Science & Technology

Brainteaser

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|
Fall 2018



Homo Naledi (left): Wits University. Homo Sapiens (right): Revers / Shutterstock

Anthropologists were left scratching their heads five years ago when a group of spelunkers exploring the Rising Star cave system outside Johannesburg stumbled upon ancient skeletal remains in what appeared to be a makeshift tomb. The never-before-seen protohuman species, soon dubbed *Homo naledi*, after the word for star in the local Sesotho language, had apparently been interred after death. Only one other form of early human, the Neanderthal, was thought to have buried its dead. And yet *Homo naledi* had a puny skull, with room enough for a brain less than one-third the size of the Neanderthal's — much smaller than scientists would have

thought necessary for such sophisticated behavior.

Eventually, Ralph Holloway, a Columbia anthropologist who specializes in analyzing fossilized skulls for clues about the sizes and shapes of our ancestors' brains, got involved. This spring, after several months spent studying *Homo naledi*'s 250,000-year-old cranium, Holloway came to the surprising conclusion that its brain, despite being the size of an orange, was shaped very much like our own — and therefore probably functioned somewhat similarly. For example, he determined that its brain had a very pronounced frontal lobe, which is involved in language processing, complex social behaviors, and other higher cognitive functions.

"Based strictly on the imprint of its brain on the inside of its skull, I would say that it's very likely that *Homo naledi* could grasp symbolism and had at least rudimentary language skills," says Holloway, who notes that anthropologists will need to unearth more artifacts from the area where the primate was discovered to say anything definitive about how mentally advanced it was.

Holloway's analysis raises fundamental questions about human evolution. That is because it challenges the view — long held by anthropologists — that our brains evolved to become unusually large before developing the special contours that give us advanced social and communicative skills.

"Many anthropologists consider brain size to be directly linked to complexity of thought," Holloway says. "But it appears that in the early stages of our evolution, at least, that was not the case."

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