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CRISIS IN PALAEOLITHIC ART STUDIES

ABSTRACT: This review of recent developments in the study of Palaeolithic art explains some of the factors that have led to a crisis in confidence in this field. In particular, the mounting difficulties experienced with dating of rock art, the tenuous status of stylistic models, the inadequate understanding of taphonomic effects on palaeoart, and the selectiveness in what is considered and what is omitted are found to be major obstacles individually. However, collectively these and still other factors indicate that this field is reaching an alarming crisis level. Claims predicated on existing models, and especially on authority, are no longer necessarily viable, and there emerges a clear need for the discipline to subject itself to more rigorous review. Restraint in interpretation is required, and the introduction of scientific data acquisition and testing methods is advocated.

KEY WORDS: Palaeolithic art – Bias – Dating – Style – Iconicity – Taphonomy – Fakes – Misidentifications – Metamorphology – Scientific testing

INTRODUCTION

One of the most important contributions of Professor A. Beltrán has been his paper presented at the 1988 First AURA Congress in Darwin, Australia, in which he addressed what he perceived to be an impending crisis in traditional ideas about European rock art, especially that of the Pleistocene (Beltrán 1992). His warnings have since emerged as rather prophetic: the crisis he predicted began to unfold within a few years, and by 1996 has taken on serious proportions, as I shall argue here.

Like Beltrán, Professor J. Jelínek has been among a small number of scholars who have long questioned fundamental assumptions and Périgord-centric (Straus 1995) models of Palaeolithic art. Their general reservations and specific scepticisms have been amply vindicated by the developments of recent years, brought about by the introduction of such methodologies as direct rock art dating, taphonomic logic, the discovery of new key evidence, and the introduction of more rigorous epistemologies than those widely in use in archaeology throughout the 20th century. In this paper I can provide no more than a very brief summary of these developments, and the problems they have introduced for traditional models in this area of scholarly endeavour. Much more comprehensive arguments have been presented in some of the recent work cited, and more publications are in preparation at the present time. It is therefore reasonable to assume that this renaissance of Palaeolithic art studies is an ongoing process and that we may have to expect still more major changes and challenges in the near future.

PROBLEMS WITH SPATIAL BIASES

Nearly all publications on Pleistocene art have either heavily emphasized the Franco-Cantabrian traditions of south-western Europe, or have even restricted their coverage entirely to this small geographic region. This has resulted in greatly distorted models of the origins and evolution of art, language, culture and human consciousness, all of which have been predicated on the

false idea that the non-utilitarian human behaviour traces we collectively describe as palaeoart first appear in south-western Europe during the Aurignacian.

In reality, the question of geographical distribution is exceedingly complex. Firstly, the extant evidence has been subjected to various highly selective selection processes which are collectively called taphonomic factors. Extant indices of distribution, quantity and type of evidence are of little significance in reconstructing the traditions responsible for creating this evidence (Bednarik 1994a), they can only tell us what has survived. As if this taphonomic determinant were not sufficient reason to reject most claims made regarding this class of evidence, there is a second major encumbrance: the enormous geographical disparity in research efforts. For instance it is obvious that European Pleistocene art is a part of a larger, Eurasian corpus, but while we have many thousands of learned publications about the European part of this greater body of evidence, only one writer has ever considered the Ice Age art of Asia on a pan-continental basis (Bednarik 1994b). In any other field of inquiry, such an incongruity would seriously impair the acceptance of any universal interpretative model, but in this field it has become almost customary to publish books supposedly about the art of the Pleistocene, and to consider in fact only that of the Franco-Cantabrian region. The impression one gains from this vast body of literature is that its authors are quite ignorant about the subject, they genuinely believe that "art" first emerged in France and Spain.

