PLEISTOCENE MODERNITY: AN EXCLUSIVELY AFRO-EUROPEAN ISSUE? AN INTRODUCTION TO SESSION A1

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Within European prehistory, the issue of cultural, cognitive or behavioural modernity is an old debate. Based on the appearances of milestone indicators like specialized blade industries, bone and antler tools, figurative art, musical instruments and personal ornaments, a revolution of modern behaviour around 40,000 years ago has been hypothesized (Mellars 1989, 1996; Bar-Yosef 2002). Scholars perceive a significant behavioural change in the European archaeological record, which occurs contemporaneously with the arrival of *Homo sapiens* in Europe. Representatives of the Upper Paleolithic revolution hypothesis trace the origin of the different behavioural changes as exclusively associated with *Homo sapiens*. However, the question as to the cause of the assumed revolution of cognitive and/or behavioural capacities—social factors, genetic mutation or a cultural answer to the competition with another human species (the Neandertals)—remains unanswered.

Around ten years ago, the search for behavioural modernity and the origin of anatomically modern humans shifted to Africa (Conard 2007). The consequent second hypothesis arose that behavioural modernity evolved gradually in Africa, and that *Homo sapiens* left Africa and populated the world with a whole package of modern behavioural patterns. The trait list of modern behaviour has been extended and altered because the European trait list fitted only partially. The African list now includes—in addition to personal ornaments—notational/incised pieces, fishing, shellfishing, mining, long distance exchange, simple and barbed points, microliths, pigment processing, and grindstones (McBrearty and Brooks 2000).

The time frame for several traits in Africa has been extended back to the Middle Pleistocene, with some appearing earlier than the first evidence of modern anatomy 200,000 years ago (McBrearty and Stringer 2007). Personal ornaments are present in the Levant and in North Africa (Vanhaeren et al. 2006; d'Errico et al. 2009) and South Africa (Henshilwood et al. 2004; d'Errico et al. 2008) for a period of time that likely spans over 100,000 years. Microlithic technology seems to have arisen on the African continent more than 200,000 years ago. Even the use of pigments is ancient, dating back nearly 300,000 years (Barham 2002), and the first evidence of systematic blade technology stems from sites in the Kapthurin Formation, Kenya, which are over 500,000 years old (Roure Johnson and McBrearty 2010).

Reconsidering the European archaeological record on the basis of the African trait list led to a third hypothesis. If all the traits assumed to indicate behavioural modernity in Africa are indeed markers of behavioral modernity in Europe as well as in species other than *Homo sapiens,* then behavioural modernity (at least to a certain grade) might have developed independantly in more than one species. Evidence for behavioural modernity was indeed found not only in anatomically modern human contexts, but also in association with Neanderthal fossil and cultural remains: e.g. in the use of pigments, probably in notational pieces, in few personal ornaments (Soressi and d'Errico 2007) and bone tools (d'Errico et al. 2011), in micro tools (Hillgruber 2007) and in traces of hafting and multicomponent tools (Mazza et al. 2006; Pawlik and Thissen 2011).

However, all perspectives on development of behavioral modernity—be they sapiens-eurocentric, sapiens-afrocentric or multiregional with the involvement of different human forms (d'Errico 2007; Nowell 2010)— widely ignore South-, East- and Southeast Asia. The only commonly mentioned evidence of modernity from this area is the colonization of Sahul/Australia across the sea (Noble and Davidson 1996; Balme et al. 2009). Although several critical revisions of the archaeological record of this region have been published in recent years (Brumm and Moore 2005; Habgood and Franklin 2008; Langley 2009, Langley et al. 2011), the perception that Australasian Pleistocene cultural remains are simple and do not clearly indicate behavioural modernity (cf. O'Connell and Allen 2007) dominates. The region and its archaeological record do not (yet) play a significant role in the discussion about the origin, essence and spread of cultural modernity.

