



KEYWORDS: AMS 14C – Post-Palaeolithic rock art – Bronze Age – Atapuerca – Spain

THE GALERÍA DEL SÍLEX (SIERRA DE ATAPUERCA, BURGOS, SPAIN): AMS RADIOCARBON DATES OF POST-PALAEOLITHIC ROCK ART

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Abstract. New datings for the rock art at Galería del Sílex allow us to relate the symbolic-ritual activity with its archaeological context, which furthermore may help to perform a provisional first outline about the post-Palaeolithic graphical development in the Iberian Peninsula.

Accelerator Mass Spectrometry (AMS) ¹⁴C dating of rock art is a recent analytical technique that has been applied to Palaeolithic research (e.g. Lorblanchet et al. 1990; Valladas et al. 1992). The site of Galería del Sílex, which is a part of the Atapuerca complex in Burgos, Spain, is exceptional for the conditions of its discovery, as well as for the good state of preservation of the graphic manifestations and archaeological assemblage it contains. As a result, it has been possible to learn about some of the burial practices and ritual behaviour of the Bronze Age societies that lived in this region. Certain charcoal-drawn figures have been found in the Galería del Sílex, a rare form for post-Palaeolithic rock art, that is commonly dominated by engravings and red paintings located in open-air sites or rockshelters. Under the exceptional cave conditions, we have obtained dates of 3530 ± 110 years BP and 3670 ± 40 years BP for Galería del Sílex drawings, representing one of the first (Sanchidrián et al. 2001) results of this kind obtained for post-Palaeolithic rock art in western Europe. These results provide us with a solid evidence for the development of graphic manifestations in early complex societies and bring into question previous stylistic proposals (Breuil 1933–35; Obermaier 1924; Acosta 1968; Gómez-Barrera 1999), that were mainly based on artistic arguments and comparisons with limited ceramic decorated assemblages.

The Sierra de Atapuerca (Burgos, Spain), a small arched hill range about 15 kilometres to the east of the city of Burgos, is located on the western plateau of the Iberian Peninsula, at the north-eastern rim of the Duero Basin. The Sierra features a karstic system developed in Cretaceous calcareous bedrock, containing several Lower and Middle Pleistocene archaeological and palaeoanthropological infillings (Trinchera Dolina - Bermúdez de Castro et al. 1999; Trinchera Galería - Carbonell et al. 1999; Trinchera Elefante - Rosas et al. 2001; and Sima de Los Huesos - Arsuaga et al. 1997). They represent some of the earliest human occupa-

tions of Europe. Additionally in this complex, two Holocene sites, El Mirador rockshelter and Portalón of Cueva Mayor, have been excavated and studied by the current research team since 1999. The latter has yielded evidence of Middle Age, Roman, Bronze Age (Early, Middle and Late) and Chalcolithic occupations.

Galería del Sílex, consisting of a winding 920-metres-long corridor, belongs to the upper level of the Cueva Mayor-Cueva del Silo karstic complex (Martín et al. 1981) that was discovered during entrance clearing by speleologists in 1972. The current entrance substitutes for the original one that was sealed at some time after the Bronze Age. Thanks to this, the archaeological and palaeoanthropological record of the last human activities carried out in the gallery were found in situ on the surface and exhibit an excellent state of preservation (the Gallery was closed immediately after the discovery of the art to preserve it and to prevent disturbance of materials found on the floor, thus avoiding any alteration or contamination of this exceptional karstic chamber). Work carried out between the 1970s and 1980s (Apellániz and Domingo 1987) documented the following archaeological materials:

- (a) Lithic assemblage: 10 hammerstones, a minimum of 80 flint nodules extracted from a flint quarry located at the end of the gallery, 7 blades, 6 flakes, 3 foliate points (2 of them with a central stem), 1 sickle element and 1 circle segment.
- (b) Worked bone assemblage: 6 objects, mainly pointed elements
- (c) Domestic faunal assemblage: remains of 11 individuals of *Ovis aries* and *Capra hircus*, 3 *Sus scrofa*, 1 each of *Bos taurus*, *Sus domesticus* and *Canis familiaris*; and wild faunal assemblage: 5 *Lepus capensis*, 4 *Oryctolagus conniculus* and 1 *Cervus elaphus*, *Sus scrofa*, *Ursus arctos*, *Vulpes vulpes* and *Felis silvestris*.



