DIOGENES

*Diogenes* 214: 122–133
ISSN 0392-1921

# The Origin of Humanity and Modern Cultures: Archaeology's View

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It is reasonable to think that in the more or less distant past there were human societies organized according to cultural traditions without the multitude of symbols that enliven and sometimes haunt the civilizations of our time. Since when have humans been 'modern'? When did they acquire the characteristics we normally associate with 'humanness': language, use of symbols, art, religious thought? Many of these behaviours do not leave fossils and it is the archaeologist's job to identify and date the signs of their emergence in our ancestors' material culture.

One model has long been accepted to account for this great transformation (Stringer and Gamble, 1993; Mellars, 1996; Bar-Yosef, 1998, 2002; Gamble, 1999). The modernity of humans is thought to be connected with a sudden cultural revolution that took place around 40,000 years ago, that is, in the early Upper Paleolithic. This cultural change would have come about in Europe and coincided with the arrival on the continent of anatomically modern human beings, people like us in fact. For some time the development has been thought to have been abrupt and explosive. It would have been marked by the simultaneous appearance in the material culture of several new elements: incised and sculpted objects, adornments (necklaces, bracelets), musical instruments (flutes), paintings on cave walls and rocks in the open air, carefully worked bone tools, more sophisticated stone tools.

A variant on this model considers cultural modernity as resulting from a genetic mutation that may have occurred 50,000 years ago in Africa without leaving any visible traces in the cranial anatomy of modern African humans (Klein, 1999, 2000).

As against the 'cultural big bang' model in the Upper Paleolithic, another model has recently been suggested (McBrearty and Brooks, 2000; Barham, 2002; Henshilwood and Marean, 2003). According to this scenario cultural modernity is deemed to have begun in Africa, the continent where genetics indicates our species originated around 200,000 years ago, and to have spread in stages between 200,000 and 20,000 BP (during the period known as the African 'Middle Stone Age'). This

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DOI: 10.1177/0392192107077652

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model therefore assumes a more gradual and non-European evolution, which causes these authors to say 'the revolution that wasn't'.

An important discovery in 2002 has provided a solid argument in favour of the second model. This was two fragments of ochre found in the Blombos Cave in South Africa (Fig. 1). The two fragments, dated to –75,000, and others found subsequently, are engraved with geometric motifs. In the same archaeological strata meticulously fashioned bone spearheads and awls were discovered in 2001, and in 2004 a number of pierced, ochre-coloured shells, used as ornaments. These finds can be compared with many other signs of modern behaviour, such as frequent use of colorants, at many African sites far older than the early Upper Paleolithic in Europe

Though these two scenarios differ as to place and speed of appearance of cultural modernity, they nevertheless share the fact that they think the new abilities developed within one and the same species. In particular the second model, which is gaining the upper hand as the dominant paradigm, directly connects the biological origin of our species to its cultural modernity. The notion is a simple one: the process that produced our species in Africa must have provided it with certain advantages (language, symbolic thought, superior cognitive capacities) which favoured its colonizing Eurasia and replacing the human populations living in those regions. According to the authors both models implicitly or explicitly assume that because of their different biology the human populations living in Eurasia before modern humans emerged – Neanderthals for example – did not have the capacity to develop culturally and cognitively modern behaviour. Production and use of bone tools and ornamental objects by the later Neanderthals, documented at some French sites, are thought to be the result of uncomprehending imitation, since Neanderthals were incapable of symbolic behaviour because they probably lacked the necessary linguistic capacity (Mithen, 1996; Mellars, 1999).

