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Lecture No. 3. **The evidence of paleoart**

Introduction

In the previous lecture, we have seen that the replacement/African Eve model of Late Pleistocene human evolution, is probably false, especially in Europe. To survive, this model has to deny any evidence suggestive of complex technologies and, most particularly, of symboling abilities prior to 45 ka ago in Europe. It has done this by several strategies. First, most reports of advanced hominid abilities predating the advent of "Moderns" have been rejected out of hand, either as being unreliable or as being susceptible to alternative explanations. Those finds that could not be swept under the carpet were grudgingly accepted as flukes, as the work of unusually gifted individuals, even as evidence of "running ahead of time" in human development (Vishnyatsky 1994). Their claimed small number was often cited as being enough reason to ignore them (Chase and Dibble 1987; Davidson and Noble 1989; Noble and Davidson 1996), because for them to be of significance, "the use of symbolism must be systematic, often repeated". When in response it was pointed out that the number of known instances was actually very much greater than assumed (Bednarik 1992a), the response was that this still made no difference.

This is one of numerous instances of the application of double standards in assessing possible paleoart finds or purported evidence of symbolism. The (false) premise of this accommodative thinking is that the Aurignacian is by "Moderns"; therefore, finding "art" objects in it is acceptable. Finds such as figurines, beads or engravings are not judged by their inherent characteristics, but invariably by their age — as if we already knew what the abilities of the humans concerned were. For instance, a set of neatly engraved parallel marks on a bone, readily accepted as symbolic — even as notational — if from the Upper Paleolithic, would inevitably be rejected from a Middle Paleolithic or earlier context by many. Such finds were routinely prejudged, based on their assumed age, as was sometimes also the case with human remains. The Hahnöfersand specimen, for instance, was judged Neanderthaloid, based on its robustness and postulated age of about 35 ka. While the consideration of uniqueness was not deemed an issue in the acceptance of a fake such as Piltdown, it was with an authentic specimen such as the Kleine Feldhoferhöhle remains (the Neanderthal type fossil), explained away as a "Cossack" and so forth. Yet, it is more likely that a single unique human specimen lived than it is that a single bead, for instance, could have been used by a society. Such unique symbolic artifacts are a logical impossibility, which alone renders the argument of "number of known instances" irrelevant.

The practice in Pleistocene archaeology of applying different standards to manifestations of symbolism as a function of their purported age is an interesting epistemic phenomenon, particularly in view of the many cases when archaeologists misdated paleoart. To name just one example, most of the petroglyphs of the lower Côa valley, in Portugal, or at Siega Verde, in neighboring western Spain, are in the order of two to four centuries old, yet all commenting archaeologists judged them to be 20 ka to 30 ka old. These instances of attributing entirely false ages to rock art, of which examples have occurred widely (Bednarik 1995a), invite two observations: that the commentators are poorly equipped to estimate the ages of most paleoart, and that their inclination to be guided by age in the interpretation of controversial specimens is detrimental for two reasons. First, we do not know what the faculties of past human populations were, we have merely weak hypotheses; second, even if we did know this, the demonstrated inability of archaeologists to estimate the age of much paleoart would need to be taken into account in considering their claims. In anthropocentric and humanistic disciplines, the definitions of what indicates characteristics such as culture or language are routinely revised in response to the threat that such characteristics might be attributed to non-human interloper species. In this case, that practice is extended to "pre-modern" hominids that need to be excluded from some perceived exalted status of modern humans. In reality, there can be no doubt that humans do not possess one single definable, measurable or observable characteristic that is not shared by another species. The humanist inclination of maintaining, perhaps subconsciously, a qualitative separation between humans and non-human animals (or between "Moderns" and archaic *H. sapiens*) is ultimately attributable to the religio-cultural individual reality scholars exist in.

As it happens, the issue is easy to resolve. To explain the sudden appearance of undeniably sophisticated cave and mobiliary art at Chauvet (France), in the Swabian Alb (Germany) and at Galgenberg (Austria), all about 32 ka old, three basic possibilities could be considered. One is the arrival of a new people with a new culture; another the extraordinarily precipitate local development of these magnificent faculties; or thirdly, a taphonomic explanation. The first of these notions would presume the existence, along the route taken by this intrusive population, of examples of their artistic (or any other) proficiency. No such evidence has ever been found anywhere along any potential route from sub-Saharan Africa — or anywhere else, for that matter. Unless we were to consider that the artistic sensibilities of these invaders were only aroused after they settled in central Europe and southern France, which would contradict their claimed prior superiority, this would exclude the replacement model.

Our second potential explanation looks somewhat more plausible, particularly if we consider the known distribution of what we regard as figurative Pleistocene art. With the exception of the Tolbaga animal head and one mammoth engraving (Bednarik 1994a), there are no pre-LGM (Last Glacial Maximum) iconic depictions anywhere in Asia or

eastern Europe, i.e. east of the Rhine. Even after the LGM, with great proliferation of iconic art, for the rest of the Final Pleistocene it is almost wholly restricted to a small geographic region. There are substantial occurrences of Pleistocene rock art elsewhere, particularly in Australia, but they look generally non-figurative to the Western observer. Consequently, in-situ development of the predominantly southwestern European traditions is very much more realistic than introduction from outside. However, it renders any tale of African invaders redundant.

