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The Bronze Age of Southwestern Iberian Peninsula: endogenous evolution *versus* migration stimuli

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Abstract

Geographically, the Bronze Age of Southwestern Iberian Peninsula encompasses the Portuguese South, the province of Huelva and part of that of Badajoz. In recent years, our knowledge about the pre and protohistoric archaeology of the Iberian southwest, complemented by archaeometric research of various types, has undergone an enormous increase. This research has been showing that a dispersed settlement is a recurrent trace during the Bronze Age, while only by the end of the 2nd millennium BC, during the Late Bronze Age, fortified settlements appear. Moreover, Bronze Age burials occur in a wide variety of structures, namely in stone cists (isolated or grouped in a necropolis), pits, hypogea, and also in reuses of collective funerary monuments of Neolithic or Chalcolithic chronology. On the other hand, pottery shapes, where carinated vessels and burnished surfaces are usual, appear to undergo a weak evolution over Bronze Age times. The copper-based metallurgy, characterized by arsenical coppers, also does not show a great evolution, as bronze only becomes common during the Late Bronze Age, despite the existence of earlier evidence of its production and use. Nevertheless, some contacts and trade (exotic materials) with other peninsular regions or even with the Mediterranean area are visible in the archaeological record, mainly at the beginning and at the end of this whole cultural period. Although ancient DNA studies are only beginning for the Southwestern Bronze Age, either this DNA data or the current archaeological evidence do not seem to indicate the existence of relevant migrations, but rather an endogenous evolution of the communities that inhabited this region of the Iberian Peninsula. However, there was a rupture with the Neolithic and Chalcolithic social order and an effective demographic breakdown both detected at the end of the 3rd millennium BC, on the onset of the Bronze Age.

Resumo

A Idade do Bronze do Sudoeste abarca, geograficamente, o sul de Portugal e a província de Huelva e parte da de Badajoz, em Espanha. Em anos recentes, o desenvolvimento do conhecimento acerca da arqueologia pré- e proto-histórica do Sudoeste ibérico, complementado pela pesquisa arqueométrica em diversos domínios, experimentou um enorme incremento. A investigação arqueológica tem mostrado que, durante a Idade do Bronze, nesta região, o povoamento disperso de planície é uma característica recorrente. Só no final do II milénio a.C., isto é, durante o Bronze Final, surgem os povoados de altura fortificados. Por outro lado, as estruturas funerárias da Idade do Bronze do Sudoeste apresentam uma grande variedade de arquitecturas, designadamente cistas em pedra (isoladamente ou formando necrópoles), fossas e hipogeus, além da reutilização de monumentos funerários colectivos anteriores, do Calcolítico e, mesmo, do Neolítico. As formas da cerâmica, onde os vasos carenados e as superfícies brunidas são usuais, não parecem sofrer uma grande evolução ao longo da Idade do Bronze. Também a metalurgia de base cobre não parece mostrar uma evolução apreciável, sendo caracterizada por cobres arsenicais, para, apenas no Bronze Final, as ligas de bronze se generalizarem, apesar de existirem evidências da sua produção e uso, nesta região, a partir de meados do II milénio a.C. Contudo, alguns contactos e, também, algum comércio (designadamente de materiais exóticos) com outras regiões peninsulares ou, mesmo, com a área do Mediterrâneo são visíveis no registo arqueológico, principalmente nos tempos iniciais e finais de todo este período cultural. Embora a investigação científica recorrendo a análises de ADN humano esteja apenas no seu início, designadamente no que se refere à Idade do Bronze no Sudoeste Ibérico, quer os poucos dados existentes de ADN antigo, quer a evidência arqueológica “clássica”, não parecem sugerir a existência de migrações relevantes, mas sim uma evolução endógena das comunidades que habitaram esta região da Península Ibérica. Contudo, deverá ter-se em conta que se assistiu a uma rutura com o padrão de povoamento neolítico que se tinha prolongado pelo Calcolítico, bem como à ocorrência de um colapso demográfico, detectáveis no final do III milénio a.C., isto é na transição para a Idade do Bronze.

1. Introduction

It is due to the German archaeologist Hermanfrid Schubart the first definition and characterization of the Bronze Age of Southwestern Iberian Peninsula (SWBA), which geographically encompasses the Portuguese South (the entire region south of the Évora parallel), the province of Huelva and part of that of Badajoz, in Spain (Fig. 1). This definition, formulated during the seventies of the last century, was essentially based on funerary grave goods, which came, overwhelmingly, from burials in usually individual stone cists (Schubart, 1971a; 1974; 1975). Schubart considered the cists — rectangular or trapezoidal stone boxes, commonly built up with four upright slabs and covered by another slab, where the body was deposited in fetal position — as the typical and almost unique funerary structure of the SWBA.

The SWBA is in the sequence of the “Horizonte de Ferradeira” (Ferradeira Horizon), also defined by Schubart (1971b), which occupies the same geographic region. This Horizon is characterized by individual burials, often in

large ovoid cists, that allowed the deceased to be buried in an extended position. These cists were built up with several slabs placed vertically, containing Bell-Beaker pots without decoration and Palmela points as grave goods. Often these burials reuse ancient megalithic monuments, mostly with single depositions (Mataloto, 2017). The “Horizonte de Ferradeira” would establish the transition between the Chalcolithic and the Full Bronze Age. However, a Beaker occupation over previous fortified settlements has been identified later and continues to multiply in the archaeological record throughout the southern region of Portugal. This finding leaves no room for a culturally significant moment to frame the characteristics proposed for the “Horizonte de Ferradeira” (Lago & *alli*, 1998; Valera, 2000; 2006; Valera & Filipe, 2004; García Rivero, 2008; Mataloto, 2010; Soares & Silva, 2010), since there is synchronism between contexts from both natures (Soares, 2008; Soares & *alli*, 2007). Thus, the Ferradeira Horizon will continue to be an essentially funerary construction, framed in the process of individualization

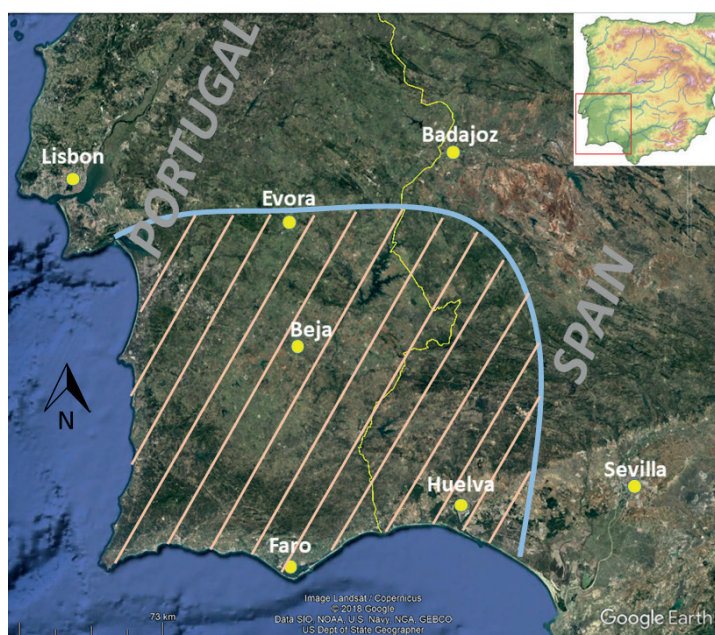


Fig. 1 – The southwestern region of the Iberian Peninsula (dashed).

of the funerary gesture that will mark the transition to the Bronze Age, taking place within a society where the Bell-Beaker elements circulated and were or were not integrated.

If the rise of SWBA can be considered well defined by Schubart, the *terminus* of the SWBA was never fully characterized by the German archaeologist, although a late phase mentioned by him with ceramics having burnished decoration would be contemporary of the earlier societies of the Iron Age (Schubart, 1971a; 1975). According to Schubart, the “Horizonte de Ferradeira” would date from 1800 to 1500 BC, while the SWBA would be chronologically comprised between 1500 and 700 BC, being divided into two Phases: Bronze I and Bronze II.

In recent years, our knowledge about the pre and protohistoric archaeology concerning southern Portugal has undergone an enormous increase mainly due to numerous archaeological field excavations, complemented by archaeometric research in various fields. These excavations were integrated in research projects or associated with measures to minimize impacts on cultural heritage carried out in the context of the implementation of the Irrigation Network of the Alqueva Dam.

In addition, there has been a great development of studies concerning ancient DNA in recent years, which has allowed to interpret sudden and extensive changes in the demographic pattern, as well as to understand the

origin of some important technological and cultural innovations during Prehistory. A debate about these changes resulting from the circulation of ideas or from human migrations has been usual. Genomes obtained from ancient biological remains can provide information on past population histories, allowing to verify, for instance, that the neolithization of the Iberian Peninsula is associated, as in other European regions, with a genetic influx originating, essentially, in the Middle East (Szécsényi-Nagy & *alii*, 2017). The Early Bronze Age of Eurasia also was a dynamic period with major cultural changes, namely by the middle of the 3rd millennium BC when the archaeological record testifies a new social and economic formation in Eastern and Central Europe which quickly replaces the Neolithic agriculture mode or the Chalcolithic social order. It is the so-called Corded Ware culture that developed in this region, as a result of a strong people migration from the Early Bronze Age Yamnaya culture, inducing a steppe-related ancestry into Eastern and Central Europe (Allentoft & *alii*, 2015). The Bell Beaker culture in Iberian Peninsula, and in great part of Europe, is contemporaneous of the Corded Ware and related cultures, but unfortunately very little information has yet been obtained regarding the genome of Bell Beaker populations of the Iberian Peninsula. Therefore, no evidence has been obtained, with an exception that will be mentioned later, indicating the existence of migrations that could explain the cultural change recorded during the onset of Bronze Age in the Iberian Peninsula (Allentoft & *alii*, 2015; Szécsényi-Nagy & *alii*, 2017; Olalde & *alii*, 2018).

On the other hand, in another archaeometric field, a new database of radiocarbon dates has enabled to build a more reliable chronology (Table 1) than the one proposed earlier by Schubart. The Early SWBA, corresponding in part to the “Horizonte de Ferradeira”, notably to its last centuries, will have begun in the 3rd millennium BC, perhaps in its last quarter, while the Middle SWBA occupies almost the entire 2nd millennium. Finally, the Late SWBA corresponds to the time interval between the last century of the 2nd millennium and 750 BC, just before Early Iron Age societies made their appearance and begun to consolidate throughout the concerned region.

In view of these chronological boundaries, the following paragraphs are intended to describe the evolution of various parameters or vectors that characterize, from a technological, social and cultural point of view, the communities that inhabited the Peninsular Southwest during the Bronze Age.

2. The evolution of SWBA communities

2.1. Habitat

Settlement structures were particularly unknown when Schubart prepared his study on the SWBA assuming, due to their invisibility, the absence of fortified settlements. Thus, it was proposed that this archaeological record would correspond to a particularly sparse population network of open villages and mobile communities leaving scarce archaeological marks. However, archaeological research has been showing that this panorama should be tinted.

The “Horizonte de Ferradeira” is an essentially funerary construction as we saw before, but coeval occupations with Beaker pottery over ancient fortifications have now been identified (Valera, Mataloto & Basílio, 2019). Beaker ceramics has also been recorded in another kind of monumental structures, the so-called ditched enclosures that were found and have become very common in southern Portugal (Valera, 2015).

Some of the former Chalcolithic fortifications have been the subject of archaeological works showing that these walled enclosures were built up during the first half of the 3rd millennium BC. But by the middle of this millennium, habitat structures and walls surrounding them were destroyed and new huts and walls with a different architectural design were built over the ruins. This new settlement usually occupies a smaller area than the previous one. Porto das Carretas, not far from Évora, is an example of these walled enclosures. The stratigraphic sequence shows two occupation phases: Phase I, attributable to pre-Beaker Chalcolithic, whose archaeological contexts can be dated from the end of the 1st quarter to the middle of the 3rd millennium BC, and a Phase II, which provided Bell-Beaker pottery from the international stylistic group, dated from the 3rd

Bounderies	cal BC (1σ)	cal BC (2σ)
<i>Late Chalcolithic (“Horizonte de Ferradeira”)</i>		
Initial	2596–2565	2623–2552
End	2116–2058	2129–2026
<i>Early SWBA (“Horizonte de Ferradeira”)</i>		
Initial	Transition from the 3 rd to the 4 th quarter of 3 rd millennium	
End	2116–2058	2129–2026
<i>Middle SWBA</i>		
Initial	2116–2058	2129–2026
End	1131–1071	1167–1047
<i>Late SWBA</i>		
Initial	1131–1071	1167–1047
End	772–747	782–728

quarter of the same millennium. Among these occupation levels was a layer of abandonment covering the ruins of Phase I buildings (Silva & Soares, 2002, Soares, 2013), indicating a hiatus of occupation between the two Phases. Corresponding to Phase I, a defensive system with three wall lines was identified as well as habitat structures, namely circular plan huts. Above that layer of abandonment several structures dominated by a tower with circular huts standing against its walls, all occupying the central area (the highest) of the Phase I settlement, characterize Phase II. Finally, the abandonment of the site occurred during the last quarter of the 3rd millennium. A very similar situation occurred in São Pedro (Redondo) further west, where several towers and huts have been built over the previous fortification debris (Mataloto, Costeira & Roque, 2015). The region under study, specifically the region of Alentejo, has one of the major concentrations of ditched enclosures in the Iberian Peninsula. Ditched enclosures are dwelling and meeting places visited repeatedly and possibly for short time periods by mobile and dispersed populations, to carry out a multiplicity of activities within the enclosed areas. It must be noted that these monumental structures are associated, besides the ditches, with large number of pits. Researchers agree that the act of building these sometimes enormous enclosures and associated structures may have been a very significant social event in itself. Ditched enclosures appeared earlier than the walled ones. The first ditched enclosures can be dated from the second half of the 4th millennium BC (Late Neolithic period), but during the first half of the following millennium their number largely increase (Márquez & Jiménez, 2013; Valera, 201; 2015; Valera

Table 1 – Chronology for Late Chalcolithic and Early, Middle, and Late SWBA, based on radiocarbon data (following Mataloto & alii, 2013, Quadro IV).



Fig. 2 – Pit fields surveyed in the rectilinear layout of the irrigation pipelines. A, B - Horta do Cabral 6 (Torrão, Alcácer do Sal); C - Casarão da Mesquita 3 (S. Manços, Évora).

