

# G02: Set in Stone

## The long way round

WC 2030

Just over half a century ago, on 21 November 1953, and 40 years after his “discovery” in a Sussex gravel pit, so-called Piltdown Man was officially exposed as a hoax. The man given the “credit” for the discovery of the apparently fossilized remains of what was hailed as a “missing link” in Britain was Charles Dawson who may or may not have been responsible for the forgery. “Piltdown Man” was not proof of Darwin’s *Descent of Man*, but a cleverly adapted and stained 500 year old human cranium coupled with the jawbone of an orangutan.

The reasons such a hoax could be perpetrated in the first place and in the second, sustained for so long, are a lesson to us all: despite the skeptical warnings of many noted scientists, other scientists and certainly the general public and the media simply “wanted” Piltdown Man” to be genuine. National pride demanded it:

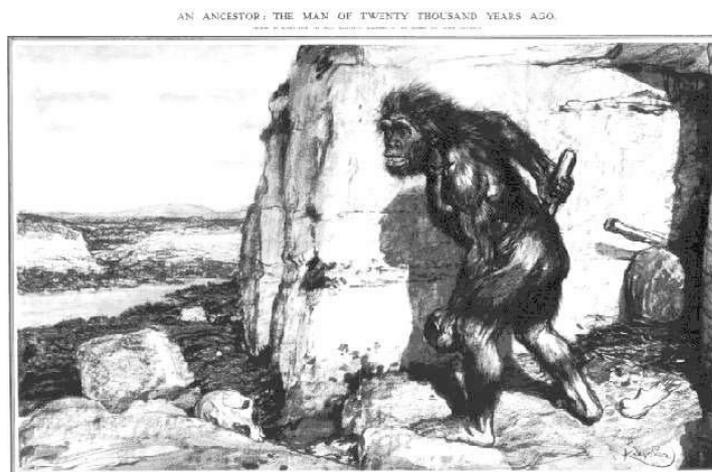


fossilized remains of hominids had been found in both France and Germany, but until “Piltdown Man” was announced at the Geological Society of London in December 1912, not even an antediluvian tooth had been found in Britain.

*Excavating the Piltdown gravels in 1911, with Dawson (right) and Smith Woodward*

Unfortunately for British pride, we can be much more certain about the *bona fides* of those foreign finds. They were the fossilized remains of what is now officially

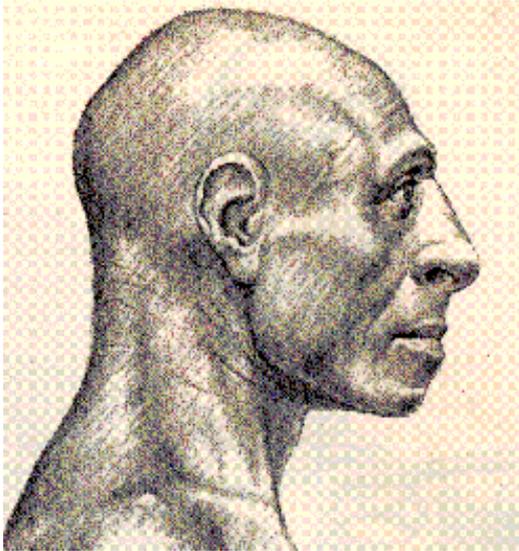
called *Homo neanderthalensis*, the first discovered by Johann Fuhlrott in 1856 in the Neander Valley in Germany (from which it takes its name), and the second at La Chapelle-aux-Saints, discovered in France in 1908.



*An Ancestor: the Man of Twenty Thousand Years Ago - L'Illustration & Illustrated London News, 1909.*

From the moment of his discovery, Neanderthal Man has been portrayed as a shambling brute, more King Kong than Fred Flintstone. So for example, in 1909,

both *L'Illustration* and *The Illustrated London News* published a purported representation by artist Frantisek Kupka of what they called “*An Ancestor: the Man of Twenty Thousand Years Ago*”



*Modern reconstruction of H. neanderthalensis*

Modern research shows that Neanderthal Man was much closer to our kind of humans than to the apes, and while he was of a sturdier build and had a bigger nose, he was not all that “brutish” by our standards. We will come back to Neanderthal later, but for the moment, this modern reconstruction shows what he would perhaps have considered his best profile!