The third explanation is evidently the most parsimonious, the most readily testable and the scientifically most persuasive. It contends that the "sudden appearance" of the art is a result of a combination of changes in cultural practices, taphonomic processes, and metamorphological factors related to the evidence-gathering strategies of archaeologists. Cave art, for instance, has survived primarily in regions of negligible cryoclast cave deposits, i.e. in relatively stable speleoclimatic environments. The world over, rock paintings have not survived from the Pleistocene, unless they were either located in deep caves, or were concealed by mineral accretions (e.g. silica or oxalate). Yet, the practice of applying pigments to rock surfaces can be demonstrated to have existed for hundreds of millennia, as shown by hematite crayons with striated wear facets (Bednarik 1990, 2003a). Another example is that nearly all of the portable art objects of the Pleistocene consist primarily of dentine, calcium carbonate or calcium phosphate, i.e. substances that would only survive in high-pH sediments. They have indeed only survived in loesses and limestone caves, which does of course not mean that such art only existed where these sediments occur. Rather, the evidence of these art traditions must be severely truncated by taphonomy, because the logical alternative explanation, that such art objects were only deposited in regions of sediments suitable for their long-term preservation, would be absurd. It follows from these and similar considerations of taphonomic logic (Bednarik 1994b) that the distributional, compositional and statistical indices of paleoart are all fundamentally irrelevant to the interpretation of this evidence.

This third possible explanation for the claimed sudden appearance of undeniably very complex art 33,000 carbon-years ago is the most plausible, but it also negates the notion of a population replacement. The conceptually most complex art of the Upper Paleolithic is that of the Aurignacian, including the two therianthropes from Swabia (Hohlenstein-Stadel, Schmid 1989; and Hohle Fels, Conard et al. 2003), the anthropomorph from Galgenberg (Bednarik 1989a), the extensive parietal art from Chauvet Cave (Clottes et al. 1995), the older phase of Baume Latrone (Bégouën 1941; Drouot 1953; Bednarik 1986) and the engravings of l'Aldène (Ambert et al. 2005: 276–7; Ambert and Guendon 2005). No credible explanation has ever been offered by the Eve advocates as to how such sophistication could have suddenly appeared, or where it came from.

Art-like products, such as geometric engravings, pendants and beads, cupules and linear petroglyphs, proto-figurines and other such material has long been known from periods of the Middle and even Lower Paleolithic. The thousands of examples described (Bednarik 1992a, 2003a) provide a cognitive and semiotic background that rendered the developments in the second half of the Aurignacian possible, by showing that the human capacity to create entirely non-utilitarian products is hundreds of thousands of years old. These finds range from the 540 Acheulian cupules at two Indian sites (Bednarik et al. 2005) to the several hundred Acheulian *Porosphaera globularis* fossils indisputably used as beads (Bednarik 2005); and from the Bilzingsleben engravings (Bednarik 1995b), now confirmed to be deliberate (Steguweit 1999), to the earliest iconographic image currently known, of the Micoquian (Bednarik 2006). This substantial corpus of evidence, supplemented by the demonstrated use of red pigment for hundreds of millennia, provides strong evidence that the cognitive, intellectual, technological, linguistic and cultural abilities of hominids have been massively underestimated by orthodox archaeology.

A comprehensive review of evidence of very early paleoart covering all continents reveals significant misconceptions in the dominant models of 'art' origins. The traditional preoccupation with predominantly zoomorphic, figurative traditions of southwestern Europe is examined in this lecture, as well as the closely related concept of an endemic cave art of the Upper Paleolithic period. The existence of much earlier non-utilitarian traditions is demonstrated in the following review of all relevant evidence, including bead making and pigment use in the Lower Paleolithic, and the widespread uniformity of Middle Paleolithic paleoart traditions is noted.

To explore the possible scenarios of cognitive hominid evolution, a variety of evidence has been proposed to have relevance. The perhaps most pertinent corpus of evidence at our disposal in this quest is the body of very early paleoart, and any other 'non-utilitarian' evidence that may provide clues to early hominid cognition. This 'other' evidence may include manuports suggestive of non-utilitarian functions (e.g. tiny crystals, fossil casts and the like), or technologies that seem to have required certain minimum mental capacities (e.g. seafaring).

Claims for extremely old rock art (in excess of 30,000 years BP) have been made for almost all continents, the notable exception being North America, besides Antarctica where there is no rock art at all. I will summarize the evidence of 'art' beginnings as it stands for each continent, of what has either been claimed to represent particularly early use of symbolism, or what in my view might be worth considering in such a context. I will in each case consider petroglyphs as well as pictograms (rock paintings and pigment drawings), engraved portable art, sculpted portable art, and evidence that has been suggested to be the result of non-utilitarian activities.

North America

Dorn and Whitley (1984) have obtained a series of cation-ratio minimum 'dates' from Coso Range (California) petroglyphs ranging up to about 11,500 years BP, but numerous writers have rejected the method's reliability (Bednarik 1988a; Bierman and Gillespie 1991; Bierman et al. 1991; Watchman 1989, 1992). More recently, detailed scrutiny of

Dorn's work has raised new questions (Beck et al. 1998), and Dorn himself has effectively withdrawn all his results (Dorn 1996a, 1996b, 1997).

Similarly, the datings at Salton Sea (Lake Cahuilla), California (Turner and Reynolds 1974), and at Long Lake, Oregon (Ricks and Cannon 1985), have been questioned and could not be sustained. Loendorf's (1986) attempt to date what he thought to be a rock painting at the petroglyph site Rochester Creek, Utah, has been refuted (Bednarik 1987a). Early petroglyphs at Mud Portage, Lake-of-the-Woods, Canada (Steinbring et al. 1987), have been shown to be between 5000 and 9000 BP. Nevertheless, final Pleistocene petroglyphs may well exist in North America (Bednarik 1988b; Parkman 1992).

There are several purported Pleistocene portable art objects from North America, but most have been exposed as fakes. The only exceptions (apart from beads from the Jones-Miller site in Colorado) seems to be a mineralized sacrum from Tequixquiac, Mexico, which has been modified to look like an animal head (Bahn 1991: Pl. 18a); and the numerous (at least 134) limestone plaques from the Clovis layer of the Gault site, Texas, which bear 'geometric' engravings (Collins 2002). Eighteen of them are clearly from the Clovis deposits. Other examples are less well authenticated, but a bone with an engraving of a rhinoceros from Jacob's Cave, Missouri, has been suggested to be of the final Pleistocene (Bahn 1991: 92). Bahn has not explained, however, why a rhinoceros, a species that never occurred in the Americas, should have been depicted.

