KEYWORDS: ***Pleistocene – Palaeoart – Symbolism – Rock art – Portable art – Art origins***

THE EARLIEST EVIDENCE OF PALAEOART

Robert G. Bednarik

Abstract. A comprehensive review of evidence of very early palaeoart covering all continents reveals significant misconceptions in the dominant models of 'art' origins. The traditional preoccupation with predominantly zoomorphic, figurative traditions of south-western Europe is examined, as well as the closely related concept of an endemic cave art of the Upper Palaeolithic period. The existence of much earlier non-utilitarian traditions is demonstrated, including bead making and pigment use in the Lower Palaeolithic, and the widespread uniformity of Middle Palaeolithic palaeoart traditions is noted. The review of this global Pleistocene evidence suggests that the oldest and symbolically most sophisticated palaeoart is that of Asia rather than Europe.

Introduction

The question of the beginnings of art have long been recognised as being crucial to our understanding of the origins of human language, human consciousness, human culture, as well as the eventual development of modern human cognition. More importantly still, that question is thought to be intimately related to the formulation of past and present human concepts of reality. In this sense, the entire framework of our epistemology is ultimately predicated on the development of non-utilitarian human culture, and its interaction with our faculties of perception (Bednarik 1994a). The processes responsible for these developments remain very poorly understood. This is at least in part due to biased models archaeology has provided. In particular, throughout the twentieth century, the topic of art beginnings was entirely dominated by just one model: that relating to the 'Upper Palaeolithic' rock art and portable art of Europe, particularly south-western Europe (I use terms such as 'Palaeolithic' in the traditional sense, for the sake of communication, without endorsing them; cf. Bednarik 2003).

Only very recently has this model come under sustained and coherent criticism, particularly with the promotion of earlier art evidence from other continents (Bednarik 1994b, 1994c), and the appearance of explanations of taphonomic nature to account for the composition of the surviving evidence (Bednarik 1994d, 1995a, 1995b). Other recent currents of thought have also become very important and are considered in this paper.

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 palaeoart, 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 or cognitive capacities (e.g. seafaring). Of particular importance, however, are beads and pendants: not only does their skilled production require sophisticated techniques, and their use the availability of cordage and knotting (both of which are also required for seafaring), beads are a form of symbolic artefact that can only assume cultural relevance in a complex social system of symboling and of value concepts (Bednarik 1997a).

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 summarise 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, engraved portable art, sculpted portable art, and evidence that has been suggested to be the result of non-utilitarian activities.

THE EVIDENCE

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). Dating information for American petroglyphs has recently been provided by Tratebas (1994), for paintings by Russ et al. (1990), Chaffee et al. (1993) and Hyman et al. (1999).

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 mineralised sacrum from Tequixquiac, Mexico, which has been modified to look like an animal head (Bahn 1991: Pl. 18a); and the numerous limestone plaques from the Clovis layer of the Gault site, Texas, which bear 'geometric' engravings (Collins 2002; Collins et al. 1991, 1992; Robertson 1999). So far, at least 134 specimens have come to light at this site, but the provenience of many is not secure (D. C. Wernecke, pers. comm.). Nevertheless, eighteen good examples are clearly from the Clovis deposits, and they represent some of the most important palaeoart the Americas have yielded (Fig. 1). 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).

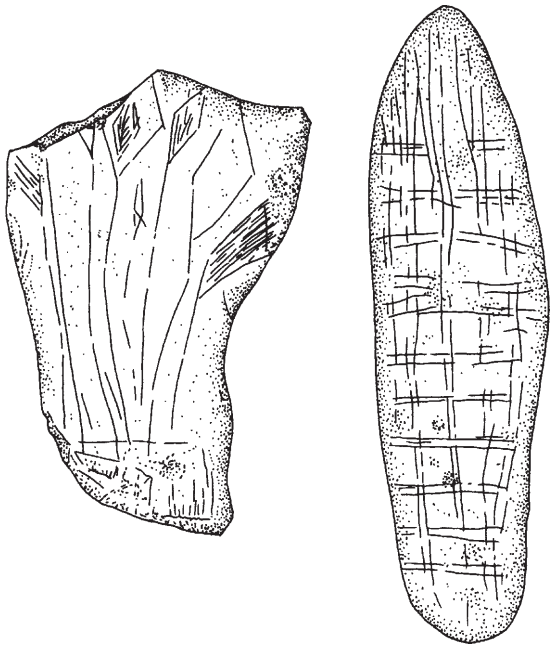

Figure 1. *Engraved limestone plaques of the Clovis, Gault site, U.S.A. (after Collins et al. 1991).*

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 1989). 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 1989: 105). They occur immediately above a thick layer of charcoal. A fragment of a pigment ball that showed 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 1989) and Bolivia (Bednarik 1988c, 2000a). 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 (Fig. 2). Although undated, circumstantial evidence suggests an early Holocene or final Pleistocene antiquity (Bednarik 2000a). Cupules and other petroglyphs at further Bolivian sites have been dated to the second half of the Holocene.

Figure 2. Early cupules on quartzite, Inca Huasi, Bolivia.

Asia

There have been several claims relating to Upper Palaeolithic 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 Palaeolithic of China (e.g. You 1984) and South Korea (Sohn 1981). An examination of many Asian claims of Palaeolithic 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 1994c). 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 for confirmation), although the Mal'ta plaque (Bednarik 1992a)

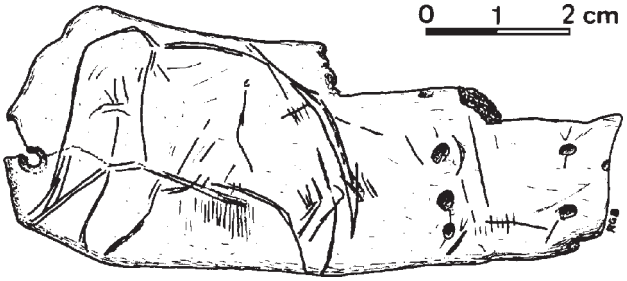

Figure 3. *Perforated ivory plaque with engraving of an apparent mammoth image, Mal'ta, central Siberia.*

might be around 14 000 years old (Fig. 3). However, nearly all known Asian (as well as eastern European) graphic art of the Pleistocene is 'non-figurative' (Bednarik 1993d), a key issue that has so far largely been ignored. Siberian portable art includes the probably oldest presently known iconic sculpture, an animal head from Tolbaga, thought to be possibly 35 000 years old (Fig. 4). Siberian claims of

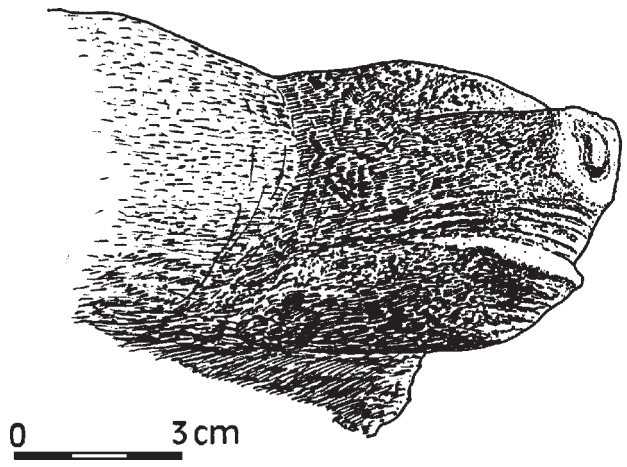

Figure 4. *Sculpture resembling the head of a bear on a vertebra of the woolly rhinoceros, Tolbaga, southern Siberia.*

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 Palaeolithic 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 various frequent claims for great antiquity rebutted by subsequent analysts. Examples are some thirty sites on the Kalguty River of the Ukok Plateau in southwestern 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 a recent historical site.

