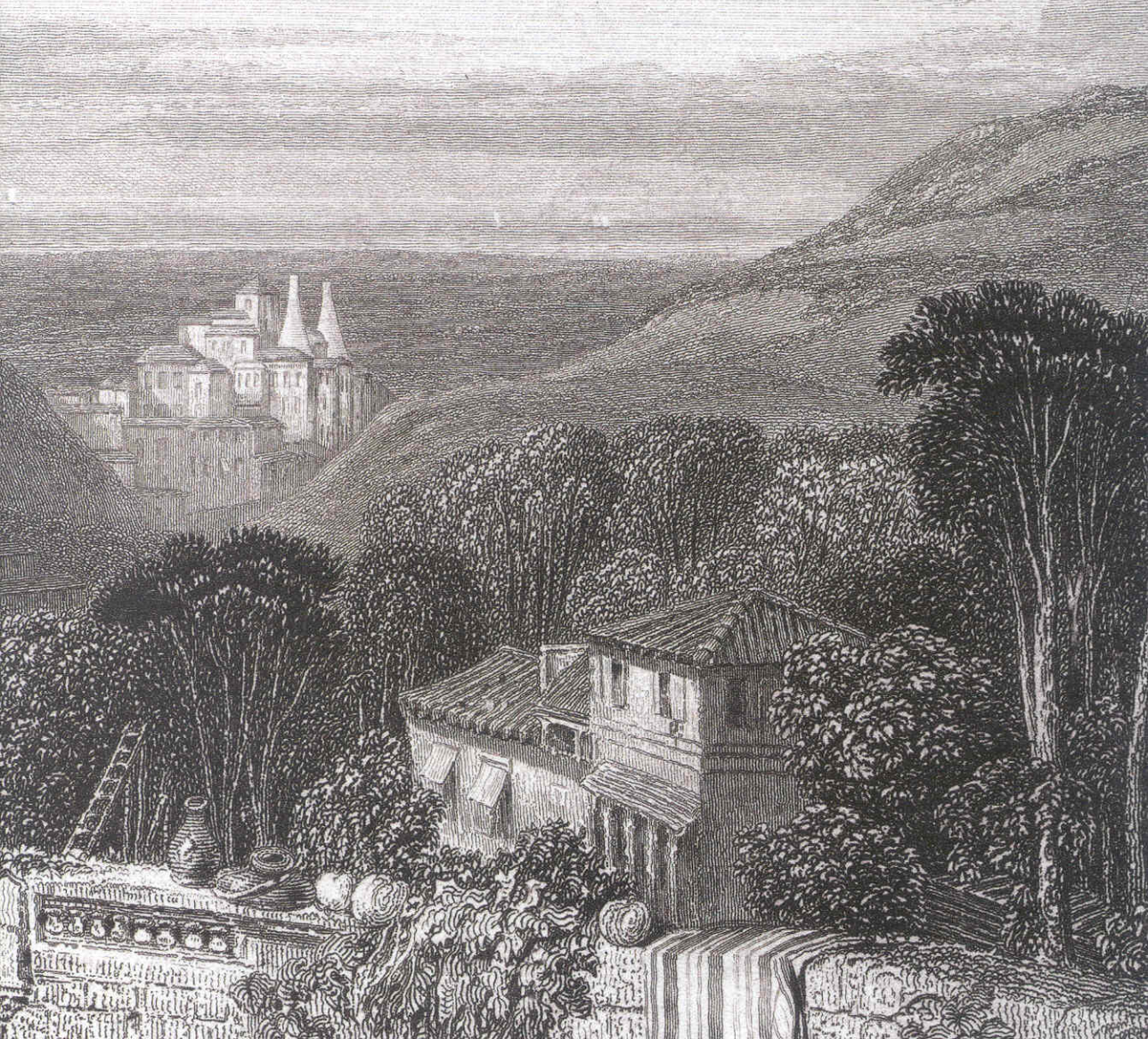


THE ROYAL ARCHAEOLOGICAL INSTITUTE

Portugal



Portugal

Report and Proceedings of the
157th Summer Meeting of the
Royal Archaeological Institute in 2011
compiled by Anthony Quiney,
edited by Patrick Ottaway

Supplement to the *Archaeological Journal*
volume 168 for 2011

THE ROYAL ARCHAEOLOGICAL INSTITUTE

LONDON

© Royal Archaeological Institute 2012

This publication is copyright under the Berne Convention and the International Copyright Convention. Apart from copying permitted under the UK Copyright Act 1991, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form without prior permission of the copyright owners. Permission is not required to copy abstracts of papers or articles on condition that a full reference to the source is shown.

