



ROBERT G. BEDNARIK

TOWARDS A BETTER UNDERSTANDING OF THE ORIGINS OF BODY DECORATION

ABSTRACT: *The hypothesis that beads and pendants mark the advent of body decoration, and that they do not occur before the Aurignacian period of Europe, is examined. The global evidence relating to the beginnings of bead production is reviewed and it is concluded that bead-like objects were commonly produced long before the Upper Palaeolithic. The taphonomy of this evidence is also considered, and in particular, it is noted that most types of body decoration are not likely to result in archaeologically detectable evidence. It is proposed that the available archaeological record would not be adequate to refute Pre-Aurignacian body decoration even under the most favourable conditions. Moreover, the existence of Pre-Aurignacian beads effectively refutes the hypothesis relating to Aurignacian beads.*

KEY WORDS: *Beads – Palaeolithic – Ochre – Decoration – Metamorphology*

INTRODUCTION

The subject of the beginnings of body decoration, or rather of the evidence that has been presented for it, has been as superficially considered by empiricism as any other subject related to the cognitive evolution of humans. White, who focuses on the production of perforated beads in the early part of the Upper Palaeolithic, concludes that “Aurignacian body ornamentation explodes onto the scene in southwest France during the Early Aurignacian (i.e. between 35,000 and 33,000 BP). It appears to have been complex conceptually, symbolically, technically and logistically right from the very beginning... This sudden, intrusive, and complex character of the earliest body ornamentation remains one of the greatest explanatory challenges in all of hominid evolution” (White 1989: 385).

Accepting the “record” as a true reflection of the circumstances of its production, White thus presents us with an unsolvable enigma. How could a people suddenly begin to produce beads and pendants, invent social contexts for such non-utilitarian objects, and develop the requisite technology to manufacture them in large numbers? Ar-

chaeology is not well served by the formulation of such conundrums, which can only direct attention away from important issues. In this case, the riddle can be easily enough answered by re-phrasing the question: why does a phenomenon (body decoration), the suggested material evidence of which (perforated objects) is susceptible to selective preservation (it can only survive in some materials and environments, not in others), occur where such evidence can have survived, and not where it cannot have survived? If there were no pre-35,000 BP perforations found, would this prove that perforation was not practised then? Obviously it would not, it would at best (and not necessarily) prove that it was not applied to non-perishable materials – and there is a very marked change towards using bone, ivory and antler at around 35,000–33,000 BP. The simple fact that much earlier evidence for perforation exists is relevant, but it is not even required to refute White’s proposition, which was based purely on argumentation from negative evidence and is therefore invalid in archaeological interpretation.

The concept of the sharp Middle to Upper Palaeolithic transition has taken a battering in recent years. Several

commentators, including Lindly and Clark (1990), Duff et al. (1992), Rolland (1992), Bednarik (1986) and Hayden (1993), have all examined the basic underlying propositions, and have found that there seems much more evidence for continuity or for a more gradual development in many facets of human evolution. The skeletal evidence from such sites as Mladec (Freyer 1986, Trinkaus, Le May 1982) and Vindija Caves (Karavanic 1995) is highly relevant. Bednarik (1992a) reviewed the adequacy of the samples of Pre-Upper Palaeolithic cognitive evidence that had been cited in support of propositions on the subject, demonstrating serious inadequacies. He also repudiated claims that taphonomy could not account for biases in the "record" (Chase, Dibble 1992) by demonstrating logically that the opposite was much more likely to be true, and that it is precisely taphonomy which accounts for most quantifiable attributes of any archaeological evidence – and most particularly Pleistocene evidence (Bednarik 1992b, 1993a, 1994a).

In accepting taphonomic logic as the ultimate test for any archaeological pronouncement, it is pertinent to subject White's "explosion of art" (cf. also Byers 1994) to the taphonomic acid test. His model is based on three corpora of art: the Upper Palaeolithic parietal art primarily of Franco-Cantabria, the Upper Palaeolithic portable art primarily of Europe, and the vast numbers of engraved stone plaques and cobbles at a small number of mostly European sites. Only one of these three bodies of evidence, the last mentioned, can be regarded as a possibly realistic sample. Nearly all of the known Upper Palaeolithic rock art, over 98% of it, occurs in limestone caves, and would not have survived at unsheltered sites of the respective regions, so we are almost certainly dealing with a remnant population that has been subjected to most severe taphonomic selection processes. Hence it is unacceptable to base any interpretation on the distributional or compositional characteristics of the surviving sample, without considering which common denominators may be preservation related rather than cultural interpretation related (Bednarik 1994a).

One only needs to consider the often expressed question why the geographical distributions of the parietal art and the mobiliary art are so incongruous in the European Pleistocene, although both art forms were supposedly practised by the same societies. Taphonomically this is a vacuous question: why is the geographical distribution of a phenomenon that survived a certain set of selective processes different from that of another phenomenon subjected to a different set of such processes? Indeed, the portable art is entirely dominated by remains of mineralized organic materials (limestone, ivory, teeth, shell, and fossilized bone or antler), which have only been found in high-pH sediments, the only ones affording any chance of survival for these materials. Hence it is clear that the geographical distribution of these remains does not coincide with their historical distribution, and it is also likely that the material composition of the surviving sample is largely determined by taphonomy.

To derive far-fetched cultural and interpretational conclusions from the quantitative and qualitative characteristics of such a taphonomically distorted sample, which has been a preoccupation of archaeology for over a century, is most inappropriate and totally devoid of science. To succeed here we would need to know the original geographical, compositional and chronological characteristics of each relevant class of remains, which we will probably never know. Basing concepts of cultural plateaus, such as that of the advent of the Upper Palaeolithic, on preservational accidents of history, on taphonomically truncated and skewed samples, on the radiocarbon dating plateau and on biased, preconceived models is profoundly unscientific, and there should be no room for this form of rationalization in any sophisticated discussion of Pleistocene cultural evidence. Moreover, the familiarity of many of the protagonists in this debate with the evidence they need to be acquainted with to debate the subject in an informed and balanced fashion leaves much to be desired (Bednarik 1992a, 1993b). There is not just the direct effect of the dissemination of notional models, but the tendency to vigorously defend these when they are challenged, relying on their lack of refutability.

