

Ibex Images from the Magdalenian Culture

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ABSTRACT

This work deals with a set of images created during the Magdalenian period of Western Europe, part of what is known as Upper Paleolithic or prehistoric “art.” The set includes 95 images depicting four species: chamois, Pyrenean ibex, Alpine ibex, and saiga antelope. A selection of previously published image descriptions are collected here, and revised and extended with reference to current naturalistic knowledge. In 48 of the images studied, the image-makers selectively depicted seasonal characters and behaviors, as first remarked by Alexander Marshack for images of all subjects, but 41 ibex and saiga antelope images reveal a focus on selected horn features—winter rings and growth rings—which are unique to these two subjects and first remarked here. These are not seasonal characters but are still closely related to the passage of time and may have been used as a visual device to keep track of solar years, elapsed or to come. Revealing similar concerns by the image-makers, and the same creative way of using images from the natural world surrounding them, this new theory can be seen as complementary to the seasonal meaning theory, of which a brief historical account is included here. The careful study of selected images and image associations also led to the finding, in line with recent paleobiogeographical data, that the Pyrenean ibex was the most frequently—if not the only—ibex species depicted by the image-makers, as a rule in its winter coat. Sixty-four carefully selected photographs, tracings, and drawings, of which seventeen are previously unpublished, illustrate the images discussed in the text.

INTRODUCTION

This article presents the results of a comprehensive review of Magdalenian images that I began in the spring of 2002. Rather than actual artifacts, this review is based on the wealth of drawings, tracings, and photographs published from the second half of the nineteenth century to the present day. A selection of all the photos, tracings, and drawings studied, including a few early tracings¹ and drawings (Table 1) is provided here, along with previously unpublished photographs and my own tracings from photographs. The set of 95 images discussed is limited to images of ibex and two related species, saiga antelope and chamois (Figure 1). Some of these images have been selected for publication more than once since their discovery, partly because of what had been perceived, especially until the 1960s, as their artistic value, but others received less attention yet have turned out to offer the most valuable clues.

The rest of this section introduces the artifacts discussed in this work, the time and place from which they come, and relevant background information on ibex biology. This information includes a definition of the four distinct anatomical horn features for which the generic term horn rings (in French, *corne annélée* or “ringed horn;” the author’s translations into English are indicated in italicized blue font throughout this article) can be used, and a description of seasonal characters for one of the species considered. With reference to our current knowledge of the species that were actually living in the region, in the following section I will examine the set of images included here only to see if the

overall shape of the horns can tell us which species was depicted. The issue of species determination will be taken up again later when discussing the Abri Bourdois ibex and especially after introducing the two main techniques used to render horn features. The third section includes a review of the ibex, saiga, and chamois images so far described as seasonal, with a few new additions, and a brief history of the seasonal meaning theory (my terminology). Although it was referred to as “une voie nouvelle de la recherche” (Crémades 1997b: 455) about five years prior to the start of the work described here, this line of research actually can be traced as far back as the mid-1960s. Thus, my account, which collects together results from independent research efforts, will begin with that decade.

In the same way as seasonal characters and behaviors are a key feature in many images of all subjects, including 48 of those included here, horn rings are a key feature in as many as 41 ibex and saiga images. The fourth section will present these images, which come from different times and places within the Magdalenian region, arranged in four groups to highlight similar image-making solutions. When looking at some of them, a naturalist or wildlife biologist cannot fail to notice how easily these images allow horn segment counts (Ragni, pers. comm.), a means of age determination, and a closer look reveals how the image-makers intentionally focused on these features, suggesting that these features had a special significance for them. This significance will be discussed in the final section on meaning, in which the theory proposed here is presented side-

TABLE 1. NOTES ON EARLY TRACINGS AND DRAWINGS.

	Author	Notes
Figure 10	H. Breuil	This tracing was reprinted twice by de Sonneville-Bordes (de Sonneville-Bordes and Laurent: 1968; de Sonneville-Bordes: 1986). I was unable to find any evidence to double-check this tracing other than Breuil's (1936-37: 14, caption of Figure 13) original description of the three images as " <i>deeply engraved</i> " and of a " <i>summary and mediocre artistic style.</i> "
Figure 18	H. Breuil	See <i>L'Art Pariétal du Ker de Massat</i> (Barrière 1996).
Figure 19	H. Breuil	Reprinted in <i>L'art des grottes en Ariège magdalénienne</i> (Vialou 1986).
Figure 40	H. Breuil	Pales and Tassin-de-Saint Péreuse (1981: 137) noted that Breuil's tracing, made seventy years before their time, was based on a " <i>neater painting,</i> " and " <i>although very stripped down,</i> " it was " <i>very faithful,</i> " at least for horn features. After double-checking this tracing with three photographs (Graziosi 1956: Plate 199 b; Leroi-Gourhan 1965: Figure 594; Beltrán et al. 1973), I reached the same conclusion.
Figure 51	A. Glory	I double-checked this tracing with two photos by F. Windels, one for the colors (Windels 1948: 82) and one for the engravings (Graziosi 1956: Plate 190b) and found it to be quite rough but reliable. More recent photos could have been used for the engravings, but not for the colors—the first of the two photos was published in the same year the cave was opened to the public; by the time the second photo was taken, the color had largely disappeared, as noted in the original figure caption.
Figure 60	J. Bouyssonie	Bouyssonie's artwork is regarded, in general, as more reliable than Breuil's (Bahn 1997: 51) and this particular drawing was selected as cover art for the booklet <i>Amédée et Jean Bouyssonie Préhistoriens</i> (Roussot 1966).

by-side with, and eventually compared with, the seasonal meaning theory. A concluding section offers an overview of the results.

ARTIFACTS

The images discussed here were created on cave walls, stone plaquettes, and a variety of portable objects including bone plaquettes (Table 2). As image-making supports, stone plaquettes were traditionally bundled together with bone, antler, and ivory objects under the label *art mobilier*, but I have found them to share just as many properties with cave walls and this is why they will be considered here as a third, distinct group. The same conclusion was reached by Vialou (in Conkey 1987: 420).

More than half of the portable objects listed in the artifacts table have been assigned to a class of tools or personal ornaments, but some of these class names are now only conventional. I translated *baguette demi-ronde* as half-round

point, meaning a point with a semicircular section, and both *spatule* and *lissoir* as polisher, for consistency. *Tubes* are elongated, hollow objects made out of bird bones and known to have been used in various ways, when they do not have flute holes. The class name *pendeloque*, here pendant, refers to pierced objects that can be carved in full relief—these may have broken off from batons or weighted spear-throwers—or carved flat, just like *rondelles* and *contours découpés*. Since all the unclassified portable objects listed here were used as image-making supports, when their shape is roughly rectangular they match the definition of plaquettes, and to this class I assigned two of them (see the notes to Table 2). For consistency, I left the class field blank for those portable objects that were identified in the literature by the name of the bone (*côte*, *omoplate*) or antler part (*époi*, *palm*) they were made from, because these are not class names. I kept the term *lame*, without translating it.

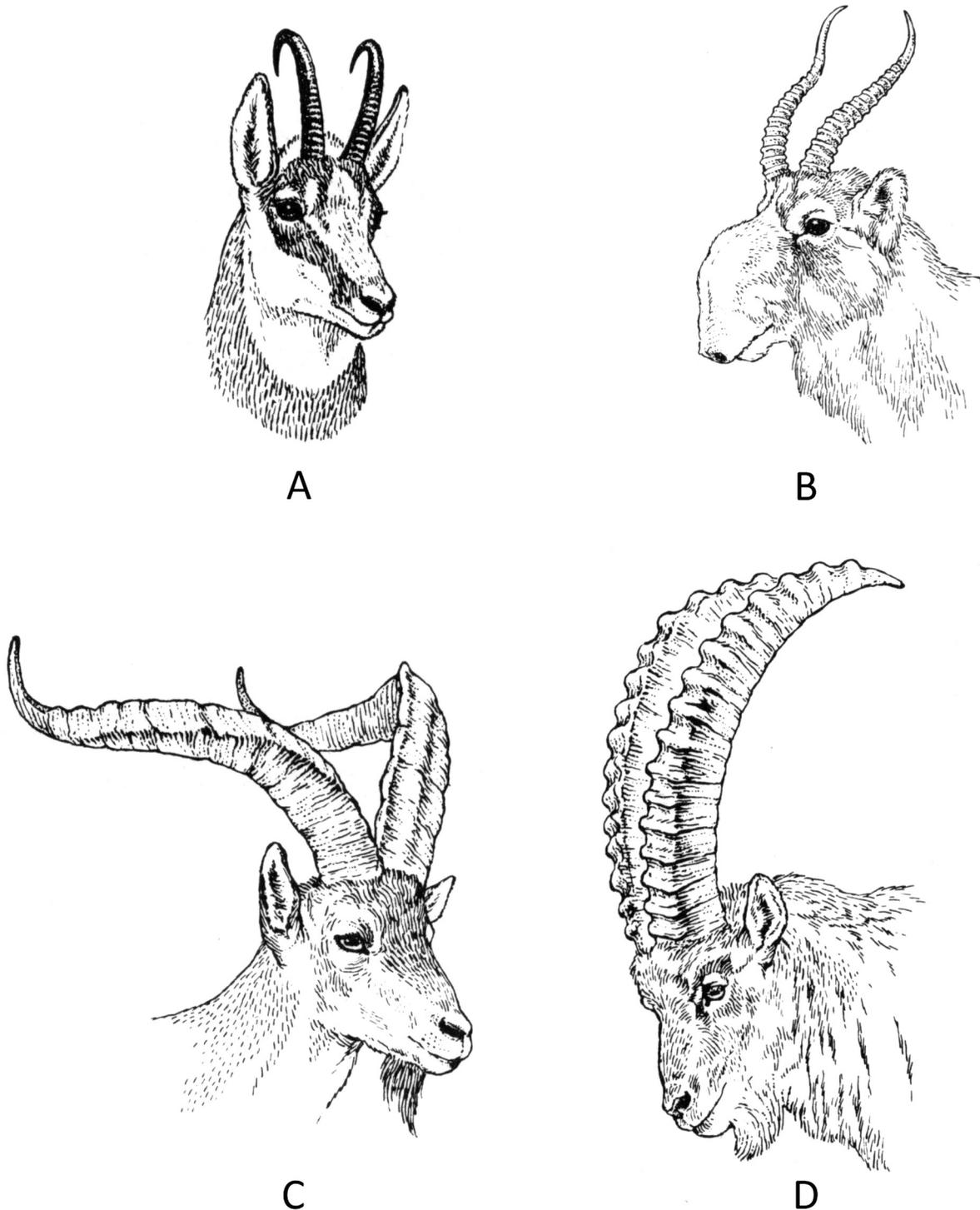


Figure 1. Line art showing heads and horns of the four species mentioned in the text. A: chamois; B: saiga antelope; C: Pyrenean ibex in summer coat; D: Alpine ibex in winter coat. Note the prominent ornament rings along the front side of Alpine ibex horns. Art by R. Keane, reprinted by permission of the publisher from Schaller (1977: Figures 6–7).

CLIMATE AND ENVIRONMENT

The vast majority of the artifacts presented here have been assigned to the Middle, Upper, or Final Magdalenian (see Table 2) subdivisions of the Magdalenian cultural period—

the last of the Upper Paleolithic age—based on the “cadre chrono-stratigraphique” (Bosselin and Djindjian 1988: 23, Figure 9), that is, the environmental sequence of the last deglaciation. The artifact discovery sites are found across a

TABLE 2. ARTIFACTS LIST.

Material	Object class	Size (cm)	Discovery site	Phys. env.	Dating (Magdalenian)	Dating source	Museum	Inv. no.	
<i>Stone plaquettes</i>									
1	Micaceous sandstone	plaquette	14.8 × 14.3 *	Ekain	CC	Upper-Final	Altuna 1984	MAN	47.011
2	Stalagmitic limestone	plaquette	9.3 × 7.3 *	Ènlene	Pyr.			MH	1424
3	Schist	plaquette	7.4 × 4	Lortet	Pyr.	Upper	Musées de France	MAN	48.270
<i>Portable objects</i>									
4	Reindeer antler	baton	19.3	Arudy, Grotte d'Espalungue	Pyr.	Middle	Musées de France	MAN	47.011
5	Bone		7.35 × 2.3	Aurensan, Grotte Inférieure	Pyr.	VI	Delporte 1974	MAN	51.451
6	Bone		11.0 × 2.6	Bruniquel, Abri Montastruc	MC	Upper	Tisnerat-Laborde et al. 1997	BM	Palart.624
7	Bone		6.7 × 2.3	Bruniquel, Abri Montastruc	MC	Upper	Tisnerat-Laborde et al. 1997	BM	Palart.625
8	Bone	rondelle	3.5	Bruniquel, Abri Montastruc	MC	Upper	Tisnerat-Laborde et al. 1997		
9	Reindeer antler	baton	6.8 *	Abri de Cambous	MC				
10	Reindeer antler	baton	15.3	Abri Duruthy	Pyr.	IV (11,890-11,560 BC)	Evin 1978	AA	
11	Red deer antler	baton	12.8	Gourdan	Pyr.	Upper	Musées de France	MAN	47.261
12	Bone		10.5 × 2.6	Gourdan	Pyr.	Middle-Upper	Dujardin 2008	MAN	47.327
13	Bone	<i>contour découpé</i>	5.5 × 3.6	Isturitz (Salle Saint-Martin)	Pyr.	Middle (IV)	Pétillon 2004	MAN	84.675
14	Bone		9.3 × 2.3 *	Isturitz (Grand Salle)	Pyr.	Middle (IV)	Pétillon 2004	MAN	
15	Bone	polisher	19.6 *	Isturitz (Grand Salle)	Pyr.	Middle (IV)	Pétillon 2004	MAN	86.717
16	Bone		13.3	Isturitz (Grand Salle)	Pyr.	Middle (IV)	Pétillon 2004	MAN	86.719
17	Bone	plaquette	7.7 × 2.2	La Crouzade, Grotte de	Clape	Middle (IV)	Sacchi 1986	MBA	74.3
18	Bone	<i>contour découpé</i>	6.2 × 2.35	La Garna (Galera Inferior)	CC	Middle (14,120 BC)	Corchón Rodríguez 2005	MPAC	GI-1002
19	Reindeer antler	baton	19.2 *	La Vache (Salle Monique)	Pyr.	Upper (12,850 BC)	Musées de France	MAN	83.348
20	Bone	polisher	13.1	La Vache (Salle Monique)	Pyr.	Upper (12,695 BC)	Musées de France	MAN	83.353
21	Bone		19.8 × 3.5	La Vache (Salle Monique)	Pyr.	Upper (11,800 BC)	Musées de France	MAN	83.355
22	Bone	tube	7.2	La Vache (Salle Monique)	Pyr.	Upper (12,695 BC)	Musées de France	MAN	83.376
23	Reindeer antler		11.0 × 2.6	La Vache (Salle Monique)	Pyr.	Upper (12,540 BC)	Musées de France	MAN	83.378
24	Bone		6.25	La Vache (Salle Monique)	Pyr.	Upper (12,540 BC)	Musées de France	MAN	83.378
25	Reindeer antler	point, round	11	Lacave, Grotte de / Joudas	MC			LMA	12571

TABLE 2. ARTIFACTS LIST (continued).

