

The Copper Age Settlement of Valencina de la Concepción (Seville, Spain): Demography, Metallurgy and Spatial Organization

El asentamiento de la Edad del Cobre de Valencina de la Concepción (Sevilla). Demografía, metalurgia y organización espacial

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ABSTRACT

This paper presents the results obtained from a review of the archaeological record available for the prehistoric site of Valencina de la Concepción (Seville, Spain), one of the most important settlements of SW Iberia in the 3rd and 2nd millennia BC. Two main variables, namely demography and metallurgical production, are examined in the light of both conventional and spatial statistical methods (with particular emphasis on significance testing) with the aim of assessing the wider issue of social complexity. Among the various conclusions emerging from this empirical study, two stand out. Firstly, neither the correlation between the total extension of the settlement and the complexity of its internal organisation, nor the spatial delimitation between domestic/productive and funerary practices is as straightforward as previously claimed. Secondly, no simple, clear-cut statistical patterns are found in the spatial distribution of human remains or metal objects. These conclusions provide the basis for a critique of currently held interpretations of Valencina de la Concepción as the political centre of an early state extending across the lower Guadalquivir valley.

RESUMEN

En este trabajo se presentan los resultados obtenidos en una revisión del registro arqueológico disponible del

sitio prehistórico de Valencina de la Concepción (Sevilla, España), uno de los asentamientos más importantes del Suroeste de la Península Ibérica durante los milenios III y II ANE. A la luz de métodos estadísticos convencionales y espaciales (con particular énfasis en las pruebas de significación) se examinan dos variables principales, la demografía y la metalurgia, con el objeto de valorar la más amplia cuestión de la complejidad social. De las principales conclusiones obtenidas en este estudio destacan dos. En primer lugar, ni la correlación entre la extensión total del asentamiento y la complejidad de su organización interna, ni la delimitación espacial entre las prácticas doméstico-productivas y funerarias es tan simple como se ha propuesto anteriormente. En segundo lugar, no existen pautas estadísticas definidas o evidentes en la distribución de los depósitos de restos humanos y objetos metálicos. Estas conclusiones proporcionan la base para una crítica de interpretaciones recientemente propuestas que presentan a Valencina de la Concepción como el centro político de un estado temprano que se extendía por el valle del bajo Guadalquivir.

Key words: Copper Age; Bronze Age; Iberian Peninsula; Guadalquivir valley; Demography; Physical anthropology; Metallurgy; Megaliths; Spatial analysis; Statistical significance testing; Social complexity.

Palabras clave: Edad del Cobre; Edad del Bronce; Península Ibérica; Valle del Guadalquivir; Demografía; Antropología física; Metalurgia; Megalitismo; Análisis espacial; Pruebas de significación estadística; Complejidad social.

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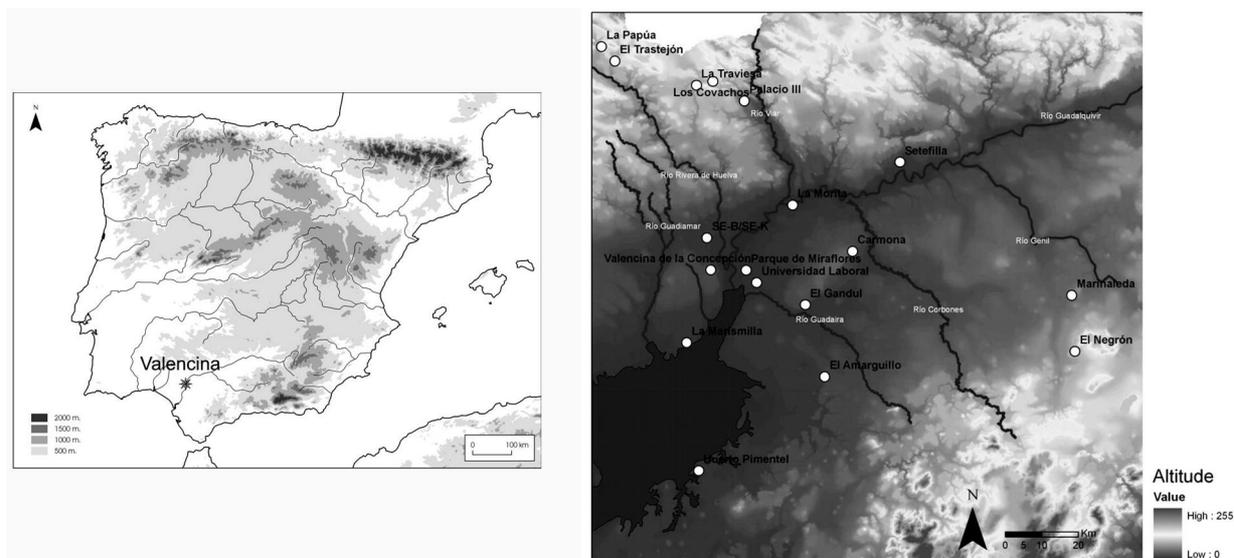


Fig. 1. Left: Location of the Copper Age settlement of Valencina de la Concepción in the Iberian Peninsula. Right: Map of the location of Valencina de la Concepción in relation to settlements and funerary sites of the 3rd and 2nd millennia cal BC excavated in the lower Guadalquivir valley. The map shows the outline of the estimated coastline of the Late Prehistory.

1. INTRODUCTION

The archaeological site of Valencina de la Concepción (Seville) is located near the right bank of the Guadalquivir River, about 6 km from the city centre of Seville to the west, occupying the higher elevations of the region of El Aljarafe Norte, mainly within the municipality of Valencina de la Concepción, but also partly in Castilleja de Guzmán. The prehistoric community lived in a physical environment very different from the present. The main features of that earlier environment have recently begun to be determined from geo-archaeological studies of the lower reaches of the Guadalquivir river (Arteaga Matute *et al.* 1995a; 1995b) and of fluvial deposits in the city of Seville and its surroundings (Barral Muñoz and Borja Barrera 2002; Borja Barrera and Barral Muñoz 1999, 2003a, 2003b). This physical environment was characterized above all by the richness and diversity of natural resources provided by the great marine gulf into which the Guadalquivir flowed, the complex network of river channels and marshes that occupied the mouth of the river, and the fertile lands of the El Aljarafe platform (maximum elevation of 165 metres at Cerro de la Cruz) (Fig. 1).

Scientific research on the prehistoric site of Valencina dates back to the late nineteenth century. The orientation and profile of the numerous

excavations and studies have changed over time in accordance with the general development of archaeology as a discipline in Spain. The list of specialists who have contributed to this research includes some of the most famous and influential scholars across several generations of Spanish prehistorians.

The first studies on this prehistoric settlement focused on its monumental megalithic constructions, such as La Pastora, Matarrubilla, and Ontiveros (Tubino 1876; Obermaier 1919; Carriazo y Arroquia 1962; Collantes de Terán 1969). From the end of the 1970s, but especially since the mid-1980s, other megalithic constructions came to light, often as the result of rescue excavations related to construction projects that affected various parts of the site [Fernández Gómez and Ruiz Mata 1978; Murillo Díaz *et al.* 1990; Murillo Díaz 1991; Santana Falcón 1991; Ruiz Moreno and Martín Espinosa 1993; Martín Espinosa and Ruiz Moreno 1995; Ruiz Moreno and Martín Espinosa 1995; Arteaga Matute and Cruz-Auñón Briones 1999a, 2001 (1)]. Since the mid-1980s, domestic and productive structures were also found and excavated throughout the settlement (Fernández

(1) Cabrero García, R. 1985: "El sepulcro megalítico de Caño Ronco (Camas, Sevilla) y su vinculación con el yacimiento calcolítico de Valencina de la Concepción". *Prehistoria 1* (Unpublished manuscript): 1-16. Sevilla.

Gómez and Oliva Alonso 1986; Murillo Díaz *et al.* 1987; Blanco Ruiz 1991; Ruiz Moreno 1991; Martín Espinosa and Ruiz Moreno 1992; Santana Falcón 1993; Arteaga Matute and Cruz-Auñón Briones 1999b; Cruz-Auñón Briones and Arteaga Matute 1999a; 1999b; Ruiz Moreno 1999; López Aldana *et al.* 2001; Vera Fernández *et al.* 2002; Nocete Calvo *et al.* 2008). As recently as in 2007, again through a “rescue intervention” caused by urban developments, an excavation was begun of Montelirio, a megalithic structure similar in size to La Pastora and Matarrubilla. The excavation and study of this monument continues today.

Several studies have proposed overall assessments of the site in accordance with the information available at each particular time, whether in terms of broad chrono-cultural characterization (Ruiz Mata 1983; Martín de la Cruz and Miranda Ariz 1988) or historiography (Murillo Díaz 2001; Gómez de Terreros Guardiola 2005, 2008). The production of a *carta arqueológica* (inventory) of the excavations carried out at site (Ruiz Moreno 1995; Vargas Jiménez 2004a, 2004b) was a notable advance in the systematization of information and for the preliminary assessment of its internal organization.

Despite the considerable number of archaeological surveys and excavations carried out, which perhaps make Valencina the most intensively excavated prehistoric settlement in Spain, the empirical

basis currently available for its analysis is, paradoxically, rather limited. Several factors explain this limitation. One major factor is certainly the ‘rescue’ character of the vast majority of excavations conducted so far, so that, firstly, several different teams have worked on the site, often without coordination; secondly, that the reports and studies produced have been generally very superficial (in the Autonomous Community of Andalusia rescue excavations do not legally involve in-depth post-excavation analysis of the data obtained); and thirdly, that the publications are often short, especially those contained in the *Anuario Arqueológico de Andalucía* (where some excavations have been described in articles of just 1 or 2 pages).

To date, the complex of negative structures (underground and semi-underground), usually interpreted by their excavators as “silos,” “hut floors” (*fondos de cabaña*), “dumps,” “ditches” or “trenches” has not been recorded on a unified, single cartographic basis, which complicates greatly the interpretation of their function and spatial distribution. Similarly, little has been done in terms of the analysis of the archaeological data obtained in the excavations. The absolute chronology, for example, is rather insufficient, despite the significant contributions made by recent studies (Nocete Calvo *et al.* 2008). The 11 radiocarbon dates published so far (Tab. 1) suggest that the occupation of Valencina extended from the

SITE	ABBREV.	DATE BP	DATE BC 1σ	CONTEXT	REFERENCE
P. MIRAFLORES	KIA-24925	4327 ± 24	3010-2890	Domestic	Lara Montero <i>et al.</i> 2006
P. MIRAFLORES	KIA-24927	4190 ± 28	2880-2700	Domestic	Lara Montero <i>et al.</i> 2006
VALENCINA	Ua-19475	4150 ± 50	2872-2638	Metallurgic	Nocete Calvo <i>et al.</i> 2008
P. MIRAFLORES	KIA-24924	4133 ± 39	2870-2600	Domestic	Lara Montero <i>et al.</i> 2006
VALENCINA	I-10187	4050 ± 105	2870-2470	Domestic	Castro Martínez <i>et al.</i> 1996
VALENCINA	Ua-24557	4135 ± 45	2864-2627	Metallurgic	Nocete Calvo <i>et al.</i> 2008
LOS COVACHOS	Beta-136699	4090 ± 50	2860-2500	Funerary	Caro Gómez <i>et al.</i> 2003
P. MIRAFLORES	KIA-24926	4109 ± 28	2860-2580	Domestic	Lara Montero <i>et al.</i> 2006
VALENCINA	Ua-32885	4120 ± 40	2859-2620	Metallurgic	Nocete Calvo <i>et al.</i> 2008
VALENCINA	Ua-32042	4104 ± 40	2851-2580	Metallurgic	Nocete Calvo <i>et al.</i> 2008
EL AMARGUILLO	OxA-3967	4030 ± 65	2840-2460	Domestic	Mederos Martín 1998
VALENCINA	Ua-22813	4050 ± 45	2831-2489	Metallurgic	Nocete Calvo <i>et al.</i> 2008
VALENCINA	Ua-19474	4045 ± 50	2831-2482	Metallurgic	Nocete Calvo <i>et al.</i> 2008
VALENCINA	Ua-24558	3995 ± 75	2829-2350	Metallurgic	Nocete Calvo <i>et al.</i> 2008
VALENCINA	GIF-4028	3910 ± 110	2580-2200	Domestic	Castro Martínez <i>et al.</i> 1996
LOS COVACHOS	Beta-136697	3780 ± 40	2290-2130	Funerary	Caro Gómez <i>et al.</i> 2003
LOS COVACHOS	Beta-136698	3670 ± 80	2200-1930	Funerary	Caro Gómez <i>et al.</i> 2003
SE-B	Beta-225413	3720 ± 40	2200-2030	Funerary	Hunt Ortiz <i>et al.</i> 2008
SE-B	Beta-225412	3660 ± 40	2130-1960	Funerary	Hunt Ortiz <i>et al.</i> 2008
VALENCINA	Ua-32043	3620 ± 55	2112-1920	Metallurgic	Nocete Calvo <i>et al.</i> 2008
VALENCINA	UGRA-72	3380 ± 150	1880-1520	Domestic	Castro Martínez <i>et al.</i> 1996

Tab. 1. Radiocarbon dates of Valencina de la Concepción and sites of the 3rd millennium cal BC in the province of Seville.