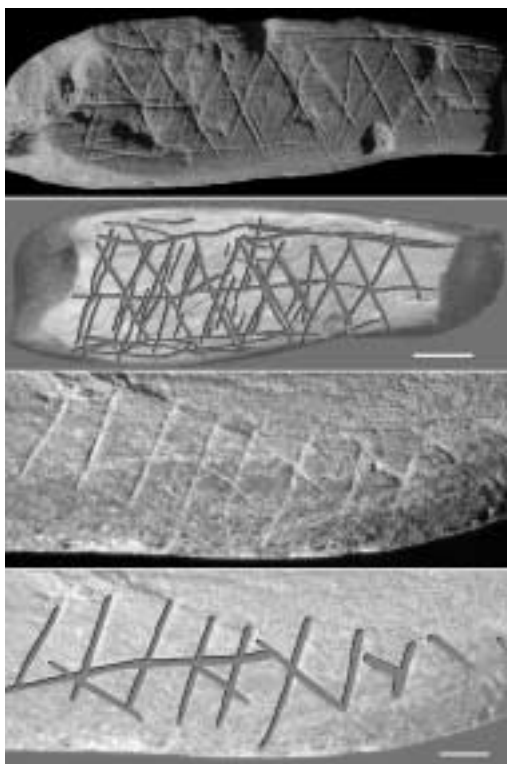

Fig. 1. Geometrical motifs engraved on the edge of an ochre slab discovered in the 'Middle Stone Age' strata at Blombos Cave (Cape Province, South Africa), dated at 75,000 BP (Henshilwood et al., 2001)

Postulating the primary role of biology in cognitive change, which is accepted by some researchers, leads to the surprising and somewhat paradoxical conclusion that studying



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Paleolithic material culture does not inform us as to the origin of modern behaviour. Indeed, in order to find out whether fossil human populations were equipped with language and symbolic thought, we would simply need to establish whether they belonged to our species. On the other hand, if we consider the causal relationship between biological and cultural change, not as a postulate but as a working hypothesis to be verified 'in the field', archaeological data should help us to document and date the emergence of modern behaviour in Africa and Eurasia.

## The search for modernity: an archaeological quest

There is no consensus between specialists as to the archaeological clues that allow us to demonstrate the emergence of cognitive abilities and modern cultures: reference is made sometimes to specialized hunting, sometimes to conquest of new territory, subsistence strategies in difficult environments, use of new raw materials, invention of style in stone and bone tool manufacture, exchange of raw materials over long distances, structure of habitat, burials with or without offerings, use of colorants, production of carvings, paintings or decorative objects, etc., or again all these behaviours together (McBrearty and Brooks, 2000; d'Errico et al., 2003; Henshilwood and Marean, 2003). The difference of opinion is not surprising: these criteria each reflect a possible definition of what is peculiarly human.

Archaeologists attempt to overcome this difficulty by comparing the material cultures of Paleolithic populations living in different regions throughout the world, without losing sight of the variability of material cultures in the human societies known about in history, particularly those of hunter-gatherers.

This approach leads them to develop an alternative model to the current ones, the 'cultural big bang' and 'out of Africa'. According to this model the features defining cultural modernity are not peculiar to our biological species: they are thought to have emerged gradually among several different human types, among them Neanderthals. A number of archaeological clues support this third model (Zilhão, 2001; d'Errico, 2003; d'Errico et al., 2003; Conard, 2005; Villa et al., 2005; d'Errico et al., in press).

When we compare the subsistence strategies of modern humans from the 'Middle Stone Age' in Africa with Neanderthals in Europe and the Near East, we do not notice significant differences between these populations. Like the former, Neanderthals were able not only to occupy a territory of several million square kilometres spread over several ecological and bio-geographical zones, but also within this territory to survive, between –300,000 and –30,000 years BP, three great ice ages and three interglacial periods and to come through many sudden changes in climate that current global warming can hardly match in intensity (Tzedakis et al., 1997; de Beaulieu et al., 2001; Martrat et al., 2004).

Studies on Neanderthals carried out over recent decades show that their subsistence strategy was not based on eating carrion (that is, animals that had died naturally) but on organized hunting of a wide range of different-sized mammals including dangerous animals such as bison, mammoth, woolly rhinoceros and brown bear (Jaubert et al., 1990; Brugal, 1999; Grayson and Delpech, 2003). Research



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undertaken in the Near East, where Neanderthals and modern humans lived in the same areas, comes to similar conclusions (Shea, 1998). Granted, the former practised a 'gathering' strategy with less mobility as to habitat, whereas the latter went in for hunting based on seeking out prey. But as both strategies are attested among a large number of hunter-gatherers studied by ethnologists, the difference cannot be used to disprove the modern nature of Neanderthal societies.