EARLY PERFORATION

Empiricists may find such dialectical reasoning less convincing than what they would regard as facts, even though in reality it is far more sound epistemologically than models of the "origins of material representations" (White 1992) based on samples that are not only taphonomically skewed, but also distorted due to the incomplete knowledge of their purveyors. Nevertheless, even an examination of the "facts" soon dispels the determinist notions. Let us, for the moment, pretend that White's argument of beads and pendants having to be the earliest evidence of personal ornamentation is correct, and that the earliest beads were made of non-perishable materials, and let us overlook that both propositions seem implausible. Surely, then, it would be crucial to pay special attention to the earliest appearance of such objects on the surviving record. White believes that "the earliest fully credible personal ornaments in Europe are the pierced animal teeth recovered by Kozłowski (1982) from Bacho Kiro Cave in Bulgaria, from an Aurignacian level dated to >43,000 B.P." (White 1992: 546), a claim that is repeated verbatim in White (1993a: 279) and White (1993b: 333); so it is not likely to be a misprint, although it is obviously badly expressed (surely what White means to say is not "the earliest", but "the earliest *known*"). He seems unaware of earlier such finds, of the evidence of drilling as far back as the Acheulian (Keeley 1977), and of the Middle Palaeolithic status of the Bacho Kiro assemblage (which is of the Proto-Aurignacian). The perforated objects from the Repolusthöhle in Styria, for instance, were first published and illustrated in 1950, but forty-three years later, White has still not considered them. They have long been

on public display in the Eggenberg Castle of Graz, Austria, where I first examined them thirty years ago. But White, who writes so extensively about Palaeolithic perforated objects, does not seem to be among the tens of thousands of people who have seen them. They are significantly older than the site's Aurignacian horizon and separated from it by a massive cryoclastic layer. The lithic assemblage they were found with has been described as Levalloisian, Tayacian and Clactonian. Although perhaps a Middle Palaeolithic industry, it has recently been proposed to be almost 300,000 years old, on the basis of the phylogeny of the related bear remains (Bednarik, 1992a: 34). Irrespective of this, the industry certainly contains no typical Mousterian elements (Mottl 1950, 1951, Murban, Mottl 1955) and may well be Lower rather than Middle Palaeolithic. The perforated objects found in it may bear the oldest perforations known to archaeology (*Figure 1*). This proves neither that they relate to the oldest phase of perforation, nor that the objects were used as personal ornaments; but if small perforated articles from the Upper Palaeolithic are inevitably regarded as evidence for body decoration rather than utilitarian objects, then we should not treat similar finds differently simply because they are older and we believe that we know that the earlier people possessed no such technology or tradition (Bednarik 1992a).

There are many Micoquian, Mousterian and Middle Stone Age perforated objects that we also need to consider, including those from the Bocksteinschmiede (Narr 1951), La Quina (Martin 1907–10), Pech de l'Azé (Bordes 1969), Lezetxiki (Baldeon 1993), Prolom II (Stepanchuk 1993), Border Cave (Beaumont *et al.* 1978) and others – in all over 200 perforated objects which are generally accepted to be significantly earlier than the Aurignacian. Moreover, there is no reason to assume that naturally perforated objects were not used as pendants or beads, and many have been found in Lower and Middle Palaeolithic occupation sites, including naturally perforated bones, shells, fossils and small vertebrae, e.g. of fish (for examples, see Marshack 1991a, Goren-Inbar *et al.* 1991). But

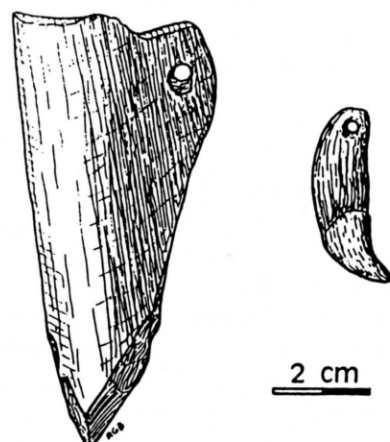


FIGURE 1. Flaked bone point and wolf incisor, both perforated. Lower or Middle Palaeolithic, Repolust Cave, Austria.

what is even more important is the question: what proportion of ethnographically known beads consists of materials that would survive for tens of thousands, even hundreds of thousands of years? Most modern beads from such contexts, for instance among the Australian Aborigines, are made of perishable materials, such as seeds, even though the Australians produced beads from sea shells at the time of the European Aurignacian (Morse 1993). We have thus no reason to assume that this was not the case in the distant past. Additionally, even most of the bead materials that sometimes do survive for such huge time spans do so only in certain preservation conditions. None of those early examples found come from low-pH sediments (except those of stone; e.g. at Debari, Japan), and unless we were to assume that hominids deposited their beads only in high-pH soils, intentionally, we will have to accept that we are dealing with preservational flukes. To base far-reaching pronouncements about human capacities on such inadequate, distorted and largely negative evidence is taphonomic illiteracy, as is the selective reporting of evidence attributable to inadequate knowledge of the reporter (which is a factor of metamorphology; Bednarik 1995).

ABOUT BODY ORNAMENTATION

The principal arguments against White's thesis, however, have not been mentioned so far. They deal with more fundamental questions concerning the kind of evidence that demonstrates body ornamentation, or what such practices really signify. Beads and pendants certainly do suggest such traditions, although it is to be cautioned that small perforated objects can be utilitarian (Chase, Dibble 1992). However, I do agree that for most specimens derived from the Palaeolithic corpus we may disregard that possibility, particularly where the objects are small, occur in large number, or are of very hard material (e.g. teeth) drilled near one end.

The most important aspect of this entire subject of body decoration of humans is that while such practices were, and still are, widespread (including in Western society), nearly all such evidence has little or no chance of being detected by archaeologists. Body painting, for instance, was extensive among the Tasmanians, although the ethnographic record offers no graphic art at all from the island, while it is so extensive on the Australian mainland. Body painting is widely practised among extant traditional societies, and haematite, for instance, was used in the Lower Palaeolithic of all Old World continents (Bednarik 1990a, 1992a, 1993c), and in nearly all periods from thereon. It would be judicious to allow for the possibility that some of it was used for body painting.

Tattoos and cicatrices are also widely used among human societies, and while the oldest direct evidence may come from Similaun Man (the Neolithic "Iceman" from the Italian-Austrian border; Barfield 1994), we have indirect suggestions of such body decoration from the Upper Palaeolithic. The body markings found on several figu-

rines (e.g. Kostienki 1, 2, 4, 8, 24, and the Mezin figurines) may or may not indicate tattoos or other forms of personal ornamentation. Marshack (1991b) has raised the possibility that the girdles (Pavlov, Kostienki I) and arm-bands clearly depicted on many otherwise nude female figurines have specific cultural meanings (Figure 2). Since these articles have hardly the appearance of purely utilitarian apparel, Marshack may well be right, and one would assume that the artists had good reasons for the standardized depiction of such items over huge geographical areas (cf. the armbands of Willendorf 1, Kostienki 1, the largest of the Kostienki limestone statues [Bednarik 1990b: Fig. 1] and one of the incomplete Avdeevov torsos). Irrespective of the significance and correct interpretation, we must accept that we can only know about these possible forms of personal ornament because they were actually depicted on non-perishable materials. We would know nothing of them if they had not been depicted, or if they had been depicted only on, say, wooden objects which are usually not preserved. The fact that we have no such indirect evidence from earlier periods is more likely a taphonomic phenomenon than an archaeological one, it proves in no way that such traditions did not exist. On the contrary, the complexity of apparently symbolic traditions in the Aurignacian renders it difficult to account for them without preceding cultures. However, if we ignored both the preceding evidence and the taphonomic limitations inherent in all archaeological data, we would be likely to arrive at the conclusion that a new tradition “explodes onto the scene”.

