

Ivory Craftsmanship, Trade and Social Significance in the Southern Iberian Copper Age: The Evidence from the PP4-Montelirio Sector of Valencina de la Concepción (Seville, Spain)

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Because of its great potential to provide data on contacts and overseas trade, ivory has aroused a great deal of interest since the very start of research into Iberian late prehistory. Research recently undertaken by the German Archaeological Institute in Madrid in collaboration with a number of other institutions has provided valuable contributions to the study of ivory in the Iberian Copper Age and Early Bronze Age. One of the archaeological sites that is contributing the most data for analysing ivory from the Copper Age in southern Iberia is Valencina de la Concepción (Seville), which is currently the focus of several debates on the development of social complexity. This article contributes to this line of research by providing new, unpublished evidence and by examining the significance of ivory craftsmanship in commercial, social, and ideological terms. It also assesses in greater detail the prominent part played by luxury ivory items as an expression of social status and power.

Keywords: Copper Age, Iberia, burial practices, ivory, craft specialization, trade, social complexity, radiocarbon dating, optical microscopy, Fourier transformed infrared (FTIR)-spectroscopy, elemental analysis, isotopic ratio mass spectrometry

INTRODUCTION

Because of its great potential to provide data on contacts and overseas trade, ivory has aroused a great deal of interest since the very start of research into Iberian late prehistory. One of the first scholars to bring attention to this material was

Estació da Veiga, who suggested that there were finished items and pieces of raw ivory imported from North Africa to be found in southern Iberia (Da Veiga, 1886–1891, volume 1: 268–70, volume 2: 212). Luis Siret, who differentiated between items made from elephant and hippopotamus ivory, later put forward

Egypt as the place from where finished objects were imported (Siret, 1913: 33). Later, Josep Calassanç Serra Ràfols argued that, since there were no substantial reasons for believing Egypt to be the source of ivory found in Iberia, north-west Africa was the main candidate (Serra Ràfols, 1925: 87). At around the same time, Alfred Götze denied a use of local fossilized ivory, because he thought it to be too fragile and brittle (Götze, 1925: 87). Some years later, in their monumental work about Iberian megalithic tombs, Georg and Vera Leisner compiled a list of ivory objects that is still a major resource for research (Leisner & Leisner, 1943). Regarding the origins, Jodin (1957) and Camps (1960) connected the finds of Iberian ivory with the appearance of Bell Beakers in north-west Africa — a view that would be expanded in Harrison and Gilman's (1977) now classic paper on Copper Age and Early Bronze Age exchange networks in the western Mediterranean.

The first modern monographic studies of Iberian prehistoric ivory focused on Iron Age objects connected to Phoenician colonization (Aubert Semmler, 1979, 1980, 1982). Apart from occasional papers appearing in the 1980s and 1990s (Spindler, 1981; Fonseca Ferrandis, 1988; Poyato Holgado & Hernando Grande, 1988; Pascual Benito, 1995), the recent boom in research into the significant presence of ivory objects in contexts dated to the third and second millennia BC has arisen from two consecutive research projects carried out by the German Archaeological Institute in Madrid (undertaken between 2005 and 2008, and between 2009 and 2012, respectively). These projects have provided valuable, innovative contributions to the study of ivory in the Early Bronze Age (*c.* 2200–1500 cal BC), mainly in the south-east of the Iberian Peninsula (López Padilla, 2006, 2009, 2012; Barciela

González, 2012; Liesau Von Lettow & Schuhmacher, 2012; Pascual Benito, 2012; Schuhmacher, 2012a, 2012b).

Nonetheless, the most spectacular finds belong to the ivory from the Copper Age (*c.* 3200–2200 cal BC) — an area in which research has advanced at a remarkable pace, as shown by the publication of several papers that reveal the outstanding scale and socio-economic significance of ivory-use throughout southern Iberia (Cardoso, 1995, 2003; Schuhmacher & Cardoso, 2007; Schuhmacher et al., 2009, 2013a, 2013b; Valera, 2009; Cardoso & Schuhmacher, 2012; Liesau Von Lettow & Moreno, 2012; Schuhmacher & Banerjee, 2011, 2012; Vargas Jiménez et al., 2012; Nocete Calvo et al., 2013). The recent expansion of this field of research is providing highly valuable evidence for investigating crucial aspects of the dynamics of social complexity in Iberian Copper Age, including long-distance trade, craft specialization and the role of luxury items in the exhibition of status and power.

One of the archaeological sites that is contributing the most data for analysing ivory from the Copper Age in southern Iberia is Valencina de la Concepción, a well-known settlement located near Seville (Figure 1), which is currently the focus of several debates on the development of social complexity. This applies in particular to the scale of agro-pastoral and metallurgical production, functional specialization, monumentality, and social inequality (for contributions in English to these debates, see Nocete Calvo et al., 2008; Costa Caramé et al., 2010; Inacio et al., 2011; Wheatley et al., 2012; García Sanjuán & Murillo-Barroso, 2013; Rogerio-Candelera et al., 2013). Recent studies of Valencina's ivory have suggested the high degree of technical skill and specialization achieved in the working of this raw material, which has been proven

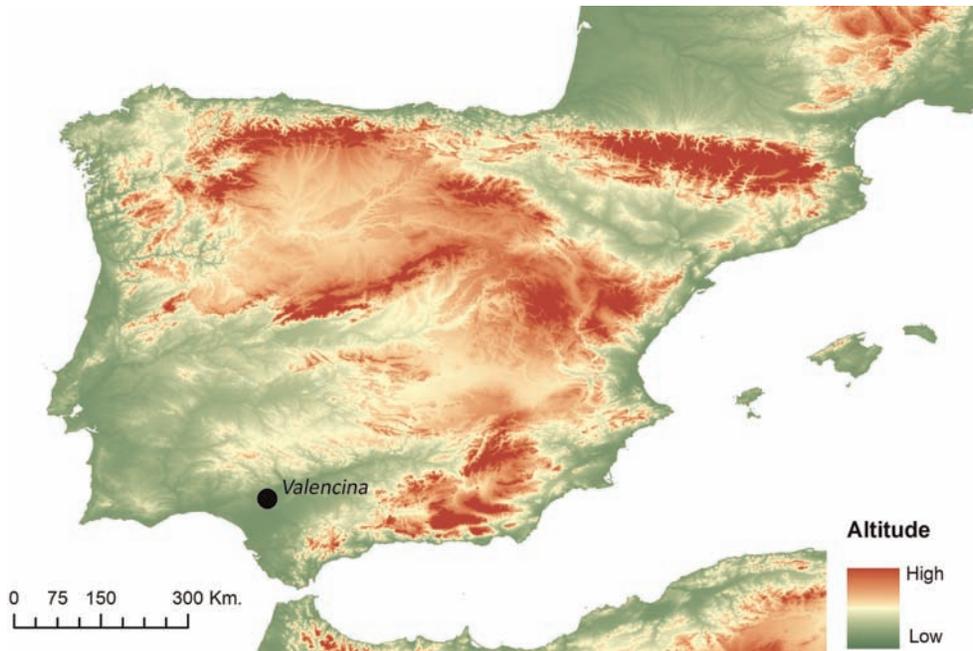


Figure 1. Location of Valencina de la Concepción in the Iberian Peninsula.

to come from North Africa and Asia (Vargas Jiménez et al., 2012; Nocete Calvo et al., 2013).