Fig. 2. Map of the Valencina de la Concepción archaeological site, showing the perimeters of the proposed domestic/productive and funerary areas (after Vargas Jiménez, 2004a: 49).

first centuries of the 3rd millennium to the mid-2nd millennium cal BC, which cover almost the entire period conventionally designated as the Copper Age and the early part of the Bronze Age. The oldest dates, which are from the first half of the 3rd millennium, are contemporary with those obtained at the site of Parque de Miraflores, in the centre of modern Seville. The end of the period of Valencina's occupation is not clear, since the only date so far published that spans the first half of the 2nd millennium cal BC has a high standard deviation. The limited number of dates available has impeded the analysis of problems such as the chronology of burial practices and the evolution of the settlement's occupation. Thus, it is basically unknown whether the large area of the settlement (estimated between c. 300 and 400 hectares) was ever occupied all at the same time, or whether different parts were occupied in different phases. Published interpretations regarding the organization of space within the settlement of Valencina have only gone as far as proposing a subdivision into two main sectors: a "habitational" sector (functionally domestic and productive) to the north, and a "funerary" sector to the south (Vargas Jiménez 2004a; Arteaga Matute and Cruz-Auñón Briones 1999a, 1999b).

On the other hand, over the years some studies have been published on different types of artefacts from the site. This includes ceramics [Ruiz Mata 1975a, 1975b; González Vilchez *et al.* 1999 (2)], lithic tools (Ramos Muñoz 1992; Murillo Díaz 1997, 1998, 1999, 2000; Sánchez Liranzo and Fernández Vera 2000), the deposit of metal 'javelin' (or spear) heads found outside of La Pastora (Almagro Basch 1962; Montero Ruiz and Teneishvili 1996; Mederos Martín 2000), and votive objects such as idols (Fernández Gómez and Oliva Alonso 1980; Martín Espinosa and Ruiz Moreno 1996). Other studies have addressed some collections of animal remains (Hain 1982) and human bones (Alcázar Godoy *et al.* 1992; Basabe and Benassar 1982; Guijo Mauri *et al.* 1996; Lacalle Rodríguez *et al.* 2000). Unfortunately, these works do not begin to cover the quantity, quality and complexity of the empirical record that has been obtained in the numerous excavations carried out since the mid-1980s.

(2) González Vilchez, M.C. 1982: *Estudio Físico-Químico y Tecnológico de una Serie de Productos Cerámicos del Yacimiento Arqueológico de Valencina de la Concepción (Sevilla)*. Unpublished doctoral thesis. Universidad de Sevilla. Sevilla.

Thus, although at present the site is indisputably a major reference for understanding Copper Age societies in southern Iberia (and especially in the Guadalquivir valley), and has a bibliography that is unusually rich in the context of Iberian Prehistory, the reality is that the settlement of Valencina de la Concepción has now become a complex palimpsest of information, the product of brief episodes rather than research projects based on explicitly defined objectives (and executed by relatively stable and organized teams of specialists). This poses many serious problems of interpretation in terms of the key social and cultural processes of which this prehistoric community was a part.

This paper aims to contribute to the scientific assessment of the prehistoric settlement of Valencina with new evidence and arguments. This contribution is based on a series of previously unpublished data on the demography and metallurgical production at the site, the result of investigations carried out recently (and which are now being expanded) by the University of Seville. A statistical analysis of the meso-spatial distribution of these new data (together with information available in previous publications) is then conducted in order to propose an overall assessment of the internal organization of the settlement. In other words, through a spatial and quantitative examination of the empirical evidence regarding demography and metallurgical production, a knowledge base capable of informing the debate on the social complexity of this community (and, by extension, of others that occupied the lower Guadalquivir valley during the Copper Age) is discussed.

2. THE EMPIRICAL RECORD

2.1. Human osteology

During the long history of its study, the archaeological site of Valencina de la Concepción has revealed a major collection of human bones which, with some exceptions, has never been the subject of a comprehensive research. As mentioned above, the only publications available so far are those devoted to the sectors of El Corte A de La Perrera (Fernández Gómez and Oliva Alonso 1986: 20; Basabe and Benassar 1982), La Cima and La Galleja (Alcázar Godoy *et al.* 1992), Los Cabezuelos (Guijo Mauri *et al.* 1996) and Divina Pastora (Lacalle Rodríguez *et al.* 2000).

EXCAVATION	MNI	CONT MNI	MET	SECTOR
Cerro de la Cabeza	1	Tholos	1	H
El Cuervo	1	Silo	0	H
La Alcazaba	7	Silo-shaped	0	H
La Candelera - Emisora	2	Ditch	9	H
La Cima	2	Oval	0	H
La Gallega	2	Circular	6	H
La Perrera	10	Ditch	3	H
Mariana Pineda	1	Silo	0	H
Mirador de Itálica	2	Circular	2	H
P.P. Matarrubilla	6	Ditch	13	H
Divina Pastora/Señorío de Guzmán	20	Tholos	3	F
El Algarrobilllo	16	Circular	2	F
El Roquetito	48	Tholos	5	F
Los Cabezuelos	14	Tholos	7	F
Matarrubilla	2	Tholos	6	F
Plan Parcial 3	1	Tholos	0	F
Los Veinte	0	Tholos	3	F
La Pastora	?	Tholos	31	F
Caño Ronco	?	Megalith	13	–
Carretera TVE	0	–	1	H
TOTAL	135		105	

Tab. 2. Breakdown of the anthropological data used in this study. It includes reference to the minimum number of individuals considered (MNI), type of context in which the remains were found according to the description proposed by the excavators (CONT MNI), number of metal objects in the area (MET), and the sectors of the settlement as proposed by Vargas Jiménez (F: Funerary; H: Habitational).

The data analyzed here comprise a total of 135 individuals. These data come from a recent review (3) that includes a compilation and organization of data already available in published and unpublished reports, as well as a study of some of the human remains from the site that are preserved in the Archaeological Museum of Seville, and which had never been investigated previously (4). This systematization of the relevant data on human osteology is in itself a significant contribution to the analysis of the prehistoric settlement of Valencina, of which a demographic synthesis has never been attempted. In this regard it should be made clear that no account has been taken of published descriptions of osteological material which do not provide critical data such

as the minimum number of individuals (MNI), sex, and age (i.e., publications in which there are only general references to human remains which we were not able to examine directly). For this reason, osteological material from the megalithic constructions of Ontiveros (Carriazo and Arroquia 1962) and La Pastora (Ruiz Moreno and Martín Espinosa 1993), as well as from some non-megalithic contexts such as Sitio de Valencina (Vargas Jiménez 2004a) and Polideportivo (Murillo Díaz *et al.* 1987) have not been included in this study.

The general breakdown of the anthropological sample considered in this study (Tab. 2) requires some preliminary comments and clarifications. One point to keep in mind is that the degree of preservation of human remains is generally not very good, and varies from one excavation to another. In Corte A de La Perrera (Basabe and Benassar 1982) almost complete individuals were documented in a good state of preservation. In contrast, at the sites that we examined ourselves (El Algarrobilllo, La Cima, La Gallega and La Alcazaba), the skeletons were highly fragmented

(3) Díaz-Zorita Bonilla, M. 2007: *Bioarqueología de Dos Comunidades de la Edad del Cobre en el Suroeste de la Península Ibérica: Valencina de la Concepción y Almadén de la Plata (Sevilla)*. Trabajo de Investigación para la obtención del DEA. Sevilla. Universidad de Sevilla. Unpublished

(4) At least in publications until 2004, the year of the last volume of the *Anuario Arqueológico de Andalucía* available as we write these lines.

SECTOR	FEMALE					MALE				S	A	?		TOTAL
	20-30	30-45	>45	A	YA	20-30	30-45	>45	A			?	30-45	
Matarrubilla	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Los Cabezuelos	2	0	0	1	0	2	1	0	0	1	0	5	2	14
Cerro de la Cabeza	0	0	0	0	0	0	0	0	0	0	0	1	0	1
El Roquetito	0	0	0	2	0	0	0	0	0	0	0	46	0	48
Divina Pastora- Señorío de Guzmán	3	1	0	3	1	3	3	0	0	5	0	1	0	20
Norte Castilleja	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	5	1	0	6	1	5	5	0	0	6	0	55	2	86

Tab. 3. Distribution of sex and age in megalithic funerary contexts.

Abbreviations: (A): Adult; (YA): Young Adult; (S): Subadult; (?): Undetermined.

SITE	FEMALE					MALE				S	A	?			TOTAL
	20-30	30-45	>45	A	YA	20-30	30-45	>45	A			?	20-30	30-45	
El Algarrobillo	2	0	0	0	1	4	0	0	2	0	4	0	3	0	16
La Alcazaba	0	0	0	0	0	0	0	0	1	0	3	1	2	0	7
La Cima	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2
La Gallega	0	0	1	0	0	0	0	0	0	1	0	0	0	0	2
La Perra	0	0	0	3	1	0	0	0	4	1	0	1	0	0	10
P.P. Matarrubilla	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6
El Cuervo	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Mirador de Itálica	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Mariana Pineda	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
La Candelera- Emisora	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Total	3	0	1	3	2	4	0	0	7	3	9	12	5	0	49

Tab. 4. Distribution of sex and age in non-megalithic funerary contexts.

Abbreviations: (A): Adult; (YA): Young Adult; (S): Subadult; (?): Undetermined.

due to taphonomical processes: there were some skulls but no long bones or pelvises. For this reason the determination of sex was based on the dimorphic sexual characteristics of the skull described by Buikstra and Ubelaker (1994), and the age estimation was made according to the degree of dental attrition following the methods of Brothwell (1987), and by comparison with the degree of obliteration of the cranial sutures in accordance with the data of Perizonius (1984). To establish a comparative analysis between the different methodologies for estimating age, the age ranges used were subadults (5), 20-30 years, 30-45, ≥ 45 years, adults, and indetermined.

(5) Individuals younger than 17 years of age (Brothwell 1987).

A second important aspect to consider is the architectural, spatial, and functional context for each find, which are based on the descriptions of the excavators. As mentioned above, one of the principle objectives of this paper is to examine the internal organization of Valencina by studying in detail (for the first time) the spatial distribution of the human osteological record. To this end, the contexts where human remains have been found have been grouped into two simple categories: megalithic (basically *tholoi*) and non-megalithic.

The breakdown of the total skeletal population of Valencina by sex and age is presented in tables 3 and 4. In general, this population shows a well balanced distribution of male and female individuals. Also, individuals representing all age groups are documented, although there is a pre-

dominance of adult individuals between 20 and 30 years old. It must be kept in mind, however, that because of the large number of unidentified individuals there is a relatively large margin of error (6).

In relation to the context of appearance, the number of individuals found in megalithic contexts is 86 (which represents 63.7 % of the sample total), 15.1 % being female, and 11.6 % male. In non-megalithic contexts, the MNI is 49 (36.3 %), with 18.3 % of females and 22.4 % of males. In both context types the predominant age group is that of 20-30 years (with 11.62 % in megaliths and 24.4 % in non-megalithic structures). Subadult individuals represent a very small percentage, only 6.6 % of the total. This represents an interesting anomaly which could be due to taphonomic (the deterioration of children's bones), cultural (the corpses of subadult individuals were subjected to burial practices that left no visible archeological remains) or epistemological (deficiencies in the observation and archaeological study of the site) causes. Due to the lack of studies of physical anthropology in the record from Valencina de la Concepción, there is still a very high rate of indetermined individuals, some 66.2 % in megalithic contexts and 34.6 % in non-megalithic.