The archaeological records of Asia and Australia are required to complete the picture of the development and probable differences in human cultural capacity, as well as of the range of cultural performances for different human species. The assemblage of archaeologically visible cultural innovations is often portrayed as a 'package', although the European and African packages differ somewhat from one another. The African 'package'—personal ornaments, notational/incised pieces, fishing, shellfishing, mining, long distance exchange, simple and barbed bone points, microliths, pigment use, and grindstones— developed over a significant time span, but is assumed to have been completed by the time when *Homo sapiens* moved out of Africa. The European 'package' is more exclusive, with a focus on figurative art, musical instruments and an abundance of different personal ornaments made from bone, antler, teeth and ivory. When developed blade technology, bone tools, exchange networks and different resource exploitation patterns are included, the European 'package' seems to have appeared almost simultaneously all over Europe (e.g. Harrold 1992; Mellars 2005).

Such a 'package' of modern behavioral traits – deduced from the African trait list – cannot be claimed for the Indo-Pacific region. Habgood and Franklin (2008) have recently stated that this 'package' of cultural innovations did not exist as an entity at the beginning of Sahul settlement, and that its "components were gradually assembled over a 30,000 year period". In a comprehensive examination of more than 200 Pleistocene sites from Australasia, Langley (2009; Langley et al. 2011) could not find evidence of cognitive modernity and cultural complexity, but did identify the effects of taphonomy and archaeological sampling on the nature and representativeness of the archaeological record in this region.

For Southeast Asia modern traits remain basically absent until the Pleistocene/Holocene boundary, and are still very rare until the Neolithic, with the exception of few finds of tools and points, and fishing gear made of bone, predominantly in the coastal environments of Southeast Asia (Rabett 2005). This is quite remarkable, given a body of fossil evidence—the so-called "Deep Skull" in Niah Cave, Borneo (Barker et al. 2007) and the "Tabon Man" and related human fossils from the Pleistocene layers of Tabon Cave in Palawan (Détroit et al. 2004)—for the arrival of modern *Homo sapiens,* which ranges back 45,000 to 50,000 years ago. A number of authors have argued that the simplicity of Southeast Asia's lithic industries was caused by the availability of various organic materials like bamboo, rattan and other wood species. The latter materials provided the more specialised and perhaps more formal working tools for a majority of prehistoric activities, while most stone tools were only used for the production of these organic tools (Narr 1966; Solheim 1970; Pope 1989; Schick and Dong Zhuan 1993; Mijares 2002; Mellars 2006; Dennell 2009). While evidence for such vegetal tools is missing in the Palaeolithic record of Southeast Asia, a number of use-wear analyses have indeed identified wear traces of working wood, bone and bamboo on stone tools (e.g. Bannanurag 1988; Dung 1994; Mijares 2002; Barton 2006; Teodosio 2006). Cutmarks found on animal bones from the 67ka layer of Callao Cave, Philippines have been recently investigated with optical and SEM microscopes (Manalo 2011), and comparative analysis with experimentally created cutmarks from various lithic and organic sharp-edged tools pointed towards the use of bamboo "knives" rather than the edges of lithic flakes.

However, explaining the pervasive absence of formal and 'modern' lithic tool types by supposing a developed organic tool industry that is even more absent in the archaeological record might not be the most convincing way to argue for modernity in Southeast Asian tool technology. Nevertheless, the processing and use of organic materials need to be considered as part of the technological package of hominins in Southeast Asia and the Pacific, and their potential for providing traits of modern human behaviour in this region must be recognized. Microscopic analysis revealed a variety of sophisticated modifications on bone tools, including grinding and hafting, both of which are assumed modern traits. Other organic tools from Niah Cave include projectile points made from worked stingray spines. Residue analysis on these intriguing points revealed that they were attached to shafts using tree resin supported by a fibreous binding (Barton et al. 2009). Evidence for the use of simple, unretouched, yet pointed chert flakes as projectile points—which were attached to wooden shafts by applying what was probably a similar resin—appears at Ille Cave in Northern Palawan, Philippines (Pawlik 2011 [this issue]). This kind of an elaborate and multicomponent tool technology requires the ability to perform complex sequences of action and has been rightfully considered modern behaviour (Ambrose 2010). Certainly, the appearance of this technology in the terminal Pleistocene at both Niah and at Ille is not surprising, from a European/African perspective. What is worth mentioning, though, is that the information was obtained mainly by microscopic analyses. This is not a standard practice for the identification of modern behaviour and is neither necessary nor applied for identifying blade technology, rock and figurative art, ornaments, and most other modern traits. However, it helped to uncover formerly unknown and invisible modern traits in Southeast Asian assemblages. Beside projectile and hafting technology, the working of shell (possibly for ornaments), and the use of pigments was identified at Ille Cave, along with signs of tool curation (Pawlik 2011 [this issue]). Evidence for the use of pigments on shell, bone and turtle plastron in Southeast Asia has been dated to just beyond 40,000 years ago (at the earliest) at Niah Cave (Barton et al. 2009).

