POVOAMENTO E EXPLORAÇÃO DOS RECURSOS MINEIROS
NA EUROPA ATLÂNTICA OCIDENTAL

COORD.
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METALLURGY AND SOCIETY IN "BAIÕES/SANTA LUZIA" CULTURE GROUP: RESULTS OF THE METABRONZE PROJECT*

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When we started the METABRONZE project we already possessed archaeological evidence (coming from the some several archaeological sites that provided the bulk of the samples addressed in the new project). It was enough, by itself, to allow us to put forward the hypothesis of the existence of diminutive scales of metal production in the Late Bronze Age (LBA) Baiões/Santa Luzia Culture Group, distributed between small villages and even settlements of smaller dimensions (Senna-Martinez 2000a; Senna-Martinez & Pedro 2000a). The probable historical and social implications of such a model of production had also been abundantly

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addressed (Senna-Martinez 1998, p. 219-226; 2000a, p. 126-131; 2005, p. 904-909; Senna-Martinez & Pedro 2000a, p. 64-67).

Through analytical results independently obtained, the METABRONZE project come to strongly support several of these hypothesis, produced new results, raised new hypothesis and questions as well as allowing the local development (at a Portuguese level) of new methodologies for archaeometallurgical studies.

1. THE GEOGRAPHICAL AND GEOLOGICAL SETTING

The heart of the Beira-Alta region (home of LBA Baiões/Santa Luzia Culture Group – Fig. 1) comprises the interior basins of the Mondego and Vouga rivers. The southern limits of Beira-Alta are the Portuguese central highlands, the *Serras* of Lousã, Açor and Estrela, part of the Iberia central divide. Of these, Serra da Estrela has very good spring and summer pastures whose use seems to extend as far back as the Neolithic (Knaap & Van Leeuwen 1994).

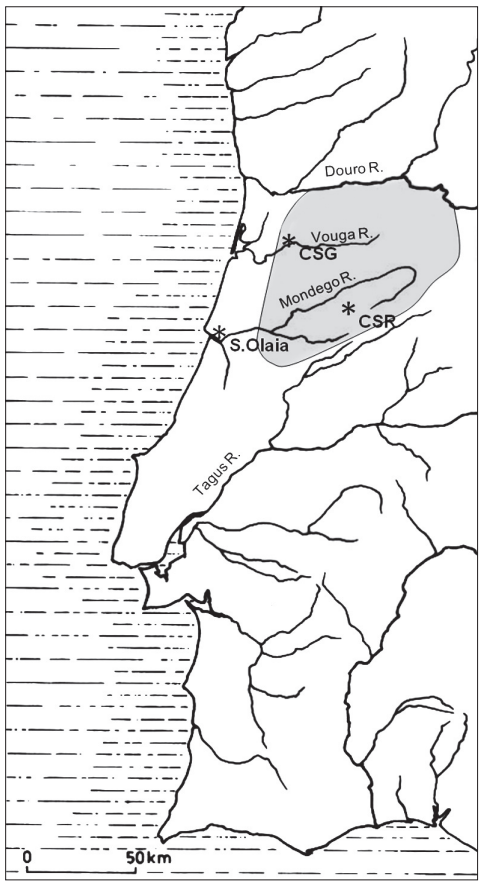

Figura 1.
Location of the area of Baiões/Santa Luzia LBA culture group in Western Iberia, with the main archaeological sites discussed: CSG – Castro da Sª da Guia de Baiões; CSR – Cabeço do Crasto de S. Romão; S. Olaia – Santa Olaia.

The western and north-western boundary, the Maciço Marginal, separates the Mondego and Vouga interior basins from the coastal lowlands. By going around the Serra do Caramulo the middle Mondego basin opens up to the Vouga and Paiva rivers' upper basins, whose valleys constitute two natural passages, going respectively West and North. The first one of these is controlled by the Castro da Senhora da Guia de Baiões, a very important Late Bronze Age settlement which lies at the core of METABRONZE Project.

Looking east and north of the Celorico basin, the northern Meseta step divides Beira-Alta from north-central Iberia. Nevertheless there exist several natural paths as shown by medieval castles defending both sides of the border zone with Castilla.

In the North of our study area, the high basins of the Paiva and the Távora link it to the Douro basin, both allowing and explaining cultural contacts.