## Technology

The technologies used by Neanderthals have long been seen as 'immediate', that is, requiring only a limited series of operations in order to be usable. Thus they would need just a low level of conceptualization. However, the recent discovery of six wooden lances on the 400,000-year-old Schöningen site in Germany (Thieme, 1997), confirming other finds of the same type, shows, on the contrary, that pre-Neanderthal populations were already perfectly capable of making lances for hunting and of shaping wood using specific techniques such as whittling and planing. This suggests a long, complex series of technical operations. The presence of four wooden handles, again at Schöningen, suggests the existence of composite tools as well. Quite recently, birch resin handles have also been unearthed at the Mousterian site in Königsau in Germany (Grünberg, 2002).

Blades made of hard rock produced by modern humans in Europe during the Upper Paleolithic (35,000–10,000 BP) have often been regarded as symptomatic of modern cognitive capacities compared with the Neanderthals' shards, which have been interpreted as resulting from a lesser ability to plan. But we have known for some years that blades were systematically produced both by Neanderthals (in Europe and the Near East) and by modern humans (in the Near East and Africa), and that this was happening several tens of thousands of years before the start of the Upper Paleolithic in Europe (Bar-Yosef and Kuhn, 1999). Analysis of the stone industries in South Africa has recently shown (Villa et al., 2005) that after a period known as Howiesons Poort, dated to around 50,000 years ago, during which blades were produced, stone technology went back to the production of shards very similar to what has several times been found in Europe among Neanderthals. We should also remember that even Australian aborigines, populations that are cognitively and culturally completely modern, did not produce blades over several thousand years of their history. From this perspective, blade production might be explained more easily as the result of a local cultural adaptation rather than reflecting a stage in cognitive evolution.

Bone spearheads and harpoons (Fig. 2) have for some years now been attested at a few African sites such as Katanda (Democratic Republic of Congo) and Blombos (South Africa): they are several thousand years in advance of the appearance of these objects in Europe (Yellen et al., 1995; Henshilwood et al., 2001). But this time difference is not necessarily symptomatic of Neanderthals' limited cognitive and/or linguistic capacities (Villa and d'Errico, 2001).

Neanderthals used stone spearheads whose base is often wide and thick, which implies a wide shaft and thus a fairly heavy lance or javelin. This type of weapon,



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Fig. 2. Bone harpoons discovered at the Middle Stone Age site at Katanda, Democratic Republic of Congo (photo: d'Errico)

when thrown by hand, is slow but has great penetrative power over a short distance and its point may cause mortal wounds, even in large animals. Bone spearheads of a similar size thrown in the same way would be unable to get through the skin and penetrate deep into the flesh of large mammals. On the other hand, the bone and stone spearheads used by the modern humans of the Upper Paleolithic are slim, light and highly aerodynamic; they are made to travel at great speed and to be thrown from a distance. This means that, unless they are halted by bone, they penetrate deep into the animal's body and wound internal organs. In short these two types of weapon seem more to indicate two different hunting strategies rather than opposing cognitive worlds. In addition, are bone tools, so to speak, the *symptom* or simply one of the possible but not obligatory results of the *acquisition* of these modern characteristics? In fact they are quite rare in the African 'Middle Stone Age' (MSA). Granted, a relatively small number of MSA sites have been explored along modern lines compared with the many European Middle and Upper Paleolithic sites. But does this difference completely explain why only a handful of bone tools have been discovered in southern Africa?

Eighty percent of the tools from this period come from the Still Bay strata at Blombos Cave (Henshilwood et al., 2001). A bone spearhead that is supposed to have come from the oldest Howiesons Poort strata at Klasies River, and which is very similar to 'Late Stone Age' (LSA) arrowheads, should probably be attributed to this period. In short, though the collection of tools from Blombos displays features that convincingly demonstrate the modern nature of the cultural system responsible for their production, we cannot use these data to argue that the whole 'Middle Stone Age' is typified by the systematic production of worked bone tools, nor the



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theory – since we know so little about the meaning to be attributed to the evolution of the shaping of bone tools – that this production gives a modern character to the material culture of the populations responsible for the production of the Middle Stone Age.

