Significance of Textile Production in the Argaric Culture (Spain)

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Abstract:

In recent decades, research on the Bronze Age in the south-east of the Iberian Peninsula has focused mainly on analysis of the processes of hierarchy and social development. The valued archaeological indicators have been very diverse: from the ceramic and metallurgical specialization, to the normalization of funeral practices or the settlement pattern. However, only in recent years the importance of textile production in these processes has begun to be considered. With the present work we intend to evaluate the importance of this basic and fundamental craft, assessing the set of labour processes involved, the degree of specialization achieved, and the social value granted to textile products in the Bronze Age culture of El Argar.

Key words: *Textile Production, Bronze Age, Argaric Culture, Specialization, Social Development.*

Resumen:

En las últimas décadas, las investigaciones sobre la Edad del Bronce en el Sudeste de la península ibérica se han centrado preferentemente en análisis de los procesos de jerarquización y desarrollo social. Los indicadores arqueológicos valorados han sido muy diversos: desde la especialización cerámica y metalúrgica, a la normalización de las prácticas funerarias o el patrón de asentamiento. Sin embargo, sólo en los últimos años comienza a ser considerada la importancia de la producción textil en dichos procesos. Con el presente trabajo pretendemos evaluar la importancia de esta artesanía básica y fundamental, valorando el conjunto de procesos laborales implicados, el grado de especialización alcanzado y el valor social otorgado a los productos textiles en la cultura de El Argar.

Palabras clave: *Producción Textil, Edad del Bronce, Cultura de El Argar, Especialización, Desarrollo Social.*

INTRODUCTION

Research on the Bronze Age in the south-eastern Iberian Peninsula is almost a century and a half old. After a long period of establishing the bases for the sequencing and seriation of material necessary for recognizing and characterizing the Argaric culture (Siret and Siret 1890; Cuadrado 1950; Tarradell 1965; Lull 1983), in recent decades the studies have been orientated towards analysing social hierarchization and development (Arteaga 2000; Lull *et al*. 2009; 2011; Cámara and Molina 2011). Diverse aspects have been evaluated: from the containers and grave items (Lull and Estévez 1986; Lull *et al*. 2011), specialization of metallurgy, and ceramics (Lull *et al*. 2011; Aranda 2004), to the centralization of production of subsistence goods (Risch 2002; Lull *et al*. 2011). However, only in the last few years has textile production come to be considered another archaeological indicator within the framework of these processes (Risch 2002; Jover and López 2013).

Textile production became notable in the second millennium BC in much of the Mediterranean area (among others, Lucas and Harris 1962; Killen 1984; Barber 1992; Gilis and Nosch 2007; Gleba 2008; Andersson Strand and Nosch 2015). Not surprisingly, some of the final processes of textile activity – especially weaving and garment making – demand great skill as well as many hours of work in conditions often linked to labour specialization; and a division of labour which, by extension, can be related to the emergence of class-structured societies.

The objective of this work is to assess, based on archaeological evidence, the implications of textile production in the Argaric culture. In this sense, it should be borne in mind that this Bronze Age society, which developed from the end of the third to middle of the second millennium BC in the south-eastern Iberian Peninsula, has been categorized by some researchers as a chieftainship and by others as a state (Arteaga 2000; Camara and Molina 2011; Lull *et al*. 2009; 2011).

THEORETICAL APPROACH AND HYPOTHESIS

Overall, textile production is interrelated with a broad variety of production activities: agriculture, animal husbandry, harvesting, the treatment of wild resources, and various handicrafts (Gleba 2008; Gleba and Mannering 2012; Andersson Strand and Nosch 2015). Depending on the degree of labour specialization, it can also involve the need for specific spaces for the storage of raw materials, as well as their treatment and manufacture (Costin 2005; Jover and López 2013).

In short, textile production involves a complex chain of processes connected spatially, temporally, and technically. This requires careful planning and organization, from production and management of the raw materials, to the production of thread, to the final processes of preparing fabrics and the fashioning and sewing of garments (Costin 2013). Textile products could therefore be used as goods of high social value, especially considering the time invested in their preparation. These could furthermore acquire an exchange value, given their social role, in addition to their durability, quality, and ease of storing and transporting (Harris 2017).

In the case of the Argaric culture, one question is to what extent the preparation, exchange, and distribution of textiles could be controlled by its emerging elite class. Our starting hypothesis is that El Argar could be characterized as an early class society (Jover 1999: 165-181). In this type of social order, the community as a whole maintains ownership over objects and means of labour, but the elite has the power to appropriate a part of the product by developing tribute mechanisms without the need to exercise direct control over the herds or the land of the dominated groups, or over the processes related to the acquisition of primary raw materials or manufacturing of goods, which in general did not need full-time specialists (Bate 1984).

With regard to textile production, the elite appropriated a portion of the goods generated, either in the form of raw material or in the form of thread, cloth, fabric, or garments. Thus, together with other crafts, textile production must have played a prominent role in the creation of demand, as well as intragroup and intergroup identities, as reinforcement of social inequality.

The validation of these considerations requires empirical information, but most of the labour processes involved in textile production have left no material traces in the archaeological record. However, certain tools related to spinning and weaving have been preserved, as well as a relatively large set of textile remains. Via the analysis of observation units, such as the activity areas and their spatial distribution at the settlements and in the territory (Flores 2007), we can infer significant aspects of the labour processes involved and of the distribution – and in some cases exchange – of raw materials as well as textile products within the society as well as between societies.

OBSERVATION: EVIDENCE OF TEXTILE ACTIVITY

The documentation of archaeological remains related to textile production in Argaric settlements dates to the pioneering works of the brothers Henri and Louis Siret in the late 19th and early 20th century. In their excavations, they found many work tools, such as loom weights or spindle whorls, and even stems and seeds of burnt flax. They also found considerable amounts of metal objects, wrapped in fragments of linen, which were deposited inside the tombs as a part of the grave goods (Alfaro 1984; Hundt 1991).

