KEYWORDS: ***Dams – Dating – Management – Palaeolithic – Rock art – Settlement***

THE CÔA VALLEY: RESEARCH AND MANAGEMENT OF A WORLD HERITAGE ROCK ART SITE

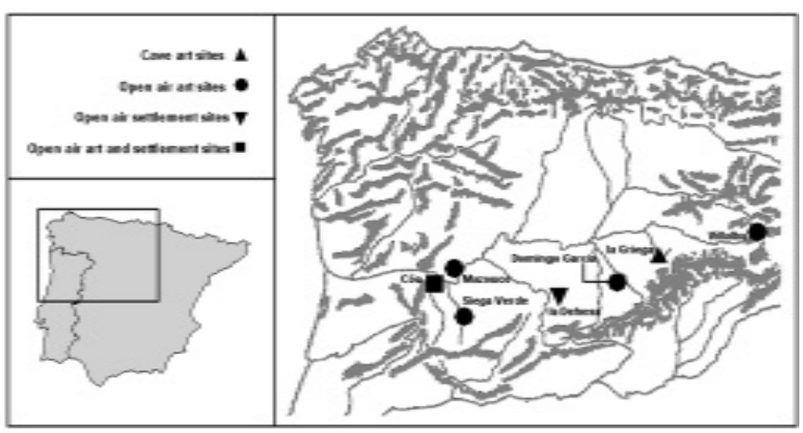
João Zilhão

Abstract. The Côa valley rock art would have been completely submerged if construction of the large Foz Côa dam, begun in 1992, had been allowed to be pursued. The dam project was halted in 1995 and a 200 km² archaeological park was established in this area, which has been legally protected at the highest level—that of National Monument—since 1997. Public access to selected sites is organised through four-wheel drive tours of groups of no more than eight people accompanied by guides appropriately trained in archaeology and rock art studies. Visitor centres were set up in restored traditional houses positioned in villages located on the periphery of the park. A museum of art and archaeology and associated research facilities is to be established at the site of the now abandoned dam. The universal importance of the valley's cultural heritage and the landmark nature of the Portuguese government's decision to preserve it in spite of the huge financial loss involved have been widely acclaimed. As a result, the Côa valley's pre-Historic rock art was included in the World Heritage List in December 1998.

Introduction

The Côa river is one of the first tributaries to be found on the left bank of the Douro once the latter crosses the present-day political border between Spain and Portugal (Fig. 1). It flows from south to north, mostly across granitic terrain and then, for some 12 km until the confluence, across schists. Geographically, the deeply incised terminal Côa valley belongs to the Upper Douro region, which has a Mediterranean climate and is, today, the driest in the country. An important succession of hydro-electric dams was built in this region since the 1950s, taking advantage of the steep topographic gradients. The latest was Pocinho, on the Douro, some 8 km downriver from the mouth of the Côa. As a result, the original valley bottom of the latter has been under a few metres of water for some kilometres upriver from the confluence since 1983.

Figure 1. *Location in the Iberian Peninsula of the ensemble of rock art sites in the Côa valley and of other Upper Palaeolithic locations of the northern Meseta.*



The history of the discovery of an ensemble of open air rock art sites from the Palaeolithic period in this valley begins in 1991, when the panel now known as Canada do Inferno Rock 1 was first recognised (Fig. 2). However, it was not until November 1994, when several other engraved rocks had already been identified in the same location, that its existence was officially announced by the responsible authorities. In the following weeks, a rapid succession of new finds established that the valley's decorated rock surfaces spread along some 17 km (Baptista and Gomes 1995; Rebanda 1995).

At that time, work towards the construction by EDP (Electricidade de Portugal) of a large hydro-electric dam was already well under way a few hundred metres down-river from Canada do Inferno. If this work had been allowed to continue, the eventual inundation of the valley would have brought about the submersion of this art at depths that, in places, would be of more than 100 metres. Fortunately, a year-long national and international campaign to stop the dam project in order to protect and study this major piece of archaeological heritage succeeded in obtaining the desired outcome. In November 1995, a new government would announce that the dam was to be abandoned and that an Archaeological Park devoted to the research and management of the valley's

Figure 2. *Superimposition of pecked 'horses', 'aurochsen' and 'ibex' in Canada do Inferno Rock 1.*

rock art was to be established in the area. After a few months of preparatory work, the Côa Valley Archaeological Park (PAVC, Parque Arqueológico do Vale do Côa) opened to the public on 11 August 1996 (Zilhão 1998).

The monument

Twenty-four rock art sites are currently known in the Côa valley and adjacent slopes of the left bank of the Douro (Zilhão 1997; Zilhão et al. 1997; Baptista 1999, 2001). Of the few hundred panels already identified, 164 contain Palaeolithic figures. Other periods are also well represented in the ensemble, particularly the Iron Age, but there is also some rock art from the Neolithic and the Copper Age, as well as from historical times (17th–20th centuries). Estimations based on the number of inventoried panels indicate that the figure for the total of Palaeolithic representations will be in the range of the thousands rather than in that of the hundreds. The species depicted are 'aurochsen', 'horse', 'ibex' and 'red deer'. Rare examples of 'fish', 'cha-mois' and 'humans' are also known. The absence of Euro-Siberian species common in the cave art of the Franco-Cantabrian region (such as reindeer, mammoth, woolly rhino or bison) is to be expected, given that, at the time, those species did not live south of the Ebro River.

Engraving techniques include pecking, fine-line incision, abrasion and scraping, often used in conjunction. Fine-line incision is mostly used for small-sized figures (up to 15–20 cm), whereas middle and large-sized ones (between 50 and 200 cm) have their contours pecked or abraded. Red paint is still visible in association with the engraved contours of large-sized 'aurochsen' at the site of Faia, suggesting that, originally, the valley's Palaeolithic representations were colour-treated. The recovery of pigments (red and yellow ochre, manganese) in the many contemporary habitation sites discovered in the area is consistent with this hypothesis.

From a stylistic point of view, the Palaeolithic art of the Côa presents some significant novelties, rare or unknown in Franco-Cantabrian parietal art. In fact, several medium- to large-sized pecked figures depict movement through the juxtaposition of two, sometimes three heads over the same body contour. More often, it is the downward movement of the head, in a 'mating' or 'drinking scene', a technique applied to both 'horses' and 'aurochsen'. In some other instances, 'aurochsen', 'ibex' and 'red deer' are depicted turning their head backwards (Fig. 3).

Figure 3. *The two-headed 'male ibex' in Quinta da Barca Rock 3 (copyright Centro Nacional de Arte Rupestre).*

The two major sites (the Penascosa/Quinta da Barca complex and Canada do Inferno) correspond to petroglyph concentrations on rock outcrops around the best beaches in the valley bottom. This suggests that the art found therein decorated habitation areas, even if Pleistocene deposits with settlement remains were not found in the different archaeological, geological and geophysical tests carried out in the area. These tests showed that such an absence is due to erosional processes occurring throughout

Tardiglacial and early Holocene times. In places where the geological setting enabled the conservation of such deposits, as is the case at Fariseu (Aubry and Baptista 2000), richly decorated panels were covered by archaeological levels with Gravettian and Magdalenian lithic artefacts (Fig. 4). This find also allowed a stratigraphic, direct dating of the Côa rock art, solving beyond any reasonable doubt the controversy on the true age of the valley's stylistically Palaeolithic petroglyphs (Bednarik 1995a; Zilhão 1995; Phillips et al. 1997).