The principal vegetation cover for the period under consideration seems to have been a deciduous temperate oak forest (*Quercus pyrenaica* at altitudes over 600-800 m and *Quercus robur* at lower altitudes – cf. Janssen 1985; Janssen & Woldringh 1981; Van Den Brink & Janssen 1985; Knaap & Van Leeuwen 1994).

Palynological analyses of peat cores at a transect of Serra da Estrela allow the development of a model of several episodes of degradation of this forest (Janssen 1985; Knaap & Van Leeuwen 1994.), attributed to human impact. These episodes are marked by deforestation and bush fires at middle and high altitudes of Serra da Estrela that could be due to the opening of spring-summer grazing lands.

A main episode about 3500 BC can well be correlated with the principal phase of development of the Neolithic megalithic necropolis (Senna-Martinez & Ventura 2008).

A second deforestation episode dated from about 1600-1500 BC is associated with the first appearance of rye (*Secale cereale*) and can be correlated with the First Bronze Age (c. 2200-1250 BC).

The process of deforestation intensifies again from 1000-900 BC onwards (Janssen 1985) in correlation with the second halve of the LBA (c. 1000-500 BC).

Old paths, some of them subsequently followed by the Roman roads (Alarcão 1988, p. 102-5 and fig. 20), surely criss-crossed the country. However, the principal access to our study area from the lower Mondego and littoral plains must have been the rivers until very recent times (Martins 1940, p. 164-6; Oliveira 1972, p. 1-5).

According to Dias (1987), following a quick transgression in Early Holocene times (c.10000-8000 BP; Dias 1987, p. 330), the sea level stabilised near its present situation, invading deeply the lower river valleys (Daveau 1980, p. 24) between 5000-3000 BP (Dias 1987, p. 334). Even if we cannot be very precise about their limits, the Mondego and Vouga flandrian *rias* can be reconstructed in broad lines for the period under study, clearly establishing their importance as waterways to access the more inland areas. Thus, the location of lower Mondego LBA sites and

especially of the Phoenician "port of trade" of Santa Olaia becomes significant in terms of their possible relations with the ones in our study area.

Beira Alta has abundant mineral resources of which tin and gold are particularly important for the period under consideration (Garcia 1963; Senna-Martinez *et al.* 1984, p. 117, 118 and fig.1). Old mines are difficult to find namely because most of the mining of these two resources would occur in alluvial placers, nevertheless the reopening, during World War Two, of the ancient gallery of the S. Martinho mine (Orgens, Viseu) led to the discovery, at the bottom of the ruble which filled its shaft, of a bronze dagger of "Porto de Mós type", proving its original opening and posterior infilling during the Late Bronze Age, probably for cassiterite exploitation (Correia *et al.* 1979).

Copper is an entirely different question. During the last two centuries it was thought that the main prehistoric sources for copper ores in the Iberian Peninsula were in its southern regions. This being surely true in terms of modern industrial exploitation, is nevertheless incorrect in what concerns the early metallurgies of the Copper and Bronze Ages. For these small scale ("domestic") metalworking almost any small outcrop with secondary mineralization of copper carbonates and/or oxides would do, as has been proved possible recently for the First Bronze Age habitat site of Fraga dos Corvos (Macedo de Cavaleiros, Trás-os-Montes – Geirinhas *et al.* in press). Such occurrences are known to occur in the Mangualde area in the center of the Mondego's Platform.

The development of local elites during the LBA has been linked to the role of metallurgy in producing status enhancing artifacts (expressed by the higher number of metallic artifact production, as well as their more complex shape and new techniques of production). So an easy access to the minerals must have been seen as an advantage, and can also be taken into account in the positioning of some emerging sites (Senna-Martinez 1996; Vilaça 1995).

2. THE BAIÕES/SANTA LUZIA CULTURE GROUP: A BRIEF CHARACTERIZATION

This Late Bronze Age Culture Group develops through the 12th to the 7th centuries BC, with a final phase from the 10th century onwards (Senna-Martinez 2010, Table 1).

Settlements constitute a network of sites with high archaeographic visibility, clearly disposed as to visually control the surrounding territory. With mainly small size (average 0,5 ha – Senna-Martinez 2000a, p. 120-121) and population (in average between 200 and 300 inhabitants) they constitute equivalent and surely cooperative nodes in this regional network (Fig. 2 – Senna-Martinez 1996, p. 168; 1998, p. 221-222).

Their presumed food economies show little surplus producing capacities with animal husbandry (ovi-caprids) and horticulture dominants, together with acorns used for roasting and flower making (Senna-Martinez 2000a, p. 124-126).