More than a century later, the archaeological record has grown considerably. Currently, we have nearly 100 sources of evidences, documented in both domestic and funerary contexts, including remains of garments, shrouds, cloth, and, specially, concentrations of loom weights, interpreted mostly as the evidence of warp-weighted looms (Jover and López 2013: Table 1).

FIBRES

In the archaeological record few animal or plant fibres have survived. Notably wool, flax and other plant species such as esparto grass (*Stipa tenacissima*) and bulrush (*Scirpus Holoschoenus* and *Typha* sp.) have been found. At the moment, wool has been possibly identified only at the site of Castellón Alto, inside Grave 121 (Molina *et al*. 2003; Rodríguez-Ariza *et al*. 2004; Rodríguez-Ariza and Guillén 2007) and at the settlement itself, from a mass of carbonized material similar to foam. On the other hand, almost 100 archaeological contexts have provided evidence of flax and esparto (Jover and López 2013: 166-167, fig 20). In the case of flax, its presence is recorded in the form of seeds at many sites (fig. 1) (Buxó and Piqué 2008; Lull *et al*. 2015a; 2015b) and also, although in lower numbers, as fibres and fabrics of linen. The same can be said for esparto, used not only in rope making, basket weaving, and as material for construction, but also in making garments, in the same way as other fibre plants such as bulrush (Jover *et al*. 2001; Jover and López 2013: 154).

TOOLS

Tools that may be connected to some of the processes involved in textile production include needles, bone and metal awls, copper knives and daggers, spacers and spools. Use-wear analyses made in recent times indicate the great variety of work processes in which bone awls were used, particularly the perforation of leather and basketry (Le Moine 1994; Buc and Loponte 2007). On the other hand, knives and daggers could be involved in cutting and making garments.

With respect to needles, what appears beyond doubt is their involvement in sewing. There must have been wooden needles, but only those made of bone have survived. A particularly common type of bone needle was made using pig fibula. It had a perforation in the proximal epiphysis, through which the thread was passed (López Padilla 2011: 388).

Thread spacers, made of antler and used to facilitate the interweaving of warp and weft, are also found in settlements near the Argaric area, such as Cabezo Redondo (López Padilla 2011: 430). Probably most of them were made of wood, given the small number of documented pieces. Such is the case of the four-hole wooden thread separator which was found in the dwelling VIII of the Bronze Age site of Cerro de El Cuchillo, in Castilla-La Mancha. A small piece of charred thread was preserved inside one of the perforations. In addition, next to this singular piece, a large number of storage containers with charred grain, several silos and a significant concentration of loom weights of oblong shape with four perforations were recorded in this room (Hernández and Simón 1993: 53, fig. 3.9), which was destroyed by fire around 1800 cal BC.

Other objects that have been linked to textile activities are the clay spools, found until recently only at certain sites: Peñalosa (Contreras and Cámara 2000: 133), El Argar (Siret and Siret, 1890: 157, Lam 24), El Picacho de Oria (Hernández and Dug 1975) and Cuesta del Negro (Contreras and Cámara 2000: 133). These objects are the only ones that could be interpreted as bobbins or spools to store thread on the Argaric territory, since for the moment, no wooden bobbins or spindles with thread wound on them – such as those found at the Motilla of Santa María del Retamar (Galán and Sánchez 1994: 99) and at Terlinques (Jover *et al*. 2001) – have been recorded. If we consider that the wooden rods of these bobbins could have had prior use as spindle shafts, they would be a rare direct evidence of these types of objects in the archaeological record of the Iberian Peninsula. Finally, we should mention the wooden shaft of a possible spindle (in this case without yarn) found in Cueva Sagrada I, dating to the end of the third millennium BC, immediately preceding the Argaric period (Eiroa 2005).

