Paleoart of the Lower Paleolithic

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***Abstract*- The earliest known art-like productions by humans are comprehensively summarized in this paper. Its purpose is to fathom the origins of what today are the Arts and the Humanities, both of which are based on the constructs of reality originally created by our early ancestors. The primary evidence we have of these concepts are the few surviving examples of paleoart from the period of the earliest humans, the Lower Paleolithic period. A variety of objects and non-utilitarian practices are reviewed, which indicate that the use of the external storage of memory traces, called exograms, may have begun at least a million years ago.**

Keywords- Paleoart; Pleistocene; Epistemology; Engraving; Petroglyph; Figurine; Bead; Pigment Use

I. INTRODUCTION

The subject of this paper, the very earliest forms of art-like products created by hominins, is of fundamental importance to both the Arts and the Humanities. In the sciences it is essential to cast propositions in cause and effect formats: while a disease is defined by its symptoms, it should rightly be expressed as a function of its etiology. What we define as Arts and Humanities are entirely self-referential and anthropocentric pursuits and it is useful to occasionally place them into the greater epistemological context of reality: how things might really be in the world. Protagoras' dictum that man is the measure of everything explains the Humanities and leaves the Sciences with a quandary. But pursuing cause and effect issues has proved fairly successful over the centuries, and it might be useful in examining where the Arts and the Humanities originate. As a species we have, despite our ingenuity, so far failed to explain how the contents of our crania form concepts of the world from the sensory input reaching them, and an explanation of how we manage to develop constructs of reality has largely eluded us thus far. In part this may be attributable to our inability to recognize the role of exograms, the externalized memory traces constituting the thing we call culture (Bednarik 2014), in the way we connect with external reality. It might then be useful to investigate how the human ability of creating exograms, which is one of the few human faculties not shared with other animals (others being metarepresentation, recursion, and autonoetic consciousness), came into existence.

This is not an easy task and has never been attempted by the gatekeepers of the human past, Pleistocene archaeologists and paleoanthropologists, who are more concerned with the tools and skeletal architecture of our ancestors. Indeed, very few authors have even concerned themselves with the phenomenon of exograms so far (Bednarik 1987; Donald 1991), and the exograms of the human past have either been ignored or explained away as "art" or "symbols" by archaeologists. There is no evidence that they were either. Just as the humanistic definitions of culture and civilization lack scientific significance and relevance, humanistic comprehension of art and symbols is impaired by simplistic understanding of what these concepts embody. Paleoart (a generic term defining art-like productions preceding written records) was not necessarily "art," in the sense of that term today (Davies 1991; Stecker 1997; Carroll 2000); nor can we know if it was symbolic (involving referent and referrer). The term "art" always derives from an ethnocentric concept: "the status of an artifact as a work of art results from the ideas a culture applies to it, rather than its inherent physical or perceptible qualities. Cultural interpretation (an art theory of some kind) is therefore constitutive of an object's arthood" (Danto 1988). It would be preposterous to contend that modern (Westernized) humans could fathom the ideas past cultures applied to paleoart tens or hundreds of millennia ago. They cannot even establish the status of recent ethnographic works (Dutton 1993) with any objective understanding: interpretation is inseparable from the art work (Danto 1986: 45; Convey 2014). To regard paleoart as art is therefore an application of an etic and ethnocentric idea to products of societies about whose emic parameters nothing is known in most cases ("emic" refers to knowledge and interpretation within a culture, "etic" refers to interpretation by another culture).

Here it will be attempted to define what is currently known about the earliest surviving exograms, which are collectively defined as "paleoart". Palaeoart of the Lower Paleolithic period seems to have been found for well over 150 years but it has remained largely ignored, misinterpreted, or its existence was fundamentally denied. Most archaeologists and paleoanthropologists of recent decades attempt to refute anthropogenically modified objects located in Lower and Middle Paleolithic contexts as being taphonomic accidents or "natural" in origin. Their presumption is that *all* Lower and Middle Paleolithic humans (including *Homo habilis, H. rudolfensis, H. ergaster, H. georgicus, H. erectus, H. heidelbergensis,* and *H. sapiens neanderthalensis*) were cognitively incapable of expressing themselves through "art" or exograms. They "know" these hominins were cognitively incapable of expression because they were not *modern* humans; they have been convicted of mental deficiency by negative evidence (Speth 2004). This is despite the clear evidence that these hominins have engaged in maritime colonization since approximately a million years ago, and have crossed sea barriers of up to 180 km to reach over twenty islands and one continent prior to having "Upper Paleolithic" technology (Bednarik 1999).

