

Amoreira 1930 to 1933.

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Abstract Without an understanding of the relationship among human skeletons excavated at Cabeço da Amoreira in the 1930s and more recently, it is impossible to get a clear picture of the distribution of burials. The 1930s excavation trenches are reconciled with the 1960s trench and information from field notes, museum archival material and the skeletons themselves is used to place the burials in their context.

Keywords Muge, Mesolithic, burials, Amoreira, mortuary practices, excavation history

Introduction

Cabeço da Amoreira is one of several Mesolithic burial sites along the Muge tributary of the Tagus in central Portugal, but until recently it has been much less well known than the neighbouring shell middens Moita do Sebastião and Cabeço da Arruda. The skeletons excavated from Amoreira have been less fully studied (Ataide 1940; Cunha and Cardoso 2001; Cunha and Cardoso 2002/2003). The site was tested in the nineteenth century, but abandoned because no skeletons were found (Paula e Oliveira 1889, 59), and then excavated in the 1930s, the 1960s, again in this century (Roksandic 2006; Rolão and Roksandic 2007), and is now again undergoing further excavation (Bicho *et al.* 2010). Since information on the human skeletal material excavated in the 1960s has now been assembled (Roksandic and Jackes 2013), our interest here is to reconstruct what we can of the placement of the 1930s skeletons and their location in relation to other known Amoreira human material. The 1930s excavations were undertaken by a team led by Mendes Corrêa, at that time professor in the University of Porto and founder of the Museum of Anthropology. The collection is now maintained in the Museu de História Natural, Faculdade de Ciências do Porto. Amoreira samples have been studied for stable isotopes and dated (Umbelino *et*

al. 2007) making it all the more important that we understand the stratigraphic relationships among the two sets of skeletons (Jackes 2013).

The trenches

In order to establish the placement of the skeletons, we must locate the 1930s trenches in space. There were two trenches which bracketed trees. The first attempt (Roche 1951) to recreate the shape and location of those trenches was clearly wrong and Veiga Ferreira corrected the general placement in the 1960s (Roche 1972). An indication of problems was the difficulty of reconciling the details with Serpa Pinto's sketch of the site in 1931 (Gonçalves 1986). A member of the original excavation team, Serpa Pinto confused the numbering of grid lines and the location of the trees, and he again had the tree placement wrong in another sketch on the last day of the 1931 excavations (Cardoso and Rolão 1999/2000 have published the field notes referred to in this paper: the sketch discussed is reproduced there as Figure 16). We know from a field sketch two years later in 1933, that the correct interpretation is that 11 north-south lines of squares were dug (a north-south line of squares was termed a *troço*) and labels and bones retained in the Porto collection prove that *troço* 11 was excavated. Thus 11 2.5m wide *troços* were dug. A contemporary photograph shows that an initial 1.5m wide trench (the *vala d'ataque*) served to give a clean profile for excavation.

Veiga Ferreira's detailed plot (Cardoso and Rolão 1999/2000, Figure 45, to be cited here as "the composite plan") of the Mendes Corrêa northern trench was drawn in 1963 (Roksandic and Jackes 2013) and showed the 1930s north trench to be 22m long, whereas the 1930s trench was in fact 27.5m long (plus the *vala d'ataque* which would have been indistinguishable by the 1960s). In fact, the two trenches did not begin at the same point on the bottom, east side, of the site and Veiga Ferreira's composite plan is misleading with regard to the 1930s excavation. Veiga Ferreira disregarded the fact that the Mendes Corrêa team had dug the superficial levels of part of square E8 and all of E9, and his composite plan did not include the 11th *troço*. Although only superficial levels of squares F11 to I11 were removed in 1933, the 11th *troço* cannot be ignored. Roche (1951, Figure 3 cf. 1972, Figure 20) makes it clear that A11 to B11 were not dug until the 1960s.

