Neanderthals built cave structures — and no one knows why

Walls of stalagmites in a French cave might have had a domestic or a ceremonial use.

Ewen Callaway

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Neanderthals built one of the world's oldest constructions — 176,000-year-old semicircular walls of stalagmites in the bowels of a cave in southwest France. The walls are currently the best evidence that Neanderthals built substantial structures and ventured deep into caves, but researchers are wary of concluding much more.

"The big question is why they made it," says Jean-Jacques Hublin, a palaeoanthropologist at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany who was not involved in the study, which is published online in *Nature* on 25 May [1]. "Some people will come up with interpretations of ritual or religion or symbolism. Why not? But how to prove it?"

Nature Podcast
Ewen Callaway discusses Neanderthal cave structures with Marie Soressi.
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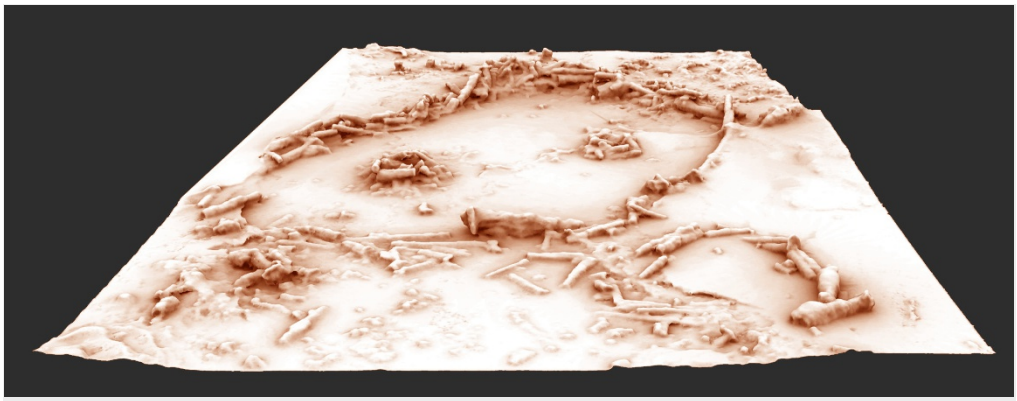
Speleologists first discovered the structures in Bruniquel Cave in the early 1990s. They are located about a third of a kilometre from the cave entrance, through a narrow passage that at one point requires crawling on all fours. Archaeologists later found a burnt bone from an herbivore or cave bear nearby and could detect no radioactive carbon left in it — a sign that the bone was older than 50,000 years, the limit of carbon dating. But when the archaeologist leading the excavation died in 1999, work stopped.

Then a few years ago, Sophie Verheyden, a palaeoclimatologist at the Royal Belgian Institute of Natural Sciences in Brussels and a keen speleologist, became curious about the cave after buying a holiday home nearby. She assembled a team of archaeologists, geochronologists and other experts to take a closer look at the mysterious structures.

Neanderthal hearths?

The six structures are made of about 400 large, broken-off stalagmites, arranged in semi-circles up to 6.7 metres wide. The researchers think that the pieces were once stacked up to form rudimentary walls. All have signs of burning, suggesting that fires were made within the walls. By analysing calcite accreted on the stalagmites and stumps since they were broken off, the team determined that the structures were made 174,400 to 178,600 years ago.



Xavier MUTH - Get in Situ, Archéotransfert, Archéovision -SHS-3D, base photographique Pascal Mora

A 3D reconstruction of the structures in the Bruniquel Cave.

“It’s obvious when you see it, that it’s not natural,” says Dominique Genty, a geoscientist at the Institute Pierre-Simon Laplace in Gif-sur-Yvette who co-led the study with Verheyden and archaeologist Jacques Jaubert, at the University of Bordeaux, in France. Their team found no signs that cave bears had hibernated near the structures, and so might have broken the stalagmites off themselves.

The researchers have so far found no remains of early humans, stone tools or other signs of occupation, but they think that Neanderthals made the structures, because no other hominins are known in western Europe at that time. “So far, it’s difficult to imagine that it’s not human made, and I don’t imagine any natural agent creating something like that,” Hublin agrees.

Spiritual to domestic

But Harold Dibble, an archaeologist at the University of Pennsylvania in Philadelphia, isn’t so sure. “When they say there’s no evidence of cave bears in this spot, maybe they’re looking at the evidence for cave bears,” he says. The authors could make a stronger case for Neanderthals if they can show, for instance, that the stalagmite pieces are uniform in size or shape and therefore selected.

If Neanderthals did build the structures, it’s not at all clear why. “It’s a big mystery,” says Genty, whose team speculates that their purpose may have ranged from the spiritual to the more domestic. Evidence for symbolism among Neanderthals is limited, ranging from etchings on a cave wall to eagle talons possibly used as jewelry.

“To me, constructing some sort of structure — things a lot of animals do, including chimps — and equating that with modern cultural behaviour is quite a leap,” says Dibble.

Marie Soressi, an archaeologist at the Leiden University in the Netherlands, says that it is no surprise that Neanderthals living 176,000 years ago had the brains to stack stalagmites. They made complex stone tools and even used fire to forge specialized glues.

More surprising is the revelation that some ventured into deep, dark spaces, says Soressi, who wrote a News and Views article for *Nature* that accompanies the report. “I would not have expected that, and I think it immediately changes the way we are going to investigate the underground in the future," she says.

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References

1. Jaubert, J. *et al*. *Nature* http://dx.doi.org/10.1038/nature18291 (2016).