Reports

A Figurine from the African Acheulian[1]

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The Tan-Tan figurine was discovered during an archaeological survey by Lutz Fiedler, state archaeologist of Hessen, Germany (Kuckenburg 2001:136), in a fluvial terrace deposit on the north bank of the River Draa a few kilometers south of the Moroccan town of Tan-Tan. The terrace system has been sectioned along a road leading down to a bridge crossing the river and to the east along a drainage gully also connecting to the river. The two sections show the same sequence and are about 20 m high, from the river to the arid plain overlooking it. The lowest facies contains red sands and pebbles and yields lithics of typical Early Acheulian character. This layer is followed by a ca. 12-m sequence of alluvial gravels, sands, and finer fractions of varying compositions, the lower part of which contains a rich industry of the Middle Acheulian, free of specimens of Levallois technique. The figurine described here is from this horizon, around 1.5 m above its base or 15 m below the plain's eroded surface. This major alluvial series is in turn locally truncated by fluvial erosion and followed by coarse channel deposits devoid of any stone tools. Farther up in the profile occurs a finer facies about 1 m thick with Middle Paleolithic artefacts, capped by a more recent weathering horizon (L. Fiedler, personal communication).

This clear-cut sequence of three artefact-bearing deposits has not so far been subjected either to sedimentary analysis or to dating. However, the antiquity of the Middle Paleolithic of the general region is on the order of 120,000 to 50,000 years, and Middle Acheulian of similar composition occurs between 500,000 and 300,000 years. The Early Acheulian industry of Morocco and the Maghreb generally is older than 500,000 years (Fiedler 1998). While the contextual age estimates for the Tan-Tan deposits have yet to be subjected to scientific testing, there is no expectation that this would result in dramatic revisions of these preliminary datings.

In the absence of sedimentary analyses and further excavation work, nothing should be said at this stage about the environmental and archaeological contexts. All specimens taken from the site were located in the existing cuttings, but there is no possibility of recent contamination. The Middle Acheulian layer is well cemented by carbonate, and its finds exhibit a peculiar pattern of patination; they are darker on their upper surfaces and thus readily identifiable. The lithics of this horizon are also slightly weathered, and some are rounded by fluvial transport. The specimens collected present a typical Middle Acheulian assemblage of bifaces ("handaxes"), cleavers, and thick quartzite flakes (fig. 1). None of those that I have examined microscopically bear any surface accretion other than an incipient ferromanganeous film (probably a "fossil" rock varnish) and occasional carbonate traces. The stone figurine was found by Fiedler himself *in situ*, slightly exposed in the section, only centimetres from the nearest handaxes, occurring clearly in an undisturbed and well-stratified context of rich Middle Acheulian deposit.

The Acheulian of north-western Africa is of great significance to the study of the same industry in south-western Europe because of the likelihood that Europe was initially settled via the Strait of Gibraltar rather than via eastern Europe (Bednarik 1999*a*). The identical Lower Paleolithic development in western Europe and the Maghreb, the presence of Acheulian disc beads on both sides of the western Mediterranean (Bednarik 2001*a*), and the evidence of Acheulian navigation from the huge former Fezzan Lake (Bednarik 2001*b*) render it very plausible that the Strait of Gibraltar was negotiated by these hominids. This possibility is supported by the significantly longer sea crossings achieved by their Indonesian contemporaries (Bednarik 1999*b*). The stone tool technologies of Indonesia (such as those at Mata Menge, Boa Leza, Koba Tuwa, Ngamapa, and To'os [Bednarik and Kuckenburg 1999]) and northern Africa were among the most advanced at that time. The existence of the Tan-Tan figurine needs to be seen in this general context, the context of an enterprising and relatively sophisticated people.

DESCRIPTION

The Tan-Tan figurine consists of a moderately metamorphosed quartzite (fig. 2). It is 58.2 mm long, a maximum of 26.4 mm wide, and 12.0 mm thick and weighs roughly 10 g. The grain size is of a small range, although small local variations in average grain size do occur. Well over 80% of grains fall into the 0.10–0.25-mm fraction; there are very few smaller grains, and the larger grains appear particularly as elongate, slightly more angular forms of up to 0.6 mm. The quartz grains are generally clear, well sorted, moderately rounded, and lightly frosted. They are more tightly packed than those in the

1. I thank Lutz Fiedler for providing generous access to material presented in this paper, for facilitating its study, and for encouraging its publication.