& *alii*, 2017). Some of them developed into complex sites with a large dimension of several tens of hectares (as, for instance, Porto Torrão, near Ferreira do Alentejo (Valera & Filipe, 2004), or Perdigões, near Reguengos de Monsaraz (Valera, 2012)). Only very few and smaller ones were built during the last quarter of the 3rd millennium, namely Horta do Albardão 3, near Évora (Santos & *alii*, 2009), and Bela Vista 5, near Beja (Valera, 2014). The disappearance of ditched enclosures is dated to the late 3rd millennium BC, being associated with significant and profound structural, social and ritual changes in these communities. By the end of the 3rd millennium the Chalcolithic architecture had vanished with an abrupt ending of those large enclosures (fortified and ditched enclosures), which together with the progressive emergence of individual burials are clear signs of the dissolution of the Neolithic and Chalcolithic social order and of an effective demographic breakdown (Valera, 2015). As we saw above, genomic data does not seem to support people migration to play a role in this process, given the limited genetic affinity found between Beaker people from Iberian Peninsula and central and western Europe. However, another study (Martiniano & *alii*, 2017) concerning genomic data from a small set of ancient individuals from the Portuguese territory (10 from the Middle Neolithic to Late Neolithic/Early Chalcolithic and 4 from the Middle SWBA) also suggest, as indicated by other studies already mentioned, a significant genetic influx during the Early Neolithic originating in the Middle East. On the other

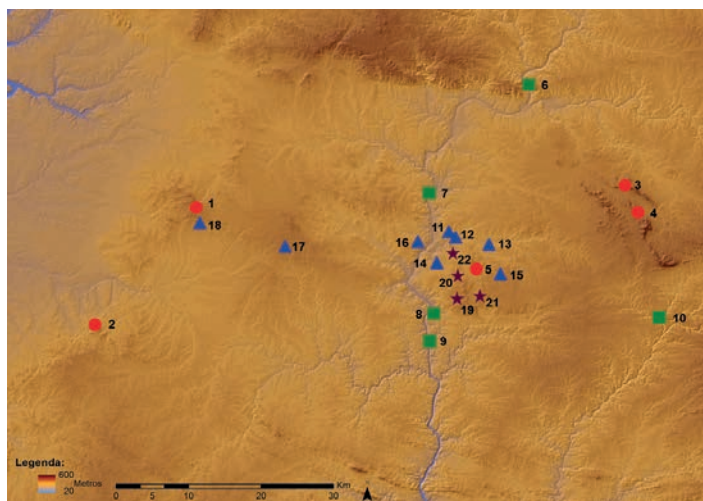
hand, the sample of 4 Middle SWBA analysed individuals suggest “detectable, but comparatively modest, steppe-related introgression present at the Portuguese Bronze Age” albeit “all three Iberian BA males [2 individuals from Torre Velha 3 and one from Monte do Gato de Cima 3, both Middle SWBA necropolis at Serpa, Alentejo] are R1b, the haplogroup that has been strongly associated with Steppe-related migrations” (Martiniano & *alii*, 2017). Nevertheless, the sample is too small and we should wait for new studies that will allow more reliable conclusions.

In the southwestern Iberia, the first half of the 2nd millennium BC reveals a total non-existence of monumentality in relation to the non-funerary architecture. Archaeological research has been showing that, in the first centuries and in the following centuries, i.e. during all the Middle SWBA, the habitat areas do not appear to undergo any modification over time. It would be a dispersed settlement revealed by “pit fields” (Fig. 2), open sites inserted in flat areas without any remains of positive structures, where pits that are sometimes mixed with burial structures (pits, hypogea, cists) are recurrent traces. However, it should be noted that almost all of these sites were recorded and studied during archaeological rescue work related to the implementation of the Alqueva irrigation network, which conditioned the research carried out since it was limited to the straight sections of pipelines, not exceeding the width of ditches to be excavated for their implantation. Thus, the true dimensions of these pit fields were not usually determined, as well as their spatial relationship with eventual settlements of builders and users of those pits. However, it must be taken into account that in the periphery of the southwestern region defined by Schubart and followed in our work, some Middle Bronze Age fortified settlements are known — it is the case of El Trastejón, near Aracena (Hurtado, García Sanjuán & Hunt Ortiz, 2011), Castillo de Alange, near Badajoz (Pavón, 1995), and Evoramonte, not far from Évora (Mataloto, 2013; Mataloto & *alii*, 2013).

In SWBA, positive architectures with an impact on the landscape only reappear during the Late Bronze Age, more specifically by the end of the 2nd millennium BC. These are fortified settlements located in hilltops or on rocky spurs

of banks of major rivers, although settlements inserted in flat zones, apparently without any defensive structures, also existed (Fig. 3). Some (very few) apparently fortified small settlements, not yet investigated, should be added to large hilltop settlement networks. The data currently available on the Late SWBA settlement network in the Guadiana basin, the best studied region, allow to infer how the various types of habitat could be articulated but, on the other hand, many questions remain, in particular about the synchrony or diachrony between the various human occupations, the seasonal or permanent character of the so-called open settlements and the function of those apparently fortified small settlements (Mataloto, 2012; Soares, 2013).

The model that can be built to explain and interpret the current archaeological record will necessarily be controversial or, at least, should be considered as a hypothesis to be tested in the future with the acquisition of more data. Thus, the known habitat sites may be grouped into four sets: i) large fortified settlements on hilltops; ii) large fortified settlements on the banks of the Guadiana and its tributaries; iii) open settlements on flat zones; iv) apparently fortified small settlements. In the first two groups there will be chieftain settlements. Outeiro do Circo, Ratinhos, Crespa further South, or Evoramonte, Castelo Velho da Serra d'Ossa or Monsaraz to the North, given their size, their geographical situation and their material culture, meet the requirements to have become chieftain sites. Other sites of these two groups, as well as open settlements, whether seasonal or not, and the apparently fortified small settlements would be dependent on them (Soares, 2013) in what was called settlement system networks (Mataloto, 2015). The open site of Santa Margarida (Serpa), whose material remains are practically made up of thousands of ceramic fragments, with almost total absence of other artefacts related to domestic and production activities, could correspond to a meeting place for populations on the left bank of the Guadiana, where rituals, perhaps related to water, would be practiced, being the hundreds of pottery fragments with burnished ornaments a testimony of those rituals (Soares, 2005).



2.2. Burial practices

As mentioned above, Schubart considered the cists as the typical and almost unique funerary structure of the SWBA. Nowadays it is known that burials can occur in a wide variety of structures: not only in cists, isolated or forming part of necropolis of diverse extension, inserted in tumuli of diverse architecture, but also in pits of rectangular or circular plants (silo-like pits), in hypogea (artificial caves constituted by a funerary chamber and an atrium, also presenting several architectures), and also in reuses of collective funerary monuments of Neolithic or Chalcolithic chronology.

The “Horizonte de Ferradeira”, as defined by H. Schubart (1971b; 1975), corresponds to a change in the funerary ritual — to the Chalcolithic collective tombs, hitherto in use, succeeded purposely built individual graves or individual inhumations in well delimited spaces, however reusing collective tombs. Tholoi of Monte da Velha 1 (Vila Verde de Ficalho, Serpa) and Centirã 2 (Brinches, Serpa) are two examples of this reuse of old monuments published more recently (Soares, 2008; Henriques & alii, 2013), although several others with similar situation are known from ancient excavations (Mataloto, 2017). In the chamber of the first monument, a disturbed skeleton of an adult individual aged 35/40 years old, with no visible pathological changes in the few bone remains recovered (Silva & alii, 2008), was found beneath the ceramic grave goods and the stone structure that protected them (Fig. 4). The high state

Fig. 3 – Late SWBA settlements in the Guadiana basin (following Soares, 2013, Fig. 2). Hilltop settlements:
 1 - Outeiro do Circo;
 2 - Cerro da Mangancha;
 3 - Serra Alta;
 4 - Álamo;
 5 - Castelo de Serpa.
 Fortified settlements on the banks of Guadiana and tributaries:
 6 - Ratinhos;
 7 - Laço;
 8 - Misericórdia;
 9 - Crespa;
 10 - Passo Alto.
 Open settlements on the plain:
 11 - Casa Branca 1;
 12 - Salsa 3;
 13 - Entre Águas 5;
 14 - Santa Margarida;
 15 - Cidade das Rosas 4;
 16 - Folha do Ranjão;
 17 - Pisões 5; 18 - Arroiteia 6. Apparently fortified small settlements:
 19 - S. Brás 1;
 20 - S. Gens;
 21 - Moitão d'Altura (Alpedrede 3);
 22 - Quinta do Pantufo.

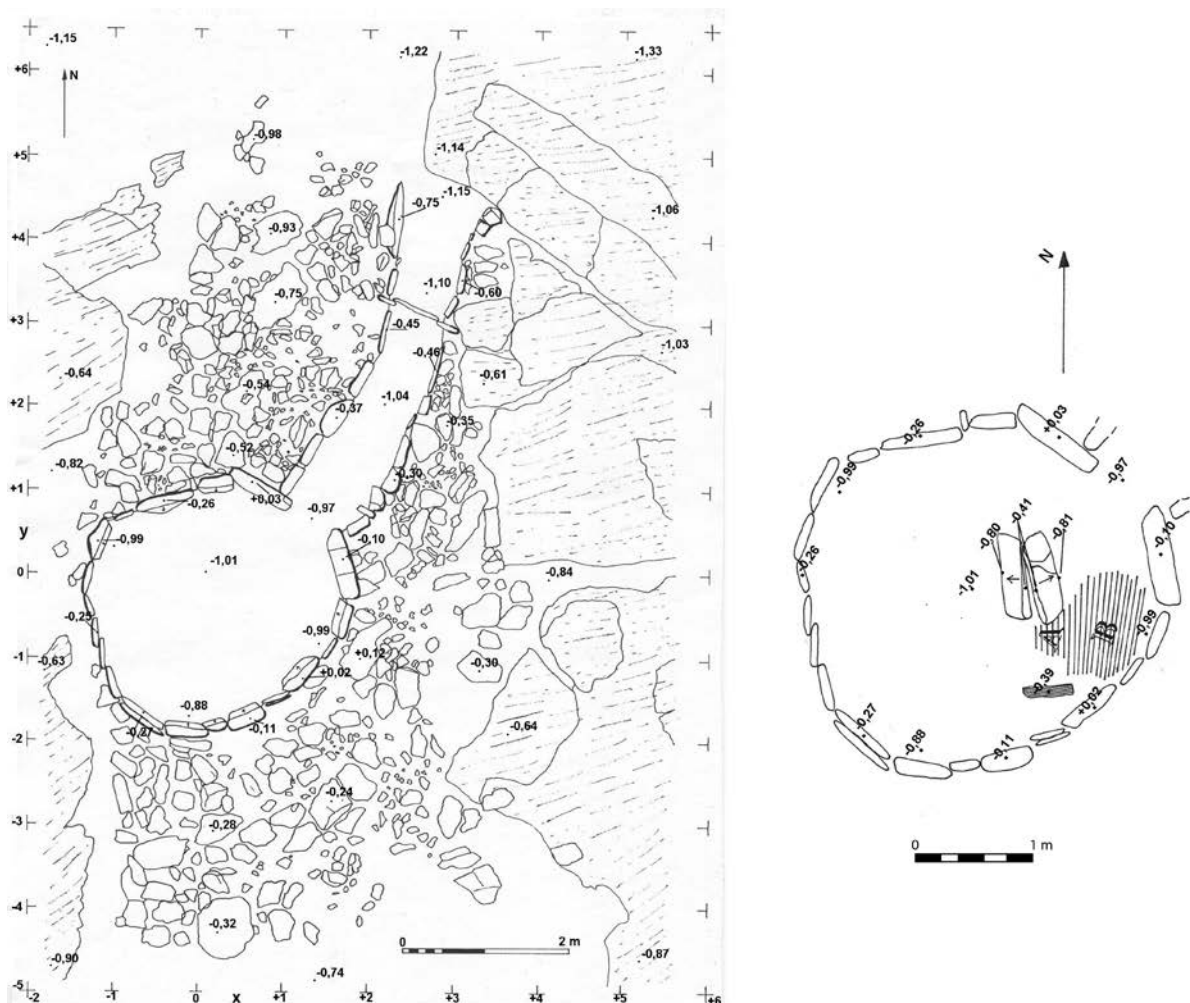
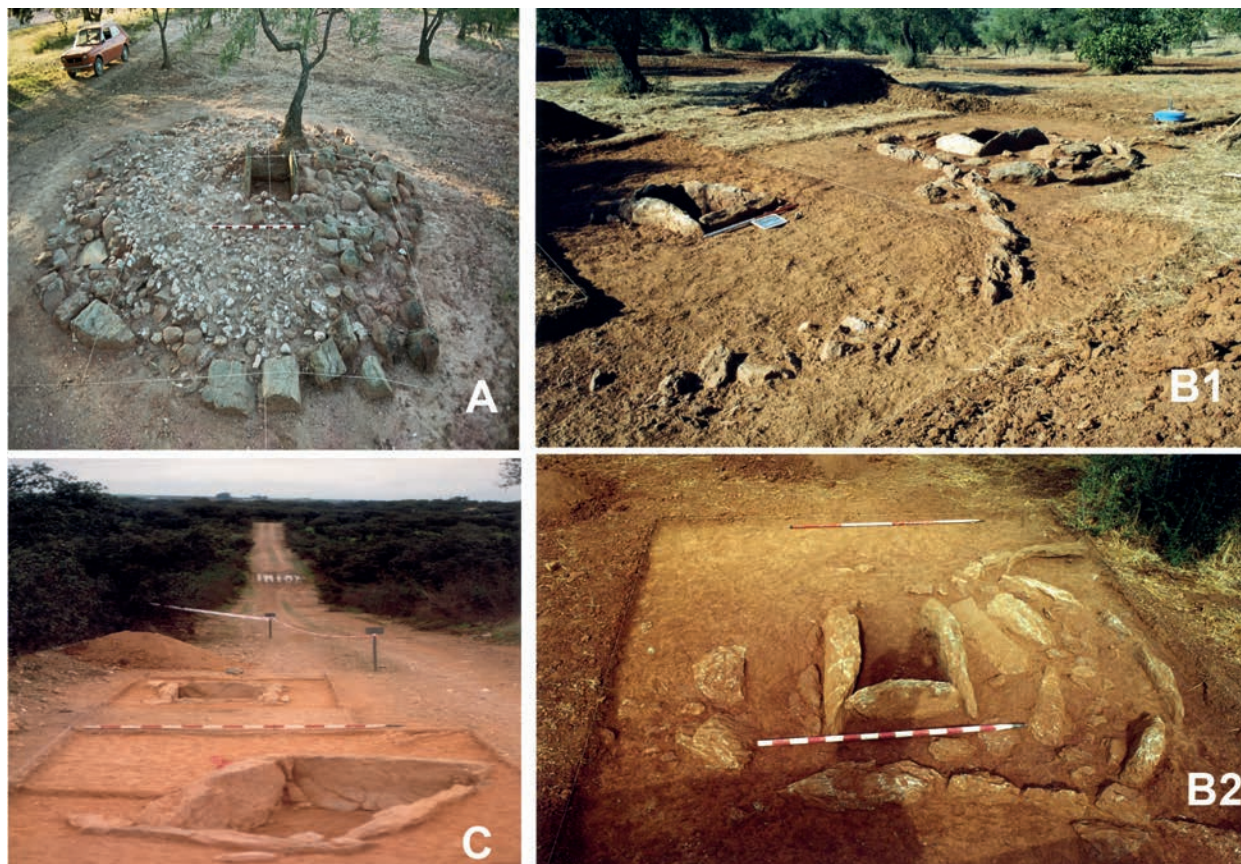


Fig. 4 – Tholos MV1 (Vila Verde de Ficalho, Serpa). A, B (dashed zones) - human bone remains of a secondary burial (following Soares, 2008, Figs. 4 and 12).

of fragmentation, not only of the bones, but also of the grave goods (three ceramic vases, being one of them a Bell-Beaker without decoration), allow to suggest that we are facing not a primary but a secondary inhumation. Centirã 2 was also a tholos, consisting of chamber, corridor and atrium, where several burials were recorded on the chamber ground floor with some grave goods such as Bell-Beaker vases without decoration, archer armbands, a Palmela point and a V-perforation button. Radiocarbon dating of these skeletons allows ascribing this funerary occupation to the 2nd half of the 3rd millennium BC, i.e. to the “Horizonte de Ferradeira” (Henriques & alii, 2013).