How did such biased perceptions develop historically? They begin with the (still present among many archaeologists) assumption that de Mortillet's divisions of European Paleolithic stone tools into the Lower, Middle, and Upper "stages" correspond to biological grades of Lower, Middle, and Upper Paleolithic European humans (Monnier 2006). Next came Marcelin Boule's classification of all Neanderthals as deficient degenerates on the basis of his analysis of the geriatric male from La Chappelle-aux-Saints. It is still common in the media and pop-culture for Boule's caricature to be regarded as valid. Then came the "New Archaeology" of Lewis Binford, who with his students wanted to practice a new, explicitly "scientific", archaeology, mainly through a process of accusing other archaeologists of subjectivity an imprecision. Such accusations were accompanied by criticisms of earlier interpretations of the archaeological record, especially regarding European Neanderthal sites. Then we experienced the famous Wolpoff-Stringer debate, which was followed by the Krings et al. (1997) paper on the Neanderthal DNA, after which many people discounted any similarities between Neanderthals and anatomically modern humans. The success of the marketing campaign promoting the replacement ("African Eve") hypothesis (Thompson 2014) began to wane only with the erosion of its credibility (Bednarik 2008a) in recent years. Denying archaic humans cognitive abilities of any consequence has become a fossilized "unstable orthodoxy" in archaeological reasoning (Thompson 2014), but one that is squarely refuted by the data reviewed here.

This paper summarizes the currently available credible evidence of "symbolic" or non-utilitarian behavior from the Lower Paleolithic, the earliest period of human tool making (beginning at least 3 million years ago and ending very roughly 200,000 years ago). Material evidence of this kind is defined as "palaeoart;" whether or not this constitutes art in the modern accepted usage of that term is irrelevant. The primary issue is that this material is crucial in considering the cognitive and intellectual status of the period's hominins. For purely descriptive purposes the relevant evidence can readily be divided into a few groups: small perforated objects that may have been used as beads or pendants, petroglyphs, indications of pigment use, proto-figurines, engravings on portable objects, and unmodified objects that are thought to have been carried around because of some outstanding property (manuports).

Palaeoart finds of this earliest time of exogram use are still exceedingly rare, and among those reported some are of doubtful status or have fairly been rejected. The evidence presented here has been culled from a much greater corpus of reported finds. It consists of specimens that constitute either convincing evidence of symbolism, or that provide such compelling aspects that they deserve to be seriously considered in this context. I have examined most of the crucial specimens myself and their listing here indicates that I accept their authenticity after careful analysis. In the cases where reasonable reservations are appropriate I will try to present these fairly.

II. BEADS AND PENDANTS

It is well known that the existence of Paleolithic culture was first demonstrated by Jacques Boucher de Crèvecœur de Perthes (1788–1868) and rejected by archaeology for several decades. But it was soon forgotten that with the "hand-axes" and animal remains he excavated at St Acheul he also found a large number of fossilized sponge fragments with central perforations (supposedly *Coscinopora globularis*), which may or may not be manuports. Rigollot considered them to have been used as beads (Prestwich 1859: 52), while Prestwich himself, who also found some specimens, remained undecided but did note that some of the holes appeared to have been enlarged artificially. Because the pieces found no further attention, they had been forgotten by the time Smith (1894: 272–76) excavated about 200 identical items from an Acheulian site at Bedford, England. These were of precisely the same species and also showed artificial enlargement of the natural orifice. Smith was certain that these specimens were used as beads, which in view of the identical French finds from the same period is indeed likely. Keeley (1980: 164) examined some of the English sample and confirmed that there is no doubt that their perforations were modified. In 2004 I examined 325 specimens collected at French and English Acheulian sites before the early 20th century, finding that they had all been incorrectly identified, being actually *Porosphaera globularis* fossils (Fig. 1). Among them were numerous examples with enlarged or completed tunnels and with extensive wear from having been used as beads on a string (Bednarik 2005). Goren-Inbar et al. (1991) recovered similar disc-like and perforated fossil casts from an Acheulian site, Gesher Ya'aqov in Israel, although these are crinoid segments (*Millericrinus* sp.) and no evidence of modification other than extensive wear was noted.

What renders the possibility that these finds were used as beads particularly plausible is the discovery of manufactured disc beads from a Late Acheulian site in Libya, El Greifa (Ziegert 1995; Bednarik 1997). According to Th/U dating and other evidence, these ostrich eggshell beads are about 200 ka (thousand years) old, and replication experiments have shown that their manufacture involved a complex procedure (Bednarik 1997). Originally, only three damaged specimens were found, but about forty more have become available since.

There can be no doubt about the authenticity of two pendants from the Repolust Cave in Styria, Austria (Bednarik 1992, 1997). Their perforations are clearly anthropic, but since their discovery (Mottl 1951) they have attracted almost no attention. A drilled wolf incisor (Fig. 2) and flaked bone point were recovered together with a large lithic assemblage variously describes as Levalloisian, Tayacian, and Clactonian, probably a late Lower Paleolithic industry. It was found well below an Aurignacian or Olschewian level, separated from it by substantial clastic deposits of stadial periods. No reliable dating is available from the site, but according to the regionally well-known paleontology, especially the phylogeny of the bears, the occupation seems to be in the order of 300 ka old (Rabeder et al. 2000).