The funerary ritual documented in Valencina consists primarily, although not exclusively, in collective inhumation, with successive depositions of human remains in the same container over extensive periods of time, as has been documented in El Roquetito (Murillo Díaz *et al.* 1990). To date no cases have been found of partial cremations of the type increasingly associated with Neolithic and Copper Age communities in the southwestern part of the Iberian Peninsula (Weiss-Krejci 2005). Nor are there documented cases of individual burial containers of cist or pit type, which from the end of the 3rd and early 2nd millennia cal BC are common in other regions of the Iberian southwest (7). This observation is potentially interesting for the study of the cultural

continuity (or, conversely, lack of discontinuity) that it suggests within this particular community. Nonetheless, probable examples have been identified of the reuse of collective inhumation for individualized burials, as is the case within Sepultura A (*tholos*) in the Los Cabezuelos sector, as described below.

2.2. Metal objects and metallurgy

The data on the metal objects considered in this study come from a synthesis carried out recently (Costa Caramé 2010) which incorporates various sources, including reports published in the *Anuario Arqueológico de Andalucía* (on excavations carried out up to the year 2004), two monographs that provide the results of archaeometric studies and which derive from two doctoral theses (Hunt Ortiz 2003; Rodríguez Bayona 2008), the *carta arqueológica* of the site (Vargas Jiménez 2004), as well as other articles in specialized scientific journals.

Currently there are 105 metal artefacts recorded from the prehistoric settlement of Valencina. This tally includes the 29 javelin points found outside of the *tholos* of La Pastora, which various studies (Almagro Basch 1962; Montero Ruiz and Teneishvili 1996; Mederos Martín 2000) agree in dating to the Early Bronze Age (i.e. roughly after c. 2200/2100 cal BC), that is to say, in the later phase of the settlement's occupation. Although their morphology, quantity, and apparent context of their deposition make these metal objects exceptional, and although there are doubts about whether they are indeed contemporaneous with the deposits of Copper Age metals in the settlement (as well as on the reliability of the records on the circumstances and context of the discovery), given that the currently available C-14 dates of Valencina span the first centuries of the 2nd millennium cal BC, the decision has been made to include these items in this study.

Although no study has yet analyzed and assessed all the available information from a global and multidisciplinary perspective, the Valencina de la Concepción collection of metal objects is one of the most important of the Copper Age in southern Iberia, after those from Cerro del Ahorcado (Puente Genil, Córdoba), which includes 171 artefacts (although the site has never been excavated), and from La Pijotilla (Badajoz), with

(6) The high rate of indeterminate individuals is due to two factors: 1) the high degree of fragmentation which prevents the complete determination of sex or age; and 2) the absence of detailed anthropological data in some publications, which only mention the MNI.

(7) Various Early Bronze Age cist cemeteries, for which radiocarbon dates are available (Tab. 1), have been found within the province of Seville (Fernández Gómez *et al.* 1976; García Sanjuán 1998; Hunt Ortiz *et al.* 2009).

142 objects. Other settlements in the Southwest that can serve for comparison have smaller quantities of items, as is the case of Cabezo Juré (Alosno, Huelva), with 54 artefacts, El Acebuchal (Carmona, Seville), with 43, Santa Justa (Alcoutim), with 42, Perdigões (Reguengos de Monsaraz, Évora), with 19, El Amarguillo II (Los Molares, Seville), with 7, and Carmona (Seville), with 4. In the recount conducted by I. Montero Ruiz (1994), Los Millares (Santa Fe de Monda, Almería) had 96 artefacts and Almizaraque c. 90 (8).

For their analysis, the Valencina metal objects have been divided into groups according to a generalized functional classification similar to that proposed by I. Montero Ruiz (1994) in his study of prehistoric metallurgy in southeastern Iberia. This classification includes five categories: tools, tool-weapons, weapons, ornaments and artefacts of indeterminate function. The “tool-weapons” category includes objects such as arrowheads, daggers and axes, i.e. those devices that could be used for both domestic and productive purposes and for war or ideological purposes (social prestige) (Montero Ruiz 1994). The javelin points from La Pastora have been classified as “weapons” because it seems unlikely that they were manufactured for purely domestic or utilitarian purposes (e.g. for hunting) and they are unique artefacts (perhaps designed with a strong ideological significance, and probably as objects of prestige). The sheets of copper and amorphous copper objects have been included in the category of “artefacts of indeterminate function”, but we will return to this issue later.

In terms of metallurgical production, the first study of the settlement of Valencina de la Concepción was that made by M. Hunt Ortiz, according to which the Copper Age metallurgy of the southwestern Iberian Peninsula was generally characterized by a limited scale and technological development (Hunt Ortiz 2003: 303). Reduction of ores would have been carried out by means of crucible-furnaces, in which there would be a partial reduction, while globules of copper would be trapped in the slag, and the destruction of the slag was required in order to recover these nodules of

metal (Rovira Llorens and Ambert 2002). This rather crude and inefficient process suggests that this activity would not have been carried out by full-time specialists, but may have been instead a domestic activity spread across more or less specialized (part-time) members of the community (Hunt Ortiz 2003: 378). In terms of its technological characteristics and the socio-economic organization of production, the metallurgical production at Valencina would not have differed much from that documented in other settlements of southern Iberia.

The excavations carried out recently at the Plan Parcial Matarrubilla site, revealed a large number of crucibles, crucible-furnaces, slag and minerals, as well as metal artefacts that have been included in a recent doctoral dissertation and have been studied by archaeometric techniques (Rodríguez Bayona 2008). In this area, semi-underground structures that contained slag and minerals were found, and they have been interpreted as furnaces (Nocete Calvo *et al.* 2008). The proposed metal production for this area is above one ton, a figure based on the estimated number of crucibles in use (which itself is derived from the number of crucible fragments) and the number of times these crucibles may have been re-utilised (Nocete Calvo *et al.* 2008: 728).

3. ANALYSIS OF THE DATA

3.1. Objectives

Based on the data described in the preceding section, an analysis with the aim of examining the organization of space within the settlement of Valencina de la Concepción has been conducted. This objective can be divided into two more specific ones. The first is to determine the validity of the conventional spatial division between a domestic-productive sector in the north and a funerary sector in the south. The second objective is to investigate the degree of functional specialization of space within this prehistoric community, both in economic and social terms, specifically in relation to metallurgical production and the use and deposition of metal objects. On a methodological level, the productive and/or functional specialization of space, the existence of significant differences in the size and nature of domestic structures and the presence of “social zoning,” are parameters usually considered to be of relevance

(8) In the case of Almizaraque, which was excavated at great length, L. Siret mentioned 70 objects, to which must be added 20 from more recent digs, although I. Montero Ruiz (1994) was only able to identify 42, including those from recent excavations.

in the archaeological analysis of the emergence of highly hierarchical, stratified and state-like societies (Haas 1982: 107; Smith 1987: 298; Hendon 1991: 895; González Marcén *et al.* 1992: 142; Wason 1994: 135, etc.).

The methods of data analysis used to examine these two problems include both conventional and spatial statistical tests, which are commonly used in current archaeological research, such as density analysis, χ^2 test, nearest neighbour analysis, and Moran's *I* test for spatial autocorrelation – see discussions in Hodder and Orton 1976; Pinder *et al.* 1979; MacNutt 1981; Blankholm 1991; Shennan 1992; Wheatley and Gillings 2002. It should be borne in mind that, given the lack of a truly accurate cartography of the archaeological contexts in which the osteological and metal evidence analyzed here was found, the main spatial reference for their geo-referencing are the land plot polygons where the excavations were carried out (Figs. 3 to 5). In other words, the spatial analysis presented below uses the centroids of the excavation polygons to locate the contexts and items referred to. Therefore, all the reference points considered in this spatial analysis have a margin of error which in principle is

undetermined, but which in any case is not more than a few tens of metres.

3.2. Results

Regarding the first of the aims stated above, analysis of MNI/m² density shows that human osteological material appears distributed throughout the entire area of the settlement (Figs. 4 and 6, Tab. 2). While in the southern sector, conventionally known as the “necropolis,” a greater number of individuals (MNI = 101) has been found, the number recorded in the northern sector (the “domestic” or “productive” area) is not at all negligible (MNI = 34). Within the northern sector, the contexts in which human remains have been identified were described by their excavators as a “silo” (Mariana Pineda and El Cuervo), “silo-shaped structure” (La Alcazaba), a “ditch” (La Perrerea) a “pit” (La Candelera-La Emisora and Plan Parcial Matarrubilla), and an “underground structure” with an oval or circular layout (La Cima, La Gallega and Mirador de Itálica). In this study, these contexts are grouped under the heading “non-megalithic.” The northern sector of

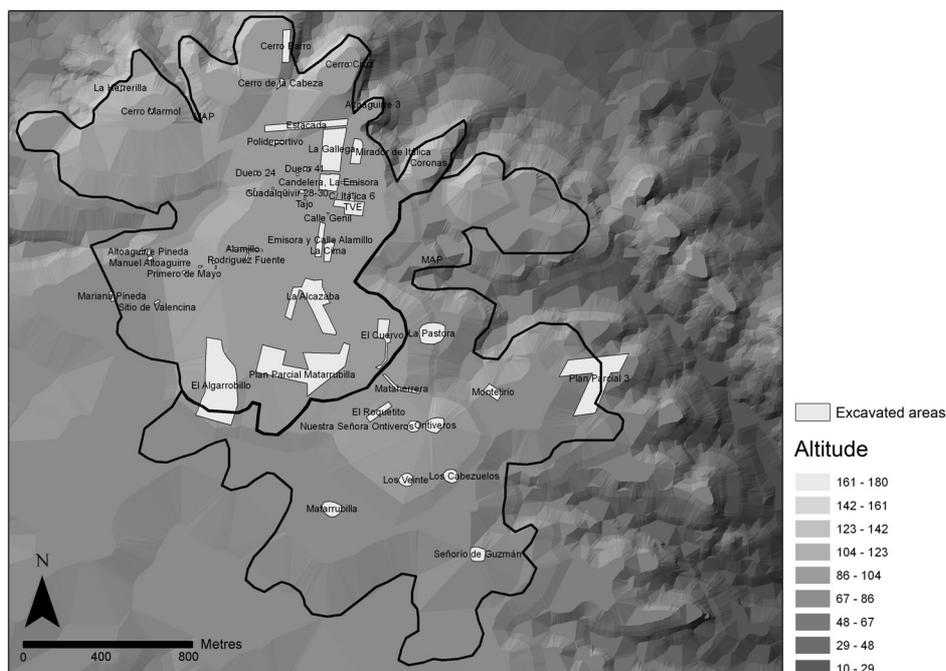


Fig. 3. Map of the distribution of the sites excavated in the settlement of Valencina de la Concepción.

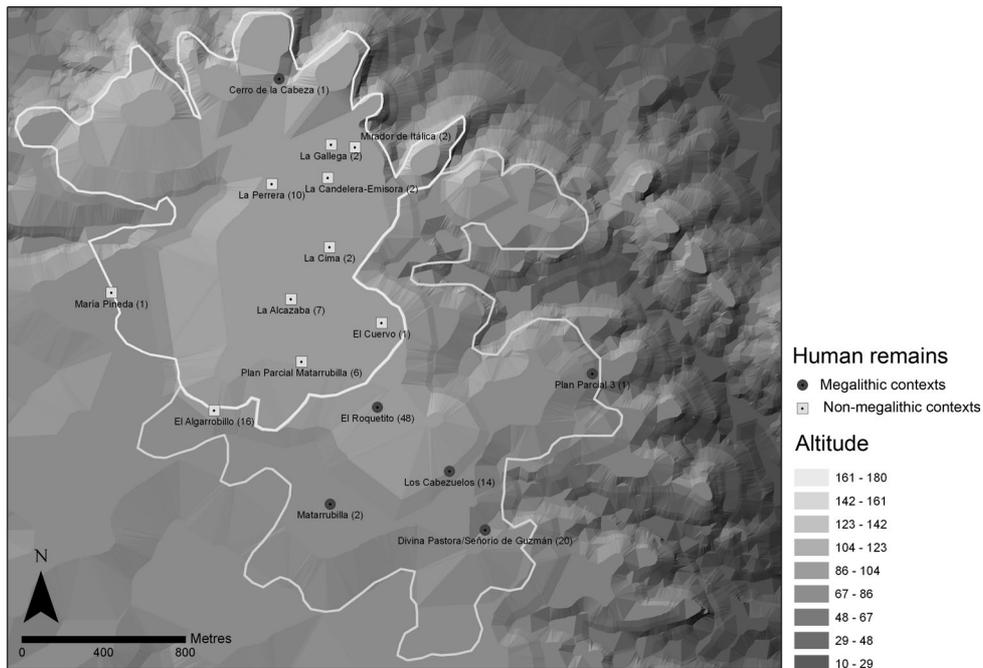


Fig. 4. Map of the distribution of the funerary contexts of Valencina de la Concepción considered in this study. In parentheses is the MNI verified in the excavation (not the MNI of a specific context).