Stone cists (Fig. 5) are, as it is known, one of the most common types of graves during the Middle SWBA. The dimensions of these structures are variable, although the major axis

rarely exceeds one meter in length. The two larger slabs of the funerary box are usually locked by two smaller ones (corresponding to the head and feet areas), while small stones help in this locking and flatten the area where the large roof slab rests. The closure of the cist can be reinforced by the use of an animal grease with hydrophobic properties, which would make it waterproof, as it was the case in the grave of Herdade do Montinho (Vale de Vargo, Serpa) (Ribeiro & Soares, 1991) and another one at Folha das Palmeiras (Mourão) (Paço & Leal, 1962–1963). Cists may contain one or more inhumations, although usually only contain one. The deceased was usually deposited in lateral decubitus, with the upper and lower limbs flexed, that is, in the so-called fetal position, not being covered by earth. The cists may be apparently isolated — Herdade do Montinho, Carapetal, Santa



Justa, Barranco do Salto (Soares, 1994) — or forming more or less extensive cemeteries — Atalaia (Ourique) (Schubart, 1975). No tumulus has been reported in most isolated cists but, for instance, in the Talho do Chaparrinho necropolis (Vila Verde de Ficalho), one of the cists was inserted in a true cairn, consisting of blocks of diorite, delimited by shale slabs in a horizontal position, being the whole *tumulus* covered by rolled white milky quartz pebbles (Soares, 1994) (Fig. 5A). In the Carapinhais necropolis (Sobral da Adiça), cists with different orientations (Fig. 5B1) are inserted into circular enclosures, delimited by slabs placed vertically and filled by other shale slabs and stone blocks placed horizontally (Fig. 5B2) (Soares & alii, 2007). Stone cists, whether isolated or in cemeteries, usually have different orientations. At the Carapinhais necropolis, two of the cists inserted in the larger diameter circles have a NW-SE orientation, while those inserted in the smaller diameter circles have a SW-NE orientation. Two cists at the Bugalhos necropolis (Serpa), which are about 2 m apart (Fig. 5C) and whose contemporaneity,

lato sensu, offers no doubt, have also different orientations — while one has an E-W orientation, the other is oriented in the ESE-WNW direction (Soares, 2000). In this case, these different orientations, which do not correspond to the orientation of the schist plans of the rock soil where the cists are implanted, may imply that they were built at two different times of the year, assuming that their builders wanted to give them an E-W orientation through the observation of the sunrise (or sunset).

In addition to the inhumations in cists attributable to Middle SWBA, hypogea are also another common type of grave with this chronology. The first one to be recorded in southwestern Portugal was the Belmeque's grave (Vale de Vargo, Serpa) (Schubart, 1974; Soares, 1994), where two adults (one male) were buried in the chamber, but whose skulls apparently were absent (Oliveira, 1994, p. 185). These hypogea consist in an atrium that gives access to a chamber dug underground (Fig. 6). The access to the chamber is usually blocked by slabs sometimes involving a black greasy earth containing an organic

Fig. 5 — Cists.
A - Talho do Chaparrinho;
B - Carapinhais;
C - Bugalhos.



Fig. 6 – Hypogeum at Torre Velha 3. A - atrium and funerary chamber, B - black greasy earth and stone blocks closing the chamber entrance.

material — beeswax and propolis were identified in Torre Velha 3 and Horta do Folgão hypogea (Frade & *alii*, 2014).

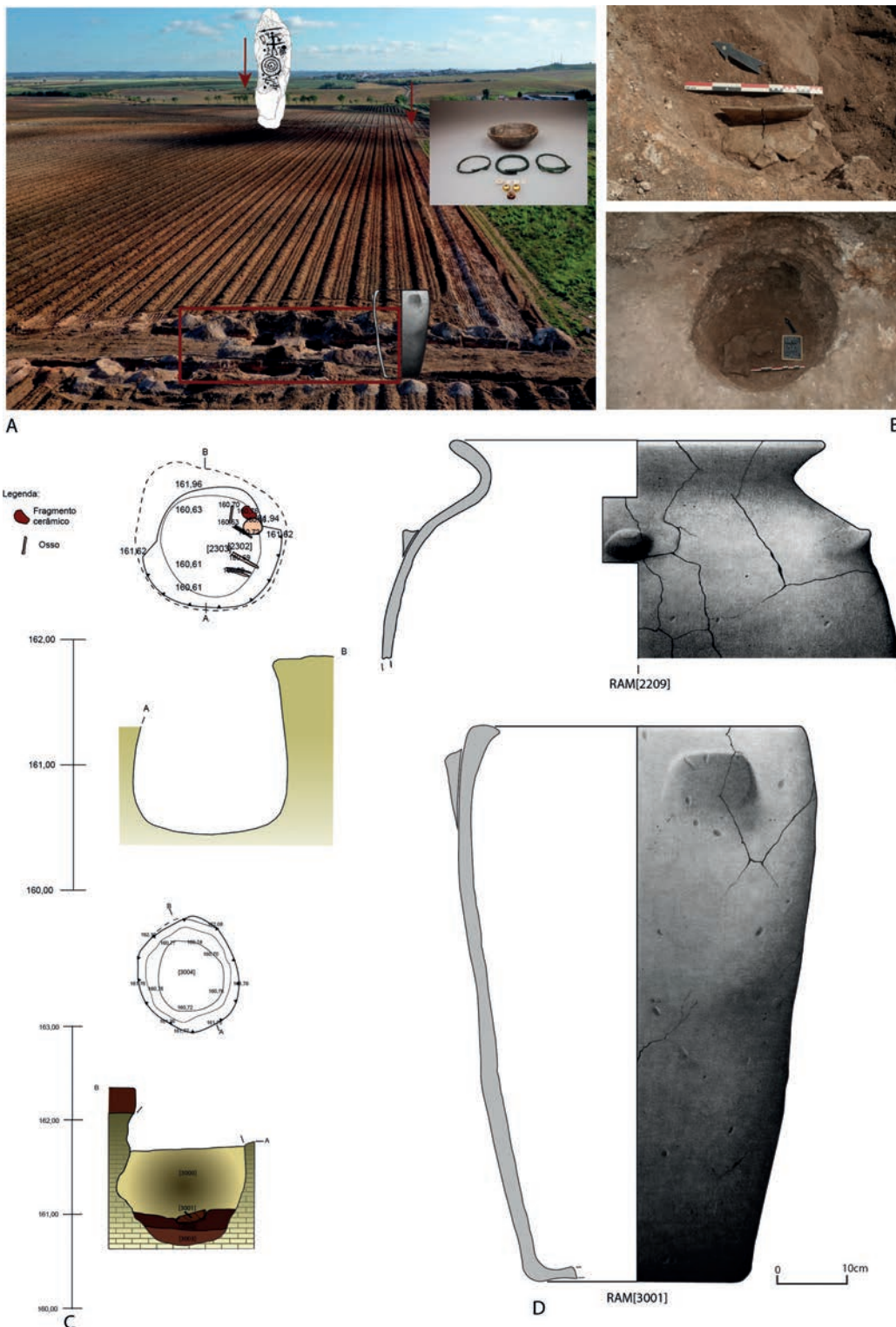
There are hypogea in the southwestern Iberian Peninsula dating from the 2nd half of the 4th millennium BC (Valera & *alii*, 2008), but only recently it has been shown that these funerary structures are widespread in this region. Hypogea are also recorded for the “Horizonte de Ferradeira” — Hypogeum 156 from Monte das Aldeias is dated to the last quarter of the 3rd millennium BC (Soares & *alii*, 2018). Moreover, Middle SWBA funerary contexts currently include hypogea at sites such as Torre Velha 3 (Alves & *alii*, 2010), Torre Velha 12 (Gomes & *alii*, 2013), Outeiro Alto 2 (Valera & Filipe, 2010), Pexem (Baptista & *alii*, 2013), Montinhos 6 (Baptista & *alii*, 2012) and Horta do Folgão (Ponte & *alii*, 2012).

The geographical distribution of hypogea and cists, seems to be organized in large clusters

throughout the Baixo Alentejo region, like clusters of Santa Vitória or Ourique cists, or clusters of Beringel and Serpa hypogea. However the archaeological record of some areas shows us that clusters boundaries are fluid since, for instance, both funerary architectures are present in Serpa region. These two architectures might show us distinct funerary traditions of neighbouring communities during the Middle SWBA, eventually related with Identity management. Even if we consider any geological deterministic possibility, obvious in some areas like in the Ourique schist plateau, the presence of big stone slabs to seal the entrance of hypogea was available, but the funerary architecture seems to mainly be culturally determined. Therefore, in the cluster area of Ourique cists, hypogea are absent in the archaeological record. On the other hand, for instance, the Santa Vitória cist cluster is located only few kilometers away to the south of Beringel region, where hypogea are known, or in Serpa, where an hypogea cluster is located just to the north and cluster of cists to the south.

Finally, for the first time, two hypogea ascribed to the Late SWBA were recently identified and studied at Monte da Ramada 1 (Ervidel, Aljustrel) (Baptista & *alii*, 2018; Valério & *alii*, 2018). A primary inhumation and an ossuary were recorded in hypogeum 4, while a complex sequence of primary inhumations and ossuaries, in addition to several metallic and ceramic grave goods, were recorded in hypogeum 2. Radiocarbon dating of several human bone samples allowed ascribing these hypogea to the 1st quarter of the 1st millennium BC (Soares & *alii*, 2020). Interestingly, the collective burial identified in hypogeum 2 is also a novelty in funerary contexts with this chronology, perhaps indicating the occurrence of an epidemic event.

The Monte da Ramada 1 hypogea makes part of a more complex landscape, central to understand SWBA, regarding Santa Vitória, Ervidel and Mombeja Alentejan Bronze Age stelae region, as we will see below. Actually the Monte do Pomar cists necropolis and the Ervidel stelae (Gomes & Monteiro, 1976–1977; Barceló, 1991) were found less than a kilometer to the south, on the opposite river bank, and less than 300 m north from Monte da Ramada 1 some apparently Middle SWBA pits, with a burial, were recently recorded (Fig. 7). Thus,



the Bronze Age landscape at Monte da Ramada 1 seems to have been built throughout the 2nd millennium, adding sites and meanings of multiple Identities in a long ritual and sacred *continuum*. As referred above, in pit fields with a Middle

Bronze Age chronology, some of the pits also contain inhumations (Fig. 8), while others will be attributable to Neolithic and Chalcolithic periods and still others, to the Late Bronze Age. The majority of these inhumations are



Fig. 8 – Burial in a pit at Horta do Albardão 3 (S. Manços, Évora).

not associated with grave goods and only the radiocarbon dating is able to give a reliable chronology. For instance, in the site named Horta do Albardão 3 (S. Manços, Évora) a flat-bottomed pit, with a diameter of about 1,3 m and 1,2 m deep, was intentionally sealed by a very deep stone filling, compact and well structured, made up of small angular shale slabs, limestone elements and large rounded granite blocks. The individual was buried in the right lateral decubitus position, with the limbs flexed, and the skull was apparently separated from the body and deposited at a higher level on a flat slab (Fig. 8). There was no grave goods deposition associated with this inhumation, dated by radiocarbon to 3080 ± 60 BP (Sac-2252) (Santos & *alii*, 2009).