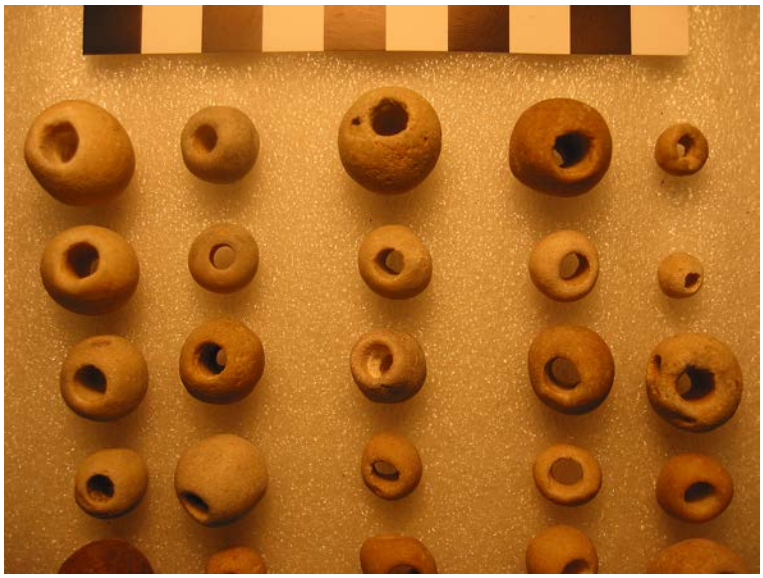

Fig. 1 Some of the *porosphaera globularis* fossils from the Acheulian of Bedford, England, many of which show enlargement of the orifices and substantial use wear facets indicating they were worn on strings.

Fig. 2 Wolf incisor from Repolust Cave, Austria, perforated at its root.

III. PETROGLYPHS

Whereas some (though not all) of the bead-like finds might invite alternative explanations or could be explained away as unusual coincidences, this uncertainty does not apply to petroglyphs whose anthropic origin has been demonstrated. Petroglyphs relating to Middle Paleolithic traditions are very common, in fact they are more common than Upper Paleolithic rock art (Bednarik 1995: 628). The number of petroglyphs credibly attributed to the Lower Paleolithic 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 Lower Paleolithic are the eleven petroglyphs in Auditorium Cave, Bhimbetka complex, Madhya Pradesh, India (Bednarik 1993a, 1994a). Nine cupules (cup marks) occur on a large vertical boulder face above ground level, while a tenth cupule and a meandering groove clearly associated with it were found in an excavation, covered by the uppermost part of substantial Late Acheulian occupation deposits. They were overlain by a horizon of heavily calcite-cemented Middle Paleolithic sediment that virtually excluded the possibility of post-depositional disturbance, and partially concealed by Acheulian deposits. The cave is formed in heavily-metamorphosed quartzite, a rock of such hardness that it was extensively quarried by Acheulian hominins at several Bhimbetka sites.

Another Indian quartzite cave, Daraki-Chattan, was found to contain two vertical panels densely covered by 498 cupules

(Kumar 1996). Because apparently Middle Paleolithic and Acheulian lithics occur on the surface of the cave's floor deposit, it was suggested that these cupules might be of great age as well (Fig. 3). Similarly, two further cupule sites in Rajasthan, of exposed boulders as well as in a further quartzite shelter, were also considered to be of great antiquity, although here the evidence remained circumstantial (Kumar & Sharma 1995). In response to these discoveries G. Kumar and I established the Early Indian Petroglyphs (EIP) Project, with the intention of testing these claims by an international panel of specialists (Bednarik 2001a). As part of the EIP Project, major excavations were commenced at Bhimbetka and at Daraki-Chattan in 2002. This led to the excavation at the latter site of numerous exfoliated wall fragments found within the Lower Paleolithic occupation deposit. These rock slabs bear a total of 28 cupules, identical to those on the walls above. Also, two deeply engraved grooves were found on a boulder excavated in the Lower Paleolithic deposit. Stone tools exhibiting Lower Paleolithic characteristics were found above and together with these slabs, in a deposit that is considered undisturbed. Dating of the deposit at Daraki-Chattan and at two Bhimbetka sites is in progress (Bednarik et al. 2005) but there can be no doubt that the cupules were made by hominins with a chopping tool industry resembling the Oldowan, found well below the site's Acheulian horizons.

