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THE HUMAN ASCENT: A CRITICAL REVIEW

ABSTRACT: A critical review of the traditional taxonomy of Pleistocene archaeology emphasizes a number of aspects suggesting the need for a more appropriate system. In particular it is proposed that the focus on tools, especially stone tools, could be replaced with an emphasis on cultural indicators. A system based on technological, cognitive and cultural variables is then presented for consideration. It defines four distinctive phases of the Palaeolithic period, based on current knowledge, and it emphasizes the need for local or regional periodization during the Holocene.

KEY WORDS: Pleistocene – Chronology – Typology – Taxonomy – Cultural evolution

INTRODUCTION

Since the acceptance of Boucher de Perthes' "worthless pebbles" from Abbeville at the time of Darwin's *Origin of the species*, Pleistocene archaeology has come a long way. Its cultural chronology of the human species and its designations of the major phases have served the discipline reasonably well for around one and a half centuries, but as we proceed into the twenty-first century it is increasingly becoming a liability, stifling progress and better understanding in the discipline. It is becoming progressively apparent that many of the fundamental phases were either inexpediently chosen, or the parameters supposedly defining them have become imprecise at least, and misleading at worst. For instance, the term "Neolithic" has lost much of its currency. Once intended to refer to the advents of pottery, ground stone artefacts, and plant and animal domestication, we have recognized that none of these criteria are valid, except perhaps in a part of Europe. Decorated pottery in the Pleistocene Early Jomon of Japan and even earlier ground stone tools from Australia and New Guinea, together with the considerable complexity of the question of cultivation and domestication, render the traditional criteria of the Neolithic problematic.

The concept of a Mesolithic period may be even more tenuous. Traditionally characterized by such features as the introduction of microliths and the Spanish Levantine

shelter painting tradition, we now believe the latter is much younger, while microliths are common in many earlier traditions, for instance the Howiesons Poort phase in southern Africa, of the Middle Stone Age, many tens of thousands of years ago. Of particular interest is the idea that the Mesolithic is marked by the introduction of coastal settlement patterns and a marine-based economy, contrasting sharply with the hunting societies of the Upper Palaeolithic. Indeed, some commentators went so far as crediting the Mesolithic period with inventing arithmetic, to help in "counting shells and fish". This entire idea is one of the great absurdities of simplistic archaeological explanations, because the widespread appearance of coastal economies in deposits of the Early Holocene is merely a taphonomic phenomenon. Throughout the Pleistocene, sea levels oscillated repeatedly, reaching high levels only during interglacials. Pleistocene traces of coastal occupations are either below the sea today, or they have fallen victim to coastal erosion or massive dune deposition. Bearing in mind that for most of the Pleistocene, sea levels were well below those of the present, and considering the known demographic distribution of ethnographic hunter-forager-fisher populations, it is obvious that all the Pleistocene occupation sites we have studied refer to former inland societies, which may well have consisted of nomadic bands of hunters. At the same time absolutely nothing is known about the Pleistocene populations of the coasts, the

lowlands, and the lower reaches of major rivers, i.e. the regions where seasonality had much less effect, where population densities would have been much higher, and where nomadism might have been less pronounced. The introduction of navigation about a million years ago (Bednarik 1997) suggests that economies of coastal specialization were already established early in hominid history and are much more likely to have driven technological development than those of inland subsistence societies.

The kinds of generic absurdities implied by these considerations increase as a function of age, and as we proceed back through the Pleistocene their plateau-forming effects on interpretations become ever more evident. Taphonomic effects are not limited to those of sea level fluctuations, they are universal, they apply to all categories of archaeological material evidence (Bednarik 1994). The evidence of the earliest periods of hominid history is almost invariably so greatly affected by taphonomic distortions that practically all its quantitative parameters are statistically irrelevant. For instance, archaeologists may be tempted, at least subconsciously, to perceive the geographic distribution of hominid remains as implying former population distributions, of marking the spatial movement of genetic traits and their physical characteristics. The truth is that all skeletal remains from these times are the result of fluke preservation conditions, therefore these geographical distributions indicate primarily the locations where hominid populations lived in geological and climatic conditions favouring the occasional preservation of skeletal remains. They are also the locations where we have managed to track down the relevant fossil beds, and they are in the regions where our research efforts have been focused. In other words, we have no hominid remains from regions that were not favourable for preservation or that have not attracted much attention. This has nothing to do with the presence or density of hominid occupation. It is self-evident that the prime regions of hominid finds share quite specific geological conditions: well stratified, undisturbed high-pH sediments, often containing significant volcanic ash components.