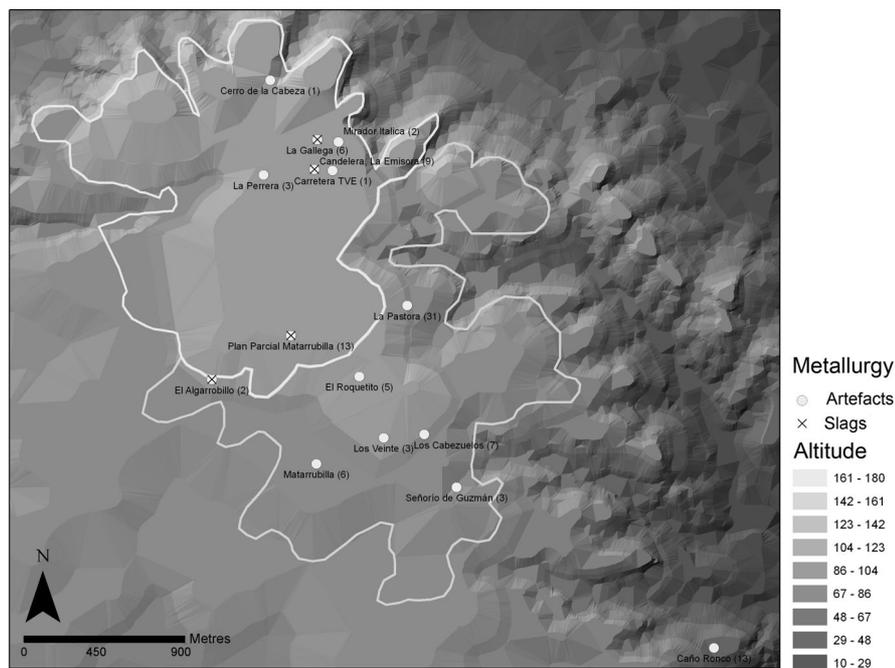


Fig. 5. Map of distribution of the archaeometallurgical evidence from Valencina de la Concepción considered in this work. In brackets is the count of artifacts from each excavation and the crosses indicate the presence of remains of slag.

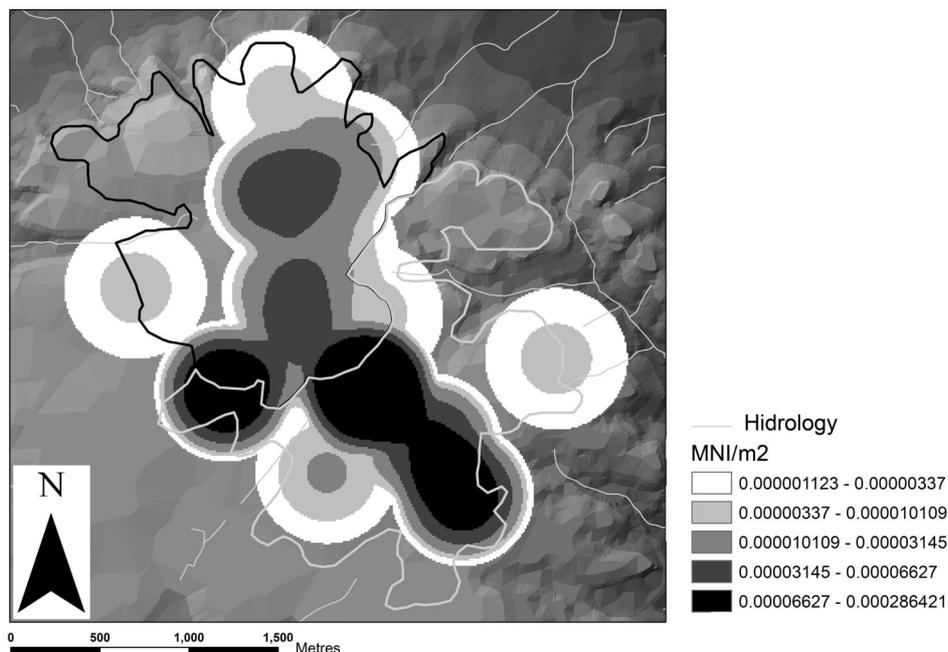


Fig. 6. Map of the density of the skeletal population (MNI) of the settlement of Valencina de la Concepción.

the settlement does however include at least one megalithic structure: the *tholos* of Cerro de la Cabeza. Within this group of contexts, the largest numbers of individuals were found at the “ditch” of La Perrera (10), the “silo-shaped” structure of La Alcazaba (7) and the “pit” of the Plan Parcial Matarrubilla (6). In the southern part of the settlement (or “necropolis”), human remains appear predominantly in megalithic constructions. Although the number of these contexts is comparatively smaller (6), some yielded larger numbers of individuals, especially El Roquetito (48), Divina Pastora (20), El Algarrobillo (16), and Los Cabezuelos (14). It is also worth mentioning that among the 6 deposits of human osteological material identified within this sector, at least one is non-megalithic (El Algarrobillo) (9).

(9) This is debatable, however. El Algarrobillo (which comprises the third largest osteological deposit of the site) is located in between the two conventionally differentiated sectors for this settlement. Unfortunately, the only available publication of the excavation (Santana Falcón 1993) does not specify in which part of the area the structures were found, so in this case it was decided to do away with the centroid and locate the datapoint in the extreme South of the excavated area, within the “funerary sector” because this is the best option for reinforcing the accepted conventional assumption that we are testing.

Nearest neighbour analysis of the 16 data points with osteological deposits results in a nearest neighbour index of 1.61, which suggests that the distribution tends to a dispersed spatial pattern (10). Applied to assess the spatial distribution of MNI, Moran’s *I* test produces a value of -0.16 , an expected index of -0.06 and a Z score of -0.27 , which with a significance level of 0.05, suggests a random distribution of points (11). As a result of these two tests, it appears that the distribution pattern of osteological deposits in Valencina is between random and scattered, but in no case concentrated, which runs counter to the very notion of a “necropolis” properly so called – see further discussion of this particular point below.

In examining the distribution of osteological deposits in relation to context types, it has already been stated that the funerary population is higher

(10) The nearest neighbour index is the ratio of the observed distance over the expected distance and is expressed between zero for perfect clustering and 2.149 for a perfectly dispersed pattern.

(11) The Moran’s *I* tests calculated for the centroids of land parcels have been compared with those of the land plot polygons, in order to avoid the possibility of the results being a statistical artefact of the chosen data structure.

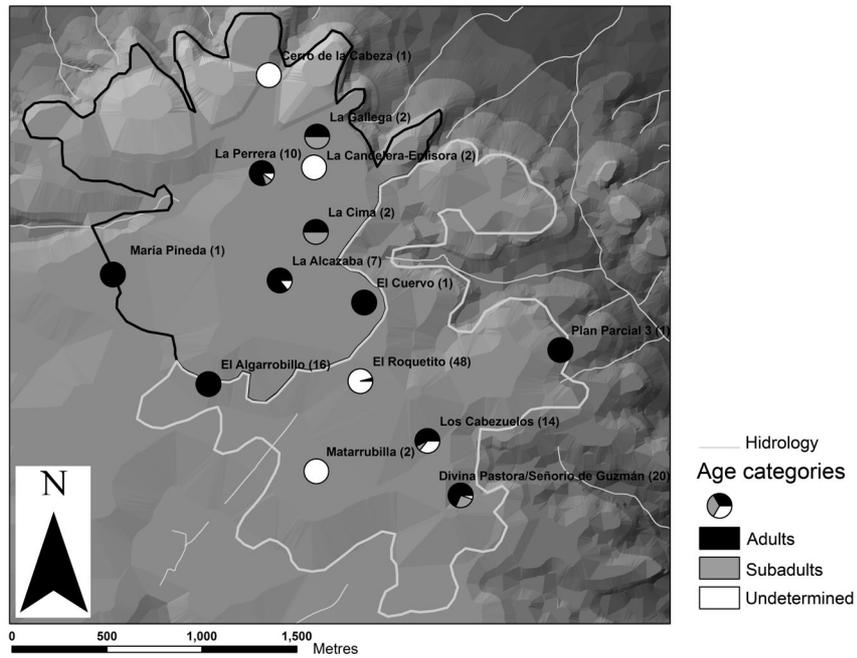


Fig. 7. Map of the density of the skeletal population of the settlement of Valencina de la Concepción by basic age groups.

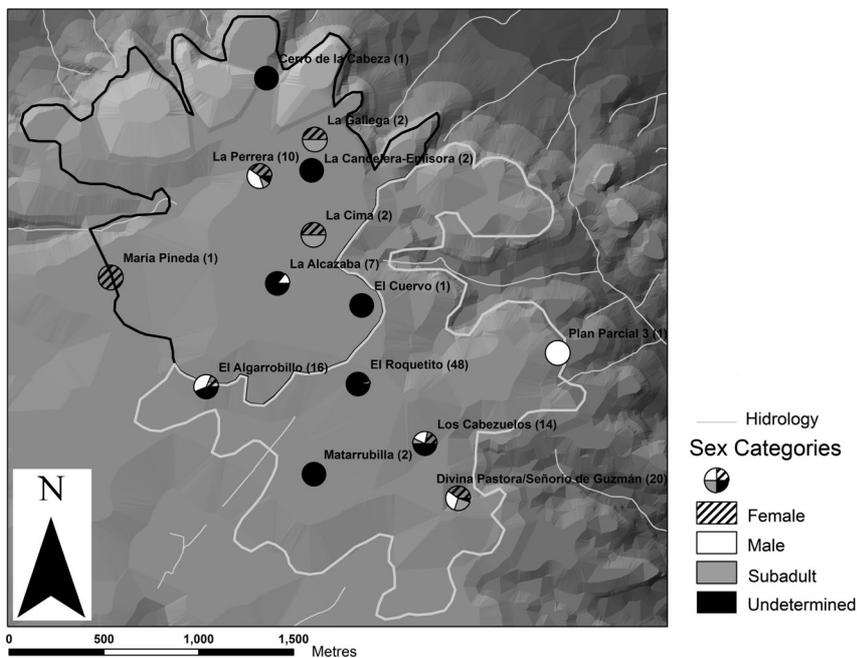


Fig. 8. Map of the density of the skeletal population of the settlement of Valencina de la Concepción by sex.

SEX	MEGALITHIC	NON-MEGALITHIC	AGE	MEGALITHIC	NON-MEGALITHIC
FEMALE	13	9	ADULTS	23	29
MALE	10	11	SUBADULTS	6	3
Result: 0.57 Critical value: 3.84 (at 0.05) or 2.7 (at 0.1) for 1 degree of freedom			Result: 1.54 Critical value: 3.84 (at 0.05) or 2.7 (at 0.1) for 1 degree of freedom		

Tab. 5. χ^2 test for the MNI in megalithic and non-megalithic funerary contexts according to the sex and age of the population of Valencina de la Concepción.