Burial contexts of the Late Bronze Age in this southwestern region were virtually unknown

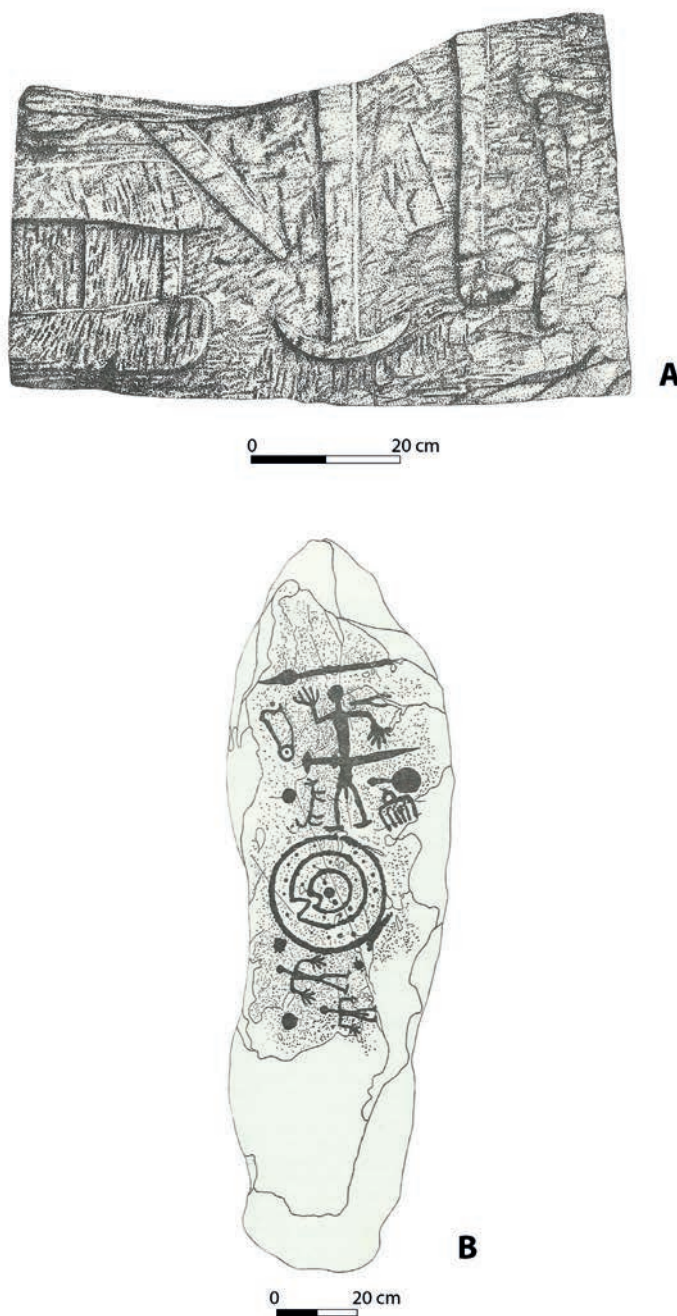
until a decade ago. Cists, perhaps the most common structures in the Middle SWBA, appear to have ceased to be built and used in the Late SWBA. However, some 1st Iron Age cists are known, being structurally identical to those of the preceding period, such as, among others, those of the necropolises of Corte Margarida, Aljustrel (Deus and Correia, 2005), Cabeço da Vaca, Alcoutim (Cardoso & Gradim, 2008), and Gregório, Silves (Barros & *alii*, 2005). This evidence seems to indicate an inhumation ritual continuum from the Middle Bronze Age to the 1st Iron Age. However, according to some authors, this ritual may have resurged in this last period by influences originating in the Central Mediterranean (Torres, 1995). In recent years, the excavation of several sets of pits have allowed the identification of various inhumations in fetal position, without any grave goods, but it was possible to assign some of these burials to the Late Bronze Age by radiocarbon dating of skeletons or archaeological layers that wrapped them. These are the cases of two burials of Casarão da Mesquita 3 (S. Manços, Évora) and at least one of the several pit burials of Monte da Cabida 3 (Mataloto & *alii*, 2013).

Some artefacts, usually ceramics, very fragmented and even somewhat rolled, have been found outside the graves in the area of several necropolises. This record has usually been interpreted as traces of a ritual that would bring to the necropolis soil from the area of their respective settlement (Silva & Soares, 1981; Coelho & Cardoso, 1944). In addition, by reexamining the purpose of the deposited artefacts and their significance in the funerary ritual, it appears that some objects may be symbolic depositions, placed by the attendants / participants in the funeral as part of a ceremonial custom rather than the property of the deceased. It is in this line that the ceramic fragments and other artefacts appearing near the graves are reinterpreted being now considered as remnants of libations or banquets, ritual commemoration ceremonies that would have taken place at the funeral, near the grave. Subsequent erosive processes, most likely due to agriculture, would lead to their great fragmentation. In southeastern Iberian Peninsula, these commensality rituals are well identified and described (see, for example, Aranda & Esquivel, 2006; 2007; Sánchez

& alii, 2007) and should also have been performed in the southwestern region (Porfírio & Serra, 2010).

Also linked to the funerary world, two groups of engraved stelae are characteristic of the southwestern Iberian Peninsula — the “Alentejo” and the “Extremadura” stelae (Fig. 9). The first corpus of these decorated stelae was published by Almagro (1966). The first ones, also known as Type I stelae, have their area of distribution mainly in southern Portugal (Algarve and Alentejo), although they also reach the Spanish Extremadura and Andalusia. The “Extremadura”, Type II or Warrior stelae are mainly distributed in the Spanish provinces of Cáceres and Badajoz, but with specimens located further south, namely in the regions of Seville, Granada, Beja and Algarve.

Some of the “Alentejo” stelae will instead be covering slabs of Bronze Age cists, although most of them are true stelae that would be standing by the tombs (Gomes & Monteiro, 1976–1977; 1977). The engravings usually depict, in a realistic style, an hanging idol with an anchoriform shape, and weapons and tools, namely swords, halberds and axes, and, more rarely, a bow, a chisel and a pair of feet or sandals. Recently, at Valencina de la Concepción an ivory hilt for a rock cristal dagger was recovered, which resembles this so called “idol” (Fig. 10), and have been securely an element of prestige display (García Sanjuán & alii, 2013). The evolution of the “Alentejo” stelae can be traced throughout the SWBA. The geographic distribution of these stelae overlaps the distribution of some ceramic types, namely Odivelas and Santa Vitória cups, bottles and vessels with vertical ribs, which are ascribed to the Southwest Bronze II, i. e. corresponding chronologically to the end of the 2nd millennium BC, following Schubart (1975). However, radiocarbon data call into question this chronology. Following Barceló (1991), the swords depicted in the stelae are much older than Schubart thought — they should be dated at least from the period 1700–1500 BC. According to a more recent and deeper study performed by Díaz (2009; 2012), also taking into account the chronology of swords and halberds depicted on the slabs, an older date is suggested for the beginning of these decorated stelae. On the other hand, the depicted shaft-hole axes can date the more recent decorated slabs, since the first knowl-

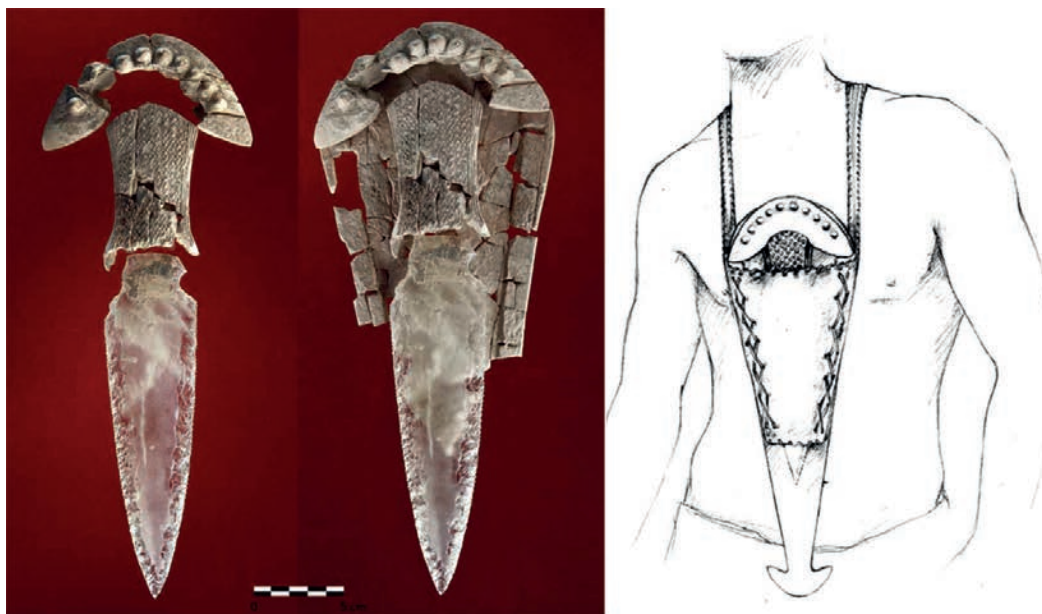


edge of this kind of hafting in the Iberian Peninsula has been linked to the so-called pre-colonial contacts. So, the “Alentejo” stelae must have been in use throughout the 2nd millennium BC. The similarity between the dagger hilt and the “idol” of the stelae points towards the same direction, for an older chronology of the elements carved on the stelae.

The continuity of the iconography of the “Alentejo” stelae can be found on the “Extremadura” stelae, which should be standing close to the tombs, marking them and evoking the deceased

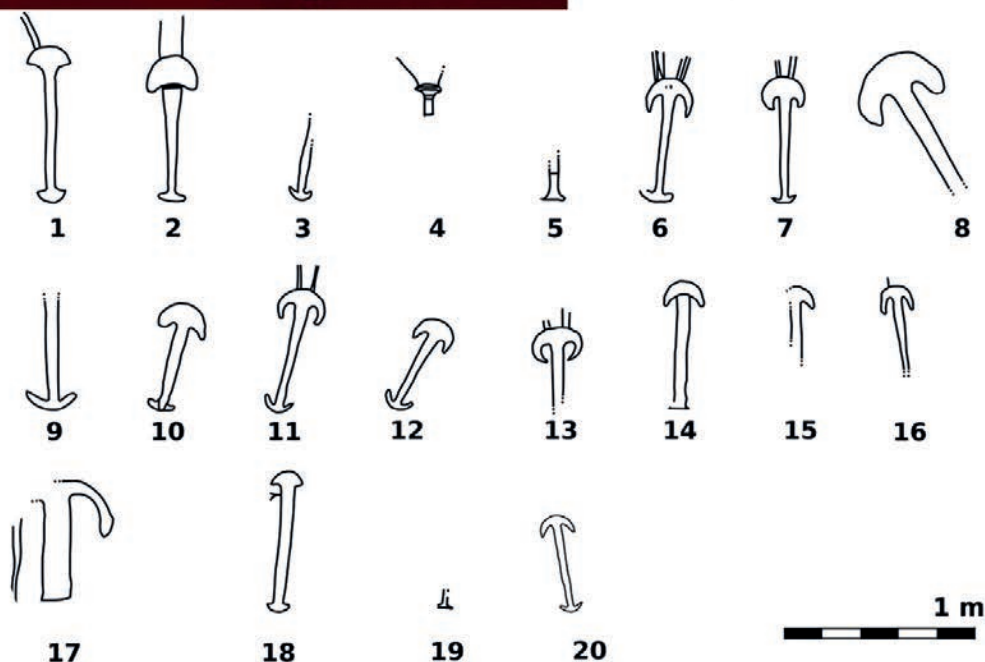
Fig. 9 – Ervidel stelae (following Gomes & Monteiro, 1976–1977, Figs. 3 and 4).
 A - Type I (“Alentejo”) stela (probably not a true stela, but a covering slab of a cist);
 B - Type II (“Extremadura”) stela. Both slabs were found at the same archaeological site (Herdade do Pomar, Ervidel).

Fig. 10 – On top - Left: Dagger hilt with rock crystal blade and with sheath. Photo: Miguel Ángel Blanco de la Rubia (according to García Sanjuán & alii, 2013, p. 619). Right: Idealized reconstruction of the suspension system for the dagger. Drawing: Miriam Luciañez Triviño (according to García Sanjuán & alii, 2013, p. 622).



Bottom - Anchor shaped motif depicted on “Alentejo” stelae:

- 1 – Tapada da Moita,
- 2 – Abela,
- 3 – Trigaches II,
- 4 – Mombeja I,
- 5 – Mombeja II,
- 6 – Monte de Abaixo,
- 7 – Defesa,
- 8 – Panoias,
- 9 – Ervidel I,
- 10 – Santa Vitória,
- 11 – Pedreirinha,
- 12 – Assento,
- 13 – Castro Verde,
- 14 – Alfarrobeira,
- 15 – Passadeiras I,
- 16 – São Salvador,
- 17 – El Torcal,
- 18 – Donas,
- 19 – Milrei I,
- 20 – Monte do Ulmo (according to Serra & Porfírio, 2014, fig. 6)



buried there. In contrast with the earlier group, these slabs depict, in a schematic style, warrior’s weapons, namely a V-notched shield, and other items sometimes together with the warrior himself. Besides the V-notched shield also the sword, the spear, the dagger, his two-horse two-wheeled chariot, sometimes his helmet, and other special objects, such as a comb, fibulae, even a phorminx, are depicted. A chronology of the Late Bronze Age/Early Iron Age has been attributed to these later stelae (Díaz, 2012; Gomes & Monteiro, 1977; Gamito, 1988).

2.3. Ceramics

Schubart (1975) proposed the division of the Southwestern Bronze into two Phases, essentially based on typological criteria of the ceramic collection. The first one, Bronze I, was characterized by ceramic grave goods with the so-called “metallic style”, usually carinated cups where the carination is in the lower portion of the vessel, of which the Atalaia cup is the most common example. Also, following Schubart, coeval cists are usually larger than those of the next phase and sometimes have a *tumulus* framed by stone

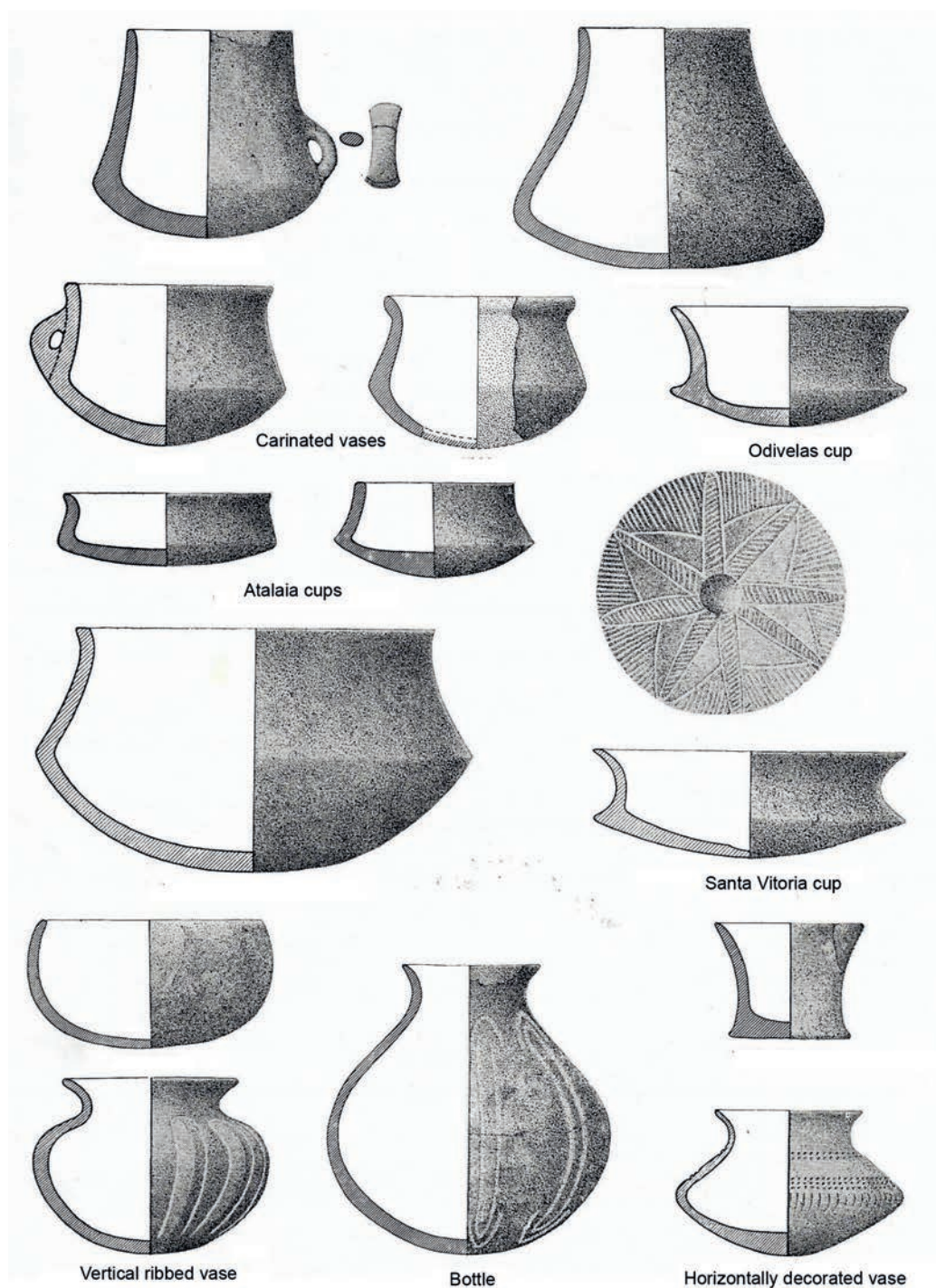


Fig. 11 – Pottery shapes of Middle SWBA (following Schubart, 1974, Fig. 3).

