

CONSERVATION AND
MANAGEMENT OF
ARCHAEOLOGICAL SITES

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The rock art of the Côa valley, Portugal

Significance, conservation and management

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ABSTRACT

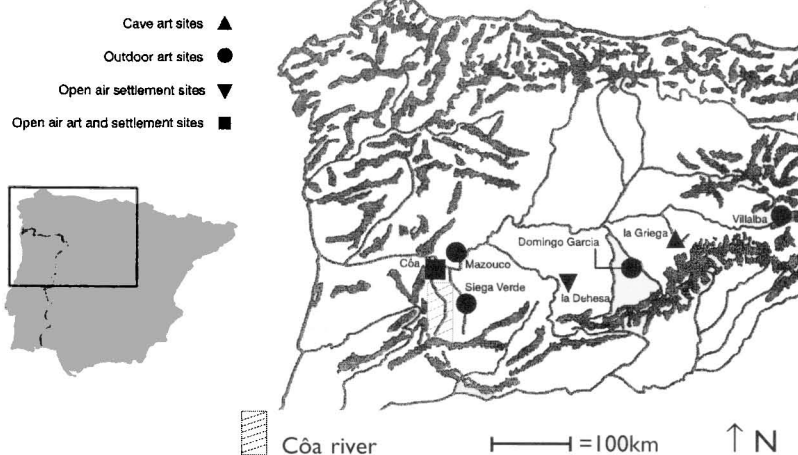
The Côa river valley is the largest open-air Palaeolithic art site currently known. Some 150 decorated panels have already been found, spread along 17km. The whole complex would have been submerged under 100m of water if construction of the large Foz Côa dam, begun in 1992, had been allowed to continue. The dam project was halted in 1995 and a 200km² archaeological park is being established in this area, which is now legally protected at the highest level as a National Monument. Public access to selected sites is organized through four-wheel drive tours of groups of eight people accompanied by guides appropriately trained in archaeology and rock art studies. Visitor Centres have been set up in restored traditional houses located in the villages around the periphery of the park. A Museum of Rock Art and Archaeology and associated research facilities is to be established at the site of the now abandoned dam.

LOCATION AND DISCOVERY

Flowing from south to north, near and parallel to the border between Portugal and Spain in the northwest of Iberia, the Côa (Fig. 1) is a tributary of the Douro, one of the longest rivers of the

Peninsula and the largest by volume. In the last kilometres before the confluence, the Côa runs through the Alto Douro region of Portugal, well-known for the Port wine it produces. Here, the valley is deeply incised in a dramatic landscape of granite and schist outcrops.

Figure 1. The Upper Palaeolithic of the Douro basin. The Côa valley sites and Mazouco are located in Portugal, the others in Spain. Villalba is where a small schist plaque decorated with Palaeolithic zoomorphic figures was found in the open air. With the exceptions represented by two single panels – Fornols-Haut, in southeastern France, and Piedras Blancas, in Andalucía – all open-air Palaeolithic rock art sites currently known in the world are located in the schist outcrops of this region.



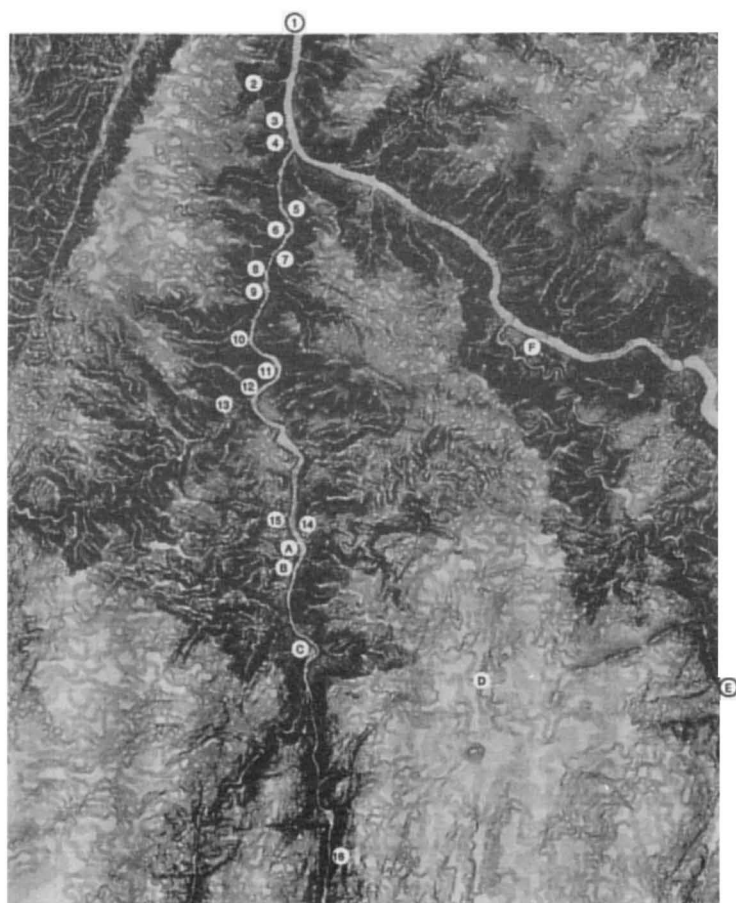


Figure 2. Slope chart of the Côa valley and surrounding plateau regions, with location of the Upper Palaeolithic rock art and settlement sites currently known. *Art sites*: 1, Vale da Casa; 2, Vale de Cabrões; 3, Vermelhusa; 4, Vale de José Esteves; 5, Broeira; 6, Vale de Moinhos; 7, Canada do Amendoal; 8, Rego da Vide; 9, Canada do Inferno; 10, Vale de Figueira; 11, Fariseu; 12, Foz de Piscos; 13, Ribeira de Piscos; 14, Penascosa; 15, Quinta da Barca; 16, Faia. *Camp sites*: A, Quinta da Barca; B, Quinta da Barca Sul; C, Salto do Boi (Cardina); D, Olga Grande; E, Ínsula; F, Quinta da Granja.

