp. 45–46), according to the authors, with prominent cheekbones and a brain larger than that of *H. erectus* (though not directly ancestral to Neandertals). However, the authors think the first Europeans represented an isolated migration out of Africa, and that they retreated out of Europe when the climate deteriorated. This is somewhat hard to believe, since, as stated previously, they first reached

the southern and western extremities of Europe after 500,000 years (p. 32).

The ancestor to Neandertals is thought to be *Homo heidelbergensis*, extending from Africa and Europe right across to even India and China, 600,000 years ago. In 1985, remains of *H. heidelbergensis* were discovered at Boxgrove, in southern England, along with 300 hand axes and the butchered remains of elephants, rhinoceroses, horses, bison, and red deer (p. 52). Along with these artefacts, a shoulder blade of a horse was also discovered, showing signs of having been pierced by a spear. Similar spears embedded in horses were also found near Schöningen, Germany, dated from 340,000 years ago (p. 53). This indicates that *H. heidelbergensis* was a skilled hunter instead of a marginal scavenger, another sign that early humans had advanced cognitive capabilities.

Another important site near Atapuerca is that of Sima de los Huesos

(‘pit of bones’ in Spanish), which contains 6,500 fossil remains from around thirty individuals, plus fossil remains of cave bears and other predators, such as lions, wolves, and foxes. Also found among these fossils was a red-coloured hand axe (p. 55–56). Sima de los Huesos is thought to be a burial ground. The fossils indicate that they were mostly right handed, which can be seen from their stronger right arms and legs, as well as the imprint of the shape of their brain inside the skull. Based on grooves left on their teeth, they also appear to have used toothpicks, indicating that they were aware of the necessity of dental hygiene (p. 57).

### The Neandertals themselves

Chapters four to six of the book deal with the expansion of the Neandertals over the world, from an evolutionary age of 250,000 years ago to 25,000

years ago, when they supposedly disappeared. This period allegedly began when the endocranial volume of the Neandertals reached an average that was larger than that of humans living today. For example, a Neandertal skull found in 1978 in Reilingen, Germany, showed an endocranial volume of 1,430 ml, with an estimated weight of 1.36 kg, whereas the brain volume of *H. heidelbergensis* ranged between 1,100 and 1,350 ml, with an estimated weight of 1.05–1.28 kg (p. 77). Besides this, Neandertals had a prominent ridge above the eyes, broad noses, and large jaws, with no chin, as well as an occipital torus and a supraorbital fossa. Their teeth were also found to be worn down (p. 77–78).

Having such a large brain, even larger than that of modern humans, makes it hard to deny that Neandertals were intelligent. One of the main themes of the book is that it describes in detail certain areas of evidence which indicate that Neandertals had cognitive capabilities quite like those of modern humans.

For example, a pile of concentrated mammoth and rhinoceros bones was found underneath a cliff overhang at La Cotte de St Brelade on what is now the island of Jersey, but was then a peninsula of Normandy. Researchers speculate that this could have been the end of a ‘drive lane’, similar to what some American Indians use when funnelling their prey in the direction of, and over, a cliff. These Indians plan a route in which they drive their prey, bursting forth at certain strategic points to keep the animals moving. Such evidence indicates that Neandertals could have been capable of forward planning, whereby they choreographed their moves when hunting animals (p. 80–81).

Many primate and bird species are capable of using simple tools for certain purposes, but higher intelligence is manifested in the way in which Neandertals used special tools to make other

kinds of tools. Such tool-making tools were used to strike flakes off of a stone core, flake by flake, until a sharp edge was produced, which could be used as a spear tip. The French archaeologist François Bordes (aka Francis Carsac, 1919–1981) classified Neandertal tools into 63 tool types, 21 of which were a variety of ‘side scrapers’, which consisted of long blades or flakes which had been continuously retouched (p. 96). Furthermore, there is recent evidence that Neandertals used pendants, pigments, and adhesives to form composite tools (p. 155).