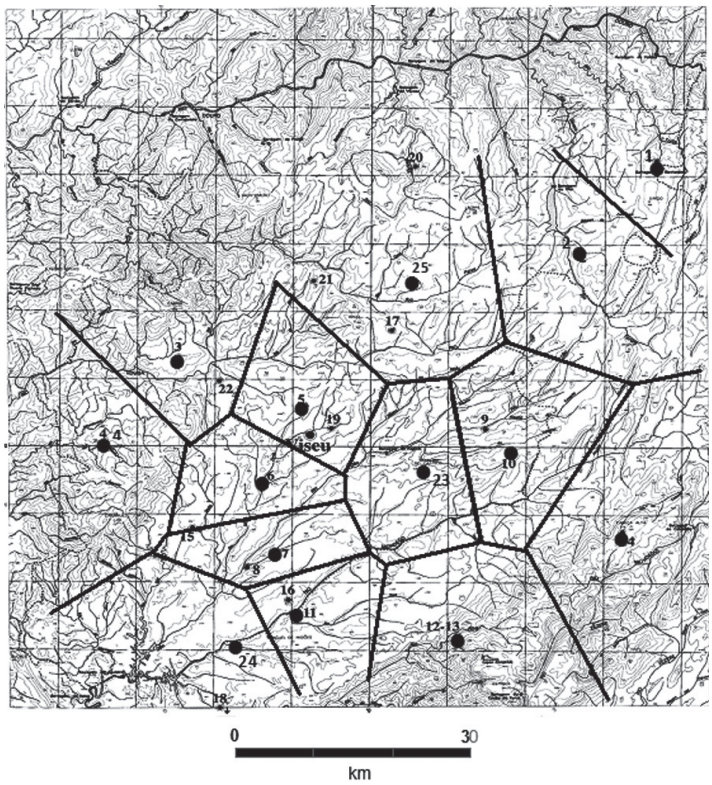

Figura 2. Settlement network of Baiões/Santa Luzia culture group: 1 – Monte Airoso (Penedono); 2 – Senhora das Necessidades (Sernancelhe); 3 – Senhora da Guia de Baiões (S. Pedro do Sul); 4 – Cabeço do Couço (Vouzela); 5 – Santa Luzia (Viseu); 6 – Castelo dos Mouros (Viseu); 7 – Outeiro dos Castelos de Beijós (Carregal do Sal); 8 – Malcata (Carregal do Sal); 9 – Castelo de Penalva (Penalva do Castelo); 10 – Senhora do Bom Sucesso (Mangualde); 11 – Castro de S. Cosme (Oliveira do Hospital); 12 – Cabeço do Crasto de São Romão (Seia); 13 – Buraco da Moura de São Romão (Seia); 14 – Cabeço Redondo (Gouveia); 23 – Senhora do Castelo (Mangualde); 24 – Castro da Picota (Tábua); 25 – Canedotes (Vila Nova de Paiva).

The production of the principal artefacts, namely pottery (Senna-Martinez 1993) and metalworking (Senna-Martinez 2005), is local and domestic, in a small scale and for self-use with almost no goods-circulation.

The study of pottery decoration (Reprezas 2010) allows us to see different sub-regional distinctions within Baiões/Santa Luzia Culture Group that may suggest the existence of different lineages of woman potters.

All available data leads us to think that the privileged way for inter-site and even inter-regional contacts in Atlantic Iberia LBA culture groups (namely between the two Portuguese Beiras and Estremadura) could well be through women circulation in matrimonial alliances. At a strict regional or sub-regional level this practice (made necessary because of settlement size and population) could well contribute

to the development and maintenance of "ways of production" namely for pottery (Colomer i Solsona 2005), as well as to consolidate the network of solidarities and ties between the local elites that allowed them to control metal production and circulation as well as access to its regional sources. At a higher transregional level, this practice could lead to the small but established circulation of pottery and, mainly, to the rapid development of metallurgical technologies and metallic models diffusion between regional elites (Senna-Martinez 1996).

3. THE LBA BAIÕES/SANTA LUZIA METALLURGY: RESULTS OF THE PROJECT

A first revision of the subject of metal production in the LBA Baiões/Santa Luzia culture group, as well as a complete inventory of the regionally available metallurgical evidence, was developed in between 1997 and 2000 by the first author together with Ivone Pedro in preparation of the National Museum of Archaeology (MNA) 2000/2001 exhibition "Por Terras de Viriato: Arqueologia da Região de Viseu" (Senna-Martinez & Pedro 2000b).