## The march of the hominids

Neanderthal was not by a long chalk the only close relative to modern man. A whole family of what are called “hominids” have been discovered over the years, or rather, fragments of their fossilised bones have been unearthed and arranged by scientists into a much-debated “family tree”.



In his excellent web page directed at counteracting Creationist misrepresentations of early man and his antecedents, Jim Foley.<sup>1</sup> says that

*The word "hominid" refers to members of the family of humans, Hominidae, which consists of all species on our side of the last common ancestor of humans and living apes*

He goes on to give useful details and proposed dates for many of the fossilized remains, including the famous “Lucy” (named after the Beetles’ song), as well as my favourite, the so-called “Java Man” which, when I did Physical Anthropology back in 1955 was called *Pithecanthropus erectus* but has since been re-classified as a *Homo erectus*. This was discovered by Eugene Dubois in 1893 in the bank of the Solo River, near the city of that name, in Central Java. Its age is uncertain, but generally thought to be about 700,000 years (700 KYA) ago.

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<sup>1</sup> See Jim Foley’s page on Fossil Hominids at <http://www.talkorigins.org/faqs/homs/> and the older one at <http://www.snowcrest.net/goehring/a2/primates/fossils.htm>

The oldest known hominid or near-hominid species found to date is *Sahelanthropus tchadensis* named in July 2002 from fossils discovered in Chad in Central Africa. This fossilised almost-complete cranium and several teeth has been dated at between 6 and 7 million years old. It is not known if this creature could walk upright (was bipedal) but he — the cranium was christened *Toumai* (“*Hope of Life*”) — had only a very small brain, around 350cc.<sup>2</sup> However, Toumai is thought to be close to the common ancestor of humans and chimpanzees because it was about the time he was alive that chimps and hominids chose different branches of the evolutionary tree.

There have been many other finds in Africa of fossilised bones belonging to different hominid species — too many to catalogue here — which, as Foley<sup>3</sup> says show

..... a number of clear trends (which were neither continuous nor uniform) from early australopithecines to recent humans: increasing brain size, increasing body size, increasing use of and sophistication in tools, decreasing tooth size, decreasing skeletal robustness.

While most of us know that it is the size of our brains which set us apart from our remote ancestors, we are probably not all that clear about a couple of other features which would allow us to distinguish these remote hominids from our neighbours. One is body size: after the split from the chimpanzees there was a trend for hominids to grow taller, the oldest apparently being closer in size to the chimps they had left behind. And many of these early hominids were what is termed *robust*, that is, their bones were much heavier and thicker than more modern varieties, including ourselves, who are termed *gracile* in comparison.

However, whatever their brain size and vital statistics, all of these ancient genera of hominids, most of them called *australopithecines*, eventually became extinct. Despite the fact that some of those doomed hominids were still around when the genus *Homo* emerged, paleontologists have not been able to make the connection between an earlier hominid and our remote ancestor. There is a gap from about 3 MYA to 2 MYA which so far remains a kind of paleontological Dark Age.

### **The Advent of Man**

Since we don't know who was the first of our genus, we cannot say for certain when he — or she — first appeared. For many years scientists claimed that *Homo habilis* (or “handy man”) was the earliest in our line. He was dated at about 2.5 MYA, and was found in the Olduvai Gorge, in Tanzania in the early 1960s. More recently, it has been said that he is too much of a “mishmash of traits and

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<sup>2</sup> Foley cites Brunet M. et al: (2002): A new hominid from the upper Miocene of Chad, central Africa. *Nature*, 418:145-51., and Wood (2002): Hominid revelations from Chad. *Nature*, 418:133-5.

<sup>3</sup> Ibid.

specimens”, and that he does not show the body size and shape and the small teeth expected of a species of *Homo*.

The most likely candidate as the patriarch of our genus is *Homo ergaster* who, at about 2 MYA, already showed all the signs scientists asked of a true *Homo*. This places *H. habilis* back among the extinct *Australopithecines*.