Among the exceptions to this trend is the work of Jelínek (e.g. 1988, 1990) which provides a more balanced overview by stressing the importance of central and eastern European as well as pre-Upper Palaeolithic evidence. Other attempts to break out from a Eurocentric mould are Bahn and Vertut (1988), the first major work on Ice Age art that featured examples from continents other than Eurasia, and Bahn (1991).

To appreciate the full effects of these geographical biases, let us consider the following points. Pleistocene art occurs in all continents, although in the Americas it is so far limited at best to the very end of the Pleistocene. Many of the authors restricting their coverage to south-western Europe believe that there is no evidence of art-like productions before the Upper Palaeolithic. Yet practically all of the Pleistocene art of Australia is from an essentially Middle Palaeolithic context (the initial settlers of Australia were clearly seafarers of Middle Palaeolithic technology, which in Tasmania was preserved to the 19th century), and since this corpus alone is thought to be greater than that of the entire Upper Palaeolithic art of Europe, it follows that there may in fact be more "art" surviving from the Middle Palaeolithic than from the Upper. This is the exact opposite of what is being taught at the universities of Europe, in two ways. Firstly, the extensive evidence of Middle and even Lower Palaeolithic art-like traditions (Bednarik 1995a) from all continents except the Americas and Antarctica discredits the claims concerning *temporal* distribution, and secondly, the larger quantity of Pleistocene rock art in Australia in comparison to Europe indicates the extent of European misinformation regarding *geographical* distribution. This is so even before we consider the evidence of Pleistocene arts in Siberia, China, Japan, India, the Near East and sub-Saharan Africa (Bednarik 1994c). Consequently the geographical biases inherent in most existing models of art origins seriously discredit all of these constructs.

PROBLEMS WITH DATING

During the 20th century, a finely honed taxonomy has been developed of the Palaeolithic rock art of Europe, attributing sites to several tool industries, ranging from the Aurignacian to the Magdalenian. This chronology is based on an inductive framework resting on supposedly dated portable art objects, purported minimum ages established at a small number of sites by excavating sediment-covered figures (and assuming that charcoal contained in the sediment corresponds to the time of sedimentation), co-occurrence with occupation deposits (which provides no evidence of age for rock art), but primarily on stylistic assumptions. Most of this rock art is not datable by archaeological methods, but is thought to resemble other art of supposedly established provenience. The stylistic taxonomy most frequently used in recent decades is that of Leroi-Gourhan (1971).

Until 1990 there were no attempts to underpin or test this chronology by scientific methods, even though "direct dating" methodology had been introduced in 1980 in Australia (Bednarik 1984). The attempt to relate paint pigment in Tête-du-Lion (Combier 1984) to ochre found in the deposit does not amount to direct dating, because the physical relationship of the dating criterion and the art is neither falsifiable, nor is the age of the dating criterion itself unassailable: the age of the ochre is contingent upon the unprovable deduction that the relevant charcoal is of the same age as the occupation deposit.

In 1990, however, direct dating methodology was applied to parietal paintings first in France (Lorblanchet *et al.* 1990), then in Spain. At the time of writing, we have radiocarbon estimates from eight of the cave sites. While there are problems with most of them, it has already become apparent that many do not coincide with the stylistic chronology of this art. Two of the "dates" from supposedly Palaeolithic charcoal paint residue are from the Holocene, so they were withheld from publication. Others that were obviously contaminated were published because they coincided with stylistic estimates (as reported in Clottes 1994). However, the majority did not. Lorblanchet abandoned his own attribution of the supposedly uniform art at Cougnac to the Magdalenian (Lorblanchet 1984) and now assigns that art to three periods (Lorblanchet 1994). The stylistic attribution of the art in Cosquer Cave had to be significantly revised (Clottes *et al.* 1992). But the crunch came in 1995, with the secure dating of spectacular black paintings as well as soot smudges in the newly discovered Chauvet Cave. According to traditional stylistic dogma, this art would belong to the

Magdalenian, at the end of the Upper Palaeolithic, but the several dates placed it unequivocally in the Aurignacian, at its beginning (Clottes *et al.* 1995).

