

Oldest modern human fossil discovered in Ethiopia

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A team of 45 scientists from 14 different countries led by Professor Tim White from Berkeley University has uncovered and assembled three fossilised skulls from Ethiopia that provide the oldest record of modern humans. The fossils give strong support to what is known as the Out of Africa theory: that humans first evolved in Africa and then migrated to other regions and ultimately the entire globe.

The landmark discovery was made public in the scientific journal *Nature* on June 12. The find was made in 1997 in an arid valley close to the Middle Awash River near the village of Herto, 225 kilometres northeast of Addis Ababa. The three skulls—two adults and one child—were so fragmented that it took five years to piece them together and were dated at 160,000 years old using the Argon-Argon method. The dating was quite precise as the fossils were found between two layers of volcanic ash.

Scientists regard the features as just within the range of modern humans, but including more primitive traits such as a slightly larger brain case. White described the skulls as “near-modern”. The fossils have been classified as true humans, that is *Homo sapiens*, but the sufficient differences from modern man to assign them to a new subspecies—*idàltu*, the word for “elder” in the local Afar language. Our subspecies is *Homo sapiens sapiens* or wise ape.

The fossils were found along with the skull pieces and teeth of several other humans, the bones of butchered hippopotamuses and buffalos and over 600 stone tools. The animal bones had been crushed in order to remove the marrow. The tool kit was from a transitional period between the early Stone Age, characterised by a predominance of hand axes, and the later flake-dominated tools of the Middle Stone Age.

The tools indicated “these were people using a

sophisticated stone technology,” White explained. They were “using chipped hand axes and other stone tools, they were butchering carcasses of large mammals like hippos and buffalo and undoubtedly knew how to exploit plants.”

The skulls showed signs of being used for ritual purposes. The child’s skull was worn smooth, as if from constant handling, probably as part of some ceremony. One of the adult skulls has a set of parallel scratch marks similar to those made by tribal people in New Guinea, who preserved and worshipped the skulls of their ancestors.

Unusually, the crania were found without any other bones, including jaws, another indication they were probably carried around for ritual purposes. White explained that the people “were moving the heads around on the landscape. They probably cut the muscles and broke the skull bases of some skulls to extract the brain, but why, whether as part of a cannibalistic ritual, we have no way of knowing.”

The age of the *Homo sapiens idàltu* fossils gives an insight into a period completely outside the range of earlier discoveries. Previous human fossils were only from about 100,000 years ago. Their dating was imprecise and the fossils incomplete. The latest discovery is especially significant as the age of the fossils fits with the predictions made by the Out of Africa theory for the likely emergence of modern humans.

Although anthropologists for some time considered Africa the most likely region for the evolution of the first humans, the Out of Africa theory dates from the work of Mark Stoneking, Allan Wilson and Rebecca Cann in 1987 at Berkeley University. Using modern genetic techniques, they compared DNA sequences from African, Asian, Australian, Caucasian and New

Guinean populations. They analysed genetic variations to reveal a family tree, which had two branches—the central and oldest branch originating in Africa and a later split forming a second branch that spread out of Africa into Europe and Asia.

The theory proved controversial. Other scientists held to a multiregional theory: that the more primitive *Homo erectus* originally evolved in Africa and then migrated to Europe and Asia about one million years ago, where the largely separated populations evolved into modern man. The multiregional theory holds that racial traits can be traced back to our *Homo erectus* ancestors, although its adherents also allowed for a limited exchange of genetic material between the evolving populations in Africa, Asia and Europe.

The age of the Herto fossil find fits within the 100,000- to 200,000-year timeframe predicted by the Out of Africa theory for the emergence of modern humans. White noted: “In a sense, these genetic findings were impossible to seriously test without a good fossil record from Africa. Back in 1982, when ... [Cann and Wilson] were using molecules to study evolution, they concluded that the common ancestors of all modern humans lived in Africa 100,000 to 200,000 years ago. For the last 20 years we’ve been looking for good, well-dated fossil evidence of that antiquity.”

The Out of Africa theory also predicted that the migrating *Homo sapiens* displaced earlier neanderthal populations which inhabited Europe, the Near East, Central Asia and probably western Siberia. The neanderthals, whose features were more primitive than modern humans, lived from 200,000 to about 30,000 years ago, when they became extinct. Whether neanderthals were driven out by modern man or form a part of the evolution of modern man has been hotly debated.

The three Ethiopian skulls were found to have no neanderthal features at all. Berkeley University professor F. Clark Howell commented: “These fossils show that near-humans had evolved in Africa long before the European neanderthals disappeared. They thereby demonstrate conclusively that there was never a neanderthal stage in human evolution.”

Proponents of the multiregional theory consider neanderthals as an earlier primitive stage in the development of modern Europeans. Dr. Milford Wolpoff of the University of Michigan, a leading

multiregionalist, dismissed the significance of the latest discovery claiming that, “all the specimens show is that there was a trend of evolution in Africa toward modernity, just as there was in China and Europe”.

While the latest fossil discovery may not have provided the definite answer, it certainly adds weight to the Out of Africa theory and, in doing so, confirms the great potential of genetic analysis as a tool for evolutionary investigation. The debate—Out of Africa versus Multiregional—will undoubtedly continue as further investigations shed more light on the diverse and complex nature of human evolution.



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