It should come as no surprise that world regions lacking such deposits also lack hominid remains.

The probably greatest systematic error of traditional archaeology is perhaps the implicit assumption that archaeological samples, of whatever kinds of variables, are valid random samples. They are almost never so, and according to taphonomic logic (Bednarik 1994) they are not just systematically distorted, the distortion increases linearly with age. Moreover, orthodox archaeology treats the taphonomic threshold as the earliest historical occurrence of the phenomenon the material finds are thought to represent. This is a massive error of logic, and as a consequence all archaeological pronouncements about human history in the Pleistocene, particularly the Early and Middle Pleistocene, need to be reviewed.

The taxonomy of Pleistocene human history

This is a major issue, but certainly not the only one that should be of concern here. Over the past one and a half centuries of Pleistocene research it has become necessary, for practical reasons, to define main phases of human history. The obvious problem with traditional notions of these eras of hominid evolution is that they were determined before much of the information we have today was gathered. While it must be appreciated that with the means available then, the researchers concerned have done their best to design a workable system, it is also clear that many of the assumptions on which chronological pigeonholes were established, mostly during the 19th century, are no longer valid or relevant. A call for a revised system is not an expression of disrespect for the pioneers of the discipline, but a realistic response to *their* reasonable expectation that we would *build* on their foundation, that we would refine a developing discipline to meet new challenges. To preserve a system intended as a tentative taxonomy is not an expression of respect, it facilitates intellectual stagnation which the founding fathers of the discipline — intellectual revolutionaries of their time — surely would not have advocated.

The taxonomy designed for the human history prior to the introduction of what we have come to regard as written records is based squarely on the perceived use of principal artefact materials. In a sense this is a reliable way of tying chronology to empirical evidence, were it not for the taphonomic effects on this evidence. Again this means that so further we proceed into the past, so more unreliable the "record" becomes in appropriately defining periods. By in fact relying on just one form of material evidence, lithic artefacts, such models also become susceptible to falsities such as the assumption that economy in lithic diversity indicates primitiveness. We know from ethnographic observation (e.g. in Australia) that the precise opposite may apply, i.e. economizing in technology may be the result of specialized adaptation, and cultures of great technological economy may be extremely complex in matters of ontology or other cultural variables. Similarly, we have recently learnt that the evolutionary assumption characterizing all 20th century discussions of Pleistocene rock art, that it developed from extremely simple and rudimentary Aurignacian works to highly sophisticated styles of the late Magdalenian, were simply false and baseless (cf. Clottes *et al.* 1995). We now accept that the most sophisticated cave art of the European Upper Palaeolithic is also the earliest we have found so far (Bednarik 1995a). Similarly, simplistic evolutionary notions about the development of complexity in lithic technology have been questioned by various strands of evidence, such as the occurrence of supposedly Upper Palaeolithic traits in the Middle and even Lower Palaeolithic. Indeed, the technological differences between the Lower and the Upper Palaeolithic, as perceived in the stone tools, are not as great as we have been led to believe. The presence of beads, pendants, advanced wooden and

other artefacts, composite artefacts, palaeoart (including petroglyphs and engraved portable objects), pigment use and maritime navigation evidence in the Lower Palaeolithic seriously questions most assumptions made about these evolutionary processes (Bednarik 1995b). While it is probably sensible to assume that some kind of development from the simple to the complex must have taken place at some stage in the human ascent, it seems that we may have severely misjudged either the chronological time frame within which this ascent occurred, or the path these developments took, or perhaps made both these mistakes. Whatever the case, it is becoming increasingly evident that the supposedly technology-based taxonomy of human history in the Late Pliocene and all of the Pleistocene only serves to uphold outdated and simplistic notions about this history.

It follows that in looking for a better taxonomy of Pleistocene human cultures one would need to focus on cultural stages instead of taphonomically truncated and skewed, and thus misleading, technological manifestations. Economy in stone tool design, for instance, may be a sophisticated adaptation to high mobility, and apparent long-term conservatism in lithic typology can equally well indicate a succession of various cultures of a uniformly well-adapted stone tool technology. Again, ethnographic observations render it unlikely that the study of stone tools alone, or primarily of stone tools, would lead to an understanding of cultural dynamics or entities. Utilitarian artefacts by themselves do not define cultures. Simplistic empiricism, particularly when it reflects only the investigator's limitations, is not likely to lead to valid deductions about cultures as alien to us as those of the Pleistocene are likely to be. While it is true that *some* cultural factors may be expressed in utilitarian objects, it does seem self-evident that non-utilitarian material finds are far more likely to shed light on the cultural evolution of humans.