Before the discipline could even consider the implications of this important finding, the next calamity occurred. A series of about fifteen open air petroglyph sites in the Côa valley of northern Portugal had been confidently placed in the Solutrean, purely on the basis of style. In a series of blind tests conducted by several archaeometrists, they arrived independently and under controlled conditions at the same result in mid-1995: the supposedly Solutrean-style figures are of the late Holocene, possibly even of Historic age (Bednarik 1995b, 1995c, 1995d, Watchman 1995, 1996). There followed a chorus of Palaeolithic art experts, uniformly rejecting these findings as being unacceptable, and even rejecting the concept of blind tests as "unethical" (Zilhão 1995). But by now the confidence of the experts of Palaeolithic style had begun to wane, even though some of them tried to salvage the credibility of their approach (Zuechner 1995, 1996). Their counter arguments became increasingly desperate and eventually irrational (Zilhão, Monge 1995, Zilhão 1995) as they tried to defend the traditional stylistic chronology of Palaeolithic rock art. For instance the bovids of the Côa valley were stylistically compared to those of Lascaux. Yet the Lascaux bovids are probably of the Holocene (Bahn 1994), and they are stylistically similar to the Levantine shelter art of Spain (which is now thought to be of the Neolithic or even younger), as even Breuil (1948, 1952) recognized many years ago (although he placed both traditions in the Perigordian). With the age of the Lascaux art now under review, and most of the charcoal dates from paint in disagreement with traditional chronology, the entire framework of stylistic dating of European Palaeolithic rock art is now at crisis point, and collapsing under the weight of the cumulative evidence.

PROBLEMS WITH STYLE

What is surprising about this development is that it should have taken so long to become apparent. Stylistic dating of rock art has failed in most other parts of the world where it was applied and later tested. We even have numerous examples of rock art of essentially Palaeolithic style that cannot possibly be of the Pleistocene, from China, Siberia, India, Austria, Norway, Turkey, and even from south-western Europe. In some cases, especially on the Iberian peninsula, there is a very real possibility that Palaeolithic styles continued to be used in the Holocene, because of the comparative permanence of rock art and its consequent role as a cultural determinant (Bednarik 1991-92, in print).

The principle of stylistic determination seems to be derived from art history, in which certain parameters of Historical art traditions are recognized and then used to determine the period, era or art school a specimen of unknown age should belong to. This is possible where we have Historical sources to understand the iconographies and meanings of stylistic traditions, but in the text-free context of pre-Historic archaeology, perceived styles are free-standing constructs of archaeologists themselves; they exist without documentary evidence. In fact not even the periods or cultural traditions archaeologists "identify" actually existed, even they are merely archaeological inventions. In Pleistocene archaeology, these "cultures" are just theoretical constructs based almost entirely on tool assemblages, especially of stone tools. It would be absurd to claim that such perceived tool traditions must necessarily mark specific ethnic, linguistic or cultural entities. Art, on the other hand, would probably define and demarcate cultural entities of the distant past, but it has never been used for this purpose. Instead, art is forced into the straitjacket of tool-derived nomenclatures, and we are not only told that there must be such a rock art style that corresponds specifically to, for instance, Solutrean tools, but also that archaeologists know how to recognize it. When dating scientists then point out, as has now happened, that their results do not agree with these perceptions of archaeologists, they are attacked as heretics (Zilhão 1995, Zilhão, Monge 1995).

This is an incredible state of affairs: the onus is not on dating scientists to justify their results (which, after all, are perfectly falsifiable, irrespective of their actual validity), it is on archaeologists to demonstrate what it is in their training that should enable them to recognize the subtle stylistic markers in an alien art system of which we lack any ethnographic information. Until recently we have not had any means of consistently determining the age of Pleistocene rock art, so how could we have developed any knowledge of what the style of a particular period was?