— = 1.8km

↑ N

Geologically, this region represents the western limit of the northern Meseta. The change in the nature of the terrain, as well as the amount of water the river drains from the high mountain chains surrounding the Meseta plateau, explain the deep incision of the hydrographic basin of the Portuguese Douro and why, in the past few decades, it has been systematically dammed for the production of electricity. One of the last dams to be built, in 1983, was that located at Pocinho, a few kilometres downstream from the confluence with the Côa, where flooding brought about a rise in water level of about a dozen metres. In 1991, Electricidade de Portugal (EDP), the state-owned power company, decided to build a second large dam on the Côa itself, near the confluence with the Douro.

As archaeological salvage work began, several discoveries of stylistically Palaeolithic rock art were made in 1992–3 near the construction site at

Canada do Inferno [1]. However, for reasons that the political authorities of the time never explained, these were not made public until November 1994, when construction of the new dam was already well under way. In the next couple of months, many other rock art sites were found in the valley (both by archaeologists and by local inhabitants), all of which would have been submerged under more than 100m of water if construction had continued as planned.

After a passionate political and scientific controversy, national and international [2–5], the Portuguese government elected on 1 October 1995 formally decided to abandon the dam project altogether (despite the huge financial loss, estimated at US\$100–150 million) and, instead, to create an archaeological park in the area. In the light of that decision (published in the official journal of the Portuguese Republic on 17 January

1996), a thorough scientific investigation was ordered with the purpose of substantiating via solid archaeological evidence the dating of the rock art to the Palaeolithic age and its consequent world significance. The results obtained, which fully confirmed expectations, were presented in a report (2 January 1997) to the Portuguese authorities [6,7].

SIGNIFICANCE

The rock art in the Côa valley (Fig. 2) should be considered a cultural property of national and international significance on the following grounds (see items 24 and 39 of UNESCO's *Operational Guidelines for the Implementation of the World Heritage Convention*):

- It bears exceptional testimony to a disappeared cultural tradition, that of the hunting groups that inhabited Eurasia during Last Glacial times.
- The Côa valley is a landscape providing a unique illustration of a significant stage in human history, the Upper Palaeolithic period.
- The landscape, closely associated with the traditional way of life, continues to play an active role in contemporary society; while the evolutionary process is still underway, at the same time the valley provides significant material evidence of its development over time.

This view is substantiated by the results of the scientific research carried out in the Côa valley since 1995, of which the main findings are:

- The valley contains prehistoric and historic rock art sites that form an almost uninterrupted sequence initiated more than 20,000 years ago; one of the largest outdoor art history museums in the world, its 'collections' can boast continuity from extremely early origins.
- A large majority of the rock art figures date from the Upper Palaeolithic; stylistic comparison suggests that the oldest may be of the Late Gravettian Age, i.e. more than 20,000 years old, and that this first artistic cycle lasted until the end of the Magdalenian, some 10,000 years ago. Human presence in the valley in this time range is independently confirmed by well-preserved and characteristic settlement sites.

- The size of the territory involved and the number of Palaeolithic panels and animal figures in the Côa valley and the adjacent slopes of the Douro is unmatched by sites previously discovered – such as Domingo García and Siega Verde in Spain [8–11]; at Côa, where work has just begun and survey is still only partially completed, Palaeolithic art is spread along some 17km and the minimum numbers of decorated panels and of zoomorphic figures can be estimated at more than 150 and 1200, respectively.
- The aesthetic quality of many of the Côa Palaeolithic petroglyphs (Figs 3–6) is superb. Some of their features are absolute novelties in representational terms, particularly as regards animation, rendered by such drawing techniques as the simultaneous depiction of two or three heads on the same body, to convey the impression of downward or backward movement of the upper torso.

Palaeolithic art in the open

The Côa valley discoveries thus substantiate the need for a Copernican change of perception regarding the meaning of Palaeolithic art. For almost a century, ever since its antiquity was recognized, the nonmobiliary Palaeolithic art of Western Europe was thought to be a phenomenon restricted to caves and rock shelters, to the extent that it was commonly referred to as 'cave art'. The prevailing interpretation of its meaning was developed in the 1960s by French prehistorian André Leroi-Gourhan, who considered it religious art. By analogy with the churches or temples of modern religions, caves were conceived of as sanctuaries where the images (animals, humans beings and symbols) painted, sculpted and engraved on the walls played an important role in the cults celebrated in these places [12]. After 1981, when the Portuguese site of Mazouco, only a few kilometres east of the Côa, was identified [13], researchers came to realize that Palaeolithic art also existed outdoors [14]. However, Mazouco and similar discoveries made since – such as, initially, Domingo García, as well as Piedras Blancas, in Spain [15], or Fornols-Haut, in France [16] – were single-figure or single-panel sites that



Figure 3. Ibex and aurochs from Rego da Vide, Panel I.