This article contributes to this line of research by providing new, unpublished evidence and by examining the significance of ivory craftsmanship in commercial, social, and ideological terms. It also assesses in greater detail the prominent part played by luxury ivory items as an expression of social status and power. More specifically, this paper presents the study of several extraordinary ivory objects from sector PP4-Montelirio of the Valencina de la Concepción site, excavated between 2007 and 2008. In this sector, 134 Copper Age structures were revealed (also some Roman); sixty-one contained human remains and, consequently, were classed as funerary, while seventy-three did not contain human remains and were classified as non-funerary (Mora Molina et al., 2013). The artefacts studied here come from structure 10042-10049, for

which some studies on its unique contents have already been published, including analysis of the human remains (Robles Carrasco & Díaz-Zorita Bonilla, 2013: 377), an exceptional piece of amber (Murillo-Barroso & García Sanjuán, 2013), and the red pigments (Rogerio-Candelera et al., 2013).

Structure 10042-10049 from PP4-Montelirio is a megalithic funerary construction with two chambers. There is an access corridor with a maximum length of 12 m and a maximum width of 0.70 m, bounded by fifty-five slate slabs (twenty-eight on the north side and twenty-six on the south side) with another thirteen inside. This leads into the first chamber, whose maximum diameter is 2.57 m, and which was partially destroyed by work carried out in 1998 in this sector of the site. The remains of four people were identified between the access corridor and first chamber, together with over 2000 perforated beads with red pigment, four

fragments from one or two small pottery figurines, fragments of twelve stone arrowheads, three fragments of flint blade, several carved remains from various ivory objects (very broken, some decorated), as well as two examples of marine malaco-fauna and fragments of deer antlers.

Leading from the first chamber is a second corridor, with a maximum length of 2.52 m and a maximum width of 0.51 m, bounded by fifteen slate slabs (seven on the north side and eight on the south side), joining the first chamber to a second. The second chamber, which is better preserved than the first, has a maximum diameter of 2.16 m and is enclosed by twenty-three slabs. Two stratigraphic levels were found in the second chamber.

The lower level contained a primary individual burial in foetal position, lying on the right side and the head pointing to the corridor, which was covered in several parts with red pigment made from cinnabar (Rogerio-Candelera et al., 2013). An unworked elephant tusk (described below) was found framing the head of this individual, who had also been furnished with a set of grave goods including a large *borde almendrado* (almond-rim) plate partly covered in red pigment, a set of twenty-three flint blades, numerous highly fragmented ivory objects (many of them decorated), a flint dagger blade found next to an amber pommel, probably from Sicily (Murillo-Barroso & García Sanjuán, 2013), and a small, morphologically unrecognizable, copper object.

The upper level of this chamber was physically separated from the lower deposit by twenty-two slate slabs laid horizontally and had no human remains. Several objects were found here, including five pots, a rock crystal dagger blade, a set of thirty-eight flint blades and fragments of sixteen others, a flint arrowhead, several ivory objects (the currently studied

examples of which are described in this article), ninety beads, and an ostrich eggshell.

In total, with over fifty objects found in the first chamber and access corridor and about one hundred in the second chamber (more than thirty items in the lower level and over seventy in the upper), structure 10042-10049 yielded some 150 objects, in some cases worked with foreign raw materials (such as the amber, cinnabar, ivory, and also the ostrich egg), which, together with the architecture of the grave and its position in respect of the others, suggests that the people buried here enjoyed high social status. The twenty-two ivory objects identified from this grave represent 56.4 per cent of the total recovered from sector PP4-Montelirio (thirty-nine pieces), although this count may change increase as future restoration work may cause this figure to change. Although tombs 1 and 2 of Perdigões (Alentejo, Portugal) represent the Chalcolithic funerary structure containing the most ivory objects found in Iberia (Antonio Carlos Valera, personal communication), structure 10042-10049 certainly held the largest quantity in terms of gross weight.

Among the thirty-nine ivory artefacts identified in the PP4-Montelirio sector are bracelets, hairpins, various types of containers, two elephant tusks (one unworked, the other with carved decoration), plaques, a dagger hilt and part of what may be its sheath, a pair of combs or ornamental combs, and remains of other, unidentifiable objects. All these objects were found in poor condition; in addition, the excavation of some of them had to be completed in the Museum of Seville where they are currently kept. The objects described below were then subjected to a six-month period of conservation and restoration that included cleaning and consolidation, as well as laborious

re-assembling. Except for the raw ivory tusk, which was restored by the Seville Archaeology Museum staff, the other four items described in this paper (vessel, carved tusk, hilt, and sheath) were treated by Miriam Luciañez Triviño (Luciañez Triviño, 2012).

NEW EVIDENCE FROM STRUCTURE 10042-10049

Unworked elephant tusk

This exceptional piece comes from the second chamber in structure 10042-10049. It was found in the basal stratigraphic unit 664, where a single person was buried: a male aged between 17 and 25 years (Robles Carrasco & Díaz-Zorita Bonilla, 2013: 377), heavily covered in red pigment (cinnabar). The tusk was found on the eastern side of the chamber, with the concave side facing the head of the skeleton, as though framing the head and separating the body from the threshold between the chamber and the corridor.

The whole tusk weighs 1170.5 g and is approximately 59–60 cm long (a more precise measurement is not possible due to its fragmentary state) (Figure 2). It is

not worked and completely undecorated, but was cut horizontally into three parts similar in size and weight. Until now, no references to similar cases of complete unworked tusks have been published for the Iberian Copper Age, although in the large megalithic constructions of Montelirio (Fernández Flores & Aycart Luengo, 2013) and Matarrubilla (Collantes de Terán, 1969), at Valencina de la Concepción itself, and in one of the graves at El Kiffen (Dar Bouaza, Morocco) (Bailloud & Mieg, 1964: 170–72, fig. 19) tusk segments were also found as part of grave goods. To our knowledge, therefore, this is the largest example of unworked raw ivory ever found in Iberian late prehistory.

Carved vessel

This piece comes from the basal stratigraphic unit 664 in the second chamber of structure 10042-49, thus forming part of the grave goods of the male individual described above. It is a cylindrical vessel, 6 cm high and with an average diameter of 7.05 cm. The wall gradually thins out from the base (1.2 cm thick) to the edge (0.2 cm). The vessel was made from part of an elephant tusk and decorated on the



Figure 2. Unworked elephant tusk.
Photo: Miguel Ángel Blanco de la Rubia.

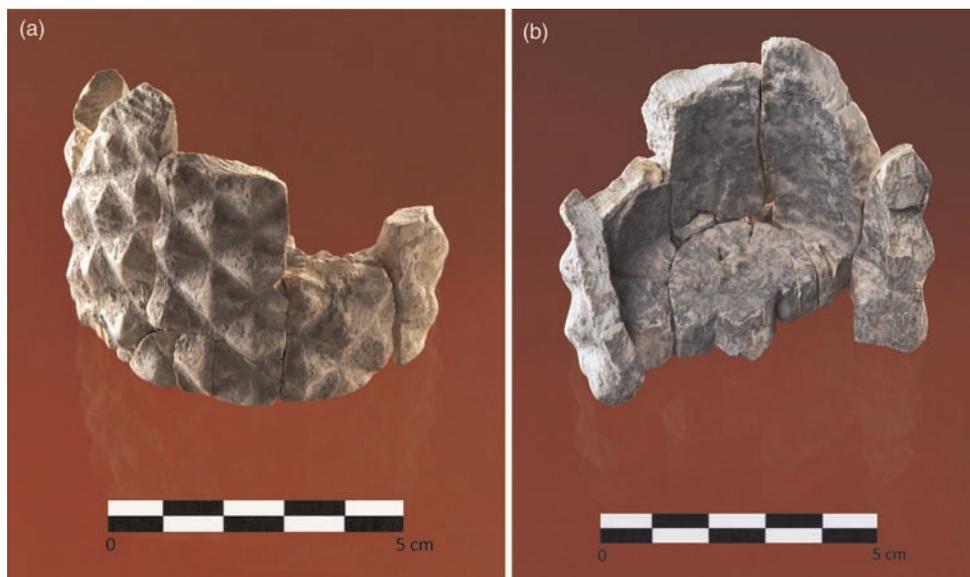


Figure 3. Carved vessel: (a) exterior; (b) interior. Photo: Miguel Ángel Blanco de la Rubia.

outside only, in a combination of motifs: three parallel lines run horizontally around the edge, while the remaining surface is chequered in relief, with a four-sided pyramid on each square (Figure 3).