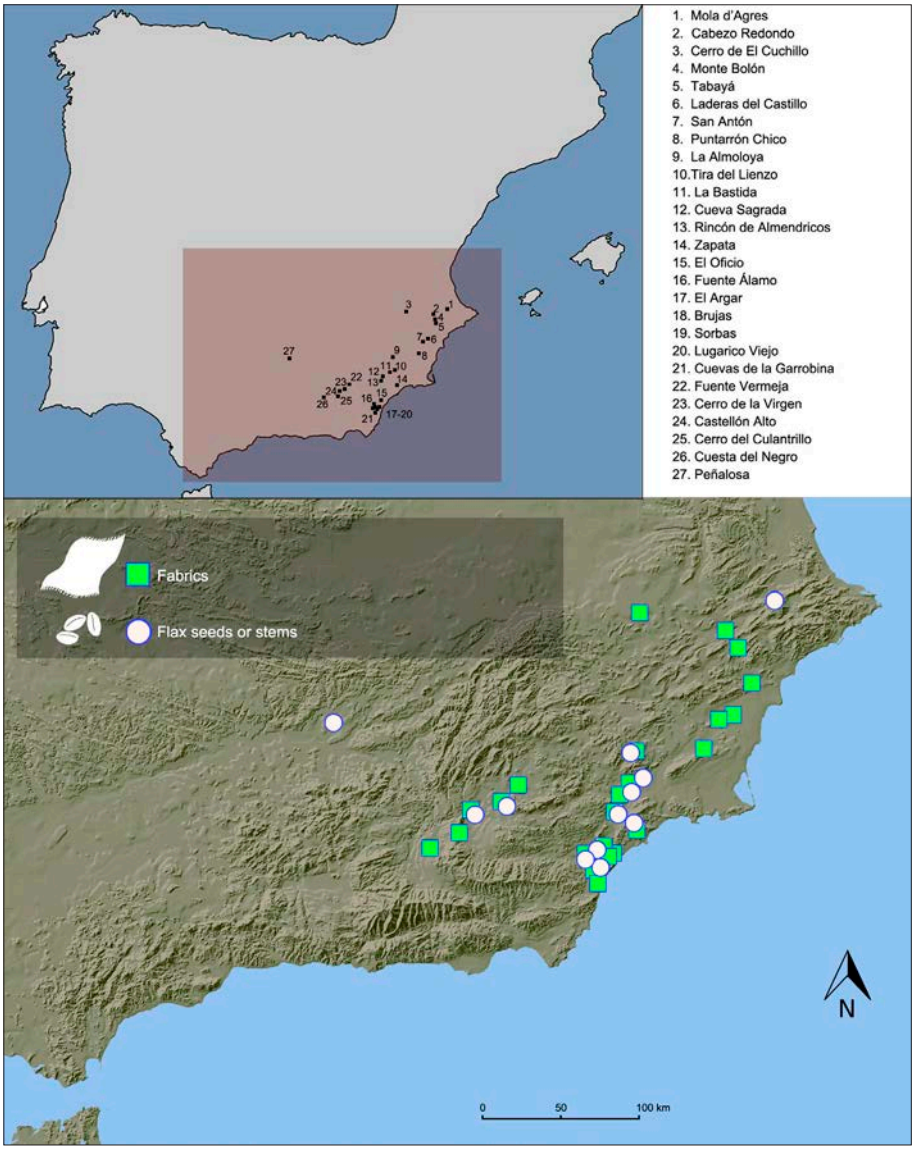

Fig. 1: Distribution of archaeological sites with presence of flax seeds or stems and fabrics (Authors).

The tools most directly linked to the spinning and weaving processes preserved in the archaeological record are, respectively, the spindle whorls and loom weights. The spindle whorls, documented already in the late Neolithic period (López Mira 2004), began to spread through the south-eastern Iberian Peninsula from the third millennium BC onwards. Their presence indicates an increase in the productivity, compared with preceding periods, as these whorls enable the production of a greater amount of thread in less time. Considerable diversity of the forms of the spindle whorls has been recorded, both in terms of morphology and weight as well as material used: clay, stone, antler, and bone. They are usually circular, with a central perforation, where the shaft of the spindle would have been inserted. The most common shapes in the second millennium BC are discoid and biconical; most whorls are made of fired clay. The discoid shape, the most common type from the Copper Age to the middle of the second millennium BC, has been documented at Argaric sites such as Zapata, El Argar and Fuente Álamo (Siret and Siret 1890), and also at other sites of the Argaric periphery, such as Cabezo Redondo (Soler 1987: 112). We could also include in this group spindle whorls made from deer antler, widely documented

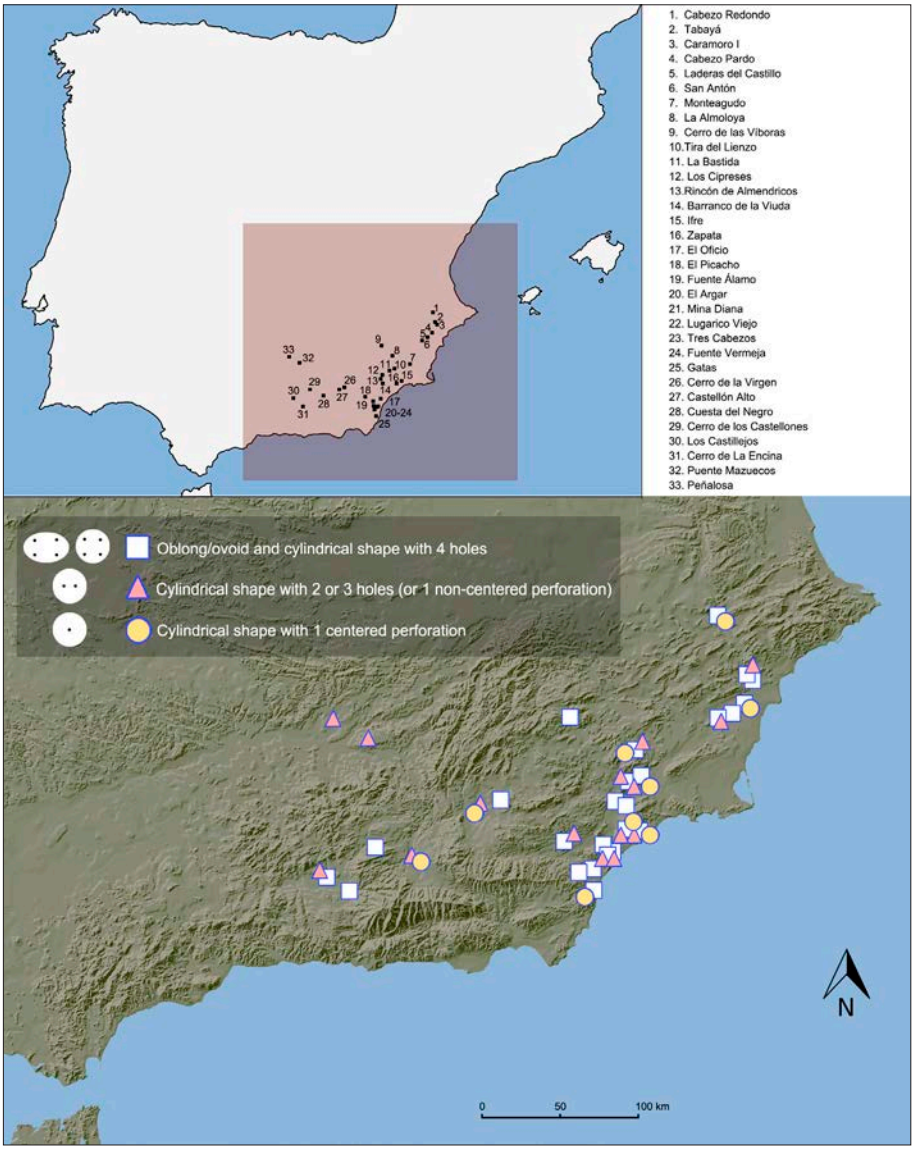

Fig. 2: Distribution map of the different types of loom weights in the Argaric culture (Authors).