In neighbouring 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 the Chinese Pleistocene was known until 1991, except the material from the Upper Cave of Zhoukoudian: haematite 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 in Hebei Province (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 same paper also reported the discovery of a stone pendant at Shiyu wenhua, from a dated final Middle Palaeolithic or very early Upper Palaeolithic context (Fig. 5).

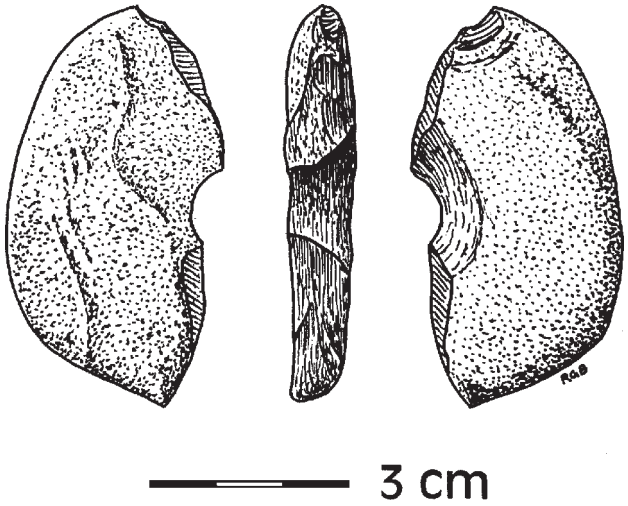

Figure 5. *Stone pendant from the Shiyu site, Shanxi Province, China.*

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 (Fig. 6). 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 Palaeolithic, including a perforated specimen (Bednarik 1994c).

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 microorganisms (Bednarik 1992a). Similar markings occur on

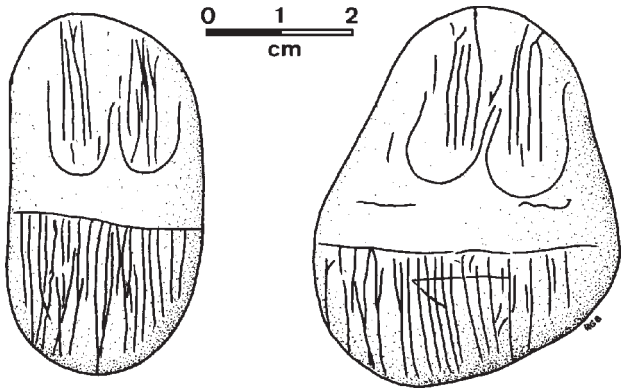

Figure 6. *Two engraved pebbles of the Incipient Jomon of Kamikuroiwa rockshelter, Ehime Prefecture, Japan.*

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 1992a). It is thought to be 25 000 years old (Fig. 7).

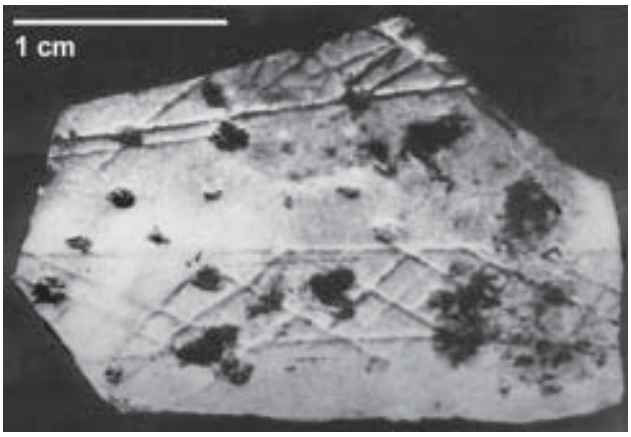

Figure 7. *Engravings on ostrich eggshell fragment, Patne, western India, early Upper Palaeolithic.*

The Upper Palaeolithic 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 Palaeolithic (Bednarik 1993b) (Fig. 8).

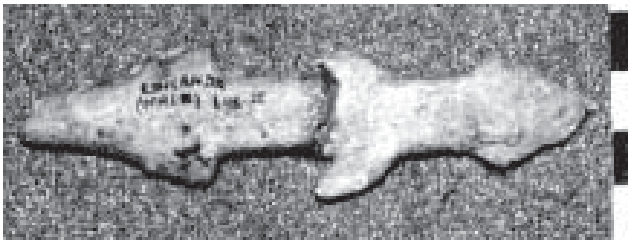

Figure 8. *Carved and polished bone object from Lohanda Nala, Belan valley, India, formerly regarded as female figurine, but in fact a harpoon point.*

Turning next to the claims for a Palaeolithic antiquity of rock art in India, we find that Wakankar's (1975, 1983) notion of the precedence of the green dynamic paintings, which he considered to be of the Upper Palaeolithic, 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. Some of the Bhimbetka quartzite cave petroglyphs were covered by in situ Lower Palaeolithic occupation strata (Bednarik 1992b, 1994b, 1994c) and they are of the Acheulian (Fig. 9), being therefore the oldest currently known rock art in the world (Bed-

Figure 9. *Cupule and meandering groove on boulder in Acheulian layer, Auditorium Cave, Bhimbetka, India.*

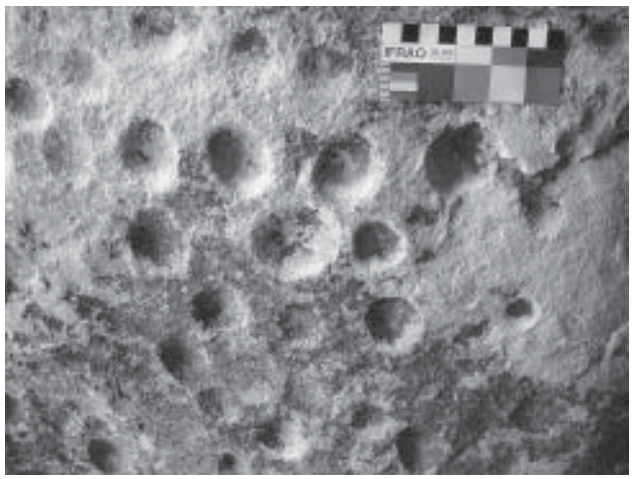

Figure 10. *Some of the more than 500 Palaeolithic cupules in Daraki-Chattan, India, thought to be of the Acheulian or Middle Palaeolithic.*

narik 1993b). A large number of cupules in Daraki-Chattan (Fig. 10), a quartzite cave near the Chambal valley, has been suggested to be of either Acheulian or Middle Palaeolithic age (Kumar 1996), a claim that is being evaluated by an international commission at the present time (Kumar et al. 2003). Striations on a wear facet of one of a series of haematite 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 1990a). Another find of relevance is the suite of six quartz crystal prisms (Fig. 11) 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).