Now that the focus is on the claimed ability of archaeologists to recognize Palaeolithic art styles it is abundantly obvious that this area of "knowledge", too, is in a state of crisis. The dating information from Chauvet is sufficient by itself to demonstrate that the stylistic system of Leroi-Gourhan and all others before it are all refuted. As a consequence there is currently no recognizable stylistic chronology of the Palaeolithic rock art of Europe, and there is still more upheaval to be expected in this area before differences are resolved satisfactorily.

PROBLEMS WITH ICONICITY

The most common form of assertions to possess some valid interpretative knowledge about palaeoart concern claims to know what is depicted in palaeoart. In Palaeolithic art, experts have been telling us for a century that they know precisely and with great confidence which animal species have been depicted, and often even what the meaning of this art was. There are incredibly naïve and unsupported claims in the literature, repeated uncritically time and again. For instance, a very simple stick-man figure in Lascaux is often interpreted as a shaman, entirely without valid evidence.

Nor has any evidence ever been offered for why modern archaeologists should have the same cognitive processing of

sensory perception as people tens of thousands of years ago. We know from ethnography that various extant human populations possess cognitive systems that differ quite significantly from that of contemporary Westerners (or non-Westerners who have been strongly conditioned by Western epistemology). It is then very hasty to assume that humans of the Pleistocene must have perceived the same kind of reality as most of us do. Perhaps they did, but before we interpret an alien art in terms of our own perception of it, science would require of us that we demonstrate this to be so.

From a scientific point of view, the determinations of images by intelligent organisms who lack cultural access to the cognitive world of the creators of these images do not relate to that reality, but to the reality of the interpreters themselves. They tell us how archaeologists perceive imagery. These determinations would be of great interest to the psychologist who wishes to study the cognition and perception of archaeologists. They are, however, entirely irrelevant to the scientific study of the imagery itself.

The only known blind test of Western identifications of pre-Historic rock art images occurred in Australia (Macintosh 1977). A distinguished professor of anatomy reported that 90% of his designations of animal pictures were shown to be false when it was discovered that some authors or users of the particular art were still alive. This does not necessarily mean that we should expect that most species identifications from Palaeolithic art in Europe must also be false, but if we feel so confident about correctly determining the meaning of such an extremely ancient art we need to explain why we should be so inclined. There is in fact a logical explanation for why modern Europeans may have a close iconographic affinity with their continent"s Pleistocene art, but this is only now being proposed and will need to be considered before we should rely on our intuition (Bednarik in print cf. p. 21, 26).

Another difficulty with iconicity is that even if our "identifications" of objects in rock art could be shown to be valid, it does not necessarily follow that our deductions from them must also be valid. For example, several major rock art bodies have been assigned to archaeologically perceived periods, for instance in the Sahara, central India and the Spanish Levant, on the basis of their apparent iconographic contents. It was assumed that if a rock art consists of what seem to be scenes or motifs consistent with a hunter/gatherer subsistence (e.g. apparent hunting, fishing, honey gathering), it must have been produced by pre-agricultural societies. The Bubaline phase of Saharan rock art was therefore initially placed in the Pleistocene, then in the early Holocene, until Muzzolini (1990) showed convincingly that it was Neolithic. Similarly, the Levantine art moved gradually up in time, from the Perigordian and through practically all Upper Palaeolithic and Mesolithic tool traditions (Ripoll Perello 1977), until eventually it was attributed to the Neolithic (Hernández Pérez *et al.* 1988). It is therefore apparent that even if we did have the means of reliable identification of objects, it might still not be possible to validly deduce from them the age of the art in question.

