**Did Modern Humans Travel Out of Africa Via Arabia?**

JEBEL FAYA, UNITED ARAB EMIRATES—The barren desert and hills here seem wholly inhospitable, with sparse rain and sandy soil supporting only a few nomadic Bedouin. But things were different 125,000 years ago, when the desert was savanna, with plentiful water and game, and under the protection of a rock overhang, a group of hominids whiled away their time making stone tools. A German-led team argues on page 453 that these tools were made by modern humans who may have crossed directly from Africa as part of a migration spreading across Europe, Asia, and Australia. Although most researchers agree that our species came out of Africa in one or more waves (see p. 392), those dates are more than 50,000 years earlier than most believe our ancestors left the continent.

The audacious claim by Simon Armitage of Royal Holloway, University of London, and colleagues is sparking interest and controversy. “This is really quite spectacular,” says archaeologist Michael Petraglia of the University of Oxford in the United Kingdom, who has previously argued that *Homo sapiens* left Africa before the massive eruption of an Indonesian volcano 74,000 years ago, a catastrophe thought to have left much of Asia uninhabitable for early humans (*Science*, 5 March 2010, p. 1187). “It breaks the back of the current consensus view.” But others, such as archaeologist Paul Mellars of the University of Cambridge in the United Kingdom, say that although the discovery is important and well dated, the conclusions are flawed. “I’m totally unpersuaded,” he says. “There’s not a scrap of evidence here that these were made by modern humans, nor that they came from Africa.”

The debate centers on a collection of stone tools found here at Jebel Faya, a long limestone mountain an hour’s drive from the bustling urban center of Sharjah and 55 kilometers from the Persian Gulf. A rock shelter indents the mountain’s end, a few meters above a desolate plain where only camels graze today. The overhang is modest, but it has sheltered humans for millennia, say excavators Hans-Peter and Margarethede Uerpmann of the University of Tübingen in Germany. They began digging here in 2003, uncovering artifacts from the Iron, Bronze, and Neolithic periods before hitting material from the Middle Paleolithic era, roughly 300,000 to 30,000 years ago. Using single-grain optically stimulated luminescence, which measures how much time has passed since materials were last exposed to light, the team dated the oldest set of artifacts, including stone hand axes, blades, and scrapers, to about 125,000 years ago.

Arabia and its fierce deserts have long been seen as obstacles than conduits to human migration, and most archaeology here has focused on histori-cal times. Recent studies, however, show wetter periods such as one that began around 130,000 years ago. And a spate of findings in the past 25 years show that hominins were in the region during the Middle Paleolithic. Early *H. sapiens* skulls and tools from Skhul and Qafzeh caves in Israel are now dated to 100,000 to 130,000 years ago, for example.

Co-author Anthony Marks of Southern Methodist University in Dallas, Texas, says the combination of artifacts from Jebel Faya, such as two-sided blades and small hand axes, is remarkably similar to assemblages made during this period in East Africa, when our own species was the only known hominin on that continent. Other hominins, such as the Neandertals who populated Europe and north Asia, did not use this combination of tools and were not likely to have been in Arabia, he says. That makes the African origin likely “by process of elimination.”

Marks says the tools don’t resemble those from Israel or the Aterian tools from the same era in North Africa (*Science*, 7 January, p. 20). He suggests that *H. sapiens* may have left Africa in different waves, with the Arabian tools representing a migration launched from East Africa.

Petraglia agrees that it’s likely that *H. sapiens* made the tools and that they came from Africa. “This is out of the habitat range of Neandertals,” he notes. “So they make a really strong and plausible argument.” The team believes that these early modern humans may have even pushed on across the Persian Gulf, perhaps to India, Indonesia, and eventually Australia. Petraglia claims evidence of early *H. sapiens* in India both before and after the Indonesian eruption, though others dispute that assertion.

Mellars, in contrast, sees no evidence that the Jebel Faya artifacts are of an East African style. He says one of the bifacials is stout rather than narrow like those common in Africa and adds that the authors have not ruled out Neandertals and even *H. erectus* as the toolmakers. “Everything hinges on whether that material is explicitly African—and I don’t see that.”

Other researchers are enthusiastic about the Jebel Faya discovery but cautious about the conclusions. Archaeologist Mark Beech, a visiting fellow at the University of York in the United Kingdom who has worked extensively in the United Arab Emirates, praises the paper but adds: “One site does not confirm the out-of-Africa-via-Arabia hypothesis.”

Hans-Peter Uerpmann agrees, saying that fossil bones are needed “before we can be absolutely sure” that the tools were made by *H. sapiens*. Other researchers are hot on the trail: Petraglia leaves this month to continue work in Saudi Arabia, and other archaeologists plan to comb Arabian caves and sands for signs that our ancestors passed this way.

—ANDREW LAWLER