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RONDA Y LA SERRANÍA]

ESTUDIOS EN HOMENAJE AL ARQUEÓLOGO
PEDRO CANTALEJO DUARTE

José Ramos Muñoz
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ÍNDICE

TESTIMONIOS DE AFECTO Y AMISTAD

Homenaje y reconocimiento al amigo y compañero Pedro Cantalejo Duarte con motivo de su jubilación. Reflexiones sobre investigación de base, gestión, conservación y socialización del Patrimonio Histórico.

JOSÉ RAMOS MUÑOZ 13

El hombre que leía las cuevas.

VIRGILIO MARTÍNEZ ENAMORADO 99

Amigo y colega Pedro Cantalejo.

EUDALD CARBONELL 103

¿Tienes un bolígrafo para mí? Encuentros con Pedro Cantalejo.

GERD-CHRISTIAN WENIGER 105

¿Para qué va a ser? Las hicieron para que nosotros las viéramos.

MANUEL PIMENTEL SILES 107

El maestro del laberinto.

MANUEL ALONSO NAVARRO ESPINOSA 111

Laudatio a Pedro Cantalejo 2022.

JOSÉ ENRIQUE MÁRQUEZ ROMERO, JOSÉ SUÁREZ PADILLA
Y VÍCTOR JIMÉNEZ JÁIMEZ 115

Dedicatoria personal.

LIDIA CABELLO LIGERO 117

Testimonio de afecto a Pedro Cantalejo.

EDUARDO VIJANDE VILA 119

Testimonio de afecto y amistad a Pedro Cantalejo.

ADOLFO MORENO MÁRQUEZ 121

<i>Notas de reconocimiento a Pedro Cantalejo por la amistad profesada y aportación científica a la arqueología malagueña.</i> ÁNGEL RECIO RUIZ	123
<i>Un bonito Camino.</i> CARLOS VASSEROT ANTÓN	127
<i>A Pedro Cantalejo, maestro y guía en la oscuridad de los inicios.</i> SERAFÍN BECERRA MARTÍN	133
<i>Homenaje a Pedro Cantalejo.</i> ALEJANDRO MUÑOZ MUÑOZ	143
<i>Testimonio de gratitud a Pedro Cantalejo Duarte.</i> IKER LAISEKA URÍA	147
<i>Amigo y colega Pedro Cantalejo.</i> MANUEL BECERRA PARRA	149
<i>Testimonio de agradecimiento a Pedro Cantalejo de sus compañeros del Museo y Cueva de Ardales.</i> GERARDO ANAYA PAZ ET ALII.....	153
<i>A Pedro Cantalejo Duarte.</i> TONI CIFUENTES ET ALII	163

ARTÍCULOS

<i>Evolución del asentamiento humano en la región de Aïn Beni Mathar-Guefaït (Jerada, Marruecos Oriental). Investigaciones recientes y cartografía del poblamiento humano al norte del Sáhara.</i> ROBERT SALA-RAMOS ET ALII	179
<i>Sobre el origen hipogenético de la Cueva de Ardales y otras cavidades de la Serrezuela y su relación con las aguas sulfurosas de los Baños de Carratraca (Málaga).</i> JUAN JOSÉ DURÁN VALSERO ET ALII	205
<i>Cueva de Ardales: un caso de estudio para comprender el papel simbólico de las cuevas en el Paleolítico medio.</i> AFRICA PITARCH MARTÍ, FRANCESCO D'ERRICO Y JOÃO ZILHÃO	219