*Multiple copying of the contents of the publication
without permission is always illegal.*

ISBN 978 0 903986 601

ISSN 0954-1756

The Council of the Royal Archaeological Institute wish it to be understood that they are not responsible for any statement or opinion expressed in the *Archaeological Journal*, the authors of the several communications being alone responsible for the same.

PRODUCED IN GREAT BRITAIN BY OBLONG CREATIVE LTD, WETHERBY
AND PRINTED BY HENRY LING LTD, DORCHESTER

THE PREHISTORIC SETTLEMENT OF LECEIA (OEIRAS)

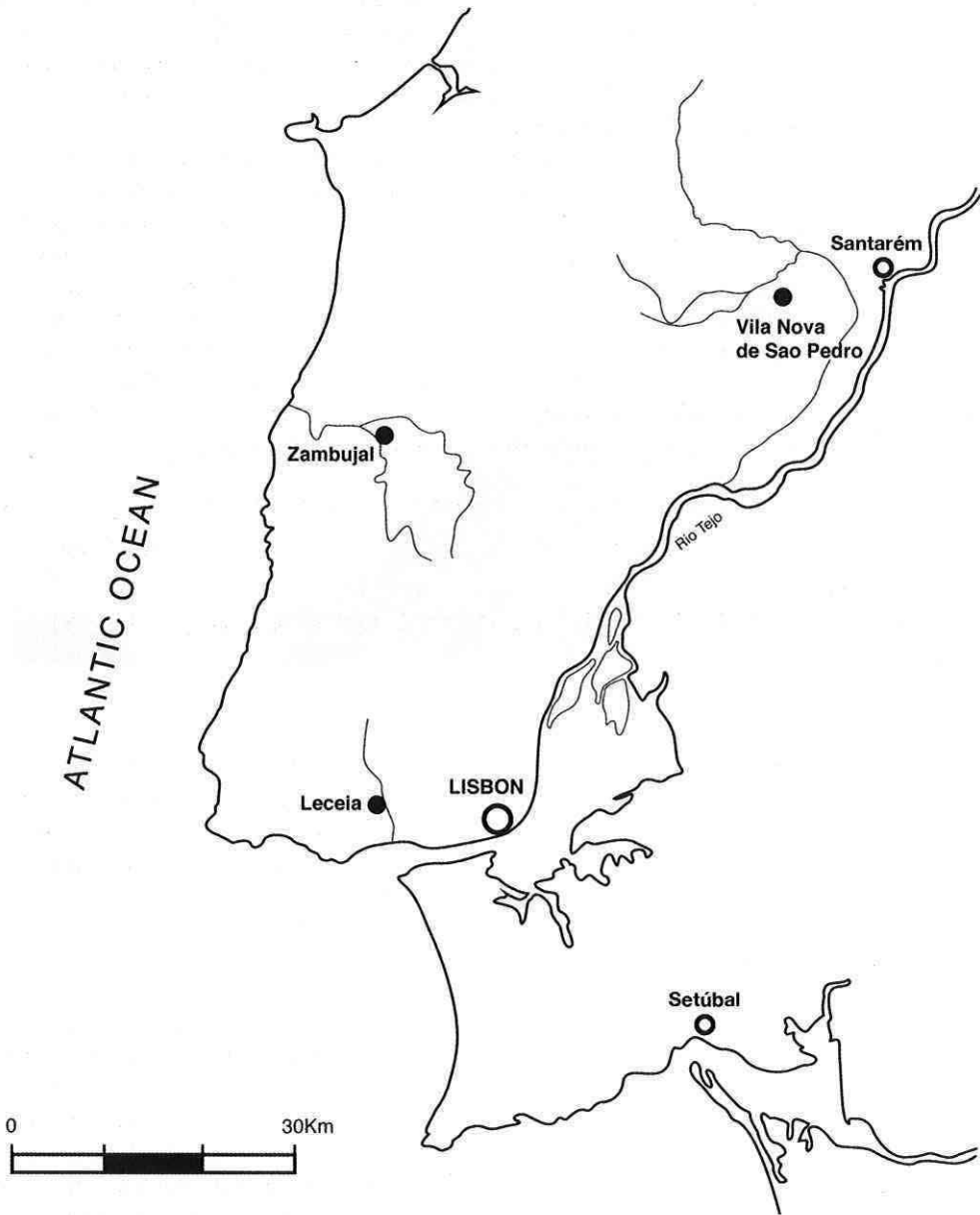
RESULTS OF THE EXCAVATIONS OF 1983–2002

Introduction

In the course of the last four decades, investigations of the Chalcolithic or Copper Age of the Lower Estremadura, situated roughly between the parallels of Torres Vedras and of the Sado Estuary, have produced an extensive, albeit dispersed and anomalous group of results concerning habitats and burial sites (Illus. 19). However, the absence of a coherent overview, both in the treatment of such accumulated evidence and the gathering of fresh information through continuing excavations, has prevented, until recently, any understanding of the strong identity and cultural originality of the region in the Copper Age.

Previous accounts should have proposed models of territorial exploitation that considered their ecological character and natural resources (preconditions of settlement itself) and also provided a perspective of the relationships with other, contemporary cultural groups. This would allow one to establish a regional cultural sequence, as well as a model of the underlying social organization.

The investigations concern a clearly defined geographical region over a period that lasted about one millennium which is one of the richest in terms of the transformation of prehistoric society in Western Europe. In this context, discoveries at Leceia assume a special importance. It has been well known as an archaeological site since 1878, the year of publication of an extensive and fully detailed monograph (Ribeiro 1978 / 1991) which remained for many years the only one dedicated to a prehistoric settlement in Portuguese territory. No true excavations were undertaken, however, and the real



ILLUS. 19 Location of the three most important fortified Chalcolithic settlements of the Portuguese Estremadura: Vila Nova de S. Pedro (Azambuja); Zambujal (Torres Vedras); and Leceia (Oeiras)



