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Becoming Human: The Origin of Stone Tools

Archaeologists are still debating when hominids started making stone tools and which species was the first toolmaker

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Oldowan choppers are among the oldest-known type of stone tools. Image: Didier Descouens/Wikicomons

“[Becoming Human](#)” is a series of posts that periodically examines the evolution of the major traits and behaviors that define humans, such as big brains, language, technology and art.

For decades, anthropologists believed the ability to use tools separated modern humans from all other living things. Then scientists discovered chimpanzees use rocks to hammer open nuts and twigs to fish out termites from mounds. And then they learned tool use wasn't even limited to apes. Monkeys, crows, sea otters and even [octopuses](#) manipulate objects to get what they want. Yet there's no denying humans have taken technology to a completely different level. Given that our high-tech tools are one of our defining features, you'd think

anthropologists would know when hominids began modifying stones to make tools and which species was the first to do so. But there's still much to be learned about the origins of stone tools.

The oldest-known type of stone tools are stone flakes and the rock cores from which these flakes were removed. Presumably used for chopping and scraping, these tools are called [Oldowan](#), named for Tanzania's Olduvai Gorge, where they were first recognized. [Louis Leakey](#) first found roughly 1.8-million-year-old tools in the 1930s. But it wasn't until the 1950s that he found hominid bones to go along with the Stone Age technology. In 1959, Leakey's wife, Mary, discovered the species now known as *Paranthropus boisei*. With its giant teeth, massive jaws and relatively small brain, the hominid didn't look very human, but the Leakeys concluded *P. boisei* had to be the site's toolmaker—until the 1960s, when they found a slightly larger-brained hominid called *Homo habilis* (meaning “the handy man”). This more human-like hominid must have manufactured the tools, the Leakeys thought. But *P. boisei* and *H. habilis* overlapped in time (roughly 2.4/2.3 million years ago to 1.4/1.2 million years ago), so it's been hard to definitively rule out the possibility that both types of hominids were capable of making stone tools.

It turns out neither species is probably eligible for the title of earliest toolmaker. In the 1990s, [archaeologists recovered even older Oldowan tools at the Ethiopian site called Gona, dating to 2.6 million to 2.5 million years ago](#). Identifying the toolmaker is tricky because no fossils have been found in association with the artifacts, and there weren't many hominid species present in East Africa during this time period to pick from. [Paranthropus aethiopicus](#) is one possibility. But so far only one skull and a few jaws of the species have been found in one area of Kenya, so not much is really known about the hominid.

A better choice might be *Australopithecus garhi*. The species was discovered at a site about 55 miles south of Gona, in association with animal bones that display the characteristic markings of butchering—indirect evidence of tool use. Again, not much is known about *A. garhi*, as scientists have only found one skull, some skull fragments and one skeleton that is tentatively considered part of the species.

Even these tools, however, are probably not the oldest stone tools, say Sileshi Semaw, director of the Gona Paleoanthropological Research Project, and the other researchers who found the Gona artifacts. The tools at this site are so well made, requiring such precision, that the anthropologists suspect that by 2.6 million years ago hominids had been making stone tools for thousands of years.

In 2010, a group of archaeologists claimed the origins of stone tools went back another 800,000 years. Shannon McPherron of the Max Planck Institute for Evolutionary Anthropology in Germany and colleagues announced [they had discovered signs of butchering at another Ethiopian site, dating to 3.39 million years ago](#). The rib from a cow-sized hoofed mammal and the leg fragment from a goat-sized mammal contained microscopic scratches indicative of cutting and scraping to remove flesh and pounding to break open a bone to retrieve marrow. The only hominid species around at that time was *Australopithecus afarensis*, Lucy's species. McPherron's team suggested tools have not yet been found with Lucy's kind because early tool use was probably not as extensive as it was later on. So hominids were probably making fewer tools and thus leaving behind fewer artifacts for scientists to unearth.

The case for 3.39-million-year-old stone-tool manufacturing is controversial. McPherron and colleagues acknowledge that hominids didn't necessarily make tools to butcher their prey; they could have used naturally sharp rocks. Other researchers doubt any butchering even happened at all. Manuel Domínguez-Rodrigo of Complutense University of Madrid in Spain and colleagues say [the cut marks may actually be trampling damage or scratches from the abrasive sediments the bones were buried in](#). Further research is needed to confirm the marks were actually made by hominids.

Although the exact timing of when hominids began making stone tools is still unsettled, at least one thing is clear: Big brains weren't required to make simple stone tools. The evolution of bigger brains comes at least a million years after our ancestors invented the Oldowan toolkit.

About Erin Wayman



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