The argument that the ivory beads of the Pleistocene can only have been used as “personal ornaments” is itself a fallacy. It is a non-refutable proposition and therefore unscientific, it is incapable of being tested. Alternative explanations are just as likely correct, and yet they are not even considered by those who already “know” what the

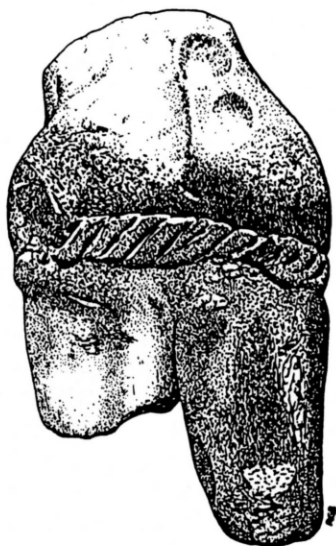


FIGURE 2. Fragmentary female torso from Pavlov, Moravia, of fired clay, early Upper Palaeolithic. The detailed hip belt seems to be made of evenly twisted flexible elements.

“evidence” signifies. White indicates no interest in perforated Pleistocene beads other than those of Europe which I think limits his horizons of bead production considerably. I should just mention in passing beads made of another material dominated by mineralized calcium carbonate of organic origin, ostrich eggshell (Bednarik 1992c). Such Palaeolithic beads occur in India (Bhimbetka, Patne), Siberia (Krasnyi Yar, and in Trans-Baykal), Inner Mongolia, Hutouliang, and in the Gobi (Shabarak-usu). Ostrich eggshell disc beads also occur in various parts (and periods) of Africa, and a variety of other materials have been used as beads in the Asian Palaeolithic (Bednarik 1994b).

If we are prepared to accept the claim that the Sungir’ beads were sewn onto items of clothing (which is a good possibility but not a proven fact), to describe them as decorative is still hardly an objective definition. What is the word “decorative” meant to signify in this context? For instance, it would be quite plausible that the beads fulfilled the same function as the coins or other objects sewn onto the apparel of contemporary individuals: they are hardly there for simple decoration, they signify complex social, economic, emblematic, ethnic or ideological meanings that may be almost inaccessible to the shamans of Western “science” even in the case of contemporary peoples. “Decorative” practices often have meanings that are far removed from the simplistic ideas of Western anthropologists. For instance, they may be protective, warding off evil spirits or spells. How would interstellar visitors interpret the stripes on a sergeant’s uniform “archaeologically”? Or the carved ivory figurines from an incomplete chess set? Would its knights signify an equine cult to them? Surely it is foolhardy to even try and fathom the motivations that led to the presence of such a large number of beads in the three Sungir’ graves. To attribute them to a newly acquired propensity towards “body decoration” seems to be an over-simplistic rationalization, particularly as this find is most unusual and there are no others like it from the entire Pleistocene. I emphasize this because one of the favourite arguments of those opposed to any form of Pre-Upper Palaeolithic symbolism is to discount finds they regard as rare or unusual (e.g. Chase, Dibble 1987).

The entire *sapiens*-centric concept of “decoration” or “ornamentation” needs to be reviewed objectively. We should ask: what is it that lends aesthetic pretensions to certain articles? To randomly select a specific case: why should a “decorated” woman be perceived “prettier” by society? Surely non-human species would not regard her so, therefore we need to explain this concept in some cultural terms: it evolved with humans. But how? There are no doubt many possibilities, but let us consider just one, purely for the sake of argument. If hip belts or armbands on Upper Palaeolithic females (Figure 3) indicated, say, a particular status or message, the objects would have absorbed aspects of that status, and emblematic symbolism would seem to develop into decorative symbolism. I am not at all suggesting that this is what happened, I am merely



FIGURE 3. Female limestone sculpture from Kostienki 1, Russia. The finely fashioned waist belt and armlet are clearly visible.

illustrating that it is not helpful to project modern concepts of decoration onto extremely remote societies, and that it is necessary to view their symbolic systems as having been no less complex than our own.

ABOUT BEADS AND PENDANTS

Let us now consider the evidence White presents as the earliest body ornamentation. He refers especially to the three human burials found at Sungir', northeast of Moscow. They come from an industry of clear Middle Palaeolithic origins, characterized by many earlier elements. Most particularly, the concave base, bifacial projectile points from Sungir' (Bader 1978: Fig. 86) are no different from those of the Russian Middle Palaeolithic industries, such as that from Starosel'e, Crimea (Boriskovski 1984: 121). The bulk of the lithic assemblage is clearly mousteroid, or resembles types usually associated with the Middle Palaeolithic: consider the numerous Mousterian points and scrapers, and the common Levallois pieces (Bader 1978: Figs. 79–83, 87–92, 96). Most specimens have close parallels at such sites as Grotty Ust'-Kanskaya, Grot Obirakhmat, Grot Ogzi-Kichik, Grot Teshik-Tash, Molodova I, Rikhta, Zhitomirskoe, Antonovka I, Kiik-Koba, Korolevo and others. White seems to consider what he regards as a Mladec (Lautsch) point at Sungir' to be of importance, ignoring that such bone points occur in many Middle Palaeolithic sites (e.g. in Chokurcha, Crimea; and ten specimens at Salzgitter-Lebenstedt, Germany; Tode 1953). Similarly, the ivory spear is not a new innovation at Sungir': a long polished lance point was made from a split elephant tusk, reportedly by *Homo erectus*, at Bilzingsleben (Germany), some 300,000 years earlier, and was even "decorated" with an engraving (Mania, Weber 1986: Pl. 87, Bednarik 1995b).

In the same vein, the perforated articles have many predecessors in Europe, Asia and Australia, from generally Middle Palaeolithic contexts. There are, in fact, very few distinctively Upper Palaeolithic types among the lithics of Sungir'; therefore the site is a poorly chosen example to underpin a model of a "cultural explosion". In reality, the assemblage provides an excellent example of cultural continuity from the Middle to the Upper Palaeolithic, combining numerous technological elements from both periods. This is one of the most northerly known Palaeolithic sites in Europe, and so quite probably a site of marginal, "Epi-Middle Palaeolithic" people, rather than the vanguard of the hypothetical "Cro-Magnon invasion".

