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Threads of change: textile production and consumption during the Early Iron Age in Eastern Iberia

Fios de mudança: produção e consumo de têxteis durante a I Idade do Ferro no oriente da Iberia

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ABSTRACT: The establishment of Phoenician colonies in the South and East of Iberia between the 9th and 8th centuries BCE directly and indirectly provided an unprecedented stimulus for the economic and social development of the local communities, which became increasingly integrated into the trade dynamics of the Mediterranean. Textile production and consumption seem to have played a significant role that has not been sufficiently appreciated so far and that will be the basis of the spectacular textile development that followed. Therefore, this article analyses the textile tools and elements related to clothing found in different archaeological sites in Eastern Iberia between the 8th and 6th centuries BC, both indigenous and Phoenician, which coexisted in the same territory, establishing important economic and exchange relationships. The evidence seems to indicate significant changes in textile tools, but above all in the organisation of production and forms of textile consumption.
KEYWORDS: Spindle whorls; loom weights; fibulae; Phoenicians; wool

RESUMO: O estabelecimento de colónias fenícias no Sul e no Leste da Iberia entre o século IX e o VIII a.n.e. geraram, direta e indiretamente, um estímulo sem precedentes para o desenvolvimento económico e social das comunidades locais, que passaram a estar cada vez mais integradas nas dinâmicas de intercâmbio do Mediterrâneo. A produção e o consumo de têxteis parecem ter desempenhado um papel significativo que não foi ainda devidamente valorizado e que constituem as bases do desenvolvimento espetacular da produção têxtil que se segue. Por essa razão, este artigo analisa os instrumentos têxteis e os elementos relacionados com a indumentária encontrados em diferentes sítios arqueológicos do Leste da Iberia entre o século VIII e o VI a.n.e., tanto indígenas como fenícios, que coexistiram no mesmo território, estabelecendo importantes relações económicas e comerciais. As evidências parecem indicar alterações importantes nos instrumentos têxteis, mas acima de tudo na organização da produção e nas formas de consumo têxtil.
PALAVRAS-CHAVE: Cossoiros; pesos de tear; fíbulas; Fenícios; lã.

1. INTRODUCTION

Research on prehistoric and protohistoric textile production in the Iberian Peninsula has grown considerably in recent years (Berrocal-Rangel 2003; Gorgues 2009; Gomes 2017; Basso – Navarro – García Atiénzar 2018; Costeira – Mataloto 2018; Marín-Aguilera 2019; Marín-Aguilera – Gleba 2020; Basso 2022a; Basso – Jover – López Padilla 2022; among others). The abundant archaeological information that has existed for decades on textile tools, textiles and other related elements is now being studied in depth. This is allowing the development of a diachronic view of the processes of change and continuity in textile production throughout these periods. However, in the long period from the beginnings of this activity in the Neolithic to the change of era, the Early Iron Age (8th – 6th centuries BCE) is the one that has so far gone most unnoticed. Although it is true that the archaeological data available on Early Iron Age is quantitatively less than that known from other periods, the lack of interest is surprising, especially if we take into account that this is a period with important economic, social and cultural changes. The increased interaction of the indigenous communities with the Phoenician traders and their subsequent settlement and founding of enclaves along much of the eastern coast of the Iberian Peninsula meant a radical transformation in the way of life of the local communities.

In fact, the course of this period will give rise to the emergence of Iberian societies, which occupied the entire peninsular coastal strip from Andalusia to the south of France between the 6th and 1st centuries BCE. Corresponding to these centuries, a huge quantity of textile tools have been found both in Iberian settlements and in their necropolises, reflecting an intense textile activity that has been recorded by the Romans in the written sources (Castro 1983-1984; Basso 2022b). In our view, this powerful textile development had its origin during the Early Iron Age, a time when the eastern Iberia was fully integrated into Mediterranean exchange relations. Therefore, the aim of this study is to delve deeper into this period and to assess how all these issues affected textile production and consumption.

2. CONTEXTUALISING EASTERN IBERIA IN THE EARLY IRON AGE

The Early Iron Age in the eastern area of the Iberian Peninsula is framed between the middle and end of the 8th century and the middle of the 6th century BCE. It began with the stable settlement of Phoenician populations in the south and southeast of Iberia, as well as Greek settlers in the northeast, and the intensification of relations between them and the indigenous communities, which is why it is also known as the Orientalizing period (Jiménez Ávila – Celestino 2005; Jover Maestre – López Padilla – García Atiénzar 2021). Between the middle/late 8th century BCE and the beginning of the 7th century BCE, important transformations took place throughout the eastern peninsular territory, with a particular impact on the coastal strip. The archaeological record shows how the social interaction between the indigenous communities and the Phoenicians led to an unprecedented socio-economic development. Indigenous settlements such as Penya Negra (Crevillente, Alicante) show in its phase II the transition from a dispersed urbanism of circular huts to a dense urban fabric of quadrangular buildings (González Prats 1993; Lorrio *et al*. 2020). A similar situation can be observed in small newly founded enclaves, many of them specialised in specific productive activities, such as Los Almadenes (Hellín, Albacete) (Sala – López Precioso 2000; Sala *et al*. 2020), Alt de

FIG. 1 Distribution of the main archaeological sites mentioned in the text: 1. La Ferradura. 2. Sant Jaume. 3. Puig de la Misericordia. 4. Alt de Benimaquía. 5. Les Casetes. 6. Penya Negra. 7. La Fonteta. 8. Castillo de Guardamar. 9. Los Almadenes. 10. Cerro de los Infantes. 11. Cerro de la Mora.

Benimaquía (Denia, Alicante) (Gómez Bellard – Guérin 1995; Álvarez García – Castelló – Gómez Bellard 2000) or Sant Jaume (Alcanar, Tarragona) (Garcia i Rubert – Gracia Alonso – Moreno Martínez 2016; Álvarez Estapé *et al*. 2021), as well as in important productive and trading centres, such as the Phoenician settlement of La Fonteta (Guardamar del Segura, Alicante) (González Prats 2014; Lorrio – Torres Ortiz – López Rosendo 2022) (Fig. 1).

The key elements of this interaction include the introduction of writing, the potter's wheel, the metallurgical production of iron and the goldsmith work of various types of jewellery, the appearance of new accessories such as fibulae, buttons or belt buckles related to new ways of dressing –and, therefore, of producing textiles–, luxury crockery, amulets and necklaces of vitreous paste and important products such as wine or oil (Soriano *et al*. 2012; Jover – López Padilla – García Atiénzar 2021: 81). All these economic transformations had an impact on local societies, accelerating the processes of hierarchisation and consolidating the elites that already had a high weight at the end of the Late Bronze Age. In our judgement, the production and consumption of textiles had to play a prominent role for the elites from that time onwards.