<i>La divulgación de la Cueva de Ardales y la prensa escrita local.</i> JUAN CARLOS DÍEZ FERNÁNDEZ-LOMANA	243
<i>Las manos positivas del arte rupestre paleolítico en la Península Ibérica.</i> HIPÓLITO COLLADO GIRALDO	255
<i>A vueltas con la Cueva de Atlánterra (Zahara de los Atunes, Cádiz, Andalucía): Una propuesta cronológica de su registro gráfico paleolítico desde el reestudio parietal y los enclaves arqueológicos circundantes.</i> DIEGO SALVADOR FERNÁNDEZ SÁNCHEZ	315
<i>La Cueva del Haza (Ramales de la Victoria, Santander).</i> JOAQUÍN EGUIZABAL TORRE Y JOSÉ M. ^a CEBALLOS DEL MORAL	361
<i>Reconstructing social networks through Palaeolithic art: graphic interactions in the Later Magdalenian.</i> MARCOS GARCÍA-DÍEZ ET ALII	367
<i>La conservación de la Cueva de Nerja desde la perspectiva de la investigación interdisciplinar en el marco de su proyecto general de investigación.</i> LUIS-EFRÉN FERNÁNDEZ RODRÍGUEZ, YOLANDA DEL ROSAL PADIAL Y CRISTINA LIÑÁN BAENA	387
<i>La convención de patas paralelas divergentes de la cabra M-4 de la Cova de les Meravelles. Una aproximación a su significación estilística y al papel de las representaciones de cabras en el arte Pre-magdalenense.</i> ANA CANTÓ Y VALENTÍN VILLAVERDE	419
<i>Agujas de hueso del extremo occidental de Eurasia: los datos del Paleolítico de Andalucía (España).</i> J. EMILI AURA TORTOSA, VANESSA EXTREM MEMBRADO Y JESÚS F. JORDÁ PARDO ...	449
<i>Aproximación al estudio de las materias primas líticas del Paleolítico de la comarca del río Guadalteba (Málaga).</i> LIDIA CABELLO LIGERO ET ALII	465
<i>El papel de los moluscos marinos y de agua dulce en las sociedades prehistóricas de la comarca del Guadalteba (provincia de Málaga). Una visión en proceso histórico.</i> JUAN JESÚS CANTILLO DUARTE Y SERAFÍN BECERRA MARTÍN	485
<i>La ocupación del ámbito de la bahía de Málaga entre el VI y el III milenio a. n. e.: Estado de la cuestión.</i> SERAFÍN BECERRA MARTÍN, JOSÉ SUÁREZ PADILLA Y JOSÉ ANTONIO SANTAMARÍA GARCÍA	519

<i>¿Por qué hacemos lo que hacemos?</i> ASSUMPCIÓ VILA MITJÀ Y JORDI ESTÉVEZ ESCALERA	553
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CRÓNICA DE AL-ÁNDALUS EN LA SERRANÍA. DE LOS NOMBRES DE SUS GENTES Y SUS LUGARES (V)	575
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1. *Otro hidrónimo más con etimología desentrañada para la nómima fluvial de al-Andalus: el río Guadarrín de Faraján.*
VIRGILIO MARTÍNEZ ENAMORADO Y JUAN ANTONIO CHAVARRÍA VARGAS 577
2. *Dos nuevos topónimos andalusíes de la Algarbía malagueña.*
VIRGILIO MARTÍNEZ ENAMORADO 584
3. *Testimonio de los Gelidassen en la Algarbía malagueña: el caso de Casarabonela.*
VIRGILIO MARTÍNEZ ENAMORADO Y ESTEBAN LÓPEZ GARCÍA..... 595
4. *Sobre el campo semántico de al-Ŷazīra aplicado a ‘vega’: el caso de la villa de Garciago (Ubrique, Cádiz).*
VIRGILIO MARTÍNEZ ENAMORADO, FRANCISCO SILES GUERRERO
Y LUIS IGLESIAS GARCÍA 611
5. *Evidencias de los imaziguen Miknāsa en la Algarbía malagueña.*
VIRGILIO MARTÍNEZ ENAMORADO, ANTONIO ORDÓÑEZ FRÍAS
Y ESTEBAN LÓPEZ GARCÍA..... 622





ESTUDIOS EN HOMENAJE
A PEDRO CANTALEJO DUARTE

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VIRGILIO MARTÍNEZ ENAMORADO
FRANCISCO SILES GUERRERO

(EDITORES)

RECONSTRUCTING SOCIAL NETWORKS THROUGH PALAEOLITHIC ART: Graphic interactions in the Later Magdalenian¹

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RESUMEN: El estudio de las convergencias y divergencias gráficas en el arte paleolítico es utilizado para comprender la cultura, los territorios y los sistemas de interacción entre grupos humanos. El análisis estilístico y formal de los bisontes rupestres europeos atribuidos al Magdaleniense reciente muestra la existencia de dos morfotipos gráficos: pirenaico (o tipo Niaux) y perigordiano (o tipo Font-de-Gaume). Su distribución geográfica, así como la densidad de conjuntos y figuras, permiten reconsiderar su significado territorial y proponer hipótesis para explicar la distribución y la coexistencia de estos modelos gráficos.

PALABRAS CLAVE: arte rupestre, arte mueble, territorios gráficos, redes culturales, bisonte.

SUMMARY: The study of graphic convergences and divergences in Palaeolithic art is a way of understanding the culture, territories and interaction systems of human groups. The stylistic and formal analysis of bison depictions dated in the Later Magdalenian (Middle, Upper and Late Magdalenian) shows the existence of two graphic morphotypes: Pyrenean (or Niaux type) and Perigordian (or Font-de-Gaume type). Their geographic distribution and the density of sites and figures enables a reappraisal of their territorial significance and hypotheses are proposed to explain the distribution and co-existence of these graphic models.

KEY WORDS: cave art, portable art, graphic territories, cultural networks, bison.