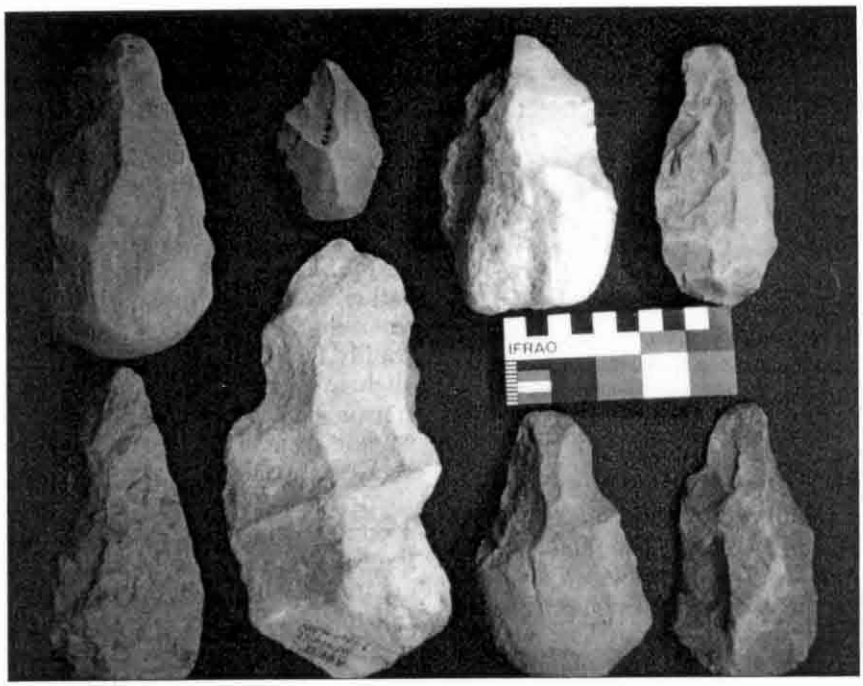

FIG. 1. *Selection of Middle Acheulian stone implements from the immediate vicinity of the Tan-Tan figurine, recovered from stratigraphic context.*

accompanying tools, which tend to have higher cement contents.

The underside of the object (hereinafter called the "back" [fig. 3]) is patinated by patchy mineral accretion to between Munsell 5YR 7/8 and 2.5YR 6/8. Its upper surface (called here its "front") is coloured between 5R 7/2 and 5R 6/2. There are almost 20 minute specks of a brilliant red matter (almost matching the red colour chip on the IFRAO Standard Scale), waxy in appearance. All of these specks are under 250 microns, and most fall between 75 and 150 microns in maximum size. They are occasionally covered by a very thin (< 3 μm), almost black coating. A white-coloured matter underlies one of these specks, measuring ca. 70 μm. These specks occur in minute depressions adjacent to prominent aspects of the micro-topography and are lacking in the larger recesses. Their distribution and morphology are similar to severely deteriorated manually applied paint residues, often surviving only as faint traces, that I have examined microscopically on the surfaces of many Upper Paleolithic stone and other objects. They do not resemble corroded natural iron deposits, nor has any trace of this pigment been detected on any of the other objects I have examined from Tan-Tan. Recently the red substance on the figurine has been analysed at the Archäometallurgie Abteilung, Bergakademie Freiberg, according to whose preliminary report it is of iron and manganese.

Intensive microscopic surface study failed to secure any evidence that the overall form of the object was modified by human action. Evidence of impact and of crushing of quartz grains does occur, but it is entirely restricted to specific grooves as described below. The form of the object is attributable to the natural bedding of the initial sandstone and to weathering. Originally horizontal bedding planes formed the "arms" and the median line, including the separation of the "legs." The object is entirely the result of random natural processes. However, the grooves at roughly right angles to the bedding plane, appearing on both sides of the object and emphasizing its anthropomorphous character, are partly natural and partly artificial. Some of these defining grooves are attributable to slight variations in the petrology of the quartzite (grain orientation), some were formed by connecting natural depressions, and some were formed by percussion alone. The latter proposition is based on the similarity of microscopic morphological features between these grooves and experimentally made markings on a sample of similar rock. In the replication experiments I applied sedimentary silica flakes by indirect percussion, that is, with a hammer stone, resting the sample against a soft anvil surface. The details of these technological analyses are provided elsewhere (Bednarik 2001*c*), but here it is emphasized that percussion traces of granulate siliceous rock types occur as conchoidal fractures whose edges may be crushed. Step-flaking may be evident or grains may be truncated by diffuse fracture patterns, and in rare cases whole grains remain intact but show internal fractures and an impact area.