ILLUS. 20 Leceia: aerial view of the excavated site

archaeological interest of the place, suggested by abundant surface finds remained to be established (Cardoso 1979; 1980; 1981),

In 1983, confronted by the imminent destruction of the site by proposed urban development, and by the digging of numerous ditches for the planting of trees, excavations were begun with the support of the National Institute of Cultural Heritage and Oeiras Municipal Council (Cardoso 1989; 1994; 2000; 2003; 2008). These successfully uncovered a large defensive system within an area that included more than 5000m² of the proposed 10,000m² built-up area. The discoveries placed Leceia among the most important sites for the understanding of the genesis and development of Chalcolithic society in the Iberian peninsular (Illus. 20).

RESULTS OF THE EXCAVATIONS: STRATIGRAPHY AND POTTERY

There is a widespread stratigraphic sequence everywhere at Leceia which comprises three archaeological layers, namely Layers 4, 3 and 2, which are closely related to three cultural phases identifiable by their pottery.

The first occupation layer, Layer 4, belongs to the Late Neolithic and is separated from Layer 3 by a period of erosion due to the abandonment, perhaps total, of the site. Layer 3 is that of another cultural phase, the Early Chalcolithic, separated, in its turn, from Layer 2, of the Full Chalcolithic, by another period of abandonment that is less marked than the previous one.

That the archaeological finds, especially the decorated pottery, are specific to the culture represented by each occupation layer, has now been confirmed by thousands of pottery fragments gathered over the years (Cardoso 2007). Pottery decorated with oval impressions arranged in acacia leaf and cruciform patterns comes mainly from Layer 2 (Full Chalcolithic) and is almost unknown in Layer 3. Such decorative motifs occur especially on large spherical storage pots, but are also found on smaller objects in the form of cups that succeed the cups of the Early Chalcolithic. The pottery found in Layer 3 is characterized by tenuous channelling patterns which appear on two kinds of vessel, cups and bowls. The basal Layer 4 of the stratigraphic sequence, Late Neolithic, is, in turn, characterized by the presence of vessels with a denticulate rim and by waisted pots, reminiscent of Early Neolithic pots, which are scarce in Layer 3.