From its shape, it seems obvious that this piece is a vessel or container for both liquids and solids. Containers of this type made of ivory, bone, or stone have been found at Copper Age sites of Estremadura and Alentejo (Portugal) and Extremadura, the Guadalquivir basin and the Southeast (Spain). Ivory containers with the same decoration as the one described here have been found at the Copper Age sites of Tituaria, Praia das Maças, Vila Nova de São Pedro and Perdigões in Portugal, as well as in La Pijotilla, Cañada Honda B, Cueva de las Ventanas, Los Millares Tomb 7 and La Sabina 96 in Spain (Schuhmacher, 2012b). One important consideration is, however, that the containers in which the base and walls are made out of the same piece, like the PP4-Montelirio example described here, have only been found in Perdigões (Lago

et al., 1998; Valera et al., 2000) and, outside Iberia, in Rouazi-Skhirat (Morocco) (Daugas, 2002; Bokbot, 2005: figs. 27–28).

Carved elephant tusk

This exceptional artefact comes from stratigraphic unit 535 of the second chamber in structure 10042–10049, corresponding to the upper (later) deposit where no human remains were found. It was found on the right side of the chamber (northern side), as seen when entering from the corridor, approximately 1.30 m from the chamber entrance and about 20 cm from the wall.

It is an elephant tusk, or part of one, decorated on the outside and hollow in the interior. At present, it is approximately 30 cm long with an average diameter of the preserved part of 4.25 cm. It could not be fully reassembled, but according to photographs from the fieldwork, the piece may have originally been 36 or 37 cm



Figure 4. *Carved elephant tusk.*
Photo: Miguel Ángel Blanco de la Rubia.

long. The design consists of strips interspersed with various decorative motifs: series of parallel lines, with chequered strips in relief (with a four-sided pyramid on each square) set in between. The tip, or distal end, is finished off with a globular protuberance of a shape that resembles an acorn (Figures 4 and 5). This piece appears to be worked by following the natural shape of an elephant tusk. The interior was hollowed out, and the outside was worked and decorated in the same way as the vessel described above. The piece is broken at the ‘acorn’, exposing the fact that it is completely hollow from the mouth, or widest part, to the tip. During the study, a feature appearing to be a perforation in one side of the protuberance was observed, which could have been made with a drill. However, whether this perforation was the result of a deliberate drilling or part of an accidental cracking could not be ascertained, due to the fracture described above. As with the previous piece, the tusk still preserves a shiny, polished surface in some areas.

From its shape, and in the same way that horns are used as vessels, it may be thought that this object might have been

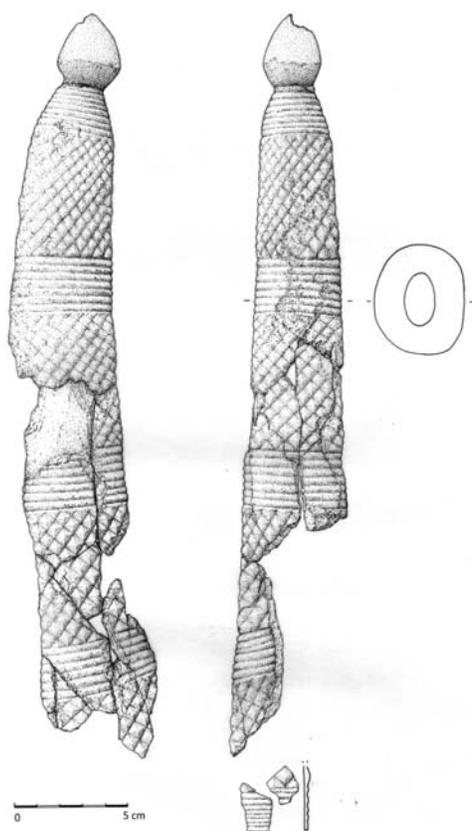


Figure 5. *Carved elephant tusk.*
Drawing: Elisabet Conlin.

used as a container for liquids or solids. In addition, if the perforation at the tip is proved, it may have been used as a drinking vessel (similar to a wineskin).

In some southern Iberian Copper Age sites, objects of an approximately similar shape have been documented and interpreted as idols or betyls. They are usually elongated and tapered, and are very often wider at one end than the other and finished off either with a rounded or pointed tip, or in a ball shape (Almagro Gorbea, 1973: 63). However, these similar objects are made of stone, not ivory. Recently, however, a similar item, made from a hollowed out elephant tusk, was found in La Molina (Lora de Estepa, Seville), which is about 120 km east of Valencina. This object is rather smaller and rougher than the one from PP4-Montelirio, and the surface is only partly decorated, although the proximal end is decorated with a strip of parallel cuts, and the tip is carved in the same globular shape (Juárez Martín, 2010: 91).

Carved dagger hilt

This piece comes from stratigraphic unit 535, in the upper (later) deposit in the second chamber of structure 10042-10049. It was found in the south side of the chamber (on the left of the entrance), where most of the objects in this stratigraphic unit were found, at less than 1 m from the chamber entrance and near the wall. Although several hypotheses were initially put forward to interpret this piece (amulet, idol or rod of office, among others), an analysis of photographs taken in the field eventually established that it was the hilt to a rock crystal blade found with a clear spatial connection.

Therefore, this piece forms a functional whole with the rock crystal blade and plaque described in the following section,

which is interpreted as being part of the dagger sheath. The hilt comprises two parts worked separately and then assembled together: a pommel or ornamental top (between 12 and 13 cm from point to point, 1 cm thick and about 4.5 cm wide) and a hilt (8.4 cm long, 4.5 cm wide and approximately 1 cm thick) (Figures 6–8).

The pommel has eight slightly conical projections on what is thought to be the front side, while the rear side has fourteen perforations around the edge. The photographs from the field show that at the side, very close to the perforations of this pommel, there was a set of perforated beads in a bunch, which makes us suspect that perhaps these were also part of the decoration for the piece and were set into the fourteen holes. The pommel had been carefully hollowed at the base, so that it could be fitted to the upper part of the hilt.

The hilt is richly decorated on both sides in zigzag lines carved in relief, with the points almost touching to create rhomboid shapes, slightly raised in the centre. The left and right edges are finished in a series of three or four parallel lines making a 0.5 cm border on each face. The sides are not decorated. The hilt has a hollow at the distal end where the rock crystal blade was inserted and held in place.

In southern Iberia, there are dagger hilts or ornamental tops for hilts made in ivory (for example, several examples from Perdigões — Antonio Carlos Valera personal communication), but they are much simpler, usually undecorated and none features the kind of crescent shape present in the item studied here. At the great megalithic monument of Matarrubilla, which is part of the Valencina de la Concepcion site, a knife handle and an object that might be a punch handle were found (Collantes de Terán, 1969: 58;



Figure 6. *Dagger hilt: (a) front; (b) back.*
 Photo: Miguel Ángel Blanco de la Rubia.