1. THE CONCEPT OF GRAPHIC TERRITORY

The use of Palaeolithic art as a “cultural revealing” has been resorted to since the beginning of research and the first studies, focusing mainly on the style of graphic

¹ “Reconstruyendo las redes sociales a través del arte paleolítico: interacciones gráficas durante el Magdaleniense reciente”.

depictions and their evolution through time and the establishment of a chronological framework (Leroi-Gourhan, 1966).

In recent decades, several authors have implemented the idea of Palaeolithic art as an indicator of social dynamics of hunter-gatherer groups during the Upper Palaeolithic (Sieveking, 1978, 2003; Bahn, 1982; Conkey, 1980, 1987; Barandiarán, 1988; Moure, 1994; Fritz, 1999; García-Diez y Eguizabal, 2003; Fortea *et al.*, 2004; Fritz *et al.*, 2007; García-Diez *et al.*, 2008, 2015; Sauvet *et al.*, 2008; Rivero, 2015), especially in the Magdalenian period when the evidence of art is more abundant and the chronological precision is better. In short, the art is regarded as a mirror of Palaeolithic societies. Thus, the study of graphic convergences and divergences in the artistic evidence can be used to understand the culture, mobility and interaction systems of human groups.

The concept of graphic territory should be understood from a wide perspective (García-Diez, 1999). The notion of territorial boundaries has traditionally been discussed and analysed through anthropological and ethnographic studies (Wobst, 1974, 1976; Peterson, 1975; Dayson-Hudson y Smith, 1978; Binford, 1980; Weissner, 1982; Gamble, 1982; Franklin, 1989; David y Cole, 1990; Layton, 1991; Barton *et al.*, 1994; Kelly, 1995; Clark *et al.*, 1996; Whallon, 2006; Grove, 2009; Fitzhugh *et al.*, 2011; Gravel-Miguel, 2016). Within the difficulty of defining a graphic territory, it must be understood as a part of the symbolic territory and, at the same time, of the social territory encompassing economic and other subsistence aspects of the groups.

Therefore, graphic territory should be taken as the representation of convergences in form, techniques and/or style in the graphic language and expression of Palaeolithic groups.

The definition of territoriality involves two main essential aspects: space and time. It is necessary to move beyond the modern idea of “borders” and establish boundaries through the analysis of social mobility and interactions, and not focusing on natural and geological conditions. On the other hand, a precise chronological framework is required. In the case of the study of social graphic territories, we need an assessment, not only of the chronology and the distribution of the iconographic representations, but also and most important, of the choice and value of the variables used. These elements determine the definition of a graphic territory.

In the Palaeolithic, cultural affinity between human groups, their degree of mobility and aggregation system determine the size of the graphic territories. Finally, a study of this kind needs to be based on the definition and ranking of concepts that can be used to assign the decorative motifs to territorial units. For this, the following terms have been proposed (García-Diez, 1999, 2002):

- Graphic local unit: or a minimum band (term used by Wobst, 1974) formed by several family units or bands, usually linked by kinship ties, where every individual is an active part of the social communication process and information sharing. The size of this area would be variable.
- Graphic territorial unit: or a maximum band understood as “a loosely interlocking network of minimum bands maintained through ritual communication and exchange” (Wobst 1974, pp. 152). At this level of social arrangement, information exchange occurs through communication between different local groups. Their degree of interaction as well as the size of territorial units depends on the needs and facilities for gathering of each group.
- Graphic community: the major structure of the graphic social arrangement. It is formed by several territorial units, more or less interconnected, depending on the mobility of each group and their degree of aggregation and, thus, communication among them. A graphic community system could span a large area, sometimes crossing natural boundaries. This type of communication among them would surely have been essential in their social complex.

This structuring implies two reflections. First, the existence of transition zones: this is the area where cultural interrelations among several communities, territorial or local units occur. These are usually smaller areas characterized by the existence of graphic similarities with the graphic community or graphic territorial units. Second, the existence of areas of geographic expansion beyond the core area. Thus, dispersion should be understood on two levels: (i) the core area of the graphic unit/community, linked by a certain sense of belonging and/or use of the territory, where the main concentration of archaeological sites and specific motifs is located, and (ii) a dispersion area, identified by a lower density of sites within a given geographical area and ensembles with a smaller number of specific motifs.

This organizational level of hunter-gatherer groups results in the formation of real and complex networks. They are defined by a varied set of different kinds of social relationships where exchange of information and goods is essential for their maintenance, and therefore they are structured by extremely complex interconnections.

2. OBJECTIVES

This study examines the stylistic and formal relationships of the representations of bison at sites in Spain and France dated in the Later Magdalenian (Middle, Upper and Late Magdalenian –Álvarez, 2006-2007–).