The most realistic way of viewing the Sungir' assemblage may well be that it is transitional between typically Middle Palaeolithic industries and those of late Upper Palaeolithic reindeer hunters. Like the earlier Châtelperronian, it defies simplistic definitions, and White (1992: 548) argues that the Châtelperronian Neanderthals may have scavenged all their "art" objects from the contemporaneous early Aurignacians (which he presumes to be anatomically modern, of which we have no proof). This kind of explanation has to be resorted to when pre-conceived models clash with incompatible evidence, but in this case it only leads to an illogical tautology. White effectively proposes that the Châtelperronian Neanderthals were incapable of producing "symbolic" artefacts, but that they collected such artefacts and presumably used them. For what? It is my view that a hominid who has no concept of symbolism at all will not perceive a non-utilitarian object as being symbolic, or in any other way useful, and worthy of keeping. The implication that such hominids adopted symbolism by "learning" it in this way is particularly incongruous, neurologically as well as logically. It ignores the concept-mediating role of symbolism, and that it can only be acquired through the identification of intangible conditions or perceived truths by artistic understanding. One could just as easily claim that the first Upper Palaeolithic people scavenged several tool types from the "more advanced" Neanderthals; if we were to believe the "African Eve" model we would have to attribute a Middle Palaeolithic technology to the "immigrants", because there is no "Upper Palaeolithic" in sub-Saharan Africa until 20,000 years ago.

The importance of scepticism of some claims concerning body decoration is shown by their exponents' ignorance of perforated objects predating the Aurignacian. There is a considerable range of such perforated objects, in terms of apparent intentionality alone. Some specimens show traces of drilling with a stone tool (rotation striae) or they have perfectly circular, bi-conical openings, or there are clear stone tool marks around the opening (e.g. Marshack 1991a: Fig. 12). Others are circular but lack direct proof for intentional drilling or reaming, while others again bear non-circular openings of various shapes. Perforation itself does not necessarily demonstrate human agency. Naturally perforated objects occur and some are known from early occupation sites, including bones, shells

and fossil crinoids (Marshack 1991a, Goren-Inbar *et al.* 1991). Small objects may be perforated by the gastric acid in the stomach of some animals (e.g. hyaenas), or by small boring species (especially found on shells), and possibly even by root action (through the respiratory carbon dioxide of mycorrhizal micro-organisms; Bednarik 1992c). Bones may also be punctured by the canines of carnivores, although this is not as convincing an explanation for perforated phalanges as some commentators have claimed: a carnivore capable of perforating a bone can just as easily crush it entirely, and there is a conspicuous absence of identically perforated bones in taphonomic studies of modern carnivore bone crushing (but cf. Chase 1990). Moreover, the presence of 111 similarly perforated phalanges of *Saiga tatarica* from just one site, the Micoquian levels of Prolom II, Crimea (Stepanchuk 1993), is not very likely to be attributable to bone taphonomy, particularly as the perforations are entirely restricted to one type of bone. One commentator even attributes perforations on teeth to carnivore chewing, while admitting that he could not explain why an animal would chew a tooth (Davidson 1990: 54). In reality, it seems extremely unlikely that any carnivore would risk its own canines by chewing teeth, which are totally bereft of any nourishment.

The Prolom II sample of phalanges with holes consists mostly of first and second phalanges pierced near the distal epiphysis. Some of the holes are quite circular, others are more irregularly shaped (Stepanchuk 1993: Fig. 15). Most of them do not seem to resemble the known phalanges with canine perforations (e.g. Blasco Sancho 1992: Plate 11). This raises the old questions concerning numerous doubtful specimens found at various sites across Europe, which can only be resolved by more intensive osteo-taphonomic studies. While some specimens bear holes that seem almost impossible to attribute to carnivores or to solution (e.g. the wolf vertebra and metapodium from the Micoquian of the Bocksteinschmiede – Marshack 1991a; the reindeer phalange from the Mousterian of La Quina – Martin, 1907–10; the cranial fragment and phalanges from the Mousterian of Lezetxiki – Baldeon 1993), that explanation seems much more realistic in some other examples. Clear criteria for a more effective discrimination between anthropic and natural perforation of bone would be useful, but they will not become available if we simply ignore this corpus in defense of any past precipitate and untenable pronouncements about such material.

The same reservations, however, do not apply to teeth, particularly where the perforations occur near the root or are accompanied by tool marks. The perforated or partly perforated teeth from the Repolusthöhle (Austria), La Quina (France) and Bacho Kiro (Bulgaria) are pre-Aurignacian (see Bednarik 1992a). Numerous other very hard, perforated objects are from cultures intermediate between the Middle and Upper Palaeolithic. The perforated objects (fox canines, shells, stone, fossil coral and belemnites) from Kostienki 17 (Russia) are from below a

volcanic deposit thought to be about 38,000 years old (N. Praslov, pers. comm.) (Figure 4), while the very similar stone pendant from Shiyu (China) is apparently only over 28,000 years old, but still comes from an industry combining Middle and Upper Palaeolithic types (Bednarik and You 1991) (Figure 5). The perforated teeth from the Châtelperronian of Grotte du Renne (France) were apparently made by Neanderthals. The same applies to the fossil shell and the basally perforated or incised (for suspension on a string) teeth from the same site, which suggest that the Neanderthals concerned were able to use knots. The site's Châtelperronian has also yielded several fragmentary ivory rings (Figure 6) and a long pointed bone object with a deep incision around the thick end which suggests that it was also attached to a string. That method of suspension occurs widely in the Upper Palaeolithic, not only in Europe (e.g. in La Combe, Abri Blanchard, Abri Cellier), but also in India (Billa Surgam III, Bednarik 1993d) and Siberia (e.g. Mal'ta, Buret'; Abramova 1962). This is only one of many distinctive cultural features which are shared by Neanderthals and subsequent peoples (Bednarik 1994c).

Of a similar age are the twenty-two shell beads recently excavated in Mandu Mandu Creek rockshelter, Western Australia (Morse 1993). Some of the small cone shells (*Conus* sp.) show wear consistent with having been on a string, and they are from a level about 32,000 years old. While it is thought that their users were physically

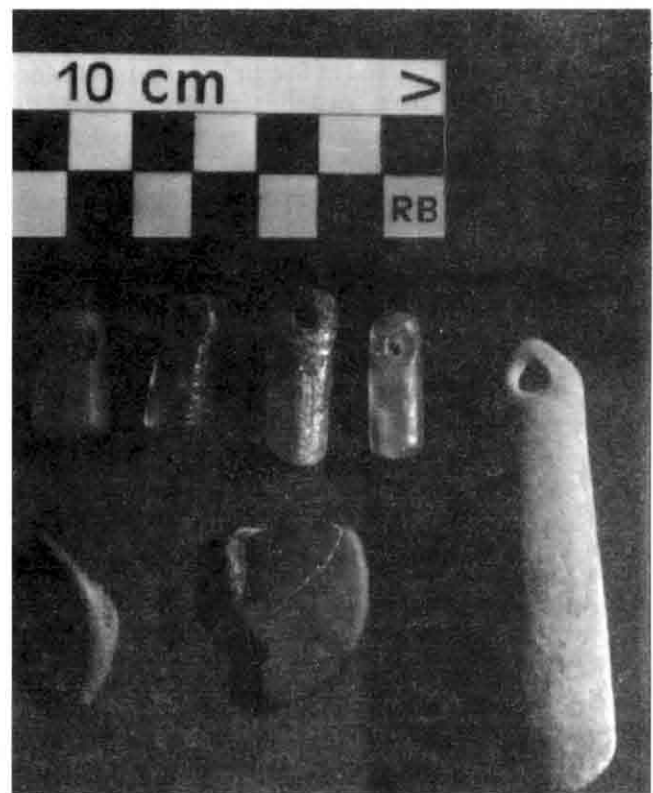


FIGURE 4. Stone pendants, two broken in half, from Kostienki 17, Russia, Middle-Upper Palaeolithic transition.