TAPHONOMIC PROBLEMS

The problems that arise from taphonomic considerations in both rock art and portable art are of particular interest, partly because they are so poorly understood and yet so crucial to archaeological understanding. Essentially, taphonomic logic (Bednarik 1994a, 1995e) leads to the inescapable conclusion that the composition, mode of occurrence, spatial distribution and statistical characteristics of palaeoart are not representative for the culture in question, and that the distortion increases in proportion to the age of the material in question. This is simple enough. The implication is that it is futile to try to reconstruct the properties of a cultural convention, such as a graphic art production, from its surviving attributes alone, i.e. without recourse to taphonomic logic. So far, however, such logic has been applied only at the most primitive level in Palaeolithic art studies, hence the models created in this field are not particularly likely to be valid.

Taphonomic problems in Pleistocene rock art studies are best explained by example. In most cases the evidence in question is presumed to be beyond the threshold of their phenomenon category, which means that these arts survive only because of unusual combinations of preservation conditions. Therefore the surviving statistical characteristics are almost entirely due to "non-cultural" factors – usually location, type of material, or presence of novel preservation conditions. Typical examples are location of rock art in a deep cave, unusually resistant material type of portable art, or preservation under a mineral accretion such as silica or rock varnish. In naïve archaeology, the statistical characteristics of such arts are sometimes interpreted as being attributable to cultural selection, for instance location in caves "proves" that the behaviour that produced the surviving traces must have been endemic to caves. Taphonomic logic shows that the probability of this being false is very much greater than the probability of it being true. As with Occam"s razor, the most economic explanation of a given set of conditions is the most likely to be true.

A good example are the famous female figurines of the Palaeolithic. Their geographical distribution is taken as indicating the extent of their former spatial occurrence. This is almost certainly false. Nearly all of these finds are made of a material that survives largely as mineralized carbonate of organic origin (ivory, antler, bone, limestone), which endures well in high-pH soils, but badly or not at all in low-pH environments. Not surprisingly, all these figures were found in high-pH regimes (loesses or limestone cave sediments). Unless we make the ridiculous assumption that they were deposited intentionally only in soils permitting their preservation, we have to concede that we will not find those specimens that were deposited in low pH regions, which is only to be expected. This then means that the

tradition would have extended to regions where no such figurines could have survived. In the same sense it may have extended not only geographically beyond what can now be known, but also in terms of the range of materials it was made from: that the figurines were found only in a certain range of materials (for details see Bednarik 1996a) does not exclude the possibility that they were also made from other materials (e.g. wood) in which they did not survive or were not found so far. In other words, the surviving sample is unlikely to be representative in either its distribution or its material type, and since the latter may be related to variables of form or use, we can say that few generalized interpretations can be made with any reasonable degree of certainty. The finds simply tell us what has been found and reported (and subjectively placed into the same category), but the *valid* interpretation of these finds is contingent upon exploration of probability scenarios predicated on taphonomic logic. This kind of work remains in its infancy, hence archaeological interpretation of palaeoart remains in its infancy, and the kind of over-confidence we have seen in this area of interpretative archaeology is misplaced.

PROBLEMS WITH ARCHAEOLOGY

This brings us to the generic problems archaeology has introduced into palaeoart studies. Only a very brief overview can be given here. To begin with, archaeology is not a science, it results in no falsifiable propositions of interpretation. Archaeology is essentially based on an inductive form of uniformitarianism, often tempered by literal or implicit ethnographic analogy. Nevertheless, falsifiable propositions are frequently imported from other disciplines, especially through archaeometry, including dating methods, pedology, palynology and so forth. Archaeological *interpretations*, however, are not themselves testable. In rock art studies this has become particularly apparent with "direct dating" methods, the results of which, when interpreted archaeologically, are often misinterpreted as real ages, which they are not (Bednarik 1996b).

