

A new interpretation regarding the origin of *Homo sapiens*

Philip Guelpa
28 May 2023

Newly published research appearing in the journal *Nature* (Ragsdale, A. P. et al., “A weakly structured stem for human origins in Africa,” *Nature* [2023]) proposes a new interpretation regarding the origin of our species—*Homo sapiens*.

The current dominant theory holds that *Homo sapiens* evolved from a single, local population of a previous species of the genus *Homo* somewhere in Africa, between roughly 300,000 and 100,000 years ago. According to this scenario, the new species then spread widely, eventually replacing the other existing species of genus *Homo*. However, the relatively small number of human fossils known from Africa and the lack of ancient DNA during that time period have made a more precise tracing of the evolution of modern humans problematic. The new interpretation, based primarily on detailed genetic studies of recent populations, posits that *Homo sapiens* emerged from the interaction of a number of regional populations which, despite some morphological differences, engaged in sufficient contact with each other that gene flow between them resulted in roughly simultaneous evolution.

The authors of the new study characterize human evolution as a “weakly structured stem” which more closely resembles a tangled vine, consisting of multiple, interacting regional populations, rather than the more traditional “tree of life” model, in which local populations branch off and become genetically isolated, giving rise to new species. Although not explicitly called out in the *Nature* article, if supported by continuing research, this new model has significant implications for understanding how human evolution was based on a complex dialectic between culture and biology, rather than the more purely biological mechanisms of natural selection which govern the

evolution of other species. This tangled vine view resembles what has been known as the “single-species hypothesis,” which had fallen out of favor in recent decades but has now received new support.

This new interpretation is based on statistical analysis of a large database of genetic information drawn primarily from African and some Eurasian populations as well as from Neanderthal fossils. It employs modeling of genetic variation between contemporary populations which can be projected back in time to trace migrations and interactions between groups over the last 150,000 years to a greater degree than was possible for earlier studies. The result demonstrates a significant amount of gene flow between regions over time. This finding reinforces the view that current physical variations between populations are superficial and merely represent the temporary state of a constant shuffling of populations that has been ongoing for hundreds of thousands of years.

Although the theory that *H. sapiens* originated in one local population and then spread has been the dominant interpretation for some time, according to the authors it does not fit well with either the archaeological or fossil evidence. Indeed, the physical record indicates a relatively synchronous (on a geological time scale) appearance of both artifacts and fossils attributable to modern humans across a wide area of Africa, rather than a single point of origin followed by a gradual dispersal.

The existing model, postulating one local point of origin, had gained favor since it conforms to the general pattern of biological evolution in which geographically dispersed groups of a given species are largely genetically isolated, with little or no mating between individuals belonging to these distinct populations. This lack of gene flow promotes what is known as “genetic

drift,” the gradual accumulation of random mutations which tend to differ from one population to the next. This combines with different selective pressures created by variations in local environments. Together, over time, genetic differences tend to increase to the point where members of these different populations become genetically incompatible and can no longer produce viable offspring with each other. This is known as “speciation.”

Mules are a good example of this process in an advanced but not completed stage. The offspring produced by matings between horses and donkeys, mules are viable as individuals but are almost always reproductively sterile. Therefore, there is no effective gene flow between the two parent species. Coydogs, on the other hand, the products of matings between coyotes and domestic dogs, do produce reproductively viable offspring. Therefore, the two are not distinct species.

The newly proposed theory of modern human origins supports the view (not explicitly referenced in the *Nature* article) that the genus *Homo*, at least in the later period of its evolution, does not entirely conform with the standard model of speciation. This is likely due to the fact that humans rely to a large extent on changes in culture rather than the modification of their physical features to adapt to their environment. The former (culture) is much more flexible and rapid than the latter (biology) and can more easily be shared between populations. Tools and techniques as well as patterns of social organization can be modified using abstract thought to interpret the features of novel environments and develop appropriate adaptations. This has allowed humans to successfully occupy a wide range of environments, from the arctic to tropical rainforests and deserts with relatively little physical adaptation and, therefore, without speciation.

Other research in recent years tends to support the view that many, though not necessarily all earlier populations of the genus *Homo* (e.g., *Homo naledi* and the Flores “hobbits”), even in far flung regions, while exhibiting some genetic variation, did not undergo the degree of change resulting in speciation. A prime example of this is the finding that modern Eurasian populations of *Homo sapiens* carry approximately 2 percent of Neanderthal DNA, thus demonstrating that these populations, despite morphological differences,

were not genetically isolated and were able to successfully interbreed when modern humans migrated out of Africa. Therefore, they did not represent distinct species.

As indicated, the proposed “tangled vine” model of *Homo sapiens* evolution not only is more in accord with the available archaeological and biological evidence, it supports the view that modern humans are the product of a complex, dialectical interaction between physical and cultural adaptation to a degree qualitatively distinct from all other animals.



To contact the WSWs and the Socialist Equality Party visit:

[wsws.org/contact](https://www.wsws.org/contact)