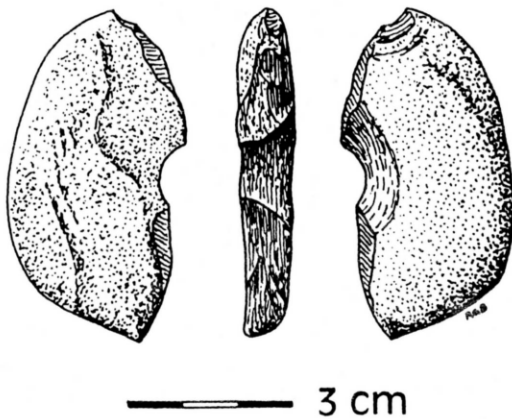


FIGURE 5. Broken stone pebble pendant, similar to the lower two in Figure 4, from Shiyu wenhua, central China, also from the Middle-Upper Palaeolithic transition.

modern humans, they had brought with them from Asia a typically Middle Palaeolithic tool kit which in Australia they retained for the remainder of the Pleistocene: they were Middle Palaeolithic people.

SYMBOLIC CONTEXT

The significance of small perforated objects is that they are suggestive of personal decoration or ornamentation, having probably been worn jewellery-like. In some Pleistocene finds, this can be demonstrated reasonably well by the position of such ornaments relative to human burials (e.g. at Sungir' in Russia, Bhimbetka in India). Nevertheless, the use of non-utilitarian objects was no doubt not restricted to those that were perforated, nor to those that could conceivably survive to the present. The *Glycymeris* shells found in the Mousterian of Qafzeh (Israel) are not edible, they are assumed to have been brought to the site from at least 50 km away for their aesthetic properties (Bar-Yosef 1989: 178). Other objects lacking any obvious utilitarian role have been found in their many hundreds in Middle and even Lower Palaeolithic sites, and they are of a great range. They include a variety of stone objects thought to be non-utilitarian: quartz crystals (China, India, Israel, South Africa, Austria; Bednarik 1992a), pyrites (weighing 2–3 kg from the Mousterian of Combe Saunière; Hayden 1993: 123), fossils of various types, teeth of whales and seals, and similar “exotic” objects, from Acheulian and later deposits. Admittedly, such finds may not demonstrate symbolism *per se*: a variety of animal species, including several birds, also collect unusual, reflective or especially coloured objects. Nevertheless, the hominid penchant for exotic articles is hardly at the same level of concept mediation as that of, say, the Australian bowerbirds. In some cases we know that the objects in question must have been carried from sources many dozens, even hundreds of kilometres away. Moreover, coloured pigments, especially haematite, were used

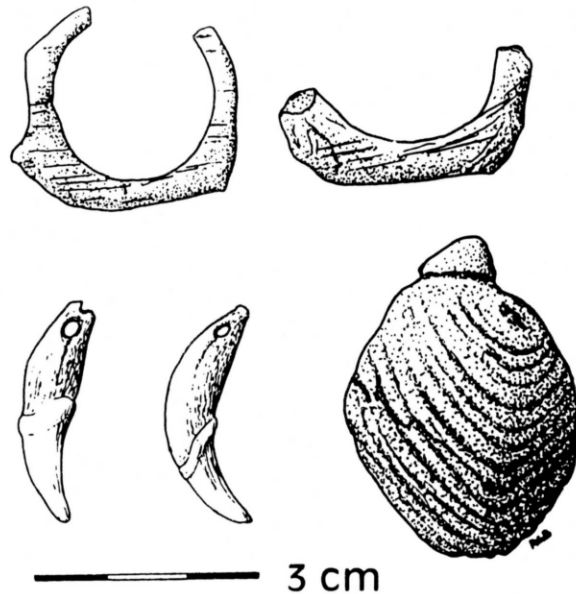


FIGURE 6. Two ivory ring fragments, two perforated animal teeth and a fossil shell with an artificial groove for attachment. All were made by Neanderthals of the Châtelperronian. Grotte du Renne at Arcy-sur-Cure, France.

by hominids since the Early Acheulian (Bednarik 1990a, 1993c), indicating most certainly pigment use and conscious colour discrimination. Non-utilitarian portable objects from the Pre-Upper Palaeolithic periods include also a number of incised, engraved or notched bone, stone or ivory artefacts, and at least one engraved tooth and one fossil (nummulite). In reviewing this material I noted a tendency for increased structural marking complexity with decreasing age: some of the Late Mousterian engravings are of a mentalistic complexity indicating that clear conceptualizations of standardized graphic forms existed in these hominids which were not significantly different from those of modern humans (for discussion, see Bednarik 1995b).

The dehumanizing notion that Neanderthals and other archaic *Homo sapiens* were singularly incapable of communication and symboling is impossible to reconcile with such evidence, and yet it continues to be cultivated by deconstructionalists. It is a notion that needs to be examined in terms of the motivations and personal beliefs of its most ardent supporters. Among the fascinating facets of this topic is the question, what makes the scenario of a sudden appearance of modern humans so attractive for some commentators, even though it is logically unlikely and impossible to explain? After all, the two basic models are totally incompatible, as are the corresponding two models of physical evolution. It is impossible to find a compromise between the African Eve model and the competing multi-regional model of hominid evolution, because the former demands that the “Moderns” evolved in total genetic isolation and that no subsequent interbreeding occurred. Similarly, the corresponding cognitive or cul-

tural models are totally incompatible: either modern human cognition and behaviour appeared suddenly, as in Stringer and Gamble's (1993) "flick of the switch", or they appeared gradually. In the latter case, an explanation is possible, even though it may still elude us, but in the former it is rather an understatement to say that we are left with "one of the greatest explanatory challenges in all of hominid evolution", as White observes; we are left with an unsolvable conundrum. But this is what the proponents of the "punctuated tempo" model believe in, and a major reason for their conviction is that they assume stylistic behaviour can only be effective in communication if there is no ambiguity: either all material culture can provide symbolically coded messages, or none of it can (Stringer and Gamble 1994: 116). This view seems to be based on notions by Wobst (1977) and Conkey (1978), ignoring that Conkey has since altered her position on style considerably, admitting the "*post hoc* accommodative nature" of the cited article (Conkey 1990: 11). While *her* thinking has evolved, that of the punctuated tempo advocates remains impeded by their convictions, which are well exemplified by Stringer and Gamble's (1994) stand against the multiregional hypothesis.