from the middle of the second millennium cal BC (Basso 2018b), at sites such as Cabezo Redondo (López Padilla 2011) or La Almoloya (Lull *et al*. 2015b: 102). Biconical whorls, all made of clay, are found at El Argar (Siret and Siret 1890: 158, lam. 24), Cabezo Redondo (Soler García 1987: 112, fig. 39. 4, 6, 7 y 8), Laderas del Castillo, San Antón de Orihuela (López Mira 2004: 88), and Tabayá (López Mira 1995: 789, fig. 3.1). Rare pieces with an irregular cross-section, somewhat like a bitruncated cone, have been documented at sites on the Argaric periphery, such as Terlinques (Jover *et al*. 2001) and Cabezo Redondo (Soler 1987: fig. 39. 2 y 5).

With respect to the weight, we found a wide variation, ranging from less than 20 g to more than 100 g, with most weighing between 30 and 65 g (López Mira 1995: 790). Perhaps the most remarkable aspect is the growth in predominance of biconical whorls as the second millennium BC progresses, in a clear trend towards the standardization in ceramics of a type of tool that generally presents lack thereof.

Spindle whorls at excavated Bronze Age sites are relatively scarce. This could be explained by the fact that some of them were made from wood or some other perishable material. In any event, this aspect substantially changed

with the advance of the Late Bronze Age, and especially in the Iron Age, when whorls even started to appear as typical grave goods in female burials (Rafel 2007; see also Prados Torreira and Sánchez Moral in this volume).

The loom weights, on the contrary, are far more common. These objects are usually made of clay, although some examples of stone have been found in Argaric settlements such as Rincón de Almendricos (Ayala 1991: 174) or Peñalosa (Carrión 2000: 147, fig. 7.4,1). Loom weights vary in shape (oblong, ovoid, or cylindrical), size, weight, and number of perforations (between one and four). Often, they are found concentrated, isolated or grouped in sets of a several pieces inside domestic areas or in open spaces of the settlements.

In the Argaric context, the loom weights can be grouped into two general types, with some slight morphological variables. One general shape is ovoid, with some objects approaching spherical with an irregular rectangular cross-section, with one to four perforations, and of markedly different weights. One variant of this type comprises oblong/rectangular loom weights with slightly rounded sides and a rectangular or oval front, with four aligned perforations, and of considerable size – reaching more than 20 cm in length and 5 cm in thickness, and weighing up to 3 kg. All these variants have been recorded at different Argaric sites (fig. 2). The second general type includes cylindrical loom weights with two and in some cases one or three off-centred perforations. This is the only type recorded at the sites of Peñalosa (Contreras *et al*. 2000) and Castellón Alto (Contreras *et al*. 2000: 90). A variant of this second type of loom weight is cylindrical with a single central perforation. Its appearance in the archaeological record seems to be somewhat later, but prior to 1550 cal BC (López and Martínez 2014: 193) and it persists at least to the end of the second millennium BC. Its presence is attested, above all, in the northern and eastern areas of El Argar.

PRODUCTS

Practically all the garments and fabric fragments documented in the south-eastern Iberian Peninsula are made of linen. Exceptional remains were found of a possible wool cap and a legging of woven esparto in Grave 121 of Castellón Alto, a site at which a foamy carbonized material was found, this being interpreted as residues of the burning of a skein of wool (Molina *et al*. 2003; Contreras *et al*. 2000: 89; Rodríguez-Ariza and Guillén 2007: 67). In contrast, the number of fragments of garments, shrouds, or sheets of linen reaches more than 100 fragments (Siret and Siret 1890; Alfaro 1984; Hundt 1991). Currently, 98 examples are known at 22 settlements, almost all Argaric (Jover and López 2013). The only exceptions outside the Argaric area include fragments found in a burial in Cave No. 9 of Monte Bolón (Soler Díaz *et al*. 2008; Herráez and Acuña 2011; Jover and López 2013; Basso 2019) and a small fragment of fabric documented in Stratum IV of dwelling VII of Cabezo Redondo (Soler García 1987: 46).

The great majority of the extant linen fragments come from burials where they were preserved in direct contact with the metal objects (fig. 3). Only two cases are known in which the remains appeared in domestic contexts of Argaric settlements: Hut "V" of El Oficio (Alfaro 1984: 123) and Castellón Alto (Rodríguez-Ariza and Guillén 2007: 63).

Evidence for dyeing fibres or clothes continues to be extremely scarce. In fact, for the Argaric culture the most relevant are still the findings of more than a century ago by the Siret brothers (1890). They discovered pigment traces in the form of stripes going round the craniums from graves 356 (Siret and Siret 1890: 198; lam. xx.1 and 2) and 129 of El Argar (Jacques 1890: 397; tab. xxvi), while a thin layer of cinnabar covered some imprints of cloth preserved over a lump of clay in grave 797 (Siret and Siret 1890: 201). A similar imprint, though without traces of pigment, has been recorded in grave 111 of Fuente Álamo. In this case, it was possible to recognize part of a piece of fine linen, which in Hagg's opinion, could have covered part of the food among the grave goods outside the tomb (Schubart *et al*. 2004: 142). The debate concerning the possible origin of these and other pigment traces located on some skeletons continues (Delibes 2000; see also Martínez García in this volume). Although analyses confirm the presence of cinnabar on the bones and other elements of the interior of the burials, none have come from textile samples (Juan Tresserras 2004; López Padilla *et al*. 2012).