A new analysis of the distribution of the Pyrenean and Pergordian morphotypes defined by Fortea *et al.* (2004) and Sauvet *et al.* (2008) seeks to identify models of social interaction and mobility among human groups, based on Palaeolithic iconography.

3. MATERIALS

Graphic representations of bison, either on portable objects, on cave walls, or in both modalities, have been documented at a total of 62 later Magdalenian sites (Alcalde del Río, 1908; Alcalde del Río *et al.*, 1911; Aujoulat, 1984; Aujoulat y Geneste, 1984; Alteirac y Vailou, 1984; Altuna y Apellániz, 1978; Arias y Ontañón, 2005; Balbín *et al.*, 2003; Balbín y González Sainz, 1993; Barandiarán, 1972; Barrière, 1982, 1990, 1997; Bégouën *et al.*, 2009, 2014; Beltrán *et al.*, 1966, 1967; Berenguer, 1979; Bétirac, 1952; Breuil *et al.*, 1913; Capitan *et al.*, 1910; Chollot, 1984; Clot y Omnès 1978; Clottes, 2010; Clottes y Rouzard, 1984; Clottes *et al.*, 1984; Combier, 1984; Corchón, 1981, 1986, 1992; Corchón *et al.*, 2011; Fortea *et al.*, 1991, 2004; Fritz y Tosello, 1999, 2007, 2010; Garate y Bourrillon 2012; Garate *et al.*, 2013a, 2013b, 2016; García-Diez *et al.*, 2015, 2017; González Pumariega, 2011; González Morales, González Sainz, 1985; González Sainz, 2003; González Sainz *et al.*, 1999; González Sainz, Ruiz, 2010; Gorrotxategi, 2000; Jauze y Sauvet, 1991; Jordá y Berenguer, 1954; Laplace y Larribau, 1984; Larribau y Prudhomme, 1984; Lorblanchet, 2001, 2010; Montes *et al.*, 2001, 2005; Mons, 1986-1987; Moure y Gil 1974; Omnes, 1984; Paillet, 1999; Rivenq, 1984; Roussot, 1984; Ruiz, 2014; Saint-Mathurin, 1984; Saint-Périer, 1930, 1936; Seronie-Vivien, 1984; Sieveking, 1987; Tosello, 2003; Vialou, 1996; VV.AA., 1995, 1996).

Fifty sites display parietal figures, seventeen have portable depictions and both types have been found at five sites (figure 2A).

- Parietal: in Asturias (La Peña de Candamo, Tito Bustillo, Covaciella, Llonín, Coímbre and El Pindal), Cantabria (Urdiales, Hornos de la Peña, Las Aguas, Los Moros de San Vitores, El Castillo and La Pasiega), Basque Country (Santimamiñe, Lumentxa, Altxerri, Atxurra, Aitzbitarte and Ekain), Navarre (Alkerdi), Pyrénées-Atlantiques (Etxeberri, Erberua, Oxocelhaya, Tastet and Sinhikole), Haute-Garonne (Marsoulas, Montconfort and Montespan), Ariège (Bèdeilhac, Trois-Frères, Les Églises, Le Portel, Niaux, Ker de Massat and Fontanet), Ardèche (Ebbou), Lot (Pergouset and Le Moulin), Dordogne

(Font-de-Gaume, Rouffignac, La Mouthe, Combarelles I, Combarelles II, Bernifal and Fronsac) and Vienne (Roc-aux-Sorciers).

- Portable: in Asturias (Las Caldas), Pyrénées-Atlantiques (Isturitz), Hautes-Pyrénées (Lortet and Les Espéluques), Ariège (Bèdeilhac, Enlène, Bèdeilhac and La Vache), Tarn-et-Garonne (Montastruc –Bruniquel–) and Dordogne (La Madeleine, Laugerie-Basse and Les Rebières).
- Parietal and portable: Cantabria (La Garma), Hautes-Pyrénées (Labastide), Ariège (Mas d’Azil, Tuc d’Audoubert) and Dordogne (La Mairie de Teyjat).

The chronology can be determined more precisely through portable collections (Las Caldas, La Garma, Isturitz, Labastide, Tuc d’Audoubert, Enlène, La Madeleine, Laugerie-Basse, Montastruc and La Mairie) which date mainly to the Middle Magdalenian (~17,600-16,300 cal BP), although some objects (La Vache and Les Rebières) from old excavations are attributed to later phases of the same period (~16,300-14,500 cal BP). Others (Espéluques, Bèdeilhac and Mas d’Azil) are only attributed generically to the Magdalenian.