Schuhmacher, 2012b). Also worth mentioning is the case of La Molina artificial cave, where a slightly tapered

object was found, which the excavators were certain was ‘... a handle or hilt, as it had a flint blade fitted to the

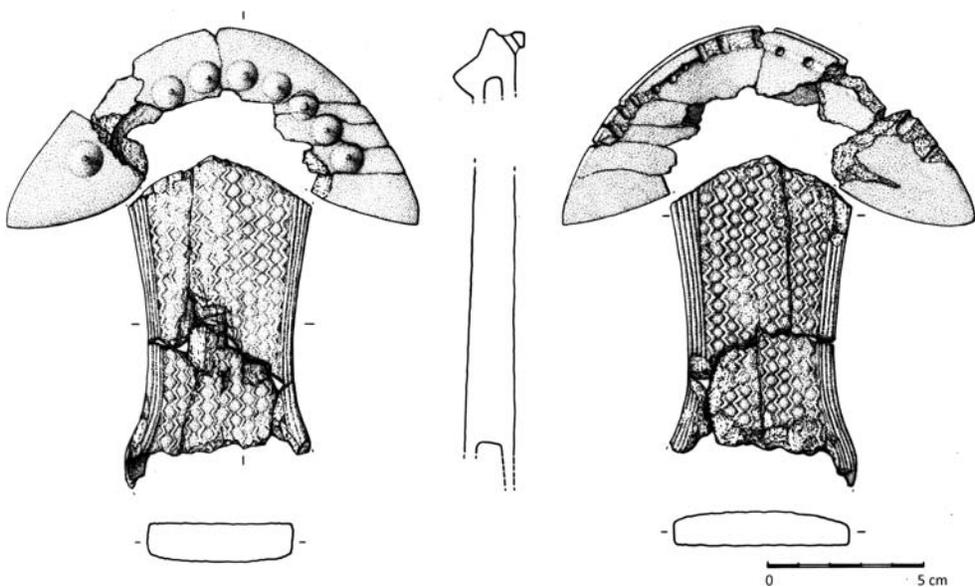


Figure 7. *Dagger hilt.*
 Drawing: Elisabet Conlin.



Figure 8. *Dagger hilt with rock crystal blade and with sheath.*
Photo: Miguel Ángel Blanco de la Rubia.

narrowest end' (Juárez Martín, 2010: 91). In Perdigões, a pommel in crescent form was found, but with the crescent pointing the other way round than the piece from Valencina.

In fact, the archaeological record for Iberian or European later prehistory does not, so far, record any similar ivory object. The shape of the piece echoes the crescent-shaped items represented on Bronze Age stelae in southern Portugal, which normally appear hanging from the 'shoulders' or 'neck' of the anthropomorphs. The crescent-shaped object is one of the basic motifs of these stelae (Díaz-Guardamino, 2010: 300), and shows a

clear iconographic prominence in some of these, which would emphasize its symbolic value, perhaps as a symbol of power and/or social status. In some of the crescent-shaped representations on the Alentejan stelae, the object is clearly portrayed as consisting of two parts, with a pommel and hilt, exactly like the PP4-Montelirio piece described above. Therefore, it is possible that the crescent-shaped objects symbolized on the stelae represent similar objects to those found in grave 10042-10049. Hilts shaped in a similar fashion also appear in large numbers in the rock art of the Camonica valley in Italy (Anati, 1994).

Carved plaque or sheath

This piece also comes from stratigraphic unit 535, from the upper (later) deposit in the second chamber of structure 10042-10049. It was found only a few centimetres from the hilt described above and the rock crystal blade.

It is a decorated plaque between 0.4 and 0.6 cm thick, and in its current condition, is 25 cm long. Despite the extensive damage to this item, the field photographs suggest that it would have originally been much longer. The rounded end, which we take to be the proximal, narrows as it approaches the opposite, or distal, end (very fragmented and incomplete). It is carved in relief on one side only (which we take to be the reverse) in zigzag lines

almost touching at the points, as with the hilt decoration, but on a larger scale (Figures 9 and 10). The undecorated or obverse side is done on two levels, as the two lower thirds have rims on the left and right (which are thicker than the centre of the plaque), which must have acted as a stop and support for the hilt pommel, since the arch of the pommel and the proximal end of the plaque meet exactly at this point. On both lateral rims there are several V-shaped perforations (a pair of perforations that meet inside the piece). The left side has one perfectly preserved and four fragmented V-shaped perforations, and the right side has four fragmented V-shaped perforations.

This object appears to have been extracted in a single piece. Therefore, the



Figure 9. *Carved plaque or sheath: (a) front; (b) back.*
Photo: Miguel Ángel Blanco de la Rubia.

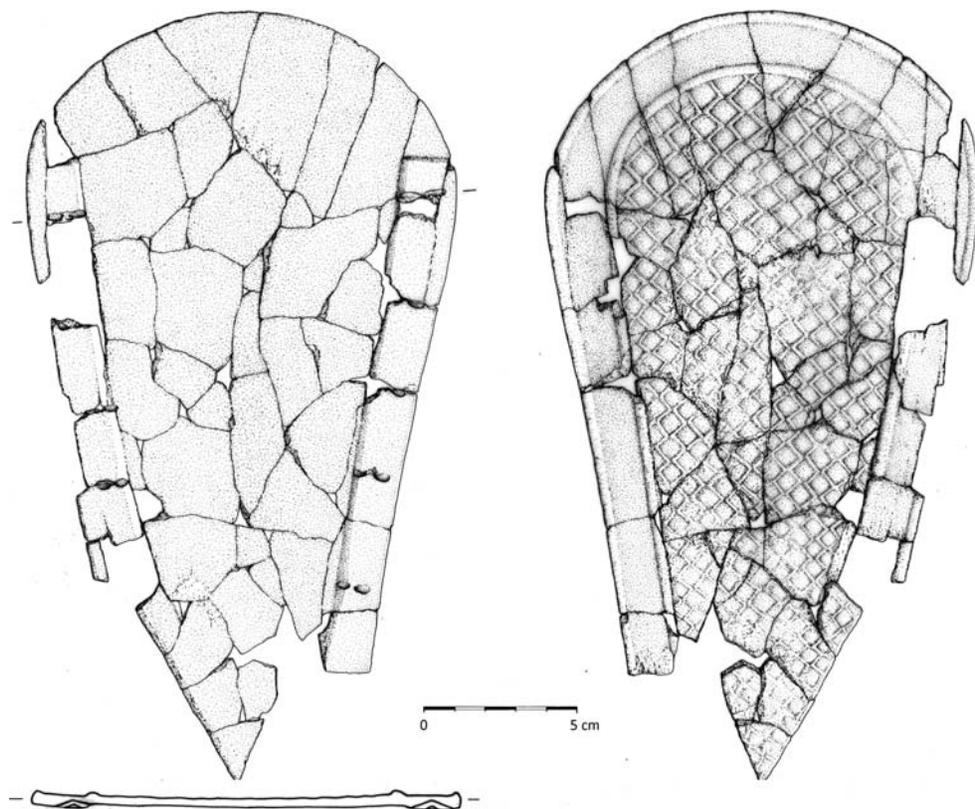


Figure 10. Carved plaque or sheath.
Drawing: Elisabet Conlin.

tusk must have been larger than 14 cm in diameter (which is the measurement of the widest part of the plaque). The manufacturing process must have followed the same stages as with the other pieces: a first rough plaque was cut, thicker than the end product, the surface smoothed, the design for the decoration drawn on the surface and, finally, the plaque carved and polished.

The shape is similar to other pieces known for the southern Iberian Copper Age, which — from a lack of knowledge of their function — have been described as ‘sandal soles’ or ‘sandal-shaped idols’. Pieces of this type, made in bone or stone, with perforations (not V-shaped) have been described for Almizaraque (Almería,

Spain) (Maicas Ramos, 2007: Figure III. 74) and Alapraia (Estremadura, Portugal) (Gonçalves et al., 2005: 183, 185). The piece from grave 12 at Los Millares (Almería, Spain), made from Asian ivory, is more similar (Leisner & Leisner, 1943: 25, plate 11, 20; Schuhmacher, 2012b). For the plaque under discussion, because of its position in relation to the dagger hilt described above, and because of its shape, it seems certain that it is part of the dagger sheath or case. If this were so, the sheath would have been made in two parts from two different materials: on one hand, a rigid ivory plate; and on the other, a decayed organic material such as cloth or leather, sown to the plaque via the V-shaped perforations (Figure 11).