The previous studies demonstrate the potential for specialised analytical methods—such as microwear and residue analysis—to detect indicators for behavioural modernity in

Pleistocene assemblages from Southeast Asia and the Pacific Region. In island Southeast Asia, modern hominins have a very early appearance, at least 50,000 BP. The recent discovery of the human fossil footbone from Callao Cave, Philippines, is dated to a minimum age of 67,000 BP. The morphology of this metatarsal might fall within the range of anatomically modern hominins (Mijares et al. 2010). The location of Callao Cave, at the northeastern end of the island of Luzon, is the most distant position from the potential entry points (either southern Palawan island or via the Sulu archipelago) of hominins into the Philippine archipelago. These finds demonstrate the behavioural capacity for ocean crossings, as well as the necessary variability for a successful island adaptation. Together with the archaeological findings from Borneo, Palawan and Luzon, they raise our expectations for identifying traits of behavioural modernity in the Southeast Asian and Pacific Region.

At this stage of scholarship on the essence and development of cultural modernity, four main questions arise (from an Asian and Indo-Pacific perspective):

1. Is there pre-*sapiens* evidence in Asia for traits of modern human behavior?
2. Evidence like the 250,000 year old pigment use at Hunsgi, India (Paddayya 1977) or the possibility of shellfishing by *Homo erectus* in Java (Joordens et al. 2009) are hints of either a species-independent development of behavioral modernity or a more complex development that cannot be easily explained by a simple and somewhat arbitrary series of milestones.
3. How valid is the current list of symptoms for detecting or refuting the existence of modern human behavior? Is the occurrence of each one of the traits necessary or sufficient to claim behavioral modernity? (see also Brumm and Moore 2005).
4. Can material analysis methods like microwear analysis, microprobing and chemical residue analysis help to detect traces of modern behavioural traits?
5. And if one of the existing or a modified trait list is not an adequate marker for behavioural modernity, can we identify other, more general and basic aspects of modern human behavior?

Adding Asia and the Indo-Pacific region to the debate on behavioural modernity allows us to revive this discussion, which was previously mired in the search for even older evidence of some artifact groups, and return it to some of the more fundamental questions. Involving Asia and the Indo-Pacific region encourages a shift in the debate towards:

- becoming more general and less geographically focused,
- the comparison of different trait lists and their validity in other continents,
- the detailed mapping of trait occurrence in short time slices,
- the identification of preconditions or specific requirements (cognitive, social, environmental?) for different traits, and
- the recognition of the importance of studying the role cultural differences play in the expression of the various traits of modern behaviour.

The papers from this session address at least some of the questions brought up in this introduction. Ludmila Lbova (2011 [this issue]) provides examples of modern behaviour from Lake Baikal. Philipp Habgood and Natalie Franklin (2011 [this issue]) focus on the geographical patterning of the 'package of archaeologically visible traits' of modern human behaviour within Greater Australia. Martin Porr (2011 [this issue]) stimulates the discussion with his contribution on behavioral modernity in Sahul's archaeological record. Alfred Pawlik (2011 [this issue]) gives evidence of behavioural modernity in the prehistory of the Philippines. And finally, Ian Gilligan (2011 [this issue]) presents a new trait from Australia—clothing —and its interpretation regarding behavioral modernity.

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