A larger brain implies a greater neocortex size, which was necessary for socialization. Neandertals could have possibly hunted in groups. The fact that their remains were found in caves suggests that they led social lives, which in turn also implied that they used language to communicate with each other. Language is supposed to have arisen at a surprisingly early evolutionary age of some 500,000 years ago (p. 101), or even earlier, with *H. heidelbergensis*. Neandertal remains found in 1982 at Kebara, Israel, dated to 60,000 years ago, included a modern-looking hyoid bone, which is an essential component of vocal architecture (p. 115). Neandertals also had a copy of the FOXP2 gene in their genome (p. 170), with a sequence that is exactly the same as that of modern humans, which is necessary for the fine motor skills, coordination, and executive function needed for producing a large variety of sounds during speech. Mutations in the FOXP2 gene lead to motor-related speech problems.<sup>2</sup>

One of the areas where Neandertals and modern humans mixed was in the Middle East, based on fossils and what strongly appear to be burial sites in Israel, such as Qafzeh and Skhul, where modern humans were buried, with an evolutionary age of 90–135,000 years. Neandertal remains from Amud and Kebara, Israel, were

were shown to have an evolutionary age of only 50–60,000 years ago. In fact, the supposedly last living Neandertal, dated at 20,000 years old, came from Tabun, Israel. These dates overturn the idea that modern humans came later than Neandertals whom they conquered.

Another characteristic of both modern humans and Neandertals is what kind of shelter they used, and how they cared for their dead. As mentioned, Neandertal remains have been found inside caves; this would indicate a desire to preserve the remains of the deceased, as compared to that of animals, who merely leave their dead out in the open. The cave at Atapuerca is not necessarily an example of intentional burial, since the remains were not buried in a grave, but were deposited down a long shaft. However, recently, a number of Neandertal burial sites have been discovered, accompanied by ornamentation, usage of pigments, and intentional burial with grave goods.<sup>3</sup>

Blombos Cave, in South Africa, contains artefacts dated to an evolutionary age of 100,000 years, in the form of ornaments, such as mollusk shell beads, fishing paraphernalia, and items used in stone tool manufacture. Other ornaments include bird talons. What is interesting is the presence of red ochre in this cave, as well as what appeared to be a painting tool kit, and a processing workshop. Red ochre painting was also discovered in a cave in Gibraltar in a crosshatch fashion, the first Neandertal ‘hashtag’. Shanidar Cave in Iraq contained remains of ten Neandertals, one of which displayed signs of partially healed wounds caused by some sort of trauma. Another Neandertal individual had been intentionally buried, and the grave covered by ornamental flowers. Thus, art and ornamentation could have also been part of Neandertal culture and society.

### The decline and disappearance of the Neandertals

The authors describe the decline of the Neandertal period broken down to three time periods. These time periods are said to have spanned an evolutionary age of 60,000 to 45,000 years ago, when the Neandertals expanded their range during a mild, yet variable, interglacial period. Geographically, Neandertals had also extended into western Asia, and even into southern Siberia. Many researchers qualify the Denisovans, a species known solely from its DNA, as a closely related sister group of the Neandertals.<sup>4</sup> The second period was allegedly from 45,000 to 37,000 years ago, when modern humans arrived in Europe, and our range overlapped with that of Neandertals. The last period is said to have been from 37,000 to 25,000 years ago, with the spread of the so-called Gravettian culture, showing an influx of new kinds of people (pp. 133–136).

Previously, the Aurignacian tool industry, which itself had replaced the characteristically Neandertal Mousterian industry, had included improved blade production using soft-hammer percussion, and more sophisticated stone tools with blades, which had also involved expanded trade networks, implying that different Neandertal populations kept in contact with each other.

There are more signs indicating the higher intelligence of Neandertals from these time periods. Phytoliths, starch granules, and proteins from Neandertal dental calculus indicates that they consumed plants, such as pine nuts, forest moss, poplar bark; mushrooms such as split gill; as well as plant fungal pathogens.<sup>5</sup> Edible grass seeds, charred legumes, and nuts were found at caves in Israel and Gibraltar (Gorham’s Cave).<sup>6</sup> Poplar contains the natural pain-killer salicylic acid, indicating knowledge of medicinal

plants and some knowledge of plant taxonomy.<sup>6</sup>

Genetic interbreeding between modern humans and Neandertals caused certain genes to intermix between these two types of humans (p. 177). Modern humans are held by some evolutionary geneticists, such as Svante Pääbo from the Max Planck Institute for Evolutionary Anthropology to have received genes from Neandertals, such as those involved in the immune system, which possibly protected against some illnesses, as well as genes which heighten the risk for type 2 diabetes, as well as genes which influence hair and skin colour.<sup>7</sup>

