

Human hunting weapons may not have caused the demise of the Neanderthals

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A Neanderthal skeleton, left, compared with a modern human skeleton. Credit: American Museum of Natural History

The demise of Neanderthals may have nothing to do with innovative hunting weapons carried by humans from west Asia, according to a new study published in the *Journal of Human Evolution*. The researchers, from Nagoya University and The University of Tokyo, Japan, say their findings mean that we may need to rethink the reasons humans survived

Neanderthals - and that we may not have behaved as differently as we thought.

The researchers looked at innovative stone weapons used by humans about 42,000-34,000 years ago. Traditionally, anthropologists believed that [innovation](#) in weapons enabled humans to spread out of Africa to Europe. However, the new study suggests that the innovation was not a driving force for humans to migrate into Europe as previously thought - they were no better equipped than the Neanderthals.

"We're not so special, I don't think we survived Neanderthals simply because of technological competence," said Dr. Seiji Kadowaki, first author of the study from Nagoya University, Japan. "Our work is related to the processes behind the global spread of [modern humans](#), and specifically the cultural impact of the modern humans who migrated to Europe."

Anatomically modern humans expanded the geographic area they inhabited out of Africa during a period of time 55,000-40,000 years ago - this event made a huge impact on the biological origin of people living today. There are other theories for the geographical spread of anatomically modern humans, but this is generally accepted as a major event in human history.

Previous models assumed that anatomically modern humans - our direct ancestors - were special in the way they behaved and thought. These models considered technological and cultural innovation as the reason humans survived and Neanderthals did not.

There has always been a big question around the demise of the Neanderthals - why did they disappear when humans survived? We have a similar anatomy, so researchers traditionally thought there must have been differences in the way Neanderthals and humans behaved. The new

study suggests that humans moved from west Asia to Europe without a big change in their behavior.

The researchers studied stone tools that were used by people in the Early Ahmarian culture and the Protoaurignacian culture, living in south and west Europe and west Asia around 40,000 years ago. They used small stone points as tips for hunting weapons like throwing spears.

Researchers previously considered these to be a significant innovation - one that helped the humans migrate from west Asia to Europe, where Neanderthals were living.

However, the new research reveals a timeline that doesn't support this theory. If the innovation had led to the migration, evidence would show the stone points moving in the same direction as the humans. But at closer inspection, the researchers showed the possibility that the stone points appeared in Europe 3,000 years earlier than in the Levant, a historical area in west Asia. Innovation in hunting weapons can be necessary, but it's not always associated with migration - populations can spread without technological innovations.

"We looked at the basic timeline revealed by similar stone points, and it shows that humans were using them in Europe before they appeared in the Levant - the opposite of what we'd expect if the innovation had led to the humans' migration from Africa to Europe," said Dr. Kadowaki.

"Our new findings mean that the research community now needs to reconsider the assumption that our ancestors moved to Europe and succeeded where Neanderthals failed because of cultural and technological innovations brought from Africa or west Asia."

By re-examining the evidence, the researchers showed that the comparable stone weapons appeared in Europe around 42,000 years ago, and in the Levant 39,000 years ago. They believe the timings imply

several new scenarios about the migration of modern humans into Europe. For example, they are likely to have migrated to Europe much earlier, and developed the tools there.

"We're very excited about our new model. We think the causes of [human](#) evolution are more complicated than just being about technology. Now that we've re-examined the traditional model about the northern migration route to Europe, we are planning to re-evaluate the model on the southern migration route - from East Africa to South Asia" said Dr. Kadowaki.

More information: "Variability in Early Ahmarian lithic technology and its implications for the model of a Levantine origin of the Protoaurignacian" by Kadowaki, S., Omori, T., Nishiaki, Y. ([DOI: 10.1016/j.jhevol.2015.02.017](https://doi.org/10.1016/j.jhevol.2015.02.017)). The article appears in *Journal of Human Evolution*, Volume 82 (April 2015)

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