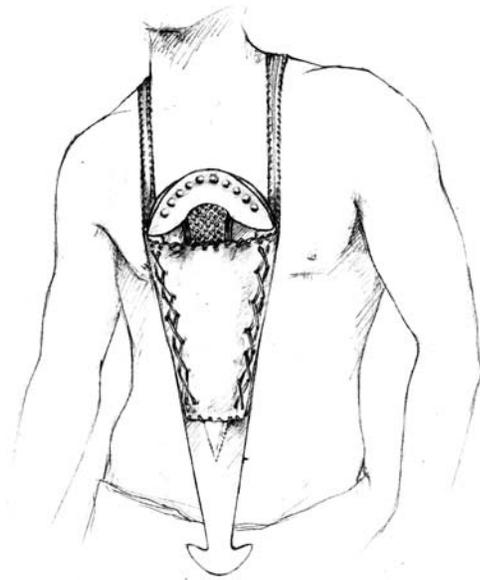


Figure 11. Idealized reconstruction of the suspension system for the dagger.

Drawing: Miriam Luciañez Triviño.

SCIENTIFIC ANALYSIS

Characterization

As part of their research project, Arun Banerjee and his Mainz University team have successfully analysed 130 Iberian ivory objects (including twenty-six from Valencina) and seventeen from Morocco. Various analytical techniques have been used in order to determine the raw material used, including measurement of the Schreger angle by optical microscopy, Fourier Transformed Infrared (FTIR)-Spectroscopy, elemental analysis and Isotopic Ratio Mass Spectrometry (Banerjee et al., 2011a, 2011b; Banerjee & Huth, 2012; Nocete Calvo et al., 2013).

Following the results of the analysis (Tables 1 and 2, Figures 12 and 13), it has been established that all four carved objects from tomb 10042-10049 were made of ivory from Asian elephant

Table 1. Result of isotopic analysis: ΔC ($^{13}C/^{12}C$ isotope ratio values) and ΔN ($^{15}N/^{14}N$ isotope ratio values)

Sample	%C	%N	$\delta C\text{‰}$	$\delta N\text{‰}$
Elf 723	10.06	2.32	-19.36	17.13
Elf 724	5.49	1.62	-18.15	16.94
Elf 725	7.65	1.97	-19.13	17.47
Elf 726	5.39	2.14	-19.30	17.87
Elf 766	7.61	1.43	-20.80	13.25
Elf 767	4.30	0.29	-21.99	11.29
Elf 768	7.71	1.42	-21.10	14.01
Elf 769	7.88	1.57	-20.16	11.74
Elf 1466	4.35	0.11	-18.05	NA
Elf 1470	4.28	0.14	-16.48	NA
Elf 1729	4.79	0.15	-20.83	NA
Elf 1730	5.10	0.25	-20.92	NA
Elf 1731	3.76	0.10	-16.06	NA

The δC and δN values of the ivory samples were compared with the Standard values of archaeological samples (INCENTIVS database). According to this comparison, Elf 723, Elf 724, Elf 725 and Elf 726 (Can Martorellet) are from African savannah elephants, and the ivory samples Elf 766, Elf 767, Elf 768, Elf 769, Elf 1466, Elf 1470, Elf 1729, Elf 1730 and Elf 1731 (Valencina de la Concepción) are from Asian elephants.

(*Elephas maxiums*) while the complete unworked tusk belongs to an African savannah elephant (*Loxodonta africana africana*). This is therefore the first time that ivory from both Asian and African elephants has been found together in the same grave context.

Radiocarbon dating

Five ivory samples, each one obtained from one of the objects described above, were sent for radiocarbon dating at the AMS facility of Friedrich-Alexander University of Erlangen-Nürnberg (Germany). The results obtained (Table 3) show that four of the five dates are totally

Table 2. *Analysed samples from Valencina de la Concepción*

Sector	Context	Sample number	Object	Result
PP4-Montelirio	Structure 10.042-10.049	Elf 1466	Cylindrical box	<i>Elephas maximus</i>
PP4-Montelirio	Structure 10.042-10.049	Elf 1470	Dagger Sheath	<i>Elephas maximus</i>
PP4-Montelirio	Structure 10.042-10.049	Elf 1729	Dagger handle	<i>Elephas maximus</i>
PP4-Montelirio	Structure 10.042-10.049	Elf 1730	Plaque	<i>Elephas maximus</i>
PP4-Montelirio	Structure 10.042-10.049	Elf 1731	Drinking-horn?	<i>Elephas maximus</i>
PP4-Montelirio	Structure 10.042-10.049	Elf 1064	Tusk	<i>Loxodonta a. africana</i>
Montelirio	Megalithic monument	Elf 1727	Comb	<i>Loxodonta a. africana</i>
Montelirio	Megalithic monument	Elf 1728	Acorn-pendant?	<i>Loxodonta a. africana</i>
IES	Pit 402	Elf 766	Production waste	<i>Elephas maximus</i>
IES	Pit 402	Elf 767	Production waste	<i>Elephas maximus</i>
IES	Pit 402	Elf 768	Production waste	<i>Elephas maximus</i>
IES	Pit 402	Elf 769	Production waste	<i>Elephas maximus</i>
IES	Pit 402	Elf 770	Production waste	<i>Elephas maximus</i>
Matarrubilla	Megalithic monument	Elf 151	Rectangular pendant	<i>Elephas maximus</i>
Matarrubilla	Megalithic monument	Elf 154	Tusk fragment	<i>Elephas antiquus</i>
Matarrubilla	Megalithic monument	Elf 448	Quadrangular bead	<i>Elephas antiquus</i>
Matarrubilla	Megalithic monument	Elf 449	Quadrangular bead	<i>Elephas antiquus</i>
Matarrubilla	Megalithic monument	Elf 153	Multiple channel bead	<i>Elephas antiquus</i>
Matarrubilla	Megalithic monument	Elf 153	Multiple channel bead	<i>Elephas antiquus</i>
Matarrubilla	Megalithic monument	Elf 450	Multiple channel bead	<i>Elephas maximus</i>
Matarrubilla	Megalithic monument	Elf 450	Multiple channel bead	<i>Elephas maximus</i>
Matarrubilla	Megalithic monument	Elf 450	Multiple channel bead	<i>Elephas maximus</i>
Matarrubilla	Megalithic monument	Elf 452	Multiple channel bead	<i>Elephas maximus</i>
Matarrubilla	Megalithic monument	Elf 157	L-formed pendant	<i>Elephas antiquus</i>
Matarrubilla	Megalithic monument	Elf 444	Raw material	<i>Elephas maximus</i>
Señorío de Guzmán	Tomb 5	Elf 102	Disk of raw material	<i>Elephas antiquus</i>

incompatible with the chronological and cultural context of structure 10042-10049. According to Dr Scharf, chief technician of the Friedrich-Alexander University laboratory, all samples had very little carbon and no nitrogen. The only one that provided a Copper Age date (Erl-17299) was that with the highest level of carbon: this sample, corresponding to the hilt, was dated to 3905 ± 74 BP (2575–2197 cal BC 2σ). This date is not very consistent with two other radiocarbon dates obtained from this tomb (see discussion below). However, given the problematic nature of the samples, the date is regarded by us as not entirely reliable.