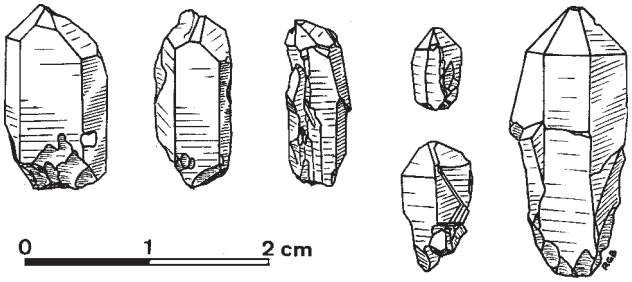

Figure 11. *Tiny quartz crystal prisms from the Lower Acheulian, Singi Talav, near Didwana, Rajasthan.*

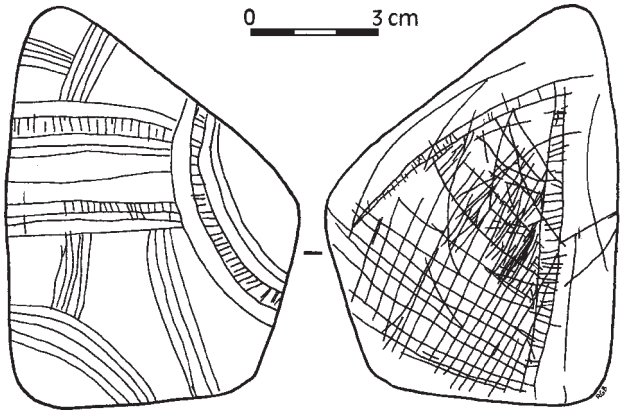

Figure 12. *Epi-Palaeolithic engravings on both faces of a limestone cobble from Urkan e-Rub, Israel.*

The Levantine region has yielded a variety of portable art of the Pleistocene. An engraved limestone cobble from the late Palaeolithic site of Urkan e-Rub II (Fig. 12), 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 artefacts, 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).

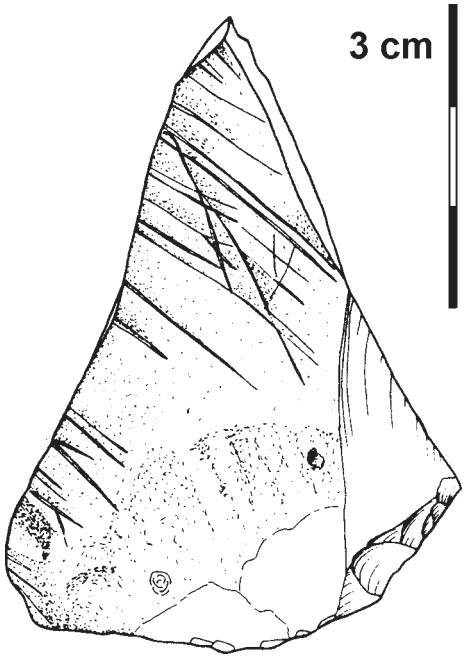

Figure 13. *Engraved stone tool of the Middle Palaeolithic, Qafzeh Cave, Lower Galilee, Israel (after Hovers et al. 1997).*

Much earlier art-like finds from the region are the Middle Palaeolithic engraved stone tool (Fig. 13) 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) that is 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 (Fig. 14), and it bears artificial markings (Marshack 1997; d'Errico and Nowell 2000). Another Acheulian site of the

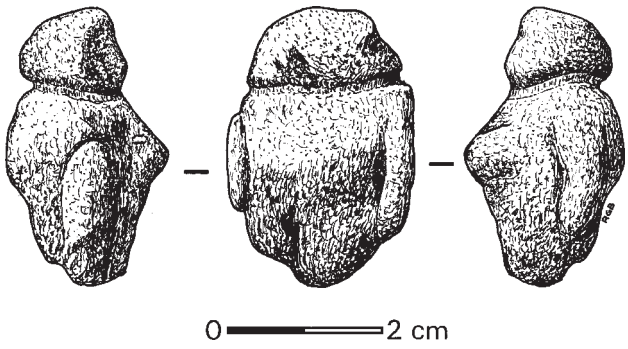

Figure 14. *Naturally shaped scoria pebble bearing engraved lines. Acheulian, Berekhat Ram, Israel.*

region, Gesher Benot Ya'aqov, yielded two 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, disc beads of that period have been reported from Africa and Europe as well.

Non-figurative rock engravings in caves at Mount Carmel have been suggested to include Palaeolithic marks but in view of the many false claims of this type elsewhere this requires specialist appraisal (Ronen and Barton 1981). At the upper end of the time scale, towards the end of the Pleistocene, the Levant has provided a good number of art-like objects, particularly stone objects, although at least one engraved ostrich eggshell fragment has also been reported (Goring-Morris 1998). A series of proto-sculptures has been described from the Natufian layers of el-Wad Cave, Mt Carmel (Garrod and Bates 1937; Weinstein-Evron et al. 1993), Kebara Cave (Turville-Petre 1932: 276), Wadi Hammeh 27 (Edwards 1991: Fig. 9.2), Upper Besor 6 (Goring-Morris 1998) and a few other sites. This material is generally of the last two or three millennia of the Pleistocene. The earliest rock art so far identified in Saudi Arabia might possibly of a similar age, consisting of cupules and archaic petroglyph motifs at the Shuwaymas 1 site, south-west of Hail (Bednarik 2002a).

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 south-western 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 1998). 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 (Rothwell 1996), 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 (Fig. 15), which was derived from uranium-series analysis, suggesting an age of well over 28 000 years (Bednarik 1999).

Figure 15. *Karake-style petroglyphs carved into the ceiling of Malangine Cave, near Mt Gambier, South Australia. They were covered by a speleothem layer of 15 to 20 mm thickness yielding a U/Th age estimate of about 28 000 years BP.*

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 2001a, 2002b) (Fig. 16).

Despite the wealth of portable palaeoart in Australia, very little has so far been dated to the Pleistocene. Striated haematite 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.