Figure 4. Aurochs from Canada do Inferno, Panel IIA.



Figure 5. Horses from Ribeira de Piscos, Panel I.



Figure 6. Canada do Inferno, Panel 30: two-headed pecked and abraded aurochs. Submerged since the construction of the Pocinho dam, this panel was originally at the bottom of the valley and periodically suffered erosion by torrential winter floods, whose effects over the millennia seriously abraded both the rock face and the petroglyph grooves.

appeared as oddities, as 'exceptions that proved the rule'.

Subsequent work at Domingo Garcia [10] significantly increased the number of discoveries to seven decorated rocks featuring a few dozen figures. Meanwhile, a more substantial discovery had already been made in Spain, in the late 1980s: Siega Verde, a site consisting of a cluster of rock art panels spreading some 1500m along the banks of the Águeda river, near Ciudad Rodrigo, across the border from Portugal [11]. After several years of extensive work, some 300 animal motifs were recorded on 94 decorated rocks. This was not enough, however, to challenge the use of the cave sanctuary model as a universal explanation of the meaning of Palaeolithic rock art. Siega Verde was interpreted by many as being akin to a cave in a region where the real thing was entirely lacking. Consequently, the river and its margins were viewed as playing the role of the underground tunnel and its walls, with decoration following the same conventions, in terms of style, location and associations, that Leroi-Gourhan had identified in Franco-Cantabrian cave sites. The Côa rock art marked a qualitative change in this panorama, given the size of the territory involved.

Following the inspiration provided by ethnographic examples, the preservation of this rock art in a topography that has not changed significantly since the onset of the Upper Pleistocene provides the possibility, for the first time in Upper Palaeolithic studies (i.e. those concerning the people of our own species most remote in time), to investigate the way those ancestors conceptualized the landscapes they inhabited. In contrast to those places that went undecorated, the various clusters where rock art has been found can be considered as especially important parts of the territory. As research progresses, the distribution of the different motifs across the several ensembles of engraved rocks, combined with insightful analyses of the topographical locations of these rocks (at the bottom of valleys, halfway up slopes, on fluvial beaches favourable for settlement, on acutely inclined slopes, clustered around prominent landscape features or scattered over unobtrusive outcrops) may provide us with information on the religious or secular nature of these important places,

as well as on the social or economic significance of these ancient and beautiful images.

Restricted distribution or differential preservation?

In all likelihood, the vertical exposures of the hard schists of the Douro basin which, in the very dry environment of the interior of Iberia during the last Ice Age, were not destroyed by weathering, are the survivors of what, in Last Glacial times, must have been extensively decorated landscapes. The outdoor location of the Côa Palaeolithic petroglyphs and the size of the area where they can be found demonstrates that our Upper Palaeolithic forebears left their artistic imprint all over the territories they settled and that, therefore, such behaviour was in no way restricted to decorating the walls of caves. Rather than being the exception, outdoor art must have been the rule. In this new light, Palaeolithic art no longer appears as an exclusively religious manifestation confined to underground sanctuaries but acquires a secular dimension, as is also the case among ethnographically documented hunter-gatherers such as the aboriginal peoples of Australia [17].

The Iberian discoveries thus suggest that it is the action of differential preservation, conditioned by local geology and climate, that must explain why, with the single exception of the Fornols-Haut rock, in France, it is only in Portugal and Spain that such art, that once must have covered vast expanses of the Old World, seems to have survived until the present. As a result of favourable conditions, and in spite of the localized losses of panels and sites brought about by the millennia of anthropic impact since the inception of agriculture, the Côa valley is, today, the largest and best-preserved instance of outdoor Palaeolithic art. The impact of its discovery can also be inferred from the fact that the number of Palaeolithic zoomorphic figures estimated to exist in the Côa valley rock panels probably surpasses that known in all of the classic Cantabrian cave sites.

As a cultural landscape, the Côa valley also preserves archaeological and artistic remains of subsequent prehistoric and historic periods [6] and, at the present time, is undergoing significant change. Vineyards are expanding as subsistence

agriculture and extractive activities (quarrying and mining) are either in decline or entirely abandoned (Fig. 7). Material evidence of the latter is to be preserved in a museum established at the Quinta da Ervamoira, where a Roman site already included in the Côa River Valley Archaeological Sites National Monument is currently under excavation.

CONSERVATION

Rock art locations between Vale da Casa and Ribeira de Piscos have been partly submerged since 1983, due to the construction of a dam at Pocinho, on the river Douro. Inspection carried out in October 1995, when the Côa was dry upstream from the site where the now abandoned Foz Côa dam was under construction, did not show significant damage. Many panels, however, were already covered by the silt deposits accumulated since 1983. The engraved surfaces that have always been out of the water have resisted the action of time astonishingly well: the most visible

effect is the patina that has given the engraved grooves the same colour as the background surface. Some panels, however, show partial loss of the figures due to the natural weathering of the rock by fracture or slabbing. Others exhibit fractures that may bring about loss by slabbing in the short term and need to be closely monitored. Security procedures adopted soon after the discovery have largely, but not completely, prevented the sites being disfigured by vandalism such as graffiti.