To facilitate examination and description I designated the four grooves on the figurine's front A–D (fig. 4) and

FIG. 2. *"Front" view of the Tan-Tan Acheulian stone figurine.*

those on its back E–H (fig. 5). Details of each of the eight grooves are as follows:

A. Two areas of conchoidal impact scars and minute step fractures are located on both sides of a saddle within the groove, suggesting that it consisted of natural depressions that were emphasized. The groove is 5.2 mm long, 2.0–2.5 mm wide, and about 0.6 mm deep.

B. This groove also consists of two depressions, both of which are natural. The left one bears clear traces of percussion, such as stress fractures, in two places, and impact is also evident on the saddle separating the two pits just to the left of its highest point. The left depression is 3.5 mm long, 1.5–2.0 mm wide, and 0.6 mm deep; the right one bears no indication of modification.

C. This 12.9-mm-long, up to 3-mm-wide, and under-0.4-mm-deep groove appears to present flaking evidence on the left, adjacent to the "arm," but evidence of impact is lacking. Distinctive crushing evidence begins to appear after the first quarter of the groove's length, to the left of a minor saddle, in the form of a mass of microscopic stepped surfaces. This impact damage continues along most of the groove, particularly around the next deep depression, which appears to have been made entirely by percussion. Such traces occur also in the next pit and continue over the final saddle before the groove connects with the deep centre line. In this area, impact traces are particularly evident, which implies that the tool used was fairly narrow.

D. This relatively broad and diffuse groove reveals no traces of impact and is regarded as a natural feature.

E. Wrapping around the left side of the figurine, this groove is 11.5 mm long and in a section formed by percussion is 2.0–2.5 mm wide with a depth of 0.7–0.8 mm. It seems to have been made by connecting some preexisting natural depressions by battering the ridges separating them. Where the groove wraps around the left side it seems to be caused entirely by repeated battering, as is attested by numerous angular and very low ridges and internally fractured quartz grains. Evidence of impact is discernible over the entire length of the groove, but its deepest floor sections are still of natural pits.

F. This groove wraps slightly around the right side of the stone figurine and is 12.5 mm long, 2.0–2.5 mm wide, and 0.4–0.9 mm deep. Because it follows a vein of slightly angular grains, its floor appears to be extensively damaged, but this is perhaps deceptive. There are very few and only tentative examples of impact apparent in the left section, but to the right clear impact evidence does occur and becomes distinct as the line approaches the right margin. This includes conchoidal fractures, traces of battering, and angular edges, and it continues around the right side of the figurine.

G. Although a large depression on the left resembles a flake scar, no clear impact evidence is discernible. With the exception of one possible conchoidal surface on a grain, the groove appears to be a natural feature.

H. This faint groove peters out towards the right, and no evidence of impact at all was detected in it.

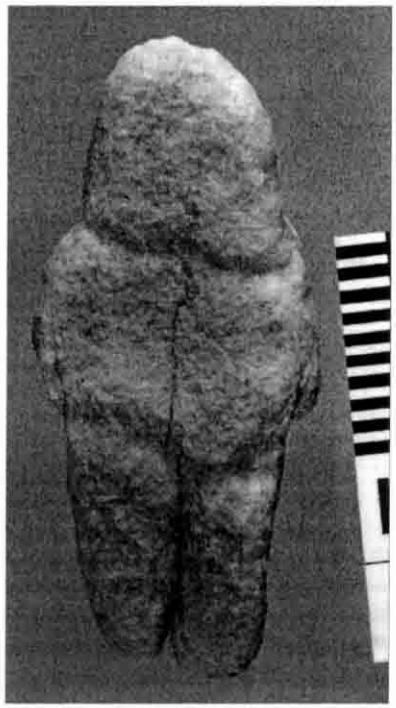

FIG. 3. *"Back" view of the Tan-Tan Acheulian stone figurine.*

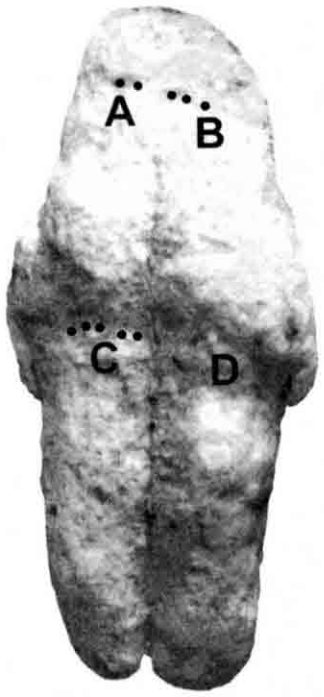

FIG. 4. *Grooves A–D, Tan-Tan figurine, showing the locations of impact evidence.*