South America

The principal claims of Pleistocene antiquity for South American rock art refer to the important sandstone shelter Toca do Boqueirao do Sítio da Pedra Furada, Piauí, in north-eastern Brazil, where human occupation traces seem to extend beyond 40,000 years BP (Guidon and Delibrias 1986; Parenti 1993). However, it is unlikely that any of the extant paintings in this site could be older than the final Holocene (Bednarik 1989b). Older paintings may have existed, and at least some of the pigment traces reported from the floor deposit seem authentic. At Toca do Baixao do Perna I, another of Guidon's sites, the numerous red paintings are at least 10,000 years old (Bednarik 1989b: 105). They occur immediately above a thick layer of charcoal. A fragment of a pigment ball showing signs of having been worn as an ornament was found at the site, providing an AMS radiocarbon date of 15,250 ± 335 years BP (Chaffee et al. 1993).

'Archaic' petroglyph traditions occur also in South America, including in southern Piauí. The motifs are heavily patinated or weathered and often occur together with accumulations of extremely archaic-looking stone tools, for instance in Brazil (Bednarik 1989b) and Bolivia (Bednarik 1988c, 2000). Their motif range, and that of early petroglyph sites in North America, is typically non-figurative and resembles that of archaic petroglyphs of other continents (Bednarik 1987b). Crivelli and Fernández (1996) have reported a series of linear petroglyphs on the bedrock of Cueva Epullán Grande, western Argentina, under sediment approximately 10,000 years old, and petroglyphs on the walls of this cave include cupules. Also in the eastern foothills of the Andes, but in Bolivia, lies Inca Huasi, on whose quartzite dyke I have found the apparently oldest petroglyphs I have seen in South America, again sets of cupules. Although undated, circumstantial evidence suggests an early Holocene or final Pleistocene antiquity (Bednarik 2000). Cupules and other petroglyphs at further Bolivian sites have been dated to the second half of the Holocene.

Asia

There have been several claims relating to Upper Paleolithic rock paintings in central India, championed especially by Wakankar (1983); similar claims from Siberia (Okladnikov 1977); and claims of portable engravings from the early Upper Paleolithic of China (e.g. You 1984) and South Korea (Sohn 1981). An examination of many Asian claims of Paleolithic art has invalidated the overwhelming majority of them (Bednarik 1992a, 1993a, 1993b, 1994c; Bednarik et al. 1991; Bednarik and You 1991; Bednarik and Devlet 1993).

In Siberia, finds of portable art have been reported from about twenty sites (Abramova 1990; Bednarik 1994a). I have argued that the mere depiction of a mammoth does not constitute proof of Pleistocene antiquity of the art in Siberia (Bednarik 1993c; cf. Steelman et al. 2002), although the Mal'ta plaque (Bednarik 1992a) is likely to be around 14,000 years old. However, nearly all known Asian (as well as eastern European) graphic art of the Pleistocene is 'non-figurative' (Bednarik 1993d). Siberian portable art includes the probably oldest presently known iconic sculpture, an animal head from Tolbaga, thought to be possibly 35,000 years old. Siberian claims of Pleistocene rock art, however, have been seriously questioned. A few painted motifs among the many thousands of pictograms and petroglyphs on the upper Lena, Siberia, were identified as being Paleolithic by Okladnikov (1959: 22-41; cf. Okladnikov and Saporoshskaya 1959), a finding that is frequently cited in the literature (e.g. Abramova 1962; Ksica 1973, 1984). Yet there is no evidence for this dating (Bednarik 1992b; Bednarik and Devlet 1993). Much the same can be said about rock art in central Asia, where we have seen frequent claims for great antiquity rebutted by subsequent analysts. Examples are some thirty sites on the Kalguty River of the Ukok Plateau in south-western Gorniy Altai (Molodin and Cheremisin 1993, 1994) and the petroglyphs of Delger-Muren and Tes (Novgorodova 1983), both refuted by Kubarev (1997) who showed that all known central Asian rock art west of China is either of the Bronze Age or younger. Similarly, Jasiewicz and Rozwadowsji (2001) showed that some of the presumed oldest rock art of central Asia, at Zaraut-Kamar Rockshelter in Uzbekistan, is most probably of recent historical age.

In neighboring China there are many examples of dating rock art to the Ice Age by perceived animal species (Gai 1986: 415-24; Li 1992; Liu 1991; You 1984; Chen 1991: 126; cf. Tang 1993 and Wang 1984) and there is even a claim

for Tertiary rock art. At the present time, no rock art in China has been shown to be of the Pleistocene. No portable art from Chinese Pleistocene was known until 1991, except the material from the Upper Cave of Zhoukoudian: hematite lumps, perforated teeth, pebbles and shells, and five tubular bone sections with parallel cut marks (Bednarik and You 1991). In 1991, a masterfully engraved piece of antler was reported from a limestone cave north-east of Beijing, Longgu Cave (Bednarik 1992c). Being about 13,065 years old, the object remains the only known specimen of art from the Chinese Pleistocene (Bednarik and You 1991: Figs 2–4).

The only known evidence of Pleistocene art in Japan comes from the cave of Kamikuroiwa, where engraved natural pebbles were found in a layer dated to about 12,000 BP. Some of the marks have been interpreted as depicting breasts and skirts (Aikens and Higuchi 1982). In addition, there are a few apparently non-utilitarian stone objects known from the Japanese Paleolithic, including a perforated specimen (Bednarik 1994a).