Figure 1.
'Animal', tree-shaped, 'human'
and linear representations of
panel 10, Galería del Sílex,
Spain.

- (d) Human skeletal remains: at least 25 individuals (8 adults, 5 juveniles and 12 infants).
- (e) Nine stone circles.
- (f) Three storage pits or silos.
- (g) A large structure constructed with clay and speleothem fragments for water accumulation, associated with a filtration and dripping area.
- (h) A large ceramic assemblage displaying forms and decorations reflective of an interrupted occupation of the gallery spanning from the Neolithic to the Late Bronze Age.

A major iconography ensemble was also documented on the gallery walls (Apellániz and Uribarri 1976), featuring black and red paintings, as well as engravings distributed along 53 different panels (Fig. 1). The themes are mainly composed by linear and geometrical shapes (simple reticules and others with lateral appendices, grids, simple marks, row-forming dots; tree-shaped, comb-shaped and roof-shaped signs; zigzags and undulating shapes).

All of these shapes are evocative of abstract aesthetic, anthropomorphic shapes or, in fewer cases, of schematic human or animal representations. A temporal framework for

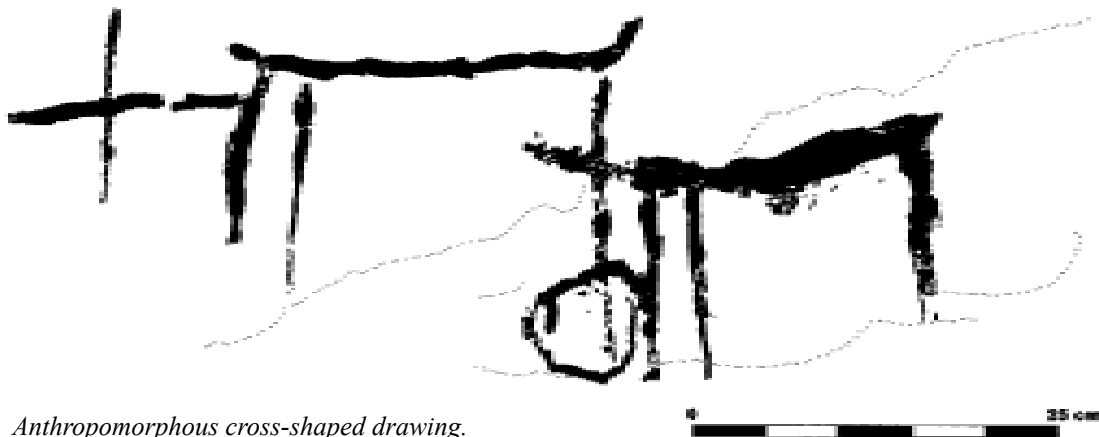


Figure 2. Anthropomorphic cross-shaped drawing.

the human occupations at Galería del Sílex was proposed (Apellániz and Domingo 1987), based on the chrono-cultural characterisation of the ceramic remains, as well as on morpho-stylistic relationships between decorative motifs on pottery and on rock art.

The associations and spatial distribution of the lithic, faunal, palaeoanthropological, ceramic and artistic remains do not imply activities of an economic nature. The small lithic and faunal assemblages show a distribution pattern different of the habitation settings. The study of the ceramics reveals a spatial dispersal in which the fragments from a single vessel were found at different places of the cave. This suggests that humans were responsible for breaking the vessels in the gallery and dispersing the fragments (Garralda and Galera 1986). The distribution of the human remains in small individualised groups suggests a secondary deposition of the corpses, represented by several incomplete skeletal groups from various individuals; moreover, one of

the skulls displays anthropic scrapings, which would point to a previous treatment of the corpses prior to their final deposition inside the gallery. All of these elements suggest the development of activities related with funerary practices, where the collective nature of the burials and ritual elements (mainly ceramics and art) probably played an important role. For all this, we consider that the term 'sanctuary' to designate the Galería del Sílex site is appropriate.