lead to perceiving a connection between referent and referrer (or the signified and the signifier). In this sense, the actual production of iconographic forms is simply the cultural and intentional creation of features prompting visual responses to a signifier; it induces visual ambiguity intentionally. This definition of art is crucial in dealing with the nature and origins of art. On that basis we would need to distinguish between (*a*) purely unmodified (natural) signifiers, like the tree root that causes us to react to a snake; (*b*) signifiers that have been emphasized by some form of modification (such as natural objects whose iconographic features are reinforced by some surface alteration); and (*c*) signifiers made from materials that initially had no visually obvious iconographic properties (although the artist may well have "seen" the sculpture in a block of stone or a piece of ivory before starting out).

To consider the question to which of these three broad groups the Tan-Tan object should be assigned I posit that its (to me) anthropomorphous form *was not created by a human hand*. To falsify this proposition one would have to provide hard evidence of surface modification outside the grooves, especially of the "arms," "head," and "legs." Such modification (reduction of bulk) could have been either by abrasion or by impact, both of which would have produced diagnostic surface features. If the material were a poorly cemented sandstone, fractures might have occurred only along the cement (i.e., breaking no grains) or broken or truncated grains might have

INTERPRETATION

The difficulties experienced with the interpretation of most very early paleoart objects are attributable to most considerations' having been couched in archaeological terms rather than in a scientific format. In analysing the Tan-Tan object I will therefore offer a different approach and mode of discourse, using falsification rather than confirmation. I begin by dividing the issues of interpretation of this find into three crucial questions and then approach each of them by positing an appropriate refutable proposition.

Is the form of the object natural or anthropogenic? While the shape of the object reminds me strongly of the shape of a human figure, it does not follow from this that it possesses this iconic quality for all my human contemporaries, much less humans of the Middle Acheulian. The iconic resemblance of a natural object is not self-evident; its detection requires an appropriate perceptual mechanism. Visual ambiguity, from which this facility probably developed, is widely experienced by species throughout the animal kingdom, but it is thought that only hominids developed a cultural use of this feature. The experience of perceiving, for an instant, a snake on a forest path when in fact there is only an exposed tree root is an example of visual ambiguity, which seems to prompt an alert reaction caused by a neuronal template. Such visual misidentification, my theory predicts, could in an organism capable of "conscious" reflection

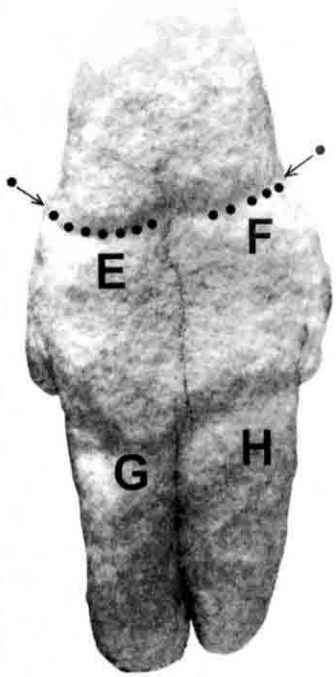

FIG. 5. *Grooves E–H, Tan-Tan figurine, showing the locations of impact evidence.*

been lost to granular exfoliation subsequent to modification. However, the partially metamorphosed quartzite of the specimen renders it impossible that impact treatment would never have resulted in fractured grains. Similarly, abrasive treatment would have produced truncated grains. No fractured or abraded grains were encountered anywhere on the surface of the object except in the "horizontal" grooves. More important, I regard it as impossible for the deep cleft between the "legs" to have been cut in this extremely hard stone, either by abrasion or, especially, by percussion. Not even the grooves delineating the two arms could, in my opinion, have been formed artificially or as the result of exfoliation. Like the median line forming the separation of the "legs," they are attributable to a former stratification in the stone which resulted in variations in the characteristics of the silica cement, apparently offering slightly less resistance to erosional processes.

A microscopic survey of the object's entire surface has therefore yielded no evidence that would refute the proposition that the form of the Tan-Tan specimen is entirely a natural product. Until contrary evidence is presented I regard this find as having been fashioned by weathering.