In Figure 1 we see reproduced a plot (Roche and Veiga Ferreira 1967) which clarifies that the 1963 composite plan relates to the situation **after** the 1958 and 1961 site preparation, not to the remnant walls of the Mendes Corrêa trench. The dotted area in Figure 1 is the slumped sediment that was cleared before the full excavation of Amoreira began in 1962. More puzzling are unresolved questions about the north wall, and questions about what Veiga Ferreira actually excavated here, because the plots are inconsistent (Roksandic and Jackes 2013). Photographic evidence deposited in the Museu de

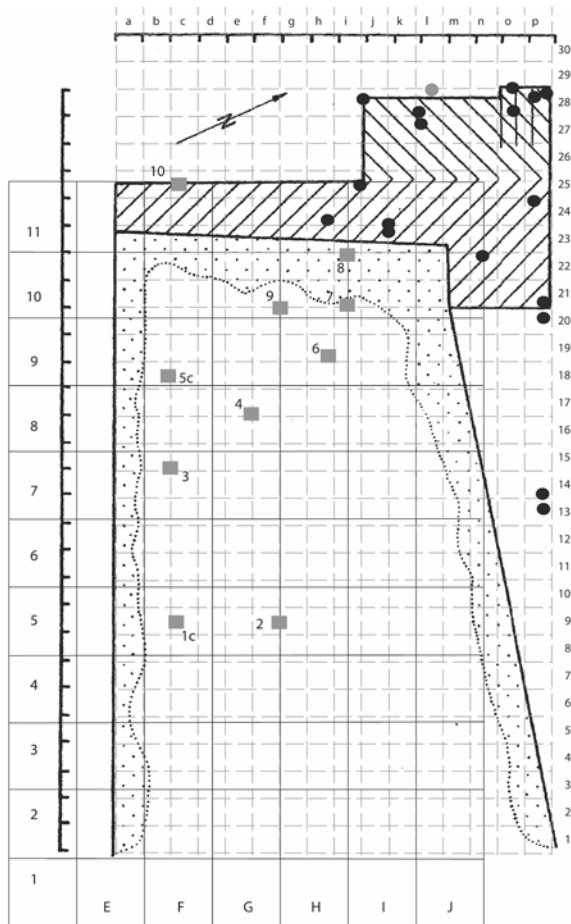


Figure 1: The 1930s north trench 2.5m grid overlies a plot of work done at Amoreira in the 1960s (1m grid: Roche and Veiga Ferreira 1967). The 1930s alphabetical and numerical grid line system has been simplified to alphabetic numeric squares. The location of the burials is noted: grey squares 1930-33; black circles 1960s; grey circle CAM-00-01.

Antropologia e Pré-História Mendes Corrêa suggests that the 1930s trench wall was quite straight until J8 (a quarter of J8, half of J9 and all of J10 and J11 were left unexcavated in 1933), suggesting that erosion led Veiga Ferreira to sketch a diagonal northern wall to the Mendes Corrêa trench.

One further plot was published (Roche 1972) and the reconciliation proposed here fits well with that diagram. The last step in the confirmation of the relationship of the 1930s and 1960s grids comes from the recorded distance between the point defined as “K” in the 1930s and the northern high point of the mound as recorded on a 1930 contour map. This distance was stated to be 20m (Roche 1951; the field notes record 19.8 and 19.5m). However, the 1972 plot is in error with relation to the *vala d’ataque* which was 1.5m wide and lay at right angles to the main trench (confirmed also by photographic evidence from the 1930s). The Roche (1972) plot has the *vala d’ataque* at 14 degrees off its true trajectory, an

error which must have arisen from confusion over how to adjust for the compass bearing differences: the *vala d'ataque* lay 10 degrees off north and the adjustment for the declination difference was 4 degrees (13° 49' W 8th August 1930: 9° 49' W 11th January 1962, National Geophysical Data Center). The 1972 plot has one further error in that the J line of squares has been ignored.