Radiocarbon dates are available for parietal art (Alcolea y Balbín, 2007; González Sainz, 2005; Ochoa *et al.*, 2020 –Table 1–). These show that the bison were produced during a long period of time, from final phases of the Lower Magdalenian to the Late Magdalenian (~18,400-12,100 cal BP). However, as documented in portable art, the Middle and Upper Magdalenian are the most frequent.

The periodization differences might be a result of chronological differentiation between portable and parietal figures. However, they may also be due to the limitations of radiocarbon dating because of contamination by organic material or even to the repainting of figures after they were first created. This would explain significant differences in the different fractions of some of the figures (Llonín, Altamira and El Castillo). At the present time, the most prudent interpretation would fix the initial production of these bison figures in a very late phase of the Lower Magdalenian or very early phase of the Middle Magdalenian, continuing until the Late Magdalenian. However, most examples belong to the Middle and Upper Magdalenian, also the time when most portable figures were produced.

4. DISCUSSION

The bison studied here are related to the concept of “Pyrenean style” (Saint-Périer, 1930, 1939; Vialou, 1986) characterised by modular outlines, a coherent

TABLE I. SUMMARY OF C14 AMS DATES FOR THE LATE MAGDALENIAN BISON DEPICTIONS

SITE	LAB. N.º	FIGURE	FRACTION	C14 AMS	CAL BP 2σ	PROBAB.	REFERENCE
Llonín	GifA-98205	4	Charcoal	13540±170	16879-15843	95,4%	Fortea, 2002
	GifA-98024		Charcoal	12550±110	15199-14253	95,4%	
	GifA-95147		Charcoal	11900±110	14011-13480	95,4%	
	GifA-98206		Humic	13260±220	16567-15264	95,4%	
Altamira	GifA-96071	XXXIII	Charcoal	14820±130	18360-17700	95,4%	Moure <i>et al.</i> , 1996
	GifA-91181		Charcoal	14330±190	17949-16933	95,4%	Valladas <i>et al.</i> , 1992
	GifA-91330	XXXVI	Humic	14250±180	17860-16827	95,4%	Moure <i>et al.</i> , 1996
	GifA-96060		Charcoal	14800±150	18380-17635	95,4%	
	GifA-91179	XLIV	Charcoal	13940±170	17424-16374	95,4%	Valladas <i>et al.</i> , 1992
	GifA-91254		Humic	14710±200	18405-17435	95,4%	
	GifA-91178	88	Charcoal	13570±190	16972-15841	95,4%	Moure <i>et al.</i> , 1996
	GifA-96067		Charcoal	13130±120	16100-15329	95,4%	
GifA-91249	88	Humic	14410±200	18037-17008	95,4%	Valladas <i>et al.</i> , 1992	
GifA-98165		Charcoal	12469±160	15200-14083	95,4%	Moure, González Sainz, 2000	
GifA-98164	Charcoal	11990±170	14385-13445	95,4%			

Castillo	GifA-98151	Charcoal	14090±150	17557-16635	95,4%	Moure, González Sainz, 2000
	GifA-98152	Charcoal	13710±140	17016-16163	95,4%	
	GifA-95108	Charcoal	13570±130	16810-15981	95,4%	Moure <i>et al.</i> , 1996
	GifA-95109		13520±120	16685-15921	95,4%	
	GifA-98159	Humic	13510±190	16899-15758	95,4%	Moure, González Sainz, 2000
	GifA-96068	Charcoal	13520±130	16721-15899	95,4%	
	GifA-91004	Charcoal	13060±200	16237-15099	95,4%	Valladas <i>et al.</i> , 1992
	GifA-96079	Charcoal	12620±110	15305-14337	95,4%	Moure, González Sainz, 2000
	GifA-91172	Charcoal	12910±180	16021-14827	95,4%	
	GifA-95146	Charcoal	11270±110	13352-12859	95,4%	Valladas <i>et al.</i> , 1992
	GifA-96078	Charcoal	10740±100	12818-12520	92,5%	
	18c	GifA-96077	Charcoal	10720±100	12791-12518	90,6%
GifA-95136		12492-12425		4,8%		
GifA-95375		Charcoal	10510±100	12680-12098	95,4%	
		Humic	12390±190	15189-13922	94,8%	
Garma	GifA-102581	Charcoal	13780±150	17130-16218	95,4%	González Sainz, 1995
	Urdiales	GifA-11454	Charcoal	12750±110	15605-14742	95,4%
Niaux		GifA-92501	Charcoal	13850±150	17233-16289	95,4%
	GifA-92504	Humic	13740±190	17195-16070	95,4%	
	GifA-91319	Charcoal	12890±160	15946-14880	95,4%	Valladas <i>et al.</i> , 1992
	GifA-91173	Humic	12440±190	15257-13976	95,4%	