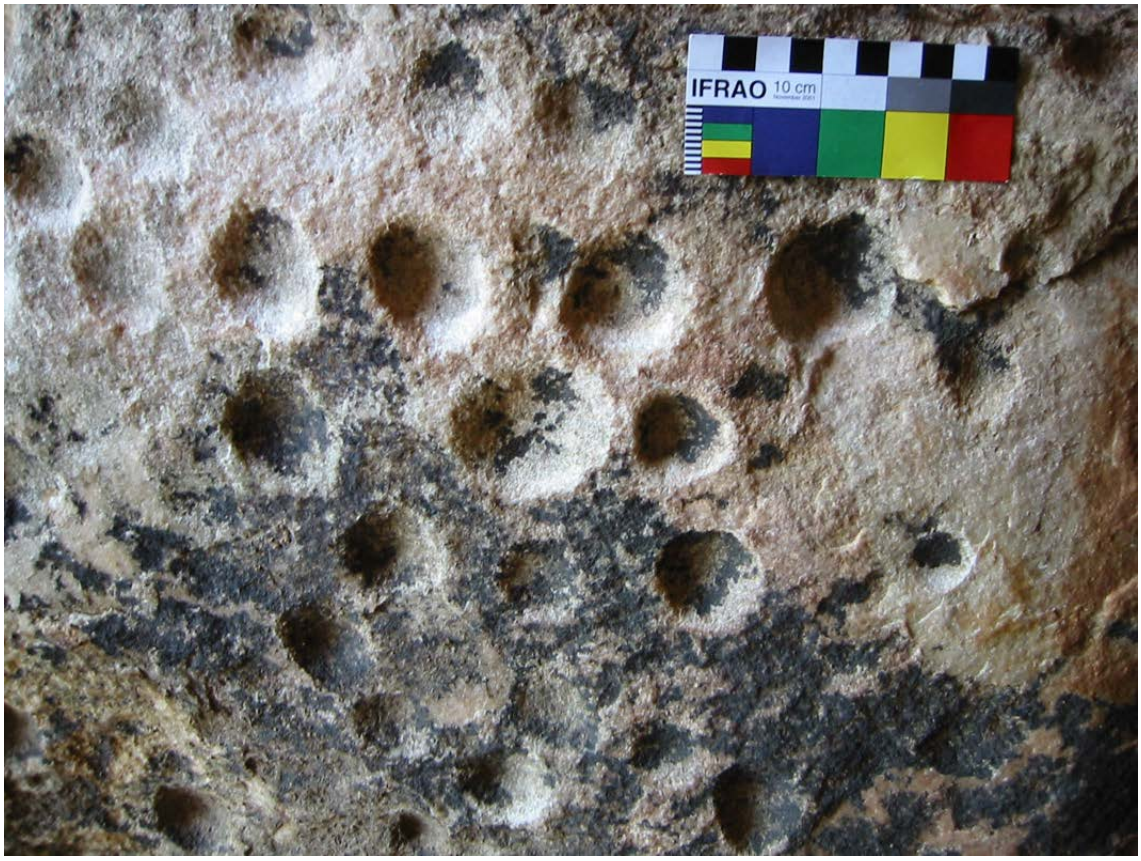

Fig. 3 Cupules on vertical quartzite wall in Daraki-Chattan Cave, India, of the Acheulian.

While some Indian sites thus present the currently oldest known rock art in the world, there are also four African finds that need to be considered here. First, there is the phonolite cobble Leakey (1971: 269, Pl. 17) reported from Floor FLK North 1 in Bed 1, Olduvai Gorge. The 10.5-cm specimen is artificially grooved and pecked, bearing what appears to be one cupule on each side. I consider this to be a utilitarian feature, however.

A second find that needs to be mentioned here is a grindstone of the Fauresmith industry bearing a partly pecked grid pattern. It was reported by Laidler (1933) from Blind River Mouth in East London, South Africa. The Fauresmith, characterized by small well-made hand-axes, is a Late Acheulian industry in the interior of southern Africa, and Peter Beaumont (pers. comm.) thinks the assemblage excavated with this object is in the order 400 ka old.

In 2001, Beaumont discovered a series of very early cupule sites in the Korannaberg region of the southern Kalahari. Like early Indian cupules, they occur on a particularly hard quartzite, so hard that most of the stone implements found at the sites were made from it. These artefacts belong generally to the MSA (c. 120 ka old), the Fauresmith (c. 400 ka) and the Acheulian (older still). An investigation of these sites (Beaumont & Bednarik 2013) has shown that the petroglyphs at several sites are of the Middle Stone Age, but some of those at Potholes Hoek and Nchwaneng may be of the Fauresmith.

Finally, a Nubian sandstone slab, c. 60 cm long, bearing a distinct large cupule of about 10 cm, around which seven very small cupules (c. 1 cm diameter) are arranged. Found with red and yellow ochre lumps, this object was excavated on Sai Island, Sudan, and is of the Lower Sangoan, c. 200 ka old (Van Peer et al. 2003).

IV. PIGMENT USE

Petroglyphs of the Lower Paleolithic may still be comparatively rare phenomena, but evidence of the use of iron oxides and hydroxides, presumably as coloring matter, has long been demonstrated from many sites in the Old World. Finds of hematite and similar minerals that bear striation use-marks are known from several occupation sites of this period, in various parts of Africa, Europe, and India (Bednarik 1992, 1994b).