The fact that Galería del Sílex represents a closed space, the exceptional conditions of its discovery and the existence of charcoal-painted figures make this site of great significance for Holocene rock art research. Most of the other evidence for this period is composed of engraved or red-painted (Fe_2O_3) motifs and most of the graphic assemblages are found in exterior spaces (rockshelter or open air sites), and thus exposed to climatic regimes and biological contamination. The black-painted motifs provide the opportunity to obtain direct AMS dates for pre-Historic



Figure 3. Grille-shaped black-painted drawing.

Laboratory reference	¹⁴ C years BP	Confidence degree	Intervals (cal B.C.)	Probability distributions
GX-27852-AMS	3530 ± 110	68.3%	2018 - 1997	0.058
			1980 - 1737	0.890
			1711 - 1693	0.051
		95.4%	2191 - 2178	0.006
			2142 - 1603	0.983
			1560 - 1534	0.011
GX-27853-AMS	3670 ± 40	68.3%	2135 - 2079	0.467
			2058 - 2012	0.351
			2000 - 1978	0.182
		95.4%	2194 - 2173	0.025
			2143 - 1937	0.968
			1929 - 1922	0.008

Table 1. Calibrated ages of the dated charcoal figures from the *Galería del Silex*, Spain.

post-Palaeolithic rock art.

Several small charcoal samples were collected from two different figures. Samples were pre-treated for AMS analysis and analysed by Dr Alexander E. Cherkinsky at Geo-chron Laboratories. The treatment of the samples followed the required laboratory protocols (Valladas et al. 1992; Russ et al. 1990). In particular, the procedure carried out, according to the report, was as follows.

The charcoal fragments were separated from sand, silt, rootlets and other foreign matter. The sample was then

treated with hot dilute 1N HCl to remove any carbonates; with 0.1N dilute NaOH to remove humic acids and other organic contaminants; and a second time with dilute HCl. The sample was then rinsed and dried and the clean charcoal was combusted to recover carbon dioxide for the analysis.

An anthropomorphous cross-shaped motif (Fig. 2) was dated to 3530 ± 110 ¹⁴C years BP (GX-27852-AMS); the δ¹³C PDB content, based on the 95% modern standard from the National Bureau of Standard Oxalic Acid, was -23.4‰; the gross sample weight was 0.15 mg with 0.08 mg of dateable carbon.

The other motif, a grille-shaped sign (rectangle divided by four lines) (Fig. 3), was dated to 3670 ± 40 ¹⁴C years BP (GX-27853-AMS); the δ¹³C PDB content was -24.8‰; the gross sample weight was 0.8 mg with 0.6 mg of dateable carbon. The establishment of corrected dates according to the INTCAL 98 (Stuiver et al. 2000) calibration curve (Table 1) shows a chronological range that spans the early 3rd millennium to the late 2nd millennium B.C. for the grid motif, and early 3rd millennium to mid 2nd millennium B.C. for the cross-shaped anthropomorphous figure. The dispersion of the GX-27852 sample is reduced and tends to concentrate around the early 2nd millennium B.C., when considering the intervals that show a greater degree of probability in their distribution. This motif is superimposed by a wide range of linear motifs, especially vertical parallel lines.

These results and their comparison with dates from the inland Portalón site at the entrance of the Cueva Mayor (Table 2), which was a habitation locus, show continuity for the occupation of the cave during the initial phase of intensification of social complexity among the inhabitants of this region. The different functions given to spaces are evidence for a high degree of organisation and management of the karstic space during the Early Bronze Age (Delibes and Fernández 2000; Ruiz et al. 2002). There is also an open-air Bronze Age site on the slope outside the Cueva Mayor (Clark 1979).