3. EVIDENCE OF TEXTILE PRODUCTION

Despite being one of the chronological periods that has received the least attention in research, there are numerous archaeological sites, both from local and Phoenician populations, where artefacts related to textile activities such as spindle whorls, loom weights and needles have been documented. These include those located in the province of Alicante, especially those concentrated in the Bajo Segura –Penya Negra (Crevillente), La Fonteta and Castillo de Guardamar (Guardamar de Segura)–. Also prominent in the Northeast are those located between the south of the province of Tarragona and the north of the province of Castellón, such as Sant Jaume, La Ferradura (Ulldecona, Tarragona) and Puig de la Misericordia (Vinarós, Castellón). Surprisingly few textile tools have been found to date in the Phoenician colonies located throughout the southeast and south of the Iberian Peninsula (Ruiz de Haro 2017).

3.1. Spindle whorls

Spindle whorls are the most numerous textile tools in the Early Iron Age archaeological record of the Eastern Iberia. They are key artefacts for inferring spinning in archaeological contexts, as they are the only component of the tools used that are not made from perishable materials. The spindle, the rod used to produce yarn, is usually made of wood, while the spindle whorls, an element added to the spindle to give it a better twist during spinning, are usually made of clay, bone, or even antler or stone (Castro 1980).

In contexts from the 8th – 6th centuries BCE in eastern Iberia, spindle whorls made of fired clay and, to a lesser extent, bone and stone have been recovered. Most of them are truncated biconical and spherical (Fig. 2), forms rarely found in previous millennia. These are followed by cylindrical, lenticular, conical and bell-shaped ones. It is worth noting that discoidal spindle whorls, the most common typology during the Chalcolithic and Bronze Age (Basso *et al*. 2023), have hardly been documented. In contrast to these periods, spindle whorls are also characterised by their smaller size and lighter weight, rarely exceeding 45g.

Of the previously mentioned sites, the indigenous settlement of Penya Negra is the one with the highest number of spindle whorls, most of them from its Early Iron Age phase –PN II (last quarter of the 8th – 6th century BC). More than 60 spindle whorls of different sizes, weights and shapes have been documented, half of them concentrated in a specific area of the settlement: Sector VII (González Prats 1982: 374). As for their typology, truncated biconical ones predominate (Fig. 2.1-3), followed by spherical ones (Fig. 2.4-6). To a lesser extent, cylindrical, lenticular, and bell-shaped ones have also been documented. In the Late Bronze Age phase –PN I (10th – 8th centuries BC)– only a few spindle whorls have been found, some of them hemispherical in shape, made from bone, and others discoid in raw clay. Interestingly, tools with these shapes and materials have not been found in the Early Iron Age phase, all of which are made of fired clay.

In the Phoenician settlement of La Fonteta, a site closely related to Penya Negra, the spinning tools are practically similar. Around fifty fired clay spindle whorls have been found at this site, most of them recovered during the excavations of A. González Prats (2014: 365, Fig. 101), but also in recent excavations

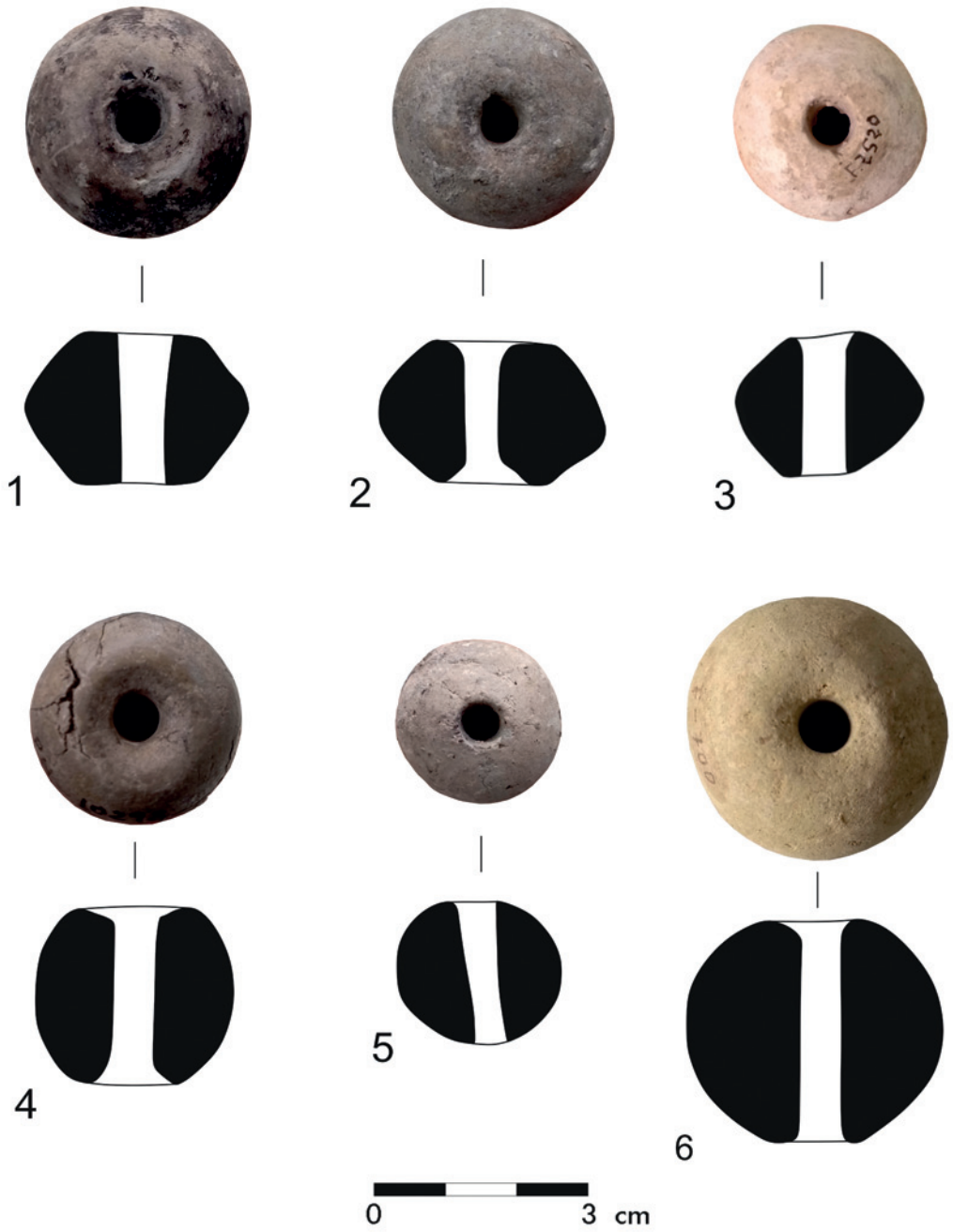

FIG. 2 Examples of truncated biconical and spherical spindle whorls: 1, 2, 4 and 5 from Penya Negra; 3 and 6 from La Fonteta.

