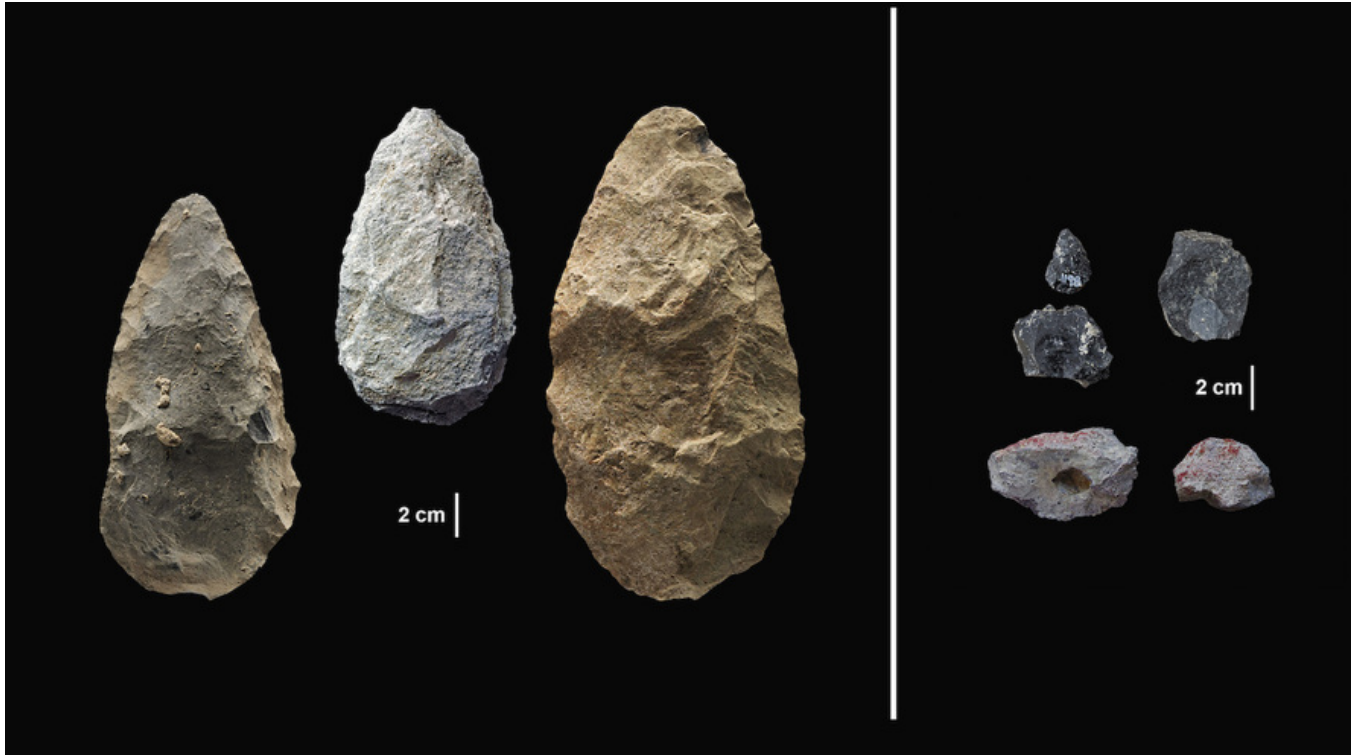


Stone tools offer clues about the lives of early humans

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This image shows artifacts found in southern Kenya's Olorgesallie Basin. For thousands of years, people living there made and used large stone-cutting tools called hand axes (left). At right are more sophisticated tools, found in the same area, which were carefully crafted and more specialized than the large, all-purpose hand axes. Photo from the Smithsonian - Human Origins Program via AP

NEW YORK, New York — Figuring out how our ancient ancestors lived is no easy task. Early humans did not leave behind written records for historians to study.

Researchers do their best to learn about the beginnings of our species using clues that can still be found many thousands of years later.

Stone tools are an especially useful kind of clue. Recently, a new batch of stone tools was discovered. Researchers studying them say they can tell us a great deal about how early humans developed. In particular, the evidence suggests that ancient humans used to build relationships with other groups in different places.

Scientists cannot be sure whether the objects were made by members of our species, known as *Homo sapiens*. If not, the tools might have been made by a relative of *Homo sapiens* that has since died off.

It is certainly possible that the tools were made by *Homo sapiens*, though. They are about 320,000 years old, which is just a bit older than the earliest known *Homo sapiens* fossils. They were found in Morocco in 2017.

Toolmakers Likely Traveled Great Distances

The newly discovered tools show "foundations of the origin of modern human behavior," says Richard Potts of the Smithsonian Institution. He is one of the researchers who took part in the project. Some of its findings are discussed in three papers released last month by the journal *Science*.

The tools are much smaller and more useful than older stone tools found in the same area in southern Kenya. Some of the newly found tools were made of a volcanic rock called obsidian, which did not come from the area. This suggests that the toolmakers traveled to get it.

If they did indeed travel far and wide in search of stone to be used to make tools, they must have often come upon other communities. They most likely built relationships with these communities. Otherwise, they might have gotten in trouble when they showed up on their land.

"I don't think you would last very long if you went around grabbing someone else's obsidian without their permission," said Alison Brooks. She is a researcher and professor at George Washington University in Washington, D.C., and another author of the papers.

Middle Stone Age High-Tech Tools

The newer style of tools, which is known as Middle Stone Age technology, used smaller stone flakes for scraping and cutting. It required a lot more planning and intelligence to break off chips of stone that were the right size and shape, Potts said. That indicates that the beings that made the tools were fairly advanced.

Some of the stones that the researchers examined were carved into small, sharp points. On the other side, they were shaped so they could be attached to something like a spear.

Potts said that the new tools were not necessarily the first of their kind. Still, they tell us about what was going on in at least one part of Africa at the time.

The First Social Network

The older stone tools found in the same area were made somewhere between 500,000 years and 1.2 million years ago. After that, there is a gap in the record because much evidence has been lost over time. Records appear again about 320,000 years ago, when "we have a total replacement" of the old tool style by a more advanced tool, Potts said.

Careful study showed much of the obsidian was from places about 15 miles to 30 miles away in five different directions. So that means the toolmakers must have been able to keep a kind of map of their surroundings in their minds, Potts said.

The volcanic rock was brought in as a raw material and then turned into the sharp-edged chips. The rock was evidently valuable, and so it might have been traded, Potts added.

He also said the toolmakers might have created a wide-ranging social network in which different communities shared and traded with each other. This would have protected them against the unpredictability of water and food supplies caused by changes in the natural environment.

"Networks are the way that hunter-gatherers protect themselves against disaster in the future," Brooks said.

"Part Of A Group"

The researchers also found evidence of efforts to make a kind of red paint. Two rocks appeared to have been ground and chopped, making a bright red powder. The powder could have been used as a base for paint. Some other rocks contained manganese, which has often been used to make black paint.

The researchers do not know what the toolmakers might have used their paints for. For early humans, the use of color was "basically advertising that you're part of a group," Potts said. It is similar to the ways colors are used on flags and uniforms.

Outside experts have said that the new research is significant.

Another researcher, Sarah Wurz of the University of the Witwatersrand in South Africa, said that the three new papers add to our understanding of our species' origins.

Eric Delson, who teaches at Lehman College in New York, agrees. He said that the new findings make it clear that, around 300,000 years ago, human beings in Africa were learning and advancing in important ways.