Based on the above mentioned inventory it was possible, between 2001 and 2006 and both as preparation for and as a first phase of the METABRONZE Project, to develop a series of EDXRF analysis on artefacts allowing bulk chemical compositional characterization of 113 artefacts: 73 from Crasto da Sª da Guia de Baiões (CSG), including the totality of the so called "deposit" (Valério *et al*. 2006); 6 from Castro de Santa Luzia (CSL – Figueiredo *et al*. 2006); 7 from Castro do Outeiro dos Castelos de Beijós (COCB – Senna-Martinez 2000b); one from Castro da Senhora das Necessidades de Sernancelhe (CSN – Senna-Martinez *et al*. 2004); nineteen from the habitat of Canedotes (CAN – Canha *et al.* 2007); and another 7 through confirmation of older analyses from Cabeço do Crasto de São Romão (CSR – Gil *et al*. 1989).

The data so provided shows that all the artefacts are made of binary bronze (Cu, Sn). Some compositional differences were detected within the presence of impurities (mainly As and Pb). The presence of gold in one of the palstaves and two rings of Baiões can be referred to its possible association with regional tin mineralization's or, if it is proved as deliberate, could eventually be the result of a gilding process.

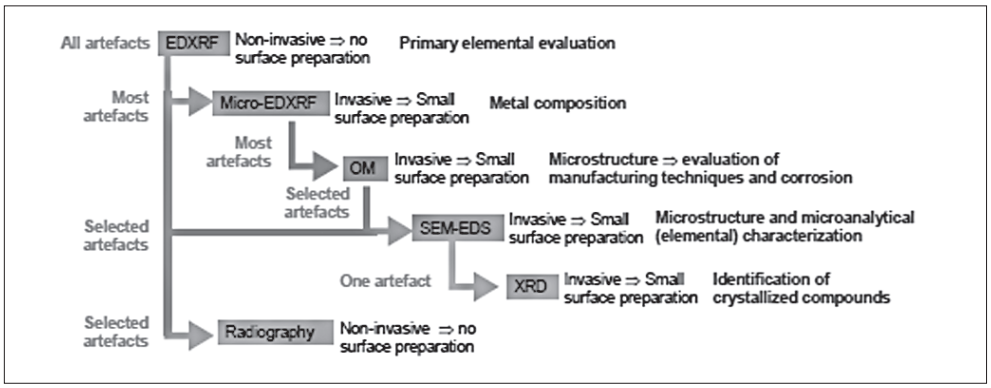

Figura 3 . Analytical design employed in the study of the artefacts (cf. Figueiredo 2010, fig.1.2).

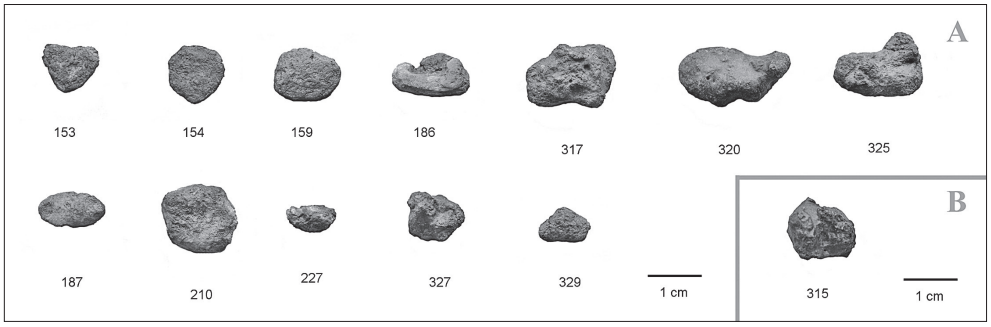

Figura 4. CSG, bronze smelting evidence: A- Bronze prills; B- Slag with traces of malaquite andcassiterite (sg. Figueiredo *et al.* 2010b, fig. 3 adapted).

During the development of the project and in general, the experimental methodology employed in the study of metallic pieces followed a 3 stage procedure (Figueiredo 2010, p. 6):

1. primary elemental evaluation by EDXRF without any previous surface preparation;
2. determination of metal composition through micro-EDXRF in prepared areas;
3. and a microstructural study by OM in prepared areas.