So what we really need to ask is this: why should such a model be favoured by some researchers, even though it demands the unlikely scenario of a fully developed modern technology, cognition, intellect and way of life "exploding onto the scene" about 33,000 years ago. A cognitive switch was flicked, providing us with ample proof of extremely elaborate cosmologies, such as a lion-headed human sculpture, apparently of a woman (Schmid 1989), the sophisticated figurine from Galgenberg (Bednarik 1989), and numerous other finds. It is totally anthropocentric and thus unscientific to claim that there is any characteristic that is exclusive to humans, hence it is futile to try and isolate some specific variable in order to discover at what point one should separate humans from other animals. The only rationale for trying to do so would, one could realistically imagine, be ideologically motivated. Interestingly, this possibility coincides with the strange language of Biblical metaphors the advocates of the African Eve hypothesis sometimes adopt, when they speak of a "Great Deluge", "computer Deluge runs" and an "Eden" south of the Sahara (e.g. Penny *et al.* 1994). These terminological idiosyncrasies may be intended facetiously, but it is debatable whether they are wise. The ironies may be lost on "Creationist scientists", who are not averse to seizing an opportunity to either discredit or utilize the mainstream sciences. They are also the people most likely to favour the conundrum of a sudden, explosion-like appearance of modern humans, and their sharp separation from the preceding "primitive and simian" hominids.

It is particularly important to note that the objective record of palaeoart and related phenomena provides no justification at all for distinct cognitive differentiation between human "subspecies" we perceive in the Pleistocene. Nor does the archaeological record provide a clear-cut technological separation coinciding with

palaeoanthropological differentiation. This applies to the division between *Homo erectus* and archaic *Homo sapiens*, just as it applies to the much-discussed separation between Neanderthals and their contemporaries in Europe. The basic concept that all evidence we have of symbolic expression is of what one may regard as Upper Palaeolithic finds is a crucial fallacy. The extent of this misconception becomes most apparent when we conduct a quantitative comparison of the supposedly non-utilitarian material we have from cultures that had essentially Lower or Middle Palaeolithic technologies (including the Middle Stone Age of Africa, and the Core and Scraper Tradition of Australia), with those regarded as Upper Palaeolithic. The combined surviving art production of the earlier traditions may even exceed that of the later, and while it is true that the Upper Palaeolithic was considerably shorter than the Middle Palaeolithic, that should be compensated for by taphonomy (Bednarik 1994a). After all, the Mesolithic and Neolithic were much shorter again, yet their surviving symbolic production is greater, and this applies progressively to all subsequent cultures. The Middle Palaeolithic non-utilitarian remains number probably in their tens of thousands in Sahul (Pleistocene Australia) alone, where Middle Palaeolithic ocean navigators arrived presumably more than 60,000 years ago, and where rock art of the Archaic Linear Petroglyph tradition (which occurs in vast quantities across the continent) has been *minimum*-dated to over 40,000 BP (Bednarik 1992d, 1994d). The combined known surviving art production of typically Upper Palaeolithic traditions (rock art, mobiliary art, beads) might be in the order of 35,000 items and motifs. This is probably of the same general order of magnitude as the Middle Palaeolithic (including Australia) number, although the latter's actual quantity is much harder to estimate. The ignorance of some scholars of this basic and most important observation renders all their theories concerning early art, cognition, language origins and body decoration superfluous and ludicrous.

THE BARRIER OF TAPHONOMIC COMPREHENSION

Among all the objects perforated by Palaeolithic people, the most unwieldy would probably be the canines of carnivores and small stone objects, yet they are still the oldest drilled objects we tend to find. It is most unlikely that the production of beads and pendants began with such hard and brittle objects, as anyone who has tried to drill through a tooth with a stone tool will agree. It is even more unlikely that bead production began with the mass-produced ivory beads of France, the manufacturing process of which has been so well described by White (1989, 1992). These refined methods are much more likely to be the result of a lengthy evolution of artisan's procedures of which we have recovered no evidence so far – and are not very likely to do so in the future.

It should be entirely obvious that the few classes of symbolic evidence we have from the Pleistocene must not

in any way be seen as defining the full parameters of Pleistocene symbolism. This would be logically inconceivable, a grotesque misapplication of empiricism. We do not assume that hominids possessed no internal organs just because we have never found any. Nor do we assume that Palaeolithic people had no boats just because we have never found any material evidence of boats predating 9,500 years BP. We know that even *Homo erectus* colonized a number of islands, crossing the open sea to do so (Sondaar *et al.* 1994), so we are perfectly willing to accept that there has been massive taphonomic distortion of the record in these and countless other cases. But when it comes to symbolic evidence, some of us suddenly insist on hard proof, and even the most plausible deductive reasoning is totally rejected by them. For instance, the evidence of sea travel earlier than 700,000 years ago indicates the capacity for at least one form of symbolic expression, language. The extreme posture on questions of symbolic evidence is particularly worthy of analysis when we recall that evidence of symbolic behaviour is among the most ephemeral in archaeology: nearly all of it has no realistic chance of surviving even for a short period.

All archaeological evidence is subjected to some degree of taphonomic reduction as a function of time. Taphonomic logic demonstrates irrefutably that the earliest record of any phenomenon is not likely to represent the earliest historical occurrence of the phenomenon in question. Moreover, the size of the lag between the two points in time (first occurrence and first record) must statistically be expected to be proportional to the transience of the evidence type. For instance in the case of ocean navigation, we know with certainty that the lag accounts for almost 99% of the actual duration of the use of boats. Similarly high lag percentages might reasonably apply to evidence of the use of string, knots, clothing, basketry and many other types of cultural material. Significantly higher percentages certainly apply to hominid hair or soft tissue.

More importantly still, in the case of symbolism, is the taphonomic dictum that the first frequent occurrence of any phenomenon which is subject to loss as a cumulatively increasing function of time cannot possibly indicate its first occurrence. It must be preceded by a long period during which an extremely low incidence should be observed (Bednarik 1994a: Fig. 2). In contrast to naive empiricism this is logical fact; it is science and not archaeological mythology. The observation that this is precisely what the early record of possibly non-utilitarian evidence offers (Bednarik 1986, 1992b, 1993a, 1994a) only confirms what logic should have long ago told those of us willing to use it.

Taphonomic logic, part of the discipline generically defined as *metamorphology* (it embraces many issues not remotely related to taphonomy in Efremov's [1940] sense; see Bednarik 1995a), provides a conceptual barrier of comprehension for archaeologists: they either pass through it, and realise the interpretational impotence of what they had regarded as the "archaeological record", or they do

not and remain ignorant of archaeology's scientific role. Body decoration, quite clearly, is in most cases a very ephemeral phenomenon, of which only certain few classes could have had any chance to survive for periods long enough to play a role in archaeology. In other words, traditional archaeology is not suitable to examine the question of early body decoration, because most of the material evidence of it is not archaeologically recoverable.