Material	Object class	Size (cm)	Discovery site	Phys. env.	Dating (Magdalenian)	Dating source	Museum	Inv. no.
26 Reindeer antler		8.8 × 6.3	Laugerie Basse, Abri Classique	MC	IV	Sieveking 1987b	BM	Palart.202
27 Reindeer antler	<i>lame</i>	19.2 × 4.6 *	Laugerie Basse, Abri Classique	MC			MAN	53.827
28 Bone	<i>lame</i>	4.6 × 2.5	Le Chaffaud, Grotte Intermédiaire	MC	Final	Airvaux 2002	MP	
29 Bone	pendant, flat	13.4	Le Mas d'Azil	Pyr.			MAN	46.487
30 Reindeer antler	spear-thrower, compact	26.5 × 2.1 × 1.8	Le Mas d'Azil	Pyr.			MAN	47.025
31 Bone	plaque *	7.7 × 2.2	Le Mas d'Azil	Pyr.	Middle	Musées de France	MAN	47.195
32 Ivory	pendant, carved	12.5 × 5 × 3.7	Le Mas d'Azil	Pyr.	Middle	Musées de France	MAN	47.257
33 Bone	polisher	12.5	Le Mas d'Azil	Pyr.			MAN	50.289
34 Bone	baton	8.4	Le Mas d'Azil	Pyr.	IV	Clottes et al. 1981	MMA	
35 Reindeer antler	baton	18.5	Le Veyrier / Veyrier, les abris de	Salève	Final	Gally 1990	MAH	A-8816
36 Reindeer antler	point, round	15.1	Les Eyzies, Grotte de	MC	VI	Sieveking 1987b	BM	Palart.100
37 Bone		19.4 × 2.8	Les Eyzies, Grotte de	MC	VI	de Sonneville-Bordes & Laurent 1968	MNP	
38 Reindeer antler	baton	22.5	Les Hoteaux / Grotte des Hoteaux	Jura	V	Desbrosse 1980	MAN	
39 Reindeer antler	point, half-round	8.1	Lortet	Pyr.	Upper	Musées de France	MAN	47.286
40 Bone		5.3 *	Massat, Grotte du Ker	Pyr.			MHN	
41 Bone	plaque *	6.2 × 2.7	Planchetorte, Grotte des Morts	MC			ML	
42 Red deer antler	pendant, carved	7.9 × 2.4 × 1.2	Tito Bustillo	CC	Upper	Moure 1983	MAA	2271

*When marked with an asterisk, object classes are my classification (see text) and object dimensions are my measurements from a published tracing. Everything else is quoted directly from one of the sources, but the source used is stated here only for dating information. Note that not only have three different dating systems been in use, but different sources may use different definitions for the same subdivisions. For example, the definition of Upper Magdalenian may include the Middle Magdalenian, the Final Magdalenian, or both.

Physical environment codes:

Clape = Massif de la Clape (in the Aude River Plain)
 CC = Cordillera Cantabrica, northern side
 Jura = Jura, western side
 MC = Massif Central
 Pyr. = Pyrenees, northern side
 Salève = Mont Salève (between the Alps and the Jura)

Museum codes:

AA = Musée de l'Abbaye d'Arthous, Hastings, France
 BM = British Museum, London, UK
 LMA = Logan Museum of Anthropology, Beloit College, Beloit, WI, USA
 MAA = Museo Arqueológico de Asturias, Oviedo, Spain
 MAH = Musée d'Art et d'Histoire, Genève, Switzerland
 MAN = Musée d'Archéologie Nationale, St-Germain-en-Laye, France
 MBA = Musée des Beaux-Arts, Carcassonne, France
 MH = Musée de l'Homme, Paris, France
 MHN = Musée d'Histoire Naturelle, Toulouse, France
 ML = Musée d'Art et d'Histoire "Labenche" Brive-la Gaillarde, France
 MMA = Musée du Mas d'Azil, France
 MNP = Musée National de Préhistoire, Les-Eyzies-de-Tayac, France
 MPAC = Museo de Prehistoria y Arqueología de Cantabria, Santander, Spain

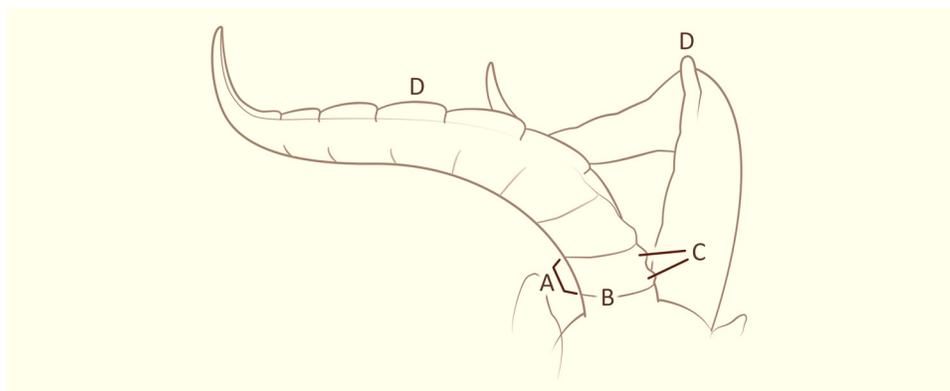


Figure 2. The Pyrenean ibex horn features, as seen in adult males—A: growth rings; B: winter rings; C: ornament rings; and, D: the bumps along the keel, a thick ridge running all along the horn, resulting from the nicks cut by winter rings. Note that ornament rings are significantly smaller than in the Alpine species.

vast region of Atlantic Europe extending northward of the Cordillera Cantabrica and Pyrenees, two mountain ranges that formed a continuous watershed (Altuna 1972: Figure 60), and bounded on the southeast by the Western Alps and the Jura. At the Last Glacial Maximum (LGM), when the southern and southeastern mountain ranges were covered by continental ice caps, this region was a refuge area (or *refugium*) for large mammals including humans. The deglaciation began with a sudden climate change, a warming event that brought about the onset of a warm phase (Bølling-Allerød) followed by a gradual return to glacial conditions (Younger Dryas) until another sudden change led to the final deglaciation stages (Preboreal) and ultimately the early Holocene climate (Cronin 1999: 57–61, 203–206). During the deglaciation, the Scandinavian ice sheet melted, causing increased volcanic and seismic activity, the surrounding permafrost zone retreated, and terrestrial life could expand northward and eastward, while at the same time rising ocean waters submerged part of the wide Atlantic coastal plain, causing the western coastline to advance inland until reaching its Holocene position. A new geological epoch of relative stability and milder climate ensued, in which we still live in.

IBEX BIOLOGY

Unlike deer's antlers that are shed every year, ibex horns keep growing for life. The length of horn developed in a year's time is called an annual growth ring (*anneau de croissance* or *d'âge* in French, *medrón* in Spanish) or horn segment. The horns borne by ibex females are much smaller but follow the same development as in males. During the mating season, in early winter, horn growth slows down, resulting in thin, dark bands running all around the horn (Figure 2). These narrow grooves, that I call winter rings, neatly mark the end of each growth ring, allowing naturalists and wildlife biologists to use horn segment counts as a means of age determination. For the Pyrenean ibex, this well-known method has been shown to be a valid means of absolute age determination, and to correlate well with dental cementum layer counts (Fandos 1991: 31–33, 35). Ibex males also develop a series of thick, transverse ridges on

the front side of the horn that are called ornament rings. The number of ornament rings for each growth ring varies with age following a known relationship and this provides an indirect way to count horn segments that can be used in the field for species like the Siberian and Alpine ibex, where this type of ring is more easily observed, from a distance, than are winter rings (Schaller 1977). Compared to those of their Alpine counterpart, the ornament rings of Pyrenean ibex males are smaller (see Figure 2) especially in older individuals where they may have worn out. The length of growth rings also varies with age, in both ibex species, with the last ones, at the base of the horn, being shorter. The chamois has much smaller horns, with a final backward turn, or hook, and whose overall shape is used in the field for sex and age class determination.

In the cold season, the age of Pyrenean ibex males also can be estimated from the extension of the dark-colored areas in their winter coat. These include the beard; the thick hair covering the top and sides of the muzzle, from the forehead to right before muzzle features; the short hair forming the neck mane and back line; and, the hair along the sides, all missing in females and young ibex. Year after year, these areas extend over more and more of the winter coat, eventually merging into an almost continuous cover (Losa 1989; Sáenz de Buruaga 2001). Since they are only displayed for a limited time of the year, these darker, almost black coat areas are seasonal characters, especially the neck mane and back line hair that can be seen standing upright when males of Pyrenean ibex, as well as chamois, are alert due to the presence of a rival or a mate, as observed throughout the mating season (various sources).

SPECIES DEPICTED

In the final Pleistocene, two species of ibex inhabited the mountain ranges surrounding the region of Atlantic Europe where the Magdalenian culture developed (see above). The Alpine ibex (*Capra ibex*) occupied the western side of the Alps and, across the Rhône river valley, the eastern side of the Massif Central, while the Pyrenean ibex (*Capra pyrenaica*) was “*prépondérant*,” compared to the Alpine species, in the Massif Central and widespread all along the north-



Figure 3. Altxerri: cave wall engraving found on the right wall of a small side room from the main gallery. Photo by J. Altuna, reprinted by permission of the publisher from Altuna (2000: Figure 73).



Figure 4. Artifact 30. The arrow points to the tongue out, right along the edge. Photo by J. Vertut, reprinted from Torbrugge (1968: 27), permission given by Photo Jean Vertut.

ern side of the Pyrenees (Crégut-Bonnoure 2005: 211–213) and the Cordillera Cantabrica (Altuna and Apellániz 1976: 198–199). The Alpine species is still found today across the Alps, while the Pyrenean species, also known as Spanish or Iberian ibex, survives only in the *sierras* of central and southern Spain. Like most of their living relatives, these two species can be told apart by their horn shape, as observed in adult males (see Figure 1). While the Alpine ibex horns follow a simple arc in a single plane, and could be laid flat on one, the Pyrenean ibex horns follow a convoluted, twisted shape in three dimensions. Within the set of Magdalenian images included here, the Pyrenean horn shape can be clearly seen in side view (Figure 3; see also Figures 14, 21, 25, 31, 40, 42, 47, 50, and 58 below) as well as in three dimensions (Figures 4 and 5), while only a few images seem to show the simpler shape of the Alpine species, including the following two. The image on the back side of the Veyrier baton (Figure 6) was traced three times, the second one by Breuil who, in addition to recreating part of the missing outline, made the ibex horns too long and tight (Stahl Gretsch 2007: 116, Figures 188–194) but the actual horn shape does not clearly belong to either species, possibly being influenced by support constraints. The image created in clay soil at Niaux (Figure 7), was traced by Breuil with a very tight horn shape, but there is a discontinuity on both sides of the outline before what he saw as the final length of the horn; it seems to me that this may in fact be part of the long streaks, likely natural features, running along the floor, to the effect that the horn may be significantly shorter than as traced and not necessarily Alpine. These two tracings by Breuil are still found in Guthrie (2005: 55, 86–87) as evidence of a possible “tight curve variant” in “Pleistocene ibex” populations across Europe. In this respect, it should also be noted that a few ibex images show wide curving, almost straight horns (Figure 8; see also Figures 51 and 52 below) and more significantly that the species depicted should be considered first, since from certain angles the Pyrenean horn shape does look like a tight Alpine. Limited as it may be, and given that in many cases the horns are not long enough to tell which species was depicted, the set of ibex images included here confirms that the Pyrenean ibex was well-known to image-makers all across the Magdalenian region, as expected from the species paleobiogeography.