Overall, the lower Côa valley can be described as a well-preserved cultural landscape, featuring environments created over the last millennia by traditional Mediterranean agriculture. This very beautiful setting provides a fitting background for more than 200 centuries of regional history recorded on the rock art of the valley.

LEGAL PROTECTION

The lower Côa region is currently under consideration as a special wild bird protection zone. The



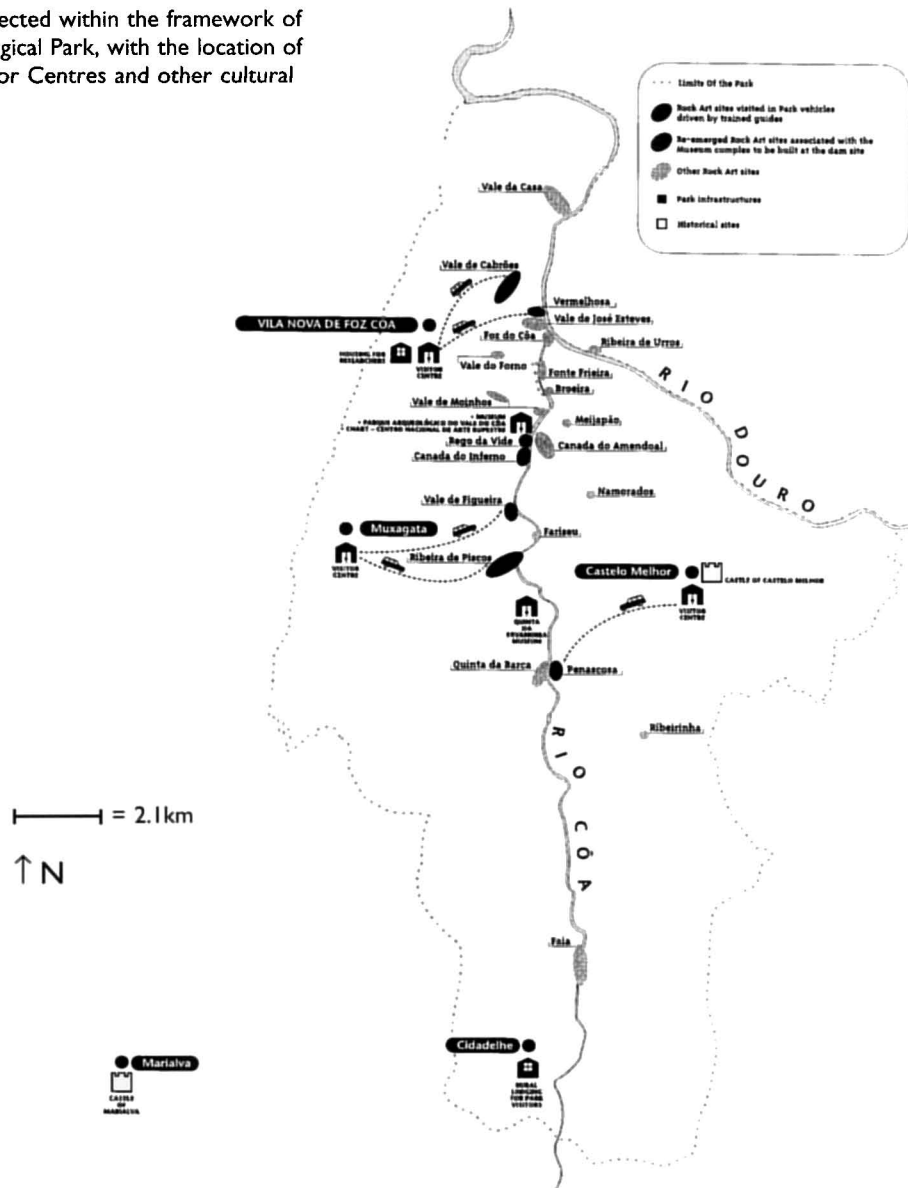
Figure 7. View of the Côa valley between Ribeira de Piscos and Penascosa. Here, the extensive vineyards of the Quinta da Ervamoira cover the gently sloping terrain along the left bank of the river, where they replaced cereal agriculture in the last 20 years. The area has been settled since Roman times. In the centre of the vineyard, the old farm building has been converted into a 700m² archaeological and ethnographic site museum, built and managed by the landowner but integrated into the Archaeological Park. This facility was inaugurated on 1 November 1997.

adjacent areas to the east, in the Aguiar river drainage, are protected biotopes located along the border with Spain, most of which are included in the Natural Park of the International Douro River. Management of these protected nature reserves is under the jurisdiction of an agency of the Ministry of the Environment, the ICN (Instituto da Conservação da Natureza).

Significant portions of the lower Côa region are already protected by two legal instruments estab-

lished and managed at national government level. These instruments enforce the maintenance of traditional land use patterns and, through their incorporation in the PDMs (Planos Directores Municipais), local authorities are bound to respect them. The REN (Reserva Ecológica Nacional) is under the responsibility of the Ministry of the Environment and the RAN (Reserva Agrícola Nacional) is under the responsibility of the Ministry of Agriculture.

Figure 8. Area to be protected within the framework of the Côa Valley Archaeological Park, with the location of existing and planned Visitor Centres and other cultural infrastructure.