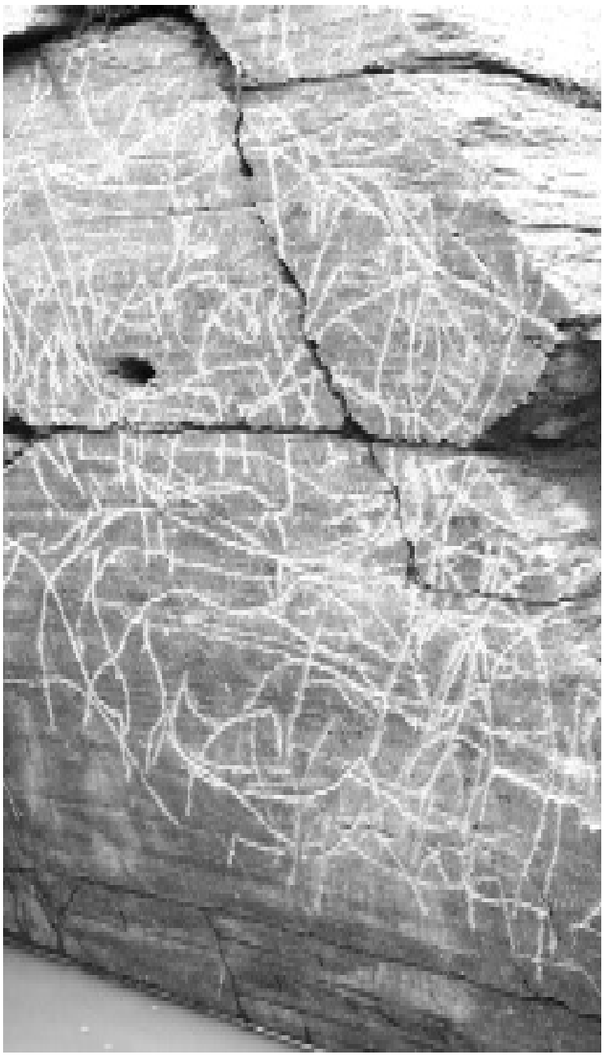


Figure 4. *Fariseu petroglyph panel (copyright the author).*

However, some very large figures are certainly not related to habitation. This must be the case, for instance, with the group of three 'aurochsen', each almost two metres long, decorating a rock face immediately downstream from the confluence of the Piscos stream with the Côa. Given the steep slope and the elevation above ground of the petro-glyphs, these figures would only be visible from a distance, suggesting they may have functioned as territorial markers of some kind. This hypothesis is consistent with the location of the panel at the entrance to the deep canyon through which the Côa runs for the next five kilometres, until the confluence with the Douro.

Most medium and large-sized pecked figures are restricted to the valley bottom. The fine-line figures are more widely distributed and are often found at high elevation in the upper reaches of the valley slopes. Given their locations, any relation with habitat activities is extremely unlikely, and their small size suggests a non-public function. Stylistically, most of these smaller representations are of Magdalenian age, whereas the vast majority of the large pecked motifs seem to date to the Gravettian and the Solutrean.

Sites from the three periods are well represented in the numerous settlement sites discovered in the region since 1995, documenting occupation of the area between c. 25 000 and c. 10 000 BP, with a major peak around the Last Glacial Maximum, between 23 000 and 18 000 BP (Zilhão et al. 1995; Aubry 1998). Rich in lithic artefacts but poor in organic remains, because of soil acidity, these sites have well-preserved features, notably hearths and other fire- related activity areas of diverse typology. Thermoluminescence dating of burnt quartz and quartzite cobbles collected in such features (Mercier et al. 2001) independently confirmed the chronological assessments made on the basis of technological and typological criteria. Raw-material proveniences show that the region was permanently inhabited by human groups which maintained geographically extensive networks of contact, circulation and exchange. In fact, some Tertiary flints recovered in settlement sites were sourced to the littoral areas of central Portugal, more than 200 km away.

These facts substantiate the evaluation of the significance of the discovery of the Côa rock art as a major scientific event, whose repercussions can only be compared with those following the revelation of Altamira. Several other smaller sites with open air Palaeolithic rock art had already been found in Iberia and southern France during the preceding decade, beginning in 1981 with the Portuguese site of Mazouco (Jorge et al. 1981; Bahn 1995a). The size and iconographic richness of the Côa ensemble, however, proved that such art should not be considered an exception. On the contrary, the fact that, north of the Pyrenees, European Palaeolithic art is only known in cave and rockshelter situations must now be considered an artefact of differential preservation caused by the action of geological, climatic and taphonomic factors. As is the norm among ethnographically known hunter-gatherers (cf. Layton 1992), Palaeolithic art must have been an information exchange system marking human territories in a ubiquitous way and giving a symbolic meaning to past landscapes. The Côa finds therefore refute any reductionist or single-cause explanations of underground 'cave art', and crown a Copernican revolution in our understanding of a complex phenomenon encompassing a vast range of concrete functional meanings—economical, social, ideological and psychological.

Management and protection

Several legal instruments secure the protection of the Côa rock art and its landscape setting. The most significant are the following:

- Government Resolution 4/96, published in the official journal, *Diário da República*, on 17 January 1996, suspends dam construction work;

- Government Resolution 42/96, published in the official journal, *Diário da República*, on 16 April 1996, creates the PROCOA program (*Programa de Desenvol-vimento Integrado do Vale do Côa*) for the promotion of the region's economy, defining cultural tourism focused on its rich historical and archaeological heritage as a strategic development axis;
- Decree-Law 117/97, published in the official journal, *Diário da República*, on 14 May 1997, created the IPA (*Instituto Português de Arqueologia*, Portuguese Institute of Archaeology), an agency of the Ministry of Culture responsible for the management of the nation's archaeological heritage; the PAVC was administratively defined as a department of the IPA by the same token;
- Decree-Law 32/97, published in the official journal, *Diário da República*, on 2 July 1997, lists *Sítios Arqueo-lógicos no Vale do Rio Côa* (Archaeological Sites in the Côa River Valley) as a National Monument;
- Decree-Law 50/99, published in the official journal, *Diário da República*, on 16 February 1999, establishes that any significant transformation of landscape and traditional soil use inside the Archaeological Park requires prior approval by the IPA/PAVC.

On 2 December 1998, the Kyoto meeting of the World Heritage Committee listed the 'Prehistoric Rock Art Sites in the Côa Valley' as a UNESCO World Heritage Site on the basis of the following criteria:

Criterion i:

'The Upper Palaeolithic rock art of the Côa valley is an outstanding example of the sudden flowering of creative genius at the dawn of human cultural development.'

Criterion iii:

'The Côa valley rock art throws light on the social, economic, and spiritual life of the early ancestor of humankind in a wholly exceptional manner.'

Consolidation of the Park's status is currently [late 2000] being pursued through two main avenues: acquisition by the State of the property concerned by the classification as a National Monument; publication as law of a Management Plan for the Park—an area of 208 km² with a peri-meter of 86.5 km—whose preparatory field work component was carried out between 1997 and 2000. This plan will define the rules under which several different cultural, economic and environmental objectives are to be attained:

- Long-term conservation of the engraved rock surfaces;
- Public visitation of the most representative and accessible sites;
- Sustainment of the traditional agricultural activities which created the landscape setting of the rock art sites;
- Preservation of the habitat of several protected animal species, especially the large birds of prey (eagle, vulture etc.) that are known to nest in the valley.

The strategy behind the creation of the PAVC was inspired by the experience of other regions of Europe where a successful tourist industry developed on the basis of rock art and Palaeolithic archaeology, such as Les Eyzies (Péri-gord, France) or Altamira/Santillana del Mar (Cantabria, Spain). These previous experiences showed that the kind of cultural tourism to be developed in the Côa valley:

- Could only be rational and sustained if functioning as a complement of traditional economic activities;
- Was a long-term process whose eventual success would depend more on the local initiative than on the 'miraculous' interventions of a central government;
- Should define the whole region, with its beautiful landscape and other historical and archaeological sites, not just the rock art, as the attraction capable of drawing in for longer than the episodic visit a significant number of tourists.