The closest ibex relatives depicted in Magdalenian images are the chamois (*Caprinae*, same as the ibex) and the saiga antelope (*Antilopinae*). Three of the images included here have been convincingly described as saiga (see Figures 43 and 44, below). Of the eight images previously described as chamois, the seven found on the red deer antler baton from Gourdan are convincing (Figure 9) but the same cannot be said for the one engraved on a bone object from Isturitz, situated between a bleating ibex image and the splintered end (see Figure 57 below). In the first description of this image, Saint-Périer (1936: 110) wrote:

“Du chamois, nous n’avons qu’une gravure, incomplète,...une tête de face, velue, sans yeux, mais dont les



Figure 5. Top view of Artifact 42. Drawing by A. Moure, reprinted from Barandiarán (1994: Figure 2 no. 16).



Figure 7. Niaux: one of the images created on the clay soil before the salon noir. Detail of a photo by J. Vertut, reprinted from Leroi-Gourhan (1965: Figure 609), permission given by Photo Jean Vertut.



Figure 6. Head and horns of the full-figure ibex engraved on the back side of Artifact 35. Detail of a photograph by M. Vautravers, Département d'anthropologie de l'Université de Genève.

oreilles, les cornes, à striation limitée à leur base, sont bien exactes; cependant, les cornes sont vues de profil afin de montrer leur crochet terminal caractéristique, exemple de réalisme intellectuel,"²

a concept introduced by the psychologist and art historian G. H. Luquet. It is true that the transverse marks may represent the "striae" seen at the base of chamois horns, but these are more difficult to observe than the corresponding features on ibex horns (more on this below) while the small size of the horns—intermediate between the two species, judging from the size of the ears—may have been influenced by support constraints. What is more, that the end of each horn was artificially twisted sideways to show the

final hook is a very complicated explanation, when the slightly curved shape of the horn and its final turn sideways and downwards seems to me nothing more and nothing less than an effective rendition of the Pyrenean horn shape. This is why I consider this image to be a Pyrenean ibex, but it can still be found described as a chamois (Guthrie 2005: 392; Sacchi 2008: 94–95). This image also was presented as an example of "creative foreshortening as viewed from behind" (Guthrie 2005: 392) as if looking at more than just head and horns. This new description, that also would turn the point of view completely around, does not take into account the hollow of the left ear, which was clearly indicated, and the fine muzzle hair marks (see below) but as far as I can tell from the accompanying artwork, it was more a consequence of misreading the vertical cracks, a natural surface feature, as intentional lines.

The following example is found on a cave wall but is similar to images on portable objects. According to Vialou (1986: 140) the small head engraved at Les-Trois-Frères (see Figure 19 below) is "difficult to determine, notwithstanding the beginning of a horn, very backward-leaning, which strongly rules



Figure 8. Side view of Artifact 7, showing the full series of transverse marks engraved along the horn. Photo taken May 2009 by J. Cook, BM, © Trustees of The British Museum.



Figure 9. The back side of Artifact 11. Photo reprinted by permission of the publisher from Chollot-Varagnac (1980: 385), © Fondation Singer-Polignac.

out the hypothesis of an ibex advanced by H. Breuil," yet the same horn position can be seen in the full-figure ibex on the object from Le Mas d'Azil (see Figure 11 below) and the rest of the image closely matches those found on other portable objects (see Figures 17 and 18 below). Considering that the best alternatives one could come up with, a red deer male or female, seem much less likely, I will follow Breuil and consider this image an ibex.

The image on the back side³ of the Arudy baton (see Figure 28 below) used to be described as a musk ox, and more recently also in Guthrie (2005: 410), but is now regarded as an ibex with a "corne repliée" due to support constraints (Musées de France), an attribution followed here. The image found on a polisher fragment from Le Mas d'Azil was described early on as an antelope horn (Piette 1907), as well as recently by Bosinski (2009: 673) due to the same "filling of oblique lines" found in other saiga images (see Figures 43 and 44 below)]. This may well be the case but I believe that this kind of "lignes obliques," or transverse marks, as I call them (see below), should be read as a rendition of horn features only when we know that the enclosing outline was meant to depict a horn. In this case it seems to me that there is no evidence that it is even figurative. It should also be noted that the bent shape of the outline that evokes a twisted horn may have been influenced by the shape of the support, so for caution's sake, this image is not included in the set discussed.

SEASONAL IMAGES

In their description of a line of three full-figures engraved on a baton (Figure 10) of uncertain provenance (see Artifact 19 in Table 3), de Sonneville-Bordes and Laurent (1968: 417) noted that the ibex in the middle had:

"la queue nettement relevée, signe certain d'excitation sexuelle pour les mâles adultes qui vont jusqu'à la rabattre complètement sur l'échine d'après [le naturaliste Marcel] Couturier. Les attitudes des trois mâles...sont tout à fait conformes à celles que décrit cet auteur pour la période préliminaire à l'accouplement. Le mâle qui suit

la chèvre a le cou tendu en avant, tête et museau un peu relevés, les cornes fortement rejetées en arrière, parfois appuyées sur le dos, la bouche parfois entrouverte"⁴

They concluded that the three images represented "*male ibex...in the mating season, that is to say in winter*" (de Sonneville-Bordes and Laurent 1968: 417). This conclusion was first reached by Rätzel (1965) in a paper that collected together a short series of examples showing the same behavior, including this line and the full-figure ibex engraved on a portable object from Le Mas d'Azil (Figure 11).

Marshack (1972: 169–234) called these types of images seasonal because they feature anatomical characters and behaviors displayed only during a specific time of the year, or season. For mammals, he presented a series of molting bison, bellowing bison, belling red deer, and pregnant mare images, showing mating season behaviors or seasonal coat features and antlers in different stages of growth. One of the best examples is the belling red deer on a baton from Les Hoteaux (Figure 12) showing this behavior associated with fine details such as the long, sharp-pointed (velvet-free) antlers, and the large neck covered by a thick, long mane—a secondary sexual character that also is seasonal. For this series, Marshack (1972: 184–185) presented images of red deer and reindeer, adding that there were more examples among bison and ibex images, and he may well have had in mind the bleating ibex on the bone object from Isturitz (Figure 13), one of the rare images of the kind and a very naturalistically accurate one that had already been published three times.

That wild horses were depicted either in their winter or summer coat was first recognized by Schmid (1984). This author presented two series of wild horse images, referred to as "winter horse" and "summer horse," that represented a significant addition to Marshack's original set, along with insightful remarks on two techniques used to render muzzle features and the coat color change line. Later on, Marshack (1991: 167–168, 390; 1995: 30–36; 1996: 64–67) pointed out that this line and a detailed lower muzzle anatomy were the features likely used to indicate a summer coat in



Figure 10. Artifact 19. Tracing by H. Breuil, first published in Breuil (1936–37: Figure 13 no. 1), reprinted from de Sonneville-Bordes (1986: Figure 6 no. 2).

wild horse images. Clearly, the absence of a winter coat alone should not be taken as evidence of the intention to depict a summer image, as was pointed out by Crémades (1997a: 37–38).

Guthrie (1984: 45–46) expanded on coat features as seasonal characters by noting that a full winter coat was “the familiar pattern” in wild horse images, while in most reindeer and bison images the coat was depicted as it would appear in the mating season, that is, the late summer and fall. He explained how the reindeer neck mane and the bison mane and beard would reach their full growth in

the mating season, in essence that the seasonal meaning of these bison coat features is fundamentally different, if complementary, to the same features of wild horses, where beard and mane are part of the winter coat. It seems to me that this may explain why, unlike wild horses, bison were rarely depicted in a full winter coat, as noted by Crémades (1997a: 41–45, Figure 9) in her comprehensive review of seasonal images based on an extended set of seasonal characters and behaviors. In the same publication (Crémades 1997a: 47–52, Figures 12–20), are descriptions of a winter coat (*livrée hivernale*) shown on a few of the ibex (Figure 14;

TABLE 3. NOTES ON MISSING ARTIFACTS.

Artifact	Notes
8	This object was discovered by M. Bétirac during his second excavation season (1956–1957) at the Abri Montastruc (Ladier et al. 1994: 207; Leroi-Gourhan 1965: 59; Pajot 1968: 210). Many objects of Bétirac’s two collections have gone missing, and what is left is now at the Musée d’Histoire Naturelle “Victor Brun” in Montauban (Lorblanchet and Welté 1990: 51; Pajot 1968: 210). This rondelle, the only one from the second collection to have been published, is one of the missing objects (Ladier et al. 1994: 207; Pajot 1968: 210). The photograph published in color by Taborin in 2004 (Plate 18) looks like the same photograph published in black and white by Leroi-Gourhan in 1965 and credited to Jean Vertut, which also appears in Delporte’s 1990 book (Figure 98) and here as Figure 58. A tracing that I first found in Sieveking’s 1971 paper (Plate 76 no. 7), which was reprinted many times since, appears to be based on the same photograph rather than the actual artifact, so I wonder if that photograph was the only direct record ever made of this object before it went missing.
9	Breuil (1936–37: 13) reported that the Bergougnoux collection this object was part of “serait à l’Université d’Alger” but he never saw it. In France, part of the same collection has been kept at the Musée de Cahors, but this particular object was not listed in the museum catalog. From the same source, I learned that “bon nombre d’objets” published by Bergougnoux in 1887 had disappeared (Clottes and Carrière 1979: 43, 67). In Algeria, the Bardo Museum currently holds only one engraved piece from the French Upper Paleolithic (Faiza, pers. comm.).
19	According to Breuil (1936–37: 14) this object was discovered during Lartet and Christy’s excavations at La Madeleine and then kept at the British Museum, but I could not find any other evidence supporting this account. Dr. Cook (pers. comm.), present curator of the Paleolithic collections at the British Museum, notes: “all of the decorated items which came here from the Lartet and Christy excavations were recorded soon after their arrival in 1866 with drawings on slips of paper which were then bound,” but there is no Christy slip for this baton and “it does not appear in any of our publications from the 1870s onwards.” What I did find was that even the provenance is uncertain, as de Sonneville-Bordes and Laurent (1968: 414) wondered whether this could be the same baton that was described as carrying the “Les Eyzies” label by Capitan, Breuil, and Peyrony (1906: 435).



Figure 11. The engraved end of Artifact 33. Photo reprinted by permission of the publisher from Chollot-Varagnac (1980: 423), © Fondation Singer-Polignac.



Figure 12. Close-up view of the red deer image engraved on Artifact 38. Photo by A. Marshack, previously published in Marshack (1972: Figure 79b), P. G. Bahn collection.

see also Figure 53 below) and saiga (see Figure 43 below) images discussed here, as well as the chamois images on the Gourdan baton (see below). Another saiga image described as bearing a winter coat—almost uniformly white in this species—is the full-figure engraved on a bone object from the Grande Grotte de Bize (Sacchi 1993: Figure 89 no. 1). The Gazel ibex (Figure 15) was described as definitely Alpine and a seasonal image of winter (Martin 2005: 265–266), but it seems to me that the species depicted in this rather sketchy image is uncertain, and if this was a Pyrenean ibex, then the marks on the side of the neck may not indicate a seasonal character because this is one of the few areas that does not undergo a seasonal color change.

The dark areas in the winter coat of adult Pyrenean ibex males (see above) were clearly indicated in many ibex images. The diamond shape on the withers, between the shoulders, was clearly depicted in the full-figure image engraved at Les-Trois-Frères and described as seasonal by Dubourg (1994: 164):

“un bouquetin peint du Salon Noir de Niaux, et un autre gravé dans le Diverticule de la Trompe des Trois-Frères offrent des représentations indubitables de pelage long et sombre. Chez ce dernier, ...sa queue levée, la présence de cornes bien développées et d’une barbiche, sont autant de détails qui semblent confirmer qu’il s’agit d’un bouc observé en hiver.”⁵

The thick hair on the top and sides of the forehead, realistically rendered with black paint, is clearly seen in two ibex images painted at Niaux, the one mentioned by Dubourg (see Figure 50 below), and another found in the same room (see Figure 40 below). The rows of marks sometimes found running across the muzzle in engraved images may be a different way to indicate the same seasonal feature—two or three rows can be seen in a series of ibex heads engraved on portable objects (Figures 16, 17, and 18) as well as on cave walls (Figure 19). The head on the Lacave point shows a more stylized rendition of this feature, with only one series of longer, almost straight marks (Figure 20). The two heads on the object from Aurensan show a full winter coat, with long muzzle hair and beard marks (Figure 21), and so do the three ibex heads forming a line on the front side of the Mas d’Azil flat pendant, with muzzle hair and neck mane marks (see Figure 41 below). Neck mane marks also can be seen in the Altxerri engraving (see Figure 3), the bleating ibex from Isturitz (see Figure 13), the Mas-d’Azil carved pendant (Figure 22), and one of the two facing ibex from La Vache discussed in detail below (see Figure 30 below), as well as in three of the four chamois heads forming a line on the back side of the red deer antler baton from Gourdan (Figure 23). The three chamois heads on the front side of the same baton also show the same marks, seen best in a photograph by Henri Delporte (1990: Figure 133; not reproduced here), so it seems to me that there should be no doubt that these chamois heads are all winter images (but see Crémades [1997a: 52] for a different view).



Figure 13. Artifact 16. Photo by Cintract/G. Boüan, reprinted by permission of the publisher from Saint-Périer (1936 Plate IX Figure 8), © Elsevier Masson SAS Editeur.



Figure 14. The engraved surface of Artifact 2. Redrawn from a tracing by C. Servelle, in Bégouën and Clottes (1990: Figure 6).