SUMMARY

We have thus arrived at a mode of reasoning that is very foreign to some archaeologists. If the least perishable evidence of a class of phenomena such as those representing body decoration happens to be the oldest form generally found (in this case perforated teeth), then it is extremely unlikely to be the historically oldest production of the generic class in question. In addition to this simple rule of taphonomic logic, it is also more likely that symbolism began with easily produced units, and not with those that are the hardest to make. This is merely common sense. Evidence for symbolic production extends back in time about 300,000 years, and it occurs in the form of the most resistant types of such evidence. The same applies to bead production. Indirect evidence of non-utilitarian behaviour (pigment use) might extend three times as long into the past. Whether we accept specific items of evidence tendered is hardly important; even the evidence in material technology or physical human evolution is not necessarily relevant, being itself taphonomically distorted by many factors. No evidence known to us proves that there were truly major cultural differences between any contemporary hominids living in the same region. Similarly, we lack any evidence of clear technological plateaus. Notions of sudden quantum jumps in technological capacities that can be related to new hominid groups are entirely attributable to the tendencies of archaeologists to categorize, to invent taxonomies. They are artefacts.

This applies also to the beginnings of body decoration. They are not related to the first known occurrences of beads, nor should they necessarily be related to any other archaeologically detectable material evidence. Moreover, the specific evidence summoned by those favouring the paradigm of beads being the first form of body decoration does not even represent the earliest known use of beads. Therefore we would have to reject their references to the advent of the Aurignacian even if we did accept the taphonomically naive propositions of these scholars. Even if they re-formulated their model chronologically, nominating perhaps some earlier development as the introduction of body decoration, we would still have to reject it, on both taphonomic and logical grounds.

REFERENCES

- ABRAMOVA Z. A., 1962: *Paleoliticheskoe iskusstvo na territorii SSSR*. Akademiya Nauk SSSR, Moscow.
- BADER O. N., 1978: *Sungir'.* Verkhnepleisticheskaya stoyanka. Izdatel'stvo Nauka, Moscow.
- BALDEON A., 1993: El yacimiento de Lezetxiki (Gipuzkoa, País Vasco). Los niveles musterienses. *Munibe* 45: 3-97.
- BARFIELD L., 1994: The Iceman reviewed. *Antiquity* 68: 10-26.
- BAR-YOSEF O., 1989: Upper Pleistocene cultural stratigraphy in southwest Asia. In: E. Trinkaus (Ed.): *The emergence of modern humans*. Pp. 154-80. Cambridge University Press, Cambridge.
- BEAUMONT P., DE VILLIERS H., VOGEL J., 1978: Modern man in sub-Saharan Africa prior to 49,000 B.P.: a review and evaluation with particular reference to Border Cave. *South African J. of Science* 74: 409-19.
- BEDNARIK R. G., 1986: Parietal finger markings in Europe and Australia. *Rock Art Research* 3: 30-61, 159-70.
- BEDNARIK R. G., 1989: The Galgenberg figurine from Krems, Austria. *Rock Art Research* 6: 118-25.
- BEDNARIK R. G., 1990a: An Acheulian haematite pebble with striations. *Rock Art Research* 7: 75.
- BEDNARIK R. G., 1990b: More to Palaeolithic females than meets the eye. *Rock Art Research* 7: 133-37.
- BEDNARIK R. G., 1992a: Palaeoart and archaeological myths. *Cambridge Archaeological J.* 2: 27-43.
- BEDNARIK R. G., 1992b: The stuff legends in archaeology are made of: a reply to critics. *Cambridge Archaeological J.* 2: 262-65.
- BEDNARIK R. G., 1992c: Natural line markings on Palaeolithic objects. *Anthropologie* 30: 233-40.
- BEDNARIK R. G., 1992d: Oldest dated rock art - a revision. *The Artefact* 15: 39.
- BEDNARIK R. G., 1993a: Who're we gonna call? The bias busters! In: M. Lorblanchet and P. G. Bahn (Eds): *Rock art studies: the post-stylistic era, or where do we go from here?* Papers presented in Symposium A, Second AURA Congress, Cairns. Pp. 207-11. Oxbow Books, Oxford.
- BEDNARIK R. G., 1993b: European Palaeolithic art - typical or exceptional? *Oxford J. of Archaeology* 12(1): 1-8.
- BEDNARIK R. G., 1993c: Wonders of Wonderwork Cave. *The Artefact* 16: 61.
- BEDNARIK R. G., 1993d: Palaeolithic art in India. *Man and Environment* 18(2): 33-40.
- BEDNARIK R. G., 1994a: A taphonomy of palaeoart. *Antiquity* 68: 68-74.
- BEDNARIK R. G., 1994b: The Pleistocene art of Asia. *J. of World Prehistory* 8(4): 351-75.
- BEDNARIK R. G., 1994c: Traces of cultural continuity in Middle and Upper Palaeolithic material evidence. *Origini* 18: 47-67.
- BEDNARIK R. G., 1994d: Art origins. *Anthropos* 89: 169-80.
- BEDNARIK R. G., 1995a: Metamorphology: in lieu of uniformitarianism. *Oxford Archaeological J.* 14(2): 117-22.
- BEDNARIK R. G., 1995b: Concept-mediated hominid marking behaviour in the Lower Palaeolithic. *Current Anthropol.* 36(4): 605-34.
- BEDNARIK R. G., YOU YUZHU, 1991: Palaeolithic art from China. *Rock Art Research* 8: 119-23.
- BLASCO SANCHEZ M. F., 1992: *Tafonomía y prehistoria. Métodos y procedimientos de investigación*. Universidad de Zaragoza, Zaragoza.
- BORDES F., 1969: Os percé mousterien et os gravé acheuléen du Pech de l'Azé II. *Quaternaria* 11: 1-5.
- BORISKOVSKI P. I., 1984: *Paleolit SSSR*. Izd. Nauka, Moscow.
- BYERS A. M., 1994: Symboling and the Middle-Upper Palaeolithic transition: a theoretical and methodological critique. *Current Anthropol.* 35(4): 369-99.
- CHASE P., 1990: Sifflets du Paléolithique moyen(?). Les implications d'un coprolithe de coyote actuel. *Bulletin de la Société Préhistorique Française* 87: 165-67.
- CHASE P. G., DIBBLE H. L., 1987: Middle Paleolithic symbolism: a review of current evidence and interpretations. *J. of Anthropological Archaeology* 6: 263-96.
- CHASE P. G., DIBBLE H. L., 1992: Scientific archaeology and the origins of symbolism: a reply to Bednarik. *Cambridge Archaeological J.* 2: 43-51.
- CONKEY M. W., 1978: Style and information in cultural evolution: toward a predictive model for the Palaeolithic. In: C. L. Redman, M. J. Berman, E. V. Curtin, W. T. Langhorne, Jr, N. M. Versaggi and J. C. Wanser (Eds): *Social archaeology: beyond subsistence and dating*. Pp. 61-85. Academic Press, New York.
- CONKEY M. W., 1990: Experimenting with style in archaeology: some historical and theoretical issues. In: M. W. Conkey and C. A. Hastorf (Eds): *The uses of style in archaeology*. Pp. 5-17. Cambridge University Press, Cambridge.
- DAVIDSON I., 1990: Bilzingsleben and early marking. *Rock Art Research* 7: 52-56.
- DUFF A. I., CLARK G. A., CHADDERDON T. J., 1992: Symbolism in the Early Palaeolithic: a conceptual Odyssey. *Cambridge Archaeological J.* 2: 211-29.
- EFREMOV J. A., 1940: Taphonomy: a new branch of paleontology. *Pan American Geologist* 74(2): 81-93.
- FRAYER D. W., 1986: Cranial variation at Mladec and the relationship between Mousterian and Upper Paleolithic hominids. *Anthropos* 23: 243-56.
- GOREN-INBAR N., LEWY Z., KISLEV M. E., 1991: The taphonomy of a bead-like fossil from the Acheulian of Gesher Benot Ya'aqov, Israel. *Rock Art Research* 8: 83-87.
- HAYDEN B., 1993: The cultural capacities of Neandertals: a review and re-evaluation. *J. of Hum. Evol.* 24: 113-46.
- KARAVANIC I., 1995: Upper Paleolithic occupation levels and late-occurring Neandertal at Vindija Cave (Croatia) in the context of central Europe and the Balkans. *J. of Anthropol. Research* 51: 9-35.
- KEELEY L. H., 1977: The function of Paleolithic flint tools. *Scientific American* 237(5): 108-26.
- KOZLOWSKI J. (ed.), 1982: *Excavation in the Bacho Kiro Cave, Bulgaria: final report*. Polish Scientific Publishers, Warsaw.
- LINDLY J. M., CLARK G. A., 1990: Symbolism and modern human origins. *Current Anthropol.* 31: 233-61.
- MANIA D., WEBER T., 1986: *Bilzingsleben III. Homo erectus - seine Kultur und seine Umwelt*. Veröffentlichungen des Landesmuseums für Vorgeschichte in Halle, Volume 39. VEB Deutscher Verlag der Wissenschaften, Berlin.
- MARSHACK A., 1991a: A reply to Davidson on Mania and Mania. *Rock Art Research* 8: 47-58.
- MARSHACK A., 1991b: The female image: a 'time-factored' symbol. A study in style and aspects of image use in the Upper Palaeolithic. *Proceedings of the Prehistoric Society* 57: 17-31.
- MARTIN H., 1907-10: *Recherches sur l'évolution du Moustérien dans le gisement de la Quina (Charente)*. Industrie osseuse, Vol. 1. Schleicher Frères, Paris.
- MORSE K., 1993: Shell beads from Mandu Mandu Creek rock-shelter, Cape Range peninsula, Western Australia, dated before 30,000 b.p. *Antiquity* 67: 877-83.
- MOTTL M., 1950: Das Protoaurignacien der Repolusthöhle bei Peggau, Steiermark. *Archaeologia Austriaca* 5: 6-17.
- MOTTL M., 1951: Die Repolust-Höhle bei Peggau (Steiermark) und ihre eiszeitlichen Bewohner. *Archaeologia Austriaca* 8: 1-78.
- MURBAN K., MOTTL M., 1955: Neue Grabungen in der Repolusthöhle bei Peggau in der Steiermark. *Mitteilungen des Museums für Bergbau, Geologie und Technik am Landesmuseum 'Joanneum' Graz* 15: 77-87.
- NARR K. J., 1951: Alt- und mittelpaläolithische Funde aus rheinischen Freilandstationen. *Bonner Jahrbuch* 151: 5-47.
- PENNY D., STEEL M. A., WADDELL P. J., HENDY M. D., 1994: A quantitative evaluation of the known mitochondrial DNA sequences. Paper presented to Fifth Australasian Archaeometry Conference, 3 February, University of New England (in press).
- ROLLAND N., 1992: Behavioural parameters and evidence for symbolism by Neandertal populations. In: S. Goldsmith, S. Garvie, D. Selin and J. Smith (Eds): *Ancient images, ancient thought: the archaeology of ideology*. Pp. 67-75. Proceedings of the 23rd Annual Chacmool Conference, University of Calgary, Calgary.
- SCHMID E., 1989: Die altsteinzeitliche Elfenbeinstatue aus der Höhle Stadel im Hohlenstein bei Asselfingen, Alb-Donau-Kreis. *Fundberichte aus Baden-Württemberg* 14: 33-96.
- SONDAAR P. Y., VAN DEN BERGH G. D., MUBROTO B., AZIZ F., DE VOS J., BATU U. L. 1994: Middle Pleistocene faunal turnover and colonization of Flores (Indonesia) by *Homo erectus*. *Comptes Rendus de l'Académie des Sciences, Paris* 319: 1255-62.
- STEPANCHUK V. N., 1993: Prolom II, a Middle Palaeolithic cave site in the eastern Crimea with non-utilitarian bone artefacts. *Proceedings of the Prehistoric Society* 59: 17-37.

