

prone to inventing categories of entities (e.g. stone tools) and then believing that these represent real classes of objects. Yet it is self-evident that artistic styles can be individual-based, and the differences of 'stylistic variables' can be greater between individual artists of one society than between individual artists of different societies. Hence to claim that 'stylistic variables' are valid chronological markers, while it may be right in some cases, may be profoundly misleading in others. In the case of Pleistocene arts, archaeologists have not produced any compelling evidence as to why we should accept their ability to determine the age or techno-chronological attribution of art by merely looking at it. That ability appears to exist only in their own minds, i.e. it is not accessible to external analysis.

Since in the case of the Côa petroglyphs the evidence weighs heavily in favour of a Holocene age even before the actual dating attempts are considered, it is certainly prudent to regard the stylistic argument with suspicion. This is even more so when we consider that stylistic dating of rock art is coming to grief at most other rock art sites that are subjected to scientific dating methods, as we shall see below. Archaeologists have created massive mythologies before with their stylistic 'dating' of rock art sequences. Even on the Iberian peninsula there are highly relevant examples. One only needs to recall the endless debates over the cultural status of the Levantine 'naturalistic' paintings and the region's schematic art, and compare the wildly differing 'stylistic datings' by Breuil, Bosch, Pericot, Almagro, Ripoll and Jordá (Ripoll 1977). They ranged from the Gravettian to the Bronze Age for the Levantine shelter art, which at present is thought to be Neolithic (Hernández et al. 1988). The Côa issue suggests that we have not learnt from these many failures of stylistic taxonomies, nor from the exhortations of some of our colleagues to abandon stylistic chronologies altogether (Bednarik 1990-91; Lorblanchet and Bahn 1993). Perhaps the Côa affair will succeed in bringing us to finally face reality: the Palaeolithic art specialists of the world have collectively demonstrated that they are not capable of determining whether a particular art corpus belongs to that inferred entity, Franco-Cantabrian Palaeolithic rock art.

This may seem a huge problem for the moment, but in the overall context of the revolution the discipline is undergoing it is not so important. There are bigger issues at stake than the loss of credibility of one school of archaeology that has been most influential for a century (Bednarik 1995a, 1995e). The entire discipline is being turned inside out. However, the Côa affair does help us to understand some of these revolutionary changes, and why it is necessary to halt the juggernaut of conventional rock art studies. These changes began in the 1980s, they are gaining momentum now, but there is much more upheaval still ahead of us because of the deeply entrenched prejudices and biases archaeology has acquired during the past couple of centuries.

In the case of the Côa affair, the local archaeological establishment is already reeling and has been called to the barricades (Zilhão 1995). Even before any dating results became available, when I was still in the Côa valley, a senior professor wrote in a Portuguese newspaper that any scientific dating results will be categorically rejected by the discipline unless they confirmed the archaeological dating to the Solutrean.

Since then, the independent reports by Ronald Dorn, Alan Watchman and the writer were submitted to the government of Portugal, in whose offices a media leak occurred and the story was splattered all over the newspapers. This was most unfortunate and improper, and I was appalled by this development, and the unethical journalistic treatment of the story. Clearly, the evidence should have been presented first to the discipline of rock art science for peer review. At the time I was still totally unaware what the results of my colleagues were, and initially I had to extract them from the incoherent, garbled tabloid reports that were translated to me over the telephone. All four dating scientists (using several different methods) had produced similar overall results: there are no petroglyphs of the Pleistocene. Most are in fact under 3000 years old. There may be a few older ones, but the ones that look stylistically most Palaeolithic, i.e. the bull, goat and horse pictures, were found to be the most recent in the sequence, and are certainly from the Metal Ages or more recent periods. These are the main findings and they are totally consistent for all four scientists involved in this series of 'blind tests'. Identical dates were obviously impossible, because vastly different methods were involved: one determined minimum ages, another only maximum ages. Moreover, two of the three researchers who examined the art rather than rock exposure durations sampled different motifs. It was obvious before results were available that most would only vaguely coincide, while those from microerosion analysis would be very inaccurate. It is therefore pertinent to note the concurrence of the results: all petroglyphs range in age from the early Holocene to just a few centuries, and perhaps 90 per cent of them are under 2000 or 3000 years old. The latter include all figures that have been regarded as being of Palaeolithic style. There is complete agreement on these points. The oldest figures, of which I detected only three or four, plus a number of 'unattached' peck marks, are of a schematic style that reminds me of supposedly early to mid-Holocene figures in many other parts of Europe.