Wonderwork Cave in South Africa provides some of the earliest relevant evidence, because its numerous ochre fragments occur at all levels down to bedrock, the lowest of which are thought to date from the Early Pleistocene (Imbrie et al. 1984; Beaumont 1990, 1999; Binneman & Beaumont 1992; Bednarik 1994b). Much older still are the two lumps of "ochre" Leakey (1958) has reported from the Developed Oldowan of Olduvai BK 2, Tanzania, but they were subsequently identified as red volcanic tuff (Oakley 1981: 207) and are questionable evidence. A hematite piece from Kabwe Cave near Broken Hill, Zambia, is probably in the order of 300 ka old, and there is a spheroid stone of 60 mm with red staining from the same site to be considered as well (Clark et al. 1947). Clark (1974) also reports evidence of pigment use from the Acheulian site at Kalambo Falls, Zambia, which is probably around 200 ka old. Somewhat older than that is a more recently found, definitely ground piece of hematite from Nooitgedacht, South Africa (Beaumont & Morris 1990). At >540 ka, the hematite from the Middle Acheulian of Kathu Pan 1 is older still (Beaumont 1990). At Mashwening 1, another South African site, specularite was mined around the same time (Beaumont & Bednarik 2013). Hematite was brought into Wonderwerk Cave, south of the Kalahari Desert, by 1.1 million years ago, the earliest such evidence in the world (op. cit.). The red pigment traces on the Tan-Tan proto-figurine from Morocco also need to be considered in this context, even though they are only microscopic, but at around 400 ka they do represent the earliest evidence of applied pigment that we currently have (Bednarik 2003).

All these finds are isolated instances, whereas the more recent Middle Stone Age has long yielded major quantities of iron pigments in southern Africa, including quite extensive mining evidence (Stapleton & Hewitt 1928; Beaumont & Boshier 1972; Beaumont 1973; Miller et al. 1999; Grün & Beaumont 2001; Henshilwood et al. 2001, 2002), However, recently the quantity of such material from the Lower Stone Age of sub-Saharan Africa has been increased significantly, and with it the evidence of use in the form of striation facets. This includes more than seventy red ochre pieces, over 5 kg in weight, from site GnJh-15 in the Kapthurin Formation, Kenya, >285 ka old (McBrearty 2001: 92). More than 306 pieces of specularite, hematite, limonite, ochrous sandstone and manganese dioxide have been excavated at Twin Rivers, Zambia, dated to between 270 and 170 ka BP (Barham 2002). Of particular importance is that 3% of this material shows signs of modification by grinding or rubbing.

This confirms the actual use of ferruginous pigment during the Lower Paleolithic period, first demonstrated by Marshack (1981) in Europe and by myself in Asia. Marshack has reported a 33-mm hematite piece from the Acheulian of Beçov, Czech Republic, striated on two faces. The floor near this find was covered by pigment powder, suggesting an activity of manufacturing coloring powder at this site. Among a series of almost twenty hematite pebbles found in the Acheulian layer of Hunsgi, India, one 20-mm specimen bears a distinct facet with sub-parallel striations indicative of its use as a crayon to colour a rock surface (Bednarik 1990). We cannot know what these color markings may have looked like, but the mere evidence that they must have been made raises the possibility that there was some form of pigmented rock art. A few European Acheulian sites had earlier yielded tentative evidence of ochre use, including Terra Amata, France, where several apparently facetted fragments were noticed among 75 pieces of red, brown, and yellow, fire-treated limonite deposited about 380 ka ago (Lumley 1966). A reportedly shaped slab of ochre was also found in the Acheulian of Ambrona, Spain (Howell 1966: 129), and a "rubbed" hematite fragment from Achenheim, France, seems to be about 250 ka old (Thévenin 1976).

These finds imply that pigments have been in use for all of the Middle Pleistocene and even the last part of the Early Pleistocene in southern Africa, and elsewhere in the Old World for at least much of the second half of the Middle Pleistocene. Ochre and similar minerals can be used for body painting, for the painting of objects (as indicated in the Tan-Tan proto-figurine) or to draw on surfaces, notably on rock. All of these activities demand complex cultural practices and probably involve exograms.

V. PROTO-FIGURINES

The existence of figurines in the Lower Paleolithic has only recently been considered and we currently have only two specimens that appear to deserve the designation "proto-figurine." This requires evidence that the specimens are not just iconic, in the sense that they resemble another object which they are seen to represent; there must also be an indication that the object was modified by human hand so as to emphasize that iconicity.