Are the groove markings natural? Similarly, concerning the status of the "horizontal" grooves the proposition needs to be falsified *that these eight grooves are natural features*. To do this the presence in them of evidence of impact or abrasion needs to be demonstrated. The above description of the grooves shows that all are entirely devoid of traces of abrasion, as would be expected on this hard stone (hardness 7 on Moh's Scale). In some cases these features follow veins of slight petrological variation, particularly in prevalent grain orientation or in grain size, which has led to shallow pitting and vague flattish grooves. Some of these grooves are free of impact traces, but in others there is localized evidence of percussion, particularly on prominent features between individual pits. This damage is entirely consistent with the application of a sharp stone tool edge, almost certainly using indirect percussion, to crush the ridges or saddles between pits and create continuous grooves in their place. My replication attempts with similarly metamorphosed quartzitic sandstone, using black chert tools, suggest that the figurine was rested against a soft "anvil" and the stone tool edge was positioned and then struck with a hammer stone. I consider it impossible for these traces to have been created with the necessary precision using direct percussion.

The impact traces in five of the eight grooves suggest that they were carefully emphasized by the process described. Similar traces are lacking anywhere on the remaining surface of the object. It is most unlikely that a natural process of impact would have been entirely restricted to specific sets of pits or grooves and particularly that such a symmetrical arrangement of grooves would have been the outcome. Moreover, none of the many other objects from the site show any such markings. The proposition that these eight grooves are all natural is therefore refuted: five have been modified and emphasized.

Were the iconographic features perceived? The ability of humans of the Middle to Upper Acheulian, presumably archaic *Homo sapiens*, to perceive the iconographic properties of a natural shape has not yet been demonstrated. Therefore it is prudent to approach this question by hypothesizing that these people *were not able to see as significant the resemblance between a naturally formed stone object and another object that it resembles in form* and then testing this hypothesis.

One way to accomplish this is to ask how likely it is that an anthropomorphous stone object such as the Tan-Tan figurine could occur naturally in an alluvial deposit containing a large number of stone tools. Although numerous such objects are likely to occur in nature, the probability that one of them will occur in the infinitesimally small volume of excavated Acheulian deposits is minute. The probability that it will be found is even smaller.

If the proposition of a natural deposition of the Tan-Tan object is a statistical improbability, it renders necessary a mechanism that could explain human involvement, and this inevitably leads to the issue of "motivation" (to the extent that we can apply that concept to hominids of unknown cognitive powers). If the object was picked up at some location before being "deposited" (dropped, lost, left behind, discarded, whatever) at an Acheulian site, this action needs to be accounted for. The stone was not suitable as food or as a tool; it features no interesting fossil cast or crystal facets and does not even have a prominent colour. It has some most unusual features, however, and Occam's razor suggests that they were the reason for the object's occurrence at the occupation site.

Certainly the hypothesis that the hominids were not able to perceive the iconographic features of this object has not effectively been refuted, but it lacks credibility, and in combination with the status of the groove markings and the pigment traces its case evaporates. If the grooves are intentionally made, their arrangement within the context of the stone's natural form negates the proposition. The grooves underline the anthropomorphous features of the natural object and its symmetry. To suggest that they were emphasized for no reason or for a reason other than to accentuate its already amply evident iconographic properties emerges as such a weak hypothesis that it can in my view reasonably be disregarded. This is further emphasized by the apparent application to the surface of haematite, a pigment known to have been widely used at the time (Bednarik 1994*a*, Barham 2002). The only hypothesis left intact is that whatever iconic features the grooves highlight were those perceived by their makers.

COMPARISON WITH THE BEREKHAT RAM FIGURINE

The Acheulian Berekhat Ram figurine, excavated in summer 1981 in the northern Golan Heights of Israel (Goren-Inbar 1985, 1986), is a basaltic tuff pebble containing scoria clasts. It has a natural form suggestive of the head, torso, and arms of a female human and bears

grooves implying that the iconic properties of the object were emphasized artificially. During the late 1980s and the 1990s, when the trend in archaeological fashion was to reject pre–Upper Paleolithic evidence of human cognitive sophistication, these grooves were either ignored or explained away as natural phenomena (Chase and Dibble 1987; Davidson 1990; Davidson and Noble 1998; Noble and Davidson 1996:75). Pelcin (1994), for instance, argued that they were formed during the cooling of the volcanic material, a point rebutted by Goren-Inbar and Peltz (1995). Although Marshack (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, the object's iconic interpretation continued to be widely rejected. D'Errico and Nowell (2000) supported Marshack's technological findings, even though Nowell (1995) had previously rejected the inclusion of the object with material relevant to the cognition of hominids. Although in some insignificant details, especially concerning abrasions, the two findings do differ (d'Errico and Nowell 2000:fig. 18), Marshack and d'Errico agree in relation to the crucial grooves around the "neck" and one "arm." Faint stone-tool striations are visible in some of the grooves, and distinctive discontinuities clearly visible at low magnification represent solid support for the hypothesis of an anthropogenic origin.