The Côa dating attempts have resulted in the rejection of two key tenets in Pleistocene archaeology: the stylistic sequence of the so-called cave art, and the belief of many rock art specialists that they can attribute a corpus or individual motif to a 'cultural' (i.e. technological) tradition on the basis of their 'experience'. Since most of the 'cave art' sites have never been properly dated (*contra* Lorblanchet 1993), but only on the basis of individual researcher's beliefs about their own powers of stylistic observation, it follows that most of the nearly 300 sites in question remain undated. Bahn has pointed out, quite rightly, that if any of the Côa figures were found in a limestone cave, their Pleistocene age would not be doubted by anyone. This indicates another inherent bias: why should location of rock art necessarily denote its age? The generic truth is that neither style nor location, nor the two combined, can be a guarantee of age.

Even the dating from some of the cave sites where radiocarbon dating of charcoal pigment has been attempted can be questioned, for a number of reasons that I have explained in considerable detail (Bednarik 1994d, 1994f, 1995f, in press). In the final analysis, only very few sites of this art can be regarded as safely linked to one of the techno-chronological designations into which that hypothetical period, the Upper Palaeolithic, has been divided by

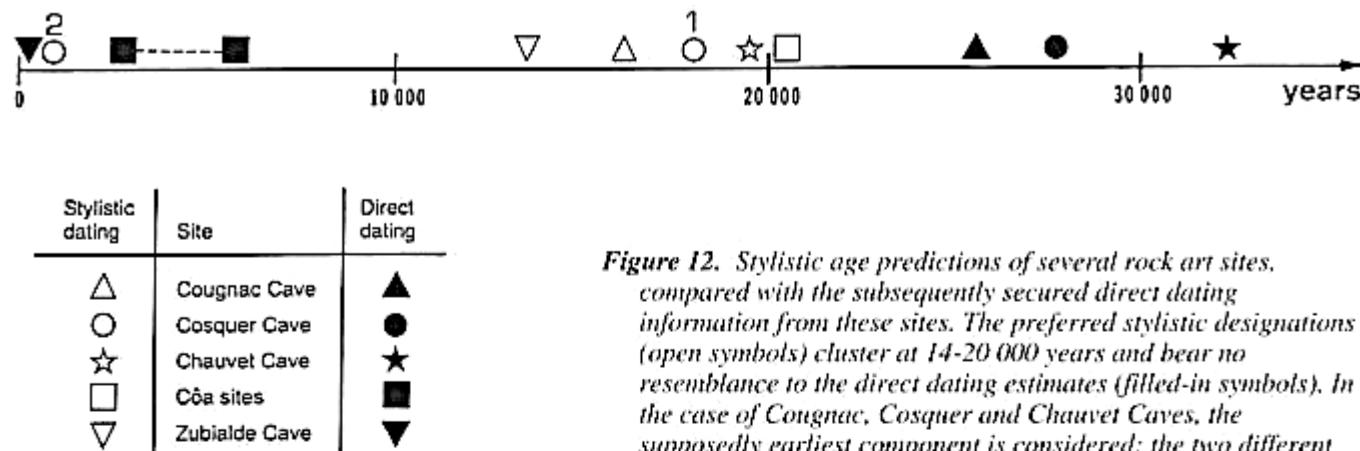


Figure 12. Stylistic age predictions of several rock art sites, compared with the subsequently secured direct dating information from these sites. The preferred stylistic designations (open symbols) cluster at 14–20 000 years and bear no resemblance to the direct dating estimates (filled-in symbols). In the case of Cougnac, Cosquer and Chauvet Caves, the supposedly earliest component is considered; the two different stylistic designations of Cosquer Cave art are those of J. Clottes (1) and D. Vialou (2); the rock art in Zubialde was found to be modern. (Sources: Clottes et al. 1992b; Bednarik 1992a; Lorblanchet 1994; Clottes et al. 1995.)

specialists who believe that they can identify cultures by their tools, through creating theoretical taxonomies of these tools. Here, of course, we touch on yet another fundamental problem with Pleistocene archaeology (Bednarik 1994e), the discussion of which we might save for another opportunity.

