Skull supports Africa origins theory

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New analysis of a skull discovered in South Africa over 50 years ago has provided critical corroboration of genetic evidence indicating that modern humans originated in sub-Saharan Africa and migrated to colonise Europe and Asia around 30 000 to 40 000 years ago.

According to research findings published in the journal *Science* last week, the Hofmeyr skull - named after the Eastern Cape town where it was found in the mid-1950s - provides the first fossil evidence capable of settling one of paleo-anthropology's most hotly contested debates.

Missing evidence

A number of genetic studies of living people indicate that modern humans evolved in sub-Saharan Africa and then left to colonise Europe and Asia between 65 000 and 25 000 years ago.

However, other genetic studies argue against this African origin and exodus model, suggesting that archaic non-African groups such as the Neandertals made significant contributions to the genomes of modern humans in Eurasia.

"Until now, the lack of human fossils of appropriate antiquity from sub-Saharan Africa has meant that these competing genetic models of human evolution could not be tested by paleontological evidence," the Max Planck Society states in a press release on the recent study.

"The skull from Hofmeyr has changed that."

International collaboration

Although the Hofmeyr skull was found over half a century ago, its significance became apparent only recently.

Alan Morris of the University of Cape Town was a member of the international team of scientists, led by Frederick Grine of Stony Brook University in New York, who used new techniques to study the skull.

According to the Cape Times, Morris, who first saw the skull in the Port Elizabeth Museum in the 1990s, showed it to Grine a couple of years ago.

Using a method developed by Richard Bailey of Oxford University - involving measuring the amount of radiation absorbed by sand grains in the skull's braincase - Grine's team dated the skull to just over 36 000 years ago.

This in itself was significant: the sub-Saharan Africa's human fossil record from about 70 000 to 15 000 years ago was otherwise blank.

Katerina Harvati of Germany's Max Planck Institute then used three-dimensional measurements to compare the Hofmeyr skull with human skulls of the same age from Europe, as well as the skulls of living humans from Eurasia and sub-Saharan Africa, including the Khoisan.

Distinct from the Khoisan

To the team's surprise, they found that the Hofmeyr skull was "quite distinct from recent sub-Saharan Africans, including the Khoisan," having instead "a very close affinity" with European skulls of similar age.

"The surprising similarity between a fossil skull from the southernmost tip of Africa and similarly ancient skulls from Europe is in agreement with the genetics-based 'out of Africa' theory, which predicts that humans like those that inhabited Eurasia in the Upper Paleolithic should be found in sub-Saharan Africa around 36 000 years ago," says the Max Planck society.

"The skull from South Africa provides the first fossil evidence in support of this prediction."

"The skull is probably male and is completely modern," Morris told the Cape Times. "If he sat down next to you on the Sea Point bus you would not react, apart from wondering where he came from.

"He would not look like modern Africans or like modern Europeans, or like modern Khoisan people, but he is

definitely a modern human being."

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The Hofmeyr skull, now dated as being around 36 000 years old. Its great similarity to Eurasian skulls of the same age confirms the 'out of Africa' hypothesis: that modern humans broke out of their place of origin around 40 000 years ago - from Africa south of the Sahara - to populate the world *(Image: Frederick Grine / Max Planck Society)*