structures with several shapes. The Bronze II was characterized by smaller cists without *tumuli* and newly shaped pottery, such as bottles, vertical ribbed vases, horizontally decorated vases, and carinated vessels with a very low and concave carination, such as Santa Vitória and Odivelas cups (Fig. 11). Radiocarbon data available for contexts with vessels of these typologies is still

scarce, but chronologies from the second quarter of the 2nd millennium BC have been obtained for some of these contexts (cf., for example, Alves & alii, 2010, Tables 1 and 3), to which it can be added an earlier date for the Odivelas cup typology (Soares & alii, 2019). The known data on SWBA carried forward for this discussion, whether referring to the funer-

ary world, in particular as regards to structures, grave goods or funeral rituals, or concerning habitat structures, including their location in the topography of the region, do not allow a distinction between the two Phases (Bronze I and Bronze II) proposed by Schubart. It should be noted, as already mentioned, that these Phases were essentially based on a typological distinction of the ceramic collection from the funerary structures known at the time, but the further development of archaeological research complemented by archaeometric analyses, namely absolute chronology, made such division obsolete and, apparently, without any cultural significance (see Soares & *alii*, 2019). Therefore, with the data known today, ceramic typology cannot at all continue to be used as an indicator to establish a relative chronology for the SWBA contexts.

2.4. Metallurgy

Archaeological studies have long related the metals and alloys used by prehistoric communities with the technological evolution of Humankind. The possibility of attaining better castability, higher hardness and appealing colours were certainly among the first improvements recognized by ancient metallurgists. The early metallurgy in the Iberian Peninsula was dominated by copper with variable arsenic amounts for almost two millennia (~3000-1200 BC) (Harrison & Craddock, 1981; Rovira Llorens, 2004; Soares & *alii*, 1996). Sites with early metallurgy have artefacts made of copper and arsenical copper (As > 2 wt.%), as well as copper ores with arsenic impurities (cf, for example, Valério & *alii*, 2020a). Moreover, the arsenic content distribution of Chalcolithic artefacts from Southeastern Iberian Peninsula suggests that the arsenic amount should have resulted from the natural variability of copper ores (Rovira Llorens, 2004), while smelting experiments have shown that copper ores with low arsenic amounts are capable of producing an arsenical copper alloy (Hanning & *alii*, 2010; Hauptmann, 2007).

Despite the apparently random scattering of Chalcolithic metal composition, it seems that there is some relationship between typology and arsenic content. Palmela arrowheads, long awls, tanged daggers and saws are more fre-

quently made of high arsenic content than axes and smaller awls (Müller & *alii*, 2007; Müller & Cardoso, 2008; Pereira & *alii*, 2013; Valério & *alii*, 2016a; 2020b).

If arsenical coppers seem to be associated with some Chalcolithic typologies, the reason for that is not obvious. Considering that most halberds and daggers were recovered from burials, it was assumed that grave goods might suffer less recycling than domestic artefacts (Rovira Llorens, 2004). However, this does not explain the compositional differences among artefacts exclusively recovered in settlements. On the other hand, the silvery colour of high-arsenic alloys would be appreciated for prestige artefacts (Rovira Llorens & Montero, 2013).

The metallurgy does not seem to have changed drastically in the Iberia Peninsula from the Chalcolithic to the Middle Bronze Age (MBA). Apart from the emergence of bronze and silver during the latter (see, for instance, Hunt, 2003; Valério & *alii*, 2014), the metallurgy continues to be dominated by copper with variable arsenic contents. The south-eastern region of the Iberian Peninsula has been extensively studied, and the comparison of about 300 artefacts from Los Millares (Chalcolithic) and Argaric (Early Bronze Age/Middle Bronze Age) cultures, have identified a slight average arsenic increase (2.0 to 2.4 wt.% As, respectively) (Montero, 1994). This was explained with the funerary origin of most Argaric examples and the exploitation of new ore sources (Rovira Llorens, 2004). Contrary, a similarly large collection from southwestern region (Spanish area) evidenced a small arsenic reduction (Chalcolithic: 1.9 wt.% As; Middle Bronze Age: 1.1 wt.% As) despite a similar increase of Middle Bronze Age funerary contexts (Costa, 2010).

In Southern Portugal, 40 metallic artefacts recently recovered from MBA funerary structures and domestic contexts disclosed a metallurgy comprising more than 80% of arsenical coppers with an average of about 4 wt.% As (Valério & *alii*, 2014). This suggests a different evolution of copper-based metals, especially considering that Chalcolithic artefacts from this region point to lower arsenic contents (Orestes & *alii*, 2016; Valério & *alii*, 2016a). Nowadays, Middle SWBA metallurgy analyses, including more than a hundred artefacts from several archaeological sites, either funerary monuments or domestic contexts, have been showing that

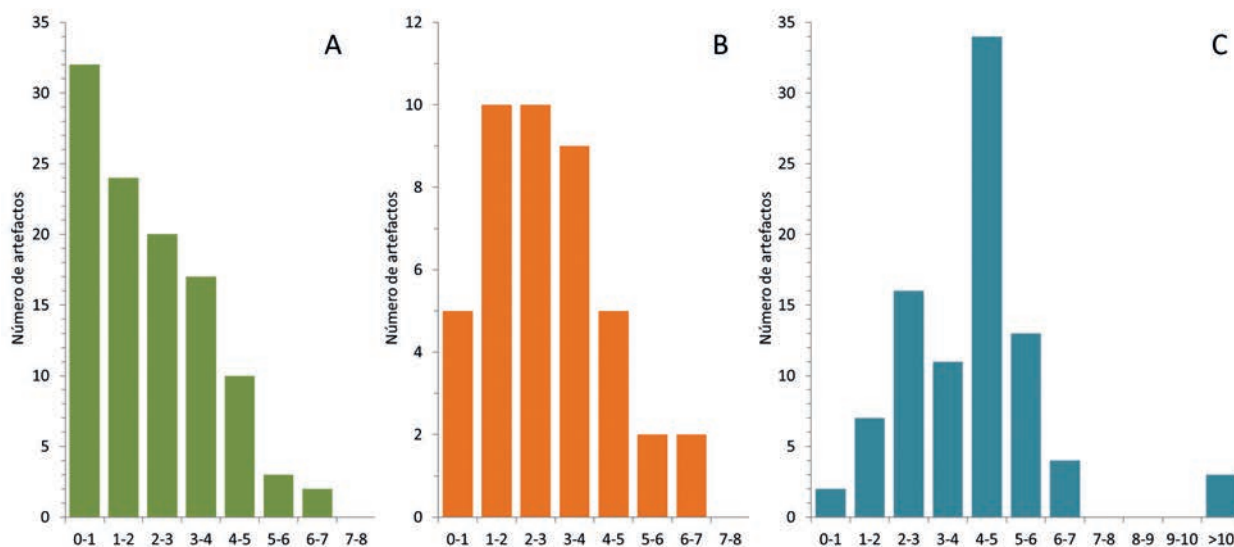


Fig. 12 – Histograms of As content of metallic artefacts of Full Chalcolithic (A), Beaker Phase (B) and Bronze Age (C) periods in Southwestern Iberian Peninsula.

these artefacts are mostly composed by arsenical copper alloys (Valério & *alii*, 2016). Moreover, this set of Middle SWBA artefacts exhibits an arsenic content with a Gaussian distribution having a rather high arsenic content (3.9 ± 1.4 wt.%; 4 arsenic-rich alloys with values outside the three standard deviation interval were excluded) (Fig. 12). The post-casting manufacture of different types did not show significant differences since most involved thermomechanical work. However, daggers seem to have a lengthier manufacture involving strong forging on cutting edges, arrowheads present variable manufactures with substantial cold-work in the tang, and rivets were typically as-cast.

There is an obvious difference between Middle SWBA metals and those from the Chalcolithic comprising an increased usage of arsenical copper alloys. It can be reasoned that Chalcolithic metals have a higher proportion of domestic contexts, thus including typologies that are not present among Middle SWBA collections. However, when comparing specific typologies such as awls, Middle SWBA examples have higher arsenic amounts than Chalcolithic ones (4.7 ± 0.9 wt.% As, $n = 31$ and 2.5 ± 1.9 wt.% As, $n = 14$, respectively). On the other hand, analytical evidence shows the common use of forging and annealing in the manufacture of artefacts belonging to the Bell Beaker Culture, which also present higher arsenic contents than those assigned to the Full Chalcolithic. Arsenic contents of Beaker artefacts present a Gaussian distribution somewhat similar to the one of the Middle Bronze Age of this region,

establishing a transition between this distribution and the lognormal distribution of the Chalcolithic (Fig. 12) (Soares & *alii*, 2017). Moreover, the histogram of arsenic contents of Middle SWBA metals resembles the distribution of tin in Late Bronze Age bronzes, i.e. a Gaussian curve centred on an intended content, which suggests intentional alloying.

2.5. Exotic materials trade

The site of Horta do Pinheiro 5 (parish of Torrão, Alcácer do Sal) was the subject of an archaeological field excavation also in the scope of the mitigation strategy concerning the threatened cultural heritage, implemented during the construction of the Irrigation Network integrated into the Alqueva Dam project. 13 surveys were carried out due to the identification of 13 negative structures that became evident after the initial works of the construction phase. Of these, four correspond to funerary structures of Islamic chronology, while from the remaining ones two (Surveys 7 and 8) also have a funerary character, but of prehistoric chronology (Soares & *alii*, in press).

In Survey 7, the funerary pit containing the burial of a male adult individual, with an ivory bracelet as grave good, overlapped another pit not fully filled. In Survey 8, a funerary hypogeum was identified, which also cut a probably pre-existing pit. The hypogeum chamber also contained a burial, the deposition of an adult male, to which prestige grave goods were associated, namely an ivory bracelet and a remark-

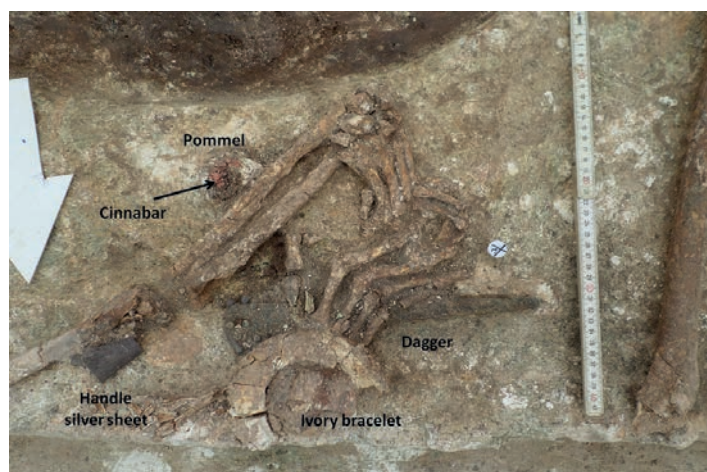


Fig. 13 – Skeleton remains and grave goods in situ in Horta do Pinheiro 5 hypogeum.



Fig. 14 – Grave goods from hypogeum 4 of Monte da Ramada 1.

able arsenical copper dagger with silver rivets and a handle wrapped with a silver sheet, in addition to a pommel made of silver and gold elements (Fig. 13). The skeleton remains and the grave goods presented cinnabar spots, a dye certainly imported from another region, probably from south-central Iberian Peninsula.

The radiocarbon dating of the individuals buried in these two negative structures allows a chronology of the 1st quarter of the 2nd millennium BC (early Middle SWBA) to be assigned to these two graves, showing that prestige items like those made of ivory or cinnabar were still imported from regions more or less distant from the Iberian southwest, namely from the central or eastern Mediterranean or from the Peninsular interior, respectively.

During the remaining Middle SWBA there are no records of imported materials in this region, arising only in the early days of the Late Bronze Age due to the precolonial (Orientalizing) trade starting by that time.