Figure 16. The ibex head engraved on Artifact 21. Tracing by author from two photographs.



Figure 15. Gazel: head and shoulders of the full-figure ibex image engraved in panel two of the rotonde. Redrawn from Sacchi (1986: Figure 126).

The behavior described by de Sonneville-Bordes and Laurent (quoted above) is called a low stretch (Guthrie 2005: 68). Along with the baton of uncertain provenance, described above, de Sonneville-Bordes and Laurent (1968: 414–417) present a point from Les Eyzies (Figure 24) that is engraved with four ibex images arranged in two lines—one on each side—showing the same behavior. I have found that these four stylized images also show a series of marks that likely represent the dark areas along the back and sides

of the winter coat, which would be consistent with the seasonal behavior depicted. The dark area along the back also is indicated in the ibex image at one end of the *lame* from Laugerie Basse (see Figure 52 below). Laurent (1978: 124) noted that the two ibex on the Duruthy baton (Figure 25) are depicted with a “stretched neck, open mouth” as if “in a period of preparation for mating,” which would make them seasonal images; it also has been suggested that these two ibex seem to be fleeing from a predator on the left because a third image might be that of bear (Arambourou 1978: 58); however, there is not much of this image and what we see is situated all around the hole so it may have been influenced by support constraints. What is more, this image does not seem to evoke a predatory behavior. It is true that the behavior of the two ibex depicted is to some extent unclear, but it seems to me that this may be due to the two images having been significantly reworked.

The series of examples showing “outstretched heads” presented by Guthrie (2005: 69, 71) includes the ibex image on the *lame* from Le Chaffaud (Figure 26) that Breuil (1936–37: 10) described as a bleating or ruminating male. Airvaux (2002: 5) noted that the animal “semble émettre un cri,” and since bleating, like tongue-flicking, can be combined with a low stretch in many species (Guthrie 2005: 68), this reading is consistent with the behavior depicted and is more convincing. In addition to showing a seasonal behavior, it seems to me that this ibex also is depicted in a full winter coat, making it one of the clearest seasonal image of this species.

Another example showing the same behavior can be seen in the image engraved on a point from Lortet (Figure 27). The horn outlines are “partially erased by the wear on the piece” (Crémades 1992: 114) but the final part of the horn is visible over the shoulders, as noted by Leroi-Gourhan (in Chollot 1964: 167) who first identified it as an ibex. The long mark was read by Guthrie (2005: 284) as a blood spew; Sacchi (2008: 94) described it instead as a “tongue shooting out from the closed mouth,” a tongue-flick, and because the

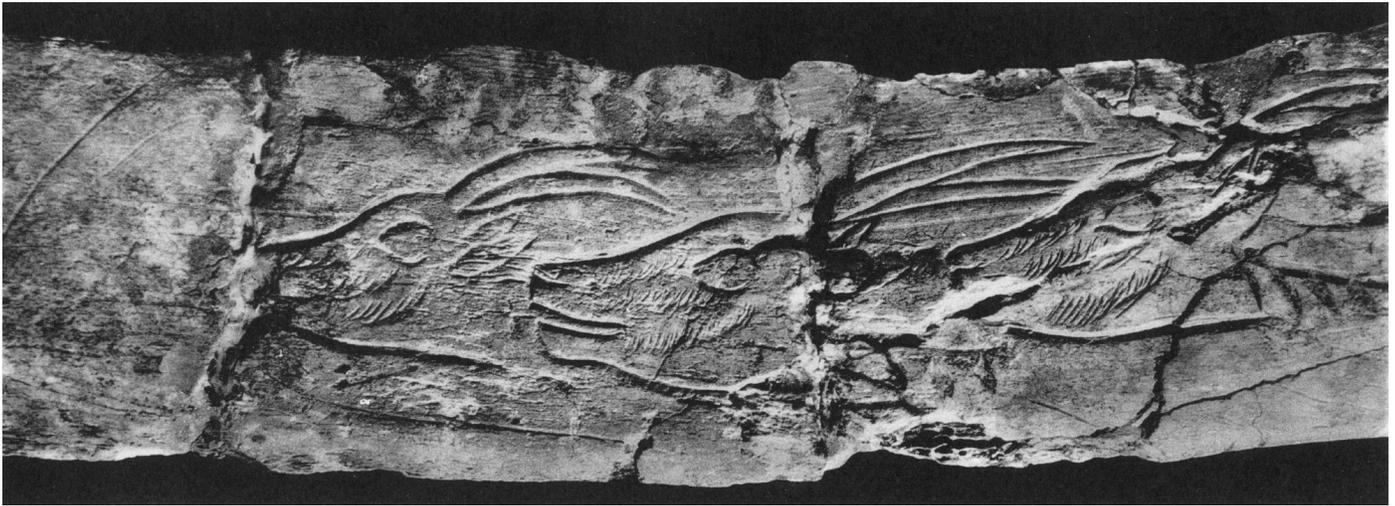


Figure 17. Close-up view of Artifact 37, showing three of the five engraved heads. This large object is made up of several fragments that were glued together early on. Photo by A. Roussot, reprinted by permission of the author from de Sonneville-Bordes and Laurent (1968: Figure 6).

deep arc formed by the neck is strongly reminiscent of a low stretch, I find this reading more convincing. It also is supported by the fact that there are more realistic tongue-out ibex images (Figure 28; see also Figure 33 below) including, as first noted by Sacchi (2008: 94) the image on the compact spear-thrower from Le Mas d'Azil (see Figure 4). Guthrie (2005: 273) also saw as "blood coming out of the snout," the three straight marks found next to the muzzle tip of the head on the Isturitz polisher (see Figure 39 below) and some or all of the series of marks (not shown here) associated with the head on the back side of the Arudy baton (see Figure 28), but I wonder if these are even figurative.

SEASONAL ASSOCIATIONS

The clearest seasonal associations, such as the series of "rennes se suivant" presented by Nougier and Robert (1974), show a combination of mating behaviors and anatomical characters, including primary and secondary sexual characters, that leave no doubt that we are looking at true scenes. Marshack (1972: 185–188) presented a short series showing bison or mammoths facing each other that evoked the confrontations between males taking place in the mating season. The association of two saiga antelope images on a polisher from La Vache (see Figure 44 below) was described by Nougier and Robert (in Marshack 1972: 226) as two facing males, the one on the right having his "muzzle

lifted,...head slightly raised, [and] nostrils dilated to savor the air" as "in the position of an animal sniffing an adversary." These are very fine details and the authors' conclusion that this association evokes a "combat theme" seems to rely more on the presence of two males facing each other, or rather confronting⁶, each other.

The two facing ibex on the baton from le Mas d'Azil (Figure 29) also may represent two males confronting each other, evoking the theme of head-to-head fighting, a seasonal one. The image on the right appears "*much less accomplished*" than the other (Clottes et al. 1981: 64) and I thought



Figure 18. Artifact 40. Tracing by H. Breuil, reprinted from Breuil (1936–37: Figure 11 no. 3).



Figure 19. Les-Trois-Frères: a small head engraved in the sixth ensemble of the sanctuaire. Tracing by H. Breuil, reprinted from Vialou (1986: Figure 91).



Figure 20. Artifact 25, in a view showing all the engraved lines and marks, including the left horn. Photo taken March 2009 by N. Meister, Logan Museum of Anthropology, published with permission of Beloit College, Beloit, WI.



Figure 21. Artifact 5. Photo reprinted by permission of the publisher from Chollot-Varagnac (1980: 395), © Fondation Singer-Polignac.



Figure 23. Close-up view of the first chamois head engraved on the back side of Artifact 11. Note the short, neatly lined up marks along the neck line of the second head. Photo © MAN (Musées de France: m. 500145 cl. 12111).



Figure 22. Head and horns of one of the two full-figure ibex carved on Artifact 32. Tracing by author from a photograph.

this could explain all the differences between the two, but an interesting new reading of this association was recently given by Sacchi (2008: 94). Sacchi remarks that “*the left individual, of slender shape, represents most certainly a doe, [while] the right one, characterized by the massive neck, depicts a buck flicking the tongue*” the conclusion being that this association depicts “*an ibex [male], courting a female*” Whether we are looking at two mates or two rivals, the seasonal meaning of the theme evoked by this association would be the same.

A reindeer antler object from La Vache is engraved with four heads, each in a different style (Nougier and Robert 1965: 201), with the two in the middle facing each other (Figure 30). In the original description, the authors wondered whether the absence of horn features (more on this below) in one of the two facing ibex in the middle (the one on the right looking left) was meant to indicate a female (Nougier and Robert 1965: 200). The same argument was used by Crémades (1997a: 50–51) to present this association as an example of a “*pre-mating scene evoking the fall season*” with the additional remark that the horns of the same ibex were also “*plus fines,*” but while this may apply to the tip,



Figure 24. Close-up view of one of the ibex images engraved on the back side of Artifact 36. Photo taken May 2009 by J. Cook, BM, © Trustees of The British Museum.



Figure 25. Artifact 10. Photo by P. G. Bahn.

the rest of the horn—only one is actually depicted—is at least as thick as the horn of the other facing ibex (the one on the left looking right) and, more significantly, definitely too long for a female. An earlier description by Delporte (1975: 128–129) contained additional evidence that the ibex on the right could not be a female:

“Si on l’examine dans le détail, la morphologie des deux animaux apparaît différente: celui de gauche a la corne courte et annelée et l’oreille pointue, celui de droite, outre la corne longue et fortement recourbée, a la bouche remarquablement bien traitée et assortie de la barbe caractéristique; son oeil est lui aussi bien rendu et une courte crinière souligne la nuque; dans la mesure où une hypothèse peut être avancée, il semblerait que le bouquetin de droite soit un mâle et celui de gauche une femelle”⁷

Since the ibex on the right has a beard and a neck mane, it can only be a male, however, the author tentatively described the ibex on the left as a female, which is repeated in later publications (Delporte 1990; Delporte 1993), with the horn described as being “courte.” However, this is not short as much as incomplete since Nougier and Robert (1965: 200) had already noted that “*we have but the base*” and Delporte (1975: 128) himself wrote that it was likely “*truncated by a further scraping*” of the surface. Later on, Delporte (2003: 402–403) described it as “petite,” rather than short, but it seems to me that a straight vertical mark right at the base of the horn suggests a larger width than it may seem at first. Having found no evidence that either image represents a female, I consider this association to be two ibex males facing each other.

On the same object, to the right of the two facing ibex just discussed, there is a third image that is relevant here. In their original description, Nougier and Robert (1965:



Figure 26. Artifact 28. Photo by J. Airvaux, reprinted by permission of the publisher from Airvaux (2002: Figure 6).



Figure 27. The ibex image engraved on Artifact 39. Tracing by author from the photos in the online picture library and the second catalogue (Chollot 1964).



Figure 28. Close-up view of the head carved on the back side of Artifact 4. Photo © MAN (Musées de France: m. 500145 cl. 5771).

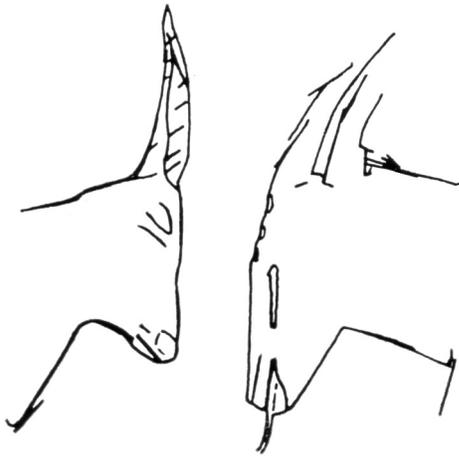


Figure 29. The two ibex heads engraved on Artifact 34. Redrawn from a tracing by C. Servelle in Clottes et al. (1981: Figure 17).

201) pointed out similarities with a wolf image from the same site and a bear image from Alliat, but had no doubt that this third image was another ibex. This was confirmed by Delporte (1975: 128–129) who recalled that “the pointed muzzle may be considered that of a wolf” but added that “in fact, by removing the concretion that covered the surface, the ringed horn of an ibex was found,” and published a photograph showing the ringed horn. Since it could only belong to an ibex or related species, the discovery of a ringed horn

should have settled the matter, but this was not the case. For some reason, all the photos published in later works show the top right corner still covered by debris, as if taken before the object was cleaned (Delporte 1990: Figure 284; Delporte 1993: Figure. 8; Clottes and Delporte 2003: Figure 403) or the whole right end of the object was cut out of the photo (Crémades 1997a: Figure 16) which is very unusual. Meanwhile, this image was considered to be a wolf and its association with ibex images taken as having a seasonal meaning (Crémades 1997b: 463). In a later description, Delporte (2003: 402–403) suggested that there may be two overlapping heads, an ibex and a wolf, but superposition is not common on portable objects and I do not think a wolf would have ever been mentioned if the horn had not been still covered by debris when first described.

The two heads on a tube from La Vache (Figure 31) have been described as a male and female following each other, reminiscent of the “gathering of males and females into a herd during the winter half of the year” (Crémades 1997b: 460, *annexe*). While on the first head the length of the horn can only be that of a male, on the second only “the beginning of the horn, which seems short” is indicated, (Baffier in Clottes and Delporte 2003: 334) and this is too short even for a female so it is more likely to be incomplete. In fact, if this head has a smaller size it is also “much less visible: the engraving is less deep and the drawing is incomplete, less precise” (Baffier in Clottes and Delporte 2003: 334) and it seems to me that this makes it difficult to draw conclusions as to which sex is depicted in the second image, or to the underlying theme of its association with the first ibex.