- STRINGER C., GAMBLE C., 1993: *In search of the Neanderthals: solving the puzzle of human origins*. Thames and Hudson, London.
- STRINGER C., GAMBLE C., 1994: Reply: confronting the Neanderthals. *Cambridge Archaeological J.* 4: 112–17.
- TODE A., 1953: Einige archäologische Erkenntnisse aus der paläolithischen Freilandstation von Salzgitter-Lebenstedt. *Eiszeitalter und Gegenwart* 3: 192–215.
- TRINKAUS E., LE MAY M., 1982: Occipital bunning among Later Pleistocene hominids. *Amer. J. of Phys. Anthropol.* 57: 27–35.
- WHITE R., 1989: Production complexity and standardization in Early Aurignacian bead and pendant manufacture: evolutionary implications. In: P. Mellars and C. Stringer (Eds): *The human revolution: behavioural and biological perspectives on the origins of modern humans*. Pp. 366–90. Edinburgh University Press, Edinburgh.
- WHITE R., 1992: Beyond art: toward an understanding of the origins of material representation in Europe. *Annual Review of Anthropology* 21: 537–64.
- WHITE R., 1993a: Technological and social dimensions of 'Aurignacian-age' body ornaments across Europe. In: *Before Lascaux: the complex record of the early Upper Palaeolithic*. Pp. 277–299. CRC Press, Boca Raton, FL.
- WHITE R., 1993b: A social and technological view of Aurignacian and Castelperronian personal ornaments in SW Europe. In: V. Cabrera Valdés (Ed.): *El origen del hombre moderno en el suroeste de Europa*. Pp. 327–57. Ministerio de Educacion y Ciencia, Madrid.
- WOBST M. H., 1977: Stylistic behavior and information exchange. In: C. E. Cleland (Ed.): *Papers for the Director: research essays in honor of James B. Griffin*. Pp. 317–42. Anthropological Papers 61, University of Michigan, Ann Arbor.

Robert G. Bednarik
International Federation of Rock Art
Organizations (IFRAO)
P.O. Box 216
Caulfield South, Vic. 3162
Australia
Tel.: Melbourne (03) 9523 0549