Marked ostrich eggshells have been reported from four central Indian sites (Kumar et al. 1988), which are among over forty recorded sites of ostrich eggshell in India. Radiocarbon dating of the shells places them roughly between 25,000 and 40,000 years BP. The markings on 45 of the 46 known specimens are attributable to mycorrhizal micro-organisms. Similar markings occur on Siberian ivory and Chinese and European bone finds. The remaining specimen of Indian ostrich eggshell is from Patne and bears a 'non-figurative' pattern that was engraved with a stone tool, as its microscopic study demonstrates (Bednarik 1992b). It is thought to be 25,000 years old. The Upper Paleolithic of India has also yielded three ostrich eggshell beads, two from Bhimbetka III A-28 and one from Patne (Bednarik 1997a). The carved and polished bone object found in the Belan valley, Uttar Pradesh, has been described as a 'mother goddess' (e.g. Misra 1977: 49). It is, however, not a female figurine, but a damaged bone harpoon of the early Upper Paleolithic (Bednarik 1993b).

Turning next to the claims for a Paleolithic antiquity of rock art in India, we find that Wakankar's (1975, 1983) notion of the precedence of the green dynamic paintings that he considered to be of the Upper Paleolithic, has been negated by Tyagi (1988). Most contemporary researchers have great doubts that any Indian rock paintings are of Pleistocene age (e.g. Misra 1977; Neumayer 1983, 1993; Bednarik 1993b; Chakravarty and Bednarik 1997). Until 1990, petroglyphs were only known from the north and south of the country. The Raisen petroglyphs (Bednarik et al. 1991) are of unknown age, but are totally repatinated and coated with a silica skin and resemble the archaic petroglyphs of other continents. Two of the Bhimbetka quartzite cave petroglyphs were covered by in-situ Lower Paleolithic occupation strata (Bednarik 1992b, 1994a) and they are of to the Acheulian, being therefore the first Lower Paleolithic rock art reported in the world (Bednarik 1993b). A large number of cupules in Daraki-Chattan, a quartzite cave in the Chambal valley (Kumar 1996), are also of the Lower Paleolithic, as demonstrated by almost thirty cupules and three linear engravings excavated from below Acheulian and Middle Paleolithic occupation strata (Bednarik et al. 2005). Striations on a wear facet of one of a series of hematite pebbles from the Lower Acheulian of Hunsgi, Karnataka, were apparently the result of use of the pebble as a crayon, to mark a hard rock surface (Bednarik 1990). Another find of relevance is the suite of six quartz crystal prisms from the Lower Acheulian of Singi Talav, Rajasthan, which are much too small to have served as stone tool material (d'Errico et al. 1989).

The Levantine region has yielded a variety of portable art of the Pleistocene. An engraved limestone cobble from the late Paleolithic site of Urkan e-Rub II, Israel, is between 14,500 and 19,000 years old (Hovers 1990). It features complex non-iconic arrangements. An older limestone pebble from Hayonim Cave also bears engravings on both faces, but it is of the Aurignacian and 29,000 to 27,000 years old (Belfer-Cohen and Bar-Yosef 1981; Bar-Yosef and Belfer-Cohen 1988). Its markings include a motif that has been interpreted as depicting a horse. From the same site and horizon, Layer D, come also five gazelle scapulae, each engraved with a series of notches (Davis 1974). Of similar age is a gazelle metatarsal from Ksar Akil, bearing five sets of linear incisions (Tixier 1974; Mellars and Tixier 1989). Three engraved fragments of bone points have been excavated at Ohalo II, on the shores of the Sea of Galilee, and appear to be about 19,000 years old (Rabinovich and Nadel 1994). One of them was found with a human burial. Finally, there are two decorated Kebaran bone artifacts, one an awl from Jiita II in Lebanon (Copeland and Hours 1977), the other an incised radial fragment from Kharaneh IV in Jordan (Muheisen 1988).

Much earlier art-like finds from the region are the Middle Paleolithic engraved stone tool from Qafzeh Cave, c. 100,000 years old (Hovers et al. 1997), and the engraved cortex piece from Quneitra, which is only about half that age (Goren-Inbar 1990; Marshack 1996). Much earlier still is the basaltic tuff pebble containing scoria clasts excavated in an Acheulian occupation layer at Berekhat Ram, Golan Heights (Goren-Inbar 1986; Goren-Inbar and Peltz 1995), dated to between 233,000 BP and 470,000 BP (Feraud et al. 1983). The pebble has the natural shape of a female human torso, head and arms, and it bears artificial markings (Marshack 1997; d'Errico and Nowell 2000). Another Acheulian site of the region, Gesher Benot Ya'aqov, yielded two naturally perforated crinoid fossils and a number of very small quartz crystals (Goren-Inbar et al. 1991), which in view of similar Acheulian finds elsewhere are of interest. In particular, Acheulian disc beads have been reported from Africa and Europe as well.

Non-figurative rock engravings in caves at Mount Carmel have been suggested to include Paleolithic marks but in view of the many false claims of this type elsewhere this requires specialist appraisal (Ronen and Barton 1981). The earliest rock art so far identified in Saudi Arabia might possibly be of the final Pleistocene, consisting of cupules and archaic petroglyph motifs at the Shuwaymas 1 and Fardat Duwaish (Bednarik and Khan 2005).

Australia

The persistent claims of the precedence of western European art are particularly hard to understand when one considers the long-standing expectation that some Australian rock art would be shown to be extremely old (e.g. Basedow 1914). While it is almost self-evident that a great deal of Australian rock art, perhaps a higher percentage than in any other continent, is of the Pleistocene, there have been several false claims made and credible dating evidence remains scarce. Leaving aside claims based on perceived styles and the supposed depiction of extinct animal species, which are in any case based on subjective and untestable evidence, there have been three specific Pleistocene age proposals that turned out to be false: at Olary, Devil's Lair and Jinmium.

