

# Human ancestors in Eurasia earlier than thought

Stone fragments found in Georgia suggest *Homo erectus* might have evolved outside Africa.

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A new find has muddied the water on the origins of *Homo erectus*.[photolibrary.com](http://photolibrary.com)

Archaeologists have long thought that *Homo erectus*, humanity's first ancestor to spread around the world, evolved in Africa before dispersing throughout Europe and Asia. But evidence of tool-making at the border of Europe and Asia is challenging that assumption. Reid Ferring, an anthropologist at the University of North Texas in Denton, and his colleagues excavated the Dmanisi site in the Caucasus Mountains of Georgia. They found stone artefacts — mostly flakes that were dropped as hominins knapped rocks to create tools for butchering animals — lying in sediments almost 1.85 million years old. Until now, anthropologists have thought that *H. erectus* evolved between 1.78 million and 1.65 million years ago — after the Dmanisi tools would have been made.

Furthermore, the distribution of the 122 artefacts paints a picture of long-term occupation of the area. Instead of all the finds being concentrated in one layer of sediment, which would indicate that hominins visited the site briefly on one occasion, the artefacts are spread through several layers of sediment that span the period between 1.85 million and 1.77 million years ago. The findings are published today in the *Proceedings of the National Academy of Sciences*<sup>1</sup>.

"This is indeed suggestive of a sustained regional population which had successfully adapted to the temperate environments of the southern Caucasus," explains Wil Roebroeks, an archaeologist at Leiden University in the Netherlands.

## Eurasian ancestry?

The presence of a tool-using population on the edge of Europe so early hints that the northern continent, rather than Africa, may have been the evolutionary birthplace of *H. erectus*. Unfortunately, the fossils of the hominins responsible for making the tools are not proving

very helpful to the debate.

Fossilized bone fragments found in the same sedimentary layers as the Dmanisi artefacts are too weathered to be identified as belonging to any one species, so it is impossible to say for sure whether the tools were made by *H. erectus*.

Neither do fossil skulls previously retrieved from later sediments at the site help to resolve the controversy. These fossils, dating from 1.77 million years ago, had brains between 600 and 775 cubic centimetres in volume, whereas *H. erectus* is generally thought to have had an average brain size of around 900 cubic centimetres. For comparison, modern humans have a brain capacity of around 1,350 cubic centimetres. "Many people call those Dmanisi fossils the earliest *H. erectus*, but there is still frequent debate about this," explains Ferring.

## There and back again

Even if the ancient inhabitants of the Dmanisi site were not early members of *H. erectus*, there is still a problem: anthropologists have previously thought that no hominins existed outside of Africa as early as 1.85 million years ago.

"Anthropology textbooks of the 1990s often showed maps with large arrows indicating migration of early *H. erectus* from its inferred core area of eastern Africa to other parts of the Old World," explains Roebroeks. The findings in Dmanisi make such an explanation look faulty.

Ferring and his colleagues propose that some ancestors of *H. erectus* might have travelled to Asia and possibly Europe, done a bit of evolving, then wandered back to Africa.

"Remember, it would not have been obvious to the hominins they were leaving Africa. There were no signs saying 'You are leaving Africa now — come and visit us again!'" says Bernard Wood, an anthropologist at the George Washington University in Washington DC. But Wood admits that it is unclear why the hominins might have made these movements. "It perplexes me," he says.

Ferring suggests that ancient hominins might have been following their food source — animals. "My hunch is that the migrations relate to the rise of carnivory and a sudden flexibility to live and eat meat anywhere," he says. Vegetarians, he explains, are limited to the specific plants that sustain them and cannot travel from tropics to deserts to mountains nearly as easily as predators can. Wood agrees. "My guess is that hominins were following game," he says.

Other possibilities also exist. "We tend to think of hominins as living in a disease-free world, but maybe they were eliminated in some places by an epidemic, and the only healthy ones left were at the edges of their distribution", who could then move back into the vacated areas, says Wood.

## • References

1. Ferring, R., *et al.* Proc. Natl Acad. Sci. USA [doi:10.1073/pnas.1106638108](https://doi.org/10.1073/pnas.1106638108) (2011).