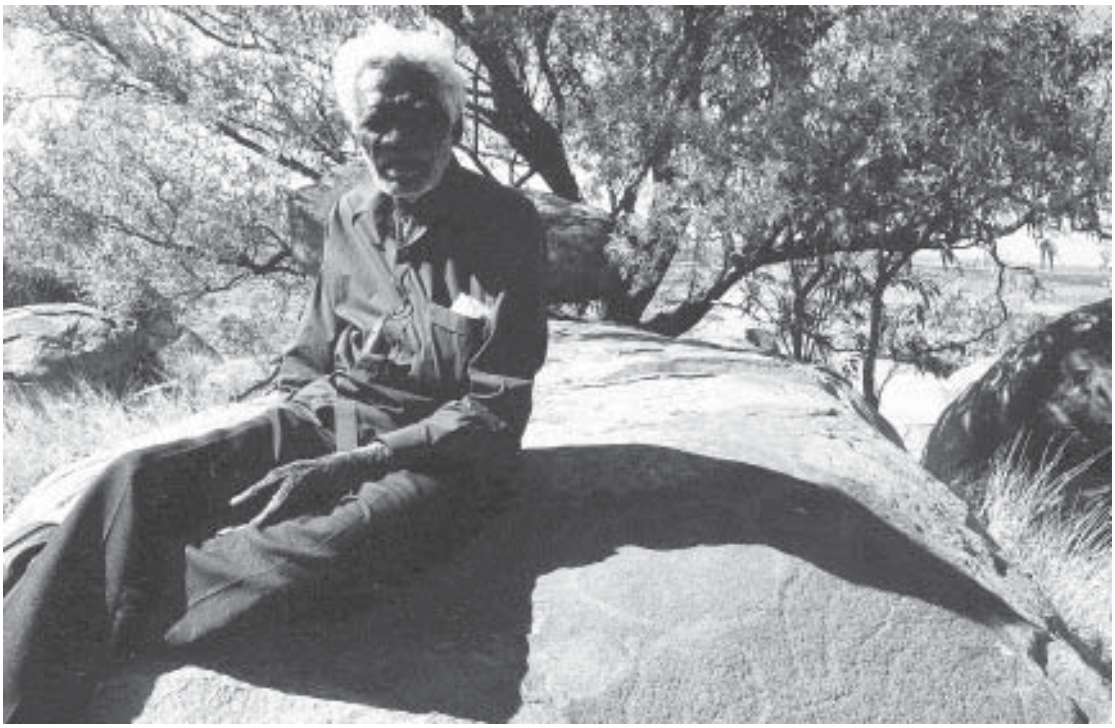

Figure 16. *Senior Traditional Custodian Monty Hale seated next to some of the oldest scientifically analysed petroglyphs of Australia, forming a circulinear pattern on granite in the eastern Pilbara.*

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 (Fig. 17).

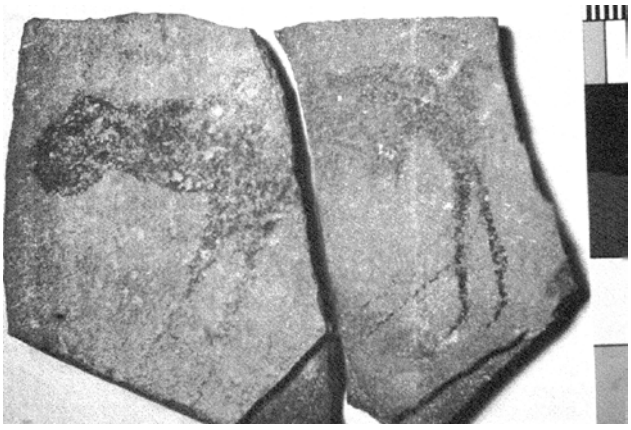

Figure 17. *Zoomorphic pictogram on stone slab from the MSA of Apollo 11 Cave, Namibia.*

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 in excess of 83 000 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; Bednarik 1994b) where they might be 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). Several other African sites have yielded apparent body ornaments of comparable ages, including the four deliberately perforated quartzite flakes from Debenath, Nigeria; the shell bead from Oued Djebanna, Algeria; and the bone pendant from Grotte Zouhra, Morocco (McBrearty and Brooks 2000: 521). While this African material provides some belated evidence refuting White's (1995) pronouncements about the origins of such behaviour, hundreds more apparent beads and pendants of the Lower Palaeolithic have been available from Europe for over 150 years (Bednarik 1997a, 2001b).

Evidence of ochre use in Bambata and Pomongwe Caves in Zimbabwe (Jones 1940; Cooke 1963; Klein 1978) is thought to be up to 125 000 years old. Stone fragments bearing ochre markings come from the MSA sites Pomongwe Cave (Fig. 18) 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 haematite fragment from the MSA of the Howieson's Poort site bears a series of eighteen notches (Stapleton and Hewitt 1928), two other haematite pieces

with notches on their edges were found in the MSA of Hollow Rock Shelter (Evans 1994).

Figure 18. *Two stones with paint residues from Pomongwe Cave, Matopos, Zimbabwe, final Pleistocene (after Walker 1987).*

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 haematite 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; Bednarik 1994b). The substantial 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; Beaumont in press) 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, haematite, 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 early 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 apparently at least 73 000 years old (Henshilwood and Sealy 1997). The engraved geometric markings comprise linear patterns and borders (Fig.19). Crisscrossing lines forming a diamond lattice bordered by 'enclosing' lines are reminiscent of the patterns engraved on numerous Upper Palaeolithic portable finds from Asia, which may define a distinctive marking strategy of great longevity and distribution.

Figure 19. *The engraved pattern on one of the Blombos Cave ochre fragments, MSA, lower Late Pleistocene, South Africa.*

The earliest palaeoart evidence from Africa includes the proto-figurine from Tan-Tan, southern Morocco, a modified manuport from a Middle Acheulian layer (Bednarik 2001c). 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 bright-red pigment, which is currently the earliest evidence of applied colouring material (Fig. 20).

Figure 20. *Natural stone object with anthropic groove markings and traces of red paint residue, Middle Acheulian, from Tan-Tan, Morocco.*

The Tan-Tan object 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, was also found in such a possible dwelling site (Kuckenburg 2001). It is the fossilised fragment of a cuttlefish cast that has the distinct shape and size of a human penis (Bednarik 2002c). 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 (Ziegert 1995; 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 (cf. Huyge 2002; Watchman 2002; Whitley and Simon 2002). 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 2002d). 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 (Fig. 21).

Figure 21. *Cobble with apparent cupules on each side, Olduvai (after Leakey 1971).*

Its Plio-Pleistocene age might render a utilitarian explanation for this artefact more plausible (Bednarik 2002d), but it should not be overlooked that the earliest known 'palaeoart' 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 (Fig. 22). As we lack any other suggestions that Australopithecus recognised the iconic qualities of such objects, the significance of this find remains tentative. However, and particularly in view of the recent discovery of *Kenyanthropus platyops,* 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).

Figure 22. *Red jasperite cobble with distinctive natural markings, a manuport taken into Makapangat Cave in the late Pliocene and deposited with australopithecine remains.*

The evidence Africa has so far yielded provides some tantalising glimpses, and it is clear that this continent can be expected to yield much more very early evidence relating to the origins of non-utilitarian practices by hominids as the search continues.

Europe

Despite the qualifications that apply to all claimed datings of the Upper Palaeolithic rock art of Europe (Bednarik 1996a), it is clear that this magnificent art corpus is between roughly 32 000 and 10 500 years old. This parietal art, together with the portable art of the same time span, is arguably the most thoroughly studied palaeoart. The Palaeolithic rock art of Europe has been claimed to occur at about 300 sites across Europe (Bouvier 1993 lists 291, plus several recently discovered sites). However, the attribution of most of these sites to the Upper Palaeolithic 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, it is essential that each presumed Pleistocene rock art site of Europe be reviewed in that light (Bednarik 1995d). Their Palaeolithic attribution needs to be tested, since even that of famous sites such as Lascaux is being reconsidered (Bahn 1994). Of the sites Bahn and Vertut (1997) list, several certainly are either not of the Pleistocene or they lack any form of rock art (e.g. Bednarik 2002e; Steelman et al. 2002). The oldest safely dated evidence of this rock art tradition is at Chauvet Cave, France (Clottes et al. 1995), being about 32 000 years BP.