We now have a good idea of the relationship of the two excavations, especially because our reconstruction puts the start of the unexcavated 12th *troço* at the exact point at which Roche finished his east-west stratigraphic profile (1964-5) and drew his north-south profile (1967). While there may be inaccuracies – for example, Figure 1 is slightly simplified, since we know that Roche's south wall profile actually had a 30cm offset in square A15 – we have a good general idea of the fit of the two excavations, although 30 years apart.

Why “reconstruct” a site?

What is the value of reconciling the trenches? An excellent example of our particular interest in trying to understand the burials is provided by wall cleaning that preceded the 1st National Congress of Archaeology in Lisbon in 1958. A partial skeleton was found in H24 at what must be the 11/12 *troço* intersection of the Mendes Corrêa trench. We can now clarify that human bone found in the 1933 in square F11 at the 11/12 intersection cannot be from that same 1958 skeleton. On the other hand, the material from 24/viii/1933 is close to a large area of disturbance documented by Roche (see below): the extent is unknown, but the third of four levels in Rolão's 70cm deep trench had faunal material with 1σ median probability dates 600 years apart (TO 11861, square A1-3 and Sa 2102), indicating disturbance beyond the Roche trench.

A paper on the skeletons from the 1960s (Roksandic and Jackes 2013) includes a discussion on the stratigraphic position, with information derived from both the 1930s and the 1960s. The majority of the 1960s material came from the basal layer just above the sterile terrace sands. But four of the 1960s skeletons came from above a disconformity and we need to understand how much of the 1930s excavation was within the beds above that disconformity.

Making sense of the 1930s information in as much detail as possible is vital to our understanding of Muge burials, but since neither Mendes Corrêa, nor, indeed, Roche, established a datum point outside the trench and there are no scaled drawings from the 1930s, our attempts to establish the exact stratigraphic position of the 1930s skeletons can never be precise. However, by reconciling the trenches, we can use information from the 1960s along with what has been published from the 1930s field notes (Cardoso and Rolão 1999/2000) and information from photographs, the skeletons and the labels retained with the collection. The upper layer dug in the 1930s was disturbed, as was sometimes the case for the middle layer

(Roche 1951, 157). Both profiles published by Roche show disturbances: the north-south profile has a disturbance around 7m across and at least 1.5m deep, which may result from nineteenth century archaeological prospections or from agricultural or industrial digging (see e.g., Ceci 1984). While there are limits to how much we can extrapolate, we can determine what is meant by the stratigraphic levels for some of the mound. Roche did not specify anything within the first 8m at the eastern end of his profile; he regarded it as disturbed – slope wash is a clear likelihood. Serpa Pinto (Gonçalves 1986, 222) stated that the steep short slope which they began to excavate in 1930 had been inundated during floods. We might assume that the first 1930s *troços* will not have *in situ* deposits. Certainly, the 1930s specifications of levels change from *troço* 3 onwards, and up to that point (and more rarely beyond) broken ceramics, fragments of human bones and teeth and various metallic objects were found.

The 1930s burials

Our brief overview will therefore start with the human skeletal material from *troço* 5 onwards, most of which the excavators numbered sequentially. It is to be noted that, despite many labels saying “August 1930”, the initial find of human material considered worth numbering was not until 30/ix/1930, when cranial and dental fragments of a child were found in what is likely to have been an area of major disturbance. A maxilla and frontal with the label “Sk. 1” survive in the Porto collection. A mandible with unerupted first molars which had no associated label in 1969 (Meiklejohn partial inventory) may belong to Sk. 1; it was with the cranium in 1984 (Jackes partial inventory).

The second skeleton found (now wrongly labelled 30/ix/1930) was an adult male with some arthritis and a fractured right forearm who appears to have been *in situ* although in the superficial level. The burial position is similar to that of many other Muge skeletons (Jackes *et al.* 2013) lying on the back with the legs flexed, the left in hyperflexion at the hip and knee. There is, however, evidence of considerable disturbance in the upper chest area and the right side. The skull was present, but badly broken, and no teeth were found at the time of excavation. The material lay in G5 and H5 at 40cm below the 1930s surface.

