

Models for an African origin of our species: where are we?

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There is widespread acceptance in the paleoanthropological community and among Africanist archaeologists working on the Middle Stone Age (MSA) that we are an African species. That is, the earliest physical examples of *Homo sapiens* are from sub-Saharan Africa at nearly 200,000 years ago (White et al. 2003, McDougall et al. 2005). This is supported by multiple genetic studies as well (Kriings et al. 1997, 1999, 2000, Carmelli et al. 2003, Harpending et al. 1998, Pääbo 2003, Pearson 2004). It is also widely accepted that behavioral modernity arose in Africa sometime prior to our global exodus. Increasingly, the debate over our origins revolves around the timing and nature of our behavioral development (Henshilwood and Marean 2003).

As recently presented by McBrearty and Brooks (2000), the preponderance of archaeological evidence argues against a late abrupt development of behavioral modernity. Indeed, even separating biological and behavioral modernity makes little sense in evolutionary terms (Lewin 1998). This paper continues in that vein, evaluating more recent archaeological evidence for fit into existing explanatory models of our origins (Henshilwood and Marean 2003). Three general empirical lines of evidence, faunal exploitation, mobility patterns, and a lack of technological change, have been consistently relied upon to support one of the most widely repeated explanations for modern human origins, the Late Upper Pleistocene Model (Klein 1992, 1999). This model holds that behavioral modernity is a relatively late development, occurring suddenly at around 40-50 kya.

The most widely referenced support for the Late Upper Pleistocene Model is a shift in faunal exploitation during the MSA to Later Stone Age (LSA) transition. Statistical analyses of the referenced faunal data, taking into account differing assemblage sizes, do not support a shift in gross faunal exploitation at the MSA-LSA transition. In contrast, a shift at the Pleistocene-Holocene transition is supported, suggesting that local climatic and resultant habitat changes, rather than a shift in intellectual capacity, explain the observed faunal patterning. Additionally, the original reasoning for why faunal patterning should be linked to intellectual capacity was that it was a proxy for technological advancement. Direct evidence for technological and symbolic sophistication in the MSA is now available (Yellen 1996, Henshilwood et al. 2001, 2002, 2004, Watts 2002, Rigaud et al. in press), and is consistently much older than the model allows for.

A second empirically-based support for the late development of behavioral modernity is derived from reconstructed mobility patterns for MSA peoples. The example cited is for the Howiesons Poort at Klasies, which dates to ~60 kya and has backed composite tools as an important part of the toolkit. These mobility patterns are taken directly from lithic raw material frequencies (Ambrose and Lorenz 1990). Geologic and technological evidence contradicts the assumptions behind the reconstructed mobility (Minichillo 2006). Specifically, raw materials that were thought to be non-local in origin are from secondary water-born deposits and full cortical reduction occurred at the Klasies site. A wider examination of the raw material patterns at an expanded sample of Howiesons Poort sites suggests an intensified reliance on local raw materials, the opposite of the assumption behind the previously reconstructed mobility (Minichillo 2006). The reconstructed mobility patterns are shown to be in error and the resultant interpretations of non-modernity must be dismissed.

The third frequently cited support for the Late Upper Pleistocene Model is that MSA technology is static for long periods of time (Klein 1999). The idea that MSA technology is static can be traced to the thick deposits of the SAS Member at Klasies (Singer and Wymer 1982) and the assumption that they represent a long period of time. The nature of the SAS Member, shellfish-containing sandy beach cave deposits, argues for a rapid deposition of those layers. The only multiple dates applied to the SAS yielded two OSL dates within the error terms of each other (Feathers 2002). Microfaunal and shell density studies also support a relatively short time-frame for the deposition of these thick archaeological deposits (Avery 1987, Thackeray 1988). If technology at Klasies only appears to be static due to hiatuses between occupations and rapid deposition during occupations, as the stratigraphy suggests, then the nature of technological change at other, more recently excavated sites are likely to be more representative of the pace of change for the MSA. Blombos Cave (Henshilwood and Sealy 1997, Henshilwood et al. 2001), Sibudu Cave (Villa et al. 2005) and Diepkloof Shelter (Rigaud et al. in press). All exhibit dated technological transitions within the MSA on a scale with those observed in Holocene archaeological deposits. Additionally, nearly all of the major technological breakthroughs that are attributed to the MSA-LSA transition in the Late Upper Pleistocene Model can now be demonstrated to have originated in the MSA tens of thousands of years prior to the purported “Great Leap Forward.”

It is found that, of all of the proposed models for an African origin for our species, the Late Upper Pleistocene Model is the poorest fit for the current evidence. Indeed, with the current skeletal, genetic, and archaeological evidence the Late Upper Pleistocene Model for modern human origins is no longer a viable explanatory model.

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