## Contact and the theory of Neanderthal acculturation

Do the cultural innovations we can see among the later Neanderthals come from contacts with modern humans? The question is a complex one because of the small number of human remains and the limitations of dating methods for that period. For a long time it was accepted that the first arrival of modern humans in Europe had to go back around 40,000 years. Bringing their own technology, decorative objects, bone tools, they were thought to have passed on (by imitation or acculturation) their technology and art to a few Neanderthal groups. Some researchers have even questioned whether Neanderthals themselves made decorative objects and bone tools. They prefer to attribute their presence at sites such as the Grotte du Renne, at Arcy-sur-Cure in the Yonne department, to Neanderthals collecting up objects made by modern humans living in nearby areas, or exchanging objects with their near neighbours, or archaeological strata getting mixed up. However, recent studies show that Neanderthals made the decorative objects and bone awls found in the Grotte du Renne: the proof lies in the presence in the same layers of refittings and byproducts of the objects manufactured, as well as many isolated neanderthal teeth discovered in the same strata. The bone awls, sometimes decorated with abstract motifs, show technical differences from those made by modern Aurignacian humans (d'Errico et al., 1998). The stone tools tell the same story: late Neanderthal technologies do not display any apparent affinity with the techniques introduced into Europe by modern humans. In fact they seem to be autonomous developments from local cultural traditions. In other words, late Neanderthals were already in the process of developing their own transition to Upper Paleolithic technologies, in western Europe at least, before modern humans settled in those regions. And, finally, the chronological precedence of the Aurignacian (the culture associated with the first modern European humans) compared with regional Neanderthal cultures is also being questioned (Zilhão and d'Errico, 1999, 2003). The new dating available for this period in Europe and the Near East shows that the earliest appearances of the Aurignacian are dated about 36,500 years BP and not 40,000 as was previously maintained. So the emergence of 'evolved' Neanderthal cultures would precede the arrival of the Aurignacian culture by several thousand years.

## Symbolic thought

Here again archaeology suggests that the first modern humans, our direct ancestors, were not the only ones to produce 'modern' cultures.

The existence of Neanderthal burials, which has several times been questioned, is currently accepted by the great majority of scientists. Out of the 58 burials



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discovered and dated to the Middle Paleolithic 35 are attributed to Neanderthals and situated in Europe and the Near East, and 23 are attributed to modern humans and situated solely in the Near East. At the Qafzeh and Skhul sites in Israel, dated to –90,000, the use of grave goods among modern humans is attested by the presence of a deer antler in a child's grave at Qafzeh and by a wild boar's jawbone placed in an adult's arms at Skhul. At La Ferrassie in Dordogne eight Neanderthal burials have been excavated: one adult was apparently buried with stone tools, bone retouchoirs and an incised rib; grave number 6 contained the body of a child about 3 years old whose head was covered with a stone with sculpted hollows.

The antiquity of this discovery caused doubt to hang over the deliberate nature of the offerings and caused people to say that Neanderthal burials were not 'symbolic', or not to the same extent as those of contemporary modern humans. But the argument is inadequate. Even if the contemporary burials of *Homo sapiens* seem more complex than those of Neanderthals, that is not enough to deny the latter's symbolic character. In many present-day societies individual burials without funeral offerings are carried out but cannot be said to have less symbolic meaning.

And so the data seem sufficient for us to state not only that the Neanderthal buried their dead just like the modern humans in Africa and the Near East, but also that all these burials have in common an absence of the decorative objects, bone tools and colourings that characterize later burials.

## Colorants

In most traditional societies the use of colorants has a symbolic value (body paint, coloured objects and clothing) and the presence of colorants at many African sites dated between 150,000 and 30,000 BP is one of the arguments often deployed to suggest that cultural modernity's emergence in Africa is the consequence of the emergence of our species on the continent. However, the excavations at Twin River in Zambia led to the discovery in 1999 – in strata dated between –260,000 and –40,000 years – of 176 fragments of colorants in five different colours and bearing traces of use. Prehistoric people collected these colorants several kilometres from where they lived (Barham, 2002). These dates are far earlier than the ones currently accepted by anthropologists and geneticists for the appearance of our species in Africa. Therefore, symbolic thought might have existed among populations who preceded the origin of our species on the continent. This realization is consistent with the often ignored fact that Neanderthals also used colorants. Black pigments, most often manganese dioxides, and fragments of ochre have been found at 70 Mousterian sites in Europe. The richest collection, comprising more than 500 colorants and grindstones (dated to between –60,000 and –50,000), comes from the Pech de l'Azé site in Dordogne (Fig. 3). Most of the pigments display traces of use in the form of abrasion surfaces comparable to the ones seen on the African colorants. Current analysis of the traces of manufacture and utilization (d'Errico and Soressi, 2002) seems to indicate that certain colorants were used like pencils to make marks on flexible materials like human or animal skin. Thus there is no reason to believe Neanderthals did not use pigments in symbolic activities.



