

# Monkey 'tools' raise questions over human archaeological record

Capuchin monkeys in Brazil unintentionally produce rock fragments that resemble ancient stone tools.

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19 October 2016

## Rock-smashing monkeys

Capuchin monkeys in Brazil's Serra da Capivara National Park crack rocks and lick the resulting dust. In the process, they produce flakes similar to ancient hominins' cutting tools.

In January, archaeologist Tomos Proffitt was examining a set of stone artefacts brought to him by his colleague Michael Haslam. Some of the quartz pieces looked like sharpened stone tools made by human relatives in eastern Africa, some 2–3 million years ago.

But Haslam told Proffitt that the artefacts had been made in the previous two years by capuchin monkeys in Brazil. “I was pretty gobsmacked,” Proffitt says. “I did my PhD looking at hominin stone tools. I’ve learnt how to make these things. I was looking at this material, and it looked like it had been made by humans.”

A team led by Proffitt and Haslam, both at the University of Oxford, UK, now describes the artefacts in a paper published in *Nature* on 19 October<sup>1</sup>.

The capuchins make the fragments unintentionally while bashing rocks into dust, the researchers find. Some scientists say that the results call into question whether some stone tools have been incorrectly attributed to hominins — including 3.3-million-year-old artefacts from Kenya that are the oldest on record.

“This is a landmark paper,” says Susana Carvalho, a primate archaeologist also at Oxford. “These capuchins are, in fact, producing without intention something that has to be labelled as a stone tool.”

## Teasing out the tools

Several primate species have been observed using crude tools. When primatologist Jane Goodall described chimpanzees using sticks to gather termites, Louis Leakey famously responded: “Now we must redefine tool, redefine Man, or accept chimpanzees as humans”<sup>2</sup>.

And capuchin monkeys are among the most habitual tool-users in the animal world. In Serra da Capivara National Park in Brazil, wild bearded capuchin monkeys (*Sapajus libidinosus*) use rocks to pound nuts, to [dig holes](#) and even to exhibit sexual displays.

In 2005, scientists observed for the first time capuchins in the park wielding rocks in a peculiar way. Next to an eroding cliff, the monkeys picked up quartz rocks, repeatedly bashed them against another rock and then licked up the resulting dust. Proffitt speculates that the quartz could provide mineral supplements, improve gut health or merely feel nice on their tongues. “Why they lick it, we don’t know.”

Previous research on the quartz-dust-licking capuchins had examined the size and shape of the larger stones broken off<sup>3</sup>. Proffitt says that no one had ever collected the smaller pieces — until Haslam did so recently.

To Proffitt’s eye, many of those pieces resembled the kind of sharp ‘flakes’ first recovered by Leakey and his wife, Mary, in Olduvai Gorge, Tanzania, in the 1930s. Dating from about 2.5 to 1.7 million years ago, these ‘Oldowan’ stone tools were thought to have been made by striking a hammer stone against an anvil at a glancing angle, causing sharp flakes to break off from the hammer. (Cut marks on bones found nearby suggest that the hominins used the flakes to butcher animals.)

### A question of intent

About half of the flakes made by the capuchins bore the hallmarks of Oldowan tools called choppers, says Proffitt. One set of flakes seemed to have been broken off of the same hammer stone in succession, “something that’s only ever been associated with humans”, says Proffitt. Yet he emphasizes that the monkeys make the fragments unintentionally and “at no point do they use these flakes. They’re just hitting stones together”.

He does not think that the Oldowan tools have been attributed incorrectly to ancient human relatives, because those artefacts were found with hominin remains and other evidence linking them to human relatives. But Proffitt says that archaeologists scouring Africa for even older stone tools should be careful when attributing fragments to hominins in the absence of other evidence: ancient apes or monkeys behaving like the capuchins might have made them instead.

Proffitt still thinks that the 3.3-million-year-old artefacts found recently at [a Kenyan site called Lomekwi](#)<sup>4</sup> — considered to be the oldest examples of tool-making — were made by human relatives, but Carvalho is less sure. “Could that assemblage be a product of a non-hominin species? Technically speaking, with this data from the capuchins, it could,” she says.

Hélène Roche, an archaeologist at Paris-Nanterre University who was part of the team who discovered the Lomekwi tools, says that there is no mistaking the bulky artefacts (some as heavy as 15 kilograms) for the slighter capuchin-made tools. “The observation is very nice and very important, but I think it’s very important on the capuchin side,” she says — not so much for understanding early humans.

Palaeoanthropologist Bernard Wood of George Washington University in Washington DC accepts that the monkey tools closely resemble some hominin artefacts. But he is unconvinced that the findings have implications on palaeoanthropology. “What I’m grappling with is what the hell that means,” he says.

*Nature* | doi:10.1038/nature.2016.20816

### References

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