To date, the only known case of coloured fabrics that has been analysed are the fragments from Cueva Sagrada I (Lorca, Murcia). These present reddish colour from intentional dyeing of the fabric with madder (*Rubia tinctorum* L.), a plant native to Southern Europe and that grows wild around the Mediterranean region (Alfaro 2005: 237). The presence of iron and aluminium in the sample analysed suggests that the mordant used to fix the colour could have been alum.

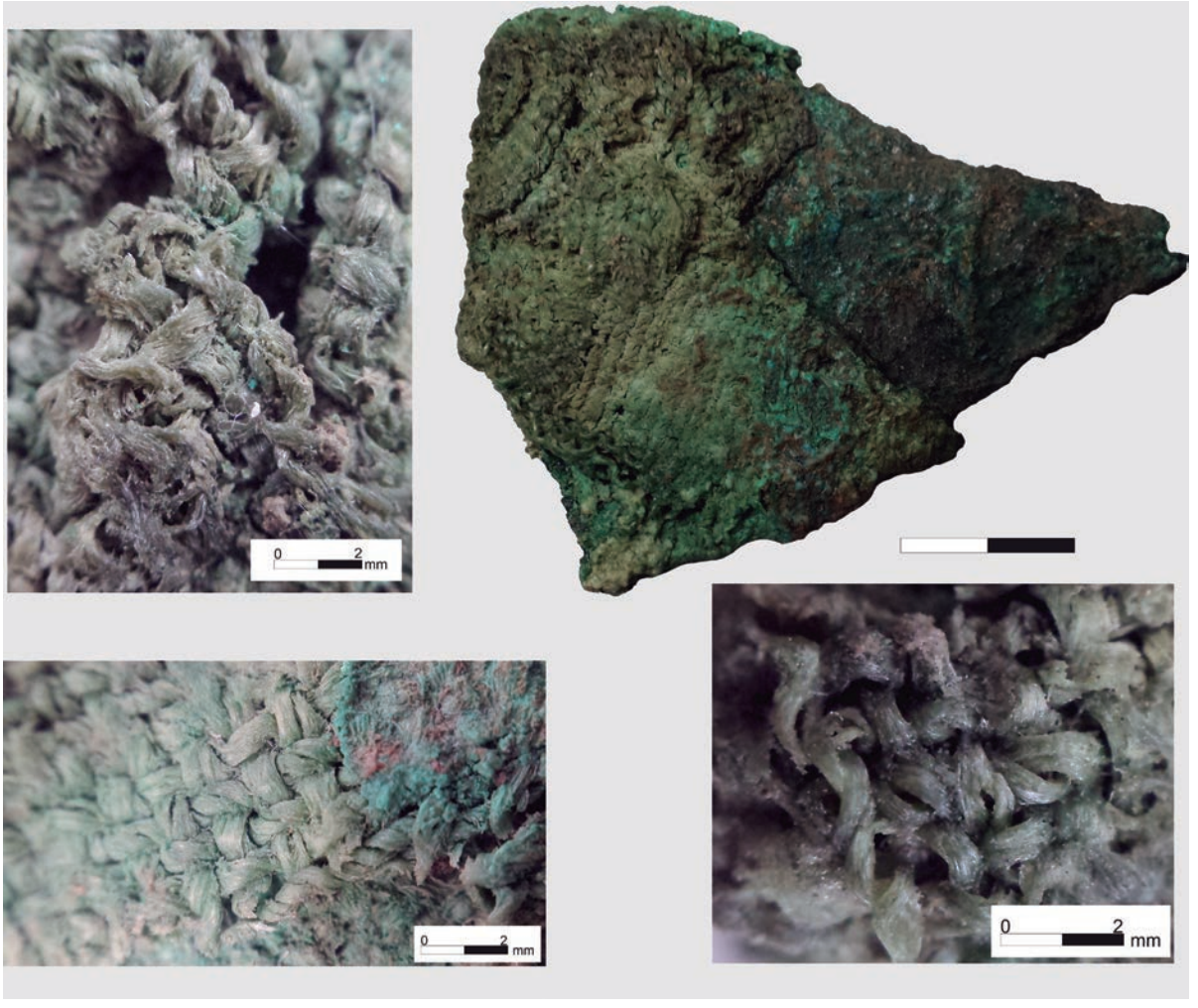

Fig. 3: Knife with mineralised textile remains of San Antón (Orihuela, Alicante). Piece deposited in Museo Arqueológico Provincial de Alicante, MARQ. J. Furgús Collection (MARQ).

The evidence reviewed above suggests that the use of linen (and possibly wool) garments was typical in the south-eastern Iberian Peninsula, but only their preservation in funerary contexts has enabled the recognition of their ubiquity.

INFERENCE: TEXTILE PRODUCTION AREAS

There are a considerable number of procedures for making textiles that could have been used and some that we have no record of, simply because all the tools used for this activity were made of perishable materials. If we look strictly at the archaeological record, the type of loom most commonly used was the warp-weighted loom (Alfaro 1984: 94-106; Contreras *et al*. 2000). The discovery of groups of weights at various settlements, in some cases aligned and associated with burnt rectilinear wooden beams – and even with spindle whorls or remains of yarn nearby – lead to the inference of their use and the existence of textile production areas in numerous contexts. However, we should not overlook that the presence of a set of weights does not necessarily imply the existence of a loom (Basso 2018a). In some cases, they may simply be stored, while in others, they may have been reused to construct ovens or other structures, as happened, for example, at Monteagudo (Medina 2003: 151, lám. 15). In any event, the presence of such concentrations of loom weights appears, in general, to be direct proof of the existence of looms.