There are various other problems with the involvement of archaeology in palaeoart studies, such as the controversies over the curatorial ambitions characterizing archaeology. The discipline often seeks control of access to data, objects, sites and so forth, which has led to confrontations particularly with indigenous peoples (e.g. over the possession of skeletal remains or particular artefacts, or over the dissemination of certain knowledge). In the present context, however, there are much more relevant difficulties. They refer to the taxonomies of archaeology: the manner in which the discipline designs categories of relevant phenomena. In pre-Historic archaeology, particularly of the Pleistocene period, we possess no secure or valid nomenclatures for the entities we seek to study. Therefore we design them ourselves. We select a group of objects that seem to possess some formal similarities, e.g. stone tools, and invent supposedly descriptive classes for them. These classes are unlikely to coincide with those the makers of the tools would have chosen, they are simply our own, arbitrary stylistic or taxonomic pigeonholes. Having divided the assemblage in this fashion, we then proceed to "analyze" our own stylistic constructs as if they consisted of real, objective categories of information units.

Archaeologists apply the same categorization dynamics to rock art, inventing motif types and various other classification criteria with the intention of "analyzing" these taxonomies, in the belief that this will yield objective information through the application of sophisticated statistical methods. In other words, these invented classes of entities are treated as if they represented real "species" or elemental units. In the case of such objects as stone tools, there may even be some justification for such an approach, because these types of objects are at least partly utilitarian. Palaeoart, on the other hand, served primarily cultural purposes, which suggests that a valid taxonomy is not possible without detailed knowledge of the cultural conventions, perception, cognition and world views of the artists or consumers of these art traditions. Such knowledge cannot be obtained by the practices of orthodox archaeology.

Another of the major problems with archaeology that has greatly affected the study of Pleistocene arts is the confirmationist tendency of the discipline, particularly when it is combined with the inherent weaknesses of any system of knowledge claims predicated on non-falsifiability. A prominent example is provided by the tendency of perceiving a significant separation between Middle and Upper Palaeolithic traditions, a belief reinforced by, among other falsities, the assumption that art and language were absent in the earlier period. Most archaeologists seem unaware that evidence of "advanced communication", presumably some type of reflective language, dates back to the beginning of the Middle Pleistocene (e.g. ocean navigation, thought to require language, occurred before 700,000 years ago). So the dominant models are largely predicated on the ignorance of individual prominent archaeologists (see e.g. debate in Bednarik 1995a). Limitations about existing knowledge are a major factor in metamorphological study, the scientific alternative to orthodox archaeology (Bednarik 1995e).

PROBLEMS WITH FAKES

Fakes in archaeology can generally be divided into two basic types. The first are those made for financial gain. They are purported to be from many different periods and cultures, but rarely from the Pleistocene. In some parts of the world, these commercial fakes support whole local industries. Interestingly, in certain other regions no archaeological fakes at all seem to exist (e.g. in Australia).

The second type of fake is much more likely to be of supposed Pleistocene age. It is usually not made for financial gain, but simply to deceive. The motivation may be complex, but it is of interest that such fakes seem to be limited entirely to Europe and North America. It would be fascinating to explore the reasons why people in these two regions have

such a penchant for providing false evidence from this period. However, the real problem with these kinds of fakes is that some could be the result of very elaborate hoaxes, perpetrated by knowledgable scholars who can easily deceive their colleagues. For instance to fake Palaeolithic rock art successfully, one could use late Pleistocene charcoal from an excavation, employ a particular style of depiction, and then "age" the figure by suitable means, such as application of water. Even secondary calcite or other mineral deposits can be precipitated over such art by a skilled expert.

Many fakes have been recognized over the years in palaeoart, ranging from Azilian painted cobbles to engraved plaques to figurines carved from genuine mammoth ivory. In 1990 we witnessed the "discovery" of the fake Palaeolithic paintings in Zubialde Cave in northern Spain, the authenticity of which is still defended by some archaeologists. In the following year, the extensive rock art in Cosquer Cave was discovered, and several archaeologists immediately questioned its authenticity. In doing so they practically accused the discoverer, a professional diver, of having conducted an incredibly elaborate hoax; because of the extreme difficulties of access it was unlikely that anyone else could have set this up. Fortunately, Clottes *et al.* (1992) were soon able to prove the authenticity of the art, otherwise Henri Cosquer might have found himself in the same unenviable position as Don Marcelino Sanz de Sautuola over a century earlier (Bahn 1992).

