

In ancient Arabia, some tools were created to show off skills

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This rock shelter was part of the excavation of the Manayzah site in Yemen.
Credit: Joy McCorriston

People living in southern Arabia some 8,000 years ago created intricate

stone weapons that were not just useful, but designed to "show off" their tool-making skills, a new study suggests.

Researchers from the French National Centre for Scientific Research (CNRS), The Ohio State University and the Max Planck Institute for the Science of Human History excavated and examined [projectile points](#)—such as spearheads and arrowheads—created during the Neolithic period in what is now Yemen and Oman.

They found that the Arabians independently invented a process to create projectile points—called fluting—that was first used by people living in North America thousands of years earlier.

But there was one key difference between fluting as it was used in North America and the way it was used in Arabia, said Joy McCorrison, co-author of the study and professor of anthropology at Ohio State.

In North America, fluting was used just to make the arrowhead or spearhead more functional. But in Arabia, people also used it to demonstrate their technical skills.

"It was like a peacock's feathers—it was all for appearance. They used fluting to show just how skilled they were at using this very difficult technology, with its heightened risk of failure," McCorrison said.

The study was published today in the journal *PLOS ONE*.

The scientists studied projectile points from two archaeological sites: Manayzah, in Yemen, and Ad-Dahariz, in Oman. McCorrison and a team from Ohio State oversaw the excavation in Manayzah, which lasted from 2004 to 2008.

Finding fluted points outside of North America was an important

discovery, said Rémy Crassard of CNRS, lead author of the study.



The sites of Manayzah (Yemen) and Ad-Dahariz (Oman) yielded dozens of fluted points. The Arabian examples date to the Neolithic period, about 8,000 to 7,000 years ago, at least two thousand years later than the American examples. Credit: Joy McCorriston, OSU

"These fluted points were, until recently, unknown elsewhere on the planet. This was until the early 2000s, when the first isolated examples of these objects were recognized in Yemen, and more recently in Oman," Crassard said.

Fluting involves a highly skilled process of chipping off flakes from a stone to create a distinctive channel. It is difficult and takes much practice to perfect, McCorriston said.

In North America, almost all fluting on projectile points was done near the base, so that the implement could be attached with string to the arrow or spear shaft. In other words, it had a practical application, she said.



Stone fluted points dating back some 8,000 to 7,000 years ago, were discovered on archaeological sites in Manayzah, Yemen and Ad-Dahariz, Oman. Until now, the prehistoric technique of fluting had been uncovered only on 13,000 to 10,000-year-old Native American sites. Credit: © Jérémie Vosges / CNRS

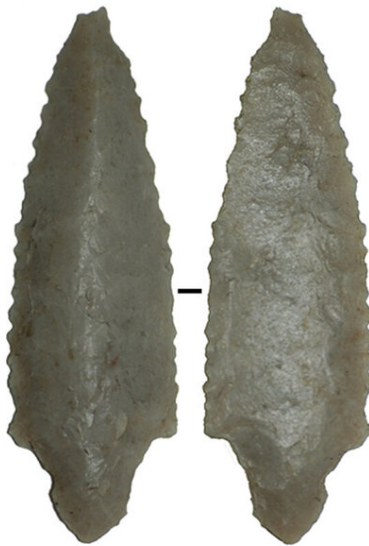
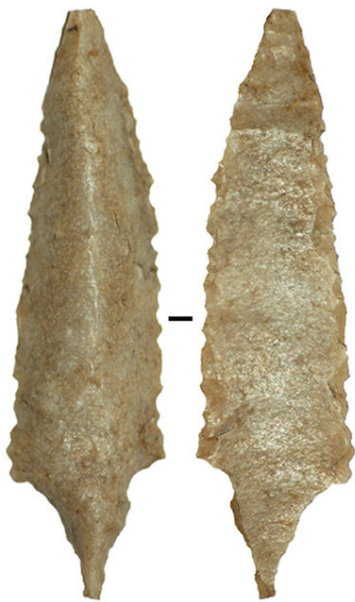
But in this study, the researchers found some Arabian points with fluting

that appeared to have no useful purpose, such as near the tip.

As part of the study, the researchers had a master technician in flintknapping—the shaping of stones—attempt to create projectile points in a way similar to how researchers believe the ancient Arabians did.

"He made hundreds of attempts to learn how to do this. It is difficult and a flintknapper breaks a lot of these points trying to learn how to do it right," McCorriston said.

The question, then, is why would these Neolithic people do this when it was so costly and time-consuming and didn't make the points more useful? In addition, they only used fluting on some points.



Fluting is a specific technique that involves the extraction of an elongated flake along the length of a projectile point, leaving a distinctive groove or depression at the base of the spearhead or arrowhead. Credit: Rémy Crassard, CNRS

"Of course, we can't say for sure, but we think this was a way for skilled toolmakers to signal something to others, perhaps that one is a good hunter, a quick study, or dexterous with one's hands," she said.

"It showed one was good at what one did. This could improve one's social standing in the community."

The findings suggested that while there were many similarities between the American and Arabian fluted points, there were also differences. The way that people performed the fluting in the two places was different, which is not surprising since they were separated by thousands of miles and thousands of years, McCorriston said.



Detailed technological analysis, backed up by stone tool experiments and replication by an expert modern flintknapper, illustrate the similarities between the American and Arabian fluting procedures. Credit: Jérémie Vosges, CNRS

Finding the fluted points in Arabia provides one of the best examples of "independent invention" across continents, said co-author Michael Petraglia of the Max Planck Institute.

"Given their age, and the fact that the fluted points from America and Arabia are separated by thousands of kilometers, there is no possible cultural connection between them," Petraglia said.

"This is a clear and excellent example of cultural convergence, or independent invention, in human history."

More information: *PLOS ONE* (2020).
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