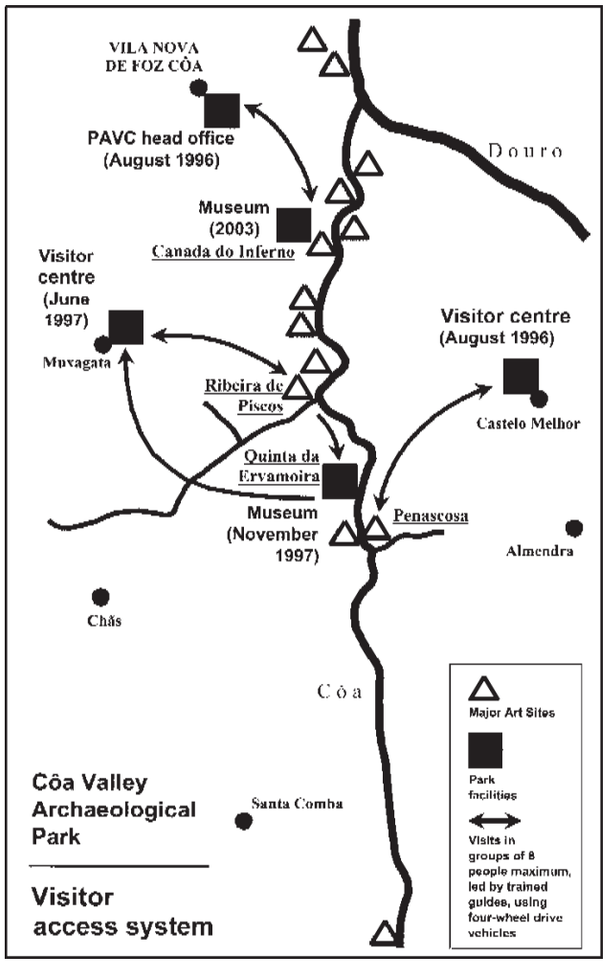


Figure 5. *Visitor access system and location of Park facilities. The opening date (effective or estimated) is indicated in parenthesis.*

The concept, therefore, is that the Monument is the valley as a whole, the place that Palaeolithic hunters monumen-talised with their art and where people continue to live and work today, not just the isolated clusters of engraved rocks and associated archaeological sites. The visitor management system (Fig. 5) is drawn from this concept (Zilhão 1998). Three sites were selected for public access for their size, quality and setting: Canada do Inferno, Ribeira de Piscos and Penascosa/Quinta da Barca. On-site management facilities are reduced to the minimum: shelters for the Park rangers

who secure the area on a 24-hour basis were built and paths for the visitors were prepared or repaired.

The petroglyphs are executed on vertical rock surfaces exposed due west on the right bank and due east on the left bank. As a result, their visibility changes markedly during the day: at Penascosa, for instance, they are in the shade in the morning. The patination of the traits and the numerous superimpositions also make it difficult for the untrained eye to obtain an immediate recognition of the individual drawings. These problems were solved with the implementation of guided tours taking place only at times of the day when the inclination of the solar rays allows good reading conditions. No more than eight persons are allowed in each group so that access to the art is optimal for the visitor and can be controlled by the guide in terms of preventing unintended damage to the panels. The guides, recruited and trained among the local youth, provide each visitor with a set of explanatory cards used during the visit as a graphic help to the deciphering of the motifs.

These cards, as well as scientific publications and books written for a wider audience are available for sale in the Park's visitor centres. The latter were set up on the periphery of the Park: at Castelo Melhor for visits to Penascosa, at Muxagata for visits to Ribeira de Piscos, and at Vila Nova de Foz Côa, in the head office of the PAVC, for visits to Canada do Inferno. These centres are provided with the entire infrastructure needed: ticket sales, souvenirs, light food and drinks, sanitary facilities etc. Inside, while they wait for their tour to start, visitors can access information on the valley's art and archaeology, displayed in wall exhibits and computer presentations.

Tours, whose duration varies between 1.5 (Canada do Inferno) and 2.5 (Ribeira de Piscos) hours, depart from these centres. The visitors are transported by their guide in four-wheel drive vehicles owned and maintained by the Park. In this system, the maximum number of visitors that each site can receive per day is conditioned by the distances involved and the nature of the terrain, by the working hours of the guides and their number and, ultimately, by the enforcement of the basic conservation rule that there can be no more than one group at a time on site. As a result, the Park's carrying capacity currently is between 150 and 200 visitors per day, with seasonal variations in the number of daylight hours imposing a winter reduction. These access limitations are compensated by a reservation system that is highly recommended for individuals and family groups, and obligatory for large groups and school visits.

On November 1997, a site museum was opened at the Quinta da Ervamoira. Although privately promoted and owned, this museum is part of the Park's circuits. The archaeology of the valley's Roman sites, the agricultural history, and the ethnography of the area are presented to the public. The high-quality produce of the property, especially the widely acclaimed wines, is available for purchase.

A museum intended to provide an explanatory framework for the valley's heritage is currently in the final stage of planning. It will be built inside the trench opened on the left slope of the valley to accommodate the wall of the now abandoned Foz Côa dam. The technical problems inherent in the choice of this location and the costs involved—30 million euro—have somewhat delayed the project, initially scheduled for completion in 2001 and whose opening to the public is now estimated to take place in late 2003 or early 2004. At that time, it will become possible to change the access rules for the Canada do Inferno petroglyphs, situated only a few hundred metres upriver, from the current 'safari-type' system to an 'open-air museum system', i.e. a system whereby people walk to the panels on their own and guides stay on-site with both visitor support and visitor control duties.

The Park's public

Since opening, the annual number of Park visitors has steadily exceeded 20 000. In the last three years, the figures were 20 070 in 1998, 20 202 in 1999, and 20 339 in 2000. In total, 82 776 people visited the Park between 10 August 1996 and 31 December 2000. Some 16% of this total corresponds to school groups, and a gradual increase in the number of foreign visitors is noticeable: from 1% in 1996–97, to 7% in 1998 and 11% in 2000.

An independent study (Lima and Reis 2001) of the composition of the Park's public carried out by a team of the ISCTE (Instituto Superior de Ciências do Trabalho e da Empresa, University of Lisbon) allowed the establishment of a sociological profile of the adult public visiting the Park in the summer:

- A majority of the visitors are highly educated; 45% hold a university degree and 14% attended a university but did not complete their studies; this must account to a large extent for the fact that 70% of those surveyed correctly identified, even before the visit, the historical period of the petroglyphs (the Upper Palaeolithic);
- A significant majority is a frequent visitor of heritage sites; 73% declared they had already visited other archaeological sites, Roman ruins for the most part, and 56% declared that the number of monuments they had visited over the preceding three years was in the range of 40;
- 98% of these visitors said they were 'satisfied' and 64% 'extremely satisfied' with the visit.

A market study carried out at the request of a private consortium set up to build in Vila Nova de Foz Côa a Palaeolithic Art Theme Park also provided valuable information on the attitudes of the general public toward the Archaeological Park and the political decisions behind its creation, particularly where the abandonment of the Foz Côa dam is concerned. Fieldwork for this study, authored by the Spanish company Sigma 2, took place in October 1997 in both Portugal and Spain, with the following results:

- 97% of the Portuguese (and 17% of the Spaniards) knew of the Côa valley rock art; in high schools, these percentages rose to 100% in Portugal and 41% in Spain;
- 43% of the Portuguese 'fully agreed' with the decision to abandon the dam project, 46% 'agreed to some extent', and only 11% were 'in total disagreement';

- The discovery of Côa rock art was something to be 'very proud' of for 70% of the Portuguese and to be 'proud' of for another 26%.

These values are all the more significant since the 1995 political controversy surrounding the fate of the dam and the petroglyphs had given rise to a major division of Portuguese society. Although, at the beginning, opinion polls indicated that a majority was in favour of stopping the dam to preserve the petroglyphs (55% against 30% in June 1995, according to a poll published in the weekly magazine *Visão*), the confusion created by the announcement of the pseudo-scientific dating results obtained by Robert G. Bednarik and Alan Watchman (cf. Bednarik 1995a) brought about a significant erosion of this support. In January 1996, a poll divulged in the *Viva a Liberdade* show of the national channel SIC (Sociedade Independente de Comunica-ção) two months after the government's decision to preserve the art and create the PAVC was announced indicated that 28% were in favour of the decision, 39% were against, whereas the percentage of undecided had risen from the 15% in June 1995 to 33%.

Five years after its creation, the PAVC is going through a phase of administrative consolidation and preparing for the qualitative leap that the opening of the Canada do Inferno Museum will represent. With this facility, the Park's carrying capacity will increase to values of c. 200 000 visitors per year. This will provide the market basis for local investors to develop the tourist facilities and services which are required to support such a flux and, at the same time, will make it possible for the Côa rock art to play an economic role of regional importance.