Most of the stylistic arguments (Breuil 1933–35; Obermaier 1924; Acosta 1968; Gómez-Barrera 1999) that have been set forward regarding post-Palaeolithic art support the existence of a long artistic cycle with common developmental trends, which would have started in the Neolithic, with sub-naturalistic figures followed by a progressive tendency towards a concentration and simplification of forms up to the Late Bronze Age, finally reaching an abstract style in several geographic settings. The data presented here document the coexistence of complex geometric and figurative forms showing a

Level	Layer	Laboratory reference	¹⁴ C years BP	Cultural attribution
1.1			2040 ± 100	Iron II
1.1			2050 ± 40	Iron II
III	10	CSIC-531	2850 ± 50	Late Bronze/Iron I
III	30	I-9879	3170 ± 130	Late Bronze
3.1			3330 ± 70	Middle Bronze
III		I-9881	3340 ± 160	Middle Bronze
III	71	CSIC-532	3400 ± 50	Middle Bronze
III		I-9880	3470 ± 190	Early/Middle Bronze
5.1			3630 ± 40	Early Bronze
III	83	CSIC-611	3640 ± 50	Early Bronze
4.2			3680 ± 40	Early Bronze
6.1			3910 ± 70	Late Chalcolithic

Table 2. Dates from the levels of Portalón site at Cueva Mayor (Apellániz and Uribarri 1976; Apellániz and Domingo 1987; Ruiz et al. 2002).

high level of schematisation around the mid-4th millennium B.C. in the peninsular plateau region. Systematic use of AMS dating techniques on black-painted artwork will continue

to provide information to build a graphic developmental scheme for pre-Historic rock art that pays attention to regional stylistic variables. Hence it will be possible to present a diachronic sequence ranging from the Upper Palaeolithic to the Late Iron Age. Finally, it will be possible to define the specificity and idiosyncrasy of artistic creation in human groups as well as some of the aesthetic concepts behind the earliest evidences of symbolic creation.

Acknowledgements

The fieldwork was supported by the Junta de Castilla y León and the Research Project by the Ministerio de Educación y Ciencia (DGICYT, project No. BXX2000-1258-C03). The carbon dates were financed by Grupo de Espeleología Edelweiss of the Excma. Diputación Provincial de Burgos. We thank C. Mallol for help with the translation and L. G. Straus and J. Bischoff for their comments and help with the final text. An earlier version of this paper was published in *Antiquity* as an on-line paper.

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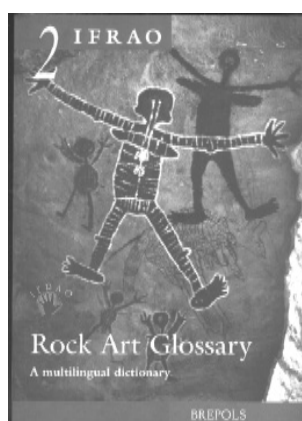
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GLOSSARY OF ROCK ART RESEARCH: a multilingual dictionary

Edited by Robert G. Bednarik,
Mario Consens, Alfred Muzzolini,
Jakov Sher and Dario Seglie

This is the first dictionary compiled specifically for rock art research. It follows the publication of an English rock art glossary in the journal *Rock Art Research* in November 2000. To be adopted by the International Federation of Rock Art Organisations (IFRAO), it has been translated by some of the world's foremost scholars in the field into French, German, Italian, Spanish and Russian. In a discipline that has hitherto been without an agreed terminology, even communication within a single language has been difficult. The proliferation of idiosyncratic terminologies of often academically isolated researchers, many of which have been used by only one scholar, has not only retarded progress and the transference of knowledge, it has led to countless misunderstandings and even personal feuds. The purpose of this dictionary is to create a single terminological standard as well as a cross-lingual uniformity of usage. It focuses particularly on scientific aspects, technical applications and epistemological rigour. It does not set out to create a terminological straitjacket for the discipline, but a common standard of reference, particularly in areas that have in the past been susceptible to greatly differing interpretations.

This dictionary comprises six sections in six languages, each listing the same terms alphabetically. It contains also a table interlinking all of these languages, listing all terms explained. This translation table is organised alphabetically according to the English terms. The volume is indispensable for scientific translators, rock art scholars, archaeologists and others concerned with aspects of pre-Historic rock art, and is also intended for the guidance of students and authors working in this field.

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