Skeleton 3, the first found in 1931, was encountered at only 20cm below the surface. While there is little indication of the lower part of the body, an arthritic right patella was found by the right humerus, and a label mentions bones found 1.3m away, probably fragments of tibia, fibula and femur: the field notes record that the upper third of a radius also lay 1.3m from the skull. This individual has an edentulous half mandible, with a worn premolar and a carious upper molar also present.

Skeleton 4 was fragmented and scattered across two squares: it was believed that the fragments sketched and

photographed, 13-14/viii/1931, in G8 and H8, 30 cm deep, were one individual. While we can see that the skull and dentition were in place, with the left hand apparently over the chest, it is only possible to guess that the legs were hyperflexed. The fragmentary adult skull with internal suture fusion and a number of sutural bones is accompanied by a partial mandible with a worn and carious dentition.

Because of disturbances, the exact nature of the material found in 1930 and 1931 is very hard to determine although in all cases it has black sediment adhering, and numerous crushed shells of *Scrobicularia plana* are evident in the surviving matrix of Skeleton 2. In 1933 there is a change. Skeleton 5, a child, is unimpressive in the contemporary field sketch, and indeed is recorded as having been severely damaged during excavation, but now we are into the deep layers. It was specified that Skeleton 5 was found in the lowest level, 2.3m below the surface. It is no longer possible to identify Skeleton 5 in the collections so we cannot be sure of the nature of the adhering sediments, but it is clear that the child was found close to or in the sands, the lowest of Roche's Amoreira levels. The only extant labels for square F9 close to the correct date (which was 12/viii/1933) are associated with two teeth of a child probably under two years of age. A later note states that the bones of the child were very pale coloured (Abrunhosa 2012, 259).

The history of this collection has a bearing on our description of the skeletons. There are no original inventories and no records of how the bones were prepared after excavation. We can only say that the skeletons are now mixed and incomplete and that misplaced or missing labels are common. At the time of the 1984 inventory by Jackes, few fragments of Amoreira were seen: indeed few were seen by Meiklejohn in 1969 and Frayer (1987) reported seeing none. It is assumed that the Amoreira material was stored away in an area damaged by water during a fire in 1974 (Gonçalves pers. comm. to Jackes and Lubell August, 1984). Lentacker was given the same information on the damage in the mid 1980s (Lentacker *in litt.* to Jackes 8th March 2004) and the information was restated (Cunha and Cardoso 2001). It is worth noting that in the collection there is an *en bloc* partial skeleton of a small child with a label "H9 8/viii/1933". The field notes do not record that a child was found on that day or any of the following, suggesting that the label was associated with this child in error at some point. The *en bloc* material is heavily brecciated and accompanied by large pieces of charcoal which accords with the description of Skeleton 5.

Skeleton 6 was found at a depth of 1.3m and was described as lying on very dark soil which covered a thick layer of *Scrobicularia plana* shells with some charcoal. The surviving skeletal elements are encrusted with dark soil, charcoal and some shell, very different from what may be expected for bones lying within the basal sands (note that Cunha and Cardoso

2001, Figure 2 is mislabelled: that mandible is from Arruda 6). Sketches and photographs show the hyperflexed burial posture to be similar to that found in a few deep level burials from later excavations (Roksandic and Jackes 2013).

Skeleton 7 has been dated (Beta-127450 6850 ± 40) to around 7500 cal BP (adjusted for $\Delta R = 140\pm40$) and it was stated by the excavators to come from the middle level at 65cm below the surface, clearly younger than the (adjusted) 7900 cal BP date for a basal sands burial (TO 11819R 7300 ± 80 , see Meiklejohn *et al.* 2009 for full details). From the work of Bicho *et al.* (2010), we can assume that the basal level dates to around 7800-7900 cal BP, while the middle level dates to around 7400-7500 cal BP. Certainly, the surviving fragments of Skeleton 7 in the Porto collection have a dark earth and ash matrix with adhering shells. Figure 2 shows Skeletons 7 and 8 during excavation.