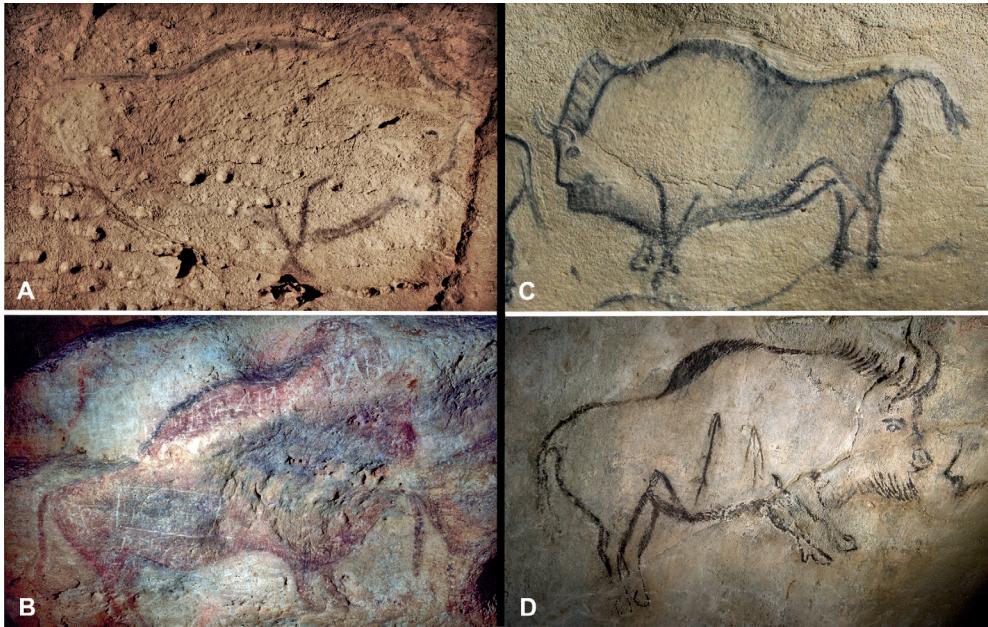


Figure 1. Comparison between the two morphotypes of bison from La Covaciella (A and C) with Font de Gaume (B) and Niaux types (D)

overall perspective, coherence in proportions, attention to anatomic and internal details, and the representation of the volume and mass of the animal's body. These elements define a naturalistic, analytic style, which has traditionally been associated with a territory including the Pyrenees and almost the whole of northern Spain, which implies a Cantabrian-Pyrenean distribution.

Within this style, two graphic variants have been defined according to the formal treatment (figure 1): the Pyrenean or Niaux morphotype and the Perigordian or Font-de-Gaume type (Fortea *et al.*, 2004; Sauvet *et al.*, 2008).

The Pyrenean morphotype (figure 2A), characterised by the classic consideration of the form and style of the "Pyrenean style", is found across a larger area than traditionally thought. Modern interpretations indicate a core area centred on Cantabrian Spain (Asturias, Cantabria and Basque Country) and the Pyrenees (Navarre, Pyrénées-Atlantiques, Hautes-Pyrénées, Haute-Garonne and Ariège), defining a theoretical E-W distribution axis. Further north, examples are found at a considerable number of sites in Dordogne, although the number of depictions is smaller. Some similar figures are known, but in smaller numbers, in the north-east of Ariège, Lot, Ardèche and Vienne, which define the dispersion area. This geographic distribution is supported by similarities in portable art, in an area from Asturias to Dordogne, although the main concentration is the Pyrenees (mostly in Ariège), coinciding with the core area (figure 2B).