Of the numerous claims falsely attributing European rock art and portable art to the Pleistocene, or describing natural markings as such palaeoart, few have so far been examined scientifically. For instance all claims made concerning Palaeolithic rock art in Germany (e.g. Hahn 1991; Conard and Uerpmann 2000) have had to be rejected (Bednarik 2002e). Some specimens feature natural surface deposits or discolouration caused by chemical reduction of iron salts (Geißenklösterle), some thought to be exfoliated fragments of rock art were made on already spalled clasts, and numerous presumed engravings were identified as taphonomic grooves occasioned by quartz grains embedded in the fur of cave bears (Hohle Fels). The stag image from the Kleines Schulerloch in Bavaria (Birkner 1938: Pl. 13) and the zoomorph in the Kastlhänghöhle (Bohmers 1939: 40) have long been rejected in this context (Bosinski 1982: 6; Freund 1957: 55), while claims of Pleistocene rock art in Jenö Hillebrand, Hungary (Kozlowski 1992: 41), Mladec Cave and Býci Skála (Oliva 1996: 120, 129, Fig. 2) have yet to be examined. In Austria, petroglyphs at two sites were attributed to the Pleistocene with only stylistic justification, some are natural markings and the others are only a few centuries old. A series of open air sites on the Iberian Peninsula has been proposed to be of Palaeolithic age, based again on perceived style only (Bahn 1995), but studies in two valleys (Côa in Portugal, Agueda nearby in western Spain) have severely questioned these postulates (Bednarik 1995c, 2000b). Substantial efforts to demonstrate the claimed Pleistocene age of the Côa petroglyphs have failed to provide tangible evidence (Aubry et al. 2002), and direct dating, geology, palaeozoology and even archaeology all imply that most are of Historical age.

The earliest known rock art of Europe, however, is not of the Upper Palaeolithic, 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) (Fig. 23). Peyrony also thought to recognise 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 Palaeolithic 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 palaeoart (Fig. 24). The cuts on a bone artefact from the last Interglacial at a German site, Taubach, may also be anthropic (Kuckenburg 1997).

Much older than the Middle Palaeolithic 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 palaeoart 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 several engraved bone fragments from gravel pit Oldisleben 1, Artern county in Thuringia, found with an apparent Micoquian industry and Middle Pleistocene fauna (Günther 1994). 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 (Fig. xxx). Also clearly anthropic and intentional are the more than twenty oblique notches arranged in two distinct rows on a probably Lower Palaeolithic 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 (Fig. xxx). An engraved bone fragment from the Acheulian of Sainte Anne I, France, bears ten similar short cuts along an edge (Raynal and Séguy 1986). A Middle Acheulian handaxe from l'Observatoire, Monaco, bears linear, deeply cut markings on its cortex that appear to be artificial (de Lumley 1976: Fig. 12.5). Relevant are also a striated haematite 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 1985); 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 Palaeolithic 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 Palaeolithic. 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 Palaeolithic specimens, are clearly artefacts (Bednarik 1997a). 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) 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).

Traditional interpretation of the evidence

The traditional model of art origins is almost entirely based on European evidence of the Upper Palaeolithic, and perceives art as a phenomenon initially arising in Europe, and most particularly in south-western Europe. There are some simple reasons for the development and persistence of this view. Perhaps most importantly, the relatively large number of sites of the perceived Pleistocene traditions is interpreted as indicating cohesive cultural entities, while the iconic quality of some of the motifs of this art corpus, particularly of zoomorphs, is seen as a sign of artistic sophistication.

There are, however, also more subtle underpinnings of the paradigm that has practically dominated all discussions of art origins. The Pleistocene art of south-western Europe was discovered at a time when colonialist ideology still determined scholarly thought patterns. Subsequent to its controversial acceptance by the archaeological establishment a century ago, it was still possible for a fake hominid fossil to be eagerly accepted as evidence that humans first evolved in Britain. While rational 'amateurs' like Eugène Dubois had long realised that the human cradle was not to be found in Europe, colonialist metaphysics permitted the suppression of Dart's Australopithecus for decades, until the counter evidence became simply overwhelming in the middle of the 20th century and the focus shifted to Africa.

In palaeoart studies, however, the Eurocentric paradigm remains in control, and with good reason. A major 'industry' has developed around it, connected with tourism, education, publishing, heritage management, national pride, even ethnic identity, as if the Palaeolithic artists could validly be seen as the ancestors of modern nations or ethnic groups. Archaeology, always a highly political pursuit (Kohl and Fawcett 1995), has created a mythology permeating all levels of education and intellectual conditioning. Its perpetuation is secured by the fact that the reputation and influence of the academic experts of Palaeolithic art depends on maintaining the dogma. The specialists of Palaeolithic art derive their positions within the hierarchy primarily from a mysterious deeper understanding of the art, whose finest manifestation is the ability of estimating the age and 'cultural attribution' of a specimen from its 'style'. This ability derives from such sources as the tenets laid down by earlier scholars, a close knowledge of the art corpus and related literature, and some intuitive factors that have never been quantified and rarely subjected to a form of testing (Bednarik 1995d). On the few occasions when the latter have been challenged the reactions have been unsatisfactory. For instance the introduction of 'direct' rock art dating techniques has led to personal attacks of archaeometrists and to the description of scientific methods such as 'blind testing' as 'unethical' (Zilhão 1995).

In recent decades this paradigm found a new lease of life in the 'African Eve' notion of a culturally, technologically and cognitively superior new 'species' which replaced all other humans and then developed art, speech and complex culture in south-western Europe. In this origins myth, cultural sophistication is implied to have largely been disseminated from Europe to the rest of the world. To survive it needs to reject evidence for human sophistication prior to the Aurignacian, and it needs to correlate 'modern' behaviour with 'modern' physical features of humans. Scholars relying on maintaining this paradigm are finding

it increasingly difficult to reject contrary data, especially as its only support, genetic claims about divergence times based on unknown mutation rates and population sizes, is dubious (Barinaga 1992; Templeton 1993, 1996; Ayala 1996; Brookfield 1997; Pennisi 1999; Strauss 1999).

