

# Paleolithic Ornaments: Implications for Cognition, Demography and Identity

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## Introduction

Paleoanthropology is the study of human origins. The most visible result of human origins research is knowledge about where and when the earliest members of the human line (hominins) or the earliest modern humans (*Homo sapiens*) first evolved. Equally important however are questions about not just where and when humans came to be, but how we came to be human. It is the origins of human nature – mental as well as physical – and the human condition – social as well as material – that occupies the energies of most paleoanthropologists. This is especially true for those researchers involved in the archaeological side of the field, that is, researchers who study the material traces of ancient human behavior rather than the bones of human ancestors.

A large part of what it means to be human stems from our unique cognitive capacities. Certainly we like to see ourselves this way: *prima facie* evidence is the name we have chosen for our species, *Homo sapiens*, ‘wise man’. Humans are more encephalized, have larger brains relative to the sizes of their bodies, than other organisms, but there is more to it than the sheer brain size. Many researchers argue that humans use their brains in unique ways. In addition to our unique abilities to manipulate symbols, humans may be unmatched in the ways they conceive of and manipulate the internal states of others (according to Dunbar, 1996; Humphrey, 1986) or plan action at a distance (Coolidge and Wynn, 2001), among other things.

Archaeological information is vital to studies of the origins of human cognition and the mental abilities of early humans. Analyses of fossil traces of neuro-anatomy may provide irreplaceable insights into the ‘cognitive hardware’ of fossil humans, but only the material objects that make up the archaeological record can tell us how our ancestors and close relatives actually used their large and complex brains. Here arises a conundrum, known as the ‘sapient behavior paradox’ (Renfrew, 1996). The archaeological record tells us only what people did in the past, not what they were

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capable of doing. Thanks to our large and complexly organized brains, humans are remarkably flexible. Our species has an astounding ability to devise ways of dealing with almost any situation, and to abandon habits and strategies quickly if they no longer fit our circumstances. The absence of evidence for a particular form of behavior does not necessarily imply that the hominins in question were incapable of such action, only that they did not engage in it. Understanding the implications of the archaeological evidence for human cognition requires careful consideration of the context in which behaviors occurred in the past (Hovers and Belfer-Cohen, 2005). To cite an obvious example, the absence of agriculture in the arctic regions of the world does not mean that people living there were incapable of using domesticated plants and animals, only that their situation was not suitable for it.

In this paper, we address the implications of evidence from one particular class of ancient material culture, beads and other 'body ornaments', for the evolution of human cognition and social behavior in the later part of the Pleistocene epoch. Though they were not the most spectacular elements of Paleolithic material culture, these objects have the advantages of being both widespread and relatively well studied. Moreover, beads appear comparatively early in the archaeological record associated with *Homo sapiens* in both Africa and Eurasia. We begin by considering in general terms why beads and similar kinds of ornaments might be important for the evolution of human behavior and thought. Ornament, and body decoration more generally, is a kind of information technology, one used especially for transmitting social information about the wearer. We then briefly review current evidence about where, when and in what forms such artifacts first appeared. Finally, we discuss the potential significance of the first beads for the cognition and social lives of Paleolithic humans. In our view, the appearance of these objects represents the interaction of previously evolved cognitive capacities with changing social and demographic landscapes. More than a revolution in how humans thought, Paleolithic ornaments represent a profound shift in technologies for encoding and transmitting information.

### **What is the significance of body ornamentation?**

Initially, ornaments may seem to be an unpromising basis for examining profound developments in how humans thought and behaved in the deep past. Beads, pendants and similar objects are integral parts of daily life in most world cultures. Yet as much as we may like beads, Americans and Europeans typically do not think of them as particularly important cultural objects. Most of us consider beads to be nothing more than superfluous embellishment, ephemera that are largely peripheral to the serious business of thinking and communicating with others. This attitude is reflected in the responses of some scholars to reports of unexpectedly early beads from sites in Africa and elsewhere. One often sees quotes to the effect that 'They could be significant, but they may be nothing more than decoration'.

We agree that beads may well be nothing more than decoration, but is decoration something so trivial? These early artifacts raise the questions of why humans decorate themselves, why they paint their skin, why they adorn their bodies or clothing with objects of particular colors and shapes, and why such objects suddenly turn

up in archaeological records when and where they do. Some practices of body ornamentation might be simple forms of visual display, analogous to the stereotypical postures and movements that other animals use to intimidate competitors or attract mates: as we will argue, the earliest use of pigments for body decoration among human ancestors probably functioned along such lines. However, ornaments play a much more diverse set of roles among recent human groups. A quick glance at a person's hands, ears and lapels can teach us a surprising amount about them. The objects we display on our bodies and clothing today reflect many aspects of identity, from marital status, religious affiliation and ethnic background, to levels of wealth (achieved or aspired to) or our political sympathies. Consciously or not, humans may communicate a great deal through 'simple' decoration.