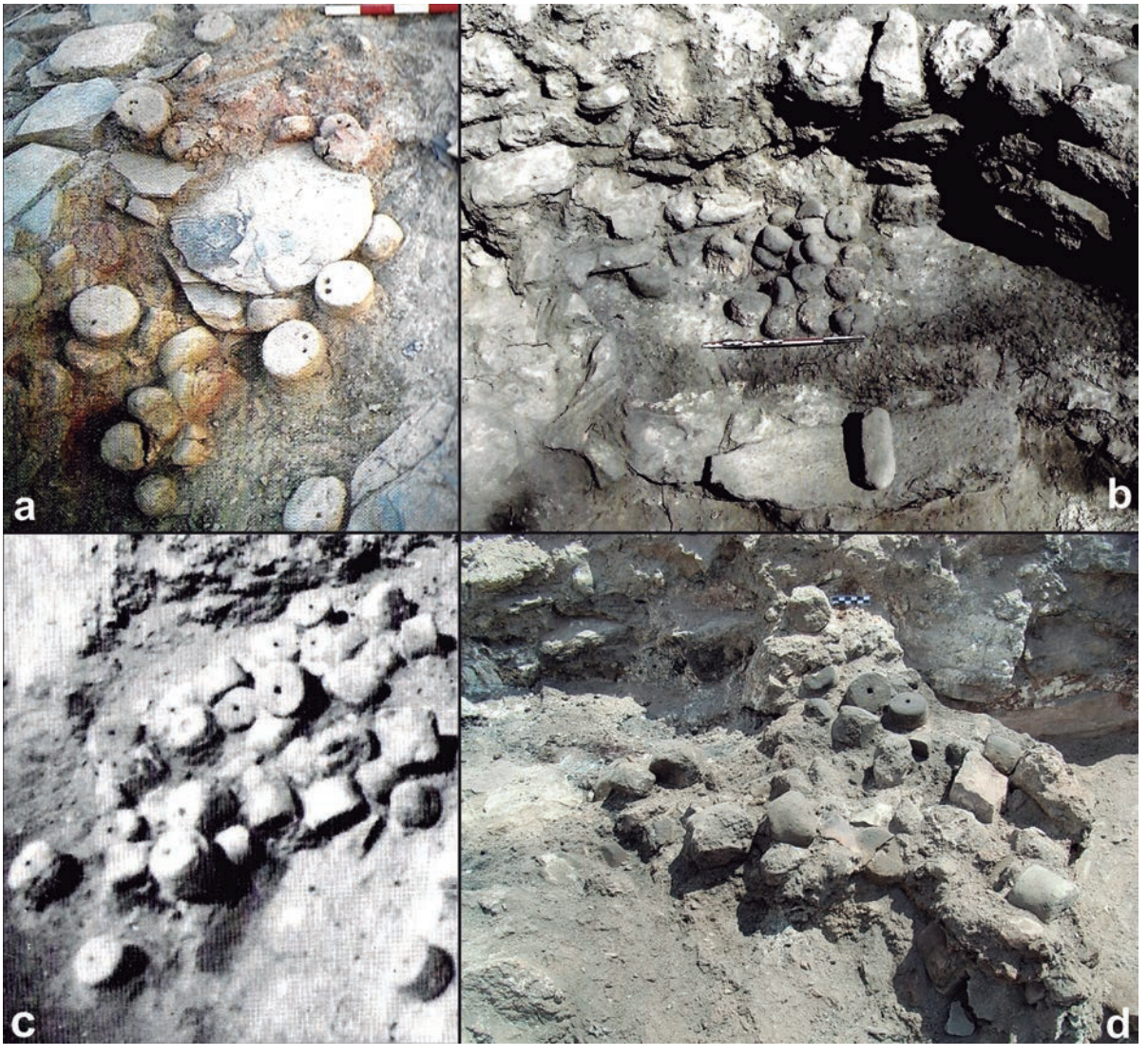

Fig. 4: Different findings of groups of loom weights in occupational contexts. a) CEIVa at Peñalosa (Baños de la Encina, Jaén) (Contreras 2000: 90); b) H55 at La Almoloya (Pliego, Murcia) (Lull *et al*. 2015b: 104); c) Department XVIII at Cabezo Redondo (Villena, Alicante) (Soler 1987: 302, Lam. 31); d) Upper circulation space at Cabezo Redondo (Courtesy of Hernández) (figures published with permission).

The number of settlements where isolated loom weights have been recorded is very large. Here we refer only to the instances where of a number of weights were found grouped in archaeological contexts. To date, groups of loom weights have been found in at least a dozen Argaric villages. In some of these, such as Fuente Álamo, Tira del Lienzo, Caramoro I or Los Cipreses, concentrations appear in a single building; at other sites, such as La Almoloya and Peñalosa (fig. 4), the largest concentrations were found in two of the housing units documented, although in other spaces – up to ten in the case of Peñalosa – isolated weights also appeared in varying numbers.

One of the sites with the greatest volume of information in this respect is Cabezo Redondo. During the excavations of J. M. Soler García (1987: 111-112), 128 loom weights with central perforations were documented at the site, found in 9 of the 18 dwellings identified. This number has grown over recent years thanks to the excavations at the site from 1987 to the present (Hernández *et al*.

2009; 2016). In Stratum V of Sector E of dwelling XVIII, a group of 52 weights were found resting on a piece of spirally-woven esparto mat. The weights were piled in a rectangular space in two groups and, on them, two charred wooden beams of some 10 cm in diameter were found (Soler García 1987: 87; 91), indicating the existence of a vertical warp-weighted loom. The weights differed in size and weight, but the measurements made by Soler for the most complete specimens gave mean values of 72 mm in diameter, 53 mm in thickness, and 387 g in weight (Soler García 1987: 112). Another 18 weights, probably stored, were located in the same dwelling. A second large concentration, with a total of 36 weights, appeared in dwelling XV (Soler García 1987: 77). Nevertheless, weights were also documented in dwellings I, II, IV, VI, VII, XIII, and XVII. Also, in recent excavations at Cabezo Redondo, both isolated and grouped loom weights have been documented in a many dwellings (Hérnández *et al*. 2016). Particularly notable is a new concentration of another group of about fifty cylindrical weights with central perforation, with the remains of thread, associated with a burnt wooden beam located in what is considered to be a passage way in the upper part of dwelling XXVII (Hernández *et al*. 2009). This loom was situated in this space in its final moments of use. Groups of weights associated with charred beams have also been recorded at Castellón Alto (Contreras and Cámara 2000: 129) and Rincón de Almendricos (Ayala 1991: 174).