Specific protection for the Côa valley as a cultural resource was provided through the resolution adopted by the Portuguese government on 28 May 1997, and published in the official journal of 2 July 1997, which created the 'Côa River Valley Archaeological Sites National Monument'. At present, the monument is composed of a group of 16 rock art and settlement sites. The area to be protected under the management plan currently being elaborated amounts to a total of 208km² and has a perimeter of 86.5km (Fig. 8). It also includes the adjacent slopes of the left bank of the Douro downstream from the confluence with the Côa, which contain several rock art sites. Other sites already known in this area will be added to the initial list, and thus be granted the highest protection possible under Portuguese law, as soon as the required administrative procedures are completed. On 25 June 1997, the nomination of the monument for inclusion in UNESCO's World Heritage List was formally presented to the World Heritage Committee by the Portuguese government. This nomination was publicly endorsed by the Director-General of UNESCO during a visit to the site on 7 June 1997.

Under Portuguese law (Lei de Bases do Património, no. 13/85, published in the *Diário da República* of 6 July 1985), National Monuments must be preserved in their present condition. Any modification of that condition (including restoration) requires the previous agreement of the Ministry of Culture. Modification of the landscape and of land use patterns, as well as construction or demolition of works of man inside the boundaries of a National Monument's surrounding protection area are subject to similar restrictions. Management of National Monuments must be made through Planos de Salvaguarda elaborated under the auspices of the Ministry of Culture and in close collaboration with local authorities. Fieldwork for the elaboration of the Côa valley's Plano de Salvaguarda is to be initiated in early 1998.

MANAGEMENT

To manage the 'Côa River Valley Archaeological Sites National Monument' the Portuguese government created the PAVC (Parque Arqueológico do Vale do Côa). References to the creation of the

Park are contained in Government Resolutions 4/96 and 42/96, published in the official journal issues of 17 January 1996 and 16 April 1996, respectively. Through these resolutions, the Portuguese government halted the construction of the dam that threatened to submerge the archaeological sites and provided a fund (named PROCOA) of Esc 25 billion (some US\$150 million) to support the economic development of the region and the installation of the Archaeological Park.

The Archaeological Park was formally institutionalized as a department of the new IPA (Instituto Português de Arqueologia), an agency of the Ministry of Culture created through a government law published in the official journal of 14 May 1997. Article 9, paragraph 1, item d) of this law creates the Park. Article 13 defines its function as 'to manage, protect and organize for public visits, including the setting up of museum facilities, the monuments included in the special protection zone of the Côa valley'.

The Côa Valley Archaeological Park has a permanent staff that includes five archaeologists in charge of research and management of public access and 12 trained guides that accompany the visitor groups to the sites open to the public. These sites are also under permanent *in situ* surveillance, 24 hours a day. This task is contracted out by the Park to a specialized security company, which employs 16 guards to do the job.

Government Resolution 42/96, which established the PROCOA, guaranteed that a minimum of Esc 2.7 billion (approximately US\$16 million) would be made available for the establishment of the Archaeological Park until 1999. In the one and a half years that have elapsed since Resolution 4/96, which initiated the process of creation of the Park, was published, some Esc 500 million (approximately US\$3.5 million) has already been spent on staff, research, infrastructure and publications.

An office to manage the PROCOA fund was established at Vila Nova de Foz Côa, under the authority of the State Secretariat for Regional Development. Priority is given to projects relating to communication, infrastructure and cultural tourism. Applicants can be public (government agencies, municipalities) as well as private (individual entrepreneurs and companies) and projects can be subsidized at up to 75% of total costs. The

Director of the Archaeological Park is a member of the management unit of PROCOA and it is explicitly stated in the resolution that creates the fund that initiatives supported through it must be compatible with the Park's development strategy.

RESEARCH

A research centre dedicated to the scientific study of all rock art in Portugal – the CNART (Centro Nacional de Arte Rupestre), – was created alongside the PAVC, in the framework of the new IPA. Its head office is located at Vila Nova de Foz Côa and its main task will be to promote and coordinate the recording and study of the Côa valley rock art. At present, all known panels have been precisely located with GPS and the sites open to visitors have already been extensively recorded through description, tracing and photographic reproduction. A GIS application is currently being developed to enable the digital encoding of all this information. In the framework of the European Union funded RAPHAEL programme, a team from the Department of Optoelectronics of INETI (Instituto Nacional de Engenharia e Tecnologia Industrial) is developing methods for the recording of the engraved surfaces using laser scanning and digital stereophotogrammetry techniques. This will subsequently allow exact physical 3-D reproduction of the rock art panels using CAD-CAM technology, thus avoiding potentially damaging traditional moulding techniques.

Archaeologists at the PAVC have been undertaking a systematic survey of settlement sites in the area, with the purpose of establishing the historic context of the rock art. This programme has been highly successful, particularly as regards the location and preliminary excavation of several camp sites attributed to the Gravettian, Solutrean and Magdalenian periods, i.e. precisely those that, according to stylistic analysis, are represented by the valley's Upper Palaeolithic petroglyphs (Fig. 2).

PUBLIC ACCESS

The official inauguration of the Archaeological Park took place on 10 August 1996. Three sites (Canada do Inferno, Ribeira de Piscos and Penascosa) have been made accessible to the

public, via widely advertised procedures. The number of visitors has been around 2000 a month: 30,200 people toured the three sites between August 1996 and February 1998.