We, along with a great many other researchers, argue that body decoration in all its forms is a particularly human medium for communication, a system of symbols (e.g. Lock and Symes, 1999: 206–8). Beads and other forms of body ornament are in fact technologies for encoding and transmitting information, a form of 'IT'. Much of the information that body ornaments transmits is social, in that it tells the viewer who we are and how we might relate to them and other people around us. We generally do not display roadmaps or thermometers or scientific treatises on our bodies. What we do provide in body ornaments are clues about how others might want to approach us, and even the kinds of relationships we would be willing (or unwilling) to form with them. As an obvious example, a gold ring worn on the fourth finger of the left hand tells people in certain cultures that the wearer is married and should be dealt with accordingly. Likewise, displaying the membership badge of a particular fraternal organization or religious society might invite someone to approach a stranger as though he or she were already an acquaintance. Even the apparently simple aim of making oneself 'look good' is sending a message to someone we hope will consider us attractive or at least attentive to our appearance.

Communicating social information through the display of material objects or other forms of body decoration, as opposed to verbally, for example, has a number of advantages. First, once the ornamentation is deployed, it takes no special effort from the wearer to broadcast their message to any number of people. Second, it allows us to communicate at some physical distance, to establish certain parameters of a potential relationship before close verbal or physical interaction occurs. Clothing or jewelry may tell us at first sight whether an unfamiliar individual is a potential ally or a likely enemy (Wobst, 1977). This saves time and effort and, more importantly, helps us avoid situations of potential conflict.

Who is the intended audience for the social messages encoded in beads and similar objects? The body ornaments a person wears may communicate many different things to many different people, but we believe that there is a principal 'target audience' for this particular form of information technology. Our closest friends and relatives already know a great deal about us, and there is no need to use material objects to communicate with them (although we may do so from time to time in order to make a point). At the other extreme, individuals from completely different cultural backgrounds, people unfamiliar with the local language of ornamentation, may fail to receive the intended message entirely. For example, someone from a very different culture might not recognize a gold ring on the fourth finger of

the left hand as a symbol of marital status, and might instead focus on the precious metal as an expression of wealth.

In our view the main target audience for the messages encoded in body ornamentation consists of strangers who occupy the 'middle distance' in the continuum of social relations. By that we mean individuals who either share the wearer's cultural background or are conversant with it, but who do not know him or her well. From the ornament *wearer's* perspective, it is beneficial to communicate social information to unfamiliar individuals in advance (or in lieu) of actually making contact with them. At the same time, only ornament *viewers* with similar cultural backgrounds will have enough knowledge to interpret correctly the messages encoded in body decoration. In other words, the visual communication made possible by codified use of ornaments is most useful at this particular scale of social interaction, or at least it may have first developed in this context.

Far from being mere ephemera, then, beads and other forms of ornament have a great deal to tell us about the evolution of human cognition, as well as the social and demographic conditions experienced by ancient human groups. Body ornaments signal the existence of the uniquely human ability to manipulate symbols. Yet the usefulness of body ornamentation as a medium for transmitting social messages is also related to the sizes and internal complexities of human societies (Lock and Symes, 1999: 230). Only when one is likely to be dealing with strangers, perhaps especially those we may encounter again, is it advantageous to display features of one's identity on one's body or clothing. Finally, the particular nature of the symbolic medium – beads and similar objects – may provide additional clues about both the information transmitted and additional details about the target audience.

### **Summary of the evidence**

Before discussing the antiquity and general significance of beads and body ornaments, it is necessary to define what we mean by the terms. For the purposes of this discussion, the term bead or ornament refers to small, durable objects that are somehow modified for suspension or attachment to other materials: this definition would include pendants, charms and virtually any other category of small, suspended object. Although we refer to beads as body ornaments, we do not assume that they were always displayed directly on human bodies. Based on tendencies of recent human societies, it seems probable that Paleolithic beads were very often attached to clothing or to other portable objects which, unfortunately, do not survive in the archaeological record. The common element here, however, is that beaded clothing and other ornamental artifacts alter and enhance the appearance of the individuals who wear, carry or use them.