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COMMENTS

Stale propaganda

By MILA SIMÕES DE ABREU

Dr Zilhão's paper does not strike me as a serious scientific contribution to understanding the rock art of the Côa valley or its management. Rather I see it as a poorly disguised propaganda exercise excusing his work, first as Director of the Archaeological Park of the Côa Valley (PAVC—Parque Arqueológico do Vale do Côa) and later as Director of the National Portuguese Institute of Archaeology (IPA—Instituto Portugês de Arqueologia).

Since this paper was written, elections were held in Portugal and a new government took office in April 2002. Following these events, Dr Zilhão resigned as IPA Director. The new Minister of Culture is slowly trying to correct some of the previous mistakes.

Although the paper is now out of date, its absurdity may help illustrate the present situation of PAVC and the lack of progress in the research of the Côa valley rock art. With this in mind, I shall point out some erroneous misleading information. Others will comment on Zilhão's vision of the facts that involved the disclosure and fight to save the petroglyphs of the Côa valley and suspend the construction of the Foz Côa dam.

Zilhão attempts to broach two quite different issues: research, covered somewhat superficially, followed by a laborious piece on the Park's management.

The bit on research airs Zilhão's usual and much published ideas on the Côa valley rock art (Zilhão 1996, 1997; Zilhão et al. 1997 and Carvalho et al. 1996), which raises nothing new and avoids discussing fresh matters like the controversial Fariseu finds and stratigraphy (Anon. 2000; Abreu and Bednarik 2000).

Briefly acknowledging the existence of evidence from other periods in the Côa valley, Zilhão then concentrates all his description of the 'monument' on its Palaeolithic-style figures. While doing so, he evades the fact that the claim of a Palaeolithic age, for most of the petroglyphs, is still based on style. In fact, many researchers agree with Paul Bahn, who writes, '… we only have stylistic arguments for this, albeit strong' (Bahn 2001: 158).

No adequate dating information is given. The few published dates (Mercier et al. 2001; Aubry et al. 2002) are from sites in the valley but not in clear association with the petroglyphs. Bahn also writes, referring to open-air Siberian rock art, that 'the presence of Palaeolithic settlements in the area in no way provides a date for these images' (Bahn 2001: 156); this specific statement evokes a general concept applying to all rock art, including that on the Côa, which Zilhão disregards.

He seeks to establish a relationship between habitation areas and the petroglyphs in two main areas, Penascosa/Barca and Canada do Inferno. There are contradictions in his desperate effort to prove this. He admits the lack of evidence and presents an explanation saying, 'tests showed that an absence is due to erosional processes'. This absence' is no proof of any possible association. Citing the contested Fariseu finds does not help his case (Abreu and Bednarik 2000). Zilhão then concedes that this is not so for other panels like one at Piscos.

Zilhão is also incapable of answering criticisms by researchers like Thomas Wyrwoll (2000) on representations of fauna. The question is not the absence of cold Palaeolithic fauna but the documented presence in post-Palaeolithic times of fauna like that depicted in the Côa valley.

The *Capra pyrenaica lusitanica* (Fig. 1) lived in the area until recent times—at least 1892 (Almaça 1992); sadly, the last known *Capra pyrenaica pyrenaica* was found dead near Parque Nacional de Ordesa y Monte Perdido early in 2000 (Huesca).

In a habitual misleading fashion, Zilhão refers in English to those figures as 'ibex'. The scientific name of the Portu-

guese 'ibex' or goat is *Capra pyrenaica*, commonly known as *cabra-brava, cabra do Gêres*. Indeed, this is called '*Capra Pyrenaica*' on the Park's 'explanatory cards' mentioned in Zilhão's paper (Fig. 2).

Figure 2. *Penascosa Rock 5C: petroglyph of a goat-like zoomorph, possibly* Capra pyrenaica. *(Photo by L. Jaffe.)*

We must also remember that Ruy D'Andrade, a Portuguese researcher, discovered a primitive horse in Portugal's Sorraia river region in 1920 (D'Andrade 1926, 1945). The Sorraia horse is not a man-made breed but a direct descendent of a wild indigenous Iberian horse. DNA analyses related it with the Tarpan. Traditionally they were used as working horses and mounts. All this should make us realise there is a strong hypothesis of the continuous presence of horses from the late Ice Age until the present day.

Finally, the striking similarity of local bovine races like the *barrosã* (Fig. 3) to many of the engraved zoomorphs cannot be ignored.

Figure 1. *Photographs of the last specimen of* Capra pyrenaica *captured alive (Almaça 1992).*

There is knowledge of a rare horse in the nearby Parque Natural do Douro Internacional (pers. comm. PNDI personnel) similar to ones depicted on the rocks of the Côa valley. Called *zebro* by locals, this small strong pony-like horse had a fat belly and a short mane just like a zebra crest. Tradition has it that when Portuguese discoverers first saw zebras in southern Africa (probably *Equus burchelli*, the so-called Chapman's zebra or Damara zebra), they gave them that name, probably because the animals reminded those discoverers of *zebros*.

Figure 3. *Drawing of a* barrosã *(Ministério da Agricultura information).*

All this does not exclude, *per se*, a Palaeolithic age for some of the Côa figures but constitutes information that cannot be excluded in serious research. It is also true that the same lack of direct or directly associated dates also applies

to several cave art sites in Europe.

Should the Côa petroglyphs be a Palaeolithic style made during a more recent period, say around 10 000 – 8000 years ago, that does not make them any less interesting or important—quite the opposite. There is no doubt that the Côa rock art is an exceptional discovery that contributes to knowledge of the earliest open-air rock art in Europe, along with other Iberian sites. Some of them may not be in such spectacular landscapes but they are equally important. Neither Siega Verde nor Domingos Garcia are 'lesser' sites, as Zilhão seems to imply.

I am also a bit puzzled by Zilhão's map in his Figure 1. It is not very clear when the paper was written—its author claims late 2000; however, the bibliography lists a book published in May 2001 (Gonçalves 2001). This means that Zilhão knew of at least TWO other open-air rock art sites: one in the Sabor river in the Douro region, in the north, and the other at Ocreza in the Tagus basin. In 1997, the services of IPA (the institute Zilhão directed) announced the discovery of an aurochs figure in a dam zone destined to substitute that of Foz Côa (Abreu 1997). Although the zone has not been properly surveyed yet, several rock art panels and decorated rockshelters were found (Abreu 2001). The Ocreza river open-air Palaeolithic-style petro-glyph was found on 6 September 2000—the first discovery in central/southern Portugal. Members of Zilhão's IPA were aware of the find (Oosterbeek 2000). I cannot think of a reasonably plausible explanation for the omission of these significant discoveries.

For the record it is necessary to add that at the beginning of 2001 a Spanish team started surveying and studying a major rock art area on the Guadiana river's left bank in Spain (Collado 2001). In April that year, further petro-glyphs were found on the Guadiana's right bank in Portugal.

Appeals of IFRAO (2001) and UISPP (2001) went in vain and did not succeed in saving the area. Worse, the standards of documentation recommended by IFRAO's President (Bednarik 2001) were not applied. While Spanish colleagues used time-tested technology to record all the decorated surfaces in Spain, the same was not true for the decorated surfaces in Portugal. All these petroglyphs now lie deep under the waters of the Alqueva dam reservoir (Bednarik 2002).

Altogether, approximately 800 rocks were identified on both banks. Several surfaces had Palaeolithic-style figures. As IPA Director, Dr Zilhão denigrated the discoveries, which may explain why he would not include the Guadiana's Palaeolithic-style figures on his map.

The open-air Côa rock art might be considered a 'Copernican revolution' by a European Palaeolithic researcher like Zilhão. Most rock art researchers around the world, including some cave art specialists (Bahn 2001) merely see it as placing 'European' rock art in its place in the world—one where truly ancient rock art in the open is already well known and has been so for decades.

As rock art researcher and also as Portuguese citizen, I am embarrassed by and dislike ridiculous jingoistic nationalism seeking to transform the Côa into the most important rock art site in the world, as, for example, PAVC guides would have visitors believe. This brings me to the next part of Zilhão's paper: managing the Park of the Côa.

This is not the place for full evaluation of how PAVC was run over the last years. I shall limit my commentary to some of the most pertinent issues. The lower Côa valley stretches out over 17 kilometres and has 24 rock art sites with 260 panels in the open—it is not a cave. Trying to follow the strategy of cave art areas like Altamira or Lascaux proved to be one of the first management mistakes. Controlling the number of visitors is different from reducing them to few dozen a day. Zilhão's lack of experience with rock art management was probably part of the problem.