Some items were also studied by SEM-EDS to evaluate inclusions, intermetallic compounds, corrosion, and other special features. A slag fragment was also analysed by X-ray diffraction (XRD). Digital X-ray radiography was also performed in some artefacts that were not submitted to invasive analyses to aid the study of the manufacturing techniques. Fig. 3 shows a scheme of the analytical design.

The analytical results (Figueiredo 2010; Figueiredo *et al*. 2010b) strongly suggest for Baiões/Santa Luzia metallurgy a primary production of binary bronze (Cu,

Sn) with a distinctive composition supported by a regular access to tin sources, probably through the exploitation of local resources.

In a much smaller scale copper could also be produced for special purposes (rivets, luxury items... – cf. Figueiredo *et al*. 2010a)[7].

As documented at the type site of CSG through the analysis of a slag fragment[8] and several reduction nodules (prills – Fig. 4) the probable method of bronze producing was through open-vessel co-reduction of malachite and cassiterite ores (Figueiredo *et al*. 2010b). This very simple process has a very low productivity and is totally compatible with the archaeographic evidence regionally recovered.

The presence in CSG and other sites of partially heat-deformed fragments of artefacts with recrystallized grain microstructures point out to recycling operations rather than faulty castings. Recycling was probably a frequent operation since more

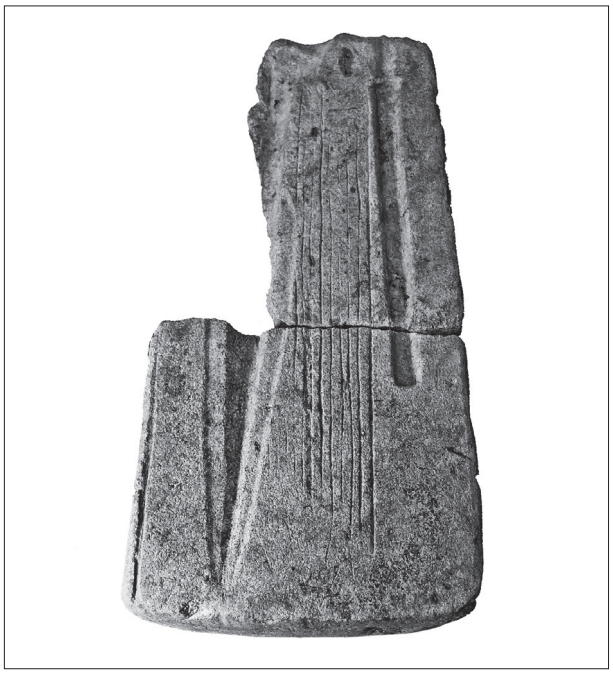

Figura 5.
Fragments of a multiple parts stone mould for Lance heads and chisels fron CCCPC.

[7] As documented by the copper bar CSG-293, whose microstructure indicates that it has been shaped through thermomechanical work to the final semi-quadrangular section. The composition and typology of this artefact suggests that it might have been used as an ingot, from which small amounts of metal were cut off to manufacture small simple copper items (Figueiredo *et al*. 2010b, p. 1629).

[8] Slag fragments can be scarce and difficult to find since because of the nature of the primitive smelting operations involved, namely at the small scale workshops that we detect in Iberia, as well as the complete fragmentation of the smelt to recover the metallic lumps and prills (also called smelting droplets) (Hauptmann 2007), so this was a very important finding.

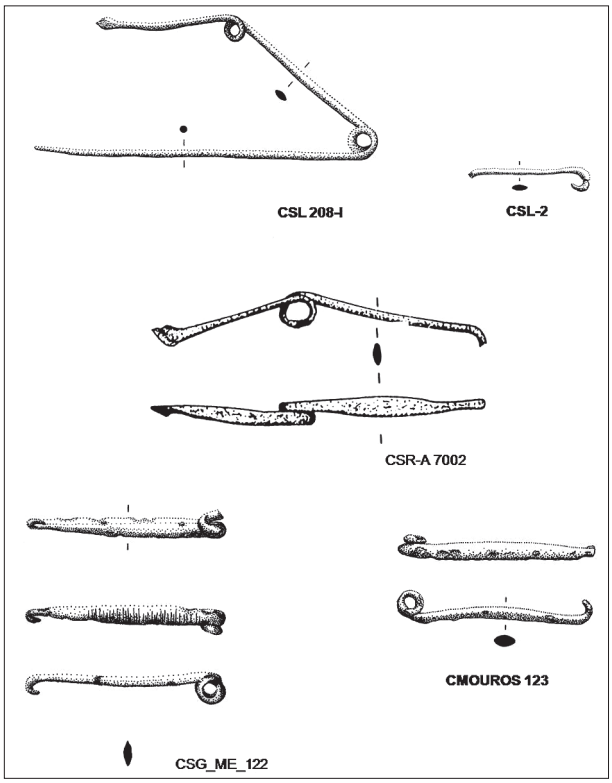

Figura 6.
Fibulae of "enrolamento no arco" type from Baiões/Santa Luzia culture group.