This orthodox model ignores most of the Lower and Middle Palaeolithic evidence listed above; its consideration is discouraged and its dissemination stifled in order to preserve the archaeological dogma. (The present paper has been submitted to two journals previously and was deemed unacceptable without major alterations.) According to it, 'modern' behaviour—which includes the skilled working of non-lithic materials (bone, ivory etc.), blade tool technology, navigation, 'art' and body decoration, speech, shelter construction, advanced hunting techniques, clothing, cordage and underground mining—is the exclusive preserve of recent humans, typified by the undated Cro-Magnon specimens. Yet all of these behaviour traces can be found in Middle Palaeolithic contexts and most in Lower Palaeolithic ones, at least outside of Europe. Indeed, the African Eve model itself lacks any evidential support from archaeology (Bednarik 1995b; Bednarik and Kuckenburg 1999). There is unambiguous evidence in archaeology that the perceived divisions between populations of specific physical characteristics are independent of cultural, technological and presumed cognitive divisions. In numerous parts of the world, including south-eastern Australia, the Iberian Peninsula, the Levant and central Europe, populations of 'modern' and 'archaic' characteristics occurred in the same time intervals, and they often shared essentially identical tool kits, even decorative objects. Moreover, there are numerous finds of reportedly intermediate hominids, claimed to display both archaic and 'anatomically modern' characteristics, including those from Mladec Cave, Krapina, Starosel'e, Rozhok, Akhshtyr', Romankovo, Samara, Sungir', Podkumok, Khvalynsk, Skhodnya, Lagar Velho, Crete, Narmada, Jinniushan, and several more Chinese sites. A sapienisation process occurred apparently in many regions outside of Africa, or alternatively, the presumed two populations interbred extensively (which also refutes the genetic hypotheses). Anatomically modern humans occur in Mousterian contexts, e.g. in Ukraine and Russia (Roginsky et al. 1954; Yakimov 1980), and Neanderthals possessed Upper Palaeolithic technology, even in France. Cultural and perceived palaeoanthropological divisions certainly do not coincide. Therefore the cultural model implicit in the Replacement Theory lacks any sound archaeological foundation. The notion of the 'replacement' of an 'inferior' population needs to be severely questioned, it probably reflects the historically contingent ideologies of commentators much more than any aspect of the human past (Bednarik and Kuckenburg 1999).

An alternative interpretation

Two main factors in the final refutation of the replacement model, however, are the evidence of Middle and even Lower Pleistocene maritime colonisation (see Bednarik 1997c for bibliography), and the application of taphonomic logic to the issue. The far-reaching effects of the early seafaring evidence have been discussed in detail elsewhere (e.g. Bednarik and Kuckenburg 1999; Bednarik 2003b), here it will suffice to note that the idea that a cultural quantum jump was suddenly generated by a 'modern' intrusive population in western Europe is becoming an absurdity. It does not even fit with the archaeological evidence from central to eastern Europe, according to which both 'modern' humans and Upper Palaeolithic technology developed directly in situ. There is no archaeological evidence of a 'superior technology' spreading northwards through northern Africa in the mid- or upper-Late Pleistocene. The Aurignacian was not imported from the Levant, it is an indigenous European development most likely from such traditions as the late central European Micoquian, Mousterian, Szeletian, Bohunician and Olschewian, or the eastern European Streletsian. East of the Rhine there is considerable evidence of technological and cultural continuity from Middle to Upper Palaeolithic traditions (Bednarik 1995d). The Périgord-centric perspective of this time period, the first half of the Würm stadial, does not facilitate a balanced and realistic perception. Western Europe was never a great centre of cultural innovation, it seems to have been a peripheral region throughout the Pleistocene. Particularly the Iberian Peninsula has apparently hosted a variety of relict traditions, even in the Holocene. Indeed, the artistic sophistication evident in the French, and much later Spanish, cave art is really an oddity, quite out of step with other global trends of the Late Pleistocene.

Technologies long established elsewhere took a long time to reach western Europe. Barbed bone harpoons, for instance, were made in Africa and east Asia many tens of thousands of years before they made their debut in Europe, during the Magdalenian. The earliest decorated pottery of Japan is twice as old as that of Europe, and the earliest ground stone axes of Sahul (Greater Australia) are six times as old as their first European counterparts. More relevantly, the Palaeolithic art of Eurasia east of the Rhine seems to have been almost entirely free of graphic figurative depiction, consisting instead of much more complex designs. If one excludes the few examples that are more appropriately considered as bas reliefs (such as the anthropomorphs from Molodova V, Ukraine, and Kostenki I, Russia; Abramova 1962) or that are doubtful (such as the rabbit-like engraving from the latter site, or the iconic elements Marshack [1989] discerns in the markings on the mammoth tusk tip from Kirillovskaya, Ukraine, which I have examined and regard as non-iconic), the confirmed iconic figures in the 'Palaeolithic' graphic art of eastern Europe and Asia are limited to the undated paintings in Kapova Cave (Boriskovski 1984: 226) and Ignatiev Cave (but note that Steelman et al. 2002 have dated a 'Palaeolithic' 'mammoth' figure in that cave to 7370 ± 50 BP) and two 'mammoth' engravings, one each from Mal'ta and Bereliokh, Siberia, and perhaps one figure from Hayonim Cave. Instead of iconic (to the European eye figurative) elements, most Pleistocene art seems to have consisted almost entirely of 'geometric' arrangements: in about 97% of the total area of Eurasia, graphic Palaeolithic art, where it does occur, seems almost entirely restricted to geometric or non-iconic marks.

Of particular interest are the numerous 'geometric signs' on portable objects from Russia (Marshack 1979), Ukraine, Siberia and India (Bednarik 1994c). They are best exemplified at Eliseevichi, Mezin, Kirillovskaya and Mezherich (but also occurring, less pronounced or in smaller numbers, at Patne, Mal'ta, Afontova, Kavkaz, Balinkosh, Klinets, Timonovka, Suponevo, Novgorod-Severskaya, Avdeevo and Gagarino), in the first Palaeolithic art discovered in China, and in several engraved objects from the Levant (especially the Urkan e-Rub II plaque and an Upper Besor 6 ostrich eggshell fragment). The same pattern is found much earlier in southern Africa (Blombos Cave) and may later have extended to North America, where it occurs in the Clovis tradition. Preliminary indications are that these traditions begin in the Lower Palaeolithic and continue right through to the end of the Pleistocene, but this issue has never been examined because of the discipline's preoccupation with western Europe.

Seen in a greater perspective, some distinctive stylistic traits can be discerned in these works, and the first hypothesis I propose here is that the traditions characterised by them are culturally more complex than those of prominent, more or less 'naturalistic' (in the sense of Western-conditioned perception) animal profile figures, such as those of the classical Franco-Cantabrian traditions.

The simplistic view that such animal figures are cognitively more sophisticated than the often highly complex 'geometric patterns' of these eastern sites is easily refuted. If we separate art works into three-dimensional figurative, two-dimensional figurative and non-figurative genres, we see that the first is the least complex and the last the most complex. This is because in the first art genre, referent (the object depicted, the signified) and referrer (the art motif) are cognitively relatable by direct visual resemblance of certain characteristics. In graphic figurative art, the referent is related to the art motif through the projection of certain of its characteristics onto a two-dimensional plane, so the perception of its relationship to the referrer involves a decoding process requiring certain cognitive faculties. In entirely non-figurative arts as well as those that use highly 'stylised' versions of iconicity it is impossible to know the referrer unless one has direct access to the cultural conventions in question. Moreover, in the last-named art form, concepts or ideas involving no figuratively definable referents can readily be 'depicted'. It is therefore clearly the most sophisticated art genre, and can communicate unlimited numbers of ideas, in rather the same way as written characters.