Underlying principles

The access rules that have been established derive from the principle that the cultural tourism to be developed with the Côa valley rock art as its focus can only be organized in a rational and sustainable way if it is understood that its economic revenues, for local entrepreneurs and inhabitants in general, cannot replace, but only supplement, those obtained from traditional economic activities. The scenery surrounding the rock art, in itself full of historical information and worthy of preservation and careful management for reasons apart from its beauty, was created by traditional agriculture and will not survive without it. Thus, from the point of view of regional economic development, the exploitation of the rock art as a resource should be understood as a means towards the maintenance of the local ways of life and corresponding landscape, threatened by diminishing returns and the decrease in population brought about by emigration to the urban centres of the littoral. It is the region as a whole, with its people, its landscape and its cultural heritage, that needs to be preserved and promoted, not just the rock art. And tourism to the rock art sites must be organized bearing in mind not only the conservation of the engraved panels themselves but also that of their setting: the monument is the valley as a whole, the place that Palaeolithic hunters monumentalized with their art and where modern people continue to live and work, not just the isolated clusters of engraved rocks and associated archaeological sites.

The setting and nature of the art also posed other kinds of problems that needed to be considered when establishing an access policy. Most rock art sites are located at the bottom of the valley, in remote places that can be reached only via several kilometres of bad dirt roads. This remoteness largely explains the late discovery of the art as well as the preservation of the landscape, of natural environments and of the corresponding wildlife. On the other hand, the art mostly consists of ancient patinated engravings

whose visibility, the colour contrast created at the time of execution between the bottom of the groove and the background having vanished, varies according to the angle of sunlight and the number of superimposed motifs. Therefore, the visual impact of the art is not immediate and its appreciation, at both the purely aesthetic and the archaeological levels, is necessarily the outcome of a learning process whereby the ordinary visitor must gradually discover how to see what is there to be seen.

Organization of visits

Bearing in mind the local conditions and the nature of the monument, the preservation principles outlined above were implemented in the framework of an access policy based on the following cornerstones:

- Roads to the sites were not, and will not be, improved: the remoteness that made possible the preservation of the area must be maintained and bad roads are an excellent deterrent to crowds of unwanted excess visitors. Access to private vehicles other than those of local landowners who use the roads to work their fields is discouraged or restricted.
- Visitors are transported in maximum numbers of eight at a time in four-wheel-drive Park vehicles driven by a trained guide who accompanies them through the tour of the site; each complete tour, depending on the specific site, has an average duration varying between 1.5 and 2.5 hours.
- The small-sized groups and the presence of the guide are also meant to make sure that visitors receive effective help in viewing and under-

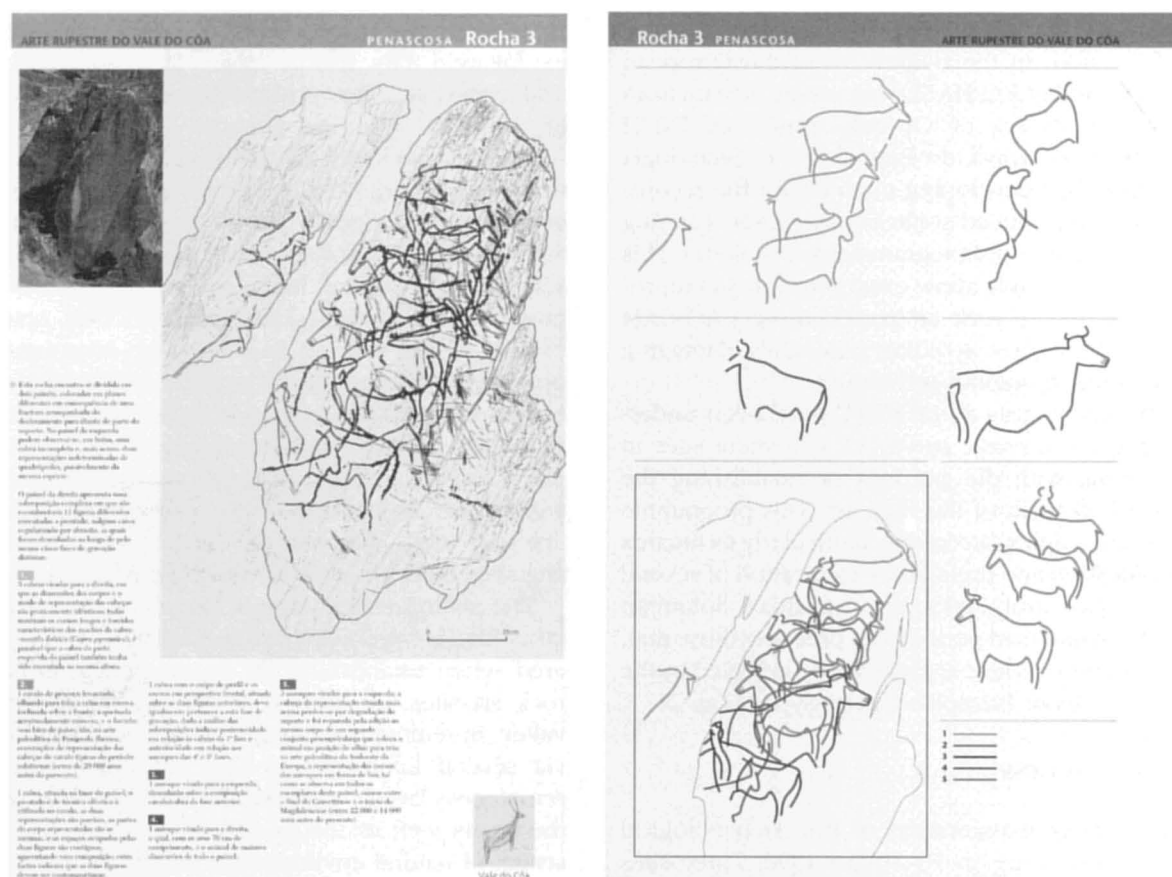


Figure 9. Explanatory card for Panel 3, Penascosa. Left: front; right: back.