Of the four earliest minimum dates reported from South Australian petroglyphs in the Olary region, which range from about 36,000-45,000 BP, three were radiocarbon dates, secured from organic inclusions under rock varnish covering the petroglyphs (Dorn et al. 1992). The fourth, a 'cation-ratio' determination, was based on an always controversial and now discredited method, but recently even the radiocarbon dates have all been withdrawn by the researcher who presented them (Dorn 1996a, 1996b, 1997; cf. Beck et al. 1998).

A series of six limestone pieces from Devil's Lair in southwestern Australia, described and widely accepted as engraved plaques (Dortch 1976, 1984), apparently of the Pleistocene, have been found to consist of naturally marked clasts (Bednarik 1998a). However, a naturally perforated marl pebble from the same site has been used as a pendant (Bednarik 1997b), as has a small bird bone fragment (Bednarik 1998). Another small cave in coastal Western Australia, Mandu Mandu Creek Shelter, has yielded a series of perforated marine shells about 32 000 years old (Morse 1993).

A third false claim of Pleistocene art from Australia was made concerning the cupule panel at the Jinmium rockshelter, Northern Territory, said to be between 58,000 and 75,000 years old on the basis of thermoluminescence dating (Fullagar et al. 1996). This was rejected by several Australian rock art specialists even before publication, and subsequently refuted by more detailed dating (optically stimulated luminescence and radiocarbon) of the site's sediments, which indicated that the rock art was of the Holocene (Gibbons 1997; Roberts et al. 1998). On present indications, Australia was only settled around 60,000 BP (Roberts et al. 1993). As in most other continents, some cupules are regarded as being extremely old in Australia (Bednarik 1993f), but the Jinmium panel occurs on a type of sandstone that experiences rapid exfoliation. More credible is the minimum dating estimate for one of the petroglyph traditions in Malangine Cave, South Australia, which was derived from uranium-series analysis, suggesting an age of well over 28,000 years (Bednarik 1999). Other credible age estimations were recently presented for Pilbara petroglyphs, ranging up to the same magnitude, and it is clear that older petroglyphs exist in the region (Bednarik 2001, 2002a).

Despite the wealth of portable art in Australia, very little has so far been dated to the Pleistocene. Striated hematite occurs in abundance from the continent's earliest known occupation levels onwards (Jones 1985; Roberts et al. 1990; Thorne et al. 1999). Of interest are the so-called 'cylcons', often decorated cylindrical-conical stone objects found in the Darling River basin, because they might possibly date from the Pleistocene.

Africa

From the African Pleistocene, figurative portable art has been reported only from the Middle Stone Age (MSA) of Apollo 11 Cave, Namibia (Wendt 1974), thought to be 26,000–28,000 years old. Older bone objects with serrations or notches are known from the MSA of several sites: Klasies River Mouth, South Africa (Singer and Wymer 1982), Border Cave, South Africa (Beaumont et al. 1978; Grün and Beaumont 2001) and again Apollo 11 Cave (Wendt 1974). A wooden fragment with longitudinally engraved lines comes from a Middle Pleistocene deposit at Florisbad, Orange Free State (Volman 1984). Engraved ostrich eggshell fragments from the Howieson's Poort phase of Apollo 11 Cave are perhaps about 70,000 years old (Miller et al. 1999), and such finds have also been reported from the MSA of Diepkloof Shelter in the south-western Cape (Beaumont 1992) where they are about the same age (Feathers 2002). The fragment of a circular ostrich eggshell pendant from the Cave of Hearths at Makapansgat is also of similar antiquity (Mason 1988).

Evidence of ochre use in Bambata and Pomongwe Caves in Zimbabwe (Jones 1940; Cooke 1963; Klein 1978) is thought to be over 125,000 years old. Stone fragments bearing ochre markings come from the MSA sites Pomongwe Cave and Nswatugi (Walker 1987). The extensive mining evidence in Lion Cavern, South Africa (Beaumont and Boshier 1972; Beaumont 1973), includes a radiocarbon date of about 43,200 BP. Apparent use of iron pigments has been widely recorded in the MSA (Beaumont et al. 1978; Clark 1988; Inskeep 1962; Klein 1978; Knight et al. 1995; Singer and Wymer 1982; Walker 1987). It includes notched (Hollow Rock Shelter, south-western Cape), carefully drilled (Klasies River Mouth Shelter 1A) and heavily striated specimens (Klasies River Mouth Cave 1) (Singer and Wymer 1982; Knight et al. 1995: Figs 3–6). A ground hematite fragment from the MSA of the Howieson's Poort site bears a series of eighteen notches (Stapleton and Hewitt 1928), two other hematite pieces with notches on their edges were found in The MSA of Hollow Rock Shelter (Evans 1994).

Two lumps of red volcanic tuff (Oakley 1981: 207), previously identified as ochre (Leakey 1958), were recovered in the much earlier Developed Oldowan levels of Olduvai BK II, Tanzania. Their significance remains uncertain, however. Some of the most extensive early evidence of hematite use comes from Wonderwork Cave, in the northern Cape region of South Africa. Every level of the excavation has produced an abundance of ochre fragments, occurring together with Acheulian bifaces and exotic quartz crystals (Beaumont 1990, 1999; Binneman and Beaumont 1992). The

apparently continuous occupation sequence has been suggested to extend to 800,000 or 900,000 years BP. Of particular importance are two ironstone slabs bearing engraved sub-parallel lines which appear to be between 260,000 and 420,000 years old (Imbrie et al. 1984) and are thus among the earliest engravings known. Well-dated evidence of very early pigment use comes from two recent studies. First, more than seventy red ochre pieces, weighing together some five kilograms, were excavated at the site GnJh-15 in the Kapthurin Formation, Kenya. They are more than 285,000 years old (McBrearty 2001: 92). Twin Rivers, Zambia (Barham 2002) has yielded at least 306 pigment pieces of specularite, hematite, limonite, ochrous sandstone and manganese dioxide. Three per cent of these show signs of modification by grinding or rubbing, vindicating the interpretation of the isolated previous Indian evidence from Hunsgi. The age of Barham's specimens is safely bracketed between 270,000 and 170,000 years. The African evidence of pigment use is therefore currently more numerous and better dated than the sporadic occurrences known from the same time interval in Eurasia.