A large set of negative structures with different chronologies were identified at a site already mentioned named Monte da Ramada 1, near Aljustrel, including two hypogea ascribed to the 1st quarter of the 1st millennium BC, i.e. to the Late SWBA (Baptista & *alii*, 2018; Soares & *alii*, 2020; Valério & *alii*, 2018). A primary inhumation and an ossuary were recorded in hypogeum 4. The last individual to be buried (*in situ* inhumation) in hypogeum 4 of Monte da Ramada 1 had a rich and rare set of personal adornments, including 3 copper-based bracelets, 2 gold beads, 6 ostrich egg shell beads, 1 glass bead and another bead, possibly made of ivory (Fig. 14). The skeleton was radiocarbon dated to the 10th century BC. Glass beads with a very likely origin in the Eastern Mediterranean (Henderson & *alii*, 2010; Towle & *alii*, 2001) are known in several Bronze Age archaeological contexts at coastal sites of Iberian Peninsula suggesting pre-colonial contacts (see, for instance, Rovira i Port, 1996; Lorrio, 2008). An additional singularity identified in these grave goods is the set of bracelets, namely one arsenical bronze (4.3 wt % Sn and 4.0 wt % As) and two bronze alloys (6.8 wt% Sn and 7.1 wt% Sn), all with low tin content when compared with the average tin content of known analysed remaining collection of adornments recorded in several sites of SWBA (9.7 ± 2.9 w % Sn) (Valério & *alii*, 2018). The archaeological excavations at the other hypogeum of Monte da Ramada 1, the hypogeum 2, identified a very distinct situation, namely at least 20 individuals including several primary inhumations (Baptista & *alii*, 2018). Radiocarbon dating of human bones of these burials allows ascribing hypogeum 2 to the 1st quarter of 1st millennium BC. Grave goods of hypogeum 2 also include exotic adornments of foreign origin, namely 2 Egyptian faience beads, a vestige of the trade with the Eastern Mediterranean region, and another bead likely made of jet. Some of those individuals also presented copper-based ornaments, such as open bracelets and small necklace beads either of annular or ring-shaped typology. The low-tin bronze bracelets associated with exotic ornaments (glass and Egyptian faience beads and, also, ostrich egg shell beads), testify an archaic trade, perhaps with an Orientalizing origin, with the Mediterranean region before or just when the first Phoenician colonies were established in the Southern Iberian coast.

3. Conclusions

The known data on SWBA carried forward for discussion in this work, whether concerning habitat places and structures, including their location in the topography of the region, or referring to the funerary world, in particular as regarding the type of graves (cists, hypogea, pits, burials in old collective tombs), grave goods, stellae or funeral rituals, have not changed too much over the 2nd millennium BC, except in the last or the last two centuries, when large fortified settlements appear. During the precedent centuries, the habitat was apparently dispersed, in lowland areas, from which the archaeological record only identifies negative structures, commonly pits of circular plan. Also the ceramic typology, where carinated vessels and burnished surfaces are common, cannot be an indicator to establish a relative chronology for SWBA contexts, since the pottery shapes have not changed throughout the Middle SWBA, although some variability in the frequency of ceramic types can be detected from region to region and over time. Only during Late SWBA, do ceramics show a wide variety of shapes, and the burnished decorations are common in surface finish. The copper-based metallurgy, characterized by arsenical coppers, also

does not show a great evolution, as the bronze alloy only become common during the Late SWBA, despite the existence of some earlier evidence, in the transition of the 1st to the 2nd half of the 2nd millennium BC, of its production and use. On the other hand, exotic raw materials seem to be imported, although maybe rarely, during the first times of the Middle SWBA following the usual trade of the precedent period. Then this trade seems to have ceased and only resumed many centuries later with other authors, integrated in the Phoenician or Orientalizing trade. Thus, the current archaeological evidence does not seem to indicate the existence of relevant migrations, but rather an endogenous evolution of the communities that inhabited this region of the Iberian Peninsula, despite the rupture with the Neolithic and Chalcolithic social order and the existence of a demographic breakdown, both detected at the end of the 3rd millennium BC, when the SWBA begin. The research on the ancient DNA carried out until now does not seem to recognize the existence of a strong genetic influx that brought steppe-related ancestry, as occurred in other European regions at this time, since it only indicate a low or non-occurrence of migrations which does not explain the facts described.

References

- ALLENTOFT, Morten E.; SIKORA, Martin; SJÖGREN, Karl-Göran, RASMUSSEN, Simon; RASMUSSEN, Morten; STENDERUP, Jesper; DAMGAARD, Peter B.; SCHROEDER, Hannes; AHLSTRÖM, Torbjörn ; VINNER, Lasse; MALASPINAS, Anna-Sapfo; MARGARYAN, Ashot; HIGHAM, Tom; CHIVALL, David; LYNNE-RUP, Niels; HARVIG, Lise; BARON, Justyna; DELLA CASA, Philippe; DABROWSKI, Pawel; DUFFY, Paul R.; EBEL, Alexander V.; EPIMAKHOV, Andrey; FREI, Karin; FURMANEK, Mirosław; GRALAK, Tomasz; GOMOV, Andrey; GRONKIEWICZ, Stanisław; GRUPE, Gisela; HAJDU, Tamás; JARYSZ, Radosław; KHARTANOVICH, Valeri; KHOKHLOV, Alexandr; KISS, Viktória; Kolář, Jan; KRIISKA, Aivar; LASAK, Irena; LONGHI, Cristina; McGLYNN, George; MERKEVICIUS, Algimantas ; MERKYTE, Inga; METSPALU, Mait; MKRTCHYAN, Ruzan; MOISEYEV, Vyacheslav; PAJA, László; PÁLFI, György; POKUTTA, Dalia; POSPIESZNY, Lukasz; PRICE, T. Douglas; SAAG, Lehti; SABLIN, Mikhail; SHISHLINA, Natalia; SMRČKA, Václav; SOENOV, Vasilii, I.; SZEVERÉNYI, Vajk; TÓTH, Gusztáv; TRIFANOVA, Synaru, V.; VARUL, Liivi; VICZE, Magdolna; YEPISKOPOSYAN, Levon; ZHITENEV, Vladislav; ORLANDO, Ludovic; SICHERITZ-PONTÉN, Thomas; BRUNAK, Søren; NIELSEN, Rasmus; KRISTIANSEN, Kristian; WILLERSLEV, Eske (2015) – Population genomics of Bronze Age Eurasia. *Nature*. 522, pp. 167–172.
- ALMAGRO BASCH, Martín (1966) – *Las estelas decoradas del Suroeste Peninsular*. Madrid. Consejo Superior de Investigaciones Científicas.
- ALVES, Catarina; COSTEIRA, Catarina; ESTRELA, Susana; PORFÍRIO, Eduardo; SERRA, Miguel; SOARES, António M. Monge; MORENO GARCÍA, Marta (2010) – Middle Bronze Age funerary hypogea from Torre Velha 3 (Serpa, Portugal). *The Southeast inside the Southwest?!*. *Zephyrus*. 66, pp. 133–153.
- ARANDA JIMÉNEZ, Gonzalo; ESQUIVEL GUERRERO, José Antonio (2006) – Ritual funerario y comensalidad en las sociedades de la Edad del Bronce del Sureste Peninsular: La Cultura de El Argar. *Trabajos de Prehistoria*. 63:2, pp. 117–133.
- ARANDA JIMÉNEZ, Gonzalo; ESQUIVEL GUERRERO, José Antonio (2007) – Power and prestige in Argar Culture societies: the commensal consumption of bovinds and ovicaprids during funerary rituals. *Trabajos de Prehistoria*. 64:2, pp. 95–118.

- BAPTISTA, Lúcia; GOMES, Sérgio; PINHEIRO, Rui; RODRIGUES, Zélia; VALE, Nelson; GRILO, José; MENDONÇA, Rodry; LUÍS, Liliána; SARAIVA, André; MOTA, Ricardo (2013) – Ponto de situação dos trabalhos de minimização de impactos sobre o património cultural decorrentes da execução do Circuito Hidráulico de Pedrógão – Fase de Obra (1.ª Fase) (Vidigueira e Beja, Portugal). In JIMÉNEZ ÁVILA, Javier; BUSTAMANTE ÁLVAREZ, Macarena; GARCÍA CABEZAS, Miriam, eds. – *Actas del VI Encuentro de Arqueología del Suroeste Peninsular*. Villafranca de los Barros: Ayuntamiento, pp. 2537–2572.
- BAPTISTA, Lúcia; RODRIGUES, Zélia; PINHEIRO, Rui (2012) – Espacialidades dos cadáveres em Montinhos ó: contributos para uma compreensão das práticas funerárias da Idade do Bronze no Sudoeste Peninsular. In *Actas do V Encontro de Arqueologia do Sudoeste Peninsular*. Almodôvar: Câmara Municipal, pp. 149–170.
- BAPTISTA, Lúcia; SOARES, António M. Monge; RODRIGUES, Zélia; VALE, Nelson; PINHEIRO, Rui; FERNANDES, Sandrine; VALÉRIO, Pedro (2018) – Os hipogeus funerários do Bronze Final do Sudoeste do Monte da Ramada 1 (Ervidel, Aljustrel). Estudo preliminar. In *Actas do VIII Encontro de Arqueologia do Sudoeste Peninsular, Serpa-Aroche, 24, 25 e 26 de outubro de 2014*. Serpa: Câmara Municipal, pp. 265–288.
- BARCELÓ ÁLVAREZ, Juan A. (1991) – El Bronce del Sudoeste y la cronología de las estelas alentejanas. *Arqueologia*. 21, pp. 15–24.
- BARROS, Pedro; BRANCO, Gertrudes; DUARTE, Cidália; CORREIA, Jorge (2005) – A Cista dos Gregórios (Silves). *Xelb*. 3, pp. 41–52.
- CARDOSO, João Luís; GRADIM, Alexandra (2008) – O núcleo II da necrópole da Idade do Ferro do Cabeço da Vaca (Alcoutim). *Xelb*. 8:1, pp. 103–115.
- COELHO, A. V. Pinto; CARDOSO, João Luís (1994) – Cerâmicas da necrópole da Idade do Bronze de Alfarrobeira (Silves). Análises macro e microscópicas. *Xelb*. 2, pp. 141–145.
- COSTA CARAMÉ, Manuel Eleazar (2010) – *Las producciones metálicas del III y II milenio cal ANE en el Suroeste de la Península Ibérica*. Oxford: Archaeopress.
- DEUS, Manuela de; CORREIA, José (2005) – Corte Margarida: mais uma necrópole orientalizante no Baixo Alentejo. In CELESTINO PÉREZ, Sebastián; JIMÉNEZ ÁVILA, Javier, eds. – *El Periodo Orientalizante. Protohistoria del Mediterráneo occidental: actas del III Simposio Internacional de Arqueología de Mérida*. Mérida: Consejo Superior de Investigaciones Científicas, Instituto de Arqueología de Mérida. Vol. I, pp. 615–618.
- DÍAZ GUARDAMINO, Marta (2009) – *Las estelas decoradas en la Prehistoria de la Península Ibérica*. Tesis doctoral. Universidad Complutense de Madrid.
- DÍAZ GUARDAMINO, Marta (2012) – Estelas decoradas del Bronce Final en la Península Ibérica: datos para su articulación en el Bronce Final. In JIMÉNEZ ÁVILA, Javier, ed. – *El río Guadiana en el Bronce Final*. Madrid: Consejo Superior de Investigaciones Científicas, pp. 389–415.
- FRADE, José Carlos; SOARES, António M. Monge; CANDEIAS, António; RIBEIRO, Maria Isabel M.; NUNES da PONTE, Teresa Nunes da; SERRA, Miguel; PORFÍRIO, Eduardo (2014). – Beeswax and propolis as sealants of funerary chambers during the Middle Bronze Age in the South-Western Iberian Peninsula. In SCOTT, Rebecca B.; BRACKMANS, Dennis; CARREMANS, Mike; DEGRYSE, Patrick, eds. – *Proceedings of the 39th International Symposium for Archaeometry, Leuven (2012)*. Leuven: Leuven University Press, pp. 141–145.
- GARCÍA RIVERO, Daniel (2008) – *Campaniforme y rituales estratégicos en la Cuenca Media y Baja del Guadiana (Suroeste de la Península Ibérica)*. Oxford: BAR Publishing.
- GARCÍA SANJUÁN, Leonardo; LUCIAÑEZ TRIVIÑO, Miriam; SCHUHMACHER, Thomas X.; WHEATLEY, David; BANERJEE, Arun (2013) – Ivory craftsmanship, trade and social significance in the southern Iberian Copper Age: the evidence from the PP4-Montelirio Sector of Valencina de la Concepción (Seville, Spain). *European Journal of Archaeology*. 16:4, pp. 610–635.
- GOMES, Mário Varela; MONTEIRO, Jorge Pinho (1976–1977) – Las estelas decoradas da Herdade de Pomar (Ervidel-Beja): estudo comparado. *Setúbal Arqueológica*. 2–3, pp. 281–343.
- GOMES, Mário Varela; MONTEIRO, Jorge Pinho (1977) – Las estelas decoradas do Pomar (Beja-Portugal): estudo comparado. *Trabajos de Prehistoria*. 34, pp. 165–214.
- GOMES, Sérgio; BAPTISTA, Lúcia; RODRIGUES, Zélia (2013) – Tradições de inumação durante a Idade do Bronze em Torre Velha 12 (Salvador, Serpa). In JIMÉNEZ ÁVILA, Javier; BUSTAMANTE ÁLVAREZ, Macarena; GARCÍA CABEZAS, Miriam, eds. – *Actas del VI Encuentro de Arqueología del Suroeste Peninsular*. Villafranca de los Barros: Ayuntamiento, pp. 709–732.
- HANNING, Erica; GAUSS, Roland; GOLDENBERG, Gert (2010) – Metal from Zambujal: experimentally reconstructing a 5000-year-old technology. *Trabajos de Prehistoria*. 67:2, pp. 287–304.
- HARRISON, Richard J.; CRADDOCK, Paul T. (1981) – A study of the Bronze Age metalwork from the Iberian Peninsula in the British Museum. *Ampurias*. 43, pp. 113–179.
- HAUPTMANN, Andreas (2007) – *The archaeometallurgy of copper*. Berlin: Springer.
- HENDERSON, Julian; EVANS, Jane; NIKITA, Kalliopi (2010) – Isotopic evidence for the primary production, provenance and trade of the Late Bronze Age glass in the Mediterranean. *Mediterranean Archaeology and Archaeometry*. 10:1, pp. 1–24.

HENRIQUES, Fernando J. Robles; SOARES, António M. Monge; ANTÓNIO, Telmo F. Alves; CURATE, Francisco; VALÉRIO, Pedro; ROSA, Sérgio Peleja (2013) – O Tholos Centirã 2 (Brinches, Serpa): construtores e utilizadores; práticas funerárias e cronologias. In JIMÉNEZ ÁVILA, Javier; BUSTAMANTE ALVAREZ, Macarena; GARCÍA CABEZAS, Miriam, eds. – *Actas del VI Encuentro de Arqueología del Suroeste Peninsular*. Villafranca de los Barros: Ayuntamiento. pp. 319–355.

HUNT ORTIZ, Mark A. (2003) – *Prehistoric mining and metallurgy in Southwest Iberian Peninsula*. Oxford: Archaeopress

HURTADO PÉREZ, Víctor M.; GARCÍA SANJUÁN, Leonardo; HUNT ORTIZ, Mark A., eds. (2011) – *El asentamiento de El Trastejón (Huelva): investigaciones en el marco de los procesos sociales y culturales de la Edad del Bronce en el Suroeste de la Península Ibérica*. Sevilla: Junta de Andalucía, Consejería de Cultura.