DISCUSSION

The five pieces described above, and the analytical data obtained from them, provide valuable evidence about the technical specialization, long-distance exchange and ideological value of ivory objects in Copper Age Iberia. Prior to this, however, the question of chronology must be briefly addressed.

As explained above, four of the radiocarbon dates taken from the ivory objects have given results that do not match the cultural context of the tomb. The only date that relates to the Copper Age is Erl-17299 (2575–2197 cal BC 2σ). Two

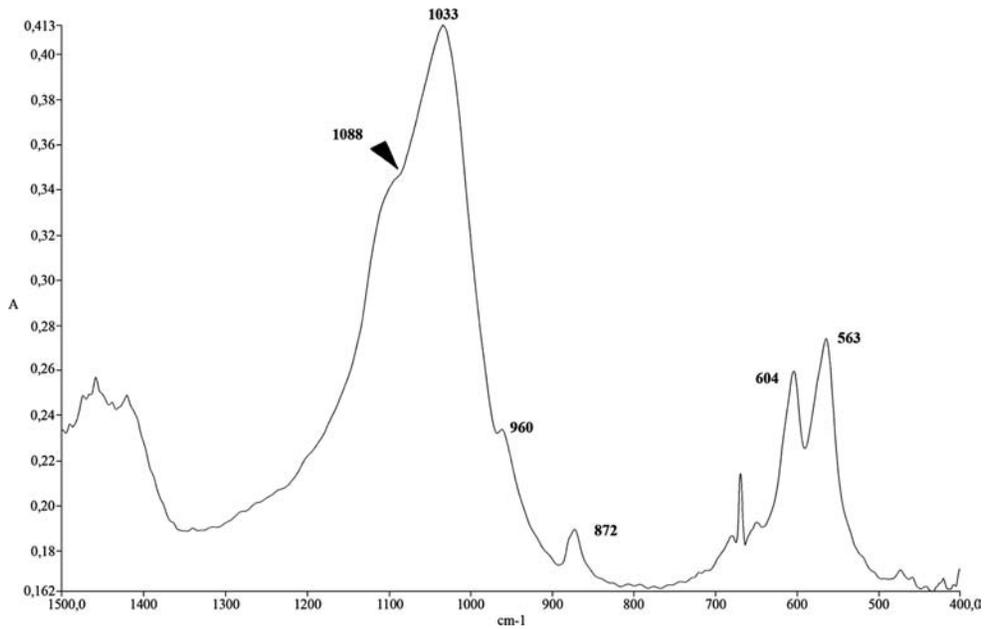


Figure 12. FTIR spectrum (absorbance) from 1500 to 500 cm^{-1} of sample Elf 766. This spectrum, as well as the FTIR spectra of other samples, match the standard FTIR spectrum (FTIR database) of *Elephas maximus* (Asian elephant).

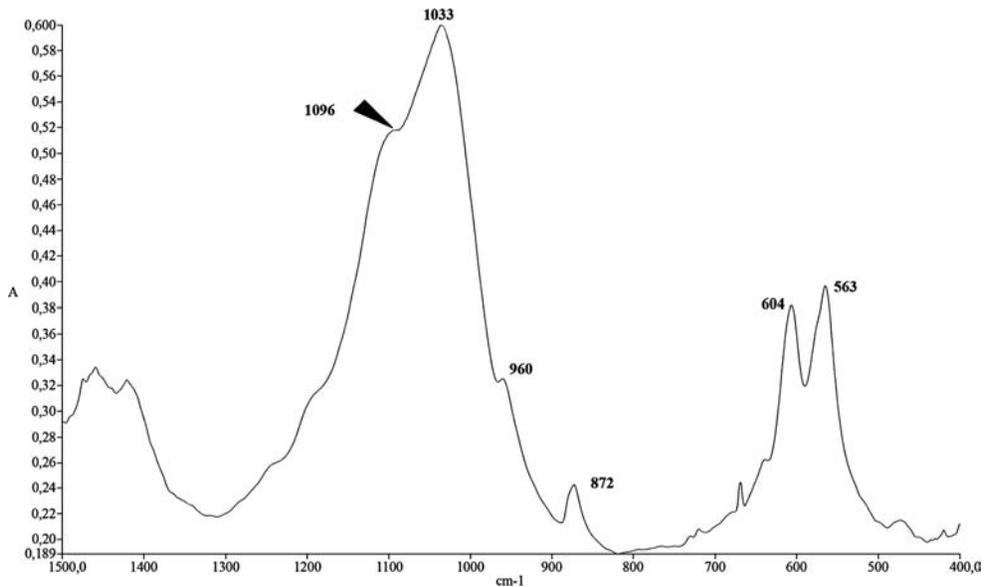


Figure 13. FTIR spectrum (absorbance) in the region 1500 and 500 cm^{-1} of sample Elf 727. This spectrum, as well as the FTIR spectra of other samples, match with the standard FTIR spectrum (FTIR-database) of *Loxodonta africana* (African savannah elephant).

Table 3. Radiocarbon dates obtained from ivory objects from *Valencina de la Concepción*

Object	Lab. ref.	Date BP	Calibrated date 2 σ
Vessel (UE 664-1)	Erl-17297	2299 \pm 68	540-178 cal BC
Sheath (UE 535)	Erl-17298	2439 \pm 58	759-403 cal BC
Hilt (UE 535)	Erl-17299	3905 \pm 74	2575-2197 cal BC
Decorated tusk (UE 535)	Erl-17300	1930 \pm 57	43-221 cal AD
Unworked tusk (UE 664-1)	Erl-17588	2180 \pm 55	384-392 cal AD

other radiocarbon dates were obtained from the human bones identified in the ante-chamber and first chamber of structure 10042-10049. These dates are 3007–2779 cal BC 2 σ (CNA-1303: 4277 \pm 31 BP) and 2880–2629 cal BC 2 σ (CNA-1291, 4161 \pm 34 BP), respectively, that is to say, they lie in the first part of the third millennium BC. This chronology is basically coincident with that obtained from the neighbouring great megalithic monument of Montelirio. Unfortunately, the two attempts made to obtain radiocarbon dates from samples of the bones of the person buried at the base level of the main chamber of structure 10042-10049 have been fruitless, due to the absence of collagen.

If, for the sake of the argument, the date obtained for the ivory hilt found in the upper level of the main chamber (2575–2197 cal BC 2 σ) is taken to be reliable, and if it is assumed that the single primary burial at the base level of the second chamber is contemporary with those in the ante-chamber and first chamber, it would mean that the carved tusk and the rock crystal blade with ivory hilt and sheath were deposited at a later time. In fact, as noted above, these items are separated from the person buried at the bottom of the main chamber by 40 cm of infill.

Nevertheless, due to the errors in the other dated samples, it is difficult to see the Erl-17299 date as entirely reliable. Therefore, for the time being, the internal

chronology of structure 10042-10049 must remain a matter of speculation.

Leaving the issue of chronology to one side, the technical skill involved in the making of this collection of objects is certainly outstanding. All the pieces studied come from elephant tusks, which were cut and carved by highly skilled artisans who gave the end products an excellent finish. Either metal saws or long, flint knives must have been used to cut the thick, tough tusks. Both tools are well documented for the period at Valencina — see, for example, the metal saw found in the ivory workshop described for the IES sector (Vargas Jiménez et al., 2012; Nocete Calvo et al., 2013). Once a basic pre-form was obtained for the final piece, the outer shape was carved. The composite design was drawn onto the almost smooth surface, with the outlines traced in natural pigments, such as a stick of coal or charcoal. Once the drawing was completed, each part of the decoration was carved. Tools used for this work could be of stone (flint knives, engraving chisels or scrapers), metal (saws, awls, chisels, or scrapers), or made from other materials, such as shell or teeth. The surfaces of several pieces studied display some soft, shiny areas and may have been polished before carving.