While he was the director of PAVC, Zilhão created a system whereby it was only possible to visit by booking guided tours in the Park's four-wheel drive vehicles. To this day one cannot hike to any of the officially open sites. The patter of guided visits follows a standard scheme that does not earnestly take into account considerations like age, education or interest. It matters not if the visitor is a young student or a keen amateur, the 'cassette-tape' is always the same. Over the years, I repeatedly found myself in the embarrassing position of taking students or colleagues to a site I discovered (in that I was the first rock art researcher to see it and make it public) and being forced to listen to a guide explaining the place.

School visits are complicated by the fact that only eight people can go on each guided trip. Guides also drive the vehicles, so these are unused for much of the day. Failure to foster private initiatives meant visits were restricted to those conducted by PAVC guides. Management practices killed off or stunted the growth of private enterprise. It is a major problem. Everything is run by PAVC, from the visits to selling coffee and souvenirs. This even disadvantages small businesses such as village coffee bars that were there before.

In recent years the situation became even more absurd. Now, babies and toddlers under three years old cannot visit the Park at any time during the year—the reason given is that it is too hot. At Piscos, this prohibition extends to youngsters aged up to eight years old. Families with small children are unreasonably penalised. Before PAVC came to be, I used to do what local people did for centuries—take my small children down to the valley bottom where the locals herded, went fishing or followed other pursuits. My family and I used to see the rock art and on hot days we often waded or swam in the river. All this is now also prohibited.

Although several areas of PAVC may be unsuitable for some visitors, the lack of alternatives is a crass mistake. There are no areas disabled people can visit, which is unfortunate when one considers that places like Penascosa are on level ground with easy access by suitable vehicles. A further example of inanity is the ban on umbrellas, even in heavy rain; PAVC personnel say they could damage the petroglyphs—possible of course but the same can be said of so many other things.

Zilhão also presents long considerations on the Park and the public. I am very surprised to see that some are

based on erroneous data. Excluding the 1996 inauguration year and 1997, visitor numbers provided by PAVC (Table 1) show a modest increase until 2000 followed by an abrupt plunge.

All except one of Zilhão's numbers differ from those given by PAVC, his showing around 2000 more visitors per year than official figures. The exception is his total from 10 August 1996 to 31 December 2000, which is identical to that for official visitor numbers. We can see he needs to validate his claim that PAVC consistently attracted over 20 000 visitors a year; the problem is that official figures were roughly 2000 BELOW the 20 000 required for this propaganda exercise. It seems he 'corrected' the official figures.

Visitor numbers

Year	Zilhão	Official
1996 - 97	*	28 162
1998	20 070	18 072
1999	20 202	18 203
2000	20 339	18 339
Total 1996 - 2000	82 776	82 776
2001	-	16 036
2002	-	15 405

* Must be 22 165 to fit Zilhão's 82 776 total, which is identical to that for official visitor numbers between 1996 and 2000.

Types of visitors

Year	Foreign visitors	Students
1996 - 97	429	
1998	1411	
1999	1642	
2000	2262	
2001	2763	3635
2002	3248	3426
Total	11 755	7061

Table 1. *Tables showing visitor numbers. PAVC personnel provided official numbers in March 2003.*

Another interesting thing is that the numbers show an average of 65 visitors a day over six years, a number far below the Park's potential, even taking into consideration severe restrictions.

Official foreign visitor numbers are interesting and show some growth. However, the general trend suggests the Portuguese public has adversely reacted to the management of PAVC.

Student numbers show that schools are not among the priorities of PAVC. Complex visiting schemes discourage teachers. The elitism Zilhão parades (45% have a university degree) is not something to be proud of; it should really be the reverse—the Côa is one of the few cultural matters appealing to a wide public.

I have no doubt that most of the visitors could be very satisfied with a visit to the Côa—the beauty of the valley and impact of the petroglyphs make it possible. Reading through the Park's complaints book I noticed most had to do with bureaucracy preventing the individuals from visiting the Park. Some of the most common complaints were against the reservations process that excluded passers-by who wanted to visit, against the system that excluded larger groups and against visits being cancelled due to small arrival delays.

In the final part of his article, Zilhão presents the idea that everything will change and that the number of visitors will increase with the opening of a museum. Most of us may welcome the idea of a 'museum' or a visitor centre with additional information. On the other hand, we must keep in mind two things: the valley is the real 'museum' and it is unlikely that either it or a museum could ever consistently attract around 200 000 visitors a year.

I am apprehensive of the idea that copies can substitute the real thing. It can make sense for caves or exhibitions but becomes particularly dangerous when it emerges as a solution to the destruction of the original. In other words, if so many visitors will be happy to see copies, why not build the dam and 'preserve' the originals under water?

A so-called 'minimisation' approach was recently applied in Portugal in the case of heritage destroyed by the Guadiana river's Alqueva dam (see *http://mc2.vicnet.net.au /home/guadiana/web/index.html*). Zilhão and members of his institute contented themselves with photographs and partial tracing of panels with thousands of petroglyphs that ended up deep under water.

In conclusion, I would like to add that the present Minister of Culture created a commission and asked a select number of researchers their opinion regarding the previous Côa Museum project. I, like the majority, agreed that the project of the architect Maia Pinto, who is also the current Director of PAVC, was difficult to build and too expensive. Above all, I am against the impropriety caused by the PAVC Director also having been engaged as the architect of the prospective museum. Anyway, even if its location in the dam cutting was original, that project did not fulfil the right requirements. Maia Pinto's project was abandoned last November and the commission and other specialists chose another location for a new project near the mouth of the Côa with spectacular views of the Douro.

Currently, PAVC is practically paralysed by the previous bureaucracy and wrong decisions. Along with other Portuguese colleagues, let us hope PAVC gets on the right track and provides the successful service that the local community, the wider national and international community and, last but not least, the rock art itself deserve.

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RAR 20-633

Criteria of importance

By LUIZ OOSTERBEEK

Dr Zilhão, former Director of the Archaeological Park of Foz Côa and former President of the Portuguese Institute of Archaeology (that had the chief responsibility of managing the Côa valley), presents his view, apparently dated to 2000, on what followed the historical decision to preserve the archaeological complex of the Côa valley, in 1995. As most readers will know, this has been the subject of intensive, and often not very serious, discussions.

In his paper, apart from useful data on the site (number of rocks, dates of legal diplomas enforcing the conservation policy), Dr Zilhão resumes his arguments, from the definition of a strategy for the Côa based on the sites of Les Eyzies and Altamira, to a prospect of 200 000 visitors in the near future, that would enable economic growth as well.

A lot has been written and said about this, but we are now in the year 2003. In his paper, Dr Zilhão presents the important figures of visitors: a steady growth, always above 20 000 visitors per year, until 2000. Reasons for optimism, then? The paper is well designed, but now we know that in 2001 visitor numbers plummeted by c. 4000, and in 2002 by another 1000! Why? What happened in 2001?

I guess a first comment must be that the steady growth has been broken, thus showing that perhaps Dr Zilhão got it all wrong. But why then? As far as I know, nothing major happened in the Côa valley after the year 2000. Why such a decrease, then? Maybe one should look for the answer a few kilometres further south, in the Guadiana valley, where news about an important rock art complex also emerged in the papers in 2001. Dr Zilhão, repeatedly, considered those carvings (that the public could see, through photos and drawings) as 'not important', thus giving a terrible image of the criteria archaeologists have on the issue of conservation of past remains. He also publicly attacked archaeologists that demanded greater efforts in the recording of such remains.

As I say, there have been, and there will be, different opinions on how to manage the Côa valley. But figures are not to be questioned, and if they clearly show that the 'steady growth' pointed by Dr Zilhão was abruptly broken in 2001, one should suggest possible explanations. I have suggested one. Maybe I am wrong, but in this case I would welcome alternative and sound arguments.