AGE	MORAN'S INDEX	Z SCORE	PATTERN
ADULTS	-0.77	-1.66	Random
SUBADULTS	0.03	0.26	Random
UNDETERMINED	0.009	0.39	Random
SEX	MORAN'S INDEX	Z SCORE	PATTERN
FEMALE	-0.2	0.35	Random
MALE	-0.6	1.25	Random
UNDETERMINED	-0.03	0.11	Random
SUBADULTS	0.03	0.26	Random
Expected index: -0.06 Critical values: -1.96 (dispersed) and 1.96 (concentrated) at the 0.05 significance level			

Tab. 6. Moran's *I* statistics for sex and age of the population of Valencina de la Concepción.

in megalithic (MNI = 86) than in non-megalithic contexts (MNI = 49). Beyond this, however, there appears to be little pattern to the distribution of the population in burial contexts. Table 5 shows the distribution of individuals according to sex (left), and age (right) across the two context types. Although females and subadults are marginally more frequent in megaliths, the χ^2 statistic indicates that neither of these are significant at the 0.05 level or even at the 0.1 level. These results can be compared with those from the Moran's *I* test, which suggests that the spatial distribution of the burials does not significantly deviate from randomness however they are classified (Tab. 6).

With regard to metal objects, in principle, following the conventional division of the settlement in two sectors (a division which for the sake of argument is followed here), 57 (54 %) of the 105 metal objects were recovered in the southern part of the settlement (the "necropolis"), while 48 (46 %) were found in the northern sector (the do-

mestic-productive area). The analysis of their spatial density (Fig. 9) shows that there are three main concentrations. The first is to the north, where the excavations carried out at La Gallega, Candelera, and La Emisora revealed a total of 15 objects, to which one more, from the nearby *tholos* at Cerro de la Cabeza, can be added. The second is in the central part of the settlement, in the space enclosed by the megalithic structures of La Pastora (29 objects), Matarrubilla (6) El Roquetito (5), Los Cabezuelos (7) and Los Veinte (3), to which the findings in the metallurgical zone (in the domestic sector) of the Plan Parcial de Matarrubilla (13) must be added. Finally, the third is to the south, about 1300 meters away from the settlement, at the dolmen of Caño Ronco, where 13 objects were found. When these data are analyzed in terms of the weight of objects (Fig. 10), the result is very similar, with the only difference that the maximum values are obtained in the second of the concentrations described above, right in the area between the fu-

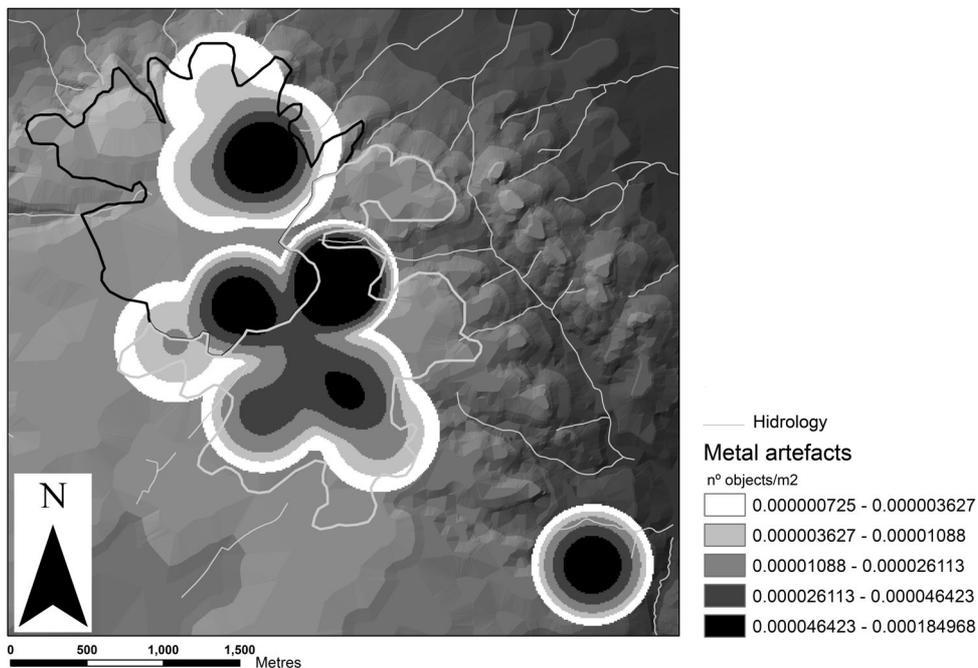


Fig. 9. Map of the density of metal artefacts in the settlement of Valencina de la Concepción (recount of the objects).

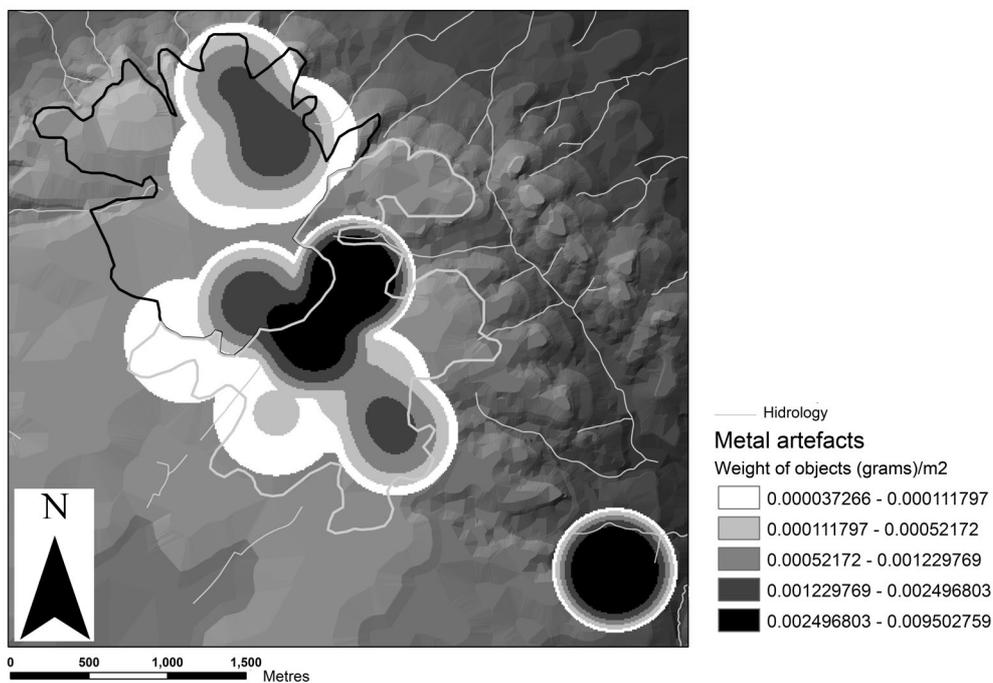


Fig. 10. Map of the density of metal artefacts in the settlement of Valencina de la Concepción (weight).

FUNCTIONAL CATEGORIES	CONTEXTS					
	NUMBER OF OBJECTS (COUNT)			WEIGHT OF OBJECTS (IN GRAMS)		
	DOMESTIC	FUNERARY	UNDETERMINED	DOMESTIC	FUNERARY	UNDETERMINED
TOOLS	30	7	0	345,0	72,3	0
WEAPON-TOOLS	4	20	0	775,5	2695	0
GOLD ORNAMENTS	0	10	0	0	5	0
WEAPONS	0	0	29*	0	0	1421*
UNDETERMINED	3	2	0	20	10	0
TOTAL	37	39	29	1093,6	2782	1421

Tab. 7. Valencina de la Concepción: Number of artefacts and quantity of metal according to their function and context. (*) Values for the 29 javelin points of La Pastora.

nerary and domestic sectors of the settlement (indeed, occupying parts of both), because of the strong quantitative effect of the javelin points of La Pastora.

At the same time, with regard to the context of deposition, the number of objects found in contexts with human remains (both megalithic and non-megalithic) is 68 (65%), while in those interpreted as “domestic” 37 (35%) were found (Tab. 7). These latter percentages are however strongly influenced by the 29 javelin points found outside of La Pastora. If these pieces are loosely considered “votive” rather than strictly “funerary” (there is no evidence that they were associated with human remains), and were removed from the count, then the number of objects associated with human remains is 39, and the two counts become almost equal. In assessing these objects according to their weight (12), again the results are quite dependent on the javelin points of La Pastora. If they are considered as part of a funerary rite, then there is a clear preponderance of the metals associated with burial (4.456 kg) over those associated with domestic contexts (1.093 kg) (Tab. 7). Therefore, given the strong quantitative effect that the 29 javelin points have on the total sample in this study, and in order to improve the comparative value of the results, the statistical tests were performed twice, in one case including them and in the other excluding them.

(12) The estimate of total weight was made by multiplying the average weight of each artefact type by the number of them found.

Taking this into consideration, it is possible to make some interesting observations with regard to the spatial distribution of metal objects according to their basic functional categories (Tab. 7, Fig. 11). Almost all of the metal sets found in contexts interpreted as “domestic” consist of tools, while in burial contexts there is a greater number of weapon-tools, and especially of ornaments. It is particularly interesting that all the gold artefacts found in Valencina appeared in megalithic contexts. The weight data agree that most of the metal found in domestic contexts was used to produce tools and weapon-tools, especially axes, which have a comparatively high average weight (250 grams).

The χ^2 test can be applied to investigate whether there are statistically significant differences in the distribution of metal artefact classes between different contexts (Tab. 7). Using only the primary characterization of the contexts (domestic vs. funerary) and excluding the javelin points of La Pastora, the calculated χ^2 (35.14) comfortably exceeds the critical value of 12.84 for three degrees of freedom and a confidence interval of 0.01. This suggests that there is a significant pattern by which objects classified as tools tend to appear in domestic contexts, while objects classified as weapon-tools and ornaments (all of them made of gold) tend to appear in funerary contexts. If the deposit of javelin points is also included in this test, an even more robust result of 60.26 is obtained, which also exceeds the critical value for four degrees of freedom and a confidence interval of 0.01, showing that there is a difference in the distributions of both categories of artefacts.

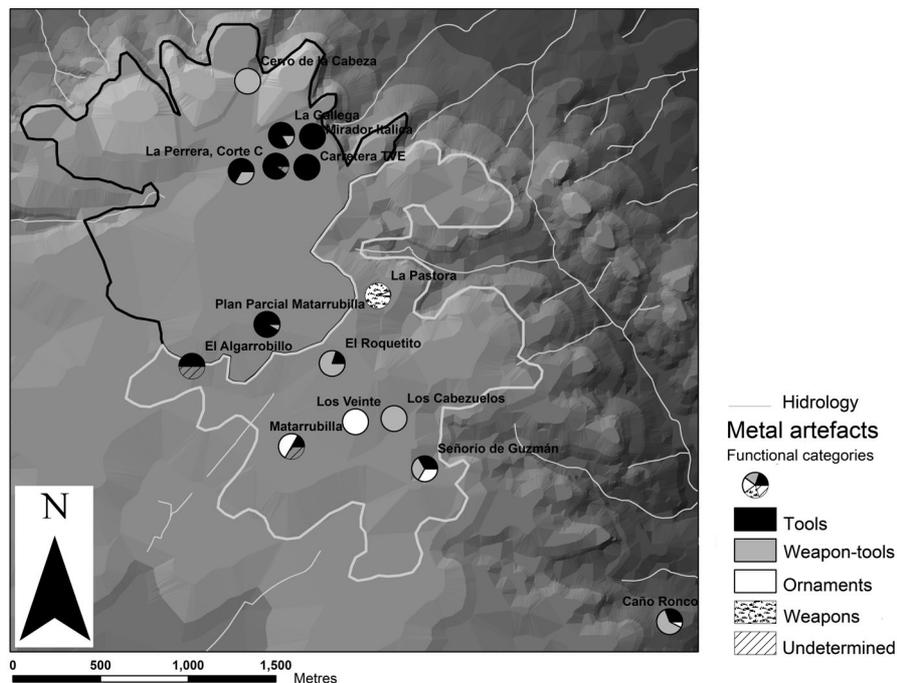


Fig. 11. Valencina de la Concepción: Percentage distribution of the functional composition of each group of metal artefacts.

The results of the significance test applied to the distribution of metal objects within burial contexts (megalithic vs. non-megalithic) are shown in table 9. In this case, the distribution of tools vs. weapon-tools do not appear to be statistically different. However, if the categories of ornaments (gold) and weapons are included, then there is a strong statistically significant difference, regardless of whether the La Pastora javelin points are included, as the ornaments only appear in megalithic contexts.