Figure 2: Skeletons 7 (left) and 8 (right) during excavation. Glass slide negative I/II August 1933. Museu de História Natural, Reitoria da Universidade do Porto.

In 1984, Skeleton 8 had no site designation but it can now be confirmed as Amoreira on the basis of field photographs. At that time the dark earth matrix and distinctive dentition were described for an “unknown site Skeleton 8”. In February 2001, a partial inventory (made by Roksandic while the collection was on loan to the University of Coimbra) recorded that same dentition as being labelled “Amoreira 8”. Only a few postcranial fragments were found in the collection in October 2010, indicating that material has now been mislaid. The location of the find should have been in I10 at 60cm below the surface in the middle level, found 17/viii/1933, but no such labels are retained in the collection.

Skeleton 9 was a child found in H10. In 2010, the dentition and some bones of this child were variously labelled 9 and A (cf. Cunha and Cardoso 2001). It has been possible to reconstruct this child on the basis of the field sketch and a field

photograph. The maxilla and mandible survive, together with some loose teeth, allowing us to specify the age as around 8 years. The right phalanges rest on the left parietal since the child's right forearm was curled behind the skull. The child lay with hyperflexed legs, both fallen to the right of the thorax. The skeleton was stated to be from the deep layer and the adhering breccia accords with this, but the depth was given as only 90 cm.

While we have a sketch of Skeleton 10, there is no field photograph. In 2010, no label identified as belonging to Skeleton 10 was found, and Skeleton 10 is not listed in the Roksandic inventory. It appears likely, however, that Skeleton 10 was a concentration of bones found 24/viii/1933 close to the surface in F11. The concentration now comprises diverse elements, very black, including an extremely worn and pathological left upper anterior dentition, but obviously not all the material was considered unquestionably human and there are lagomorph and cervid fragments.

Conclusion

Amoreira is a complicated site. It has been washed by the flooding Muge and wide swathes of disturbance can be seen in the detailed 1960s profiles. In the area of the 20th century excavated burials it has two clear levels, one black, the other light-coloured: the disconformity was credited to human activity by Roche, rather than to an erosional episode. The stable isotope values are unusually heterogeneous and the post-excavation history of the bones, both those from the 1930s stored in Porto, and particularly those from the 1960s now stored in the Museu Geológico in Lisbon, is characterized by flooding in storage facilities, loss of labels, misplacement or loss of bones. In this context, we can do little beyond trying to identify, as closely as possible, the adhering sediments and location of the human material. A future paper will examine burial posture, but at the moment it appears that the skeletons excavated in the 1930s have a mode of burial most similar to that of Cabeço da Arruda.

All the 1930s skeletons lay under a surface that was from 18.0 to 19.5m asl based on a 1930 contour map used by Roche (1951, 1972; also by Rolão and Roksandic 2007): the height above sea level, while generally congruent with IGeoE (2007), is probably too low by one or two metres. The wider 1930 contour map appears to have some inaccuracies but, as placed by Roche, the portion covering the trenches gives us an idea of relative placement of skeletons. The first two skeletons would have lain at ~17.5m asl; the third and fourth at 18m; Skeleton 5 must have lain in the basal sands at ~16m asl; but Skeleton 6 is unlikely to have been deeper than ~17.5m asl. The next two skeletons lay ~18.5m asl and Skeleton 9 at ~18m (burial with a shell concentration is thus suggested for 9). Skeleton 10 was probably the material found at the end of the excavation at the 11-12 *troço* intersection and certainly extremely high in the sequence, well within "the black layer". Thus,

it seems likely that all but one of the 1930s skeletons were from a second, later, phase of burial at Amoreira, dated by Skeleton 7. In this, they are different from the majority found in the 1960s. Amoreira apparently differs from Moita do Sebastião and Cabeço da Arruda in having skeletons dispersed throughout the depth of deposits rather than, for the most part, within a limited band of burials placed in fairly close relationship to the underlying terrace sands.

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