Two engraved fragments of ochre bearing geometric markings have recently been excavated from the MSA of Blombos Cave, South Africa (d'Errico et al. 2001). They were found in 1999 and 2000 respectively and are about 77,000 years old. The engraved geometric markings comprise linear patterns and borders. Crisscrossing lines forming a diamond lattice bordered by 'enclosing' lines are reminiscent of the patterns engraved on numerous Upper Paleolithic portable finds from Asia, which may define a distinctive marking strategy of great longevity and distribution.

The earliest paleoart evidence from Africa includes the human figurine from Tan-Tan, southern Morocco, a modified manuport from a Middle Acheulian layer (Bednarik 2003b). Its recent discovery confirms the authenticity of the similar Berekhat Ram specimen, also a proto-sculpture of this period. Importantly the Tan-Tan figurine bears microscopic traces of a red pigment, which is currently the earliest evidence of applied coloring material. It also raises the question of the relevance of a probably natural anthropomorphous dolomite piece from Mumbwa Caves, Zambia, found in the remains of an apparent windbreak structure (Barham 2000: 137, 140). Another find of interest from the Moroccan Sahara, the manuport from Erfoud Site A-84-2, a Late Acheulian site (Kuckenburg 2001), was also found in such a possible dwelling site. It is the fossilized fragment of a cuttlefish cast that has the distinct shape and size of a human penis. Of significance are also the Acheulian ostrich eggshell beads from El Greifa site E, Libya, which at about 200,000 years are among the oldest known beads (Bednarik 1997a).

Oddly, no African rock art has so far been securely shown to belong to the Pleistocene, although a few such claims have been made concerning northern Africa. Those concerning Saharan rock art have been refuted by Muzzolini (1990), while a claim from Upper Egypt (Huyge 1998) remains to be tested. Similar postulations for Tanzanian rock paintings (Anati 1986) are without basis. However, the issue of the earliest cupules in Africa may soon be clarified. Peter Beaumont has very recently reported finding extremely early cupule sites in the Korannaberg region of the southern Kalahari (Beaumont in press). Like those in India they occur on heavily metamorphosed and thus particularly weathering-resistant quartzite. They appear to be either of the MSA or earlier, which brings to mind two other finds. One is the grid pattern on a Fauresmith grindstone Laidler (1933) excavated in at the Blind River mouth in East London, South Africa, which is thought to be in the order of 400,000 years old (Bednarik 2002b). The other is the grooved and pecked phonolite cobble from Olduvai FLK North 1 in Bed 1, Tanzania (Leakey 1971: 269), which bears what appears to be a cupule on each side. Its Plio-Pleistocene age might render a utilitarian explanation for this artifact more plausible (Bednarik 2002b), but it should not be overlooked that the earliest known 'paleoart' object is the water-worn jasperite cobble found in the level 3 bone breccia at Makapansgat (South Africa), which is older still. It was brought into the cave from some distance away, either by australopithecines (Dart 1974) or perhaps by very early hominids. It bears several natural markings that give it the appearance of a head. As we lack any other suggestions that Australopithecus recognised the iconic qualities of such objects, the significance of this find remains tentative, but that does not warrant its exclusion from discussions of possible traces of early cognition. A recent microscopic analysis resulted in the reconstruction of much of the object's long history, and confirmed that the extraordinary red stone was carried into the cave 2.5–3 million years ago (Bednarik 1998b).

Europe

Despite the qualifications that apply to all claimed datings of the Upper Paleolithic rock art of Europe (Bednarik 1996), it is clear that this magnificent art corpus is roughly between 33,000 and 10,500 years old. This parietal art, together with the portable art of the same time span, is arguably the most thoroughly studied paleoart. The Paleolithic rock art of Europe has been claimed to occur at about 400 sites across Europe (Bouvier 1993 lists 291, plus several recently discovered sites and many sites with falsified claims). The attribution of most of these sites to the Upper Paleolithic is only on the basis of style, an inadequate form of dating. Since the stylistic basis of dating this art has been refuted by the reliable dating particularly of Chauvet Cave and l'Aldène, it is essential that each presumed Pleistocene rock art site of Europe be reviewed in that light (Bednarik 1995c). Their Paleolithic attribution needs to be tested, since even that of famous sites such as Lascaux is being reconsidered (Bahn 1994). Moreover, there are numerous claims falsely attributing European rock art and portable art to the Pleistocene, or describing natural markings as such paleoart (Bednarik 2002c). They include refuted claims from Germany, Czech Republic, Austria, France, Spain and particularly Portugal.