The probable existence of fakes in Palaeolithic art continues to be a significant problem in Palaeolithic art studies (Bahn 1993). This is primarily because still undetected fakes, if they exist, are likely to be very central in the perceived stylistic spectrum of this art: for a fake to be successful, the perpetrator must share with the authenticator certain perceptions of what constitutes the essence of Palaeolithic art. This means, in practical terms, that if there are still fakes among Palaeolithic art, they are likely to distort our perceptions of what constitutes Palaeolithic style in favour of already shared biases, and in fact are likely to amplify these.

PROBLEMS WITH MISIDENTIFICATIONS

Whereas fakes relate to intentionally misleading data, misidentifications are attributable to genuine mistakes. While they are surprisingly common in rock art generally, they seem to be too rare in Palaeolithic art studies to seriously impinge on the credibility of the discipline. However, even here it may be judicious to examine the matter more carefully. After all, misidentifications may very easily go undetected for a long time, so their apparently small number in Europe needs to be seen in context. It is of concern to note that in both Asia and Australia, where fakes are literally unknown in palaeoart, errors of identification have been shown to be very common (Bednarik 1994b, 1994d). Thus the contrasting conditions in Europe need to be explained, they could be attributable to a more "authoritarian" archaeological establishment.

Misidentifications of both rock art and portable art occur in palaeoart studies. In Australia there are numerous instances of natural rock markings that have been identified as rock art (Bednarik 1994d). Few such misidentifications involve portable objects, while in Asia large numbers of portable objects were misidentified (Bednarik 1994b). Many of these instances concern supposedly Palaeolithic art, e.g. the 46 "engraved" ostrich eggshell objects of the Indian Palaeolithic (of which only one was actually engraved by human hand; Bednarik 1993a), the 600 "engraved" bone fragments from Shiyu wenhua in China (Bednarik, You 1991), or the marked objects from Devils Lair and Koonalda Cave in Australia (Bednarik 1991).

In the case of rock art, misidentifications are more commonly of petroglyphs than of paintings. In a comprehensive treatise on this problem, twelve types of rock markings are distinguished and numerous published misinterpretations of them are listed (Bednarik 1994d). That article arrives at the conclusion that archaeological training does not provide observers with the means of differentiating natural and artificial rock markings securely; indeed, there is a possibility that such training may even lead to a predisposition for misidentifying such markings, in some circumstances.

The only prominent example of a misidentification of a European Pleistocene marking listed in this paper is from Bara Bahau, France. The "hand petroglyph" on the upper left corner of the rock art panel near the passage end of this cave is almost certainly made by a cave bear. A comprehensive study of cave bear markings in about fifty European caves has shown that these occur in several distinctive forms, and the Bara Bahau example is well within these forms and bears numerous other claw marks of the cave bear (Bednarik 1993b). Yet ever since Glory (1955) described this "hand" as the oldest rock art motif in the world it has been published repeatedly as such. An intensive study to locate misidentifications in European Palaeolithic rock art still has to be conducted before we can reasonably assume that this is not a more frequent problem in the study of this corpus.

DISCUSSION

I have presented several classes of problems concerning the credibility of claims regarding Palaeolithic art that have become increasingly acute in recent years. Some of them are obviously more serious than others. In particular, the selectiveness in what is and what is not considered, the fairly self-evident problems with the dating, the tenuous status of stylistic claims and the consequences of archaeology's inadequate consideration of taphonomic effects each represent significant obstacles individually. Collectively, however, they indicate that an alarming crisis level has been reached. If the art does not belong to the traditions it has been assigned to, if most relevant evidence remains largely ignored in the generation of universal hypotheses, and if most interpretations

we have are likely to be false, the general viability and credibility of the discipline need to be questioned. Its generally inductive nature renders most hypotheses highly dependent on others, and this complex latticework of interdependent hypotheses is readily susceptible to collapse once major sections of it have to be disregarded or at least significantly revised.