It should be noted that all these textile production areas were located inside buildings and dwellings, with the exception of the above-mentioned concentration in the passage way of Cabezo Redondo. There, a great quantity of stone, ceramic, bone, and metal objects, and even a spindle whorl were also found (Hernández *et al*. 2009), however we cannot be sure of their contemporaneity with the loom. On the other hand, it is also common for the concentrations of loom weights to appear next to access doors, as in Peñalosa, where the loom weights of house IV and house VI were found next to the entrance door. The entrance of this last house is directly connected to the yard of the CEVIg, where activities related to metallurgical production took place (Contreras and Cámara 2000: 132, note 2).

This association of loom weight accumulations with passageways or open spaces, or with some of the larger buildings of the settlements, where many other productive activities occurred, is quite common. Another good example is Building H1 of Tira del Lienzo (Lull *et al*. 2015a: 194), where, apart from the weights, grinding tools were documented together with various vessels and silverwork (Lull *et al*. 2014).

DISCUSSION

Despite the perishable nature of textiles, the special preservation conditions in a considerable number of Bronze Age sites of the south-eastern Iberian Peninsula have made it possible to recognize basic aspects of the production and use of textile products. The presence of spindle whorls, loom weights, looms, and graves with the remains of garments or linen cloth in many of the excavated settlements – regardless of their size, location, or economic orientation – suggests that the processes related to spinning, weaving, and preparing cloth and garments constituted usual daily tasks.

Therefore, although we cannot firmly validate this due to the lack of more specific analyses, all findings appear to indicate that the acquisition and production of a good part of the textile goods and their consumption were only mediated by distribution processes. To date, we have no proof to confirm the existence of exchange processes, although it is presumed that these occurred. Nor is it possible to hypothesise about the organisation of production, for example: whether each domestic group was self-sufficient and produced its own cloth and garments; or whether some crafts activities, including textile making, were managed collectively by multiple domestic groups within each settlement joined together; or whether, on the contrary, textile production, distribution, and exchange were largely controlled by the Argaric elite, due to their high economic and social value.

Firstly, it bears pointing out that in the extensively excavated settlements only few areas – generally no more than two or three – show clear evidence of activities linked to textile production. This is inconsistent with the trend towards self-sufficiency of each domestic group, since it indicates spatial concentration of textile production only in certain areas of each settlement. However, it is no less certain that it is relatively common to find loom weights, isolated or in very low numbers, inside other buildings of the settlements analysed, as documented at Peñalosa, Castellón Alto or Cabezo Redondo. It is thus possible that textile production was carried out in the settlements more broadly than the concentrations of tools

in certain spaces might lead us to believe at first. We suggest that, in fact, the archaeological record is providing us with indices of differences, in relative terms, associated to the productive capacity of different domestic groups in each settlement rather than differences, in absolute terms, within those groups. Nevertheless, it is evident that, in order to develop and formulate this hypothesis more precisely, it would be necessary to have a greater quantity and better quality of information on the depositional and post-depositional history of the contexts excavated.

Other evidence points in the same direction. Zooarchaeological studies at small as well as large settlements indicate an intensive use of the secondary products derived from domestic livestock, including wool (Andúgar and Saña 2004; Rizo 2009), although without evidence of an exclusively wool-oriented flock management. This suggests that the composition and management of herds was probably controlled by each domestic group and/or lineage, with the aim of efficiently covering the broad range of their needs.

Similarly, the presence of flax stems and seeds in most of the extensively excavated settlements, enable us to infer that the cultivation of this plant was probably widespread, taking advantage of the favourable conditions for its growth in the south-eastern Iberian Peninsula. We have more evidence to assume a common use of other plant fibres, such as esparto, reeds, and rushes, for basketry, ropes, construction material, and also clothes. These plant species are abundant and easily accessible in many areas of the south-eastern Iberian Peninsula and were therefore likely available to every domestic group, lineage, or community. We conclude, therefore, that the access to the raw materials involved in textile production could be quite wide-spread.

Hence, it should not be surprising that looms or other evidence of textile production have been found in almost all types of settlements: farms or villages situated on the plane, such as Rincón de Almendricos or Los Cipreses; small fortified settlements, such as Caramoro I; settlements of diverse sizes and clearly diverse production orientations, such as Castellón Alto and Peñalosa; and in large