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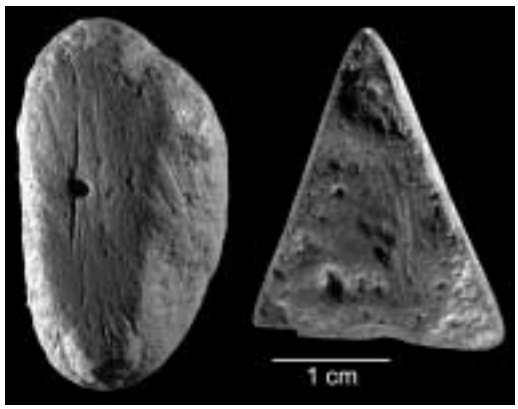


Fig. 3. Pebble and fragment of a block of manganese modified by abrasion, found in the Mousterian layers at Pech de l'Azé I, Carsac, Dordogne (photo: Jugie, Musée National de Préhistoire)

Furthermore, it is dangerous to compare the frequency of a feature of material culture in two cultural contexts that are far apart and from the comparison to deduce the significance in the respective societies of the behaviour associated with that feature. The amount of colorants emerging from an archaeological excavation depends on factors connected with the conservation of remains, the availability of the raw materials in the prehistoric environment, the techniques used for pigment production, the media onto which the pigments were applied and how often they were used. The presence of colorants with traces of utilization indicates that other pigments which leave no archaeological remains may also have been used. In the light of this evidence how can we maintain that discovery of pigments at 'only' 40 Mousterian sites in Europe shows that symbolic activities had less importance there than in Africa? The same could be said for most of the features used to identify the emergence of cultural modernity.

## Abstract and figurative representations and decorative objects

If symbolic production was the direct consequence of a biological change connected with the appearance of a new species, this behaviour should quickly appear in the material culture and alongside the phenomenon of speciation. But in fact we see (Baffier and Girard, 1998; Clottes, 2001; Conard, 2003; Broglio and Dalmeri, 2005) that the first figurative traditions we know of, those of the Aurignacian in Europe (the Chauvet Cave, the Grande Grotte Arcy, painted slabs from Fumane in Italy, human and animal figurines from the German Aurignacian) or the painted slabs with animal figures from the Apollo II site in Namibia (Wendt, 1976; Vogelsang, 1998) appear at almost the same moment (33,000 and 28,000 BP respectively) and very late compared with the date accepted for the African origin of our species (200,000 years ago). So though no credible figurative representation has been found at sites occupied by Neanderthals, biologically modern populations apparently did not feel the need to produce such figures for at least 150,000 years of their history.



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A few abstract incisions on objects dated to at least 75,000 years ago are known about in southern Africa, incised bones at Klasies River, incised ochre stones from Blombos, incised ostrich eggs at Diepkloof (South Africa), but engravings of a comparable level of complexity are known about in Europe at sites dating from the Lower and Middle Paleolithic such as Bilzingsleben, L'Ermitage, La Ferrassie, Vergisson IV, Vaufrey and La Chapelle-aux-Saints (d'Errico and Villa, 1997; Lorblanchet, 1999).

Only two incised pieces are known of in the Near East for the period preceding the Upper Paleolithic: a cortex with several parallel incisions found at Qafzeh, a site occupied by modern humans 90,000 years ago; and another cortex, engraved with several concentric lines, discovered at the Mousterian site at Quneitra, dating from –60,000 (d'Errico et al., 2003).

In this regard the only noteworthy difference between modern humans from Africa and Neanderthals from Europe is the proven production of decorative objects by the former (Fig. 4) at sites dating from at least –75,000 such as Blombos (Henshilwood et al., 2004; d'Errico et al., 2005) and certainly older, as demonstrated by the recent identification of shell beads at Skhul, Israel and Oued Djebbana, Algeria. In the present state of our knowledge, Neanderthals do not appear to produce ornaments till the end of their history, shortly before or at the time of their contact with modern peoples.