### Interpretation of the book from a creationist perspective

According to the well-known saying, if it looks like a duck, swims

like a duck, and quacks like a duck, then it most likely is a duck. Basically, if an archaic form of human displays so many signs of social, cognitive, and cultural abilities and characteristics that are shared with humans, then this is strong evidence that it is also human, a member of the human holobaramin. Table 1 lists 19 such characteristics, all described in the book as being shared by Neandertals and humans. Such marks of higher intelligence include the making and usage of over sixty different kinds of tools, burial of the dead, language, symbolism, and complex hunting patterns, and possible use of snares.<sup>8</sup>

The authors separate Neandertals from modern humans based on their special morphological characteristics, despite the fact that they were able to reproduce together, as evidenced by 1–4% of DNA present in the genomes

**Table 1.** Cognitive characteristics shared by Neandertals and modern humans mentioned in the book

Characteristic	Note
Burial of dead (p. 105)	
Cared for the disabled (p. 149)	
Used medicinal plants (p. 152)	Implies knowledge of plant taxonomy
Dental hygiene (p. 57)	Use of toothpicks
Complex hunting pattern of large animals (p. 81)	
Spoken language (p. 101)	
Created art and decoration (p. 154)	Usage of symbolism, abstract thought
Harvested sea food (p. 13)	Marine navigation
Used clothing and fire (p. 178)	
Created and used sixty-three types of tools (p. 96)	
Usage of tools to create other tools (p. 88)	
Creation of composite tools (p. 155)	
Trade networks (p. 156)	
Majority right-handedness (p. 148)	
Repetitive muscle actions (p. 148)	
Music (p. 155)	Use of flutes
Cannibalism (p. 39)	
Quasi-global geographical distribution (p. 129)	
Survival in harsh climates (p. 178)	

of modern humans.<sup>9</sup> Furthermore, there is evidence from fossils of individuals showing mixed characteristics between Neandertals and modern humans. One such example is that of a four-year-old child buried with pierced shells and red ochre in Abrigo do Lagar Velho. Dental proportions, certain mandibular characteristics, diaphyseal curvature, and pubic proportions align with those of modern humans, whereas femorotibial lengths and diaphyseal robusticity suggest that it is Neandertal.<sup>10</sup> Another example of a recently found fossil hominin showing mixed characters is a set of skull remains from Jebel Irhoud, Morocco, dated to an evolutionary age of 315,000 years.<sup>11</sup> Neandertal characters include an elongated braincase. However, most of the facial characteristics resemble those of modern humans, such as a relatively short and retracted face, weak brow ridges, as well as the reduced dentition resembling that of early modern humans.<sup>12</sup>

Furthermore, many creationist studies have indicated that Neandertals and modern humans belong to the same holobaramin, based on both cranial and post-cranial characteristics.<sup>13</sup> Modern humans, Neandertals, and their direct ancestors display lower genetic diversity than the great apes, indicating that they have undergone a demographic bottleneck in the recent past,<sup>14,15</sup> similar to modern humans. This means that humans could have been morphologically diverse before this demographic bottleneck, which could correspond to the dispersion after Babel, since at this time humanity broke up into smaller people groups. Furthermore, there are some human fossils showing mixed characteristics from both modern humans and Neandertals.<sup>10</sup> This means that these two groups interbred with each other, so were members of the same created kind, and that their individual genetic

characteristics influenced the hybrid morphology of their offspring.

What is quite anomalous about the Neandertals is their geographic distribution. The remains of both Neandertals and modern humans (as well as erectines and *H. heidelbergensis*) have both been found in Europe and Asia, which is a quasi-global distribution. Neandertal remains have also been found in Africa.<sup>16</sup> Some researchers even believe that the Denisovans showed signs of genetic admixture into 33 populations from southeast Asia and Oceania<sup>17</sup>. The assertion that the authors make, that it took 500,000 years for Neandertals to reach Spain from Dmanisi in the Caucasians, can be measured based on modern history. It is known, for example, the seven Hungarian tribes came into the Carpathian Basin from the ancient homeland, Magna Hungaria (an area of land north of the Caspian Sea) within only several hundred years, which is roughly half the distance between Dmanisi and northern Spain, where Neandertal remains were found.

In summary, we can conclude that with scientific advances made in anthropology and with more and more recent discoveries made over the past 150 years, the way Neandertals have been viewed according to evolution has changed dramatically. There are some variations in morphology, quite possibly due to a higher pre-Flood variation. But instead of primitive, brutish animals, half-way between animals and humans, we can state with high enough confidence that Neandertals are the same species as modern humans, and part of the human holobaramin.

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