(Lorrio – Torres Ortiz – López Rosendo 2022). Spindle whorls come from the different phases of occupation of the site, with a greater presence in the contexts of the recent phase dated to the 6th century BC. As at Penya Negra, they are mainly truncated biconical and spherical in shape (Fig. 2). There are also some cylindrical, lenticular, and even discoid ones. In this case, they are also characterised by being small and light, weighing between c. 6 and 45 g, except for a single case which could weigh up to 60 g.

Other settlements noted for their role as nodes of economic interaction with the Phoenician colonies, such as Alt de Benimaquia, Los Almadenes, Cerro de la Mora (Moraleda de Zafayona, Granada) and Cerro de los Infantes (Pinos Puente, Granada), also have spindle whorls among their finds. At Alt de Benimaquia, a coastal settlement oriented towards wine production (Gómez Bellard – Guérin 1995; Álvarez García – Castelló – Gómez Bellard 2000), around twenty of them were found. From Los Almadenes, a settlement

focused on sulphur production (Sala – López Precioso 2000; Sala *et al.* 2020), the discovery of some of them is mentioned, although we do not know the exact number, their shapes, sizes and weights. At Cerro de la Mora, clay spindle whorls were found in phase IIc and subphase IIIc. The oldest –phase IIc–, dated to 700-675 BC, is hemispherical, while the one from the later period –subphase IIIc– is spherical in shape (Carrasco – Pastor – Pachón 1982). Also, at Cerro de los Infantes, a truncated spherical whorl was documented in level VII dated to the beginning of the Early Iron Age. It is worth mentioning that in this same level a singular bone artefact was found that was interpreted as spool knitting (*vid. infra*) (Dorado 2019: 347-348).

A few spindle whorls have also been found in funerary contexts. This is the case of the necropolis of Les Casetes (Villajoyosa, Alicante), where the spindle whorls were present in the grave goods of tombs 3 and 19, dated between the end of the 7th century BCE and the first half of the 6th century BCE (García Gandía 2009). In tomb 3, cremation of a possibly female adult individual, a truncated spherical spindle whorl was found, as well as gold and vitreous paste jewellery and a red-slip plate (García Gandía 2009: 44). In tomb 19, infant cremation, a truncated biconical spindle whorl was found associated with silver jewellery and a bronze fibula (García Gandía 2009: 77-78). This is the earliest evidence of a funerary practice linking textile production directly or indirectly with the individuals buried.

As for the existence of spindle whorls made of other materials, only a few are recorded made of bone and a single example of stone (Basso 2022a). The bone ones are hemispherical and truncated cone shaped. They are mainly present in Late Bronze Age contexts, although they continued into the Early Iron Age (Basso 2018; Basso – López Padilla 2019). They have been found in El Puig d'Alcoi (Alicante), Kelin/Los Villares (Caudete de las Fuentes, Valencia), Puig de la Nau (Benicarló, Castellón), Puig de la Misericordia and Els Vilars (Arberca, Lleida) (Blasco 2022). These are light pieces weighing 9-15 g, mostly made from bovine femoral condyle, although one of the pieces from Puig de la Nau stands out for having been made from a human femur head (Blasco 2022: 134). In many of the settlements in north-eastern Iberia these tools will continue to be used during the Iberian period (5th – 1st centuries BCE). The only stone whorl was found at Penya Negra (González Prats 1979: 88-89, Fig. 62). It is an artefact which, due to its truncated biconical shape and its characteristics, could have been used as a spinning tool, although it is the smallest and lightest piece known from this period (Basso 2022a: 1102). Nor is it possible to rule out a different function.

3. 2. Loom weights

Loom weights show a lesser distribution in Early Iron Age contexts in the East of the Iberian Peninsula than spindle whorls, with very few in some outstanding and extensively excavated sites such as Penya Negra or La Fonteta. On the other hand, their presence is very high in settlements in the Northeast such as Sant Jaume, La Ferradura, or Puig de la Misericordia. There is a certain typological variability in these artefacts, with loom weights with central U/V groove, cylindrical-shaped, ring-shaped, truncated pyramid-shaped and oval-shaped (Fig. 3).

Loom weights with central U/V groove have been documented in the Early Iron Age contexts of two nearby sites that have been culturally linked to Phoenician communities: La Fonteta and Castillo de Guardamar. These are the latest examples of this type of artefacts, which are characteristic of the indigenous settlements of the Late Bronze Age -10th – 8th centuries BCE), having been recorded in the Southeast in sites such as Penya Negra (González Prats 1990: 94, 106) in the province of Alicante, Cerro de la Encina, Cerro de los Infantes, Cerro de la Mora, in the province of Granada, and in the Ebro Valley in sites such as Alto de la Cruz and El Castillar, in Navarra, and Cabezo del Cuervo, in Teruel, amongst others (Dorado – Molina 2020; Basso 2022a). At La Fonteta, only a single fragmentary example made from unfired clay was found, of which only the upper part with the groove and its two perforations were preserved. In contrast, at Castillo de Guardamar, a site identified as the Sanctuary of Astarte very close to La Fonteta (Prados – Jiménez Vialás – García Menárguez 2022), a set of four loom weights of this type was recovered (Basso 2022a: Fig. 6.54). These were apparently placed in a line next to a charred timber trunk, which allowed them to be interpreted as part of a warp-weighted loom. A truncated biconical spindle whorl was also found in the same space (Prados – Jiménez Vialás – García Menárguez 2022: 150).