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RAR 20-634

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Discretion and dignity

By MARCEL OTTE

Portugal has discovered its Palaeolithic at the same time as democracy. Everyone should rejoice. But this is not a reason to give lessons to an entire continent that has had experience in both for two centuries. Research on rock art has been undertaken across Europe with the same intensity as in Portugal today, but for a much longer time. We can thus attest to the existence of 'regionalism' in open-air Palaeolithic art. This does not reduce its interest, but adds to its true dimension: the history of a specific regional art must be understood as such, crossing the Portuguese border, in its totality, in conjunction with the much richer sites of the Spanish Meseta which have been studied with more persistence and discretion. Palaeolithic art clearly exists deep inside caves: this evidence cannot be put into question by a few open-air sites. Deep-cave art demands its own interpretation which cannot be resolved either by assimilation with open-air art or by its integration with all other forms of Palaeolithic art. The simple geographic distribution of cave art demonstrates that it is a characteristic effect, also regional, but infinitely more powerful than open-air art. Exposed rock formations surrounding this region, in both France and Spain, have been intensively surveyed, but without result. The lack of caves in the Douro region perhaps explains, locally, the inverse increase in open-air art, nothing more. Furthermore, from the Périgord to Vladivostok, caves are numerous and Palaeolithic sites innumerable and of an extreme richness. Yet only two caves with art are known south of the Ural. The burst of art in south-western Europe is thus itself a regional event, but of a staggering magnitude.

Art in rockshelters is also not unknown and did not require hydraulic dams or bitter political or philosophical controversies to be discovered and valued; Cap Blanc, Gorges d'Enfer, Angle sur l'Anglin and Roc de Sers are only a few examples among many others that have been discovered, described and interpreted modestly and serenely. If one relies on ethnographic comparisons from the other side of the world (but is this judicious?), one could assume that this is an art on ephemeral supports, such as bark and tent walls, even human bodies themselves. But archaeology is practised in this way: it is based on what can be known (and this is already a lot) rather than on the speculations of prehistorians (which is a good thing!).

Nothing is detracted from the superb works of open-air Palaeolithic art recently 'discovered' in Portugal, or from the superb efforts made by those Portuguese colleagues who have demonstrated their importance intelligently and in a dignified manner. But we know how to measure, with clarity and modesty, the place now taken by this art within a history so rich, complex and durable as that of the European Palaeolithic which extends across ten thousand kilometres and over thirty thousand years.

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RAR 20-635

Fact and fiction in the Côa valley

By ALAN WATCHMAN

A major problem with this paper is trying to sift the grains of fact from the chaff of fiction. Without a background and understanding of the Côa controversy, especially the independent scientific dating projects, the paper is believable. However, the biased reporting of the age of the rock carvings leads the informed reader to suspect that other aspects of the paper may not be critically represented.

Particular concerns relate to some inaccurate and misleading statements. For example, the contention that '*Raw-material proveniences* (my emphasis) show that the region was permanently inhabited by human groups which maintained geographically extensive networks of contact, circulation and exchange' is incomprehensible, illogical and unsubstantiated. How can the source of earth materials indicate levels of human occupation in an area?

Describing the rock art as Palaeolithic, but then saying that the motifs '*seem to* date to the Gravettian and the Solu-trean' gives a glimpse as to the uncertainty in Dr Zilhão's mind about the real age of the carvings. Could they also seem to date to a much more recent period?

Labelling some of the carved animals 'species' as 'aurochsen' and 'ibex' reflects biased personal opinion. They could also be cows and goats!

The uncritical conviction that 'some very large figures are *certainly not* related to habitation. This *must* be the case, for instance, with the group of three "aurochsen"…' reveals passionate belief from personal interpretation of the carvings, but without any substantive evidence. There are other biases and errors, but to counter them individually establishes the paper as credible, which it is not.

Arguments concerning the probable age of the carvings have been proposed and debated. In 1995, during the political controversy in Portugal, many people believed that the dam should be stopped because the petroglyphs were Palaeolithic. The old age was the key reason why they needed to be saved from flooding. The scientific analyses carried out by Robert Bednarik (1995a) and I (Watchman 1995) to estimate the age of the so-called Palaeolithic carvings provided a much younger perspective. Dorn (1997) and Phillips et al. (1997) have provided support for the Palaeolithic hypothesis. However, the decision about protecting the Côa valley carvings was made by the Portuguese government based on the findings of a UNESCO panel of experts, who believe that stylistically the carvings are Palaeolithic. It is for this reason that there is now a UNESCO-sponsored World Heritage archaeological park and tourism in the Côa valley. The need for ongoing research, conservation and management is unchallenged.

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RAR 20-636

Questions for Dr Zilhão

By ROBERT G. BEDNARIK

I am grateful to Dr Zilhão for offering his views on the research and management of the Côa petroglyph corpus for discussion. However, his report contains many inaccuracies that must not go unchallenged. Some relate to matters that one can argue about, being matters of opinion; some concern serious omissions that need clarification; and some *cannot* be argued about because they are matters of fact.

But first some points of agreement. Dr Zilhão mentions the planned but 'somewhat delayed' museum at the Côa dam site. Its construction has been forcefully demanded by IFRAO (to prevent recommencement of dam construction), most especially by Jack Steinbring in 1998. But ominously these delays continue, and as of early 2003 the museum project has not progressed at all. There is a privately owned, very well presented museum at Quinta da Ervamoira, within the Park, built after 1995 and fully completed in 1998. And concerning the wines produced at that property, I do agree with Dr Zilhão that they are superb.

I can also agree unreservedly on the question of the broad effects of the Côa campaign. Campaigners for preserving rock art anywhere in the world can take note that 100% of a sample of Portuguese high school students and 97% of the general population knew about the rock art. This extremely high level of awareness is without doubt attributable to the IFRAO campaign led by Mila Simões de Abreu. It demonstrates the value and potential long-term benefits for rock art protection of conducting high-profile media campaigns of this kind.

Matters of opinion

Dr Zilhão suggests that, 'originally, the valley's Palaeo-lithic representations were colour-treated', based on his identification of 'red paint' on one 'aurochsen' petroglyph at Faia. This illustrates his loose application of deductive reasoning. He ignores the dearth of painted petroglyphs in authentic Palaeolithic rock art (i.e. the Franco-Cantabrian cave art) and generalises from one instance to the whole corpus. He fails to show that what he sees on the Faia figure is indeed paint residue, here or in his other publications. But most importantly, how does he reconcile the complete and global lack of any Pleistocene paint residues on exposed rock surfaces with his extraordinary claim that the 'red paint' he perceives on the Faia image is of the Ice Age?

His claim amounts to the proposition that this one figure is the world's only instance of surviving Pleistocene paint traces on an exposed rock panel. I reject it as extremely unlikely, and provided that what he claims to be paint is indeed applied pigment, this would very strongly imply a late Holocene antiquity.

The admission that, '[F]rom a stylistic point of view, the Palaeolithic art of the Côa presents some significant novelties, rare or unknown in Franco-Cantabrian parietal art' indicates that even Dr Zilhão himself finds it hard to reconcile many stylistic elements at Côa with his preferred interpretation. I had arrived at the same finding in April 1995, when I still 'shared the stylistic conviction of my colleagues' and when I was still 'confident that the Côa valley art will eventually be shown to be of Palaeolithic age' (Bednarik 1995b), but was sufficiently alarmed to call for scientific dating work. Instead of admitting that many if not most of the Côa zoomorphs are not of authentic Palaeolithic style or treatment, Dr Zilhão presents us with more personal opinions. Their attitudes indicate 'mating' and 'drinking scenes', he says, as if his visual perception could provide a measure of what a Palaeolithic artist perceived. He tells us which species were depicted, as if he had communicated with the artists. All of this belongs into the realm of archaeological mythology, or Bahn's (1990: 75) 'consensus fiction' of the past. It has no scientific currency, except for the study of Dr Zilhão's own visual perception and cognition. But his creative interpretations do not end here, he has even worked out the purpose of at least some of the motifs: they were territorial markers. At this stage I think we have well and truly arrived in the realm of science fiction.