THE ABRI BOURDOIS IBEX

The Abri Bourdois is a rock shelter part of the Roc-aux-Sorciers archaeological site, in the Angles river valley, north of the Massif Central. Eight ibex images, organized in three panels, are carved in high-relief along the limestone wall of this rock shelter. The two images in the third ibex panel (Bo7 and Bo8) were at one point described as a male following a female (Saint-Mathurin 1984: 585) and presented as a scene showing “a phase prior to mating” (Airvaux in Sacchi 2008: 95) but Iakovleva and Pinçon (1999: 44) noted that both images show the “well-developed horn bases and the beard” of an ibex male and a matching male body. To be fair, the original description of the first ibex from the right (Bo8) as a female is understandable if we consider that this was made before the discovery of its detached head, a bloc fallen in Magdalenian times found during the excavations, and that “the sex of the first ibex was depicted just like for the second one, but it is in a bad state” (Pinçon, pers. comm.).

In a previous publication, Iakovleva and Pinçon (1998) described five images from the three panels as a line, and at the same time as a scene⁸, representing a herd led by the first ibex on the right (Bo8). In my view, only the two images in the third panel can be classified as a line, since the ibex in the second panel (Bo6) is only a head, not a full-figure like the other four—while considering the two in the first panel (Bo1 and Bo2) as more closely associated with the males in the other ibex panels than with the female



Figure 30. Artifact 23, as it appeared when the top right corner was still covered with debris. Photo by A. Marshack, previously unpublished, courtesy of the Peabody Museum of Archaeology and Ethnology, Harvard University.



Figure 31. The first ibex head engraved on Artifact 22. Tracing by author from a photograph.

found right below (Bo4) seems a bit of a stretch. In fact, Pinçon and Bourdier (2009) later noted that this female was depicted with details such as “*the tail...upright and the layout of the vulva*” and suggested that “*the agitation manifested by ibex Bo2,*” depicted like the other males with a raised-up tail, may be related to the presence of this receptive female (Figure 32) and if the other male (Bo1) can be included in this scene as a possible rival the same cannot be said for the males in the other panels. At the same time, the female also is closely associated with a young animal (Bo5) to the point that it was described as a “*young female [that] watches over her calf*” (Iakovleva and Pinçon 1999: 46), therefore, another scene but sharing one image with the first. While it does evoke a sense of protection, it seems to me that this second association also may be a thematic one in which the theme is giving birth or caring for the young. Either way, the theme evoked or the scene depicted does not necessarily take place at the same time of the first scene because if sending a signal to a male is part of “*the life of the herd...at the beginning of winter*” (Pinçon, pers. comm.), a close association between female and offspring may also be reminiscent of the birth season (Marshack 1972: 177–180), months ahead of the mating season. Even so, the two may still be related as part of the same story, that is, the species’ reproductive cycle, of which they represent the beginning and the end.

The ibex images of the Abri Bourdois were described as being life-size (Iakovleva and Pinçon 1998: 257–259) but

only the female (Bo4) seems to be truly life-size; all the males are smaller—for example, one fifth smaller on average for body length—or at least this is what I determined from the measurements published. The same measurements also were used to describe these ibex as Alpine (Iakovleva and Pinçon 1998: 257–259), although it is not clear how this was done. A simpler approach would have been to look at the shape of the horns. This can be seen in the ibex head in the second panel (Bo6), where it is strongly reminiscent of the Pyrenean species (Figure 33), as first noted by Airvaux (in Sacchi 2008: 95), and in one of the males in the first panel (Bo2) where the horn’s final straight length suggests the Pyrenean species more than the Alpine.

IBEX IMAGES WITH HORN RINGS

In all the images illustrated here, with maybe a few exceptions (see Figures 3, 6, 16, and 21), horns were rendered as an outline. Outline horns, as distinct from single-line horns⁹, are formed by two (more or less) converging lines. Some type of horn rings were indicated in most images with outline horns, using one of the two techniques presented below.

The first technique consisted of drawing the front side of the horn outline in a wavy (Figures 34 and 35), bumpy (see Figure 27; see also Figure 48 below), or jagged (Figure 36) style. The resulting modified horn outlines, as I call them, have sometimes been read as a way to indicate Alpine ornament rings. For example, with its simple horn shape and jagged outline, a small ibex image painted at Niaux (see Figure 36) has been linked until recently with the Alpine species (Sacchi 1993: 128), but Pales and Tassin-de-Saint Péreuse (1981) pointed out how the variable horn width and the final, straight horn length were “*all devices to convey the lyre shape*” of Pyrenean horns¹⁰. The same final length can be seen in the ibex head engraved at Gourdan (see Figure 35), which also looks Alpine at first but is more likely Pyrenean, while two other images with a modified horn outline show an unmistakably Pyrenean horn shape (see Figure 27; see also Figure 48 below). Outlines modified



Figure 32. Roc-aux-Sorciers: a view of the first ibex panel in natural daylight. Now indoors for protection, in Magdalenian times this was an open-air, south-exposed rock shelter. Left: a full-figure male (Bo1); right: another full-figure male (Bo2); bottom: part of the full-figure female (Bo4) and young animal (Bo5). Photo by G. Pinçon, Ministère de la Culture et de la Communication.



Figure 33. Roc-aux-Sorciers: the head carved in high-relief in the second ibex panel. Detail of a photo by G. Pinçon, Ministère de la Culture et de la Communication.

in a style intermediate between two of those defined above can be found in the stylized images on the Les Eyzies point (Figure 37), at least two of which show an elongated horn shape that cannot be Alpine (see Figure 24), and in the seasonal image on the Le Chaffaud *lame* (see Figure 26) whose horn shape I also read as Pyrenean due to fine details in the shape of the horn outline. If modified horn outlines are always found in images with a clearly or likely Pyrenean horn shape, where ornament rings are not so large, what do they represent? As I found out, the crests and bumps of modified outlines match more closely the bumps along the keel of Pyrenean ibex horns (see Figure 2) than the ornament rings of either species, because even in the Alpine these are smaller and relatively far apart. As a rendition of the Pyrenean ibex keel, modified outlines are naturalistically very accurate. Since each bump along the keel is just as long as, and part of, a growth ring, using the term “an-



Figure 34. Les Combarelles: head and horns of an ibex image engraved on the cave walls. Redrawn from Barrière (1997: Figure 370).

neaux de croissance” to describe these images, as was the case for the Le Chaffaud ibex (Airvaux 2002: 5), is definitely appropriate.

The second technique consisted in drawing transverse marks cutting side to side across the outline. The spacing and orientation of the transverse marks varies significantly from image to image. Well spaced out marks strongly evoke winter rings (Figures 38 and 39; see Figures 4 and 10; see also Figures 56 and 58 below) especially when their orientation gradually changes along the horn to suggest its three-dimensional shape (Figures 40, 41, and 42; see also Figure 31). In the most naturalistically accurate of these examples, one can even see the nicks cut by winter rings along the horn profile, which makes the growth rings stand



Figure 35. Gourdan: the ibex head engraved in zone one of the grande salle. Redrawn from Fritz et al. (1993), using the image file retrieved from EuroPreArt.

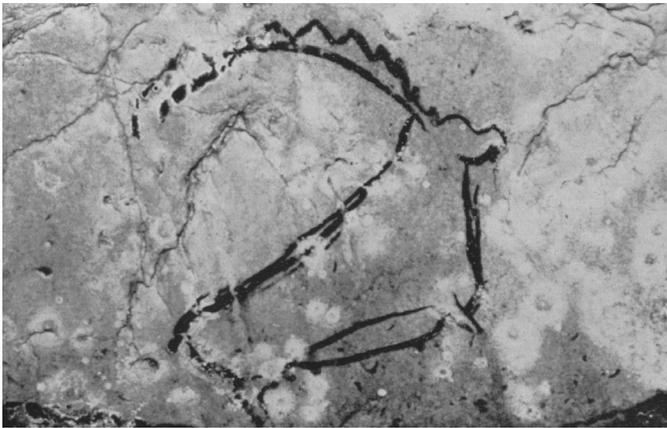


Figure 36. Niaux: small ibex image painted in panel four of the salon noir. Photo by R. Robert, reprinted from Graziosi (1956: Plate 198 b).



Figure 37. Close-up view from the top showing the horn outline of one of the ibex images on the back side of Artifact 36. Photo taken May 2009 by J. Cook, BM, © Trustees of The British Museum.

out even more (see Figures 40 and 41). Closely spaced marks may still be a way to indicate winter rings (see below), especially in saiga antelope images (Figures 43 and 44)—because the males of this species bear much smaller horns with shorter growth rings.

For a small object from the Abri de Cambous that may have gone missing (see Artifact 9 in Table 3) I had only a very early drawing as it was reprinted, or maybe redrawn, by Breuil (1936-37: Figure 12 no 1). He wrote that the thin horn showed “annelures” (Breuil 1936-37: 13), that is, some kind of rings, and these were accurately drawn as short marks stemming from one side of the outline, like those found on the *contour découpé* from Isturitz (Figure 45) only more closely spaced, but overall the drawing does not look like one that can be relied upon without additional evidence and for this reason it was not included here. The fragment of a large rondelle from Isturitz (Saint-Périer 1936: Figure 63 no. 5) was described as showing “part of two ringed horns and some hair lines” (Saint-Périer 1936: 109), but the marks that the author described as hair follow a rather squarish outline that may not be figurative at all.

Two images found on portable objects clearly depict winter rings, but rendered as long, round lines rather than simple transverse marks (Figures 46 and 47). These two images are remarkable for their smooth and detailed outlines, including large, lifelike horns with accurate winter rings. The ibex in the full-figure image, from the Abri Montastruc (see Figure 46), also is depicted with a raised leg (not shown here) that may indicate a mating season behavior.

A combination of the two techniques can be seen in a few images on stone plaquettes from Las Caldas, Gourdan, and Lortet. The image from Lortet (Figure 48) is confidently engraved, which is not common on stone plaquettes, and shows a wavy horn outline with well-spaced transverse marks, as well as a broken line running in the middle that also is uncommon, if not unique.

Martin (2005) gave a detailed description of the ibex image engraved at Le Colombier Cave (Figure 49) including horn features¹¹. He noted that the front side of the outline shows the “slight undulations of ornament rings” (2005: 175), and within the horn outline “a few transverse lines are used to indicate horn wrinkles” (2005: 642)—tiny horn features



Figure 38. The front side of Artifact 18. Photo reprinted by permission of the publisher from Corchón Rodríguez 2005 (Figure 12).



Figure 39. The end of Artifact 15 engraved with an ibex head. Detail of a photo by Cintract/G. Boüan, reprinted by permission of the publisher from Saint-Périer (1936: Plate IX Figure 10), © Elsevier Masson SAS, Editeur.

in-between, and akin to, ornament rings. He also regarded this ibex as definitely Alpine (2005: 176). Thanks to this description, I could make out at least one of the transverse marks as these otherwise are easy to miss in the photos studied, however, it seems to me that the very slight undulations in the horn outline are nothing like Alpine ornament rings, and the relatively smooth horn outline is reminiscent of the Pyrenean species instead, whose ornament rings can range from significantly smaller than in the Alpine (as shown in Figure 2) to almost not noticeable. The horn shape, rather straight from half-length and with a slight final turn, is consistent with this reading, so I consider this to be a Pyrenean ibex image showing transverse marks.

The first to note that ibex horn features could be rendered in two different ways were Nougier and Robert (1965: 200). In their description of one of the two facing ibex from La Vache (the one on the left looking right [see Figure 30]), the two authors remarked that the same *corne annelée* was found in one of the images painted at Niaux (Figure 50), while other cave wall images (see Figures 34 and 36), including one from Rouffignac (see below) were different. They wrote that in the Les Combarelles image (see Figure



Figure 40. Niaux: part of a full-figure ibex image painted in panel five of the salon noir. Detail of a tracing by H. Breuil, reprinted from Pales and Tassin-de-Saint Péreuse (1981: Figure 52 no. 2 bis).

34), the front side of the horn outline was “*marked by a series of round shapes,*” what I call here a wavy outline, adding that this might be “*more archaic*” than the transverse marks technique, a suggestion I did not follow up.

To sum up, out of a total of 95 images studied, I counted 12 images with a modified horn outline and 41 with transverse marks, with the Lortet stone plaquette counted twice. When transverse marks are present, the image-makers focused on this feature in many direct and indirect ways, as listed below.

EMPHASIS ON HORN RINGS

Horn features are not always in the same style as the rest of the image. In a few images on portable objects, horn rings (see Figure 58 below), the enclosing outline (see Figure 56 below), or both (see Figures 30 and 45) are engraved with deeper, bolder lines, while in two cave wall images the ringed horns (see Figure 40) or only the ring marks (Figure 50) are painted with a finer line style. The full-figure ibex carved along the shaft of the compact spear-thrower from Le Mas-d’Azil (see Figure 4) shows very bold transverse marks, as does the ibex image engraved at one end of the *lame* from Laugerie Basse (see Figure 52 below), best seen in a photograph by Henri Delporte (1990: Figure 285; not reproduced here).