Discussion

This separation can be correlated broadly with the main stages of human evolution. The Makapansgat cobble would seem to indicate an early hominid ability to detect at least some aspects of iconicity, even if only at a 'reflexive' level (Bednarik 1998b). It would then be reasonable to consider that subsequent hominids developed the capacity to detect iconic properties of natural objects (such as the Tan-Tan and Berekhat Ram pebbles). A predilection for abstracting three-dimensional likeness to graphic image apparently developed more recently, perhaps preceded by an ability to replicate two-dimensional imagery, such as phosphenes (Bednarik 1987b), fossil imprints (Feliks 1998) and, in some traditions, eventually tracks. The use of non-iconic markings to form complex patterns of communicable meaning seems to originate in Africa or Asia, on present evidence. This last art form, the most sophisticated, dominates in most of Upper Palaeolithic Eurasia. Even in the western European cave art, non-figurative motifs far outnumber zoomorphs, and since they are almost certainly symbols of specific meanings, they are more semiotically complex than the usually favoured animal figures. An animal picture, by itself, communicates very little by comparison, but it has been much more likely to attract scholarly attention.

This is in itself an intriguing point: considering that the communicative value of a so-called Palaeolithic 'sign' is most likely more sophisticated and informative than that of an animal outline, why are scholars, who are surely meant to see beyond these 'aesthetic' superficialities, so preoccupied with the figurative component of this art? I do not seek to detract from the great artistic excellence of the Upper Palaeolithic animal figures, I am as much in awe of these masterworks as anyone else. But the scholar is meant to be objective enough to see that the semiotic potential of these pictures is rather limited. The rules of refutation force me to accept that I cannot, definitively, determine the species of the animal apparently depicted, because my opinion cannot be falsified. It only reflects my own cognitive and perceptive processes. The falsification of a proposition is not a democratic process, subject to a majority decision, and even what all the experts of Palaeolithic art collectively think was depicted in a picture does, in the final analysis, not amount to evidence (cf. Macintosh 1977 for a conclusive demonstration that alien researchers cannot identify zoomorphic motifs in rock art).

At first sight it would appear that the outstanding oddity of Pleistocene art is the rich Upper Palaeolithic figurative art corpus of south-western Europe, with its strong development of iconic graphic depiction, but there is in fact a more perplexing deviation from a simple evolutionary trend evident. Simple non-iconic markings appear in the late part of the Lower Palaeolithic, and they continue to be made during the Middle Palaeolithic. Over an enormous time span they seem to experience some change towards increasing complexity, but their range nevertheless remains remarkably consistent: parallel lines, convergent lines, radial motifs, zigzags or meanders, dot patterns, lattices, circles. Their wide distribution over the Old World suggests a near-global cognitive tradition that perhaps coincides with archaic *Homo sapiens* groups, and may even have been universal to them. This art form continues throughout the Middle Palaeolithic and is eventually taken to Australia by Middle Palaeolithic sailors, where it manages to survive into the Holocene. The only cohesive explanation so far proposed for this long-lived and near-global 'tradition', which culminates in a distinctive set of motif types, is the phosphene theory (Bednarik 1984, 1987b, 1990b; Hodgson 2000). This is also the only scientific theory so far proposed for art origins, in the sense that it is

a fully falsifiable and thus testable proposition.

Irrespective of this interpretation of the existing record, it appears that by Upper Palaeolithic times, traditions of using non-iconic markings had become so sophisticated that they appear to have served for mnemonic, record-keeping or other exceedingly complex semiotic activities in Russia and Siberia. Their vestiges have so far attracted only cursory attention and these traditions remain profoundly unknown. At the same time, similarly complex traditions of 'geometric decoration' had evolved across Asia, for which only impoverished parallels can be discerned in south-western Europe. On the other hand, the very few iconic graphic depictions of Eurasia east of the Rhine, while indicating that this art form was available across the continent, seem to suggest that it was not widely used. But before we draw this conclusion we would be well advised to consider alternative interpretations. For instance, the apparently complete restriction of Upper Palaeolithic rock art in Europe to limestone caves is almost certainly a taphonomic phenomenon, and as such must not be used to formulate explanations without the extensive use of taphonomic logic (Bednarik 1994d, 1995a, 1995b). Similarly, even if these severe limitations imposed by taphonomic logic did not apply, distribution of evidence would still be a function of research effort, which has massively favoured Europe, especially south-western Europe, for over a century.

This is the second hypothesis I propose. In Asia, for example, only two small regions have seen some level of concerted effort in this area, the Levant and the Irkutsk region. Both have yielded good evidence, but many parts of Asia have never been subjected to any serious attempt to locate Pleistocene art. In other words, frequency of evidence seems to be directly related to intensity of research work, qualified to a considerable extent by research biases introduced from Europe. In many cases such endeavours were guided by European ideals of 'what to look for'. Bearing in mind the exceptional nature of those 'ideals' this was clearly a misguided approach that can only have led to biases in data gathering practices. For instance, the Pleistocene bone harpoon of Lohanda Nala in India was interpreted as a female figurine until I examined it, and many Chinese, even North American, investigators have been guided in their search for early art by the European paradigm. This was a direct result of the false models of Pleistocene art evolution emanating from south-western Europe.

The global development of Pleistocene art is very different from what has been perceived to have occurred in south-western Europe. But it will take a long time to eradicate this mythology, not just because it is so entrenched in the published record as well as in the public's mind, but because there exists an influential academic structure that will resist the corrections I advocate. In a model of global art origins as demanded by the evidence I have listed, and by other factors related to this topic, the rock art and mobiliary art of south-western Europe are of peripheral significance, instead of occupying centre stage as the orthodox model would have it. Throughout the Pleistocene, Europe, a small and unimportant appendage of Asia, played a marginal role in the evolution of hominid cognition, and south-western Europe in particular was a cultural and technological backwater of the world, a geographical cul-de-sac remote from the main theatres of this evolution in eastern Europe, the Near East, southern Asia and parts of Africa. It is therefore not to be expected that the figurative art of the Franco-Cantabrian sites, which is no more than a taphonomic fluke, had a decisive influence on the major cultural currents that developed during the Pleistocene and especially towards its end. What I have tried to show here is that these major currents have been so inadequately studied to date that they remain largely misunderstood. Not only are the data hopelessly skewed by the false model of art origins, they are just as distorted by other factors, especially geographically uneven research efforts and the pronounced biases of researchers and research directions.

However, the most fundamental aspect of the topic of this paper and the strongest evidence that traditional archaeology can provide only unsatisfactory models of 'art origins' still has to be discussed. The material evidence listed in this paper is actually redundant in showing that this traditional model must be false. Taphonomic logic is an axiom-like principle capable of filtering out false and whimsical hypotheses in archaeology. It views archaeological populations of evidence categories as the surviving remnant of cumulative populations that have been subjected to continuous and perfectly systematic degradation selecting in favour of specific properties facilitating longevity: the greater the age of the evidence, the more distorted its distributional and compositional variables, until a point in time is reached at which all these variables become literally irrelevant to the interpretation of the aspect the phenomenon category in question is supposed to refer to. Or in other words: so further we go back in time, so more misleading traditional archaeological interpretations must be expected to be. For most archaeological evidence categories, the composition and distribution of the material evidence of the Pleistocene has little or no bearing on explaining the societies, cultures or even technologies in question. The reason for this is very simple: if taphonomic processes effect the loss of a certain portion of a phenomenon category per time unit, a point in time must be reached when all of the evidence above a certain age (the taphonomic threshold) should be exhausted. In reality this cannot occur, because the probability of survival of any evidence can never be nil. Therefore there will be a tiny remnant population, consisting of 'survival flukes' (e.g. rock paintings in deep caves), extending beyond the threshold time of the phenomenon category. Archaeology systematically misinterprets these specimens from a category's 'taphonomic lag period' (for explanations of this quantifiable form of logic, see e.g. Bednarik 1994d, 1995b: 630, 2001d) by regarding quantifiable variables as being culturally significant, when in fact they are largely or entirely attributable to taphonomy. For instance, the world distribution of hominid remains is not a map of hominid distribution, it is a map of the distribution of sedimentary and other preservation conditions favouring the survival of such remains, combined with the distribution of both hominids and research efforts to find

their remains.