RESULTS OF THE EXCAVATIONS: CONSTRUCTIONAL PHASES

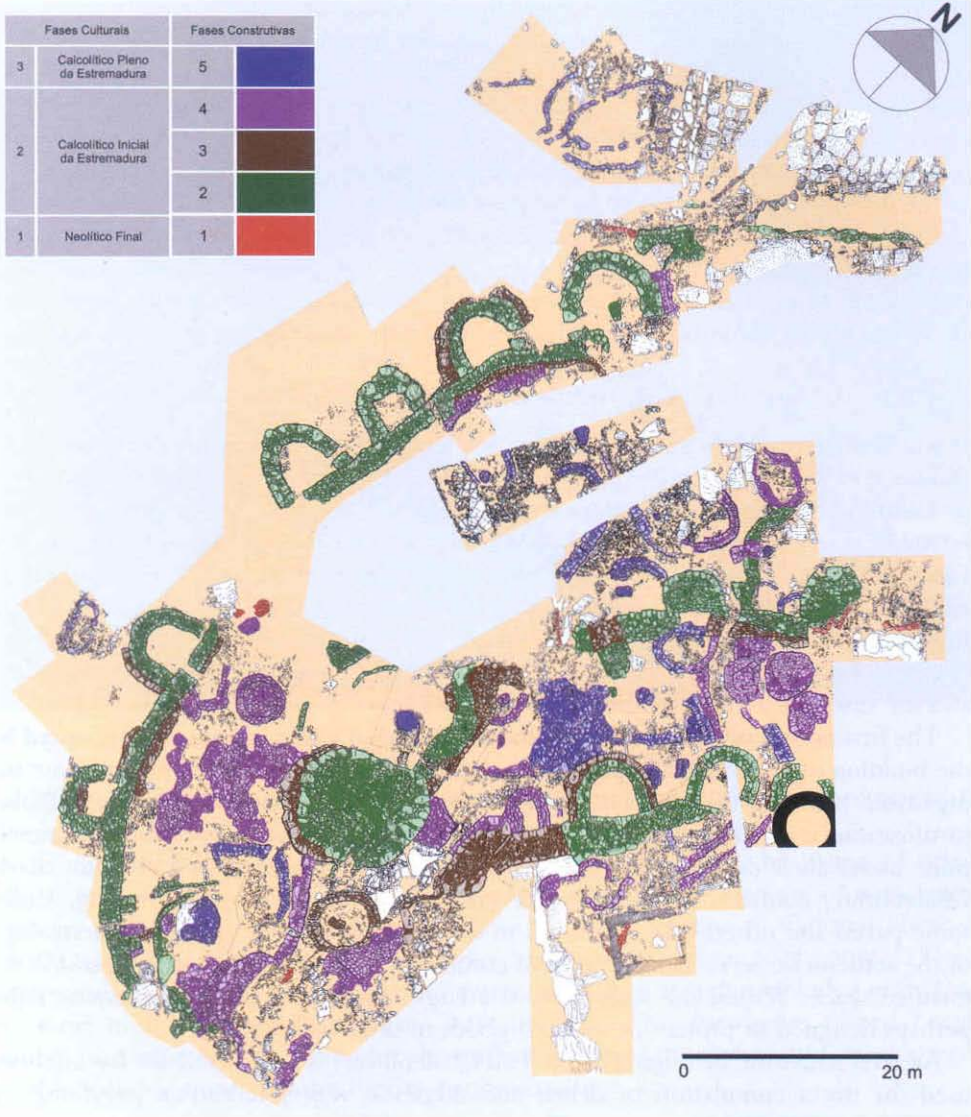
It was possible to relate the stratigraphic sequence to successive constructional phases (Illus. 21). The results may be summarized as follows: Layer 2, the third cultural phase or Full Chalcolithic of the Estremadura, belongs to the fifth constructional phase, but is undifferentiated from the Early Chalcolithic; Layer 3, the second cultural phase or Early Chalcolithic, belongs to the second to fourth constructional phases, dateable to between the middle of the third millennium BC and the fourth quarter of the third millennium BC; Layer 4, the first cultural phase or Late Neolithic, belongs to the first constructional phase, dateable to between the second half of the fourth millennium and the first quarter of the third millennium BC.

The first period of occupation (i.e. the first phase of construction) is represented by the building of structures of a purely domestic nature. The following phases show the organized planning of the space, with the erection in the second phase of complex fortifications with three defensive lines of walls. The coherence of repairs and alterations undertaken during the next two constructional phases, still within the Early Chalcolithic, confirms the evidence of occupation of a proto-urban nature. Paths, some paved and others not, with steps in one of them leading up the southern slope of the settlement, serve as main lines of communication, both within and outside the fortified space. Within the walls there is a large, open space paved with stone slabs, perhaps designed to protect people and goods in times of conflict.