The panel *des Sept Bouquetins*, “*given prominence*” by the image-makers on the east wall of the *passage* at Lascaux (Leroi-Gourhan and Allain 1979: 216), is made up of two lines

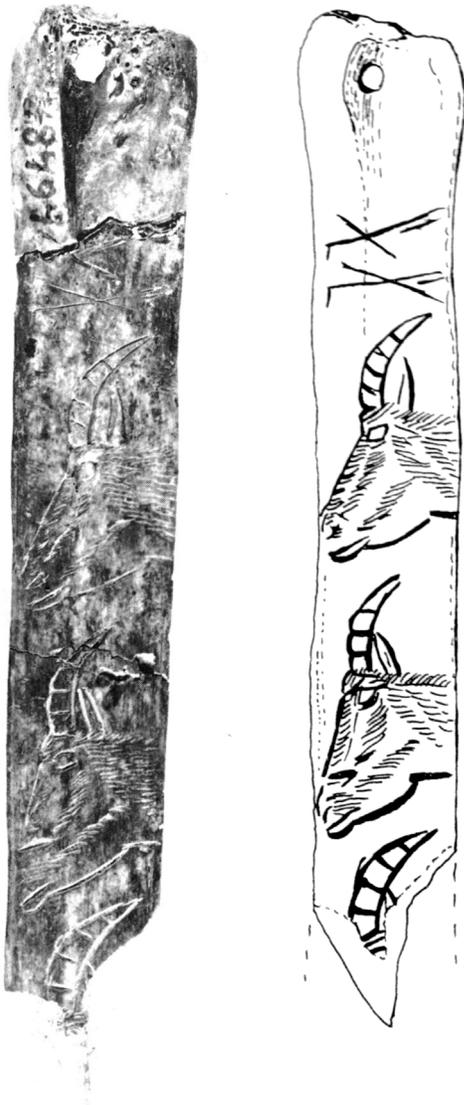


Figure 41. Photo and tracing of the front side of Artifact 29. Photo reprinted by permission of the publisher from Chollot-Varagnac 1980 (371), © Fondation Singer-Polignac; tracing by C. Fritz, reprinted by permission of the author from Fritz (1999: Figure 20).

of head-and-neck ibex images found side-by-side. All these images were originally painted, in different color shades, and later engraved (Leroi-Gourhan and Allain 1979: 216, 301–303). In the line of four on the left (Figure 51), each image has a series of “regularly spaced color spots” along the horns, described as a way to render the “nodosités” (Leroi-Gourhan and Allain 1979: 303), a term sometimes used to indicate ornament rings, but, more often, as likely here, a generic term for horn features. Before the colors began to fade, these red spots were in marked contrast with the black heads (Graziosi 1956: 181; Leroi-Gourhan and Allain 1979: 216, 301–3). Filling every other growth ring with paint is a different technique than tracing the winter rings between them, a more creative and less common one, but

just as effective in representing the regular succession of growth rings along the horn, regardless of ornament rings. When the original painted images were over-engraved, the image-makers likely focused on the horn outlines if today “the engraved lines of the horns are still vivid and clearly readable, [but] it is not the same for the head outlines, [and] the... eyes and ears” (Leroi-Gourhan and Allain 1979: 216).

The use that was made of the limited engraving space available on portable objects may also be significant. Ibex heads are sometimes oriented in such a way that the horns are displayed right in the middle of the engraving space (Figure 52; see also Figures 39 and 41) even when this leaves out part of the muzzle (see Figure 59 below).

The full-figure image engraved on the back side of the Mas d’Azil pendant shows an unnaturally stretched and straightened horn, extending all along the object’s border (Figure 53). For Pales and Tassin-de-Saint Péreuse (1981: 130), this unique image that they describe as a “mythical animal” was the result of “lack of space for...the long ringed horn.” This simple reasoning, again found in Guthrie (2005: 431), was taken one step forward by Fritz (1999: 45):

“Au premier abord, il semble que l’auteur ait exécuté un bouquetin mâle trop volumineux par rapport à la largeur du support. En conséquence, il n’a pas eu la place de graver la corne dans sa position naturelle... Toutefois, l’examen de l’autre face de l’objet, avec ces têtes de caprinés disposées en frise, montre que le graveur maîtrisait parfaitement d’autres procédés de cadrage. Dans ce cas, la mésaventure du bouquetin précédent résulte-t-elle uniquement d’une contrainte? Ne peut-on y voir une innovation, un acte délibéré transformant un animal familier en chimère?”¹²

I cannot tell if the line on the other side of this object was engraved by the same hand, but there is plenty of evidence for space planning skills in Magdalenian image-making, so I concur that this image was not simply the result of lack of space, although I wonder if it was really meant to depict an imaginary animal. While it is obvious that there was not enough space for the horn, maybe this is simply because it was not part of the original plan. I suggest that the long horn may be a later addition, as supported by the fact that it is engraved in a style completely different from the rest of the body—likely with a different tool or by different hands—and by the awkward way in which the two are joined. This is clear from both the photograph reprinted here and the one published by Henri Delporte (1990: Figure 46), even if they were taken in very different lighting. Leaving aside for a moment how it was created (more on this below), in the image as it has reached us, the viewer’s attention is drawn to the ten growth rings more than anything else.

SKETCHY AND INCOMPLETE IMAGES

Images of this kind, all found engraved on portable objects, are sometimes referred to as unfinished (*inachevées*) but may be more revealing than others. The bone object from La Crouzade (Figure 55) was polished and engraved on



Figure 42. Artifact 1. Left: photo; right: selective tracing. Photo reprinted from Barandiarán and Altuna (1977: 45), by permission of the publisher; tracing reprinted from Altuna and Apellániz (1978: Figure 78), by permission of the publisher.

both sides—thus originally matching the definition of a plaquette, as it was referred to by Martin (2005: 642) and will be here—before it was used, secondarily, as a *ciseau*, which resulted in flaking and shortening (Sacchi 1982: 13; Sacchi 1986: 121) with partial loss of the engraved surface. However, this does not seem to explain completely the missing or incomplete features of the ibex head on the back side of the plaquette, as horn features, rendered with six transverse marks, are present. As seen above, the image on the bone plaquette found at Le Mas d’Azil shows a very deeply engraved horn outline, with two neat winter rings (Figure 56); yet the rest of the image is only a roughly sketched, incomplete body outline, and apart from a very lightly engraved eye, all features are missing. The small, stylized head out-

line seen in frontal view on the Isturitz object (Figure 57) consists only of horns, ears, and a few series of lightly engraved marks on each side of the muzzle, but winter rings are clearly indicated with five neat marks along each horn. There is another object that may belong here (see Figure 54) but its surface appears so heavily weathered that perhaps some engraved details were simply lost.

Sieveking (1971: 209) described a *rondelle* found at the Abri Montastruc (Figure 58), one of the Bruniquel rock shelters, as follows:

“There is...an infinite variety of transitional decorations and combinations, but perhaps the most pleasing is that on a disc from Bruniquel . . . which has the radiating line



Figure 43. Artifact 12. Photo by A. Marshack, previously unpublished, P. G. Bahn collection.

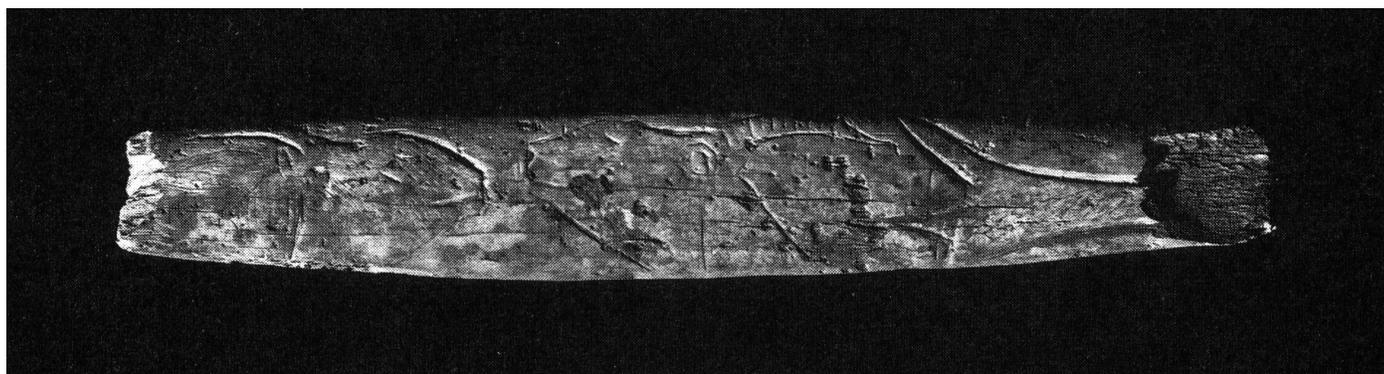


Figure 44. Artifact 20. Photo by R. Robert, reprinted from Welté (1989: Figure 9.1).

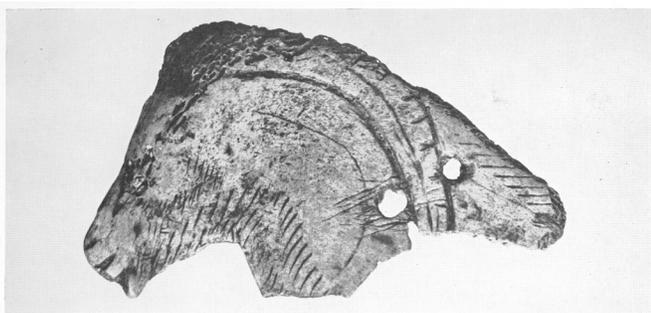


Figure 45. Artifact 13. Photo by C. Hurault, reprinted by permission of the publisher from Zervos (1959: Figure 220), © Éditions Cahiers d'Art.



Figure 47. Artifact 14. Photo by J. Vertut, reprinted from Leroi-Gourhan (1965: Figure 470), permission given by Photo Jean Vertut.



Figure 46. Close-up view of Artifact 6, showing head and horns of the ibex image in the foreground. Note the two horn rings broken by a long surface scar, the fine lips line below the large nose mark, and the beard with its fine vertical marks. Photo taken May 2009 by J. Cook, BM, © Trustees of The British Museum.



Figure 48. Close-up view of the image engraved on Artifact 3. Photo © MAN (Musées de France: m. 500145 cl. 20650).

decoration (A), the encircling line and hatching decoration (B), a delicately scalloped edge, and an engraving of the head and shoulders of an ibex."

The same "head and shoulders" image was described by Ladier (et al. 1994: 209) as a "head,...breast and back" of an ibex with a ringed horn. By looking at the tracing that both authors use (see Artifact 8 in Table 3), it is possible to determine which lines were read as the ibex back, but it seems to



Figure 49. Le Colombier: head and horns of the ibex image engraved on the right wall of a small side room, the first of two at the end of the cave. The transverse marks along the horn are not shown here. Tracing by author from two photographs.



Figure 50. Niaux: full-figure ibex image painted in panel four of the salon noir. Photo by J. Vertut, reprinted from Leroi-Gourhan (1971: Figure 114), permission given by Photo Jean Vertut.

me they may be part of the radiating lines decoration; the long, fine streaks may be read as the neck and chest, but I wonder if these are intentional, so I consider this image only

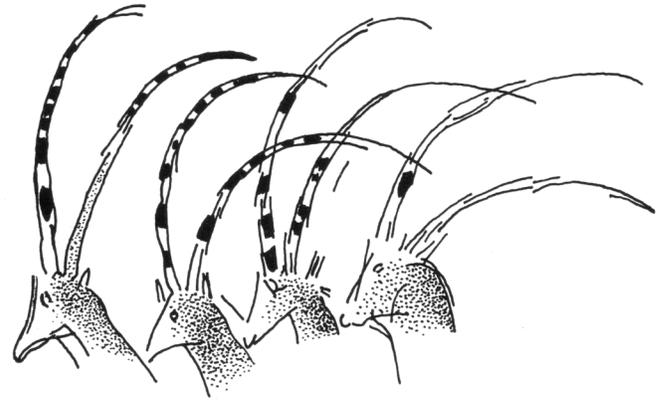


Figure 51. Lascaux: the left group in the panel des sept bouquetins. This tracing by A. Glory shows black color as shaded areas, red color as solid spots along the horn, and engraved lines as usual. Redrawn from Leroi-Gourhan and Allain (1979: Figure 288).



Figure 52. Head and horns of the ibex image engraved at one end of Artifact 27. Tracing by author from a photograph.

as an ibex head. This engraving seems rough at first but a closer look reveals that if the head is nothing more than a roughly sketched outline—three straight lines without any muzzle features—there are fine variations in the width and curvature of the horn that reveal the complex shape of the Pyrenean species, with at least six bold winter rings heavily marked all along it. Sieveking (quoted above) may well have singled out the design of this rondelle as “the most pleasing” because the hatching decoration marks seem to match the ring marks along the horn, as if to extend them, and the horn itself is found just halfway between the central hole and the encircling line. In the rondelle engraved with a full-figure bison from Enlène, found after Sieveking’s paper was published, the same edge marks seem to



Figure 53. The back side of Artifact 29. Photo reprinted by permission of the publisher from Chollot-Varagnac (1980: 371), © Fondation Singer-Polignac.

match the marks representing the mane, although the two series are much closer. At the time the description quoted above was written, the closest relatives of this rondelle had either the two decorations or one decoration and the scalloped edge, but after 1980, when excavations began at the site of La Viña (Fortea et al. 1990), a rondelle with all three elements was discovered, and one with very similar radiating lines but significantly larger in size.