A basaltic tuff pebble containing scoria clasts was excavated from a large occupation deposit of the Late Acheulian at Berekhat Ram, Israel, and is older than 230 ka (Goren-Inbar 1985). Its natural form, suggestive of the head, torso and arms of a female human, has been emphasized by man-made grooves implying that the iconic properties of the object were appreciated (Goren-Inbar 1986; Goren-Inbar & Peltz 1995). Most commenting authors rejected the find in the subsequent years without examining it (e.g. Chase & Dibble 1987; Davidson 1990; Pelcin 1994; Nowell 1995; Noble & Davidson 1996: 75; Davidson and Noble 1998). Marshack (1991, 1996, 1997) conducted a microscopic study of the object and its various markings, concluding that the grooves and abrasive markings were made with stone tools, and his main findings were corroborated by d'Errico & Nowell (2000). The latter authors accepted the object's artefact status, but they still queried the significance of its

iconicity even though they called it a "figurine." Another issue of continuing concern was the unique status of the Berekhat Ram object.

Both these issues were resolved shortly later with the report of a second stone proto-figurine from the general Mediterranean region. The object from Tan-Tan, Morocco, is of quartzite and comes from a Middle Acheulian occupation layer thought to be about 400 ka old on the basis of the lithic typology (Bednarik 2003). Its anthropomorphous form is more pronounced than that of the Levantine specimen and is emphasized by eight symmetrically arranged grooves (Fig. 4). Five of these lines were found to have been modified and microscopic traces of a brilliant red pigment seem to indicate that the proto-figurine had once been coated by red paint.

Fig. 4 Middle Acheulian quartzite figurine with modified grooves, Tan-Tan, Morocco.

VI. ENGRAVINGS

The archaeological community remains divided over the status of the several engraved objects reported from the Lower Paleolithic. The largest site assemblage is the one from Bilzingsleben, a major occupation site (more than 1000 m^2 excavated) of the Holstein Interglacial in Germany (Mania 1991). This biface-free industry of well over 100,000 stone tools has been found together with numerous skeletal remains originally defined as *Homo erectus*, but more correctly attributable to *Homo heidelbergensis* (at roughly 300 ka). *H. heidelbergensis* was closely related to the interfertile Denisova hominins of Siberia, but also to Neanderthals and "modern" humans (Meyer et al. 2013; Sankararaman et al. 2014; Vernot and Akey 2014). The modern human genome includes archaic DNA of the ancestral populations all moderns (Graciles) descend from. The lake-side living site of Bilzingsleben has yielded five apparently engraved bone fragments, mostly of the forest elephant, one presumed engraving on the fragment of a large ivory point, and one on a quartzite slab (Mania & Mania 1988; Bednarik 1988, 1993b, 1995). It is widely accepted that the grooves found on these specimens were made with the points of stone tools, but some commentators have considered them to be incidental results of utilitarian activities. However, the D-shaped marking on the stone slab shows repeated application of a tool to master its difficult curved part. While most of the other engravings are merely groups of linear grooves, those on the first four bone objects reported have been demonstrated by laser-microscopic analysis to have been made deliberately (Steguweit 1999). I have shown that five of the bundled sub-parallel grooves on bone object No. 3 were all made with the same stone tool (Bednarik 1988). These and other factors negate the attribution of the marks to utilitarian activities. Finally, one of the several engraved bone fragments from gravel pit Oldisleben 1, Thuringia (Germany), found with an apparent Micoquian industry and Middle Pleistocene fauna (Bednarik 2006), displays markings almost identical to those on the No. 1 object from Bilzingsleben. This scapula fragment bears two distinctly intentional sets totaling almost twenty engraved parallel lines, arranged in the same manner as those on the Bilzingsleben specimen (Fig. 5).

These and other consistent features in the earliest known palaeoart suggest that even in these remote times, long-lived conventions that are definable as "traditions" already existed (Bednarik 1995; Hodgson 2000).

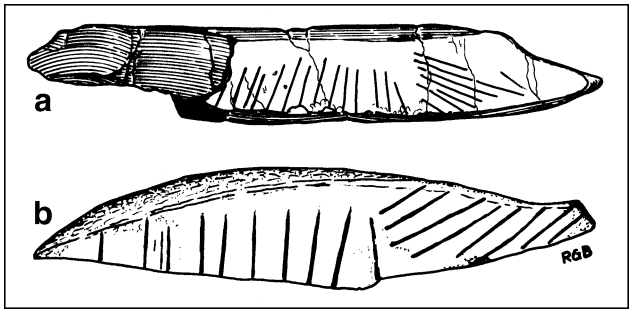

Fig. 5 Comparison of two engraved bone fragments from Germany, one of those from the Lower Paleolithic of Bilzingsleben-Steinrinne (a), and one of those from the Micoquian of Oldisleben 1 (b).