Nevertheless, the argument that the Berekhat Ram pebble is a single representative of a category has also been raised by various writers. The discovery of a second specimen is therefore of considerable significance, because it immediately reduces this concern. Not only is the second specimen presented here of very broadly the same age and certainly the same cultural provenience but its morphological similarities are such that it could easily have been modified by the same artist with similar tools. Yet it was found 4,700 km distant, in southern Morocco.

The Berekhat Ram figurine was modified by precisely the same treatment as the one from Tan-Tan, the creation or emphasis of "horizontal" grooves. One might ask what Middle to Late Acheulian people looked like and which of their features might have been perceived as sufficiently prominent to define the mental template "human figure." For instance, it seems that they would have had rather full heads of unkempt and probably uncut hair, or, if they lived in a hot or cold climate, might have worn garments covering their heads. In either case the broad shape of the "heads" on both figurines could have resembled their actual appearance. In one of the two alternative interpretations the two upper grooves on the back of the Tan-Tan specimen would very naturalistically have resembled the shape of a coiffure of ample long hair, and it is noteworthy that these two grooves show most anthropogenic traces. The two lower grooves on that side are quite naturalistic likenesses of the folds delineating the human buttocks. The short upper grooves on the front are too high to indicate a chin, and their arrangement and location renders it more likely that they depict eyes, in the manner of the very much later stone figurine from Sha'ar Hagolan, Israel (Shay 2001). The lower lines on that side seem to suggest a belt line. However, all of these interpretations are clearly unfalsifiable and thus immaterial.

Yet these speculations do lead to a striking issue. In terms of overall visual appearance the greatest difference between humans and other animals (especially quadrupeds) is that humans are more visibly symmetrical. Quadrupeds appear symmetrical only when seen directly from the front, from the back, or in plan view, yet Stone Age artists almost invariably depicted them in side view. Only animals such as certain reptiles are depicted either in plan view or in a curious "twisted perspective" combining plan and side views (Deregowski 1995). Among human depictions in rock art, frontal views account for much more than 90% of motifs, even though in many treatments the markings designating females are difficult to accommodate. The symmetry and the duplication of anatomical detail are much more apparent in the human figure than they are in most other eutherians, simply because of its erect posture. This factor may be of significance in interpreting the Tan-Tan figurine, because its most outstanding natural features are a central line from one end to the other, dividing the object into halves, and the extremely precise and symmetrical duplication of the attachments forming the "arms." These two features and the erosion of the central structural weakness that had led to the formation of the two "legs" were perhaps the key factors in the recognition of the iconic features of the object.

The objects from Berekhat Ram and Tan-Tan are both of essentially natural forms with artificially added grooves. An initial comparison of them might seem to present some differences. The grooves were made by different processes, abrasion and percussion, and this accounts for some morphological differences in groove sections. Visually more obvious are the dissimilarities in overall shape and surface texture, but they are attributable to differences in petrology and taphonomic history. The Israeli specimen is a lapillus, a small solidified fragment of lava which acquired its form essentially during the cooling of its volcanic material. The Moroccan example was shaped gradually, over a great time span. Its material was originally a siliceous sandstone, later metamorphosed to a quartzite, and its initial layering facilitated the formation of several aspects of the object while weathering and some fluvial transport account for the others.

Nevertheless, the similarities between the two finds outweigh these differences. Both are surprisingly tiny objects, weighing only around 10 g. Both are lithic manuports that for some reason were collected, marked, and deposited at Acheulian occupation sites. Both were created by archaic sapienoids of the Mediterranean sphere of cultural influence. Both bear series of anthropogenic grooves that were made with great precision and skill and with an apparently definite intention concerning their precise placement. There is a manifest patterning in the placement of these lines, and they underline the symmetry of the object. This is clear enough from the

Berekhat Ram find but is rendered even more apparent by the carefully placed lines on the Tan-Tan figurine. Particularly startling are the similarity in the appearance of the short but well-defined "arms" and their anatomically perfect placement in both cases. The treatment of both objects extends over their "backs," and especially the Moroccan specimen looks equally anthropomorphous from both front and back. Also, there is the rather shapeless and broad "head," almost as wide as the "shoulders" but still anatomically acceptable in its placement and attitude on both figurines. The principal difference in the morphology is the lack of "legs" in one specimen and their well-developed shapes and proportioning in the other.