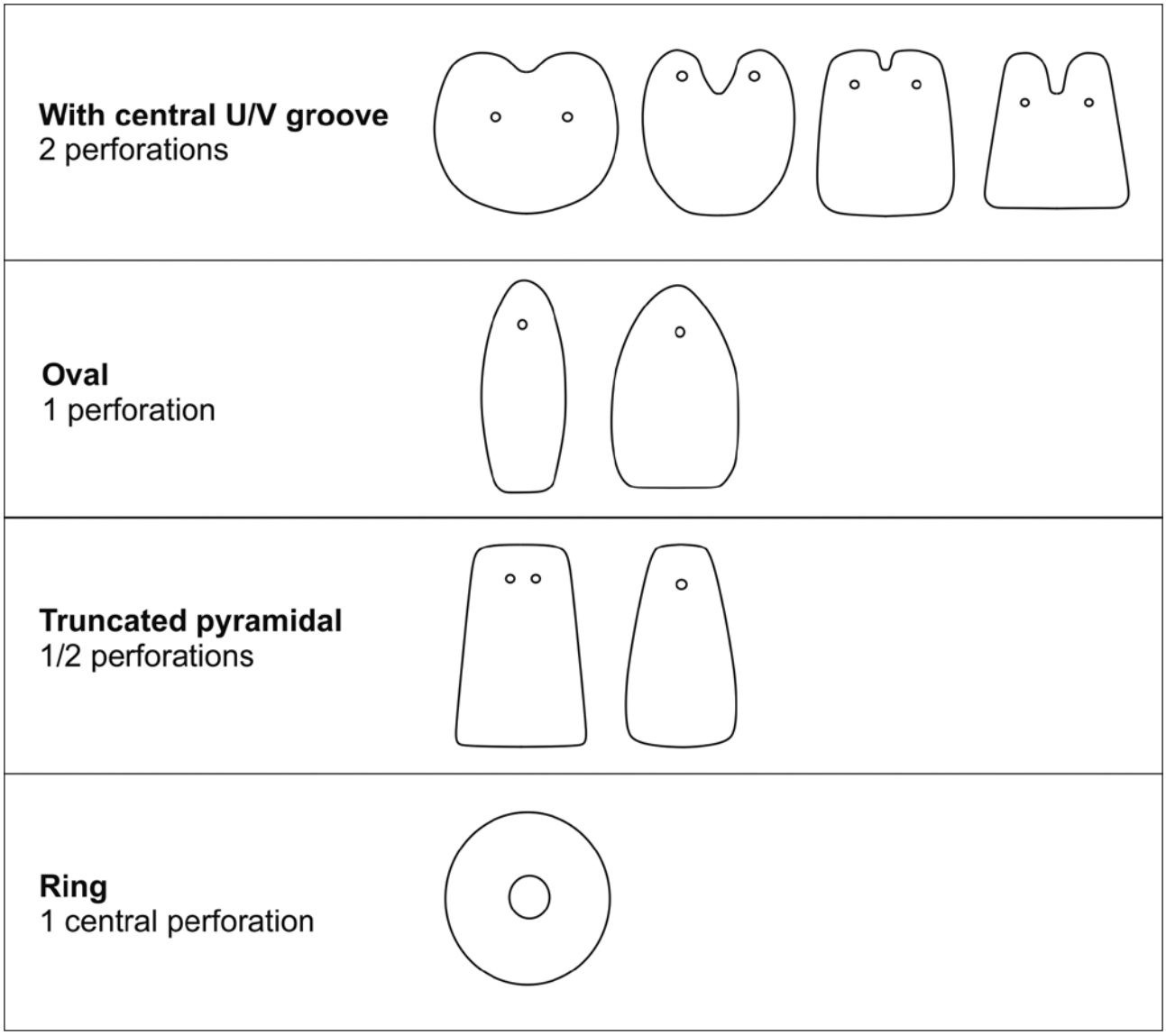

FIG. 3 Schematic drawings of Early Iron Age loom weight types.

From the 7th – 6th centuries BCE, truncated pyramid-shaped and oval-shaped loom weights became widespread, types whose elongated and narrow shape seem to indicate a similar function. Truncated pyramid-shaped loom weights, which later became common during the second half of the 1st millennium BCE, are present at Penya Negra and Puig de la Misericordia. In the Early Iron Age phases of Penya Negra, few truncated pyramid-shaped loom weights were documented, possibly because they were made from unfired clay (Basso 2022a: 1049-1050). In contrast, at Puig de la Misericordia they appear in greater quantities, even associated with the elongated oval-shaped weights (Oliver *et al*. 2021).

Oval-shaped loom weights vary in shape from ovoid to truncated pyramidal/cone, pyriform or horseshoe-shaped, in most cases having a flat base with a larger diameter than its curved top where a single perforation is located. Loom weights of this type have been documented above all in the Northeast, both in the settlements of the coastal area such as Sant Jaume, La Ferradura and Puig de la Misericordia, and in the Ebro Valley such as Aldovesta (Benifallet, Tarragona) (Mascort – Sanmartí – Santacana 1991: 37, Fig. 30.7), Barranc de Gàfols (Ginestar, Tarragona) (Sanmartí *et al*. 2000) and Alto de la Cruz (Gil 1953: Plate LII), although they have also been found further south in Alt de Benimaquia. The settlements that have provided the most information to date are La Ferradura and Sant Jaume. At La Ferradura, 25 loom weights of this type have been identified, defined as "cylindrical", "ovoid" (Garcia i Rubert – Gracia Alonso 1998) or

"obus" shaped (Maluquer 1983: 22), with differentiated weights of around 500, 700 and 900 g (Garcia i Rubert – Gracia Alonso, 1998: 219, Table 1). In the settlement of Sant Jaume, on the other hand, more than 900 loom weights were documented, many of them forming groups of 60-100 specimens.

To a lesser extent, ring-shaped loom weights have also been documented. This is a type of weight with a circular shape and a large-diameter central perforation, which is why they have also been called "donut" (Gleba 2008: 130-131) or "toroid" (Castro 1985). They have been found in a few sites, both in the Northeast, in settlements such as Puig de la Misericordia (Oliver *et al*. 2021: 75), and in the central area of eastern Iberia in settlements such as El Puig d'Alcoi (Grau – Segura 2013: 89).

3.3. Other artefacts

As for other tools related to textile activity, bronze needles stand out, of which a large number of different types have been found, and even moulds where they would have been made, at sites in the southeast such as Penya Negra and La Fonteta (González Prats 1992; 1993; 2014) and in the northeast of the peninsula (Graells *et al.* 2022). Due to its uniqueness, it is worth highlighting a bone artefact interpreted as spool knitting that was found in the Early Iron Age levels of Cerro de los Infantes (Dorado 2019: Fig. 7.117.b). This object has a hollow interior and has four points on one of its ends, as is common for this type of instrument used to weave cords or narrow tubes with woollen yarn.

4. EVIDENCE OF TEXTILE CONSUMPTION: FIBULAE, BELTS AND BUTTONS

No textile remains have been preserved in the Early Iron Age contexts of Eastern Iberia. This contrasts with the evidence documented in the 3rd and 2nd millennium BCE, periods from which substantial textiles are known (Alfaro 1984; 1992; Hundt 1991; Basso 2023; Basso *et al*. 2023). Moreover, it is not possible to directly compare and observe changes in the use and consumption of textiles. Nevertheless, the number and variety of preserved ornaments and elements related to forms of dressing, which can be indirectly linked to the textiles used, multiplies remarkably. We are referring to artefacts, mostly made of bronze, such as fibulae, pins, belt buckles, buttons and other elements and appliqués associated with the clothing of this period. Although the quantity and variety of this type of objects is beyond the scope of this text, it is possible to state in general terms the relevance of this evidence, among which fibulae and belt buckles stand out.