The tendency to use small objects as elements in body decoration also has considerable time depth, but it appears relatively abruptly too. The so-called 'first appearance' of any element of the archaeological record is usually a minimum estimate. Archaeological sampling is imperfect and future discoveries will almost inevitably push the earliest dates back somewhat in time. However, as of this writing the oldest beads currently known – perforated marine shells – come from

late Middle Stone Age (MSA) layers at Blombos Cave on the coast of South Africa, dating to between roughly 65,000 and 75,000 years ago (Henshilwood et al., 2004). Projected dates for beads of ostrich eggshell are as early as 40,000 years ago in East Africa (e.g. Ambrose, 1998a), perhaps earlier (e.g. McBrearty and Brooks, 2000). Beads first occur in western Eurasia somewhat later than in southern Africa, ambiguities in radiometric dating notwithstanding. The earliest known Eurasian examples, associated with early Upper Paleolithic cultures, date to some time between 50,000 and 40,000 years ago (Bar Yosef, 2002; Kozłowski, 1990; Kuhn et al., 2001; White, 2003). Few diagnostic human fossils are directly associated with the earliest known ornaments in either Africa or Eurasia, but given the time period and archaeological associations it is widely believed that they were produced by early populations of anatomically modern humans, *Homo sapiens*.

It is important to emphasize that even these earliest ornaments are not unique, 'one-off' items. Instead, there is a great deal of formal continuity across time and space in how early *Homo sapiens* chose to make beads. In the Mediterranean area, certain types of marine shells remained in common use as raw materials for beads and pendants for more than 20,000 years (Kuhn et al., 2001; Stiner, 2003; Taborin, 1993). Pierced animal teeth were more commonly used for ornaments in central and western Europe (Hahn, 1993; Kozłowski, 1990; White, 2003) throughout the Paleolithic period. In East Africa, the tradition of making small, disc-shaped beads from ostrich eggshell has persisted from more than 40,000 years ago down to the present day. This redundancy in form is some of the best evidence that early beads played a role in systems of symbolic communication. One way to identify a symbol, whether in the form of a word, a gesture or a piece of graphic design, is through standardization and redundancy. An utterly unique image seldom has much meaning to anyone apart from the maker. The information contained in symbols can only be propagated and reified through repetition; thus, redundancy is the evidence that archaeologists need in order to determine whether or not meaning associated with that image was shared among individuals.

While beads and other ornaments seem to have been important to many early populations of *Homo sapiens*, it does not appear that earlier taxa, such as *Homo erectus*, *Homo heidelbergensis* or Neanderthals, habitually used these kinds of objects. Assemblages of artifacts associated with these earlier human taxa – the Middle Paleolithic in Eurasia and the earlier Middle Stone Age in Africa – often do include isolated crystals, fossils, oddly shaped stones and other distinctive items that were clearly collected and transported by hominins (see Hayden, 1993; Mellars, 1996: 371–5). However, while these may be visually arresting, unusual things with no obvious practical use, they tend to be unique items that were not widely repeated. More importantly, they are seldom if ever modified for suspension and display. Occasional reports of perforated objects in sites occupied by Neanderthals and earlier hominins have all been questioned for one or more substantive reasons (d'Errico and Villa, 1997; Mellars, 1996: 374–5). It is significant as well that while many Neanderthal burials are known, there is no evidence that decorative items were used as grave goods. The role of 'non-utilitarian objects' in Neanderthal society is open to debate, but there is no particular reason to assert that they were parts of technologies of body decoration.

The main exceptions to this rule are associated with the early Upper Paleolithic Châtelpéronian culture at two sites in southwestern France, which are reported to be stratigraphically associated with Neanderthal fossils (d'Errico et al., 1998; Mellars, 1996: 411–18). That the objects from these sites are beads is not in doubt. What is significant about Châtelpéronian beads is the possibility that they were produced by Neanderthals rather than anatomically modern *Homo sapiens*. However, these objects are roughly the same age as other early Upper Paleolithic ornaments in Eurasia, raising the possibility that this cultural 'innovation' among Neanderthals resulted from some kind of interaction, direct or indirect, with other human populations.