The status of a similarly marked elephant bone from another central European hominin site, Stránská skála in the Czech Republic (Valoch 1987), remains to be clarified, although it does resemble the marking strategies of other very early finds. The lines on a fragment of an ox rib, Acheulian, Pech de l'Azé, France (Bordes 1969; Marshack 1977), are in all probability natural phenomena. However, 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 (Raynal & Séguy 1986; Crémades 1996). This probable horse bone from near Polignac in the Haute-Loire region is remarkably similar to the German fragment of a mammoth tusk from Whylen near Lörrach. The latter bears a series of about twenty short, obliquely cut notches, arranged linearly and so evenly spaced that they seem to be notational (Moog 1939). The age of the ivory fragment is not known but as it was excavated in a Rissian loess it is probably of similar antiquity as the French specimen, belonging to the late Lower Paleolithic. Finally, Wonderwork Cave in South Africa has yielded a fragment of banded ironstone bearing sets of curved sub-parallel lines incised with stone tools (Beaumont & Bednarik 2013). It is from a late Fauresmith context dated to between 420 ka and 260 ka (Imbrie et al. 1984), and thus of an antiquity matching that of the Bilzingsleben finds in order of magnitude.

With about a dozen credible specimens at our disposal, the case for Lower Paleolithic engravings on portable objects remains tenuous. But the consistencies among these finds, particularly in the marking strategies employed (Bednarik 1995; Hodgson 2000), demand their serious consideration. There are some distinctive patterns: the markings, clearly made with stone tools on the basis of microscopic studies, appear to be responses to the shape of the available panel area in most instances. Only two of the known marking sets seem to be randomly arranged. Nearly all of them show apparently deliberate spacing of individual marks, and other indications of intentionality are present. Bearing in mind that the use of coloring material is safely demonstrated from the late Lower Paleolithic, and that in some cases crayons were used to mark rock surfaces by stroking, it should be a reasonable expectation that such marking of surfaces was also attempted by abrasive or cutting action. Such action was widely used in the utilitarian technology of the period, as we know from its wooden artefacts.

VII. 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. 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 dates from the very beginnings of hominin phylogeny, being almost 3 Ma (million years) old. Until recently it was attributed to Australopithecus but the discovery of *Kenyanthropus platyops* (3.5 Ma) offers another possibility. The Makapansgat jasperite (or jaspilite) cobble was excavated in 1925 from the fossiliferous, australopithecine-bearing breccia 3 of the dolomite cave Limeworks, Makapan valley, South Africa (Eitzman 1958; Dart 1974). Its history was reconstructed by microscopic study of its surface markings and accretions (Bednarik 1998). The distinctive markings of the cobble, especially the most prominent "eyes" and "mouth," seem to have prompted its collection at least several kilometers from the site, either by australopithecines or by some of the earliest hominins (Fig. 6).

This find remains entirely unique, but clear prismatic rock crystals are a more common form of manuports at early occupation sites. They are sometimes so small that they could not possibly have served any utilitarian purpose; their obvious visual properties seem to have attracted curiosity. Rock crystal prisms occur in many Acheulian occupation layers of Wonderwork Cave down to about 900 or 800 ka ago (P. Beaumont, pers. comm.). The Lower Acheulian site Singi Talav in India has yielded six complete and unmodified quartz prisms ranging from only 7–25 mm. They differ mineralogically, which suggests that they originate from different crystal geodes and were probably brought to the site independently (d'Errico et al. 1989). Even smaller quartz crystals were excavated from the Acheulian layer of Gesher Benot Ya'aqov, Israel (Goren-Inbar et al. 1991). Zhoukoudian in China provided about twenty more quartz crystals, and here they occurred with *Homo erectus*

remains (Pei 1931: 120). The fragment of a large clear rock crystal was excavated in the Acheulian layer of the Gudenushöhle, Austria, together with several smaller fragments of this glass-like material (Bednarik 1992).

Oddly enough, the most-cited specimen of a Lower Paleolithic evidence of "symbolic cognition" is a hand-axe from West Tofts, Norfolk (Oakley 1981). While it is quite possible that the well-preserved fossil cast on its surface was noted by the maker of this artifact, this is not at all possible to demonstrate. Fossil casts occur occasionally in all sedimentary silicas, and there is a statistical probability that such a feature can appear on a large stone tool without intentionality having to account for its presence.

Fig. 6 Jasperite cobble manuport excavated in Makapansgat, South Africa, Pliocene, scale in cm.

Similarly, the anthropomorphous dolomite piece from Mumbwa Caves, Zambia (Barham 2000), may well be a manuport, but until it is shown to have been either introduced or modified by hominins its status remains to be clarified. Dated to oxygen isotope stage 5e, it was found in debris associated with the foundations of a windbreak. This brings to mind the identical context of the Erfoud manuport from Morocco, which was found within the outline of a Late Acheulian windbreak or dwelling structure (Bednarik 2002). This fossil cast of *Orthoceras* sp. is distinctively reminiscent of a human penis in every aspect of form and size. Cuttlefish fossils are very common in other parts of Morocco, but they do not occur naturally in the region of the find site, so this is also a Lower Paleolithic manuport (Fig. 7).

