

Smithsonian.com

Early Bow and Arrows Offer Insight Into Origins of Human Intellect

Tiny blades discovered in South Africa suggest early humans had advanced intelligence and modern culture 71,000 years ago

By [Erin Wayman](#)
smithsonian.com
November 7, 2012



Small stone blades from South Africa dating to 71,000 years ago may be the earliest evidence of bow and arrows. Image: Simen Oestmo

The bow and arrow is an ancient weapon—going back at least 71,000 years, a study published in *Nature* suggests. Archaeologists working at South Africa's [Pinnacle Point](#) cave site uncovered a collection of tiny blades, about an inch big, that resemble arrow points, likely belonging to prehistoric bow and arrows or spear-throwers. The researchers say the discovery is further evidence that humans (*Homo sapiens*) started to act and think like modern people early in their evolution.

The skeletons of *H. sapiens* appear in the fossil record by about 200,000 years ago in Africa. But when modern culture and cognition emerged is still an open question. Some anthropologists think the human brain evolved in tandem with the rest of the body, and culture built up slowly over time as technology advanced. Others have suggested there was a disconnect between physical and behavioral modernity, with some sort of genetic mutation roughly 40,000 years ago causing an abrupt change in how humans think. Still other researchers argue that incipient signs of advanced intellect appear early in the archaeological record but then disappear for thousands of years before reappearing. Needless to say, there's a lot of debate on this subject. (For a detailed discussion on the topic, check out the story I wrote in June for [Smithsonian.com](#)).

Kyle Brown of the University of Cape Town and his colleagues say the tiny blades that they found are signs of complex tool making. The tiny tools were created from [silcrete](#) stone that people had heated over a fire to make the raw material easier to work with before chipping the rock into blades. This suggests people had to follow a lengthy multi-step process to make the blades, which included gathering the stones, gathering fuel for the fire, heating the rocks and carefully cutting the stone into delicate blades. The shape of the blades looks like the shape of arrow tips found in more recent arrows, which led Brown and colleagues to conclude the blades were used in bow-and-arrow projectile weapons. That implies there were even more steps in the tool-making process, such as hafting the stone tips to a wooden shaft.

The blades aren't the only evidence that humans had advanced cognitive abilities as early as 71,000 years ago. Pigments, jewelry and other art found in South African cave sites dating to as many as 164,000 years ago suggest that early humans were capable of abstract or symbolic thinking. Some researchers view this ability as central to human intellect.

The new study, however, goes one step further. The researchers say the blades were found throughout a geological section of Pinnacle Point that spans roughly 11,000 years (71,000 to 60,000 years ago), indicating people could communicate complicated instructions to build intricate tools across hundreds of generations. This instance of long-term maintenance of a cultural tradition early in human history is evidence that the capacity for modern culture began early and slowly built up, Brown and colleagues say. Previous suggestions that complex culture came and went in the early days of humans is probably an artificial result, they say, because so few African sites have yet been excavated.

About Erin Wayman



Erin Wayman is a science and human evolution blogger for Hominid Hunting. She has M.As in biological anthropology and science writing.