than 300 fragments of foundry leftovers and scrap, probably for remelting, are present among the collection of CSG (Senna-Martinez & Pedro 2000a).

The composition of the bronze items analyzed shows a remarkable metallurgical consistence for such small scale local productions and their empirical methods of bronze production (tin content has an average of about 12,7±1.9 % – Figueiredo 2010).

Possible explanations for the metallurgists' good empirical production control of alloy compositions should take into consideration that primary production by co-smelting copper and tin ores would imply good control of the co-smelting charge, while recycling and selection of smelted prills for melting would probably imply that the objects of such work would mainly came from former local or regional primary productions lying within the same empirical standard production range.

Moulds of stone (Fig. 5), clay and bronze and fragments of mould have been recovered from several settlement sites (Namely CSG, CSL, CSR and CCPC), comprising simple open ones, multiple parts and "cire perdue" types.

A large variety of thermo-mechanical work affected the produced artefacts:

– Variable cycles of forging and annealing to shape bars and wires and produce fibulae, spatula, awls, etc.;

– More localized forging to give shape and sharpen the cutting edges of palstaves, spear points, chisels, etc.;
– Some exemplars where even found "as cast" structures, like several of the sickle-blades from Baiões (CSG), still showing burrs.

Overcastting has been inferred for the CSG *furcula* (Armbuster 2002-2003, p. 149) and has been analytically proved true for the production of Figueiredo das Donas shield nails (Figueiredo *et al*. 2011).

Although the great majority of bronze artefacts produced by Baiões/Santa Luzia metallurgists is of Atlantic typological affiliation there is clear evidence to an early presence there of some exemplars, and mostly models, of Mediterranean origin, going back to the last quarter of the second millennium BC. Three categories of artefacts and a special metallurgical technique document this occurrence: the first *fibulae*, the first iron artefacts, metal weights and gold gilding.

The Baiões/Santa Luzia culture group has the largest concentration of old type fibulae from Iberia: the so called "Roça do Casal do Meio" or "de enrolamento no arco" type (Gil *et al*. 1989) which is an older prototype for the *arco serpegiante* type *fibulae*[9].

Compositional analysis of the exemplars from CSR, CSL and CCPC as well as from several of the wire fragments from several sites strongly suggest a local production, copying the Mediterranean prototypes as verified for the artefacts of Atlantic typology.

Another regional early type of fibula (1100-900 BC – Senna-Martinez 2011, p. 291) is represented by the two *codo fibulae* of Sicilian type from Castro de Mondin da Beira (CMB – Carreira 1994, p. 81-83 and fig.9) and the one from Monte Airoso (CMA – Senna-Martinez 1995, p. 71).

Also from this culture group, but from the later second phase, comes a double resort type fibula from COCB, dating between 814-777 BC.

The only artefacts of sure Mediterranean provenance with no possible local production are the early iron blades of Western Iberia, namely for the Baiões/Santa Luzia culture group the exemplar and two iron fragments from COCB dated between 1314-1000 BC (Senna-Martinez 2000b).

[9] These exemplars comprise (Senna-Martinez 2010, p. 19-20): one from CSR (CSR-A 7002 dated from 1312-1055 AC); two from CSL (CSL-2 and CSL-208I dated 1322-1007 AC); two from CSG (CSG-ME 122 and another that was lost, dated 936-788 AC); one from Castelo dos Mouros (CMOUROS 123); and one from Cabeço do Cucão da Pedra Cavaleira (CCPC – Figueiredo *et al*. in press). Their dating together with the recent dating of the type exemplar from Roça do Casal do Meio (Vilaça & Cunha 2005, p. 52) suggest a period between 1200-800 BC for their utilization.