Spatial statistics were again applied to verify the existence of specific patterns of clustering or dispersion in the spatial distribution of the metal objects. First, the nearest neighbour index is 1.41 which suggests a random pattern in the spatial distribution of metal artefacts. Moran's *I* test, applied twice for the reasons explained above (including and excluding the javelins of La Pastora) indicate that there is a tendency to randomness in the distributions of both the total number of artefacts and in the total amount of metal (weight) (Tab. 8).

Another significant aspect of the spatial analysis of the settlement of Valencina is the evidence of metallurgical processing that has been found in

various excavations. All sites with evidence of metal production are located in the northern sector (the "domestic-productive" sector). Unfortunately, the data included in some publications cannot be compared with those obtained more recently in the area of Plan Parcial Matarrubilla, which has been studied in greater depth, because those publications failed to include crucial information such as the weight of the slag or the number of pots, crucibles and crucible-furnaces found, and do not analyse the materials using archaeometric techniques. So far, apart from the materials found in the area of the Plan Parcial Matarrubilla, only a slag fragment that appeared in El Algarrobbillo had been analyzed (Hunt Ortiz 2003: 148). At El Algarrobbillo all stages of metallurgical production have been documented, although it is unknown what relationship could have existed between this area and others where minerals, slag, and slagged ceramics have also appeared.

Nearest neighbour analysis of the distribution of the excavations in which metallurgical remains have appeared gives a nearest neighbour index of 1.89, indicating that those remains tend to a dis-

	MORAN'S INDEX	Z SCORE (EXCLUDING THE JAVELIN POINTS)	PATTERN	MORAN'S INDEX	Z SCORE (INCLUDING THE JAVELIN POINTS)	PATTERN
TOTAL NUMBER OF ARTEFACTS	-0.12	-0.56	Random	-0.03	0.45	Random
AMOUNT OF METAL (GR.)	0.02	1.24	Random	0.06	1.44	Random
TOTAL NUMBER OF TOOLS	-0.07	-0.07	Random	-0.07	-0.07	Random
TOTAL NUMBER OF WEAPON-TOOLS	0.03	1.11	Random	0.03	1.10	Random
TOTAL NUMBER OF WEAPONS	-	-	-	-0.04	0.53	Random
TOTAL NUMBER OF ORNAMENTS	-0.09	1.78	Random	-0.09	1.78	Random
TOTAL NUMBER OF ARTEFACTS OF UNKNOWN FUNCTION	-0.1	-0.34	Random	-0.1	-0.34	Random
Expected index: -0.07 (excluding and including the deposit of javelins) Critical values: -1.96 (dispersed) and 1.96 (concentrated)						

Tab. 8. Valencina de la Concepción: Moran's *I* test statistics for the spatial distribution of the metal artefacts. With a confidence interval of 0.05 (95 % probability of certainty) the results above the critical value of 1.96 indicate a clustered spatial pattern, while those below the value -1.96 suggests a dispersed pattern.

OBJECTS	CONTEXT	
	MEGALITHIC FUNERARY	NON-MEGALITHIC FUNERARY
TOOLS	2	5
WEAPON-TOOLS	8	12
Result: 0.29 Critical value: 3.84 (at 0.05 for 1 degree of freedom)		
TOOLS	2	5
WEAPON-TOOLS	8	12
GOLD ORNAMENTS	10	0
WEAPONS	0/29	0
UNDETERMINED	2	0
Result including the javelin points: 34.78 Critical value: 9.49 (at 0.05 for 4 degrees of freedom)		
Result excluding the javelin points: 13.67 Critical value: 7.81 (at 0.05 for 3 degrees of freedom)		

Tab. 9. Valencina de la Concepción: χ^2 test for the metal artefacts found in funerary contexts (megalithic and non-megalithic) according to their function.

persed spatial pattern. With the idea of investigating the possible existence of patterns of spatial concentration of metallurgical production together with the use/consumption/deposition of metal objects (and to examine the theoretical assumption that a specific social group might have controlled both the process of production and the possession of the metals), a correlation analysis to investigate the relationship between the size of

the deposit of objects (by both number and weight) and the linear distance from the deposit to the closest place of metal production was conducted (Tab. 10). The only slight association that appeared is that between the amount of metal used and the distance, indicating that in 52 % of the documented cases the increase in distance is related to an increase in the amount of metal used. This result, which is contrary to the effect

Name	Distance from the closest productive zone (m)	Number of artifacts	Estimation of weight (gr.)
El Algarrobbillo	0	2	18
La Gallega	0	6	292
La Candelera	0	9	104
Plan Parcial Matarrubilla	0	13	384
La Perrera, Corte C	0	3	52
Carretera a TVE	99	1	No data
El Mirador Itálica	115	2	28
Cerro de la Cabeza	413	1	250
El Roquetito	434	5	778
La Pastora	653	31	1422
Matarrubilla	715	6	25
Los Veinte	753	3	1
Los Cabezuelos	904	7	119
Divina Pastora/ Señorío Guzmán	1260	3	264
Caño Ronco	2862	13	1593
TOTAL	–	105	5545
		Correlation Coefficient	Correlation Coefficient
Distance (m)/num. artifacts		0.24	0.05
Distance (m)/weight artifacts		0.63	0.39
Num. artifacts/quantity of metal		0.73	0.53

Tab. 10. Valencina de la Concepción: Distance from areas with metal artefacts to areas with remains of metallurgical production and estimate the amount of metal used in their manufacture (including the deposit of javelin points of La Pastora).

one would expect of a concentrated pattern of production, use, consumption, and/or deposition of metals, is due to the strong effect produced by the set found at Caño Ronco, which has about 1.6 kg of metal and is 2.8 km away from the nearest productive sector. If the values of this collection of objects are removed, then a correlation coefficient of 0.1 and a determination coefficient of 0.01 is obtained, indicating that the two variables are independent and thus are not related. Therefore there is no relationship between proximity to a place of production and the size of the deposit (neither according to the number of artefacts, nor to the amount of metal used).

3.3. Evaluation

Regarding the first objective of this work, empirical analysis shows that in the prehistoric settlement at Valencina de la Concepción, there appears to be no pattern of concentration of human osteological remains that would justify retaining the notion of a “funerary” sector as opposed to a

“domestic” sector. The documented burial practices extend throughout the entire known area of the settlement, with no statistically discernible spatial grouping in the number of individuals buried (size of the osteological deposits), or in the distribution of the population by sex or age, regardless of the morphology of the container and funerary context.

It is true that, morphologically, most of the contexts (or ‘containers’) with human remains in the northern part of the settlement are non-megalithic (underground or semi-underground structures), although there is the exception of the Cerro de la Cabeza *tholos*. On the other hand, in the southern sector (hitherto interpreted as “funerary”), the contexts are predominantly megalithic (mainly of the *tholos* type), although there are also possible exceptions here, as evidenced by the excavations in Plan Parcial 3, PP4-Montelirio and El Algarrobbillo. This distinction invites investigation of the possible reasons why in different parts of the settlement morphologically different containers were predominantly (but not

exclusively) used for human bone deposits, but does not necessarily justify to keep the traditionally accepted dichotomy between a “domestic” and a “funerary” sector. Human bones were deposited all over the known area of the Valencina settlement.

Regarding the second objective of this study, that is, investigating the degree of functional specialization of space, the analysis again provides a range of relevant conclusions. On the one hand, broadly speaking, the traditional division of the settlement into domestic and funerary sectors is not reflected in the spatial distribution of metal objects, which are distributed fairly regularly and uniformly throughout its surface. Interestingly, the highest density of metal objects is in the central part of the settlement, halfway between the great megalithic construction of La Pastora and the Plan Parcial de Matarrubilla metallurgical area. With regard to the contexts in which the metal objects were found, if we remove from the sample the javelin points of La Pastora, the number of those found in megalithic burials (22 among El Roquetito, Los Viente, Los Cabezuelos, Matarrubilla, Señorío de Guzman and Caño Ronco) and non-megalithic burials (18 among the deposits of Candelera/La Emisora, La Gallega, El Algarro-billo and PP Matarrubilla) are almost even.

On the other hand, however, there are some indications of possible underlying patterns. The χ^2 test suggested that there is a significant trend to objects classified as tools to appear more frequently in domestic contexts, while objects classified as weapon-tools and ornaments (all of them made of gold) tend to appear in funerary contexts. This could in principle be interpreted as suggesting that some specific artefact types are selected as grave goods over others. The indications of a possible underlying patterning in the way some artefact types were used and/or deposited in specific contexts suggest the possibility that some artefact types conveyed a stronger ideological and sociological significance than others. This is plausible within the context of 3rd and 2nd millennia Iberian societies where certain metal objects are increasingly valued as status markers, although the available empirical record for the Valencina funerary practices is far from unambiguous – see further discussion below. On the other hand, the significance test applied to metal objects within burial contexts showed that the distribution of tools vs. weapon-tools is not statis-

tically different between megalithic vs. non-megalithic contexts, which suggests than being buried in a ditch or a megalith made no difference in terms of how likely a person was to get a certain type of tool as a grave good. In fact, more weapon-tools have been found in non-megalithic (12) than in megalithic contexts (8).

This whole discussion is complicated by various factors. First, weapon-tool objects are difficult to interpret in terms of the social and ideological prestige they may have conveyed. Second, other than the 29 javelin points of La Pastora (and there is no evidence that they were used as funerary goods), there are in Valencina no artefacts that qualify within the definition of ‘weapon’ used here. As mentioned earlier, it is also difficult to assign a function to gold objects, which are small and often fragmented. It has been claimed that they could have been attached to clothing as personal accessories (Montero Ruiz 1994). We must note, however, that in other sites they are often associated with (or even attached to) portable plaques or figurines (13). Assuming that gold objects had a particularly high ideological significance related to the expression of the sacred, then it makes sense that they were linked to figurines (that perhaps represented gods) and placed inside megalithic monuments, which are the most architecturally elaborate and costly structures of the site.

In relation to metallurgical processing, spatial analysis shows that this activity was carried out throughout the northern part of the settlement. While it is true that the production activity documented in the area of the Plan Parcial Matarrubilla is significantly larger in scale and volume, the spatial distribution of the remains of slag known so far shows a relatively large spatial amplitude (which is also true of the distribution of the metal artefacts), which suggests that this production could have taken place in a dispersed and not concentrated way.

Overall, the demographic and archaeometallurgical evidence considered in this study invite us to rethink ideas about the spatial organization of the prehistoric community of Valencina de la

(13) This is true of the fragmented gold foil rectangle decorated with eye motifs of the *tholos* of Las Canteras (Seville) (Hurtado Pérez and Amores Carredano 1984: 164), the idol with a “belt” of gold of Marroquíes Bajos (Jaen) (Costa Caramé 2009), and the idol of Logrosán (Cáceres), made of silver (Hunt Ortiz and Hurtado Pérez 1999: 267).

Concepción. Rather than as a settlement with a sharply dual space, whereby one sector was occupied by the living (“domestic/productive” sector) and one by the dead (“funerary” sector), the Valencina site should be understood as a large space of occupation and use in which various functions and activities (productive, domestic, funerary and votive) overlapped, both in space and in time, according to complex patterns which at this time are not yet fully understood. The archaeological record of the northern half of the Valencina sector reminds us of Richard Bradley’s claim that European Neolithic society was permeated by ancestor’s cult (Bradley 1998: 66), something that seems to hold true for quite a significant number of southern Iberian ditched enclosures of the 3rd millennium BC, where deposits of human remains are consistently found in ditches and pits like those of Valencina de la Concepción (Díaz del Río 2008: 136; Márquez Romero and Jiménez Jáimez 2008: 165).