Fibulae are one of the most common items of clothing in the archaeological record. From the end of the 2nd millennium BCE these pieces spread throughout the Mediterranean, reaching the Iberian Peninsula, probably with new clothing fashions. They have been documented in practically all the settlements and necropolises of the Early Iron Age in Eastern Iberia (Camacho *et al*. 2022). They are possibly one of the most studied objects related to textiles from this period, and different types have been defined, such as elbow, double-spring, bilateral-spring, etc. At systematically excavated sites, such as Penya Negra and La Fonteta, their number is very high. At the first site, from Late Bronze Age contexts, but above all from the Early Iron Age, a total of 46 fibulae of different types were recovered, among which the double-spring fibulae, possibly of local manufacture, are the most important (Camacho *et al*. 2022: 177-180) (Fig. 4: 1-3). At La Fonteta their number exceeds one hundred, with double-spring pieces also predominating (González Prats 2014; Camacho *et al*. 2022: 180-187) (Fig. 4: 4-5). The presence of unfinished pieces or in the process of manufacture suggests the prominent role of this Phoenician enclave in the distribution of this type of piece, both regionally and to other territories (Camacho *et al*. 2022: 201). Other sites where this type of objects have been found are Los Saladares (Arteaga – Serna 1974), Peñón de la Reina (Martínez Padilla – Botella 1980), Cerro de los Infantes (Mendoza *et al*. 1981), Cerro de la Mora (Carrasco – Pastor – Pachón 1982), Les Casetes (García Gandía 2009) and Villaricos (Siret 1906), among many others.

The most striking and distinctive elements are the belt buckles. Most of them come from necropolises, although they have been recovered in settlements such as Penya Negra (González Prats 1982; Camacho *et al.* 2022), La Fonteta (González Prats 2014; Camacho *et al.* 2022) (Fig. 5) or Los Saladares (Arteaga – Serna 1975: 131). The main types from this period are those

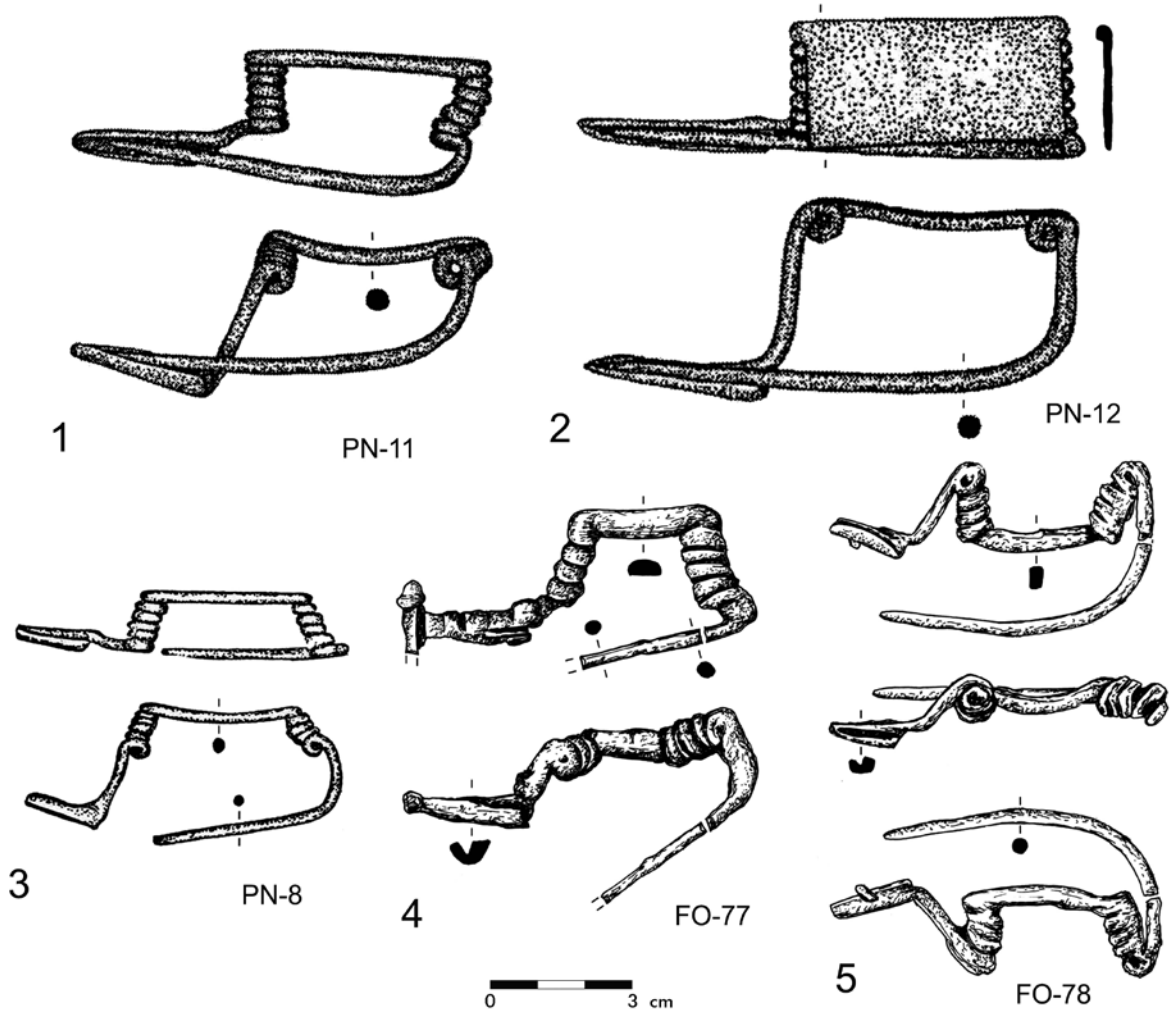

FIG. 4 Double-spring fibulae from Penya Negra (1-3) and La Fonteta (4-5) (from Camacho et al. 2022): 1-2 (González Prats 2001); 3 (González Prats 1982); 4-5 (Camacho *et al.* 2022). Drawings: M.ª D. Sánchez de Prado.

FIG. 5 Belt buckle from La Fonteta (Photo: MARQ).

with double hooks and those with a rhomboidal plate and a hook (Graells – Lorrio 2017; Camacho *et al*. 2022). Due to the context of the find and its excellent state of preservation, the belt with a rhomboid buckle with moulded decoration was found with part of its strap as part of a concealment in sector VII of Penya Negra (González Prats 1982), in a space adjacent to where the main concentration of spindle whorls was found (González Prats 1982: 374). As for the so-called buttons, some of them possibly used as decorative appliqués, different types have been found, being the hemispherical ones with a crossbar the most common from this period (Camacho *et al*. 2022: 197).