Figure 10. Guide and visitors at Canada do Inferno, Panel I.

- standing the art and are able to enjoy the environmental values of the art's setting, the same that inspired Palaeolithic artists but are incompatible with humans in great numbers – silence, topographical grandeur, rich wildlife.
- The setting up of infrastructures in the vicinity of the different sites, or close to the decorated panels themselves, was reduced to a minimum; no significant construction work was, and will not be, carried out in places, as at Penascosa or Quinta da Barca, that were not modified by the dam project.
 - Instead of large, obtrusive explanatory panels located next to the engraved rocks, *in situ* information on the art is provided through folders with A4-sized cards featuring photographs, tracings, reading schemes and written material on all the panels included in the tour; such folders are made available to each individual visitor during the visit and, although they have to be returned at the end, the different sets of cards are available for purchase (Figs 9 and 10).
 - Visits are scheduled to take advantage of natural lighting conditions. At Penascosa, for instance, the panels face due west and are in the shade during the morning; therefore visits be-

gin in the afternoon, when the visibility of the engraved figures is best.

- Visitor Centres were set up in the closest towns to welcome tourists and provide shelter and information (currently, exhibitions of the panel tracings and HTML presentations on computer screens, the latter also available through the World Wide Web) while they wait for their turn; the Park vehicles making the tours depart from these centres. Disabled visitors who may not be able to visit the sites physically can visit them 'virtually' from the Visitor Centres via the World



Figure 11. The Visitor Centre at Castelo Melhor, inaugurated on 10 August 1996.



Figure 12. The Visitor Centre at Muxagata, inaugurated on 7 June 1997.

Wide Web. Two centres have already been established – one at Castelo Melhor, for access to Penascosa, the other at Muxagata, for access to Ribeira de Piscos (Figs 11 and 12).

- The daily number of visitors is limited by the number of schedule slots and by the number of available vehicles (currently eight) and guides (currently 12). Those wanting to visit on a specific day or at a specific time or wishing to make sure that their trip to the Côa is not in vain can make an advance reservation with the Park office, a procedure that has been widely advertised and recommended. Large group visits (such as those organized by schools) must be scheduled and planned sufficiently in advance and in close cooperation with the Park office; during the school year, a few days a week are reserved for student excursions.

Visits to Canada do Inferno currently depart from the head office of the Park, at Vila Nova de Foz Côa. Plans have already been developed for the establishment of a museum complex at Canada do Inferno, which will house the new Park office as well as the rock art research centre (see Fig. 8). While this complex is being constructed, landscaping will be undertaken of the area

topographically modified by the construction of the now abandoned Foz Côa dam. This includes returning to its original state a stretch of c. 1km of the river currently submerged by the rise of some 12m in water level brought about by the construction of the Pocinho dam. The feasibility of the hydraulics involved has already been confirmed by engineering studies. Thus, all engraved rocks at the sites of Rego da Vide and Canada do Inferno, including those now submerged, will be accessible to visitors. The cost of this project, which has already been presented to the public and the media and received the preliminary approval of Portuguese authorities, is estimated to be some Esc 6–7 billion (US\$40–45 million).

In the future, when construction is completed, visits to Rego da Vide and Canada do Inferno will be organized as an outdoor extension of the future Museum of Rock Art and Archaeology nearby. Access will be unrestricted and instead of guides moving with the visitors we will have guards staying with the panels but available to help groups or individuals approaching the sites on their own. Other sites in the valley currently not accessible, such as Quinta da Barca, may also be prepared for the public in the future. However, visits to those sites, as happens today at Penascosa

and Ribeira de Piscos, will continue to be organized via the 'safari' scheme currently underway as opposed to the 'museum' scheme envisaged for Canada do Inferno and Rego da Vide.

Although privately developed and run, the museum set up at Quinta da Ervamoira by its owners is integrated in the Archaeological Park. It is intended to present to the public the archaeology of the Roman settlement excavated within the property, as well as displays on the region's ethnography and high-quality agricultural produce, particularly the wine. The museum has been open to the public, following the same principles of visitor management as those outlined above, since 1 November 1997.

CONCLUSION

As a cultural resource of humankind, research in the Côa valley has been open to all those qualified, regardless of nationality. The establishment of the significance of the rock art and the evaluation of the management and conservation policies adopted in the framework of the Archaeological Park project have also been carried out in close cooperation with international experts and consultants [18–20]. Recognition of the art's significance has been unanimous and, in spite of the speed (18 months) with which the current arrangements were implemented, the functioning of the Archaeological Park along the principles outlined above has been widely considered, so far, a success, in terms of the number of visitors as well as of the quality of the visitor experience and the preservation of the monument.