DISCUSSION

The debate about early hominid symbolling abilities has been marred by several factors, including authoritative commentary without any examination of the evidence discussed and variable standards of proof according to expectations of what the evidence should be. For instance, Upper Paleolithic figurines (e.g., Willendorf 2, Avdeevo 4, the two carved Avdeevo mammoth phalanges, the German "Venuses") that possess much less iconicity than Lower Paleolithic ones are not questioned. This subject needs to be approached without assuming that we have the answers already and with a full appreciation of the cognitive and technological indicators. Lower Paleolithic people produced petroglyphs (Bednarik 1994*b*) and on three continents used beads (Bednarik 2001*b*). For the epistemology of these issues it is crucial to consider that at least some Lower Paleolithic humans were highly skilled woodworkers (e.g., the polished willow board fragment of Gesher Benot Ya'aqov, Israel [Belitzky, Goren-Inbar, and Werker 1991] or the hunting spears from no fewer than seven European sites [Bednarik 1999*c*]), that they navigated the sea (Bednarik 1999*a*, *b*, 2001*a*, Bednarik and Kuckenburg 1999) as well as inland lakes (Werry and Kazenwadel 1999), that they used burins and other tools that we traditionally associate with the Upper Paleolithic, and that they collected fossils and tiny crystals and made extensive use of ochre (Bednarik 1992, Barham 2002). Perhaps more important, the effects of taphonomic logic in our models of cultural dynamics remain largely ignored. Nearly all material classes of Lower Paleolithic cultural evidence are from well within their respective taphonomic lag times, which means that the occurrence, distribution, frequency, and form of the observed data must not be interpreted without due recourse to taphonomic logic (Bednarik 1994*c*). The relevance of these quantified data declines with increasing age, back to the taphonomic threshold of the phenomenon in question, at which time all the quantitative data about it become meaningless for interpreting the behavior of which the phenomenon is thought to be a manifestation.

In practical terms this means that the Lower Paleolithic "archaeological record" is far too coarse to yield secure knowledge of the cognitive capabilities of the hominids concerned. This record is so severely distorted by selective processes that it is entirely unsuitable for a direct translation into interpretive models. A more sophisticated procedure of interpretation involves the systematic consideration of these selective processes, but the complexity of this approach seems to deter researchers from its wider application (Bednarik 1994*c*). The much simpler alternative is to claim that specimens implying an early sophistication of humans indicate a "running ahead of time" (Vishnyatsky 1994). This is a particularly pernicious falsity in that it accepts the existence of material evidence that refutes the "short-range" theory but then seeks to explain it away. In it, the most important forms of evidence that we have of the Pleistocene—the few specimens that date from the taphonomic lag times of their respective evidence classes—are explained away as cultural freak occurrences when they are in fact taphonomic flukes. The latter must be expected to exist, and they are the most crucial evidence we can expect to find from this period. Cultural freak occurrences "ahead of their time", in contrast, are an impossibility. People do not make beads without a social context or culture endowing them with meaning.

In iconic symbolism, the connection between referent and referrer is purely via iconicity, a relatively simple cognitive factor building on visual ambiguity. The cognition involved is deeply rooted in mental processes such as the reactions to the silhouette of a bird of prey or to staring eyes found in numerous animal species. Many others master iconicity (by recognizing a likeness in a photograph or film). Thus symbolism based on iconicity is cognitively much more rudimentary than a symbolism requiring the link between referent and referrer to be negotiated culturally. For instance, a bead is a symbolic object, but its meaning is accessible only to a cognitive organism possessing the software of the cultural conventions concerned. If the Berekhat Ram object is a non-iconic symbolic device as d'Errico and Nowell argue, the meaning of the grooves on it will be accessible only to Acheulian people of the time and region in question.