Fig. 7 Cuttlefish fossil cast, a Late Acheulian manuport from Erfoud Site A-84-2, Morocco, scale in mm.

VIII. DISCUSSION

In addition to the few objects I have listed as apparent iconic manuports there are thousands of Lower Paleolithic specimens, especially flint nodules but also other stone objects, in which many investigators perceive likenesses of human and animal forms. The largest concentration of such finds seems to extend from northern France via Holland to northern Germany, but occasional examples have also been reported from other western European countries. These finds are generally excluded from formal archaeological discourse, and for the major part justifiably so. However, the dogma that Lower and Middle Paleolithic hominins lacked the capacity of recognizing iconicity can be considered redundant now, through the evidence that at least some of these hominins had no difficulty detecting similarity between a natural object and an iconic form it resembles. Consequently any well-documented claims should be reconsidered in an unbiased fashion. The many candidates should be apportioned to one of two groups: those that can safely be discounted as having no archaeological significance (presumably the vast majority of them), and those that warrant further consideration. If an object clearly derives from an occupation layer and evidently does resemble iconic features, it needs to be subjected to specialist analysis.

The number of these latter specimens will be quite small I expect, and I would not speculate as to what the outcome of such a survey might be. Here I merely mention two finds that would need to be included in a comprehensive review, and they are among the earliest recorded. One is the haunting countenance of a face seen on a hollow chert nodule found by none less than Boucher de Perthes (1846). The other, also a flint piece of the French Acheulian, resembles a therianthropomorphic head and was found by Dharwent (1913) in or before 1902. However, another specimen mentioned, the Middle Acheulian hand-axe from l'Observatoire, Monaco, which bears a set of linear markings on its cortex (Lumley 1976: 834–5, Fig. 12.5), derives these from entirely natural causes.

Not only has it become clear that recognition of three-dimensional iconic resemblance was available in the Lower Paleolithic, we now have ample evidence of ochre use in the Middle Pleistocene, which may include the application of pigment to rock surfaces. Moreover, the portable engravings of this period imply the existence of distinctive if rudimentary traditions, especially a marking behavior one might call "spatially determined doodling," which is still present in the subconscious of humans today (Watson 2008). The even more distinctive behavior that created the cupules of the Acheulian, and later of the Middle Paleolithic from France (La Ferrassie) to Australia (Bednarik 2008b), also survived to historic times. In the face of this evidence it is no longer reasonable to continue denying that palaeoart traditions already existed in the Lower Paleolithic. The use of beads and pendants, which seems to be demonstrated at least for the late part of that period, certainly implies the existence of complex social systems and self-awareness, because without such a context these purely symbolic products could not possibly have been used.

These observations indicate that we have severely misjudged the cognitive and cultural competence of early humans. We now accept that hominins such as *Sahelanthropus tchadensis* may have begun their reign 7 Ma ago, and that almost 3 Ma ago a hominin found the Makapansgat cobble sufficiently interesting to carry it around. Not only is it entirely reasonable to expect the hominins of the Middle Pleistocene to have developed this curiosity a little further with time, it is simply absurd to expect that almost no cognitive evolution should have occurred in hominins for 7 Ma. The view that this was followed by an immense "explosion" in their cognitive faculties during the last third of the Late Pleistocene, i.e. the last 0.5% of the duration of hominin evolution, is similarly absurd. Yet this is what paleoanthropology and archaeology have favored over the last few decades, especially in the Anglo-American school of archaeology. The record indicates otherwise, and it tells us also that hominins have been seafarers since the Early Pleistocene, i.e. for about one million years (Bednarik 1999, 2001b, 2015; Bednarik & Kuckenburg 1999). Consequently the discontinuist or short-range model of human evolution (also known as the replacement or "African Eve" model) that has dominated recent discussions is almost certainly false. It is much more probable that the increase in cognitive competence occurred gradually, over a long period of time, perhaps roughly reflecting the increase in cranial capacity (encephalization) over the same period. This applies also to language or speech, most certainly available to the first mariners, and to other fundamentally human capacities such as the creation of concepts of reality, concepts of self, and the acquisition of non-utilitarian systems facilitating advanced cultural and social constructs (Bednarik 2012). All of this developed long before the advent of the people who tend to regard themselves as the pinnacle of evolution, *Homo sapiens sapiens*.

The traditional view in archaeology that Lower Paleolithic hominins lacked human cognitive capacities is refuted here by the presentation of a series of finds from that period, indicating that it gave rise to discernible traditions of palaeoart production. While the number of such specimens remains minute, distinctive patterning in their mode of occurrence and in the forms of this evidence facilitates the formulation of a hypothesis of "art" origins. Accordingly, the earliest surviving palaeoart, and thus of surviving exograms, consists principally of linear engravings organized by specific conventions, unstructured groups of cupules, beads, and minimally modified iconic proto-figurines.

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