The sophistication of the working of these objects suggests that there were highly skilled local craftspersons specializing in ivory work. It is not easy to establish whether this was strictly ‘technical’ specialization (which is to say that

Table 4. Numbers and percentages of raw material found in different regions of Iberia

Period	Region	<i>Elephas antiquus</i>	<i>Elephas maximus</i>	<i>Loxodonta a. africana</i>	Sperm-whale	Total
Early Copper Age (c. 3200/3000–2500 BC)	Guadalquivir	0	10 (66.0 %)	5 (33.0%)	0	15
	Portugal,	1 (5.6%)	0	15 (83.3%)	2 (11.1%)	18
	Extremadura Southeast	1 (25.0%)	4 (75.0%)	0	0	5
Late Copper/Early Bronze Age (2500–1900 BC)	Guadalquivir, Cádiz	8 (53.3%)	7 (46.7%)	0	0	15
	Portugal, Huelva	0	0	17 (53.1%)	15 (46.9%)	32
	Inner Spain	9 (90.0%)	0	1 (10.0%)	0	10
	Southeast	0	2 (25.0%)	6 (75.0%)	0	8
Total		19	23	44	17	103

they were people with technical skills only available to a small group and to which others had no access), or also ‘socio-economic’ specialization, in the sense that they were full-time craftspersons, exempt from taking part in subsistence tasks, as suggested by Nocete Calvo et al. (2013).

The second remarkable feature of this collection of objects is the proven foreign provenance of the raw materials themselves (Table 2). Grave 10042-10049 is the only one in southern Iberia currently known to contain pieces of both African and Asian ivory. The Valencina de la Concepcion Copper Age ivory collection shows great diversity in the origins of raw materials. The two objects analysed so far from the great megalithic monument of Montelirio are made in ivory from African savannah elephant. The five fragments analysed to date from the IES sector workshop are from Asian elephant. Of the twelve pieces analysed from the great megalithic monument of Matarrubilla, 50 per cent are from *Elephas antiquus* and 50 per cent from Asian ivory. One piece in tomb 5 from the Señorío de Guzmán sector is from *Elephas antiquus*.

Analytical data from other southern Iberian sites also show that ivory from several provenances was used throughout the region in the Copper Age (Table 4). The two pieces analysed from Cueva Antoniana (Gilena, Seville) (Rivero Galán, 1988: 68–70; Cruz-Auñón Briones et al.,

1991) are from savannah elephant, while of the other two pieces from tomb 5 at Los Algarbes (Tarifa, Cadiz), one was of Asian ivory and the other of *Elephas antiquus*. Another five pieces have been analysed from Los Millares (Santa Fe de Mondújar, Almería): of them, four are from Asian elephants and one from *Elephas antiquus* (Schuhmacher et al., 2009; Cardoso & Schuhmacher, 2012). In addition, the forty-nine pieces studied from other regions, such as Portuguese Estremadura, Alentejo, and Spanish Extremadura, include African elephant (63.3 per cent), *Elephas antiquus* (2.0 per cent), and sperm whale (34.7 per cent)¹, but not Asian elephant. More recently, foreign ivory has started to be identified in Copper Age sites in central Spain, such as Camino de Yeseras (San Fernando de Henares, Madrid) and probably Humanejos (Parla, Madrid) (Ríos Mendoza & Liesau Von Lettow, 2011: 365–67, Figures 4 and 5; Liesau Von Lettow et al., 2011).

It is beyond dispute, therefore, that Valencina occupied an exceptional place in the ivory trade in Western Europe in the third millennium BC, because it was receiving ivory from both African and Asian elephants. The complete unworked tusk

¹We include here six items from Sobreira de Cima (Alentejo), because we understand that these belong to the end of the fourth millennium BC and form a Late Neolithic or Early Chalcolithic deposit (Valera et al., 2008).

from grave 10042-10049 and the material record from the IES sector workshop prove that at least part of the raw material arrived at Valencina in the rough and was worked, transformed, and used there, and very likely sent out to other southern Iberian regions. Hypothetically, this can be explained by the fact that Valencina de la Concepción was part of two different trading networks (Figure 14). One operated on the Atlantic side, and through it African ivory was transported from the Atlantic coast of Morocco to the estuaries of the Tagus and Guadalquivir rivers. Through a second — Mediterranean — route, Asian ivory reached southeast Spain and the Guadalquivir estuary (Schuhmacher & Banerjee, 2012).

In this sense, structure 10042-10049 provides additional data demonstrating

the participation of Valencina de la Concepción in supra-regional (and even supra-Iberian) trade networks of luxury commodities (Figure 15). Apart from the ivory objects, this includes one amber object of Sicilian origin (Murillo-Barroso & García Sanjuán, 2013), cinnabar pigments from central Spain (Rogerio-Candelera et al., 2013), flint probably imported from the Baetic mountain range and a north-African ostrich eggshell. Other foreign materials recently identified in Valencina include variscite beads from northern Spain (Odriozola Lloret & García Sanjuán, 2013). Altogether, this set of evidence fully confirms earlier suggestions about the scope of the supra-regional exchange of commodities between Northern Africa and Iberia as early as the third millennium BC (Harrison & Gilman,

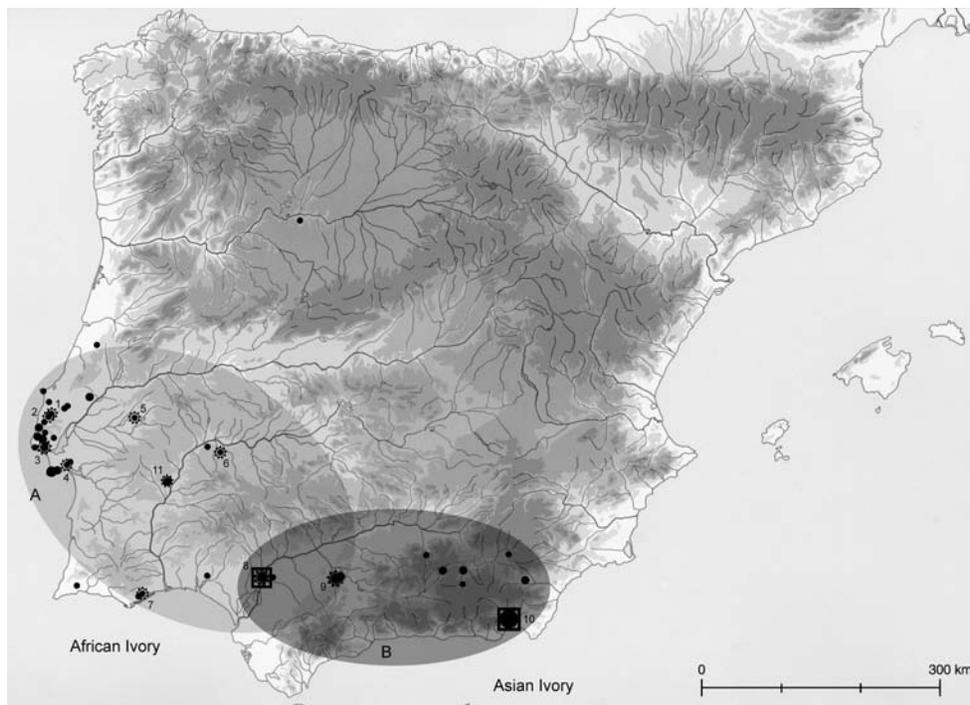


Figure 14. Distribution map of Copper Age ivory objects: 1. Cova da Moura; 2. Zambujal; 3. Leceia; 4. Palmela; 5. Anta da Herdade da Capela; 6. La Pijotilla; 7. Nora; 8. Valencina de la Concepción; 9. Cueva Antoniana (Gileña); 10. Los Millares. 11. Perdígões.