As the project matures, new challenges arise. The elaboration of a formal management plan is, together with the museum complex to be established at Canada do Inferno, the major step to be taken in coming years. It is hoped that, through the incorporation of local authorities and inhabitants in this process, the residual opposition to the Park project inherited from the controversy over the abandonment of the Foz Côa dam will finally wither away. Although the potential benefit this cultural resource could bring for the economic development of the region will only be fully realized in the long term, benefits are already apparent, particularly as regards the creation of qualified jobs for local young people.

At this level, the Park is already matching the expectations of the high-school students from the town of Vila Nova de Foz Côa, whose street demonstrations and nationwide petitioning (hundreds of thousands of signatures in favour of the preservation of the Côa rock art were collected on their initiative in the spring of 1995) played a decisive role in influencing the government decision to abandon construction of the planned dam. The continued involvement of the present-day inhabitants in the preservation of the Côa valley heritage and the fulfilment of their legitimate hopes of socio-economic improvement will be the true measure of the Park's success and a condition for the future survival of the ancient artistry engraved in the rock faces of the region.

João Zilhão was professor of prehistoric archaeology at the University of Lisbon specializing in the Upper Palaeolithic period when the Côa valley discoveries were first reported in November 1994. In January 1996 he was commissioned by the Portuguese government to coordinate the project to establish the Côa Valley Archaeological Park. In May 1997, he was appointed director of the new agency created within the Ministry of Culture to supervise archaeology in Portugal, the IPA (Instituto Português de Arqueologia).

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REFERENCES

- 1 Rebanda, N. *Os trabalhos arqueológicos e o complexo de arte rupestre do Côa*. Instituto Português do Património Arquitectónico e Arqueológico, Lisbon (1995).
- 2 Bahn, P. Cave art without the caves. *Antiquity* **69** (1995) 231–237.
- 3 Bednarik, R.G. The Côa petroglyphs: an obituary to the stylistic dating of Palaeolithic rock art. *Antiquity* **69** (1995) 877–882.
- 4 Jorge, V.O. (ed.) *Dossier Côa*. Sociedade Portuguesa de Antropologia e Etnologia, Porto (1995).
- 5 Zilhão, J. The age of the Côa valley (Portugal) rock art: validation of archaeological dating to the

- Palaeolithic and refutation of 'scientific' dating to historic or proto-historic times. *Antiquity* 69 (1995) 883–901.
- 6 Zilhão, J. (ed.) *Arte Rupestre e Pré-história do Vale do Côa. Trabalhos de 1995–1996. Relatório científico ao governo da República Portuguesa elaborado nos termos da resolução do Conselho de Ministros nº 4/96, de 17 de Janeiro*. Ministério da Cultura, Lisbon (1997).
 - 7 Zilhão, J., Aubry, Th., Carvalho, A.F., Baptista, A.M., Gomes, M.V. and Meireles, J. The rock art of the Côa valley (Portugal) and its archaeological context. *Journal of European Archaeology* 5(1) (1997) 7–49.
 - 8 Martín, E. and Moure, A. El grabado de estilo paleolítico de Domingo García (Segovia). *Trabajos de Prehistoria* 38 (1981) 97–105.
 - 9 Ripoll, S. Las representaciones de estilo paleolítico en el conjunto de Domingo García (Segovia). *Espacio, Tiempo y Forma* I(5) (1992) 107–138.
 - 10 Balbín, R., Alcolea, J., Santonja, M. and Pérez, R. Siega Verde (Salamanca). Yacimiento artístico paleolítico al aire libre. In: Santonja, M. (ed.) *Del Paleolítico a la Historia*. Museo de Salamanca (1991), 33–48.
 - 11 Balbín, R., Alcolea, J. and Santonja, M. El yacimiento rupestre paleolítico al aire libre de Siega Verde (Salamanca, España): una visión de conjunto. *Trabalhos de Antropologia e Etnologia* 35(3) (1995) 73–102.
 - 12 Cf., for instance, Leroi-Gourhan, A. *Les religions de la Préhistoire*. Presses Universitaires de France, Paris (1964).
 - 13 Jorge, S.O., Jorge, V.O., Almeida, C.A.F., Sanches, M.J. and Soeiro, M.T. Gravuras rupestres de Mazouco (Freixo de Espada à Cinta). *Arqueologia* 3 (1981) 3–12.
 - 14 Cf., for instance, Bahn, P. and Vertut, J. *Images of the Ice Age*. Facts on File, Oxford (1988).
 - 15 Martínez, J. Arte Paleolítico en Almería. Los primeros documentos. *Revista de Arqueología* 130 (1992) 24–33.
 - 16 Sacchi, D. Les gravures rupestres de Fornols-Haut, Pyrénées-Orientales. *L'Anthropologie* 92 (1988) 87–100.
 - 17 Layton, R. *Australian Rock Art. A New Synthesis*. Cambridge University Press (1992).
 - 18 Bahn, P., Balbín, R., Lorblanchet, M., Ripoll, S., Sacchi, D. and Villaverde, V. Avis de la Commission Internationale d'Experts. In: [6], 452–453.
 - 19 Stanley-Price, N., *Report to the Côa Valley Archaeological Park under a Consultancy Agreement with the Instituto Português de Arqueologia, Lisbon, December 1996*.
 - 20 Stanley-Price, N., Delgado Rodrigues, J., Prudêncio, M.I., Wyrwoll, Th., Sullivan, S. and Padgett, A., *Report of the International Commission on Conservation. Côa Valley Archaeological Park, Portugal*. Prepared for the Instituto Português de Arqueologia, Lisbon, September 1997.