Taphonomic logic is capable of predicting accurately the type of evidence of palaeoart one should encounter so further one goes back in time. Such evidence should become progressively less common, until a point in time when it seems almost to disappear from the record. However, beyond that threshold it should still extend for a much longer period in the form of extremely rare specimens. With increasing age, specific art forms should occur in specific environments—such as figurines of calcite, bone and ivory in limestone caves and loess deposits, or rock paintings in deep caves. As one proceeds back further in time, one should encounter very rare specimens of particularly deterioration-resistant forms: deeply cut petroglyphs such as cupules on highly resistant rock types such as quartzite, stone figurines, haematite crayons and the like, i.e. the types of materials that were at the disposal of hominids and had the greatest prospects of surviving under fluke conditions.

It comes as no surprise that the kinds of evidence taphonomic logic predicts is precisely the kind we are finding. The oldest single specimen of palaeoart in the world is a round cobble of jasperite. This is about as deterioration resistant as we can hope to find from that time. There are no surprises here. If we were to perpetuate the penchant of traditional archaeology to misinterpret the evidence, we could create from the above catalogue a model of how art-like production began, with stone figurines and quartz crystals and cupules. This is how archaeology translates data into models, *and it is the false way*. It merely demonstrates that Pleistocene archaeology must be expected to be wrong most of the time. The taphonomic interpretation of the above catalogue is *the precise opposite*: the evidence of figurines and crystals and cupules demonstrates that palaeoart *did not* begin with figurines and crystals and cupules. Until archaeologists appreciate why this is so and then apply this logic to all finds their discipline can only remain a 'consensus fiction' of the past (Bahn 1990: 75).

Conclusions

The two main pillars of the orthodox model are that art begins with the Aurignacian of Europe, and that Pleistocene rock art is an endemic cave art primarily of south-western Europe. Both these concepts are serious errors of fact, and their preservation has necessitated the explicit denial of the existence of Middle and Lower Palaeolithic palaeoart, as well as the systematic neglect of extra-European Pleistocene palaeoart. Yet all of the Pleistocene rock art of Australia should be regarded as essentially Middle Palaeolithic, and since this corpus is thought to be numerically much greater than that of the Upper Palaeolithic art of Europe, it follows that we seem to have more surviving Middle Palaeolithic rock art than Upper Palaeolithic. Hundreds of scholars have been engaged in exploring the question of art origins, but the Pleistocene rock art of Australia has usually not attracted their attention, nor has the palaeoart of the rest of the world. The resulting spatial bias implicit in the Eurocentric paradigm, the continued failure to adopt taphonomic logic as the universal theory of archaeology in lieu of the debilitating uniformitarianism that has been its de-facto universal theory for almost two centuries, and the scandalous treatment of dating scientists when their results did not meet stylistic expectations are just three factors that speak for themselves. When we add to this the fact that nearly all of the countless fakes of Pleistocene art relate to the south-western European traditions, and when we consider that a good portion of what is still considered to be Palaeolithic art may be either fake or at least of Holocene age (consider, for instance, the most celebrated paintings of Lascaux, which appear to be of the Holocene), it should be self-evident that this field of study is indeed in crisis (Beltrán 1992; Bahn 1994; Bednarik 1996b).

There are other epistemological or heuristic issues to be considered. For instance, why is there not a single fake of Palaeolithic art known in Russia and Siberia, where portable art is as plentiful as in western Europe? The high concentration of fakes in one small region seems to be attributable to the same factor that has led to the largest number of false claims of Pleistocene age for rock art and portable art in the same region: an excessive preoccupation with the importance of the Upper Palaeolithic art of that region. These are fascinating topics for analysis.

In summary, the Palaeolithic art lobby has made several fundamental errors in interpreting the available empirical evidence. Some are of little concern in the present context, but the following need to be clarified here. First of all, it has assumed that sophistication in graphic art is indicated by figurative complexity, and particularly by 'naturalistic' depiction ('naturalistic' in the sense of Western perception, which can differ significantly from the perception of other people). Second, geographical discrepancies in research intensity are so severe that the published record is massively distorted, yet this has not been taken into account in either hypothesis building or in research design. Third, the dominant dogma of art origins has not only affected what we think about this topic, but also what we look for, find, and consider relevant; it has dictated research directions and priorities. Fourth, dominant paradigms in general archaeology have successfully censured, ignored and suppressed data about art traditions outside of Europe or preceding the Aurignacian in Europe, as well as data about other aspects of hominid sophistication before the advent of 'anatomically modern' humans (seafaring, for example). In cases where such data could not be explained away they were accepted as evidence of a 'running ahead of time' (Vishnyatsky 1994), a particularly pernicious argument in view of the taphonomic bias always embedded in the data.

But the greatest systematic error has been the neglect of taphonomic logic, according to which most forms of palaeoart of the Pleistocene predate the taphonomic threshold of their respective phenomenon categories. It is for all practical purposes impossible, except by pure chance, to contrive valid explanations of any aspect of such evidence without the application of this form of logic. Until now the study of Pleistocene art has been conducted in the form of a game of chance, bereft of systematic procedure, and without a universal theory of how what happened in the distant past relates to what we perceive as the 'archaeological

record' of it. Until the specialists of Palaeolithic art, whose prestige and influence derives from some apparently mythological powers of perception, understand and employ taphonomic logic, and replace this game of chance with the scientific framework of metamorphology (Bednarik 1995a), their interpretations will remain aspects of a belief system. Freeman (1994) has most perceptively noted the astounding similarities in the processes of validating Palaeolithic art 'sanctuaries' and religious shrines. His paper needs to be read by everyone believing in the mythological powers of perception of Palaeolithic art experts that enables them to know the age of a motif from its 'style'. In comparing the two forms of validation, Freeman concludes that 'these two manifestations of belief, reverence, and validation of experience have the same origin at a deeper structural level' (1994: 341). Until these belief manifestations are replaced by processes of falsification, blind testing and other scientific procedures, the pronouncements of the art experts have no more validity than those of Roman Catholic arbiters of holy shrines: they may well be valid, but that is not the issue. The issue is whether they are intrinsically falsifiable.

Robert G. Bednarik
International Federation of Rock Art Organisations (IFRAO)
P.O. Box 216
Caulfield South, Vic. 3162
Australia
E-mail: *robertbednarik@hotmail.com*

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