5. DISCUSSION

The Early Iron Age inaugurated important changes in the communities that inhabited Eastern Iberia. In our judgement, those related to the production and consumption of textiles must have been among the main ones. Although fabric remains are non-existent, the appearance of a large number of textile tools, mainly spindle whorls, and of new objects and clothing accessories, such as fibulae, buckles, and buttons, corroborate this. The main argument to support this hypothesis can be found in the quantitative and qualitative changes observable in the spindle whorls. In Early Iron Age contexts their presence increases. Unlike the whorls of previous periods, these are characterised by being lighter and by having mostly truncated biconical and spherical shapes. These types of spindle whorls, which will be characteristic during the Iberian period, are related to draft spinning and have been associated with the consolidation of wool as a textile fibre (Gleba – Harris 2019). They began to appear more frequently in Middle-Late Bronze Age contexts, at sites such as Cabezo Redondo (Basso – López Padilla 2019; Basso *et al*. 2023). However, their presence is still limited, and discoidal spindle whorls still play an important role, which has been associated with the tradition of producing spliced and plied plant fibre threads (Médard 2006: 61; Gleba – Harris 2019: 2341). In the Early Iron Age, discoid spindle whorls almost completely disappeared (Basso 2022a), resulting in the association of truncated biconical and spherical in shape, smaller and lighter, with the predominance of draft spinning

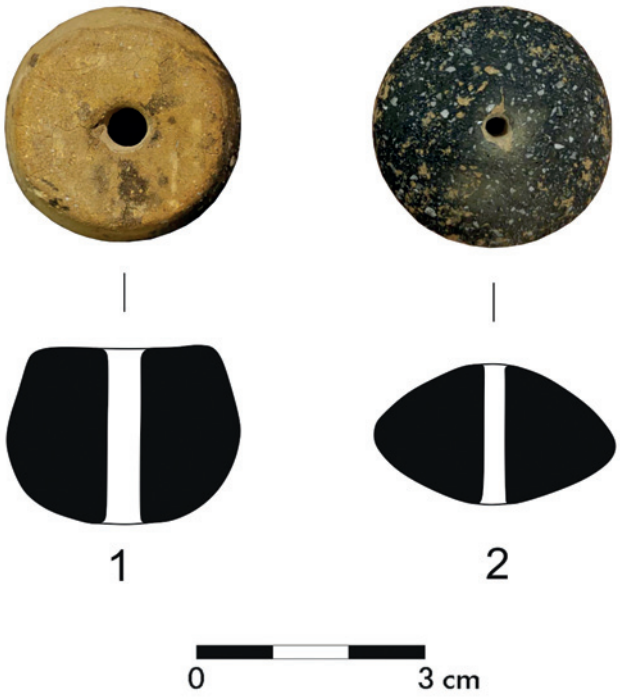

FIG. 6 Spindle whorls from Les Casetes: 1. Grave 3; 2. Grave 19.

to produce simple yarns of different thicknesses, probably with wool as the main raw material in use.

It is noteworthy that the first spindle whorls were also documented in tombs during this period, and that these are truncated biconical and spherical in shape, like most of those found in the settlements. It is also important that in these cases, both from the necropolis of Les Casetes (García Gandía 2009) (Fig. 6), the spindle whorls are associated with elements typical of this period, such as fibulae or objects characteristic of the interaction with the Phoenicians, such as red plates. The presence of spindle whorls in tombs would become spectacularly important in Iberian funerary rituals during the second half of the 1st millennium BC. In most of the Iberian necropolises, the tombs, especially the female ones, had spindle whorls in their grave goods. Among the most outstanding cases are tomb F-42 from l'Albufereta (Alicante) with 19 whorls (Rubio 1986: 72), tomb 200 from El Cigarralejo (Mula, Murcia) with 56 examples (Cuadrado 1987: 162) and tomb 586 from Cabecico del Tesoro (Verdolay, Murcia) with a total of 58 (García Cano 1997: 189). This phenomenon also developed in other nearby territories, such as in the Celtiberian area (Lorrio 1997) or the west of the Iberian Peninsula (Gomes 2017).

It is more difficult to infer the weaving production, especially because of the unequal presence of loom

weights throughout the East of the Iberian Peninsula, both quantitatively and typologically. The small number of evidence of truncated pyramidal and ring-shaped loom weights in Southeastern Iberia contrasts with what can be observed in the Northeast, where there is an abundance of contexts with oval loom weights with a flat base (Garcia i Rubert – Gracia Alonso 1998; Mateu 2016), truncated pyramidal, and even ring-shaped ones (Oliver *et al*. 2021) (Fig. 7). Of the first types mentioned, we found them in large quantities in La Ferradura and Sant Jaume, settlements located at the mouth of the river Sénia. The high number of loom weights from Sant Jaume, documented in concentrations of 60-100 specimens, but mainly the position in which they were found inside some rooms, seems to indicate that many of these concentrations correspond to high storage spaces and not only to looms (Mateu 2016; Álvarez Estapé *et al*. 2021). However, the large number of loom weights per grouping seems to be evidence of the use of large warp-weighted looms. This would be the case in rooms A4 and A5, two of the largest rooms in the entire settlement (Álvarez Estapé *et al*. 2021: 319). These concentrations and their distribution in the settlement have led to propose the existence of a textile "household industry" (Mateu 2016), which went beyond subsistence production, possibly controlled by a "regional chief" (Álvarez Estapé *et al*. 2021) and integrated in the "economy of prestige" (Sanmartí – Asensio – Jordet 2021).

A difficult aspect to address is the absence of loom weights in most of the Phoenician settlements excavated in the Southeast and South of the Iberian Peninsula. This important absence has been attributed to a major change in the weaving process. Among the changes introduced by the Phoenicians after their settlement on the Iberian coasts, the use of the two-bar looms without weights has been suggested (Ruiz de Haro 2017), a means of production that would leave no traces in the archaeological record because it was made entirely with perishable elements. According to this hypothesis, both in the Phoenician colonisation zones and in all their areas of influence, the small number of loom weights could be a response to the use of this type of loom instead of the warp-weighted loom (Ruiz de Haro 2017: 21). It should be noted that this interesting proposal does not take into consideration important issues such as the possible lack of firing of the loom weights or the small number of contexts excavated and published to date (Basso 2022a).