For the present time it will suffice to bring the stylistic claims of rock art specialists into a sharper focus. There is some limited dating information available from several European sites now. They are Cougnac, Pech Merle, Cosquer Cave, Altamira, El Castillo, Niaux, Le Portel, Chauvet Cave, Besov Nos, Grosio, and now three of the Côte sites. Few of these age pronouncements are in full agreement with the previous stylistic pronouncements, and some are so far off the mark that the problem should be self-evident. While it is true that there are epistemic difficulties even with direct dating information, these do not affect the general magnitude of the results, but only the specific qualifications applying to them, or misunderstandings of what they actually mean (Bednarik in press). The stylistic ' datings', on the other hand, appear to be totally random and irrelevant, offering no redeeming feature at all (Figure 12). They are simply the outcome of a psychological aberration of archaeological conditioning. Of course early people *used* styles, and it is perfectly possible that archaeologists, despite their academic conditioning, may correctly recognise *some* of the visual clues expressing style. This is not the issue here; the issue is whether they can demonstrate this scientifically, in a falsifiable, testable framework, and produce consistently valid age predictions on the basis of such frameworks — age predictions that are found to agree consistently with scientific dating estimates. My Figure 12 refutes their claims that they can do this with Pleistocene rock art, indeed, there is not the slightest resemblance of a correlation in the examples I give. Other claims made by archaeologists need to be tested in a similar fashion, and all those that are not refutable, or that fail the tests, need to be flushed out of the system orthodox archaeology has established during the twentieth century.

Epilogue

This paper was written partly before my work in the Côte valley in June 1995, partly in the subsequent two months. Since its completion I have attended the Turin rock art congress (August–September 1995) which has given me the opportunity to gauge the discipline's first reaction to the Côte dating work, and also to consider the results of the other dating specialists the Portuguese authorities have invited.

The consequences of the Côte results are important, and they are likely to be resisted by some marginal interest groups. It needs to be emphasised that the work conducted so far in the Côte valley is only preliminary, and that a great deal more research is still to be done. More specifically, from my perspective, replicative experiments are absolutely essential. I have not been able to provide adequate information on the tool types used in the production of most petroglyphs, and yet this kind of information is almost certainly recoverable. For instance, I would recommend detailed studies comparing the peck marks of percussive petroglyphs with the peck marks one would find on the mill stones of the numerous old mill buildings in the valley. I understand that the millers used long pointed steel picks to roughen these stones periodically, and that they had a lot of leisure time while their mills were running. It is quite likely that the metal tool marks I found inside a recess at panel 3 of Penascosa were made with such an implement. The major concentrations of petroglyphs are found close to remains of mill buildings, so this would be an interesting line of enquiry.

It is clear, then, that many further questions need to be clarified. My preliminary work, and that of my dating colleagues, has resulted in no more than useful information indicating the approximate age of the petroglyphs. This can not be considered an exhaustive study of the corpus, or even a conclusive dating. Nevertheless, it suffices to consider the wider implications of these findings, which I have attempted to do in several new publications presently in print (e.g. in *Comptes Rendus de l'Académie des Sciences de Paris* and *Antiquity*).

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Résumé. L'âge des gravures de la vallée de la Côa, au Portugal, a été soumis à une série d'essais indépendants par plusieurs scientifiques des dates en mai et juin 1995. Cet article présente les résultats d'un de ces essais, qui ont été obtenus en isolation complète, sans avoir accès aux résultats des autres participants. Ceux-ci sont considérés selon leur milieu géomorphologique, paléontologique et archéologique. Le résultat est un rejet profond de la datation stylistique de l'art rupestre, qui a dans ce cas induit en erreur presque tous les spécialistes.

Zusammenfassung. Das Alter der Petroglyphen im Côa Tal von Portugal war das Subjekt einer Serie 'blinder Tests' durch mehrere Datierungswissenschaftler im May und Juni 1995. Dieser Artikel berichtet die Resultate eines dieser Tests. Sie wurden in kompletter Isolierung erlangt, ohne jegliche Einsichtnahme in die Resultate der anderen Teilnehmer. Sie werden hier in ihrem geomorphologischen, paläontologischen und archäologischen Rahmen erörtert. Das Ergebnis ist eine entscheidende Ablehnung stilistischer Datierung von Felskunst, die in diesem Fall praktisch alle Spezialisten irreführte.

Resumen. La antigüedad de los petroglifos del valle de Côa en Portugal ha sido objeto de una serie de 'análisis' a cargo de varios científicos en datación en mayo y junio de 1995. Este artículo presenta los resultados de uno de estos análisis, que fueron obtenidos en completo aislamiento, sin ningún acceso a los resultados de los otros participantes. Son considerados dentro de su contexto geomorfológico, paleontológico y arqueológico. El resultado es un completo rechazo a la datación estilística del arte rupestre, que en este caso ha confundido prácticamente a todos los especialistas.

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