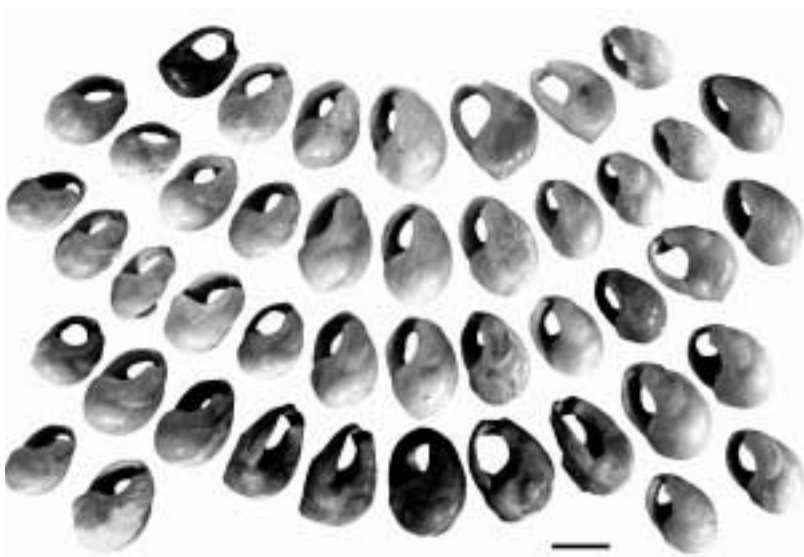

Fig. 4. Gasteropods of the species *Nassarius kraussianus*, pierced and used as ornaments, discovered at Blombos in 'Middle Stone Age' layer dated at 75,000 years ago (photo: d'Errico/Vanhaeren)



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## Conclusions

It is hard to define cultural 'modernity' exactly and we may even have doubts about reaching a consensus as to the meaning of the concept. However, we can be certain that applying the criteria used up to now shows that there is no match between biological and cultural evolution, between biological and archaeological data. In other words, the features of cultural modernity cannot be seen as a direct consequence of the biological origin of our species.

A second crucial aspect is that the subsistence strategies, technological and symbolic traditions of Neanderthals are not significantly different from those of modern humans living in Africa and the Near East at the same period (Fig. 5). In the current state of our knowledge we can simply recognize that some features, such as hafting techniques, complex stone knapping techniques, burial practices, use of pigments and incising abstract motifs are found at early periods in both regions, and that others, an evolved bone technology and wearing ornaments, appear first of all in Africa.

But it is possible that the early emergence of some of those features in Africa may be the consequence of the continent's large size and more numerous population. That may have increased the probability that cultural innovations would appear and spread there. And a third lesson flows from this: far from being the place where human symbolic cultures appeared, Europe, at the level of human evolution, was a cul-de-sac and not a disseminating centre. Bifaces reached Europe a million years after their invention in Africa. Similarly, agriculture spread into some European regions 7000 years after its invention in the Near East. *Homo sapiens* and Neanderthals thus evolved in parallel, even though speed and cultural forms varied from one population to another.

It now seems clear that the features we recognize as 'modern' appeared in different regions and in different human groups. It would be the same later with the invention of agriculture, writing, state societies, which appeared separately at several points on the planet.

And so archaeology shows us that in the same period, in both Africa and Europe, major cultural innovations emerged. In certain cases those innovations assumed a form where pre-existing behaviours became gradually more complex; in other cases there were sudden experiments with new behaviours. In some cases the innovations disappeared, probably with the people who created them; in others they spread. Some spread out over the three regions we have looked at (Europe, Near East, Africa). And this sporadic process did not come to an end 40,000 years ago, the date of the supposed 'big bang' of the Upper Paleolithic, but seems to describe appropriately the processes of invention or dissemination of innovations that were still to continue for some tens of thousands of years in several regions of the world.