Against this background, which should prompt us to exercise great scepticism and restraint in our interpretational fervour, we have experienced an ever-growing wealth of interpretational hypotheses about the meaning and purpose of Palaeolithic art. There are far more such hypotheses about this corpus than about all other pre-historic arts of the world combined, and yet it accounts for only a tiny fraction of a per cent of the global corpus. The extraordinary efforts of interpreting European Palaeolithic art are therefore not only misguided, they are themselves a phenomenon that needs to be explained. Why is there such a pronounced preoccupation with this minor art body? One could understand it if it were the earliest evidence of art production available to us, but this is certainly not the case: its production only commenced around 32,000 years ago, whereas other art-like traditions date back hundreds of millennia. Over the years we have seen hypotheses explaining Palaeolithic art as hunting magic, as shamanic practice, fertility cult, totemistic, evidence of a matriarchal cult, pornographic, acoustically inspired, scale model maps or as water magic related. There have been Freudian, Jungian, Marxist, feminist, structuralist, functional, semiotic and cognitive theories in many variations, and of course art-for-art's sake theories. What all of these many hypotheses have in common is that they cannot convincingly be applied to all the evidence in question, they are unfalsifiable, and most evaporate as soon as taphonomic logic is applied to them. When we consider them in the light of some of the problems I have briefly listed here, we see that most seem to lose all justification. The understanding we possess of this corpus of rock art is simply not adequate to test such interpretations of meaning and purpose, let alone successfully falsify them.

A factor that illustrates how critical the situation has become is the reactionary response of some quarters in the discipline when its dogma is challenged. I cite two recent examples. In the first, a French specialist responded with great indignation when I discussed some Australian dating evidence for rock art and noted that it implied a greater age than that of European Palaeolithic art. He accused me of "inverted racism" and criticised me for "encouraging the ethnic pride" of Australian Aboriginal people (Lorblanchet 1993). In the second example, an opponent of scientific dating of rock art claimed that the use of blind tests is "inconceivable on purely ethical terms" (Zilhão 1995: 899), and that rock art should only be dated by consultation with local archaeologists (which is of course impossible to reconcile with the conditions of blind tests). Until recently, the favoured method of rock art dating was through the consensus of influential archaeologists. The concept of blind tests, in which several researchers have to arrive at their estimates independently and under controlled conditions, is very alien to this practice of the past. However, it has long been one of the principal tools of science, and this experience simply shows us yet another problem with the archaeological practices of Pleistocene art studies: they may not only lead to the rejection of scientific data, but even to opposing the application of scientific procedures when these threaten the established paradigm. Hence the greatest problem in this field seems to be that some archaeological practitioners are prepared to defend their ossified belief system (and their authority) against the application of systematic testing procedures. If such a procedure is likely to produce results that contradict the favoured paradigm it may even be deemed to be "unethical". In this form archaeology has clearly become a belief system that will go to any length to defend its conservative beliefs, and do so for purely selfish reasons; it has crossed the boundaries of academic credibility. The consequence is that ways must be found to design blind tests wherever possible in archaeology.

This is one measure requiring prompt implementation, but there are also other means available to improve the discipline. It is not the purpose of this paper to consider them, but to show that there can be no doubt that the crisis of confidence in the orthodox models we have in Palaeolithic art studies has reached the stage where major remedial action has become unavoidable. We simply cannot afford to continue inventing and defending mythologies about the past beyond this point in time, and still expect to preserve our credibility. In historical terms, Palaeolithic art studies have reached a crisis point where a scientific revolution of the type Kuhn (1962) would advocate has become inevitable.

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