Even if we do admit the possibility that contemporary Western perception can determine animal species in ancient rock art, it soon becomes apparent that Dr Zilhão's 'identifications' are of no value to his case. Aurochsen, horses, ibex, deer, fish and chamois all occurred in the region in the Historical period, while typical Pleistocene species are completely absent at all the schist sites—as are the most typical Palaeolithic motifs, the so-called signs. Moreover, the bovids at Côa, Siega Verde and all other Iberian schist sites claimed to be Palaeolithic look to me like modern cattle breeds, including Spanish fighting bulls, and *Capra* sp. still survive in the region, contrary to Dr Zilhão's claims. Dr Thomas Wyrwoll (2000) has convincingly demonstrated that the ibex-like Côa figures Zilhão claims are Pleistocene closely resemble the coat markings on an extant species (Fig. 1). Horse images like the ones at these sites occur in their thousands in the area, in clearly modern contexts (Hansen 1997).

The shrill claims flaunting the importance of his Côa work are arguably irrational, and they seem to illustrate Dr Zilhão's preoccupation. For instance, his belief that the 'Côa finds … crown a Copernican revolution', that they are as important as 'the revelation of Altamira', or his entirely unrealistic plans to cater for 200 000 annual visitors and his falsifying of previous visitor numbers all indicate a capacity for unwholesome grandiosity. These and other factors cannot be treated as mere matters of opinion.

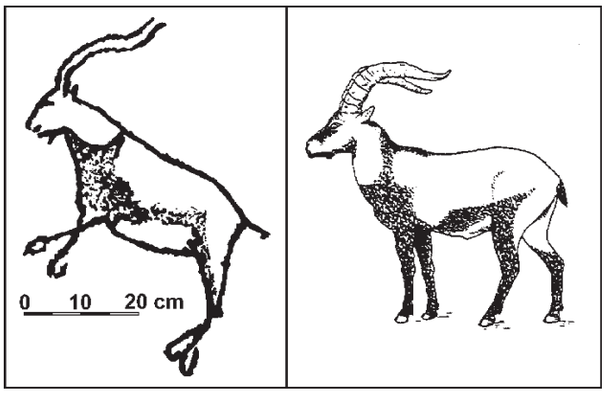

Figure 2. *Zoomorphic petroglyph from Rego da Vale (on left, adapted from Zilhão et al. 1997) and drawing of* Capra ibex victoriae*, a Holocene sub-species (after Engländer 1986).*

Matters of factual distortion

According to Dr Zilhão, the existence of the Côa petroglyphs 'was officially announced by the responsible authorities' in November 1994. This is incorrect. In late November 1994, two IFRAO Representatives (Abreu and L. Jaffe) were asked by N. Rebanda, a consulting archaeologist who had conducted survey work on behalf of the Côa dam builders for years, to inspect the Canada do Inferno rock art site. Until then this discovery had been kept confidential. Abreu immediately notified IFRAO and began organising the campaign to stop the dam. IFRAO published a report about the issue in the same month (!), November 1994 (Bednarik 1994a), and it was only in the face of international censure orchestrated by IFRAO that the 'responsible authorities' admitted in early 1995 that they had concealed the existence of the rock art for years (Bednarik 1995c). Dr Zilhão avoids all reference to Abreu and her superhuman endeavours to save the Côa rock art, and he also avoids all reference to IFRAO's role in the Côa campaign. This is a serious distortion of the historical facts. The abandonment of the Côa dam was already a fait accompli by June 1995, when I was in the valley and had detailed discussions with EDP engineers. I learnt that an alternative site had been chosen already, and although its location was not disclosed to me we know today that it was the Sabor valley. (Now, here is a subject Dr Zilhão could address with authority, his role in the EDP's concealment of most of the rock art in the Sabor valley during the years he presided over the IPA.) The political process was somewhat slower, but the decision of November 1995, by the new government, was a foregone conclusion.

Dr Zilhão claims that no members of the typical Pleistocene fauna depicted in the cave art occurred south of the Ebro 'at the time'. His chronological qualification is itself interesting, since he does not specify 'the time' (Solutrean? Gravettian? Magdalenian?), but concerning the Final Pleistocene fauna of Iberia he does need to consult the palaeon-tological literature. For instance, *Coelodonta antiquitatis* (Kurtén 1968: Fig. 60), *Panthera spelaea*,

Crocuta crocuta and *Ursus spelaeus* certainly occurred south of the Ebro (e.g. Altuna 1972, 1973; Cadeo 1956), and the latter species even in Portugal (at Furninha and Salemas; Musil 1981).

Similarly, Dr Zilhão's grasp of relevant geology has already led to his severe misinterpretation of the results from the Fariseu excavation. He continues to ignore his own statement that the presumed lithic artefacts from that site are all from colluvial strata (and hence have no stratigraphic context) (Anon. 2000). Not only has he made this cardinal error in the first place, apparently he is still not aware that colluvial detritus is of no stratigraphic relevance. It is the very nature of a colluvium that it comprises components of wildly different ages and is therefore totally irrelevant for dating. Moreover, in the years since the Fariseu excavation he has failed to report a single radiocarbon or luminescence date from that site, which others have predicted would contain only recent lake sediments (Abreu and Bednarik 2000). This is a crucial factor in the Côa debate and Dr Zilhão must make his dating results from Fariseu public—even though these 'Gravettian and Magda-lenian' sediments are probably less than twenty years old because they were formed since the establishment of the Pocinho dam. After all, he informed us in 2000 that Norbert Mercier had sampled the site for OSL analysis, so where are the results? We also need to see illustrations of the so-called stone artefacts from Fariseu, and of the 'pebble engraved on both sides with geometrical stylised animal motifs that have parallels in the Azilian of France' (Anon. 2000). The lithic sample from that site, we were told in 2000, 'is not big enough to allow a precise diagnostic of the assemblage', yet here Zilhão states unambiguously that it consists of Gravettian and Magdalenian tools. Bearing in mind that no dates of any description have been disclosed from Fariseu (Aubry et al. 2002) and that no tools have been presented, the claim for its antiquity is spurious.

Dr Zilhão's distortions of the political aspects of the Côa campaign also require a response. As he wrested control of the campaign from Abreu during 1995, he made the preservation of the rock art conditional on acceptance of his hypothesis of its Pleistocene age. A social scientist who thoroughly analysed the public campaign concluded unambiguously that 'the political nature of the archaeologists' strategy influenced their scientific discourse' (Gonçalves 1998: 18). To preserve their claim that the rock art is of Palaeolithic age they tied its preservation to this age claim—and in fact demanded that it must be preserved *because* it is of Palaeolithic age. This fundamental error of strategy has haunted Dr Zilhão ever since, as his grotesque reactions to the almost identical Guadiana issue amply demonstrate (Zilhão 2001). Concerning this destruction of the largest rock art complex in Portugal, and one of Europe's greatest, the responsibility for this monumental act of vandalism rests squarely with Dr Zilhão. It is immaterial whether he did not know about the rock art's existence prior to April 2001, as he claims, or did conspire with others to have it destroyed by the largest man-made lake of Europe. It is beyond dispute that he was responsible for its protection and that he failed completely in this duty. There is no doubt that he could tell us a great deal about rock art management in Portugal from 1996 to 2002, but we should not expect that we will ever get to know the whole truth about the rock art of the Sabor, Guadiana, or, for that matter, the Côa valley. Dr Zilhão has presided over the world's greatest bungle in public archaeology for half a century, that much is obvious.