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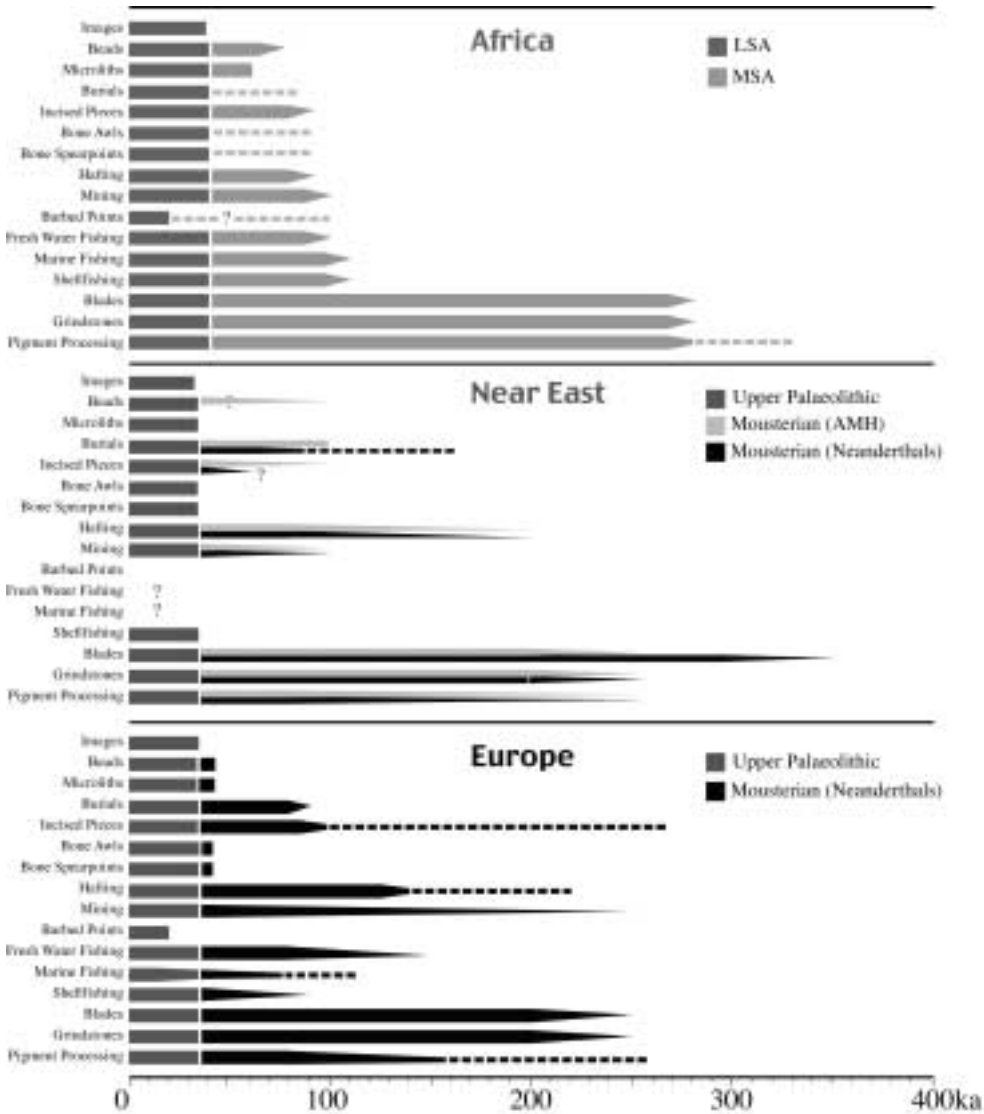


Fig. 5. Chronology of the appearance of behavioural features deemed to be indicators of modernity by McBrearty and Brooks (2000) in Africa, the Near East and Europe. The dotted lines indicate a non-continuous presence. The break at 50,000 years ago in Africa identifies the period when Klein (1999, 2000) situates a major cognitive and behavioural revolution. The break at 35,000 years ago in Europe and the Near East indicates by convention the start of the Upper Paleolithic in those regions (modified after d'Errico, 2003)



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**Acknowledgements**

I would like to thank the members of Commission 8 of the UISPP for inviting me to contribute to this special issue and also Jean-François Dortier and Dominique Sacchi for critically reading the manuscript. In addition I express my gratitude to all the colleagues who have in varying degrees collaborated in or supported my research over the last 10 years, especially Lucinda Blackwell, Alison Brooks, Chris Henshilwood, Jean-Marie Hombert, Graeme Lawson, Michèle Julien, Karen Van Niekerk, Marian Vanhaeren, Dominique Sacchi, María Fernanda Sánchez Goñi, Marie Soressi, Paola Villa and João Zilhão. The research I am conducting on the origin of symbolic thought and cultural modernity has been financed by the CNRS and the European Science Foundation's OHLL/OMLL programme, and by the ACI 'espace et territoires' of the French Ministry of Research and Education.

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Translated from the French by Jean Burrell



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