Common though they may be in some periods, beads are not the earliest possible material evidence for systems of body ornamentation among humans and human ancestors. The use of mineral pigments such as iron oxide (ochre) and oxides of manganese extends much further back in time, to as early as 250,000 years ago in both Eurasia and Africa (Barham, 1988; McBrearty and Brooks, 2000; Mellars, 1996). Moreover, evidence for use of pigments is clearly associated with skeletal remains of Neanderthals and other 'archaic' hominins. It has been suggested that these naturally occurring mineral oxides could have been applied as a preservative for hides and other organic materials (Mellars, 1996: 370). While this is certainly a possibility, there is no reason to suppose that mineral pigments were not also used for body decoration. In light of this source of ambiguity, we must think of early beads not so much as the first evidence for body decoration, but rather as evidence for the development and adoption of a new medium for displaying social information.

### What sort of message, what sort of medium?

Unfortunately, Paleolithic archaeologists seldom recover entire beaded artifacts intact. Under all but the most exceptional circumstances we find only isolated specimens, mere particles of an extinct communication system, lacking information on the rules of construction or syntax. To the extent that we can gain background or supporting data on ornament use and function, it is mostly from the manufacturing debris that accompanies these objects in archaeological sites. Human burials have considerably more potential to provide information on how ornaments were combined and displayed, but these are remarkably rare in the early Upper Paleolithic and late Middle Stone age, the periods when beads first appear in quantity. As a result, we are not in a position to read the social messages that may have been encoded in ancient objects such as necklaces or bead-encrusted clothing. Yet the medium of ornamentation itself can provide us some clues as to the messages it conveyed in the past.

In exploring the potential cognitive and social significance of Paleolithic ornaments, we should first entertain the possibility that they had comparatively little evolutionary significance at all. A wide variety of animals engage in display behaviors, using stereotypical physical attributes, movements and postures to increase their visual impact on conspecifics as potential mates, allies or adversaries. Like chimpanzees and gorillas, two close relatives of humans, it is likely that our ancestors used simple physical displays in social interaction.

On reflection, however, the kinds of beads found in early Paleolithic sites are poorly suited to simple display. They are small and, by themselves, visually unimpressive. Visual impact can be increased by assembling many of these small elements into larger objects, and in recent contexts people have created magnificent beaded objects that may entail a tremendous amount of effort. Alone or in small numbers, however, the Paleolithic beads do not have great visual force. On the other hand, ochre and other mineral pigments, the earliest possible medium of body ornamentation, are much better suited to making an arresting display; even a small amount of colorant applied to the skin, and especially to the face, can radically alter a person's appearance, making the wearer distinctive, attractive or intimidating. We hypothesize that the earliest use of pigments among human ancestors may have arisen in just this sort of context, as part of visual displays designed to emphasize the physical attributes or individuality of the wearer. Neanderthals possessing Middle Paleolithic culture, for example, may well have used body paint as a means of making themselves more impressive or more noticeable.

Why then did later people add beads and other ornaments as media for body ornamentation? In our view, the appearance of beads and other body ornaments in the late Middle Stone Age and earliest Upper Paleolithic marks a watershed event in human communication and social relations. Part of the significance of this shift can be inferred from the nature of beads as a medium. Small, discrete objects such as beads have several distinctive characteristics compared to older media such as mineral and organic pigments. First, beads are easily standardized. This standardization may come from selection of natural objects such as shells or animal teeth, or it may be produced as a result of the manufacturing process (White, 1999). Second, beads and beaded objects can be very durable, making them a semi-permanent medium that maintains its form, and its message, over a considerable interval of time. This means that the messages contained in the ornaments can last beyond the moment, beyond a single interaction or even a single lifetime. Unlike pigments, objects such as beads, and the information they embody, can even be transferred from one individual to another with great fidelity, so that the originator of the information need not be present for their message to get through. Third, because beads of the Paleolithic are simple, discrete objects, they can be used in compositions to express quantity and levels of investment very effectively. Beads can be added to a garment, or piled upon a person virtually *ad infinitum*. Beyond simply increasing overall visual impact, the volume of ornamentation or arrangement can be adjusted to convey information about scales of investment or ability to marshal resources, that is, about wealth and power.

The choice of beads as a medium for body decoration during the later part of the Middle Stone Age and the early Upper Paleolithic implies that social information and the human identities it may have described were lasting and comparatively well ordered. The use of transferable, durable objects also indicates that the information encoded in body ornaments could be of value even when the individuals involved were not present: this is just the right sort of technology for establishing and maintaining relationships over large areas or spans of time. Because they easily convey information about quantity and labor costs, beads and similar objects also provide an ideal format for social competition, conspicuous displays of an individual's wealth,

energy or family connections. Such an interpretation implies that early bead use reflects heightened levels of competition within or between human societies, competition that was played out in the socio-symbolic rather than physical arena.