An oval structure, belonging to the Full Chalcolithic, is remarkable for having been used for the accumulation of debris and domestic waste, unknown previously in Portuguese Chalcolithic contexts. The location of this structure, outside the second line of defence, next to a nearby passage, shows a preoccupation with sanitation and reinforces the belief that the site was planned.

The third phase of construction is characterized by failing building techniques, accentuated in the Full Chalcolithic, revealed by the smaller size of the defensive structures, and poorer and weaker masonry. The buildings are almost exclusively dwellings; these are often built against the fortification walls which have already been abandoned and, in some places, ruined.

The final prehistoric evidence inside the walls, the presence of Beaker ware, has no significance in either the buildings or the stratigraphy.



ILLUS. 21 Leceia: general plan of the excavated area (1983–2002) showing the five constructional phases identified

COPPERWORKING

Copper, revealed by the appearance of small droplets of metal, becomes common for the first time in the Full Chalcolithic, just when Leceia's defences had already collapsed. The artefacts themselves, punches, awls and needles, were generally of small size, and mostly designed to perform the same tasks as those, less well done, by their stone or bone counterparts.

LECEIA IN THE CHALCOLITHIC CONTEXT OF THE LOWER ESTREMADURA

When the holocene transgression reached its peak around 5000 BP (Dias 1985), the level of the sea was about the same as it is now. The mouths of the tributaries on the northern side of the Tagus estuary were then larger, with little silting, permitting better access inland. Small river craft could have moved people and their goods along the Barcarena brook, thus accounting for the occupation of the shore line, as shown by the abundance of mollusc shells.

On the other hand, the climate was different. The post-glacial optimum, which occurred during the first and at the beginning of the second cultural phases and ended *c.* 4800 BP, provided temperate conditions that were both more humid and warmer by about 2–3° Celsius than now (Théobald 1972; Renault-Miskowsky 1986) and generally favoured the development of woodland. Significantly, this contained abundant resources of timber and firewood; it also sheltered deer, wild pigs, and bears, while aurochs and horses could graze on intervening grassland.

This was the natural environment, established on the spur of land at Leceia overlooking the valley of the Barcarena, where the first Neolithic communities lived. The site had the additional advantage of natural defences, being surrounded on all sides by a chalky escarpment 8 m to 10 m high with excellent visibility as far as Cape Espichel. The defensive needs of this community at Leceia differentiate it from its predecessors, a general characteristic of Late Neolithic settlements uncovered by archaeology elsewhere in Estremadura.

Improved agricultural production, associated with the use of bovine power, gave rise to the accumulation of surpluses which needed to be stored and protected. Indeed, at Leceia, the abundance of domestic bovids in the Final Neolithic is well attested (Cardoso and Detry 2001–02) and it is likely that they were used more for farming than food. The positive evidence for this is the abundance of manual grindstones and the flint blades of sickles, the negative the slow rate of increase in the numbers of cattle, as opposed to the numbers of sheep and goats at Leceia.

The growth in food production also implies a demographic explosion and the resulting appearance of separate competitive communities. Were this so, the construction of strong Chalcolithic fortifications would be the response to ever more competition, produced by the population increase, which would itself cause a growth of the settlements themselves.

At the very beginning of the Early Chalcolithic in Leceia, complex and extensive defences were created over an area of more than one hectare. It was evidently possible to mobilize a great amount of labour for a long period of time, thus indicating the existence of surpluses which would allow the labourers to be kept away from food production. The orderly and planned manner in which this was achieved, with a closest parallel at Zambujal (Sangmeister and Schubart 1981; Kunst, 1996), shows, furthermore, that a specific group existed within the community which was responsible for its conception. Indeed, one glimpses, in the construction of the fortifications, the presence of a large community that was able to profit from a great part of its productive capacity for many years, and that was already socially stratified, with a definable elite coordinating the work.

The large fortified settlement of Leceia thus emerges as the result of the internal evolution of society during the transition from the Final Neolithic to the Early Chalcolithic, at a time when the admittedly poor evidence of material culture, at least, suggests that the use of copper was almost unknown. The differentiation within the Early Chalcolithic community at Leceia is suggested, furthermore, by the differences observed in the quality and position of its various houses. The most significant of these is a circular building, 7 m in diameter, which is situated in the most defensible place; the evidence of artefacts found there and in a similar building at Alcalar indicate that it was used for funeral rites (Morán and Parreira 2004).