A few questions

Much of the present paper resembles Dr Zilhão's rhetoric of recent years, so it may be preferable to present specific questions for him to deal with in his reply. I would be most grateful to him if he could address the following specific questions:

1. He has conducted numerous excavations at the bases of Côa petroglyph panels, seeking motifs that had been covered by sediment. With the exception of the infamous Fariseu site, where the panels were covered by recent sediments, this effort was entirely unsuccessful. In all of these many excavations, why was there not a single stone tool reported that had been used in making these petroglyphs (Swartz 1997a, 1997b; cf. Bednarik 1994b)?
2. After excavating hundreds of trenches at dozens of sites, why have no faunal remains, human remains, typical Upper Palaeolithic stone tools, palynological or proper sedimentary data ever been reported?
3. Dr Zilhão makes the point that he has excavated many hearths at Côa sites. If that is so, why has no radiocarbon date ever been reported from the Côa valley (other than Watchman's and Dorn's direct dates from the art panels, and Zilhão's one sample from the Penascosa terrace of about 1000 BP that refuted his own claim that it is a Pleistocene feature)?
4. How does Dr Zilhão explain that microlithic stone tools he defines as Palaeolithic occur stratigraphically together with ceramics at all levels at Quinta da Barca and at most levels at Cardina 1 (Carvalho et al. 1996; Zilhão 1997), the two principal occupation sites he claims are Palaeolithic?
5. How does he reconcile the complete absence of any Pleistocene sediment deposit in the lower part of the valley with his claim that he has demonstrated the presence of Palaeolithic occupation sites?
6. How does he reconcile his view that all zoomorphs on the Côa are of Palaeolithic age with the determination of others that some or many of them were made with metal tools (Eastham 1999; Bednarik 1995d)?
7. Is he willing to withdraw his claim that ibex did not exist in the region during the Holocene (Wyrwoll 2000)?
8. Why does an equine motif at Fariseu which he places in the Gravettian appear to wear a bridle (Abreu and Bednarik 2000)? Is he suggesting that the Gravettians had domesticated horses (Fig. 2)?
9. How does he explain that those zoomorphs he claims are Palaeolithic are usually much less weathered and patinated than inscriptions of the 18th century at the same localities (Bednarik 1995d)?

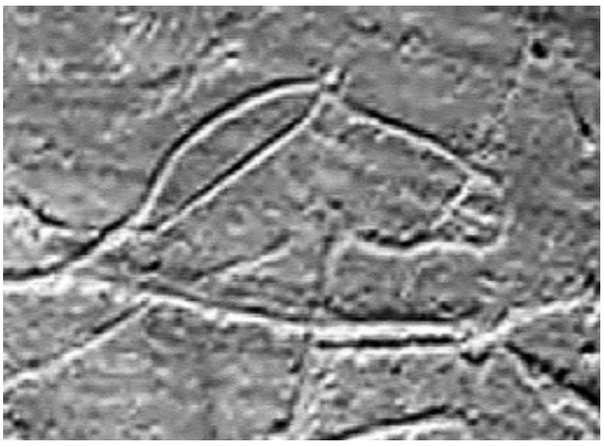

***Figure 2**. Detail of equine figure, suggestive of a horse head with bridle, Fariseu petroglyph site.*

10. How does he account for the complete absence of patination on all of the Fariseu petroglyphs (see his Fig. 4 as well as the above Fig. 2)?
11. If this corpus is Palaeolithic, why does it completely lack the most typical of the Palaeolithic art of south-western Europe, the so-called Palaeolithic signs?
12. Why do the Côa petroglyphs only feature species that existed in the region well into Historical times, or indeed until today?
13. Why does the distribution of Côa petroglyph sites coincide exactly with the distribution of water mills of recent centuries?
14. How does he explain that the very similar Mazouco equine motif is not of the Palaeolithic (Baptista 1983)?
15. How does he account for the almost complete lack of fluvial wear on the supposedly Palaeolithic petroglyphs where they occur within the river's flood zone, all being on exceedingly soft rock (Bednarik 1995d)?
16. How does he explain the survival of all of this rock art on schistose surfaces that hydrate and recede rapidly, i.e. at a rate of up to 10 mm per millennium (Bednarik 2001b)?
17. How does Dr Zilhão explain that there are numerous instances where supposedly Palaeolithic engraved lines dissect lichen thalli, and that the largest thalli occurring over petroglyphs are only a few centimetres in size, corresponding to an age of two or three centuries?
18. How does he account for the hundreds of equine petroglyphs on a 2-km-long stone wall near Castro (Hansen 1997)?
19. Since the petroglyph corpus of Siega Verde cannot possibly be older than Roman times (Bednarik 2000) and in the opinion of the local population is the work of recent shepherds, how does he reconcile this age of a very similar nearby rock art corpus with the age he claims for the Côa art?
20. How does he reconcile his claim that some Côa bovids resemble certain Lascaux bovids with the Holocene age suggested for the latter (Zilhão 1995; cf. Bahn 1994, 1995b)?
21. How does he now view his own role in the destruction of the scientific value of all of the Côa rock art as described by Jaffe (1996)?
22. How does he explain his role in the destruction of the rock art in the Sabor and Guadiana valleys? Does he have any retrospective regrets?

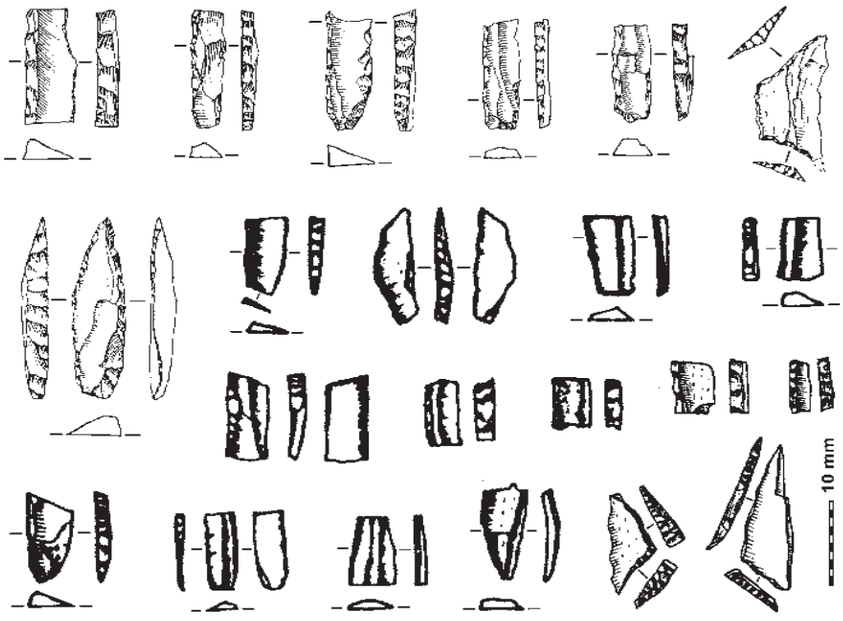

***Figure 3.** A selection of twenty-two stone implements excavated at Côa sites, claimed to be Palaeolithic. Most are from Cardina, the four closest to the scale are from Quinta da Barca. They resemble Neolithic assemblages of the region. (Adapted from Zilhão 1997 and Carvalho et al. 1996.)*

Finally, I ask readers to reflect on the following point: would we accept a similar claim for Pleistocene antiquity of a rock art corpus anywhere else in the world, based on the same level of proof? In the Côa valley we have no occupation carbon or OSL dates, no faunal or human remains, no typical Palaeolithic stone tools, no Pleistocene sediments, no unambiguous Pleistocene human occupation evidence, no stratigraphic connection between rock art and a Pleistocene living floor, no sedimentary data, no pollen analyses, and probably no Pleistocene hearths. What has so far been presented as archaeological evidence is a very small number of mostly microlithic stone tools that resemble early Neolithic industries elsewhere in northern Portugal (Silva 1993), and which in the Côa valley were in nearly all cases found together with ceramics. To claim that they are Palaeolithic is absurd (Fig. 3), and to deduce from such flimsy evidence the age of a rock art is something we would not tolerate anywhere else. Even if a Palaeolithic occupation of the valley were demonstrated, it would still not follow that any rock art present must also

be of such age.

This is not the first time Portuguese archaeologists have made unsupported Pleistocene age claims for rock art. The cave of Escoural in southern Portugal contains only Middle Palaeolithic and Neolithic occupation evidence (Lejeune 1997), yet its rock art has long been claimed (and accepted) as being of the Upper Palaeolithic. So here we have a case where rock art antiquity was accepted on the basis of a lack of corresponding occupation evidence, whilst on the Côa, Zilhão tries the opposite approach. Perhaps archaeologists need to understand that *neither the presence nor the absence* of occupation horizons demonstrates the age of any rock art that happens to occur at the same vicinity. In the Côa case, they have yet to demonstrate the existence of Pleistocene occupation floors in a 40-m zone above the river (within which the rock art occurs), but with the complete absence of Pleistocene sediments in that zone that might be very difficult to do.

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In accordance with standard *RAR* policy, Dr Zilhão has been asked to respond to these comments. Regretfully we have not received a reply at the time of going to press. Any response received from him will appear in the next issue of *RAR*.

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