The absence of preserved textiles in Early Iron Age contexts from the south-eastern Iberia also makes it difficult to delve into all these important questions, as well as into a series of processes observable in other European and Mediterranean territories. We refer, on the one hand, to the use of wool as the predominant textile fibre and, on the other hand, to the production of twill fabrics (Bender Jørgensen 1992; Gleba 2008; Grömer *et al*. 2013). Researchers such as L. Bender Jørgensen (1992: 120) have called the period immediately preceding the Urnfield culture in Europe (9th – 8th centuries BCE): "the twill horizon". This type of fabrics, predominant among the textile remains preserved in the Hallstatt period contexts (Early Iron Age), are mostly made of wool, thanks to the elasticity of this fibre.

FIG. 7 Truncated pyramidal loom weights from Puig de la Misericordia: a. Loom weights during the excavation process (Oliver *et al.* 2021: Fig. 4.9); B. Set of loom weights under study (Oliver *et al.* 2021: Fig. 5.33).

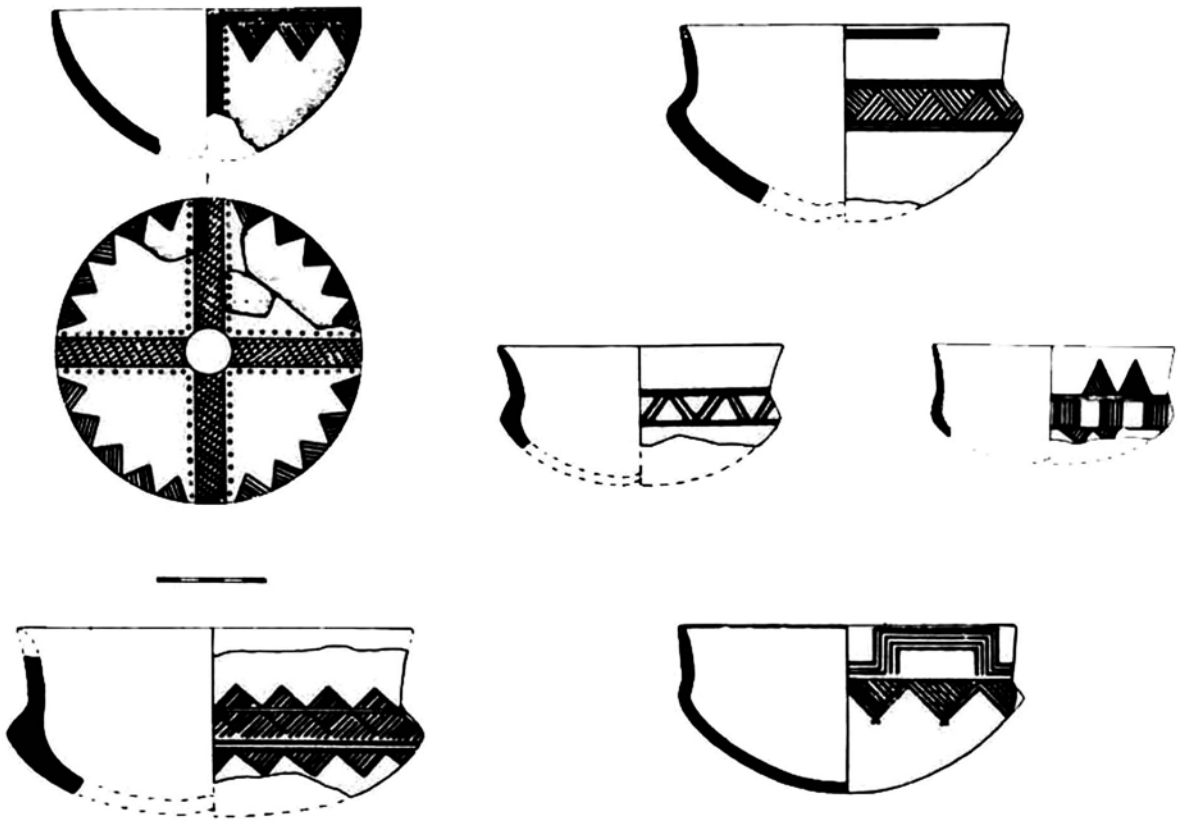

FIG. 8 Ceramics with geometric decoration from Penya Negra –PN I– (from González Prats 1992: Fig. 4).

In turn, many of the fabrics documented at that time in Central Europe are dyed (Grömer – Rösel-Mautendorfer 2013; Grömer 2016), as wool is the ideal material for this purpose.

In this sense, an indirect indicator could be suggesting the increased production of twill and dyed fabrics. This is the geometric decoration of Late Bronze Age ceramics. Some researchers (Ruiz-Gálvez 1993; 1995; Cáceres 1997) have stressed the possible relationship between the geometric decoration of painted or burnished ceramics from the beginning of the 1st millennium BC and the possible arrival on the Iberian Peninsula, and their subsequent local production, of textiles decorated with similar motifs. According to M. Ruiz-Gálvez (1993: 56), these ceramics reflect the impact on the indigenous populations of the peninsular coast of the arrival of rich oriental textiles in pre-colonial times and their local development in the Iron Age. Thus, the textiles, which due to the technical characteristics of their manufacture are limited to geometric decorative patterns, would offer an iconographic parallel to the geometric painted and burnished ceramics (Fig. 8) (Cáceres 1997: 129). Equally interesting is the relationship that both authors propose between the arrival of these new textiles and another significant indirect indicator: fibulae. For Y. Cáceres (1997: 129), luxurious decorated fabrics arrived in the Iberian Peninsula at this time accompanied by fibulae and other Mediterranean imports. This would have generated a new "fashion" in personal attire. Therefore, the arrival of fibulae from the transition from the 2nd to the 1st millennium BC (Carrasco – Pachón – Pastor 1985; Gomá 2019) and their persistence throughout the 1st millennium BC, as well as the use of other elements such as belt buckles and buttons, constitute an important indicator of changes in consumption and, necessarily, in the production of textiles.

Finally, it is worth mentioning that the production and trade of textiles by the Phoenician communities that inhabited the Iberian Peninsula has always been a very prominent aspect in historiography, especially with regard to textiles dyed with purple (Aubet 1998; García Vargas 2010; Ruiz de Haro 2017). The absence of dye production and textile dyeing structures in Eastern Iberia also prevents us from getting an idea of the relevance that this activity may have had during the Early Iron Age. However, the little evidence of

possible purple dyeing in the Phoenician colonies of southern Iberia, such as Cerro del Villar (Aubet 1998: 200) or Toscanos (Niemeyer 1998: 76-77), suggests that this type of practice was more widespread in the coastal settlements of the South, including the southeastern area, than the archaeological record to date has allowed us to observe. In this sense, we trust that in the not too distant future archaeology will provide evidence of textiles corresponding to this period characterised by important social and productive transformations, especially in the production and consumption of textiles.