The greater part of the population would have lived in less privileged zones without social differentiation, both inside and outside the protecting walls, as shown not only by the archaeological record, but also by the clear disproportion between the grandeur and the area covered by the defences, and the tiny platform which these protected. The process of concentration and continuous occupation of populations around large Chalcolithic proto-urban centres such as Leceia, which requires an increasing dependency upon local resources, leads to their over exploitation (Cardoso 1998a). Indeed, the deforestation caused by the procurement of timber and firewood, and the creation of fields for farming, is suggested by the numerous axes and hoes of polished stone uncovered there, as well as by the results of pollen analysis obtained by J. Pais. By the end of the Early Chalcolithic the landscape comprised many open zones with few trees in them (*Pinus* sp. and *Quercus* sp.), and extensive, open and fertile undulating fields, planted with cereals, or grazed by animals just as now. Hunting, although important in times of crisis or social instability, together with the gathering of molluscs and fishing on the shore, played a lesser role in the provision of food.

Leceia represents, therefore, a large centre of population controlling a vast territory on which the survival of the community depended. This caused social tension between communities and a struggle for the possession of resources. This is amply demonstrated by the construction of the defences. One specific conflict may be attested at Leceia by the greatly dispersed and incomplete human remains, mixed with abundant waste materials, excavated in 1988, inside two structures of the Full Chalcolithic period (Cardoso et al. 1991). The remains, belonging to at least three adult males, were not buried with full funeral rites, and were probably attackers who, after they had been killed, did not deserve a proper burial like that of the inhabitants of the settlement.

Leceia's role in populating the surrounding region is only comparable in the Lower Estremadura to that of Zambujal (Torres Vedras, District of Lisbon) and Vila Nova de São Pedro (Azambuja, District of Lisbon), both of which are situated many kilometres away (Illus. 19). Although there are clear similarities, the three do not follow the same evolutionary pattern in either their defensive arrangements or their chronological sequences, and they reached different solutions for the strategic organization and occupation of their inhabited spaces. There are differences, too, in their elementary structures; in Leceia, for example, no circular towers were built, unlike in Zambujal, and, when its fortifications began to decline, they continued in use at Zambujal for several more centuries (Sangmeister and Schubart 1981; Kunst 1996).

Leceia's concentration of wealth in the form of agricultural surpluses allowed a network of trading routes to be established with other regions, sometimes on a large scale. Hence even such molluscs as clams are found at inland settlements like Monte da Tumba (Baixo Alentejo) and Santa Justa (Algarve hinterland) (Silva 1993, 222). The supply, on a large scale, of strategic raw materials that were not locally available or found in the region was another feature of widespread trade. An outstanding example is hard stone, such as amphibolites, used to produce most of the polished stone implements that were indispensable for daily life; this presupposes stable and lasting routes of supply from the interior of the Alentejo, more than 120 km away (Cardoso 2004). Even flint, which exists in profusion in the geological substratum of the settlement, was sometimes imported from other regions (Rio Maior), more than 100 km away, perhaps on account of its beautifully coloured varieties such as the jasper-like flint of the Alentejo.

Copper, produced in Leceia since the Early Chalcolithic (Müller and Cardoso 2008), was used in the manufacture of prestigious ornaments, as were sumptuous raw materials, for example green minerals for beads and pendants, and North African ivory for pins and idols (Schuhmacher, Cardoso and Banerjee 2009). The existence of these exotic materials demonstrates the outward-looking character of Leceia's community in the Early and Full Chalcolithic, resulting in new cultural stimuli based on equal exchanges with other areas, notably southern Portugal, Andalusia and the wider Mediterranean.

The differing sequences of chronological change in the settlements noted in their construction suggests that they were untouched by each other's building traditions. In this respect Leceia seems to have a closer affinity with the Mediterranean region than the others. Furthermore, in its cult objects, the Chalcolithic female divinity, which is a constant presence in the cultures of the Mediterranean, is also represented at Leceia in numerous forms: phalange-idols, clay pots and cylinder-idols, one of which bears the symbol of a sexual attribute.

Marble is so common in Estremadura that its choice as the raw material used for these symbolic objects, rather than some rare, noble stone, would seem perverse were it not for its valued affinities with the Mediterranean. However, a clay idol with a flattened top belonging to the Final Neolithic (Cardoso 1989) is a precursor of those carved in ivory or marble in the Early Chalcolithic, demonstrating a diffusion of techniques and ideas by land within the Iberian Peninsular, despite the cultural connections established at the same time with the Mediterranean basin.