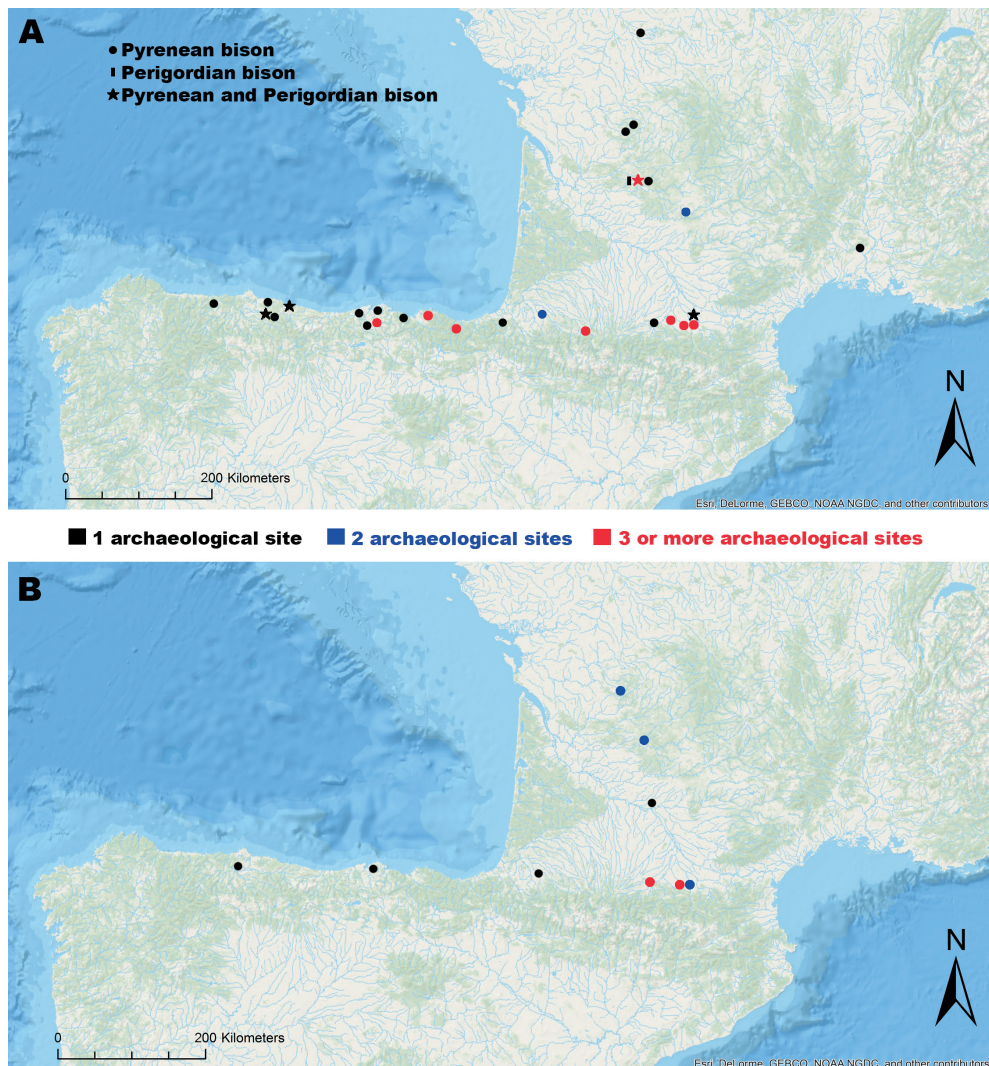


Figure 2. (A) Archaeological sites with rock art examples. (B) Archaeological sites with portable art examples

The second, Perigordian or Font-de-Gaume morphotype (figure 2A) –characterised by extremely modular outlines, a coherent general perspective and proportions, a prominent “chignon” and “bosse”, less focus on anatomical details and internal features, and great interest in the massiveness of the fore-quarters–, is a graphic model found mainly in the Dordogne (core area) where the number of Pyrenean-morphotype motifs is small despite the existence of sites with this type. The Perigordian morphotype is found in a few other places, such as Cantabrian Spain and even Ariège (dispersion area) but it is not frequent in portable ensembles.

Spatial complementariness of both graphic morphotypes (figure 2A) has been documented at some sites (La Covaciella, Pindal, Rouffignac, Combarelles I and, possibly, Font-de-Gaume, Niaux and Urdiales) located in northern Spain, Ariège and Dordogne. This complementariness is diverse. In Dordogne, the Perigordian morphotype is the most abundant and the Pyrenean type is scarce, while in northern Spain and Ariège, the proportions are inverted. This complementariness is most visible in two exceptional and distant cases (Rouffignac in Dordogne and La Covaciella in Asturias –figure 3–). In both sites, a similar composition associates two bison, each one belonging to one of the two morphotypes, facing each other and separated by a natural fissure in the rock.

With this graphic data and the determination of a long period of time, which is nevertheless “synchronic” in cultural terms, two anthropological and cultural hypotheses may be proposed.

The first would suggest that the people who painted, drew and engraved the Pyrenean-type bison belonged to a Graphic Territorial Unit circumscribed basically to northern Spain, the Pyrenees and specifically Ariège (where the highest density of sites and depictions is found), which existed from the end of the Lower Magdalenian