The history of Palaeolithic research has unfortunately rendered it necessary to devise a chronology based essentially on stone artefacts. Non-utilitarian artefacts as well as relatively perishable utilitarian artefacts have been almost entirely ignored in this process. For instance, not a single publication exists that summarizes all we might deduce from the wooden objects so far recovered from the Lower Palaeolithic, and the literature on the period's woodworking technology is woefully inadequate. Indeed, if it were not for the excellent German work in this (e.g. Jacob-Friesen 1956, Thieme 1995, 1996a, 1996b, 1997, 1998, 1999, Mania & Mania 1998, Mania & Toepfer 1973, see also Biberson 1964, Howell 1966) the entire world literature on Lower Palaeolithic wooden artefacts would amount to a few dozen pages. Much the same can be said about similar material topics, such as fibres (Leroi-Gourhan 1982, Nadel *et al.* 1994, Pringle 1997), skins, resins (Boëda *et al.* 1996; Bosinski 1985, 1992, Mania, Toepfer 1973), bone, ivory, ostrich eggshell or bamboo, and about other periods of the Pleistocene.

An alternative approach

It is particularly obvious when considering aspects of technological complexity or non-utilitarian behaviour that we begin to see how much the most important information source likely to yield cultural data has been neglected. The principal corpus of non-utilitarian finds is that of palaeoart, which so far has not been used at all in demarcating periods or broad phases of human prehistory. Palaeoart comprises such phenomena as rock art, portable "art", beads and pendants, pigment use, and natural objects that appear to have been collected or curated because of some outstanding characteristics (colour, shape, fossil casts, crystal prisms). Significantly, such material begins to occur around 900 ka (Bednarik 1995b), i.e. at about the same time as the earliest solid evidence of seafaring (Sondaar *et al.* 1994, Bednarik 1997, Morwood *et al.* 1999, Bednarik, Kuckenburt 1999). The importance of maritime navigation cannot therefore be emphasized enough in this context, and there are several aspects of it that must be considered carefully.

Of the three forms of locomotion ability we can imagine, the state of having no locomotion is essentially what defines a plant, while autonomous locomotion is what animals are capable of, including humans. On this planet, only humans achieved intentionally assisted locomotion, through harnessing energies of nature, such as wave action, sea currents, wind and buoyancy (and eventually others, such as combustion or nuclear reaction). The advent of this capability is the most important single development in the history of humans, because of the cognitive and technological effects it would have had. The planning, organization and conscious decision making involved in it, and the neural feedback of observing the far-reaching effects of one's deliberate manipulation of natural systems, all must have had a significant impact in many areas of hominid existence. It is likely that they were the principal engine in driving the evolution of human cognition, leading to the inclusion of the new neural structures in cybernetic feedback systems. "Conscious experience", or rather, what we understand by it, became possible because the neural structures prompted by increasingly "conscious" experiences became available for the "taxonomizing" processing of material stimuli. Moreover, the development of maritime navigation would have been at the technological cutting-edge of the time, because it obviously involved deliberately taking great personal risks. Just like its modern equivalent, space exploration, it no doubt led to significant technological spin-offs, perhaps in the use of cordage, containers and the transport of food or water. Most importantly, from the perspective of the archaeologist, the developmental milestones of early seafaring would provide secure indicators of the maximum technological capacities at the times in question.

These considerations are very much more important to the issue of crucial milestones in human cultural ascent than all the stone tools of the Pleistocene are ever likely to be. Moreover, the coincidence of these profound

developments, which set the course for human development firmly right up to the present time, with the apparent advent of such phenomena as ochre and haematite use, the collection of quartz crystal prisms and, eventually (but still in the Acheulian), the use of beads renders a correlation between two significant quantum jumps highly likely. The introduction of seafaring between one million and 800 ka ago, and the introduction of non-utilitarian cultural phenomena at about the same time mark the most important watershed event in human history.

These two changes seem to have contributed more than any other development to our lineage "becoming human", in the sense we usually perceive this process, and yet in orthodox Pleistocene archaeology they are not considered at all. In fact the Lower Palaeolithic is perceived as a period of exceptionally slow technological change. This view is usually related to the persistence of the "handaxes", whose basic form remains essentially unchanged for over a million years, although experiencing great gradual refinement in its detail. But this kind of reasoning is not only false (handaxes are not even typical of the Lower Palaeolithic, their use continued throughout the subsequent Middle Palaeolithic), it is also based on a false logic: the handaxe defines a culture or cultural sequence no more than does a spear, for instance. It merely defines an artefact form of great functional and formal longevity. A modern Australian spear is not technically different in form or design from one of the seven Schöningen specimens (Thieme 1999), and yet nobody would suggest that there have been no major cultural changes in the intervening 400,000 years. In much the same way it would be premature to assume technological stagnation or extreme conservatism on the basis of any other artefact type that was so well adapted that it offered little opportunity for further refinement.