GAMITO, Teresa Júdece (1988) – *Social complexity in southwest Iberia 800–300 B.C. The case of Tartessos*. Oxford: BAR Publishing.

LAGO, Miguel; DUARTE, Cidália; VALERA, António; ALBERGARIA, João; ALMEIDA, Francisco; CARVALHO, António Faustino (1998) – O povoado dos Perdigueiros (Reguengos de Monsaraz): dados preliminares dos trabalhos arqueológicos realizados em 1997. *Revista Portuguesa de Arqueologia*. 1:1, pp. 45–152.

LORRIO ALVARADO, Alberto J. (2008) – *Qurénima: el Bronce Final del Sureste en la Península Ibérica*. Madrid: Real Academia de la Historia.

MÁRQUEZ ROMERO, José E.; JIMÉNEZ JÁIMEZ, Víctor (2013) – Monumental ditched enclosures in southern Iberia (fourth-third millennia BC). *Antiquity*. 87, pp. 447–460.

MARTINIANO, Rui; CASSIDY, Lara M.; Ó'MAOLDÚIN, Ros; McLAUGHLIN, Russell; SILVA, Nuno M.; MANCO, Licínio; FIDALGO, Daniel; PEREIRA, Tânia; COELHO, Maria J.; SERRA, Miguel; BURGER, Joachim; PARREIRA, Rui; MORÁN HERNÁNDEZ, Elena; VALERA, António Carlos; PORFÍRIO, Eduardo; BOAVENTURA, Rui; SILVA, Ana Maria; BRADLEY, Daniel G. (2017) – The population genomics of archaeological transition in west Iberia: Investigation of ancient substructure using imputation and haplotype-based methods. *PLoS Genetics*. 13:7, e1006852.

MATALOTO, Rui (2010) – O 3.º/4.º milénio a.C. no povoado de São Pedro (Redondo, Alentejo Central): fortificação e povoamento na planície centro alentejana. In GONÇALVES, Victor S.; SOUSA, Ana Catarina, eds. – *Transformação e mudança no Centro e Sul de Portugal no 3.º milénio a.n.e.: actas do Colóquio Internacional (Cascais, 4–7 Outubro 2005)*. Cascais: Câmara Municipal, pp. 263–295.

MATALOTO, Rui (2012) – Os senhores e as serras: o final da Idade do Bronze no Alentejo Central. In JIMÉNEZ ÁVILA, Javier, ed. – *Sidereum Ana II: el río Guadiana en el Bronce Final*. Madrid: Consejo Superior de Investigaciones Científicas, pp. 185–213.

MATALOTO, Rui (2013) – Do vale à montanha, da montanha ao monte: a ocupação do final da Idade do Bronze no Alentejo Central. *Estudos Arqueológicos de Oeiras*. 20, pp. 221–272.

MATALOTO, Rui (2017) – We are ancients, as ancient as the sun: Campaniforme, antas e gestos funerários nos finais do 3.º milénio BCE no Alentejo Central. In GONÇALVES, Victor S., ed. – *Sinos e taças. Junto ao oceano e mais longe: aspectos da presença campaniforme na Península Ibérica*. Lisboa: UNIARQ, pp. 58–81.

MATALOTO, Rui; COSTEIRA, Catarina; ROQUE, Conceição (2015) – Torres, cabanas e memória: a Fase V e a cerâmica campaniforme do povoado de S. Pedro (Redondo, Alentejo Central). *Revista Portuguesa de Arqueologia*. 18, pp. 81–100.

MATALOTO, Rui; MARTINS, José Manuel M.; SOARES, António M. Monge (2013) – Cronologia absoluta para o Bronze do Sudoeste: periodização, base de dados, tratamento estatístico. *Estudos Arqueológicos de Oeiras*. 20, pp. 303–338.

MONTERO RUIZ, Ignacio (1994) – *El origen de la metalurgia en el Sureste Peninsular*. Almería: Instituto de Estudios Almerienses.

MÜLLER, Roland; CARDOSO, João Luís (2008) – The origins and the use of copper at the Chalcolithic fortification of Leceia, Portugal. *Madrider Mitteilungen*. 48, pp. 64–93.

MÜLLER, Roland; GOLDENBERG, Gert; BARTELHEIM, Martin; KUNST, Michael; PERNICKA, Ernst (2007) – Zambujal and the beginnings of metallurgy in southern Portugal. In La NIECE, Susan; HOOK, Duncan; CRADDOCK, Paul, eds. – *Metals and mines. Studies in Archaeometallurgy*. London: Archetype, pp. 15–26.

OLALDE MARQUÍNEZ, Íñigo; BRACE, Selina; ALLENTOFT, Morten E.; ARMIT, Ian; KRISTIANSEN, Kristian; BOOTH, Thomas; ROHLAND, Nadin; MALLICK, Swapan; SZÉCSÉNYI-NAGY, Anna; MITTNIK, Alissa; ALTENA, Eveline; LIPSON, Mark; LAZARIDIS, Iosif; HARPER, Thomas K.; PATTERSON, Nick; BROOMANDKHOSHBACHT, Nasreen; DIEKMANN, Yoan; FALTYSKOVA, Zuzana; FERNANDES, Daniel; FERRY, Matthew; HARNEY, Eadaoin; DE KNIJFF, Peter; MICHEL, Megan; OPPENHEIMER, Jonas; STEWARDSON, Kristin; BARCLAY, Alistair; ALT, Kurt Werner; LIESAU VON LETTOW-VORBECK, Corina; RÍOS, Patricia; BLASCO BOSQUED, Concepción; VEGA MIGUEL, Jorge; MENDUIÑA GARCÍA, Roberto; AVILÉS FERNÁNDEZ, Azucena; BÁNFFY, Eszter; BERNABÒ-BREA, Maria; BILLOIN, David; BONSALE, Clive; BONSALE, Laura; ALLEN, Tim; BÜSTER, Lindsey; CARVER, Sophie; CASTELLS NAVARRO, Laura; CRAIG,

Oliver E.; COOK, Gordon T.; CUNLIFFE, Barry; DENAIRE, Anthony; EGGING DINWIDDY, Kirsten; DODWELL, Natasha; ERNÉE, Michal; EVANS, Christopher; KUCHARÍK, Milan; FRANCÉS FARRÉ, Joan; FOWLER, Chris; GAZENBEEK, Michiel; GARRIDO PENA, Rafael; HABER URIARTE, María; HADUCH, Elżbieta; HEY, Gill; JOWETT, Nick; KNOWLES, Timothy; MASSY, Ken; PFRENGLE, Saskia; LEFRANC, Philippe; LEMERCIER, Olivier; LEFEBVRE, Arnaud; HERAS MARTÍNEZ, César; GALERA OLMO, Virginia; BASTIDA RAMÍREZ, Ana; LOMBA MAURANDI, Joaquín; MAJÓ ORTIN, Tona; MCKINLEY, Jacqueline I.; McSWEE-NEY, Kathleen; MENDE, Balázs Gusztáv; MODI, Alessandra; KULCSÁR, Gabriella; KISS, Viktória; CZENE, András; PATAY, Róbert; ENDRÓDI, Anna; KÖHLER, Kittj; HAJDU, Tamás; SZENICZEY, Tamás; DANÍ, János; BERNERT, Zsolt; HOOLE, Maya; CHERONET, Olivia; KEATING, Denise; VELEMÍNSKÝ, Petr; DOBEŠ, Miroslav; CANDILIO, Francesca; BROWN, Fraser; FLORES FERNÁNDEZ, Raúl; HERRERO CORRAL, Ana Mercedes; TUSA, Sebastiano; CARNIERI, Emiliano; LENTINI, Luigi; VALENTI, Antonella; ZANINI, Alessandro; WADDINGTON, Clive; DELIBES DE CASTRO, Germán; GUERRA DOCE, Elisa; NEIL, Benjamin; BRITAIN, Marcus; LUKE, Mike; MORTIMER, Richard; DESIDERI, Jocelyne; BESSE, Marie; BRÜCKEN, Günter; FURMANEK, Mirosław; HAŁUSZKO, Agata; MACKIEWICZ, Maksym; RAPINSKI, Artur; LEACH, Stephany; SORIANO LLOPIS, Ignacio; LILLIOS, Katina T.; CARDOSO, João Luís; PEARSON, Michael Parker; WŁODARCZAK, Piotr; PRICE, T. Douglas; PRIETO MARTÍNEZ, María Pilar; REY, Pierre-Jérôme; RISCH, Roberto; ROJO GUERRA, Manuel A.; SCHMITT, Aurore; SERRALONGUE, Joël; SILVA, Ana Maria; DOBRČKA, Václav; VERGNAUD, Luc; ZILHÃO, João; CARAMELLI, David; HIGHAM, Thomas; THOMAS, Mark G.; KENNETT, Douglas J.; FOKKENS, Harry; HEYD, Volker; SHERIDAN, Alison; SJÖGREN, Karl-Göran; STOCKHAMMER, Philipp W.; KRAUSE, Johannes; PINHASI, Ron; HAAK, Wolfgang; BARNES, Ian; LALUEZA FOX, Carles; REICH, David (2018) – The Beaker phenomenon and the genomic transformation of northwest Europe. *Nature*. 555, pp. 190–196.

OLIVEIRA, José Carlos (1994) – Estudo do espólio ósseo de sepulturas do Bronze do Sudoeste. In *Actas das V Jornadas Arqueológicas (Lisboa, 1993)*. Lisboa: Associação dos Arqueólogos Portugueses, pp. 185–186.

ORESTES VIDIGAL, Rosa; VALÉRIO, Pedro; ARAÚJO, Maria de Fátima; SOARES, António M. Monge; MATALOTO, Rui (2016) – Micro-EDXRF study of Chalcolithic copper-based artefacts from Southern Portugal. *X-Ray Spectrometry*. 45, pp. 63–68.

PAÇO, Afonso do; LEAL, Joaquim Baçã (1962–1963) – Sepulturas argáricas da Folha das Palmeiras (Mourão). *A Cidade de Évora*. 45–46, pp. 21–24.

PAVÓN SOLDEVILA, Ignacio (1995) – Bases estratigráficas para una revisión cronológica del Bronce del Suroeste: el corte 3 de La Umbria del Cerro del Castillo de Alange (Badajoz). *Extremadura Arqueológica*. 5, pp. 81–96.

PEREIRA, Filipa; SILVA, Rui J. C.; SOARES, António M. Monge; ARAÚJO, Maria de Fátima (2013) – The role of arsenic in Chalcolithic copper artefacts: insights from Vila Nova de São Pedro (Portugal). *Journal of Archaeological Science*. 40, pp. 2045–2056.

PONTE, Teresa Ricou Nunes da; SOARES, António M. Monge; ARAÚJO, Maria de Fátima; FRADE, José Carlos; RIBEIRO, Isabel; RODRIGUES, Zélia; SILVA, Rui J. C.; VALÉRIO, Pedro (2012) – O Bronze Pleno do Sudoeste da Horta do Folgão (Serpa, Portugal): os hipogeus funerários. *O Arqueólogo Português*. Série V. 2, pp. 265–295.

PORFÍRIO, Eduardo; SERRA, Miguel (2010) – Rituais funerários e comensalidade no Bronze do Sudoeste da Península Ibérica: novos dados a partir de uma intervenção arqueológica no sítio da Torre Velha 3 (Serpa). *Estudos do Quaternário*. 6, pp. 49–66.

RIBEIRO, Maria Isabel M.; SOARES, António M. Monge (1991) – A sepultura do Bronze do Sudoeste da Herdade do Montinho (Vale de Vargo, Serpa). Aplicação de alguns métodos instrumentais de análise química a um problema arqueológico. In *Actas das IV Jornadas Arqueológicas (Lisboa 1990)*. Lisboa: Associação dos Arqueólogos Portugueses, pp. 287–298.

ROVIRA LLORENS, Salvador (2004) – Tecnología metalúrgica y cambio cultural en la Prehistoria de la Península Ibérica. *Norba Revista de Historia*. 17, pp. 9–40.

ROVIRA LLORENS; MONTERO RUIZ, Ignacio (2013) – Iberia: technological development of prehistoric metallurgy. In BURMEISTER, Stefan; HANSEN, Svend; KUNST, Michael; MÜLLER-SCHESSEL, Nils, eds. – *Metal matters. Innovative technologies and social change in Prehistory and Antiquity*. Rahden/Westf.: Verlag Marie Leidorf, pp. 231–239.

ROVIRA I PORT, Jordi (1996) – An outstanding glass bead of oriental type amongst the funerary stocks in a Catalan barrow of the Middle Bronze Age: Monument I of the El Bosc of Corredà (L'Espunyola, Berguedà, Catalonia). *Trabajos de Prehistoria*. 53:1, pp. 155–162.

SÁNCHEZ ROMERO, Margarita; ARANDA JIMÉNEZ, Gonzalo; ALARCÓN GARCÍA, Eva (2007) – Gender and age identities in rituals of comensality: the Argaric societies. *Treballs d'Arqueologia*. 13, pp. 69–89.

SANTOS, Filipe J. C.; SOARES, António M. Monge; RODRIGUES, Zélia; QUEIROZ, Paula F.; VALÉRIO, Pedro; ARAÚJO, Maria de Fátima (2009) – A Horta do Albardão 3: um sítio da Pré-História Recente, com fosso e fossas, na Encosta do Albardão (S. Manços, Évora). *Revista Portuguesa de Arqueologia*. 12:1, pp. 53–71.

SCHUBART, Hermanfrid (1971a) – Acerca de la cerámica del Bronce Tardío en el Sur y Oeste Peninsular. *Trabajos de Prehistoria*. 28, pp. 153–182.