Commercial contacts proved their worth in the genesis of copper metallurgy in the western part of the Peninsula (Cardoso 1998b). Copper was first smelted along the valley of the Guadiana, where the water and the soils also favoured farming, thus giving rise to the Chalcolithic period (Soares 1992, figs 1 and 3; Silva 1993). Indeed, copper had already been smelted in the Algarve and Alentejo before it appeared in Estremadura (Soares and Cabral 1993). At Leceia it only appears in the Full Chalcolithic (in Layer 2) when the defensive works had already fallen out of use and become partly ruinous — metallurgy and fortification were clearly independent of each other. At the same time, the occupied area declined, as in other settlements in Estremadura and the south-west (Jorge 1990, 188), together with a decline in the

quality of construction which was then limited to insubstantial dwellings. These two developments would represent an overall decline were it not for the abundance of artefacts suggesting the persistence of a strong, progressive and rich community, with an increase in economic interaction outside the region. Other evidence points in the same direction, namely the preoccupation with sanitation and therefore the maintenance of proper standards of management of the occupied space inherited from the Early Chalcolithic.

More evidence comes from the first presence in the Full Chalcolithic of perforated clay receptacles for cheese production, thus demonstrating an increasing and optimized exploitation of resources by the adoption of new techniques, generally known as the 'Revolution of Secondary Products'.

Would the last inhabitants of Leceia simply have ceased to feel, to such a compelling extent, the defensive needs of their predecessors and would they have transformed Leceia progressively into an open settlement? This is in fact the conclusion to be drawn from the archaeological record. Such an evolution at Leceia is a foretaste of what is generally verifiable at the end of the Chalcolithic in Estremadura, when open and dispersed Beaker communities multiplied, an occurrence which suggests a break with the system of concentrated occupation which had previously prevailed (Cardoso 2001).

- CARDOSO, J. L. 1979. O povoado pré-histórico de Leceia (Lisboa, Portugal). Nota prévia sobre a colecção de Álvaro de Brêe, *Boletim da Sociedade Geológica de Portugal*, **21** (2-3), 265-273
- CARDOSO, J. L. 1989. *Leceia. Resultados das escavações realizadas (1983-1988)*, Oeiras: Câmara Municipal de Oeiras
- CARDOSO, J. L. 1994. *Leceia 1983-1993. Escavações do povoado fortificado pré-histórico*, (Estudos Arqueológicos de Oeiras, número especial), Oeiras: Câmara Municipal de Oeiras
- CARDOSO, J. L. 1997a. *O povoado de Leceia, sentinela do Tejo no terceiro milénio antes de Cristo*, Lisboa / Oeiras: Museu Nacional de Arqueologia / Câmara Municipal de Oeiras
- CARDOSO, J. L. 1997b. Génese, apogeu e declínio das fortificações calcólicas da Estremadura, *Zephyrus*, **50**, 249-261
- CARDOSO, J. L. 1998a. O povoado fortificado pré-histórico de Leceia (Oeiras), exemplo de desenvolvimento não sustentado na Estremadura no III milénio a. C., *O Arqueólogo Português*, **4** (16), 97-110
- CARDOSO, J. L. 1998b. Copper metallurgy and the importance of other raw materials in the context of Chalcolithic economic intensification in Portuguese Estremadura, *J. Iberian Archaeol.*, **1**, 93-105
- CARDOSO, J. L. 2000. The fortified site of Leceia (Oeiras) in the context of the Chalcolithic in Portuguese Estremadura, *Oxford J. Archaeol.*, **19** (1), 37-55
- CARDOSO, J. L. 2003. *O povoado pré-histórico de Leceia no quadro da investigação, recuperação e valorização do património arqueológico português. Síntese de vinte anos de escavações arqueológicas (1983-2002)*, Oeiras: Câmara Municipal de Oeiras.
- CARDOSO, J. L. 2004. Polished stone artefacts at the prehistoric settlement of Leceia (Oeiras), *Madriener Mitteilungen*, **45**, 1-32
- CARDOSO, J. L. 2004. An interpretation of the Bell Beaker cultural sequence at the Tagus estuary region: data from Leceia (Oeiras), *J. Iberian Archaeol.*, **6**, 147-56
- CARDOSO, J. L. 2007a. The Chalcolithic fortified site of Leceia (Oeiras, Portugal), *Verdoy*, **11**, 49-66
- CARDOSO, J. L. 2007b. As cerâmicas decoradas pré-campaniformes do povoado pré-histórico de Leceia: suas características e distribuição estratiográfica, *Estudos Arqueológicos de Oeiras*, **14**, 9-276
- CARDOSO, J. L. 2010. Povoado pré-histórico de Leceia (Oeiras): evolução do sistema defensivo, *Transformação e Mudança no centro e sul de Portugal 3500 a 2000 a.n.e. Colóquio Internacional (Cascais, 2005)*, *Actas*, 43-63, Cascais: Câmara Municipal de Cascais,
- CARDOSO, J. L. AND DETRY, C. 2001-02. Estudo arqueozoológico dos restos de ungulados do povoado pré-histórico de Leceia (Oeiras), *Estudos Arqueológicos de Oeiras*, **10**, 131-82