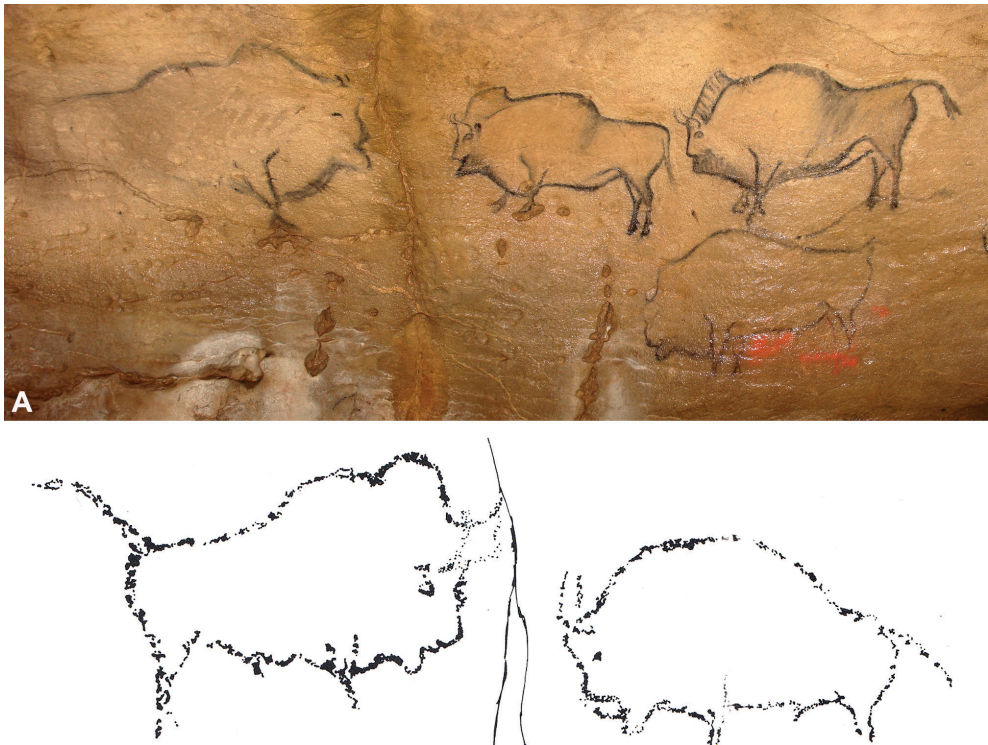


Figure 3. Spatial complementariness of Pyrenean and Perigordian types of bison in the caves of La Covaciella (A) and Rouffignac (B)

or start of the Middle Magdalenian until the Late Magdalenian. This Graphic Territorial Unit would maintain cultural contacts with other Units as they all belonged to the same Graphic Community with strong cultural ties, seen in both the preferences in the themes and the general conception of the style. In this way, it may be proposed that this Graphic Territorial Unit was in contact with another – represented by the dispersion of the Perigordian bison morphotype – centred on the area of Dordogne (the area with the largest number of sites and figures). Between these two Units, in addition to the basic cultural affinity, social interactions took place through population, cultural or material exchange, or through several concurrent exchanges. The dispersion of the Pyrenean morphotype in others regions (the Pyrenean morphotype in Ardèche and Vienne; and the Perigordian morphotype in northern Spain and Ariège) means that the influence of this Graphic Territorial Unit might have been felt over a wider geographical area. This model of interactions, based on the study of Palaeolithic art, is equally seen in other realms (Straus, 2013).

The other hypothesis regards the figures in a Pyrenean style, which as stated above are distributed over a wide area, as the basic graphic (and cultural) element of a Graphic Community. This community would encompass various graphic particularities, which would be associated with the different Graphic Territorial Units. These would be characterised by particular traits in the style of the animals or the presence of certain linear or geometric motifs (signs). In this way, Perigordian bison would be a particularity, mainly in Dordogne and with a few outliers due to mobility and frequent contacts between groups in northern Spain and Ariège, within a larger graphic structure or community. This would also explain the graphic convergences between the Pyrenean and Perigordian representations and the presence of both graphic morphotypes in the same cave.

These models necessarily imply “cultural synchrony”. Future studies with greater temporal precision will be able to confirm the hypotheses or propose a different model based on the progressive addition of motifs by human groups that were never in contact with each other but which may have possessed similar cultural roots.

5. CONCLUSION

The study of European bison figures dated in the later Magdalenian displays elements of stylistic convergence: modular outlines, coherent overall perspective, coherence in proportions, attention to anatomic and interior details and indication of volume and mass of the animal’s body. A formal interpretation is able to discriminate two morphotypes: Pyrenean and Perigordian.

In accordance with the conception of the “cultural synchrony” (Later Magdalenian) of both types, their geographic distribution enable a definition of graphic territories representing cultural links and mobility of the Upper Palaeolithic human groups.

The study suggests two hypotheses to be tested with new chronological data for the figures: a) the existence of a Graphic Community, characterised by the importance of bison figures in a style corresponding to the Pyrenean morphotypes, which would include particular variations within it (Territorial or Local Units) as regards style or thematic; and b) the existence, seen in the diversity in the stylistic treatment of the bison, of Graphic Territorial Units that would belong to a larger Graphic Community linked by a thematic preference and a generic naturalistic treatment of the bison.

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