A tiny bone object from La Vache is engraved with a line of five stylized ibex heads, all in a smooth, confident execution style (Figure 59). Delporte (1975: 125) first noted

that “*the drawing completes itself from left to right*” as more horn rings are indicated, followed by Nougier and Robert (1979: 29) who remarked that the ibex appear “*one in front of the other,*” and, overall:

“L’ensemble des cinq têtes donne une merveilleuse idée de la perspective...La première et la seconde cornes des deux premiers bouquetins portent chacun deux anneaux, relativement vigoureux. La troisième n’en porte qu’un, moins appuyé. Le quatrième n’a qu’une strie, très légère et la dernière est nue. Les détails des cornes s’estompent, diminuent en disparaissant avec l’éloignement.”¹³



Figure 54. Close-up view of Artifact 26. Photo taken May 2009 by J. Cook, BM, © Trustees of The British Museum.



Figure 55. The back side of Artifact 17. Tracing by D. Sacchi, reprinted by permission of the author from Sacchi (1982: Plate 11).



Figure 56. Artifact 31. Montage of two photos © MAN (Musées de France: m. 500145 cl. 3801 and 3805).

Because the heads go from near to far, Nougier and Robert (1979: 29) saw this association as a scene showing the ibex “as a lineup of five animals.” These head outlines, as I call them because all features are missing from the one in the foreground, show very neat transverse marks that due to their spacing and the presence of a final, longer horn seg-

ment—corresponding to the first year’s growth—can only represent winter rings. Because these outlines are shown in perspective, it is not surprising that their association was read as a scene, but one might raise the question as to why the winter ring marks go from fine and faint at the far left end to very bold in the foreground, while the head out-

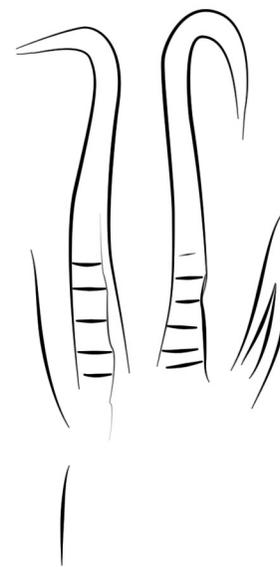


Figure 57. Left, close-up view of Artifact 16; right, tracing of the head outline, not showing the series of fine marks right below the horns. Detail of a photo by J. Vertut, reprinted from Torbrugge (1968: 27), permission given by Photo Jean Vertut; tracing by author from this photograph and the one in Figure 13.

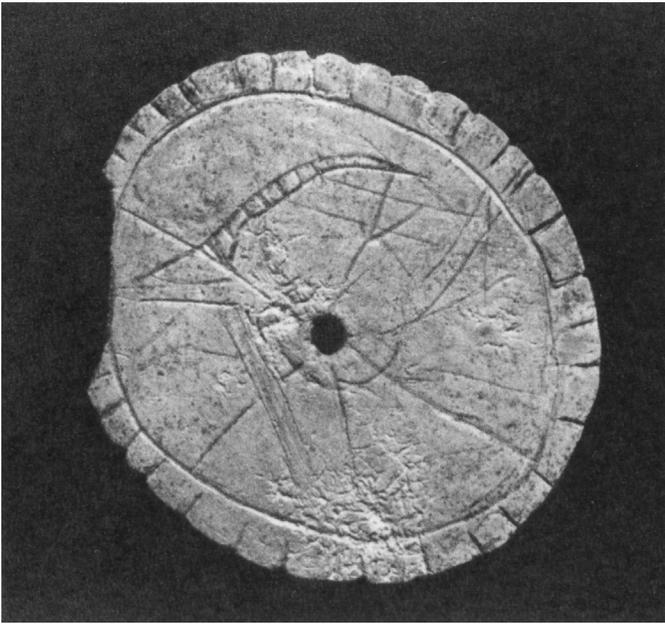


Figure 58. Artifact 8. This may be the only direct record ever made of this object (see Table 3). Photo by J. Vertut, reprinted from Leroi-Gourhan (1965: Figure 248), permission given by Photo Jean Vertut.

lines are all in the same bold style. Additionally, it might be asked why the marks increase in number from left to right, yet the horns are all the same length. I believe this is because this line was created in two distinct steps, however close in time, first the head outlines, with horns of the same length, and then the transverse marks. This would still leave us with the question of why the marks increase in number from left to right, which I will deal with in the next section.

The fragment of a half-round point from La Madeleine I know only from Breuil's tracing (1936–37: Figure 12 no. 3). The eye is in the same fine hatched style of muzzle hair, but the transverse marks were copied in a very bold style. In the same paper, which appears to be the first to focus on ibex images, this object was reported to be at the "Musée de St. Germain" (Breuil 1936–37: 14), that is the Musée des Antiquités Nationales, now Musée d'Archéologie Nationale—but unfortunately, it was not possible to ascertain additional information on this or other objects in the museum beyond what was already published.

STYLIZED HORN RINGS

We have seen that transverse marks are sometimes too closely spaced to be naturalistically accurate depictions of winter rings, at least in ibex images. But because these closely spaced marks are also too straight and well-aligned with each other, the easier explanation is that they are a conventional, stylized rendition of the same horn feature, which we know (see above) was frequently depicted by the image-makers.

An accurate description of this type of mark can be found in the recently published catalog of *art mobilier* from La Vache. In the entry for an object (not discussed here), Buisson notes that the straight, parallel marks within the outline indicate horn rings "in a conventional manner," and that just like for "a great number" of ibex images from la Vache, "the orientation of the marks...does not correspond to anatomical reality" (Buisson in Clottes and Delporte 2003: 255). It is not unusual for these orderly arranged marks to be found as part of extended and additional series, in yet another departure from a purely figurative depiction of horn features. In another image from the same site, discussed above as part of an association (see Figure 31), the ring marks along the horn form two distinct series with a wide gap in between, which is reflected in the catalog description when Baffier underlines the "conventional[,] nonrealistic" style of the ring marks (Baffier in Clottes & Delporte 2003: 334). A bone plaquette found in the Grotte des Morts, in the Planchetorte archeological valley, shows a main series of horn ring marks with additional marks below the outline, followed by a series of smaller, slanted marks where the large horn meets the uneven border (Figure 60).

In an ibex head engraved at Gabillou (Figure 61), the first mark is full-sized—if half off the outline—the second is less than half-length, and the remaining four so short and at the same time deep, that they look like dots. So, it is understandable that this is how they were all originally traced (Gaussien 1964: Plate 17 no. 1), but it seems clear to me they should be considered to be straight marks. It is interesting to note that the uneven spacing between the third and fourth marks suggests they were engraved after the dividing line found between the horse tail and a second dividing line. The first dividing line in turn may have been engraved after the horn outline since it begins, or ends, exactly on its front side (more on this below).

The image engraved at Pergouset was traced as showing two series of transverse marks with different and even



Figure 59. Artifact 24. Photo by R. Robert, reprinted from Nougier and Robert (1979: Figure 1).



Figure 60. Artifact 41. Drawing by J. Bouyssonie, first published in Bouyssonie et al. (1939: Figure 5 no. 1), reprinted from Rousot 1966.



Figure 61. Gabillou: close-up view of Panel Ten or des bouquets. Photo by J. Gaussen, reprinted by permission of the publisher from Gaussen (1964: Plate 52), © Institut de Préhistoire de l'Université de Bordeaux.



Figure 62. Pergouset: close-up view showing head and horns of the full-figure image engraved in the first room, near the entrance to the cave. Photo by J. Vertut, reprinted from Lorblanchet (1984: Figure 2), permission given by Photo Jean Vertut.

complex shapes (Lorblanchet 1995: 94–95). However, by comparing the photograph accompanying the tracing with the one reprinted here (Figure 62), it became apparent that there was some chance, however small, that all these variations were due to the rugged, highly irregular surface; the possibility that the intention was simply to engrave a single series of plain transverse marks cannot be ruled out.

THE ROUFFIGNAC IMAGES

However varied the set of images presented here may be—as well as being produced over a time span as long as four thousand years—the ibex images painted on the *grand plafond* at Rouffignac seem too different, in a class of their own, to be included and discussed with all the others. They do show seasonal characters and horn features, but always painted in the same style as the rest of the image, without any emphasis or distinctiveness and not in the least stylized—as if they had no meaning to convey. Ibex males have raised tails, but are not associated with a low stretch behavior or a full winter coat, and in two of the six images I was able to study more closely (ibex 102, 103, 106, 109, 110, and 117), sexual characters are inconsistent with seasonal characters. With its tiny horns, ibex 117 can only be a female or a young individual but its long neck mane is that

of an adult male, at least five or six years old. Close by, but sideways, ibex 109 clearly shows the horns of a female in length (Maury 1975: 97), width, and shape, but at the same time a long neck mane, when females do not have this attribute at all. This suggests that the author was not familiar with the actual species depicted but only with other Magdalenian images. More subtle differences lie in the style. The *grand plafond* ibex appears to be unusually “drawn as stiff, squarish animals,” as noted by Daniel (in Bahn 1993: 56); one of them, ibex 109, seems to me to be painted in a style too smooth and pleasing to the eye to be Magdalenian, and similar feelings have been expressed as to the style of mammoth 107 (Bahn 1993: 56), found back-to-back with ibex 109 and nicknamed the *gran-père*. The discovery of these images also is relevant here. The first report of images painted in the *grand plafond* dates back to 1945, when a local group of speleologists began visiting the cave they knew as Grotte de Miremont; year after year, they saw more and more images appearing on its walls and reported this to local authorities who declared them to be fakes (Garrod 1958; Pierret in Daniel 1963: 174; Bahn 1993: 55–56). Seven years later, the same cave was officially discovered, presented as Rouffignac, and authenticated by an international panel of experts. Two years later, the claim was made that the pres-

ence of images within the cave had been recorded in writing since 1575 (Nougier and Robert 1958), and this claim is again found in later publications (Barrière 1984: 203; Plassard 1999: 23) even though it was carefully shown to be unfounded in a short paper published the same year (Saint-Mathurin 1958).

THE MEANING OF IBEX IMAGES

While previous sections dealt only with what was depicted in the images, this section will address their meaning (*signification*) and use (*motivation*), that is, why they were made. Conkey and Soffer (1997: 2–3) explained why calling these images “art” is both limiting and misleading—nonwestern cultures do not have an equivalent term for “art,” nor do they differentiate the aesthetic from the symbolic, the sacred, the utilitarian, and so on. In these cultures, everything can have a meaning, including what we see as decoration (Chollot-Varagnac 1980: 8), so we should not assume that the primary function of images was aesthetic, but instead ask questions about how they were used and why they were made (Conkey 1990: 165).

That Magdalenian images likely had a symbolic meaning is suggested by the limited number of subjects depicted, their conventional rendition, and the complete absence of a background such as landscape or terrain. Writing about the images found on stone plaquettes and portable plaquettes (but this could be extended to all classes of portable objects), Sieveking (1987a: 16) said:

“The animals selected are not an inventory of food species, or a record of the environment; they do not obey the definition of totems and there is very little that is spontaneous or individual in the carefully repeated formulae that occur on cave walls and plaquettes alike. This adherence to a formula, in the inventory of animals and in the way they are drawn, is of great importance.”

That the most common types of image associations are methodically set out in linear or mirror layouts seems to me to be additional evidence of a symbolic system of some kind. The idea that the image-makers used as symbols images from the natural world surrounding them, including the animals and plants they were familiar with, also would explain why human images from the same period are relatively rare and rudimentary.

Since the meaning of symbols is not universal but bounded in time and to context (Conkey and Soffer 1997: 6–7) reading messages from another geological epoch is extremely difficult; all the more so because a significant part of Magdalenian heritage may have been lost at the Pleistocene-Holocene boundary (see above) or in the thousands of years that followed. What we can rely upon, and brings us closer to the image-makers, is our knowledge of the paleoclimate and paleoenvironment, including the anatomy and behavior of the species depicted. Thanks to this knowledge, we can see evidence that the image-makers appear to have selectively depicted seasonal characters and behaviors, as well as the winter rings, and, thus indirectly the growth rings, in ibex horns.

SEASONAL MARKERS

In more than half of the images with a seasonal meaning (collected here), horn features are either rendered with a modified horn outline (see Figures 24, 26, and 27) or are missing (see Figures 3, 9, 11, 13, 16, 17, 18, 19, 20, 21, and 30). If there are features that received special treatment in these images, it is coat features, typically the neck mane or muzzle hair, suggesting that these images were used only or mostly for their seasonal meaning. Expanding beyond the idea that keeping track of time is one of the basic needs of any civilization, Marshack (1972, 1995) suggested that seasonal images acted as seasonal markers, indicating the time of the year at which human groups living across the region engaged in subsistence-related, exchange, or social activities. In this scenario, ibex images were likely a symbol for wintertime, as the ibex winter coat and mating behaviors belong to the cold season.

In this regard, we can take a closer look at the five heads on the Les Eyzies object (see Figure 17). These were described by de Sonneville-Bordes and Laurent (1968: 414) as Alpine because of their simple horn shape, but it seems to me that the horns are just too short to tell. In addition to muzzle hair marks (see above), three of these images also show a series of bold, highly stylized marks that the authors described as “*the dark mid-dorsal stripe [along] the back of the ibex*” (de Sonneville-Bordes and Laurent 1968: 414). This appears to be a very keen observation, and likely correct, but, at the same time, one that undermines their tentative description of these images as females or young animals because the dark back line hair, forming a diamond shape between the shoulders, is one of the seasonal coat features that only adult males develop. And yet, the horns are those of females or young individuals. How might this apparent paradox be explained? Perhaps the images were originally drawn as young animals, and the coat features of adult males added later. This model of image use also would explain why there are two or three rows of muzzle hair marks because these may have been added over time, each to signify a new winter season (not only does the dark muzzle hair come back every winter, but it also would extend farther down as an individual got older). The same model may be applied to other images that look like females or young animals—being described as such in the literature (see Figures 18 and 19)—but which show the same rows of marks across the muzzle.