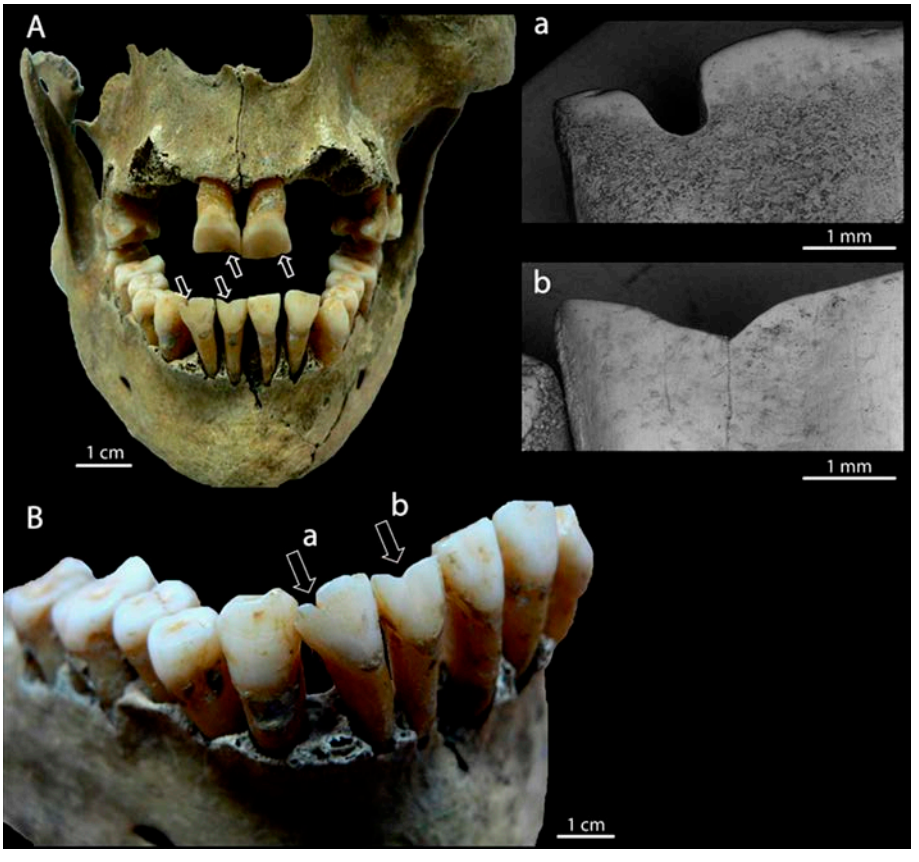

Fig. 5: Incisors with grooves in the shape of a "U" or "V" of a young woman buried at Cabezo Redondo (Romero 2016: 86, published with permission).

central settlements such as El Argar. It is also notable that at several well-excavated sites textile production areas shared the same space as other craft activities of major social interest, such as metallurgy and jewellery production. Cases in point include Peñalosa (Contreras and Cámara 2000: 129) and Tira del Lienzo (Lull *et al*. 2015a: 191-197).

The presence of warp-weighted looms together with metallurgical activities in particular buildings is documented from the middle to late Argaric period, in all cases after 1800-1750 cal BC, if we consider the dates available for the above-mentioned sites. These developments, which appear to be directed towards greater control of textile production processes, coincide temporally and spatially with notable shifts in the management of space in the settlements, characterized by the presence of buildings – in some cases quite large – in which diverse craft activities were concentrated (López and Jover 2014).

At the same time, there was a progressive standardization of certain textile tools, such as spindle whorls and loom weights. Towards 1800/1750 cal BC, biconical ceramic spindle whorls became common, while oblong loom weights disappeared as new types emerged. The cylindrical loom weight type began to dominate in the archaeological record, first with two, and occasionally with three, perforations, finally giving way to the ones with a single central perforation. All these technological changes indicate not only a major standardization in the work implements but, above all, the introduction of improvements in textile production and, possibly, a higher degree of craft specialization.

Finally, hypothesis proposed some years ago by Risch (2002: 75) regarding the association of women with textile activity based on the analysis of grave goods deserves a comment. While the social roles and position in political decision-making processes of some men was emphasised through their association with arms, women's importance in the social productive processes, specifically in connection with garment production, was demonstrated through their association with metal awls and knives or daggers in their tombs. Women would have been fundamental in the economy in relation to the textile activities. In this sense, evidence of wear in the teeth – incisors with in the U- or V- shaped grooves – of some women buried at Cabezo Redondo (fig. 5) (Romero 2016: 85-86), could have been related to the continued to spinning or processing of fibres, and as such would be a useful indicator of the possible link of women with textile production.

CONCLUSION

As opposed to what occurred with other crafts or basic production activities, textile production has not, according to our results, been adequately assessed in relation to the processes of social development during the second millennium BC in the south-eastern Iberian Peninsula. In general, we conclude that, quite to the contrary, it has been underestimated for several reasons, two of which bear highlighting:

1. Firstly, because due to the scarcity of textile evidence preserved in the archaeological record, the positivist and verificationist standpoints, still dominant in archaeological research, hold that what cannot be seen does not constitute proof and therefore cannot be used to formulate a hypothesis.

2. Secondly, because, in the light of comparative ethnography and ancient iconographic evidence, textile production (particularly spinning and weaving) has been considered an activity of women, and thereby (although not explicitly) seen as a domestic, and therefore secondary, activity of little relevance in the study of social development processes.

However, the development of textile activities necessarily implies the participation of a large number of people in multiple work processes related to obtaining wool, flax, and other plant fibres, in their processing and treatment, and in the production of a wide variety of products: clothes, bags, caps, bedlinen, sacks, and blankets, among many others. Equally so, this is an activity that also required varied and numerous tools, from awls and bone or metal needles to spindle whorls and loom weights of clay and wooden warp-weighted looms, whose manufacture in turn would have required the participation of numerous craftspeople. All this, in short, represents an enormous volume of work dedicated to producing a type of consumer goods common in the core of the social group.

Textile production thus does not appear to be an activity of scant relevance in the Argaric Culture. On the contrary, it unites a series of processes, sequentially linked, with those that cover basic needs such as clothing and protection for the body, among other necessities. The participation and labour cooperation of the entire group in these processes would require effective planning and coordination on the part of some members of the group. In the case of this work being undertaken within the extended family group or lineage, the production would have the aim of covering the needs of all the members of

the group, and a surplus could be used to exchange for other goods. In the case of an early class society, both the raw materials, whether processed or not, as well as the textiles or even the finished garments, could have served as tribute. We still do not have the means to answer the question as to whether or not the elite that began to gain power during the development of the Argaric society succeeded in controlling certain processes of textile production (Lull *et al*. 2011; López and Jover 2014), and if so, to what extent. Such control would point to the localisation of weaving in specific buildings of Argaric settlements, in the same space where other activities of special social relevance were undertaken, such as manufacturing of metal products, jewerly or even ivory work (López Padilla 2011). Further study is needed to clarify these and other questions.

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