Design: Thomas Schuhmacher.

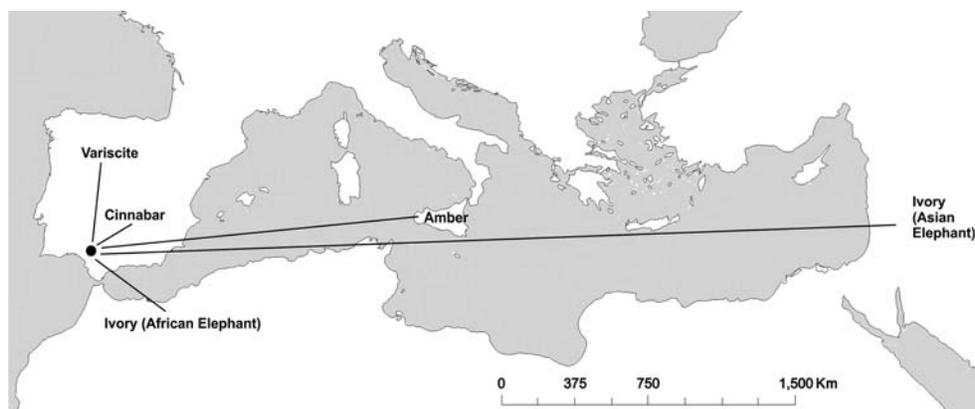


Figure 15. Map showing the provenance of foreign objects found at Valencina de la Concepción. The lines are not meant to suggest trading routes.

1977), while at the same time it throws serious doubt on the usefulness (or meaning) of the notion of ‘pre-colonization’ used in the study of the Phoenician colonization of the Early Iron Age: as it turns out, there were solid trading contacts between the eastern and western shores of the Mediterranean as early as the beginning of the third millennium BC, long before Mycenaean and Phoenician goods started to make their way into Iberia.

Finally, the ideological and social dimension of these ivory objects must be noted. In addition to the exoticism of the raw material, the sophistication of the techniques applied and the sheer beauty of the finished objects leave little room to doubt that they were used and valued as luxury items in the graves of people belonging to the elites of the Copper Age communities living across the lower Guadalquivir valley.

In this respect, grave 10042-10049 is exceptional for the amount of ivory found in it, the quality and sophistication of the items (probably unique in Iberia), and for their associations with other artefacts (for example, the association of the hilt with the rock crystal dagger blade, or the carved

vessel with cinnabar pigment). Grave 10042-10049 as a whole contains a quantity of luxury objects that, in Valencina, is perhaps only surpassed by the great megalithic monument of Montelirio, which is a mere 100 m away. In this respect, it is equally notable that there was a single body buried in the base level of the main chamber, along with grave goods that were clearly personalized — a relatively rare event in the Copper Age in which the sheer ‘collectiveness’ of the burial practices normally makes it impossible to relate grave goods to specific individuals. The person buried in the base level of the main chamber of structure 10042-10049 received an exceptionally sumptuous grave set that included special objects, such as a flint dagger with amber pommel, a carved ivory vessel, and a complete elephant tusk. The ambiguity of the radiocarbon dating obtained makes it impossible to be sure whether the equally exceptional pieces in the upper level of the main chamber in grave 10042-10049 (particularly the rock crystal dagger with ivory hilt) were grave goods laid for the same person.

However, generally, the connection of this person with the large amount of ivory and other objects and exotic materials is

important as it may demonstrate his high social standing and power — at least within the sphere of funerary ideology. With the available data one might theorize that this person was a craftsman, middleman, or merchant connected to the ivory trade, from which he might have obtained his personal wealth and his social status. In this respect, there are at least two highly interesting details. The first is the fact that the unworked tusk was already cut into three segments, as though ready for carving. The second is the almost complete absence of metal objects in grave 10042-10049 (only one very small copper item of indeterminate shape) — and the scarcity of metal items can be extended to the whole of sector PP4-Montelirio. The power and prestige of the social elite in Valencina in the Copper Age, it seems, were linked to possessing and displaying exotic paraphernalia rather than metal objects. This suggests that the importance and ideological significance of copper metallurgy in the Copper Age must be put into perspective, something that has implications when assessing the scale of metallurgical production, as we have claimed elsewhere (Costa Caramé & García Sanjuán, 2009; Costa Caramé et al., 2010; García Sanjuán & Murillo-Barroso, 2013). Overall, the evidence obtained from grave 10042-10049 and presented in this paper throws new light on a series of controversial aspects in the study of social complexity in the Iberian Copper Age, including craft specialization, long-distance contacts and the underpinning nature of social organization.

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Artisanat de l'ivoire, commerce et signification sociale pendant le Chalcolithique de l'Ibérie méridionale: les preuves du secteur PP4-Montelirio de Valencina de la Concepción (Séville, Espagne)

L'ivoire a suscité beaucoup d'intérêt dès le début des recherches sur la préhistoire ibérique récente, cela grâce à son pouvoir de fournir des données sur les contacts et le commerce outre-mer. En collaboration avec un nombre d'autres institutions, l'institut archéologique allemand de Madrid a apporté par le biais de ses récentes recherches de nombreuses contributions importantes à l'étude de l'ivoire du Chalcolithique et du début de l'Âge du Bronze ibériques. Un des sites archéologiques qui a apporté le plus de données provenant d'analyses d'ivoire chalcolithique en Ibérie du Sud est Valencina de la Concepción (Séville), actuellement au centre de plusieurs débats sur le développement de la complexité sociale. Cet article contribue significativement à cet axe de recherche en présentant de nouvelles preuves non publiées et en examinant la signification de l'artisanat de l'ivoire sur le plan commercial, social et idéologique. Il évalue également en grand détail le rôle primordial des objets de luxe en ivoire comme une expression du statut social et du pouvoir. Translation by Isabelle Gerges.

Mots-clés: Chalcolithique, Ibérie, ivoire, spécialisation de l'artisanat, commerce, complexité sociale

Elfenbeinhandwerk, Handel und soziale Signifikanz in der südiberischen Kupferzeit. Archäologische Belege vom PP4-Montelirio-Sektor von Valencina de la Concepción (Sevilla, Spanien)

Aufgrund des großen Potentials für Erkenntnisse zu Kontakten und Fernhandel hat Elfenbein von Beginn der Forschung bis zur jüngeren iberischen Vorgeschichtsforschung großes Interesse geweckt. Neue Forschungen, die von der Abteilung Madrid des Deutschen Archäologischen Institutes in Zusammenarbeit mit einigen anderen Institutionen durchgeführt wurden, haben wertvolle Beiträge zum Studium von Elfenbein in der iberischen Kupferzeit und Frühbronzezeit erbracht. Einer der archäologischen Fundplätze, der das umfangreichste Inventar zur Analyse von kupferzeitlichem Elfenbein im südlichen Iberien erbrachte, ist Valencina de la Concepción (Sevilla). Die Fundstelle steht derzeit im Fokus verschiedener Debatten zur Entwicklung sozialer Komplexität. Dieser Beitrag trägt anhand neuen, unpublizierten Materials sowie der Untersuchung der Bedeutung von Elfenbeinhandwerk im kommerziellen, sozialen und ideologischen Sinne wesentlich zu diesem Diskurs bei. Er widmet sich weiterhin detailliert der wichtigen Rolle, die Luxusobjekten aus Elfenbein als Ausdruck von sozialem Status und Macht zukam. Translation by Heiner Schwarzberg.

Stichworte: Kupferzeit, Iberien, Elfenbein, handwerkliche Spezialisierung, Handel, soziale Komplexität