Important elements in the Baiões/Santa Luzia metallurgy Mediterranean connection are the bronze weights with known exemplars in CSG, CSL and CAN. Present also in the LBA culture group of Beira Interior (in the sites of Monte do Trigo and Moreirinha), the connexion of the exemplars of CSG with the Cypriot and Aegean metric systems and the ones from CAN with Levantine (Phoenician-Canaanite) system (Vilaça 2003, p. 466-468) rise the question of their role in a socioeconomic environment of little or none goods circulation and mainly domestic forms of production.

The only metallurgical technique with an east Mediterranean origin that we find in Baiões/Santa Luzia culture group is gilding by thermo-diffusion, applied to an ornamental nail from CSR (Figueiredo *et al*. 2010a). The gilding technique explains it being made necessarily of copper. Copper use in this culture group, besides rivets production, is attested in the Tartessian belt hook fragment from Canedotes habitat (Valério *et al.* 2007), with a parallel in a different regional area, a LBA context in Trás-os-Montes, where another fragment of such a Tartessian belt hook of copper was found in Fraga dos Corvos Rock-Shelter 2 (Figueiredo *et al*. 2009). The gilding process demonstrated for the CSR nail can very well be the basis for the need of making such artefacts with copper and not bronze.

To take into perspective these very early Mediterranean cultural influences into the Baiões/Santa Luzia culture group we should consider the questions of tin accessibility and of the so called "stele route" (Nunes 1960).

The inception of LBA in Iberia south of the Tagus River (in the last quarter of the second millennium BC) will see the generalization of binary bronze production. This technological change supposes the possibility of regular access (even if in small scale) to tin ore. This metal is available, under the form of cassiterite (tin oxide), in the alluvial placers found since the Portuguese Beiras to the Iberian Northwest.

LBA Andalucía connexions with the Tagus basin can be represented by the arrival in Beira Interior of stroke-burnish pottery decorations but more important is the ending there of the "stele route" (Nunes 1960; Nunes & Rodrigues 1957; Ruiz-Gálvez & Galán Domingo 1991; Galán Domingo 1994). Here, in the Sabugal area, two new such items were found recently[10], marking the northern most extreme of its coherent distribution in western Iberia.

If, as we think, the Mediterranean pre-Phoenician influences in the Portuguese Beiras are linked to tin procurement from southern Iberia then the probable route there would follow the "stele route" even before its signalling by this particular form of engraved stones.

[10] Those were presented in October 1999 in the Sabugal meeting on "Stele and menhir-statue".

Bronze production by co-smelting of cassiterite and malaquite in open-vessel, as demonstrated for Baiões/Santa Luzia metallurgy, can also explain the lack of archaeological findings of tin ingots in western Iberia. Tin could well circulate under the form of Cassiterite crystals. If this implies circulation (even in small scale) of tin and gold from the Portuguese Beiras southwards that could also explain both the early presence there of bronze weights, fibulae and iron blades of Mediterranean type.

We think that the development in western Iberia of a Phoenician presence, between the 8th and 6th centuries BC, as demonstrated by the development of the ports of trade of Santarém and Santa Olaia (Arruda 2000), can be linked, besides the coming of age of the "stele route", to new efforts to reach the interior gold and tin producing areas of the Portuguese Beiras. Those efforts were not very successful in the case of the Baiões/Santa Luzia culture group, where only the double resort fibula and pieces of an orientalising beige pottery vessel from COCB demonstrate some evidence of such a contact. Otherwise, they met with little more success in what concerns the Beira Interior group, as shown by the orientalising artefacts recovered in the settlement of Cachouça (located in the south and near the Tagus River valley – Vilaça 2007, p. 70-74; Vilaça & Basílio 2000), with their relative small number in terms of the local material culture that is not enough to let us talk of a local transition to the Iron Age.

The location of Santa Olaia, a Late Bronze Age settlement which dominates the Mondego's Ria, implies a Phoenician interest in the metals from the hinterland in between other resources. The purposed chronology of Santa Olaia as a port of trade (from the end of the 8th century BC to the 6th – Arruda 2000, p. 254, 258) is too late as to link it to the main phase of the Baiões/Santa Luzia culture group development but makes it possible to relate it to its probable ending.