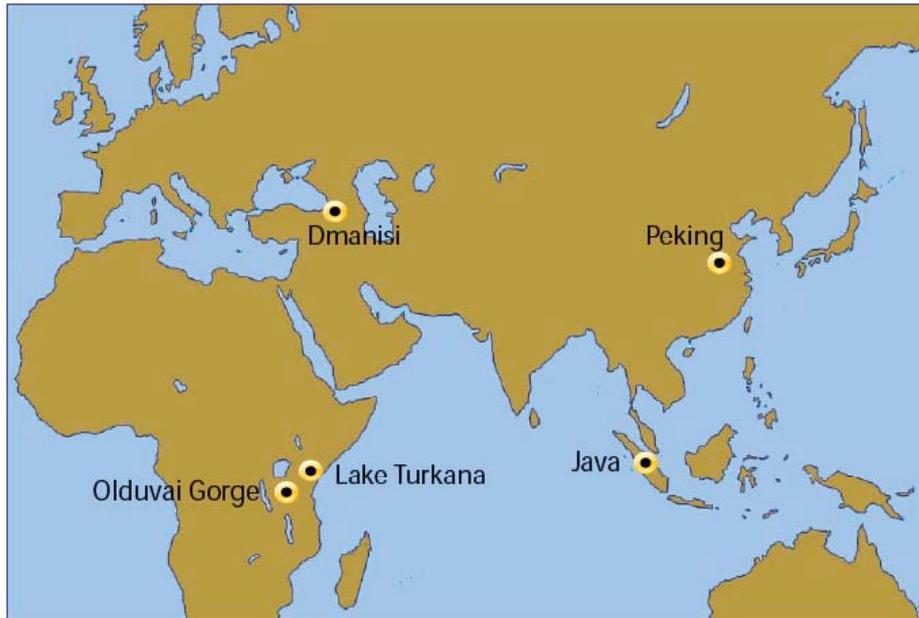
The earliest *H. ergaster* were found in Africa about 1.8 or 1.9 MYA, although the best-known, affectionately called “Nariokotome Boy” or “Turkana Boy”, dates from about 1.6 MYA. He died when he was still an adolescent, but his skeleton — which is the most complete skeleton ever found of a hominid — showed he would have grown to a size comparable with modern man. However, his brain was still smaller than ours.



Nariokotome Boy died in Africa but his species spread out over the world — they were the first species of Man to whom the “Out of Africa” scenario applied. There seems to have been a convention that *Homo ergaster* is the name applied to the species in Africa while where their remains have been found in other continents, they are labeled *Homo erectus*. The trend more recently seems to be to call them all *erectus* now and that is the name we will use from now on.

As well as Nariokotome Boy, there were several other well-known examples of *H. erectus* found around the world. One of these was the one I said was my favourite, so-called “Java Man” who was discovered in 1891. Another was “Peking Man” while others have been found fairly recently in Georgia. Some of these have been dated to a little earlier than the earliest African examples, suggesting that their larger bodies (ie, better able to withstand heat stress and dehydration) and their better stone tool kits allowed *H. erectus* to survive in a much wider range of habitats than previous hominids.

*Nariokotome Boy*, the almost complete skeleton of an adolescent *Homo erectus*.



*Sites of early Homo fossils 2.0–1.6 MYA, including sites outside Africa*

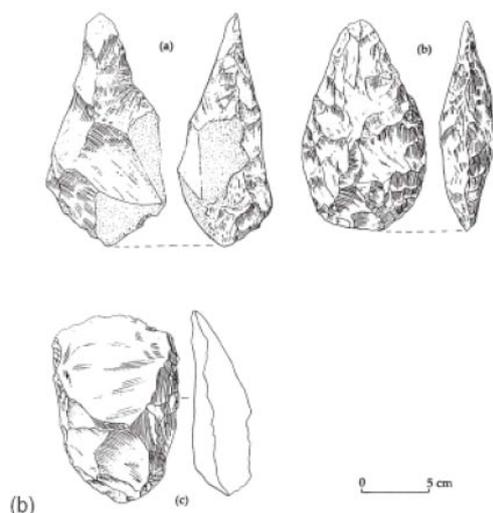
As it was, *H. erectus* seems to have survived in Java until around 27 KYA, which means that he was contemporary with modern humans, and certainly with those making their way through the region to Australia.