The earliest known rock art of Europe, however, is not of the Upper Paleolithic, it consists of a set of eighteen cupules found on the underside of a limestone slab placed over the burial of a Neanderthal child at Le Ferrassie

(Peyrony 1934). Peyrony also thought to recognize a motif consisting of patches and irregular bands on a limestone block with brown, bluish and black paint traces, excavated from the Mousterian of Le Moustier. Further apparently non-utilitarian evidence occurs in the form of portable objects, even from the Lower Paleolithic period. Mousterian examples are engravings and apparently artificial notches on bone remains from such Mousterian sites as La Quina (Martin 1907-10), Petit-Puymoyen, abri Lartet, abri Suard (Débenath and Duport 1971), Peyrere 1 or Noisetier Cave (d'Errico and Allard 1997) and La Ferrassie (Capitan and Peyrony 1921) in France; Cueva Morín (Freeman and González Echegaray 1983) and Lezetxiki (Baldeon 1993: 25-6) in Spain; Bacho Kiro, Bulgaria, (Marshack 1976); Tagliente rockshelter, Italy (Leonardi 1988); as well as from French Charentian sites (Bouvier 1987). A serrated bone fragment made with stone tools has been reported from the Mousterian of Schulen, Belgium (Huyge 1990), and the Crimean cave Prolom II yielded several engraved Micoquian specimens (Stepanchuk 1993). Non-figurative Mousterian markings have also been reported on stone, at several sites in Italy (Leonardi 1988) and Hungary (Vértes 1964, 1965). Of particular interest is the well analysed schist plaque with about 43 incised sub-parallel lines, c. 50,000 years old, from Temnata Cave, Bulgaria (Crémades et al. 1995), one of the best examples of Mousterian paleoart. The cuts on a bone artifact from the last Interglacial at a German site, Taubach, may also be anthropic (Kuckenburg 1997).

Much older than the Middle Paleolithic engravings are those from Bilzingsleben, Germany, which occur on fragments of bone, ivory and stone and are roughly 350,000 years old (Behm-Blancke 1983; Mania and Mania 1988; Bednarik 1993e). Of importance is the lasermicroscopic study of the principal Bilzingsleben paleoart objects by Steguweit (1999), which shows unambiguously that their engravings are intentional markings. A similarly marked forest elephant bone is from Stránská skála, Czech Republic (Valoch 1987), but its anthropic nature remains uncertain. Highly relevant are the three engraved bone fragments from gravel pit Oldisleben 1, Artern county in Thuringia, found with an apparent Micoquian industry and Middle Pleistocene fauna. Among them is a scapula fragment with a distinctly intentional set of about twenty engraved parallel lines, arranged in two sets in precisely the same manner as those on Bilzingsleben No. 1 specimen. Even more interesting is an apparently iconographic depiction, a stick-man figure (Bednarik 2006). Also clearly anthropic and intentional are the more than twenty oblique notches arranged in two distinct rows on a probably Lower Paleolithic mammoth tusk fragment (Moog 1939). This object of Middle Pleistocene age found at Wyhlen, Germany, may even be notational in character, but all my efforts to locate the specimen have so far remained fruitless. An engraved bone fragment from the Acheulian of Sainte Anne I, France, bears ten similar short cuts along an edge (Raynal and Séguy 1986). Of particular relevance is the claim of two much older engraved bones from Kozarnika Cave in northwestern Bulgaria. A bovid bone fragment bearing ten parallel grooves and a cervid fragment with 27 notches along an edge were excavated in 2004, in a layer of stone implements containing also a human molar and cranial fragment. Paleomagnetic dating places this material at between 1.1 and 1.4 million years. A Middle Acheulian handaxe from l'Observatoire, Monaco, bears linear, deeply cut markings on its cortex that appear to be artificial (de Lumley 1966: Fig. 12.5), but they are in fact natural. Relevant are also a striated hematite pebble of the Acheulian from Beçov, Czech Republic (Marshack 1981); several faceted pieces of limonite among the seventy-five found at Terra Amata, France (de Lumley 1966; cf. Wreschner 1980); while an apparently shaped slab of ochre reported from Ambrona, Spain (Howell 1966) appears to be of red sandstone (L. Barham, pers. comm.).

Perforated small objects which may have been used as beads or pendants have been reported from European Paleolithic sites for more than 150 years — in fact they include the oldest such specimens in the world, from the Acheulian of France (at Saint-Acheul) — to the Mousterian (at Fontmaure) and right through to the Upper Paleolithic. Tens of thousands of such objects have been published, and while a proportion of them has been naturally perforated, most, including some Lower and Middle Paleolithic specimens, are clearly artifacts (Bednarik 1997a, 2005). D'Errico and Villa (1997) have shown that a few of these many bead-like finds bear natural perforations, which is of little relevance as an object does not necessarily have to have an artificial perforation to have been used as a bead. Wear traces of the type I have described (Bednarik 1998a, 2005) are more important in the identification of beads, and certain types of beads cannot be mimicked by nature, they are always anthropic products (e.g. ostrich eggshell beads and perforated teeth).

Interpretation of this evidence

The replacement/African Eve hypothesis has only survived by its advocates rejecting all evidence of paleoart (or other indications of "modern behavior") prior to the Aurignacian of Europe. As we have seen in the second lecture, the hypothesis is contradicted by all available relevant archaeological and paleoanthropological evidence. Indeed, there is every indication that the Aurignacian tool tradition itself, and its paleoart, are the work of Neanderthals or Post-Neanderthals, which renders the replacement model soundly refuted. Therefore, the most interesting material among the comprehensive above list is that which exceeds in age 35 to 45 ka, and is regarded as Middle or Lower Paleolithic. Not only has it been impossible to consider this material effectively while the Eve advocates dominated Pleistocene archaeology, it is the material that is of the greatest importance to us if we wish to consider the beginnings of human cognition and symbol use.