A very rudimentary form of iconic recognition seems to have existed among hominids already 3 million years ago, according to the Makapansgat cobble (Bednarik 1998). In that instance it may have been limited to an awareness of the "staring eyes" element of the specimen. The Erfoud manuport (Bednarik 2002) seems to indicate, however, that at the time the Berekhat Ram find was modified, iconographic three-dimensional iconicity was well appreciated by the hominids concerned. It would be absurd to suggest that people who felt it reminded them of something but lacked the mental capacity to grasp what it was it reminded them of carried this perfectly penis-shaped specimen around for no reason at all. In the case of the roughly contemporary Berekhat Ram find it is just as absurd to claim that the grooves delineating "arms" and "neck" were made by a person but that this person did not know why he placed the grooves in precisely those locations where they best emphasized the inherent anthropomorphous features. The statistical probability of these grooves' having been placed ran-

domly and without design and, among the thousands of pebbles at the site, on just this one is not worthy of further consideration. It is far more important to inquire what might possibly motivate commentators to close their minds to the possibility that humans prior to the Aurignacian might have possessed cognitive capacities that are well within reason.

We all seem to be in agreement that around 6 million years ago our ancestors might have had capacities that broadly resembled those of some modern apes. We also agree that by 32,000 years ago humans were creating artistic masterworks on the scale of a Chauvet Cave (Clottes et al. 1995). There appears to be no disagreement that in terms of physical evolution there was a more or less gradual development over the intervening time, but when it comes to cognitive or intellectual evolution many of us wish to see practically no development at all during 99.5% of hominid evolution. For some, art, language, cognition, and so forth, all appear suddenly in their essentially modern forms in France 32,000 years ago. This is not only highly improbable but contradicted by all the available evidence. In the middle of this period, hominids collected the Makapansgat cobble, and we can only presume that something about it fascinated them enough to do so. Two million years later they took to the sea and began colonizing islands (Bednarik 1999*b*), and around the same time they began to use pigment (Beaumont 1992, Bednarik 1994*a*) and collected crystals and fossils. A few hundred thousand years ago they began using beads and pendants (Bednarik 2001*b*). Middle Paleolithic rock art, which survives in hundreds of thousands of motifs (especially in Australia, where it continued into the Holocene), is much more complex than iconic Upper Paleolithic rock art, and the perceived Big Bang of 32,000 years ago had no effect outside of south-western Europe (two-dimensional, graphic iconicity remains almost entirely absent from the rest of the world for the remainder of the Pleistocene). It is high time we took a fresh look at the cognitive evolution of humans unencumbered by existing dogma.

CONCLUSIONS

The greatest schism that has developed in our concepts of hominid evolution in recent decades concerns the antithetical positions of "long-range" and "short-range" theories of the cognitive development of humans. Sometimes called the gradualist and the discontinuist models, they perceive two entirely different paths of non-physical human evolution. The currently still dominant short-range model, which perceives the use of symbolism, language, and paleoart to be limited to the last quarter of the Late Pleistocene, survives by rejecting every instance of earlier evidence of this kind or by explaining it away as a "running ahead of time." This position is becoming increasingly difficult to sustain in the face of a growing corpus of falsifying evidence. The present paper contributes to this debate the faculty of recognizing three-dimensional iconicity in the Lower Paleolithic.

The Tan-Tan quartzite figurine is here viewed as a naturally formed object that was collected as a manuport because of its most unusual form and then modified. Preexisting surface features were deepened by percussion to complete a set of eight grooves that symmetrically underline the human form of the object, and it was coated with red paint. Assuming that an approximate age of 400,000 years is accepted, it represents the oldest currently known figurine, being probably somewhat older then the Late Acheulian specimen from Berekhat Ram. It is also the oldest known instance of pigment application, although older indirect evidence of such a practice does exist. The unmistakable traces of moderating the level of visual ambiguity of the Tan-Tan specimen define it as iconic. To avoid this conclusion one would need either to eschew this definition of iconic palaeoart (as a manifestation of the managed use of visual ambiguity) or to reject my technological analysis.

Of particular interest are the close parallels between the two Acheulian figurines now available to us. They need to be considered in any future discussion of Lower Paleolithic paleoart traditions (Bednarik 1995) and of early symbolling. While we are still dealing with only two specimens, it is tempting to develop a concept of crucial diagnostic features in the perception of anthropomorphism as they applied among these early societies. All societies in human history that have mastered iconicity have possessed some codes of the minimum requirements for representing objects iconographically. Such codes often led to culturally negotiated abstraction or schematization. Should one dare to try extracting the minimum prerequisites for human iconicity from a sample of two? However tempting this might be, and however useful it would be for illuminating dynamics leading to early symbol systems, it seems premature on the basis of such a minute sample. Nevertheless, one thing is certain: ignoring the few specimens we have of very early palaeoart, explaining them away, or rejecting them out of hand does not serve this discipline well.

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