*Sites of later Homo fossils (dating to 800–30 KYA), including the first modern humans. Sites are found in Africa, Asia, Australia and Europe, but not in the Americas.*

## Archaic humans in Europe

There have been a number of fossils of early *Homo* species found in Europe. Because it was found near Heidelberg in Germany, one of the earliest is known as *H. heidelbergensis*, and is represented by a single jaw-bone which has been dated at ~500 KYA. And, happily for the British, after losing Piltdown Man, a tibia dated at about the same age (~500 KYA) has been found at Boxgrove in England. Another sub-species called *H. antecessor* was found at Atapuerca in Spain<sup>4</sup> and was dated at ~780 KYA.... All of these — and there have been others — are probably varieties of *H. erectus* which appears to have been the most likely ancestor of *H. sapiens* about 1 MYA. Archeologically, they are associated with what is called Acheulean culture

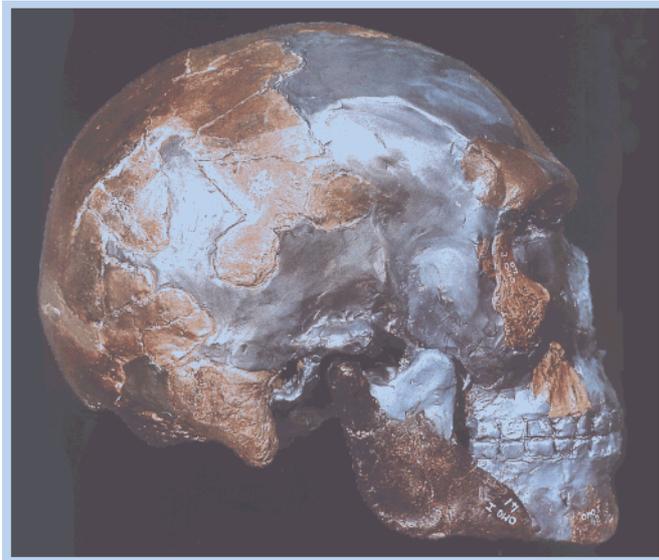


*After ~ 1.6 MYA, Acheulean tools, including bifaces, are found associated with archaic Homo. They continued to be used until ~ 150 KYA.*

## Anatomically Modern Humans

Generally abbreviated to AMH, such people are hard to define. For a start, there is no “type specimen” for the AMH — this is usually one of the early finds, for example, the jaw bone of *H. heidelbergensis*, which is thereafter used as the standard against which other fossils are compared and identified. Generally speaking, however, two criteria are used to help decide if a specimen is AMH or one of the “archaic *sapiens*”. These are

<sup>4</sup> The 2008 find at Atapuerca of a small part of a jaw bone and associated stone tools and animal bones, has been claimed as the oldest “human” remains. Dated to about 1.3 MYA, it has been hailed as an earlier form of *Homo antecessor*, or Pioneer Man, possibly a common ancestor to Neanderthals and modern humans, and is described as similar to remains found at Dmanisi in Georgia. <http://ap.google.com/article/ALeqM5he2rIkKpgdLCA5D3Dp-N7IXcJyIgD8VL98TO0>



- How big and rounded is the skull?
- To what degree does the face slope backwards? — that is, does the mandible thrust forward and/or the forehead slop back at a pronounced angle?

*The earliest anatomically modern human cranium ('Omo I'). Modern features include the high forehead and developed chin; ( the gray portions are reconstructed). This specimen from Omo-Kibish in southern Ethiopia provides crucial evidence that modern human anatomy had*

*developed in Africa by ~ 130 KYA.*

AMH are first found in Africa ~130 KYA and for reasons not yet fully understood, spread out from Africa to the rest of the world ~ 50- 85+ KYA. Or, at least, that is one theory.

Until recently, it has been agreed that modern humans evolved from predecessors in different regions of the world. Such a theory, of course, fitted in nicely with 19<sup>th</sup> and 20<sup>th</sup> Century beliefs in race. So it seemed obvious that the Mongoloid Race evolved from a fossilized ancestor unearthed near Peking.... Or, the people labeled “Deutero-Malays” — the people of the Malay Peninsula and the islands around Java, had evolved from Java Man.....

Genetics, however, have killed off not only this multi-regional theory about the descent of man but also any notion that separate “races” exist: all modern humans are demonstrably *H. sapiens* descended from the same ancestor, some of whose descendants remained in Africa while others spread out over the rest of the earth.

It is that diaspora we will look at in the next few sessions, paying particular attention to how and when modern humans reached Australia, Japan and — because most of us are descended from those early settlers — Europe in the Pleistocene. Because, as we already have seen, it is mtDNA which allows us to look further back in time than y-chromosome DNA, for the most part it will be our mothers we will be tracking and not our fathers in these earlier peregrinations. “The Migrations of Man”, in this case, is a bit of a misnomer although, obviously, men also went along for the ride.....