In the two previous lectures we have considered several factors refuting the 'short-range' or replacement model of human evolution — those provided by genetics, by a rigorous review of palaeoanthropology (physical evolution of humans), and those gleaned from an overview of technological and cultural developments between 45 and 25 ka. In the present lecture we have seen that a review of the evidence suggestive of art-like productions refutes the short-range

hypothesis even more decisively. The modernity of human behavior is not determined by skeletal evidence, not even by stone tool technologies. It is indicated by the "storage" of symbolism outside the brain, especially in the form of paleoart (the collective term defining all art-like manifestations of the remote human past). This argument was first advanced by Merlin Donald (1991: 124–161), who proposed a complex model in which he posited three basic stages of human evolution. The first, according to him, is mimetic symbol use without symbol creation, the second is construction of conceptual space using language. The third involves the deposition of symbolic properties in material culture, capable of intervening in social behaviour, or in communicating meaning. Of the obvious contenders of the third type in Pleistocene society, style in stone tools and structured use of space have been proposed, but these may be illusory and only reflect the taxonomizing activities of archaeologists. The only major direct evidence for such external storage of symbolic meaning is palaeoart. Donald's model has its shortcomings, and is without cohesively articulated material evidence, but his concept of external storage is a goalpost of immense value. If we accept such storage as the defining characteristic of cognitive modernity, it becomes fundamental in the context of the present course topic to establish how far such behavior extends into the past, and how it might have been acquired. It is this specific variable that determines when "modern" human behaviour appeared, and most certainly not any genetic or skeletal evidence. We therefore shall need to focus very specifically on this factor.

The above survey, continent by continent, of the early evidence suggestive of the use of palaeoart provides the raw empirical data in this quest. This evidence of the Lower Paleolithic, i.e. predating not only the introduction of Upper Palaeolithic mode of technology in Europe but also that of the preceding Middle Paleolithic, consists of six classes:

1. Petroglyphs

Petroglyphs relating to Middle Palaeolithic traditions are very common, in fact they are more common than Upper Palaeolithic rock art, particularly in Australia. The number of petroglyphs credibly attributed to the Lower Palaeolithic period remains relatively small, but it must be remembered that nearly all examples refer to discoveries of recent years. The first rock art ascribed to the Acheulian are the eleven petroglyphs in Auditorium Cave, Bhimbetka complex, India, consisting of ten cupules and one meandering linear petroglyph. Another Indian quartzite cave, Daraki-Chattan, was found to contain two vertical panels densely covered by over 500 cupules. Below them, covered by substantial Acheulian occupation strata, we found 30 more cupules and three linear petroglyphs. Three southern African finds also need to be considered here. The phonolite cobble from Kenya is a doubtful case, but the partly pecked grid pattern from the Fauresmith at Blind River Mouth in South Africa might be relevant. A recently discovered series of very early cupule sites in the Korannaberg region of the southern Kalahari is very reminiscent of the confirmed finds in central India.

2. Portable engravings

The largest Lower Paleolithic site assemblage is the one from Bilzingsleben, Germany, which yielded six apparently engraved bone fragments, mostly of the forest elephant, and one on a quartzite slab. Those on the first four bone objects reported have been demonstrated by lasermicroscopic analysis to have been made intentionally. The three engraved bone fragments from nearby gravel pit Oldisleben 1 were found with a Micoquian industry and Eem fauna and one of them bears an iconographic (figurative) engraving. The anthropic authenticity of an engraved bone fragment from the Acheulian of Sainte Anne I, France, which bears ten short cuts along an edge, seems assured. This probable horse bone from near Polignac in the Haute-Loire region is remarkably similar to the German fragment of a mammoth tusk from the Rissian at Whylen near Lörrach. All of this material is eclipsed in age by the two marked bone objects from Kozarnika Cave in Bulgaria, claimed to be over one million years old. Wonderwork Cave in South Africa has yielded two fragments of banded ironstone bearing sets of curved sub-parallel lines incised with stone tools. They are from a late Fauresmith context dated to between 420 ka and 260 ka, and are thus of an antiquity matching that of the Bilzingsleben finds in order of magnitude.

3. Proto-figurines

The existence of proto-figurines in the Lower Palaeolithic has only recently been seriously considered and we currently have only two specimens: a basaltic tuff and scoria pebble of the Late Acheulian at Berekhat Ram, Israel; and the Middle Acheulian quartzite object from Tan-Tan, Morocco. Both bear microscopic traces of anthropic modification, the latter was apparently coated by red paint.

4. Pigment use

Hematite pigment, in many cases with traces of working, has been found at many Lower Palaeolithic sites: Wonderwork Cave and Nooitgedacht (South Africa); Kabwe Cave, Twin Rivers and Kalambo Falls (Zambia); Site GnJh-15 (Kenya); Beçov (Czech Republic); Terra Amata and Achenheim (France); Ambrona (Spain); and Hunsgi (India). These finds imply that pigments have been in use for much if not all of the Middle Pleistocene of southern Africa, and elsewhere in the Old World for at least much of the second half of that period. Ochre and similar minerals can be used for body painting, for the painting of objects (as indicated in the Tan-Tan figurine) or to draw on surfaces, notably on rock.

5. Beads and pendants

These particularly important objects will be the subject of the next lecture.

6. Manuports

Unmodified objects collected, transported and deposited by hominins can be identified when they occur in occupation deposits in which they could not possibly occur naturally. Another distinctive characteristic of manuports is that they are not just exotic objects, they possess some outstanding visual or material properties that are presumed to have prompted their acquisition and curation. The collection and cultural use of exotic objects is not limited to hominins, it can for example be observed in various bird species. The earliest reported manuport, the Makapansgat jasperite cobble, dates from the very beginnings of hominin phylogeny, being almost 3 million years old. This find remains entirely unique, but clear prismatic rock crystals are a more common form of manuports at early occupation sites, and there is some evidence that fossil casts have attracted the attention of hominins for hundreds of millennia. An example is the Late Acheulian cuttlefish fossil from Erfoud, Morocco.

This material is all assumed to be well over 100 to 150 ka years old, and any consideration of early cognition or symbolism must necessarily begin with its review. In the next lecture we will examine one particularly important type of evidence.

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