Considering that the search for tin, gold and even bronze inland could well be the main reason for the Phoenician establishment in Santa Olaia, the scale of metal production that can be proposed for the Baiões/Santa Luzia known sites (mainly in the range of a few hundred grams yearly per site – Senna-Martinez & Pedro 2000a, p. 66-67) might have frustrated their efforts. That Santa Olaia develops its own local capacity for metal producing (probably iron – Arruda 2000, p. 238-239) can then be seen as an alternative solution for the economic viability of the Phoenician establishment, as well as clear indication of the shortcomings of metal flux from more inland areas. If we add to iron producing the capture of slaves in the hinterland, in close cooperation with the Phoenician littoral clients, this may allow us to connect Phoenician establishment in Santa Olaia with the collapse of Baiões/Santa Luzia culture group inland settlements (collapse, we think, occurs between the 7th and 6th centuries BC – Senna-Martinez 2011, p. 293). This reasoning can also contribute to explain the survival and development

into the second Iron Age of littoral settlements, namely Crasto de Tavarede and Conímbriga (Correia 1993; Arruda 2000, p. 244 and 245).

4. CONCLUDING...

The archaeological as well as archaeometallurgical evidence we now have for the Baiões/Santa Luzia culture group strongly militates against the generalized idea that in Western Iberia LBA could exist large and conspicuous smelting installations producing many tones of slag as well as small scale workshops. Such a description surely does not fit our evidence and, to our knowledge, no such "large and conspicuous smelting installations" are known in Iberia in pre-Phoenician times.

The previously suggested un-economic nature of metal production among the Baiões/Santa Luzia cultural group (Senna-Martinez 1996) is now clarified by the present study. The main productive activities of land exploitation for fruit gathering (namely acorns), farming and cattle raising could well coexist, for some specialized individuals, with small scale mining and metal artefact producing. Generally, the available evidence suggests that the small scale kind of metalworking and smelting documented were probably activities which required no special facilities (such as the complex furnaces and large infrastructures, in Eastern Mediterranean cultures for example) and no high task specialization (various metallurgical procedures performed in the same place possibly by a very small number of individuals), being thus perfectly adequate to be performed inside the settlements, at a "domestic" and "part time" level.

In the guise of conclusion, we could say that, according to our research, what seems to differentiate bronze production between east and west Mediterranean LBA is less a question of technical skills then of scale of production derived from very different social needs.

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METALLURGY AND SOCIETY IN "BAIÕES/SANTA LUZIA" CULTURE GROUP: RESULTS OF THE METABRONZE PROJECT

Abstract: Since 1984 references to the so called "Baiões Hoard" supported several studies on the Western Europe LBA metallurgy and its relations with the Mediterranean. The revision of its materials for the exhibition "Por Terras de Viriato: Arqueologia da Região de Viseu" (MNA 2000-2001) provided the basis to its characterization not as a hoard but as part of a foundry area. During the exhibition it was also possible to publicly present the large majority of the known artefacts connected to the metallurgy of this Culture Group.

As a result of the 2000/2001 exhibition it was then possible to submit to the Portuguese National Science Foundation (FCT) the project "Metallurgy and Society in Central Portugal Late Bronze Age (METABRONZE)" (POCTI/HAR/58678/2004). In this paper, we are presenting the results of this project as well as their profound repercussions on the understanding and characterization of metallurgical production in the Late Bronze Age Baiões/Santa Luzia culture group.

Key-Words: Baiões/Santa Luzia culture group, Arqueometallurgy, Late Bronze Age, Centre Portugal.

Resumo: Desde o já longínquo ano de 1984 que o conjunto denominado "depósito de Baiões" tem vindo a constituir referência para os estudos sobre a metalurgia do Bronze Final da Orla Atlântica da Europa e suas relações com o Mediterrâneo. A sua revisão, aquando da exposição "Por Terras de Viriato: Arqueologia da Região de Viseu" (MNA 2000-2001), permitiu perspectivá-lo como parte integrante de uma área de fundição, bem como apresentar a público, pela primeira vez, a quase totalidade dos conjuntos artefactuais relacionados com a metalurgia deste Grupo do Bronze Final Centro-Português.

Como consequência deste conjunto de circunstâncias foi então possível apresentar e obter financiamento da FCT (Fundação para a Ciência e Tecnologia) para um projecto intitulado "Metalurgia e Sociedade no Bronze Final do Centro de Portugal – METABRONZE" (POCTI/HAR/58678/2004). São os resultados obtidos no decurso deste projecto e as suas profundas repercussões no entendimento e caracterização das produções metalúrgicas do Mundo Baiões/Santa Luzia que aqui se apresentam.

Palavras Chave: Grupo Baiões/Santa Luzia, Arqueometalurgia, Bronze Final, Centro de Portugal.