6. CONCLUSIONS

Based on what has been explained and analysed, it is possible to suggest that significant changes in textile activity took place in the Early Iron Age. Although there is no direct evidence to investigate the wide diversity of textiles that must have been produced, the textile tools preserved clearly point to important transformations in the fabrics consumed with respect to previous periods. The large number of spindle whorls documented, as well as the size, weight and shape of these from Iron I onwards, suggest the majority use of woollen fabrics, which means that the garments would have been made mainly from this fibre at this time. In turn, the widespread incorporation of new ornaments and costume elements, such as fibulae and belt buckles, could be related to the use of new types of garments, less frequent in previous periods, which will be characteristic from this time onwards.

The small number of loom weights recovered in areas of eastern and south-eastern Iberia makes it difficult to make an indirect approximation to the technical characteristics of the textiles produced – diameter of threads, types of fabrics, thread density/cm, etc.–. Nevertheless, the establishment of wool as the predominant textile fibre could have meant the widespread development, as in other European territories, of the production of twill weavings and the use of dyes (Bender Jørgensen 1992; Gleba 2008; Grömer *et al*. 2013). In fact, in settlements in the Northeast such as Sant Jaume, where large concentrations of loom weights do abound, this seems to be confirmed. What also seems evident from the more than 900 weights found at this site is the beginning of processes of productive intensification in textile activity during the Early Iron Age. The fact that a large part of its production was oriented towards the production of textiles and that 30% of the ceramic fragments from the settlement are of Phoenician manufacture are also clear indicators that this settlement, and possibly its textiles, were perfectly integrated into the dynamic exchange processes developed in the western Mediterranean (Álvarez Estapé *et al*. 2021). Something similar can be observed at Penya Negra, where more than half of the spindle whorls were found in the same space: sector VII. This was considered by the excavator to be a possible "Phoenician quarter" within the indigenous city where various craft activities were concentrated (González Prats 1982; 1993; Basso 2022a). It remains to be assessed, in the absence of evidence along the eastern coast of Iberia, whether the production of purple textiles was also integrated into this dynamic, as has been found in other Mediterranean centres of production and exchange (Marín-Aguilera – Iacono – Gleba 2018).

In conclusion, all this data allows us to recognise that textile activity played an increasingly important role in Eastern Iberia, possibly from the end of the Late Bronze Age, but especially from the Early Iron Age onwards, in the consolidation of the elites and the integration of their textile products into the Mediterranean trade networks. Thus, it underwent a greater intensification of production and an increase in the degree of specialisation, something also observed in other territories of the central Mediterranean, such as the Italian peninsula between the 10th and 6th centuries BC (Gleba 2008: 192). This process of incipient specialisation, observable in a few but prominent settlements, will become generalised on a much larger scale during the second half of the 1st millennium BCE, fully involving all Iberian groups on the Iberian Peninsula coast (Basso 2022b).

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POLÍTICA EDITORIAL

Objectivos

A Ophiussa – Revista do Centro de Arqueologia da Universidade de Lisboa foi iniciada sob a direcção de Victor S. Gonçalves em 1996, tendo sido editado o volume 0. A partir do volume 1 (2017), a Revista Ophiussa converte-se numa edição impressa e digital da UNIARQ – Centro de Arqueologia da Universidade de Lisboa (ISSN 1645-653X / E-ISSN 2184-173X).

O principal objectivo desta revista é a publicação e divulgação de trabalhos com manifesto interesse, qualidade e rigor científico sobre temas de Pré-História e Arqueologia, sobretudo do território europeu e da bacia do Mediterrâneo.

Periodicidade

A Ophiussa – Revista do Centro de Arqueologia da Universidade de Lisboa publicará um volume anual. O período de submissão de trabalhos decorrerá sempre no primeiro semestre e a edição ocorrerá no último trimestre de cada ano.

Secções da revista

A revista divide-se em duas secções: artigos científicos e recensões bibliográficas. Excepcionalmente poderão ser aceites textos de carácter introdutório, no âmbito de homenagens ou divulgações específicas, que não serão submetidos à avaliação por pares. Isentas desta avaliação estão também as recensões bibliográficas.

Os autores / editores que pretendam apresentar uma obra para recensão devem enviar dois exemplares para a direcção da Revista Ophiussa: um para o autor/autora da recensão que será convidado para o efeito e outro para a Biblioteca da Faculdade de Letras da Universidade de Lisboa. Aceita-se igualmente a apresentação de propostas de recensões espontâneas.

Aceitam-se trabalhos redigidos em português, inglês, espanhol, italiano e francês.

Processo de avaliação por pares

Os artigos submetidos são sujeitos a um processo de avaliação por parte de revisores externos (double blind peer review).

Todas as submissões (artigos e recensões) serão avaliadas, em primeira instância, pela Coordenação Editorial, no que respeita ao seu conteúdo formal e à sua adequação face à política editorial e às normas de edição da revista. Os artigos que cumprirem estes requisitos serão posteriormente submetidos a um processo de avaliação por pares cega / double blind peer review (mínimo de dois revisores). O Conselho Científico, constituído pela direcção da UNIARQ e por investigadores externos, acompanhará o processo de edição.

Esta etapa será concretizada por investigadores externos qualificados, sendo os respectivos pareceres entregues num período não superior a três meses. Os revisores procederão à avaliação de forma objectiva, tendo em vista a qualidade do conteúdo da revista; as suas críticas, sugestões e comentários serão, na medida do possível, construtivos, respeitando as capacidades intelectuais do(s) autor(es). Após a recepção dos pareceres, o(s) autor(es) tem um prazo máximo de um mês para proceder às alterações oportunas e reenviar o trabalho.

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Os trabalhos só serão aceites para publicação a partir do momento em que se conclua o processo da revisão por pares. Os textos que não forem aceites serão devolvidos aos seus autores.

A lista dos avaliadores será publicada em ciclos de 3 anos, indicada no final da Revista Ophiussa (versão impressa e digital).

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A Revista Ophiussa segue as orientações estabelecidas pelo Commitee on Publication Ethics (COPE, Comité de Ética em Publicações): https://publicationethics.org/

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EDITORIAL POLICY

Objectives
Ophiussa – Revista do Centro de Arqueologia da Universidade de Lisboa started under the direction of Victor S. Gonçalves in 1996, with the edition of volume 0. After Volume 1 (2017) it became a printed and digital edition of UNIARQ – Centro de Arqueologia da Universidade de Lisboa (ISSN 1645-653X / E-ISSN 2184-173X).
The main objective of this journal is the publication and dissemination of papers of interest, quality and scientific rigor concerning Prehistory and Archeology, mostly from Europe and the Mediterranean basin.

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ÍNDICE