It is not uncommon for seasonal images to form lines. Lines of seasonal images are reminiscent of the return, year after year, of the same season. For example, lines of low stretching ibex can be read as the return of this species’ mating season, and lines of ibex in winter coat as the return (at the same time of the year) of the cold season. The same can be said for lines of winter horses, while lines of belling red deer can be read as the return of the fall season.

COUNTING YEARS

Time is an abstract concept but the passage of time can be observed in a variety of natural cycles. Examples range from the path followed by constellations in the night sky,

to the yearly growth rings seen in tree sections and along ibex horns (marked by what I call winter rings). As a visual device to keep track of time, winter rings are easy to draw and even long counts take little effort and engraving space, which is limited on portable objects. This use of winter rings as year markers is very clear in images where the underlying sketchy, incomplete outlines seem to be nothing more than a quick, basic layout created for adding the marks in a regular fashion, and, at the same time, the outlines offer a visual clue to read the marks as winter rings (see Figures 55, 56, 57, and 58). Moreover, this also explains the missing muzzle features and the emphasis on horn features.

We have seen that the head outlines forming a line on the tiny object from La Vache (see Figure 59) were used in the same way, and the ring marks were added in a gradually bolder style that matched the perspective view. We can read this association as a scene, following Nougier and Robert (quoted above), but why do the ring marks also gradually increase in number from left to right? Why depict five individuals orderly lined up by age? In answer to these questions, I believe that we may not be looking at five individuals at the same moment in time, but the same individual at five different moments in time. The addition of a winter ring every two images may indicate the development of a growth ring, meaning that one year had elapsed, to the effect that the far-to-near sequence actually takes place in time. In this view, the theme of this association would be the regular, gradual development of ibex growth rings, and the message would be four times half a year, the time span between every two images, or two years time overall. Associated with these figurative, if stylized, images are four vertical marks, arranged as two double marks; these may have the same meaning as the line of head outlines, with each vertical mark representing half a year, and each double mark a full solar year.

In the Gabillou image, the horn outline may have been divided in two before adding the transverse marks. If this is correct, then the marks should be read as three years followed by three years, rather than six years, although we would still not know which event the dividing line symbolized. Another example is the two facing ibex from La Vache (see Figure 30). In the original description, Nougier and Robert (1965: 200) described the horn rings in the image on the left as “*three marks determining five rings*,” and I believe they meant growth rings. Apart from the small detail that three marks define four, not five growth rings, this is a very accurate description and shows that, at least in this image, they too read transverse marks as winter rings. They also wondered if the absence of similar features in the image on the right was meant to indicate a different sex, age, or species (Nougier and Robert 1965: 200), but winter rings are present in both sexes from a young age (when the horn is much shorter than depicted here) and because we already know that this ibex cannot be a female (see above), perhaps these horn features were not present simply because this ibex image was used in a different way. While the other ibex head has deeply engraved winter rings, but no seasonal characters, and therefore may have been used as a

year count, this one has a series of neck mane marks and was likely used as a seasonal image. Since these two images also are engraved in a different style (see above) they may have been created by different hands, at different times.

SEASONAL IMAGES WITH YEAR MARKS

A relatively small number of the images studied simultaneously show both transverse ring marks and seasonal characters or behaviors (see Figures 4, 10, 14, 22, 25, 40, 41, 43, 50, 52, and 53). For at least two of them, this combination may result from the secondary addition of horn features. We have seen that the image on the back side of the Mas d’Azil pendant (see Figure 53) was described as seasonal by Crémades, and this is likely correct because the distribution of the hair marks closely matches the dark areas in the winter coat of Pyrenean ibex. Because the oversized horn may simply be a later addition to the original image (see above) it all comes down to the image having been created as a seasonal image, with a smaller or no horn, and secondarily used to create a year count. The same may be true for one of the ibex painted at Niaux (see Figure 50). With its dark, fully developed coat, this image is clearly a seasonal image of winter, to which the winter rings may have been added to indicate many winters (actually five). This would account not only for the different style of winter rings (see above) but, more importantly, for the different age they indicate, six years, compared to the age indicated by the extension of the dark coat areas which is in the range of 10–20 years.

We have also seen that the full-figure images forming a line on a baton (see Figure 10) show winter rings and at the same time very clear seasonal characters that makes them winter images. Without the transverse marks we may be looking at three winters; with transverse marks we are looking at three winters, followed by two winters, and then three or more¹⁴, so the line as a whole may be read as a long count of eleven or more winters. The same combination of seasonal characters and winter rings can be seen in the heads forming a line on the front side of the Mas d’Azil pendant (see Figure 41), which may be read as five winters, four winters, and five winters again. Associated with this line are two signs (*croisillons*) that look like the two double vertical marks on the tiny object from La Vache (see above), but are more difficult to read.

IMAGE USE

We should not assume that image associations were created instantly or over a very short period of time (Conkey and Soffer 1997: 7), especially when these are found on portable objects, because countless individuals may have carried along and used the same object since it was made (Conkey 1990: 166). This is quite clear for associations where each image is engraved in its own, distinctive style, such as the bleating ibex and head outline from Isturitz (see Figure 13), even when the addition of a second image was likely meant to form a thematic association with the first one, as in the two facing ibex from La Vache (see Figure 30), discussed at length above. So when I suggest that even within single

images we may come across features that were added later, this represents simply an extension of the same concept. If portable objects likely changed hands, it is also true that over time caves and rock shelters may have seen new visitors or dwellers using the same images in different ways. The addition of new features may have sometimes involved erasing the old ones, in what may be called image reworking, or in Marshack's words, image renewal.

Keeping in mind that the images as they have reached us may have changed through time, year counts may have been created in two ways. The transverse marks representing winter rings, especially when naturalistically accurate, may have been created at the same time as the rest of the image, to visualize and communicate the concept of a given number of years elapsed or to come, or may have been collected over time, like notational marks, to create a record of elapsed solar years for personal or shared use. In the second model, images with extended and additional series of marks could be explained as year counts that were carried on beyond the horn outline, making use of all the engraving space available, and the stylization of winter rings into series of closely spaced may simply be a way to save space and allow for longer counts.

The theory that images with transverse marks, however they were created, may be year counts share the same foundation and clear-cut limitations of Marshack's theory of seasonal meaning. They both rely on naturalistic knowledge and deal specifically with each subject, or closely related subjects. While offering different explanations for different images, they reveal the same concern with keeping track of time by their makers. They also draw more from images found on portable objects, which is important because these images "often contain more detail in their execution" (Lewin 1999: 203) and because they are likely to be representative of a much larger sample, since many more of these objects may have been lost.

CONCLUSIONS

In the first section of the paper, I introduced the term "winter rings" to indicate a type of horn ring sometimes incorrectly referred to as growth rings or with generic terms like grooves. In the second section, I looked at horn shapes and showed that while there are plenty of images clearly depicting the Pyrenean species, it is difficult to find a convincing example of the Alpine species, which was unexpected. In the same section, I suggested that the sample from which Guthrie drew conclusions as to the horn shape of Pleistocene ibex should be revised and extended; that one image previously described as a chamois depicts a Pyrenean ibex instead; two images described as ringed horns may be uncertain; and, that Breuil's original description of the small head engraved at Les-Trois-Frères likely was correct.

In the third section of the paper, I collected previous descriptions of seasonal images for the four species considered, listed the seasonal characters and behaviors more frequently indicated by the image-makers, and extended the set with new images, including the low stretching ibex on the Lortet point and the *lame* from Le Chaffaud. Five as-

sociations previously described as seasonal were discussed in detail and three of them confirmed as such. Interestingly, the four full-figure images in the first ibex panel at the Abri Bourdois, also described as a seasonal association, may be read as two distinct associations with one image in common and different, if related, seasonal meanings.

The fourth section of the paper began with an overview of the two techniques used to render horn features that I call modified horn outline and transverse marks. Transverse marks are more common and rarely combined with a modified horn outline. In the most naturalistically accurate examples, transverse marks or lines clearly represent winter rings, and this interpretation may be extended to the same marks when they are more closely spaced or stylized. The second technique is usually read as a representation of ornament rings, as seen in the Alpine species, but I found that modified horn outlines matched more closely the keel of Pyrenean ibex, a reading supported by the fact that they are always found in images with a clearly or likely Pyrenean horn shape, although this was not always easy to determine.

That winter rings were singled out among horn features and so frequently indicated would be remarkable even if they were not regularly emphasized and even stylized. That many individuals with different artistic skills and likely from different times and places focused on the same features—winter rings, and therefore growth rings—is taken here as evidence that they were to convey a message, as if they had a symbolic meaning in the cultural tradition shared by the image-makers. This may explain why winter rings sometimes appear stylized as series of marks that are clearly distinct from the rest of the image. As to why the image-makers selectively indicated and emphasized one character or behavior over another is a question that has already been answered for seasonal images, when Alexander Marshack (1972) suggested that they were used as seasonal markers, a visual aid to communication within and between human groups. This theory offers a model for image use that can be applied to the seasonal images, all pointing to wintertime, of the four species considered here.

The fifth section of the paper also featured detailed descriptions of selected images and image associations. In the line of five on the Les Eyzies object, three heads show a series of outsized, stylized marks along the neck that appeared enigmatic until I came across a description in which they were associated with a seasonal coat feature. An understanding of the concept of the yearly development of ibex growth rings underlies the line of five stylized head outlines on the tiny object from La Vache, showing that the image-makers were concerned with keeping track of time and used winter rings as a visual device to further this aim. This is also the only example for which I was able to hypothesize the meaning of the associated signs, a common but enigmatic feature. As with those on the Abri Montastruc rondelle and the Mas-d'Azil bone plaquette, the images in this line are nothing more than ibex outlines with transverse marks. I read the purely figurative outlines as guidelines for adding the marks, which at the same time of-

fer a visual clue to their meaning. Another key example in this series of incomplete but revealing images is the small head outline from Isturitz that was previously described as a chamois. In the same section of the paper, the description of the two facing ibex from La Vache was furthered, leading to the conclusion that the differences in the two images simply reflect a different use of the images, likely in the hands of a different maker. This can sometimes be seen even within a single image, showing both seasonal characters and winter rings, as with the full-figure ibex painted at Niaux and the one engraved on the back side of the Mas-d'Azil pendant. Two lines of images of the same kind, one on the front side of the same pendant and the other on a baton of uncertain provenance, may be read as two long counts of winter seasons. Finally, I envision two models for image creation, but there may be more; and if images were used as year counts, it is not yet possible to determine whether these records were created for personal use, to be shared within a group, or sent as a message, nor do we know which natural or social events the image-makers were keeping track of, year after year.

ENDNOTES

1. Before 1960.
2. "Of the chamois, we have but one engraving, incomplete . . . a head seen from the front, hairy, without eyes, but whose ears, horns, with striation limited to their base, are very exact; nonetheless, the horns are seen from the side in order to show their characteristic final hook, example of intellectual realism."
3. Front and back are labels that I use only for the sake of exposition.
4. "the tail distinctly raised, sure sign of sexual arousal for adult males that go as far as to fold it completely on their back according to the naturalist Marcel Couturier. The attitudes of the three males . . . fully conform to those that this author describes for the period preliminary to mating. The male following the female goat has the neck stretched forward, head and muzzle a little raised, horns forcefully thrown back, sometimes resting on its back, mouth sometimes partway open"
5. "an ibex painted in the Salon Noir at Niaux, and another engraved in the Diverticule de la Trompe at Les Trois-Frères offer unquestionable representations of the long and dark coat. In the latter, . . . his raised tail, the presence of well-developed horns and a beard, are some details that seem to confirm that we're dealing with a buck observed in winter."
6. The distinction between these two definitions was first made by Wel-té (1989: 217–219) and also is found in Crémales (1990a: 37).
7. "If examined in detail, the morphology of the two animals appears to be different: the left one has a short, ringed horn and a pointed ear, the right one, in addition to the long and strongly curved horn, has the mouth remarkably well-treated and matched by the characteristic beard; his eye also is well-rendered and a short mane underscores the nape; as far as an hypothesis can be advanced, it would seem that the right ibex is a male and the left one a female"
8. Here and elsewhere I am using the classification system devised by Delporte (1975, 1979) with four main types: line (*file*), confrontation (*affrontement*), thematic (*thématique* or *mythologique*) association, and scene (*association en scène, narrative, or dramatique*).
9. These are common on cave walls and usually date to the Magdalenian or earlier periods.
10. Found in the figure caption of Plate 123, however, on page 137 they described the same image only as a very unusual Alpine ibex.
11. The following quotations were translated following the author's own definitions (Martin 2005: 41).
12. "On first impression, it seems that the author created an ibex male too large compared to the width of the support. Consequently, he or she had no room to engrave the horn in its natural position . . . However, an examination of the other side of this object, with its heads of caprines laid out in a frieze, shows that the engraver mastered perfectly other framing methods. In this case, does the misadventure of the previous ibex result exclusively from a constraint? Couldn't we see this as an innovation, a deliberate act transforming a familiar animal into a chimera?"
13. "The ensemble of the five heads gives a wonderful idea of perspective . . . The first and the second horn of the first two ibex bear two rings each, relatively strong. The third bears no more than one, less accentuated. The fourth has but one stria, very light and the last one is bare. The details of the horns fade away, decreasing as they disappear while moving away."
14. The last image is incomplete.

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