- CARDOSO, J. L. AND SOARES, A. M. 1996. Contribution d'une série de datations C14, provenant du site de Leccia (Oeiras, Portugal), à la chronologie absolue du Néolithique et du Calcolithique de l'Estremadura Portugaise, *Actes du Colloque de Périgueux (1995). Supplément à la Revue d'Archéométrie*, 45-50
- CARDOSO, J. L., CUNHA, A. S. AND AGUIAR, D. 1991. O Homem Pré-Histórico no concelho de Oeiras. Estudos de Antropologia Física, *Estudos Arqueológicos de Oeiras*, 2, 85
- DIAS, J. M. A. 1985. Registos da migração da linha de costa nos últimos 18 000 anos na plataforma continental portuguesa setentrional, *I Reunião do Quaternário Ibérico, Actas*, 281-295, Lisboa: GTPEQ, 1
- JORGE, S. O. 1990. Desenvolvimento da hierarquização social e da metalurgia, in *Nova História de Portugal (Portugal: das origens à Romanização)*, 163-212, Lisboa: Editorial Presença, 1
- KUNST, M. 1996. As cerâmicas decoradas do Zambujal e o faseamento do Calcolítico da Estremadura portuguesa, *Estudos Arqueológicos de Oeiras*, 6, 257-87
- MORÁN, E. AND PARREIRA, R. 2004. *Alcalar, 7, Estudo e reabilitação de um monumento megalítico*, Lisboa: IPPAR
- MÜLLER, R. AND CARDOSO, J. L. 2008. The origin and use of copper at the Chalcolithic fortification of Leccia, Portugal, *Madrid Mitteilungen*, 49, 64-93
- PARREIRA, R. 1990. Considerações sobre os milénios IV e III a.C. no centro e sul de Portugal, *Estudos Orientais*, 1, 27-43
- RENAULT-MISKOWSKY, J. 1986. *L'environnement aux temps de la Préhistoire. Méthodes et modèles*, Paris: Masson
- RIBEIRO, C. 1978 / 1991. Estudos prehistoricos em Portugal. Notícia da estação humana de Licêa. Academia Real das Ciências de Lisboa. Reedição fac-simile com notas e comentários de João Luís Cardoso, *Estudos Arqueológicos de Oeiras*, 1, 184
- SANGMEISTER, E., AND SCHÜBART, H. 1981. *Zambujal. Die Grabungen 1964 bis 1973* (2 vols), Mainz: Walther de Gruyter
- SCHUMACHER, T. X., CARDOSO, J. L., AND BANERJEE, A. 2009. Sourcing African ivory in Chalcolithic Portugal, *Antiquity*, 83, 983-97
- SILVA, C. T. 1993. Calcolítico, *Pré-História de Portugal*, 57, 197-233
- SOARES, A. M. 1992. O povoado calcolítico dos três Moinhos (Baleizão, conc. De Beja). Notícia preliminary, *Setúbal Arqueológica*, 9-10, 291-314
- SOARES, A. M., AND CABRAL, J. M. 1993. Cronologia absoluta para o Calcolítico de Estremadura e do sul de Portugal, *I Congresso de Arqueologia Peninsular*, 2, 217-35
- THÉOBALD, N. 1972. *Fondements géologiques de la Préhistoire. Essai de chronostratigraphie des formations quaternaires*, Paris: Doim

JOÃO LUÍS CARDOSO