

Paper reference

Did Early Humans Go North or South?

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Abstract

This work starts with summarizing human migration studies, identifying which aspects are well established and which aspects are still under open debate. The current understanding is that modern humans arose ~150,000 years ago, possibly in East Africa, where human genetic diversity is particularly high. However, it raises question on which route did the first Eurasians take out of Africa. They discuss that this question by looking at DNA evidence along with fossils, as detailed in previous literature. They describe the work of Macaulay on human migration along the Indian ocean coast; and suggest that it will inspire archaeological exploration along these areas. Finally, they emphasize the need to collect secure data on fast dwindling indigenous populations.

Discussion

Forster and Matsumura first discuss a variety of research, which leads to the current understanding that modern humans arose ~150,000 years ago, possibly in East Africa, where genetic diversity is particularly high. They discuss that subsequent colonization in Africa is supported by old genetic mtDNA and Y chromosome branches in certain tribes of Africa. They relate it to the fossil studies, which show early humans ventured out of Africa briefly, as shown by 90,000-year-old fossils found in Israel.

Then they discuss studies on mtDNA which show that successful migration out of Africa occurred between 55,000 and 85,000 years ago. They refer to expansion signature of L2 and L3 mtDNA types in mitochondrial evolutionary tree. They then refer to studies on Y-chromosome which confirm these results.

They then raise a question over which route did early Eurasians take out of Africa. They discuss two possibilities: along the Nile and across the Sinai Peninsula, or crossing the Red Sea (a important geographical *block* that separates Africa from Asia) and following the coast of the Indian Ocean. The Nile route, they say, is less probable because of evidence that adjacent Europe was settled thousands of year later than distant Australia. (In Europe, Neanderthals were replaced by modern humans only about 30,000 to 40,000 years ago, whereas southern Australia was definitely inhabited 46,000 years ago and northern Australia and Southeast Asia necessarily earlier.

The above facts (derived from archaeological dating and fossils, etc.) raise questions to the studies and simulations by the research discussed in the lecture, where the “distances” taken do not match necessarily with the migration patterns in light of these facts.

They then discuss other possible route: the coastal route along Indian ocean, which would conveniently explain the early dates for human presence in Australia. However, that would mean that humans were capable of crossing the mouth of red sea 60,000 years ago; and also relate to geological phenomenon, e.g. red sea level dropped 20,000 years ago.

Ideally, a lot of these questions could be answered by DNA studies for humans along the coast. However, detailed data is not available along these routes. (Even though, Macaulay collected some data along Malaysia.) Also, some partial fossil data is available along some of these routes. They then purport work of Macaulay describing the coastal Human Migration route.

They do raise a very important point---that simulations need to take into account these local uncertainties, and geographical variations to improve estimates to (hopefully) match estimates from fossil/archaeological evidence. They point to the importance of securing DNA data from fast dwindling populations; as well as importance of archeological explorations to support the hypothesis.