The appearance of ornaments in the Paleolithic record also implies an expansion in the scales of human social interaction. We have already made the case that the principal audience for body ornaments consists of 'strangers in the middle distance'. The appearance and rapid proliferation of beads indicates that people were finding it necessary and advantageous to broadcast their identities to larger numbers of people spread across a more complex network of groups. This phenomenon, described by Clive Gamble (1999) as a 'release from proximity', refers to a significant expansion in the scope of human social interaction beyond the immediate family and other very familiar individuals. We can only guess as to the particular content of the messages conveyed by body ornaments – marital status, group affiliation, wealth and status. However, it does seem clear people began using body decoration to communicate more things to more people than ever before.

We have argued that developments in technologies for social communication among the earliest anatomically modern *Homo sapiens* reflect a burgeoning need to communicate efficiently with stranger and friend alike. Why might the scale and complexity of social communication have changed at this particular time? In our view, these exigencies arose from demographic pressures, increases in population sizes relative to available territories. On one hand, larger populations mean that people encounter strangers more often on a daily basis. Moreover, when packed together, people often develop more rigid social boundaries, partitioning populations into a range of exclusive or overlapping subgroups, and affiliation with these groups is often expressed in dress and ornamentation.

There is independent evidence to suggest that human populations were reaching unprecedented levels at about the same time that beads make their first appearance in the archaeological record. Some genetic data are interpreted as evidence for one or more severe population 'bottlenecks', drastic reductions in human populations, were followed by rapid growth during this period, perhaps associated with the evolution and dispersal of *Homo sapiens* (e.g. Harpending and Rogers, 2000; Hawks et al., 2000; Schriver et al., 1997; Wall and Przeworski, 2000). Subtle but consistent expansion of human diets and increasing site numbers provide further evidence of population growth (Mirazón Lahr and Foley, 2003; Stiner et al., 1999, 2000). With the beginning of the Upper Paleolithic in Eurasia humans began to abandon the near-exclusive focus on large game that had characterized the Neanderthals that preceded them. Increasingly, the diets of Paleolithic hunter-gatherers incorporated small animals and birds, marine resources, and eventually vegetable foods. These kinds of resources represent a decline in foraging efficiency, in that they yield lower net returns per unit time or energy invested than do large game. On the other hand, they afford higher gross yields per unit area (Kuhn and Stiner, 2001). This gradual shift from large game to low-yield, high-density resources such as rabbits and seed plants is often interpreted as a response to increasing population densities and a need to extract more food from finite territories. Although the available data are fewer, the early appearance of fishing and the use of grinding stones for processing plant foods may indicate human diets began to expand even earlier in Sub-Saharan Africa



(McBrearty and Brooks, 2000) and the Mediterranean Levant than in temperate Eurasia.

We emphasize that these populations of Paleolithic *Homo sapiens* were very small by modern standards: what is important are relative changes in population densities. The pressures that population density places on human societies depend on the nature of economies and the conditions of the landscapes on which people make their living. Upper Paleolithic and late Middle Stone Age populations would have been tiny and sparsely distributed compared to current ones, but they were large and dense compared to earlier periods.

If we are correct in thinking that beads and other forms of body ornamentation represent a new way of communicating, then it follows humans must already have been using symbols to communicate when ornaments first appeared in Paleolithic sites. There is no doubt that this sort of communication was underwritten by evolutionary developments in cognition, particularly in the ability to manipulate symbols. However, the archaeological 'moment' when new technologies for communication first appeared surely followed evolutionary changes in neuro-anatomy and basic cognitive capacities, though by how long we cannot say. Rather than the appearance of novel cognitive abilities, the integration of beads and other ornaments into the material cultures of both sub-Saharan Africa and Eurasia reflects changing social and demographic conditions. Increasing populations associated with the origins and dispersal of anatomically modern *Homo sapiens* changed the social landscape, putting nearly everyone in more frequent contact with strangers. This heightened level of interaction fostered heightened sensitivity to group boundaries as a means of delimiting and defending territories (e.g. Cashdan, 1983; Kelly, 1995: 190–203; Peterson, 1975). In an ever more complicated social landscape, there are many advantages to communicating one's identity effectively and to as many other people as possible. Such conditions in turn encouraged the development of novel modes of communicating social information, including body ornamentation. Thus began the first stages of the information revolution.

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