Not only does the traditional division of the Palaeolithic period ignore the massive changes that took place about 900 ka ago, it promotes the arbitrary separation of periods that provide far more indices of continuity than of discontinuity. This is as true for the separation of the Lower from the Middle Palaeolithic as it is for that of the Middle from the Upper Palaeolithic (Bednarik 1995c, Fiedler 1999). The latter, in particular, has promoted the perception of significant difference, which, on close examination, cannot be sustained. Moreover, it has encouraged such fads as the various "African Eve" models (refuted in Bednarik and Kuckenburg 1999). It is of considerable relevance that the concept of a local Middle Palaeolithic is under review currently in China (Xing Gao, Norton 2002), India and elsewhere.

A proposal

The role of a classification system is to serve the discipline concerned, not vice versa, and its purpose, surely, is to facilitate rather than impede understanding and communication. There are many reasons for advocating a revised basic taxonomy of principal divisions of the late

Pliocene and Pleistocene human history, but the principal issue is that such a system should reflect the main stages of cultural and technological development during this period, and not archaeologically perceived changes in lithic artefact form. On the basis of current information about the chronological places of the major milestones in cultural, technological and presumed cognitive human development, human history has experienced four main stages prior to what is sometimes described as the "Neolithic revolution". It is proposed that the Palaeolithic period be divided according to these milestones:

Palaeolithic 1 (2.4 million years to 900 ka ago): lithic implements, expansion out of Africa, incipient ability to detect some forms of iconicity.

Palaeolithic 2 (900 ka to 350 ka ago): archaic seafaring, pigment use, language-like communication, cordage, fire use, probably dwellings, discrimination of common and exotic entities.

Palaeolithic 3 (350 ka to 60 ka ago): linear, radial and form-prompted engravings, probably cupules, inland navigation and improved seafaring, developed wooden and composite artefacts, dwellings, beads and pendants, proto-figurines.

Palaeolithic 4 (60 ka to 12–8 ka ago): seafaring beyond visual range, underground mining, complex graphic markings, ritual, interment, developed garments, later figurative sculpted and graphic palaeoarts.

Neolithic 1: domestication, sporadic pottery.

Neolithic 2: "High" Neolithic, general pottery use.

Neolithic 3: Late Neolithic or Chalcolithic, copper use.

I have included tentative divisions of the post-Palaeolithic cultures mainly to show my preference for omitting the Mesolithic period altogether. I regard it as misleading to compare Early Holocene coastal economies with those of the Final Pleistocene, which are inevitably inland economies and thus significantly different from coastal ones, be they Late Pleistocene or Holocene. I perceive no sharp division between the inland economies straddling the end of the Pleistocene, and since the definition of the Mesolithic is in any case rather blurred there is little to recommend retaining the concept. Also, there are considerable temporal differences in the advent of Neolithic features in different world regions and the prehistory of the Holocene needs to be considered on a regional basis that differs significantly from the broadly universal stages I advocate for the Pleistocene.

My proposed stages of Late Pliocene and Pleistocene human history are so broadly formulated that they can probably be recognized in all parts of the world that were occupied during the time in question. While the listed chronological values may have to be subjected to some future revisions, the potentialities implied in this schema were probably universal. This does not mean that each capability was present in each population of a period as listed, but that the general cognitive capacities were such

that these technologies or abilities were potentially realizable. Whether they were developed or even needed depended on factors other than potentialities, and had perhaps little to do with Darwinian dynamics or determinist beliefs. Cultural, social and environmental imperatives might have been more relevant.

Be that as it may, the proposed stages of the Palaeolithic period effectively combine some elements of a "punctuated equilibrium" scenario with a gradualist view of human development, avoiding the usual "either-or" position. While there were probably quite distinctive episodes of keystone developments that prompted major cultural and technological changes, most advances were perhaps slow and gradual.

In this sense, the proposed taxonomy is not at all revolutionary, rather it synthesizes the best aspects of previously competing models into a sensible whole, allowing them to be projected onto our current knowledge about the first appearance of crucial qualities and capabilities. The resulting model is certainly not the last word on the issue, but it offers a significantly more appropriate formula for comprehending the history of the human species than the traditional model, which was designed as a provisional taxonomy well over a century ago.

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