At least two major implications emerge from here. On the one hand, there is a need to handle with care (and even revise) some of the functional interpretations that have been made of the underground and semi-underground features, according to which they are almost always labelled as “domestic” or “habitational” despite the fact that in many cases they include significant structured deposits of human remains. The usual descriptions of these structures in the excavation reports by terms such as “hut floors” (*fondos de cabaña*), “silos”, “dumps”, “pits”, or “trenches” carry implicit functional readings which are quite *a priori*, and are not based on detailed studies of the stratigraphy and the deposits of artefacts and remains of plants and/or animals. Recent reviews of such contexts in settlements of the 4th and 3rd millennia BC in southern Iberia suggests that caution must be applied when assigning single functions to these contexts, since in many cases, a thorough review of their morphological characteristics and/or stratigraphical deposits has made possible alternative interpretations (Márquez Romero 2002, 2006, 2008; Jiménez Jáimez and Márquez Romero 2008; Márquez Romero and Jiménez Jáimez 2008). In addition, overtly simplistic classifications also ignore the possibility that the function and meaning of such structures may have changed through time. A number of recently identified contexts in the prehistoric settlement of El Seminario (Huelva), which have mor-

phology and dimensions similar to those usually interpreted as “silos” or “dumps” in the excavations of Valencina, contained deposits of ideological artefacts of high symbolic value (cylindrical idols, sacred stones, etc.) (González González *et al.* 2008), so clearly in this case its function was not (or at least not ultimately) to store staple goods or to serve as dumps of waste. The variability of the deposits found in semi-underground and underground contexts such as El Algarrobbillo suggests that reliable functional interpretations cannot be made solely on the basis of observations made *in situ*, and without proper evaluation of the evidence available from study of the site’s anthropology, archaeofauna, sedimentology, chronology, and so on.

Given that in the case of Valencina de la Concepción, the vast majority of these structures have been found as a result of “rescue excavations,” and that none has been subjected to a careful post-excavation analysis focused on its sediments, fauna, micro-stratigraphy, etc. (and taphonomy, ultimately), it would be advisable to suspend judgment on their specific function until more and better evidence is available, and therefore to use in field descriptions (and in subsequent publications) designations based on morphology and not on their (alleged) uses and functions, thus avoiding much confusion.

On the other hand, the successive generations who occupied Valencina de la Concepción in the 3rd millennium cal BC seem to have shared cultural patterns that, at least in part, were different from those that have been identified in settlements of the same period located in other Iberian regions. The well-defined spatial demarcation between an area dedicated to domestic activities (housing, workshops, etc.) and another dedicated to burial practices that occurs in a site like Los Millares deviates considerably from what is found in Valencina de la Concepción. No funerary deposits in non-megalithic structures (like those which are abundant in Valencina) have ever been found in Los Millares. The physical demarcation of the perimeter of the settlement by a walled enclosure, as found in Los Millares and in many other settlements of the 3rd millennium cal BC, is absent in Valencina de la Concepción, which suggests a significant variability of patterns in the organization of the settlement space. In other words, the social and cultural tradition of which the human community of Valencina de la

Concepción was part presents a number of peculiarities, which suggest that, within the societies that occupied southern Iberia during the Copper Age, there may have been a significant variability in the strategies of organization and specialization of space (and therefore, in the social structure) that is in danger of passing unnoticed if the complexities and nuances of the available archaeological record are not properly taken into account.

4. DISCUSSION

4.1. Demography

Judging by its wide extension (estimated between 300 and 400 ha), it is tempting to assume that the community that lived in Valencina during the Copper Age was accordingly large (14). However, the interpretation of this indicator is not conclusive for several reasons. In the first place, the absolute chronology currently available is insufficient to completely rule out the possibility that the extent of the space occupied corresponded to a sequence of occupation and uses over time, rather than a single large village with a steady population. Second, in light of our research it is difficult to establish a clear delineation of the area of strictly domestic use (e.g. in terms of households and production) and to evaluate it in terms of population. Third, even if it is accepted that it represents only a fraction of the total original population, the MNI of 135 individuals obtained from the documented skeletal population does not seem to keep a proportion with the extension ascribed to the settlement - for an estimated period of occupation of more than a millennium. In this regard, it should be kept in mind that in just one tomb (number 40) at Los Millares (Almería), the remains of 114 persons were identified (100 in the chamber and 14 in the corridor) (Molina González and Cámara Serrano 2009), and that in Tomb 3 of La Pijotilla (Badajoz), around 300 individuals were found (Hurtado Pérez *et al.* 2002: 254).

Overall, the results of this study suggest that Valencina was an area of occupation and use with

complex patterns of evolution in space and time that must be interpreted only on the basis of good quality data. The possibility of a direct correlation between its estimated extension and the size and complexity of its human contingent must be assessed with caution.

4.2. Organization and functional specialization of space

Spatial zoning into physically separated groups and the specialization of productive facilities are two indicators commonly associated with the emergence of highly hierarchical, stratified, and state-like societies in prehistory. None of the evidence used in this study suggests the existence of social zoning in Valencina, in the sense that such zoning exists, for example, in some later (basically Bronze Age and Iron Age) European communities, where an elite appears spatially segregated from the rest of the community through an organization of space that includes physical barriers (acropolis, walled enclosures, ways of access, etc.) and significant differences in the size and complexity of housing. The linear structures ("pits" and "trenches") found in Valencina could hypothetically have played a boundary role within the settlement, but given the difficulties already identified in the available archaeological record, at the present time it is impossible to prove or disprove such a point. In this regard, it is worth noting the remarkable absence at Valencina of the walled enclosures which are common in other villages of the 3rd millennium in southern Iberia. Similarly, the distribution of osteological deposits and metal objects suggests that great prudence must be observed before trying to identify functionally specialized areas. Both metallurgical wastes and metal objects found show a broad pattern of spatial distribution without statistically significant concentrations. In addition, the available radiocarbon dates do not exclude the possibility that the documented metallurgical production occurred over a long period of time.

4.3. Scale of the metallurgical production

Valencina has yielded one of the largest collections of Copper Age metal artefacts identified to date in Iberia, as well as significant evidence of metal production. In general terms, this sug-

(14) The specialized archaeological and anthropological literature accepts a general positive correspondence between demographic scale and social complexity.

gests an important dynamic of metallurgical production and consumption. In order to assess the scale of production in relative terms, however, two factors must be noted. First that Valencina is one of the most (if not *the* most) intensively excavated prehistoric sites of Iberia. Second, the difference of the metal collection with respect to other contemporary settlements (e.g. Los Millares), is not proportionate to the size (i.e. area) that is generally ascribed to Valencina. In other words, given the extent generally ascribed to Valencina, a much greater difference between its numbers and volume of metal objects and those found in other contemporary sites would be expected.

In connection with the scale of metallurgy, it has already been mentioned that a recent study has suggested that the figure of metal production for the Plan Parcial de Matarrubilla site is above one ton. This figure, based on the number of crucible fragments found, the estimated number of crucibles in use and the number of times these crucibles may have been re-utilised, is in sharp contrast with the amount of metal represented by the 105 metal objects documented throughout the settlement, which according to our estimation weigh 5.29 kg. (Tab. 7). Ideally, the theoretical number of metal objects existing in Valencina may one day be extrapolated from the total excavated area. Unfortunately, the currently available literature does not provide data of sufficient quality to estimate the total area of the settlement that has been excavated. Methodologically, however, an estimate based on *documented* objects is more reliable than one that, departing from a count of crucible fragments infers a total number of crucibles and then the number of their re-uses – two inferences that necessarily rely on a particular interpretation of the nature of the smelting process. This is more so because the Plan Parcial de Matarrubilla publication does not include archaeometric analysis of the slags and slagged potteries (claimed to be furnaces), which makes it impossible to create a productivity model of the smelting process such as that proposed by I. Montero Ruiz for some sites of the Iberian South-East (Montero Ruiz 1994: 233). In addition, it should be noted that the proposed amount of metal smelted at Plan Parcial de Matarrubilla seems all the less plausible when considered at a broader regional level: the total number of metal objects attributed to the Copper Age (a period conventionally

accepted as covering the period *c.* 3300/3200-2200/2100 cal BP) found in the entire Spanish South-West (including the provinces of Cadiz, Cordoba, Seville, Huelva and Badajoz) is 758, which represents an estimated weight of 48.21 kg of metal (Costa Caramé 2010).

On the other hand, it has been claimed that the metallurgical production taking place at Valencina during the first half of the 3rd millennium would have had a significant environmental impact, including deforestation and pollution with heavy metals at local and regional levels throughout western Andalusia (Nocete Calvo 2004: 339; Nocete Calvo *et al.* 2008). According to conventionally accepted estimates, producing 1 kg of copper with the technological conditions prevailing in the 3rd millennium BC would have required the use of 16 kg of charcoal, made from 112 kg of wood, which can be obtained from the trunk of a single pine tree about 100 years old grown in not-too-fertile soils (Montero Ruiz 1994: 303). The total amount of copper metal currently documented in Valencina in the form of objects could therefore have been processed with the use of 6 pines. If, however, this documented volume of metal is increased by a factor of 1000 (and let us note that far more than a thousandth part of the site has been excavated), then the resulting amount of metal would have required the burning of about 6000 pine trees, which, for a period of about 1000 years (and the occupation of Valencina could have been even longer), would have meant an average of about 6 pines per year in the period under consideration. Increasing the metal production by a factor of 100,000 would not yield a significantly different result. Unless it can be demonstrated that the whole metallurgical production involved took place over a relatively short period of time, the impact caused by such exploitation of the environment can hardly be qualified as deforestation. Considering the above mentioned weight of all objects recorded at a regional level (48.21 kg) divided by 1000 years and multiplied by the above-mentioned factor of 1000, the trees needed to process the metal would have meant, at most, the deforestation of an area of 0.5 ha per year, which, within a territory of 67,198 km² (i.e. more than 6.5 million hectares) that includes major wetlands and forests, represents a negligible environmental impact.

As the above discussion suggests, diverging interpretations about the scale of metallurgical

production at Valencina are possible depending on the type of evidence that is selected for analysis. The claim that the metal found in the excavation of Plan Parcial Matarrubilla represents an “optimized industrial production” (Nocete Calvo *et al.* 2008: 718) that would have caused a major environmental impact is not in accordance with the evidence considered in this study and must be carefully pondered within a broader regional and technological context, especially in light of the complexity and diversity of the methodological problems presented by the archaeological investigation of environmental pollution (Montero Ruiz *et al.* 2007: 36).

4.4. Labour investment in monumental architecture

Social complexity often shows a positive covariation with the extension and generalization of monumental buildings of a public, funerary and ritual character. In the case of Valencina, no major stone structures, such as terraces, platforms or walls, which are known in numerous settlements of the 3rd and 2nd millennia BC, were ever erected. However, large “ditch” structures, which did require significant investments of labour are present. They may have delineated enclosed areas to some extent similar to those found at the settlement of Marroquíes Bajos, further up the Guadalquivir valley (Zafra de la Torre *et al.* 1999, 2003). As already mentioned, however, there is no published cartography of these structures that would allow reliable estimates of their size, development and cost (an interesting discussion of this problem in relation to the Valencian Neolithic can be found in Bernabéu Aubán *et al.* 2006 and Orozco Köhler *et al.* 2008).

The largest monumental works so far documented in Valencina de la Concepción are undoubtedly its megaliths, some of which (Matarrubilla, La Pastora and Montelirio) are among the largest and most elaborate of southern Iberia. As an indicator of social complexity and hierarchy among societies from the 5th to the 2nd millennia cal BC, megalithic structures must be assessed within a broader system of empirical indicators that includes also the analysis of settlements. Beginning in the 5th millennium cal BC there exist all along the European Atlantic seaboard great megalithic constructions that are associated with

very simple settlements with little or no evidence of hierarchy or social or political stratification, such as defensive architecture, specialized internal organization, social zoning, funerary stratification, etc. This is the case, for example, of Avebury (Wiltshire, United Kingdom), the largest monumentalized space of the Late Prehistory of Western Europe. Built between the 4th and 3rd millennia, Avebury consists of a henge type structure of c. 500 m in diameter, enclosed by ditches and embankments of up to 10 metres in depth and height, of various circles of huge stones and two great avenues of access and several kilometres in length which are flanked by menhirs (Smith 1965, Pollard and Reynolds 2002). In its environment there is a group of megalithic burial chambers which include some of the largest examples known in the British Isles, like for example West Kennet Barrow. Despite the large amount of research conducted at the monument itself (Gillings *et al.* 2008) and in its surroundings (Evans *et al.* 1993), the only places of habitation so far documented are a few small and irregular pits, and dispersions of lithic material, while settlements of an obviously permanent character are completely unknown, and there are no domestic structures (e.g. huts) bounded by walls or ditches. One could speak in similar terms of the settlements associated with other enormous megalithic constructions of the 4th to 2nd millennia, such as Newgrange (Ireland) and Stonehenge (United Kingdom). In other words, the existence of large-scale megalithic construction does not by itself demonstrate the presence of a high degree of social hierarchy within a given prehistoric community, much less that the megalithic monuments were appropriated by the elites within a coercion-based state system. Each specific case must be assessed within its own cultural and social terms, and of course starting from the fact that megalithic sites were built and used over very long periods of time during which societies evolved and their characteristics changed.