- SCHUBART, Hermanfrid (1971b) – O Horizonte de Ferradeira. Sepulturas do Eneolítico Final no Sudoeste da Península Ibérica. *Revista de Guimarães*. 81: 3–4, pp. 189–215.
- SCHUBART, Hermanfrid (1974) – La cultura del Bronce en el Sudoeste peninsular. Distribución y definición. *Miscelánea Arqueológica*. 2, pp. 345–379.
- SCHUBART, Hermanfrid (1975) – *Die Kultur der Bronzezeit im Südwesten der Iberischen Halbinsel*. Berlin: Walter de Gruyter.
- SILVA, Ana Maria; FERREIRA, Maria Teresa; CUNHA, Eugénia (2008) – Os restos ósseos humanos recuperados do monumento megalítico do Monte da Velha 1 (MV1) em Vila Verde de Ficalho (Serpa). *Revista Portuguesa de Arqueologia*. 11:1, pp. 52–55.
- SILVA, Carlos Tavares da; SOARES, Joaquina (1981) – Os cemitérios de cistas da Idade do Bronze. In *Pré-História da Área de Sines*. Lisboa: Gabinete da Área de Sines, pp. 141–180.
- SILVA, Carlos Tavares da; SOARES, Joaquina (2002) – Porto das Carretas: um povoado calcolítico fortificado do vale do Guadiana. *Al-Madan*. Série 2. 11, pp. 176–180.
- SOARES, António M. Monge (1994) – O Bronze do Sudoeste na margem esquerda do Guadiana. As necrópoles do Concelho de Serpa. In *Actas das V Jornadas Arqueológicas (Lisboa, 1993)*. Lisboa: Associação dos Arqueólogos Portugueses, pp. 179–197.
- SOARES, António M. Monge (2000) – Necrópole do Bronze do Sudoeste dos Bugalhos (Serpa). *Vipasca*. 9, pp. 47–52.
- SOARES, António M. Monge (2005) – Os povoados do Bronze Final do Sudoeste na margem esquerda portuguesa do Guadiana: novos dados sobre a cerâmica de ornatos brunidos. *Revista Portuguesa de Arqueologia*. 8:1, pp. 111–145.
- SOARES, António M. Monge (2008) – O monumento megalítico Monte da Velha 1 (Vila Verde de Ficalho, Serpa). *Revista Portuguesa de Arqueologia*. 11:1, pp. 33–51.
- SOARES, António M. Monge (2013) – O sistema de povoamento do Bronze Final no Baixo Alentejo – bacia do Guadiana. *Estudos Arqueológicos de Oeiras*. 20, pp. 273–302.
- SOARES, António M. Monge; ARAÚJO, Maria de Fátima; ALVES, Luís; FERRAZ, Maria Teresa (1996) – Vestígios metalúrgicos em contextos calcolíticos e da Idade do Bronze no sul de Portugal. In MACIEL, Manuel Justino, ed. – *Miscellanea em homenagem ao professor Bairrão Oleiro*. Lisboa: Colibri, pp. 553–579.
- SOARES, António M. Monge; BAPTISTA, Lídia; VALÉRIO, Pedro (2020) – Contactos “pre-coloniales” durante el Bronce Final en el interior del Alentejo (sur de Portugal). Establecimiento de una cronología precisa haciendo uso de la datación por el radiocarbono y de un tratamiento estadístico bayesiano. In BARCELÓ ÁLVAREZ, Juan A.; MORELL ROVIRA, Berta, eds. – *Métodos cronométricos en Arqueología, Historia y Paleontología*. Madrid: DEXTRA, pp. 367–374.
- SOARES, António M. Monge; DEUS, Manuela de; CORREIA, José C. (2007) – Necrópole dos Carapinhais (Sobral da Adiça, Moura). *Vipasca*. 2.ª Série. 2, pp. 180–190.
- SOARES, António M. Monge; MARTINS, Pedro Pais; MELO, Linda; SOARES, Rui M.G. Monge; SILVA, Ana Maria; VALÉRIO, Pedro (in press). O sítio da Horta do Pinheiro 5 (Torrão do Alentejo, Alcácer do Sal): contributo preliminar para o conhecimento dos inícios do Bronze Pleno no Sudoeste da Península Ibérica (1.º quartel do II milénio a.C.). In *Actas do X Encontro de Arqueologia do Sudoeste Peninsular (Zafra, 9–11 Novembro 2018)*.
- SOARES, António M. Monge; RIBEIRO, Maria Isabel M.; OLIVEIRA, Maria José; BAPTISTA, Lídia; ESTEVES, Lília; VALÉRIO, Pedro (2018) – Têxteis arqueológicos pré-históricos do território português: identificação, análise e datação. *Revista Portuguesa de Arqueologia*. 21, pp. 71–82.
- SOARES, António M. Monge; SOARES, Joaquina; SILVA, Carlos Tavares da (2007) – A datação pelo radiocarbono das fases de ocupação do Porto das Carretas: Algumas reflexões sobre a cronologia do Campaniforme. *Revista Portuguesa de Arqueologia*. 10:2, pp. 127–134.
- SOARES, António M. Monge; VALÉRIO, Pedro; ARAÚJO, Maria de Fátima; SILVA, Rui (2017) – A Metalurgia Campaniforme no Sul de Portugal. In GONÇALVES, Victor S., ed., *Sinos e Taças. Junto ao Oceano e mais longe. Aspectos da presença campaniforme na Península Ibérica*. Lisboa: UNIARQ, pp. 354–363.
- SOARES, António M. Monge; VALÉRIO, Pedro; CALVO, Ever; LOURENÇO, Marina; SIMÃO, Patrícia; SOARES, Rui Monge (2019) – O hipogeu 36 da Quinta do Castelo 5 (Salvada, Beja) ou uma revisão da partição por Schubart do Bronze do Sudoeste. *Onoba*. 7, pp. 65–76.
- SOARES, Joaquina (2013) – *Transformações Sociais durante o III milénio AC no Sul de Portugal. O Povoado do Porto das Carretas*. Évora: EDIA.
- SOARES, Joaquina; SILVA, Carlos Tavares da (2010) – Campaniforme do Porto das Carretas (médio Guadiana). A procura de novos quadros de referência. In GONÇALVES, Victor S.; SOUSA, Ana Catarina, eds. – *Transformação e mudança no Centro e Sul de Portugal no 3.º milénio a.n.e.: actas do Colóquio Internacional (Cascais, 4–7 Outubro 2005)*. Cascais: Câmara Municipal, pp. 225–261.
- SZÉCSÉNYI-NAGY, Anna; ROTH, Christina; BRANDT, Guido; RIHUETE HERRADA, Cristina; TEJEDOR RODRÍGUEZ, Cristina; HELD, Petra; GARCÍA MARTÍNEZ DE LAGRÁN, Íñigo; ARCUSA MAGALLÓN,

Héctor; ZESCH, Stephanie; KNIPPER, Corina; BÁNFFY, Eszter; FRIEDRICH, Susanne; MELLER, Harald; BUENO RAMÍREZ, Primitiva; BARROSO BERMEJO, Rosa; DE BALBÍN BEHRMANN, Rodrigo; HERRERO CORRAL, Ana M.; FLORES FERNÁNDEZ, Raúl; ALONSO FERNÁNDEZ, Carmen; RINDLISBACHER, Laura; OLIART, Camila; FREGEIRO MORADOR, María Inés; SORIANO LLOPIS, Ignacio; VICENTE CAMPOS, Oriol; MICÓ PÉREZ, Rafael; LULL SANTIAGO, Vicente; SOLER DÍAZ, Jorge; LÓPEZ PADILLA, Juan Antonio; ROCA DE TOGORES MUÑOZ, Consuelo; HERNÁNDEZ PÉREZ, Mauro S.; JOVER MAESTRE, Francisco Javier; LOMBA MAURANDI, Joaquín; AVILÉS FERNÁNDEZ, Azucena; LILLIOS, Katina T.; SILVA, Ana Maria; MAGALHÃES RAMALHO, Miguel; OOSTERBEEK, Luis Miguel; CUNHA, Claudia; WATERMAN, Anna J.; ROIG BUXÓ, Jordi; MARTÍNEZ RODRÍGUEZ, Andrés; PONCE MARTÍNEZ, Juana; HUNT ORTIZ, Mark; MEJÍAS GARCÍA, Juan Carlos; PECERO, ESPÍN, Juan Carlos; CRUZ AUÑÓN BRIONES, Rosario; TOMÉ, Tiago; CARMONA BALLESTERO, Eduardo; CARDOSO, João Luís; ARAÚJO, Ana Cristina; LIE-SAU VON LETTOW-VORBECK, Corina; BLASCO BOSQUED, Concepción; RÍOS MENDOZA, Patricia; PUJANTE MARTÍNEZ, Ana; ROYO GUILLÉN, José I.; ESQUEMBRE BEVIÁ, Marco Aurelio; GONÇALVES, Victor Manuel dos Santos; PARREIRA, Rui; MORÁN HERNÁNDEZ, Elena; MÉNDEZ IZQUIERDO, Elena; MENDUIÑA GARCÍA, Roberto; MARTÍNEZ CALVO, Victoria; LÓPEZ JIMÉNEZ, Oscar; KRAUSE, Johannes; PICHLER, Sandra L.; GARRIDO PENA, Rafael; KUNST, Michael; RISCH, Roberto; ROJO GUERRA, Manuel A.; HAAK, Wolfgang; ALT, Kurt W. (2017) – The maternal genetic make-up of the Iberian Peninsula between the Neolithic and the Early Bronze Age. *Scientific Reports*. 7: 15644.

TORRES ORTIZ, Mariano (1995) – *Sociedad y mundo funerario en Tartessos*. Madrid: Real Academia de la Historia.

TOWLE, Andrew; HENDERSO, Julian; BELLINTANI, Paolo; GAMBACURTA, Giovanna (2001) – Frattesina and Adria: report of scientific analysis of early glass from the Veneto. *Padusa*. 37, pp. 1–62.

VALERA, António Carlos (2000) – Moinho de Valadares 1 e a transição Neolítico Final/Calcolítico na margem esquerda do Guadiana: uma análise preliminar. *Era Arqueologia*. 1, pp. 21–37.

VALERA, António Carlos (2006) – A margem esquerda do Guadiana (região de Mourão), dos finais do 4º aos inícios do 2º milénio AC. *Era Arqueologia*. 7, pp. 136–210.

VALERA, António Carlos (2012) – Mind the gap: Neolithic and Chalcolithic enclosures of South Portugal. In GIBSON, Alex, ed. – *Enclosing the Neolithic. Recent studies in Britain and Europe*. Oxford: Archaeopress, pp. 165–183.

VALERA, António Carlos (2013) – Cronologia dos recintos de fossos da Pré-História recente em território português. In *Arqueologia em Portugal 150 anos. Actas do 1.º Congresso da Associação dos Arqueólogos Portugueses* (Lisboa 2013). Lisboa: Associação dos Arqueólogos Portugueses, pp. 335–343.

VALERA, António Carlos (2014) – *Bela Vista 5. Um recinto do final do 3º milénio a.n.e. (Mombeja, Beja)*. Lisboa: Era Arqueologia.

VALERA, António Carlos (2015) – Social change in the late 3rd millennium BC in Portugal: the twilight of enclosures. In MELLER, Harald; ARZ, Helge Wolfgang; JUNG, Reinhard; RISCH, Roberto, eds. – *2200 BC: a climatic breakdown as a cause for the collapse of the old world? 7th Archaeological Conference of Central Germany, October 23–26, 2014 in Halle (Saale)*. Halle: Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt, Landesmuseum für Vorgeschichte, pp. 409–427.

VALERA, António Carlos; FILIPE, Iola (2004) – O povoado do Porto Torrão (Ferreira do Alentejo): novos dados e novas problemáticas no contexto da calcolitização do Sudoeste peninsular. *Era Arqueologia*. 6, pp. 28–63.

VALERA, António Carlos; FILIPE, Victor (2010) – Outeiro Alto 2 (Brinches, Serpa): nota preliminar sobre um espaço funerário e de socialização do Neolítico Final à Idade do Bronze. *Apontamentos de Arqueologia e Património*. 5, pp. 49–56.

VALERA, António Carlos; MATALOTO, Rui; BASÍLIO, Ana Catarina (2019) – The South Portugal perspective. Beaker sites or sites with Beakers? In GIBSON, Alex M., ed. – *Bell Beaker settlement of Europe. The Bell Beaker phenomenon from a domestic perspective*. Oxford: Oxbow, pp. 1–23.

VALERA, António Carlos; SIMÃO, Inês; NUNES, Tiago; PEREIRO, Tiago do; COSTA, Cláudia (2017) – Neolithic ditched enclosures in Southern Portugal (4th millennium BC): new data and new perspectives. *Estudos do Quaternário*. 17, pp. 57–76.

VALERA, António Carlos; SOARES, António M. Monge; COELHO, Manuela (2008) – Primeiras datas de radiocarbono para a necrópole de hipogeus da Sobreira de Cima (Vidigueira, Beja). *Apontamentos de Arqueologia e Património*. 2, pp. 27–30.

VALÉRIO, Pedro; ARAÚJO, Maria de Fátima; SOARES, António M. Monge; SILVA, Rui J.C.; BAPTISTA, Lídia; MATALOTO, Rui (2018) – Early imports in the Late Bronze Age of South-Western Iberia: the bronze ornaments of the Hypogea at Monte da Ramada 1 (Southern Portugal). *Archaeometry*. 60:2, pp. 255–268.

VALÉRIO, Pedro; CARDOSO, Isabel P.; SANTIAGO, Mafalda; ARAÚJO, Maria Fátima; ALVES, Luís C.; GONÇALVES, Mário A.; MATALOTO, Rui (2020a) – Microanalytical study of copper ores from the Chalcolithic settlement of São Pedro (Portugal): Copper production in south-western Iberian Peninsula. *Archaeometry*. 62:2, pp. 314–328.

VALÉRIO, Pedro; SILVA, Rui J.C.; SOARES, António M. Monge; ARAÚJO, Maria Fátima; CARDOSO, João Luís (2020b) – Compositional and microstructural outlook of grave goods from Anta do Malhão and Soalheironas (Portugal): the diachronic use of arsenical copper in southwestern Iberian Peninsula. *Journal of Archaeological Science: Reports*. 33, 102527.

VALÉRIO, Pedro; SOARES, António M. Monge; ARAÚJO, Maria Fátima (2016a) – An overview of chalcolithic copper metallurgy from Southern Portugal. *Menga. Journal of Andalusian Prehistory*. 7, pp. 31–50.

VALÉRIO, Pedro; SOARES, António M. Monge; ARAÚJO, Maria de Fátima; SILVA, Rui J.C.; BAPTISTA, Lídia (2016b) – Middle Bronze Age Arsenical Copper Alloys in Southern Portugal. *Archaeometry*. 58:6, pp. 1003–1023.

VALÉRIO, Pedro; SOARES, António M. Monge; ARAÚJO, Maria de Fátima; SILVA, Rui J. C.; PORFÍRIO, Eduardo; SERRA, Miguel (2014) – Arsenical copper and bronze in Middle Bronze Age burial sites of southern Portugal: the first bronzes in Southwestern Iberia. *Journal of Archaeological Science*. 42, pp. 68–80.