In this context, an interesting indicator is of course the duality that is found in Valencina between the non-megalithic and megalithic burial containers. Since the latter imply a higher cost of labour and increased energy expenditure, it has been suggested that their construction and use may have been linked to an elite (wealthy burials), while the former, since they are much more simple in their construction, were linked to the

rest of the population (poor burials) (15). Unfortunately, data on the specific burial practices in each type of container have not yet been fully examined, so there is a fundamental lack of knowledge about issues that are key to a sociological interpretation of burial practices, such as the associations between human remains and grave goods. Nonetheless, the data on demographics (number of burials and categories of sex and age) and metal production collected in this study do not reveal significant differences between the two categories of burial containers, except in regard to the ornaments manufactured of gold leaf, which, as mentioned above, seem to be associated with representations of a sacred nature. Moreover, the fact that the anthropological MNI identified in megalithic containers (86 individuals) is greater than that identified in non-megalithic containers (49) goes directly against any theoretical premise that would expect to associate megalithic monuments with a possible elite class, since by definition, an elite is not a majority within the wider society of which it is part.

4.5. Visibility of social ranking within the funerary ideology

In the ample funerary record documented at Valencina de la Concepción, no cases have been identified of clear visibilisation of social leadership. Considering the dominance of collective burial rituals, and despite the fact that, as mentioned earlier, this issue has not been well studied, the allocation of grave goods (especially in relation to articles made of exotic or costly materials) does not suggest the existence of a pronounced social hierarchy. The only possible exception to this general rule is tomb A of Los Cabezuelos, a *tholos* that was initially used to inhume a group of at least 12 individuals, above whom were placed two individual in clear anatomical connection that the stratigraphy clearly shows to be of a later date (Arteaga Matute and Cruz-Auñón Briones 1999a: 596). One of the individuals, a female, lacked any grave goods,

(15) In this respect, it is worth maintaining some reserve with regard to the specific functional character of the largest megalithic constructions in Valencina, such as Las Pastora or Matarrubilla. Given that little or no osteological remains were identified inside them, it is possible that these great monuments served for general ideological or religious purposes, rather than as burial containers in the strict sense.

while the other, a male between 30 and 45 years old, came with burial goods consisting of a dagger (*puñal de lengüeta*) and five copper points of the Palmela type. This individual is the only one of the 135 identified in this study that shows an obviously customised set of prestige metal grave goods. It should be noted, however, that the excavators considered this particular burial to be of the “bell-beaker group and transitional to the Early Bronze Age” (Arteaga Matute and Cruz-Auñón Briones 1999a: 596), so it may be representative of a late stage and/or the end of the occupation of Valencina de la Concepción, and not of its earlier Copper Age occupation.

Likewise, attention must be drawn to the fact that the largest deposit of prestige objects found in a megalithic context, the javelin points of La Pastora, has no obvious or discernible funerary significance (until further research has been conducted, doubts will persist about the real nature of their context). This finding reinforces the notion that, within the funerary ideology of Copper Age societies in the Guadalquivir valley and the Iberian southwest, the display and use of metal objects for the expression (or reinforcement) of individual social status had a fairly limited role (especially if compared to what happens in the Bronze Age, for example) (García Sanjuán 1999, 2006). The predominant orientation of metallurgical production to the manufacture of tools and weapon-tools (saws, axes, sickles, chisels, awls, etc.) and not of objects of prestige (such as personal ornaments or weapons), in both the Southwest and the Southeast, supports this idea (Montero Ruiz 1994; García Sanjuán 1999).

4.6. Social inequality, social complexity, social stratification

The population aggregation from which the settlement of Valencina may have resulted occurred around 3000-2800 cal BC, when southern Iberia was experiencing a major population expansion, as a consequence of which many new settlements were established. The community that occupied the northern area of El Aljarafe plateau enjoyed a physical environment with exceptional biotic and abiotic resources, which may have facilitated its demographic and economic growth, in turn fostering an increase in the complexity of social relationships. The physical envi-

ronment of 3rd millennium Valencina, combining coastal and fluvial resources with soils of high agricultural potential plus the availability of significant forest and abiotic resources in the vicinity, matches exactly what Elman Service (1975: 94-95) considered the most suitable setting for the formation of “villages with diversified resources” likely to evolve into large scale chiefdoms (16).

In recent years several papers have assigned to the settlement of Valencina the role of a political centre of a state-like polity that spread throughout the lower Guadalquivir Valley (Nocete Calvo 2001; Nocete Calvo *et al.* 2008; Arteaga Matute 2000; López Aldana and Pajuelo Pando 2001; Lazarich González *et al.* 2004). According to this view, the settlement of Valencina, along with the prehistoric settlement of El Gandul, would have formed a “*dípolis*” (or two-headed state) exercising economic, social, and political coercion over a number of smaller communities spread out over that region (López Aldana and Pajuelo Pando 2001: 216 and 221). In a variant of this proposal, the role of “*dípolis*” would have been played by the Copper Age settlements of Valencina and Carmona (Nocete Calvo 2001: 95).

As seen in the preceding pages, the main indicators of social stratification, which show positive results when they are studied in certain European societies from the Bronze Age and Iron Age, are either inconclusive or negative in the case of Valencina. The interpretation of this settlement as the political centre of a territorial state system has the potential value of pushing the analysis of the social formations of the 3rd millennium BC toward a spatial reference framework, while at the same time emphasising the importance of inter-group relations in the analysis of social complexity and inequality in Late Prehistory. However, it does not agree with the currently available evidence. Moreover, the interpretation of settlements contemporary with (and geographically close to) Valencina, such as El Gandul or Carmona, as part of a state-like social system presents serious empirical and methodological problems. Regarding El Gandul, the only information available on its prehistoric occupa-

tion is a stratigraphic sondage (2 × 2 metres) made in 1986 which identified strata from the 3rd and 2nd millennia cal BC. This excavation remains basically unpublished except for a brief report (Pellicer Catalán and Hurtado Pérez 1987). Since there is no data on the extent, morphology, or internal organization that 3rd-millennium El Gandul may have had, it is difficult to see how one can attribute to it a role as a “political centre” (López Aldana and Pajuelo Pando 2001: 216 and 221) or indeed make any other interpretation about its political status. Exactly the same problem arises with the analogous interpretation of Carmona, where, despite recent new light of the Copper Age occupation (Conlin Hayes 2003, 2004), there are no data of sufficient precision to permit such broad interpretations.

On the other hand, the distribution of settlements in the 3rd and 2nd millennia BC currently documented in the lower Guadalquivir valley cannot be easily interpreted in spatial terms. In this region the disparity in the data available from archaeological surveys is very great, so that in some areas numerous sites have been identified, while in other areas there is no information at all (Fig. 12). Furthermore, as a result of the practices in use when some of these surveys were made, in almost no case is there any reliable data concerning the main parameters for analysis of the territorial dimension of social hierarchy, such as, for example, the extension of settlements, the presence of walled structures, their internal organization, association with monumental buildings, etc. Moreover, the approach that presents the 3rd-millennium population of the lower Guadalquivir as a hierarchical system of a centralized and state-like character is not based on a methodologically formalized spatial analysis. A “formalized methodology” is one based on the description and justification of the criteria used in the selection of variables and in data collection (including explicit discussion of the problems inherent in them), the use of a quantitative methodology (descriptive and inferential statistics), the use of proper methods and procedures in the analysis of the spatial relationships among the entities under investigation, as well as their later reflection in archaeological cartography, and the critical evaluation of the results and their limitations (García Sanjuán in press).

The interpretation of social complexity demands robust methodologies and good empirical

(16) Similarly, P. Díaz del Río (2004: 91) has emphasised the strategic importance of the combination of natural resources in the population aggregation that, in the early centuries of the 3rd millennium cal BC gave way to the 113 ha settlement of Marroquies Bajos.

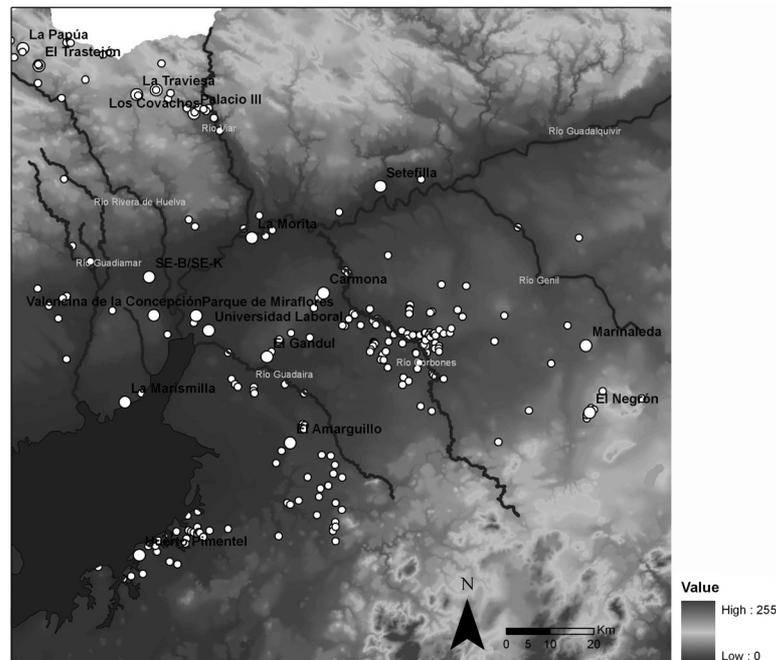


Fig. 12. Map of the location of Valencina de la Concepción with respect to the settlements of Late Prehistory recorded in the lower Guadalquivir valley.

evidence. The assessment in terms of empirical indicators of social stratification suggests that in Valencina there is a group of indicators that give an inconclusive result (either because they present significant empirical problems, or simply because they are ambiguous), and another group of indicators which are negative. Some of the evidence considered in this study shows that there were significant differences between Valencina and other Copper Age villages physically demarcated with stone enclosures that are known in various regions of southern Iberia. Similarly, the degree of specialisation in the organization of space in this settlement appears to have been limited, and there is no indication of social zoning (such as an acropolis, specially designed houses, enclosed areas of significant size, or defensive walls), nor remarkable concentrations of high value luxury or prestige items, nor funerary evidence of a military elite.

The evidence regarding demographics, organizational and functional specialization of space, the scale of metallurgical production, labour investment in monumental works, and the visibility of the social hierarchy within the funerary ideology, all suggest a system of social organization

basically akin to the notion of *communal ranking* proposed in relation to the Copper Age societies of the southwestern Iberian Peninsula (García Sanjuán 1999: 64-67). This notion is based on that of corporate or group oriented society (Blanton *et al.* 1996; Earle 2001; Renfrew 1973; 2001), which has also been used in relation with Marroquíes Bajos, a large Copper Age settlement situated further up the Guadalquivir valley (Díaz del Río 2004: 93). Coercion does not seem to play a major role in the mobilisation of labour of southern Iberian Copper Age societies (Díaz del Río 2008: 135) or indeed in their structure of social relations of production as a whole (García Sanjuán 1999: 266)

Undoubtedly the data, analysis and interpretation that have been discussed throughout this paper have significant limitations, and it is very possible that the excavations conducted in recent years (but still unpublished), and also future investigations, will serve to improve and qualify many of our observations. Any rigorous assessment of the social and economic organization of the community that occupied Valencina during the 3rd and 2nd millennia BC must be based on a robust quantitative analysis of variables such as

subsistence production, the investment of labour (especially in large underground structures such as ditches, but also in funerary constructions, megalithic or otherwise) and the distribution of grave goods in burial contexts. The research presented in this study in relation to demographics and metallurgy is only a first step ahead in the difficult task on interpreting the social organisation of the Valencina prehistoric community. Given the complexity of the archaeological record of this major prehistoric settlement, great scientific rigour will be required in the handling and interpretation of the available data as well as in the critical scrutiny of any premises derived from alternative theories.

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