

# THE TEMPORALITY OF PERDIGÕES ENCLOSURES: ABSOLUTE CHRONOLOGY OF THE STRUCTURES AND SOCIAL PRACTICES

## LA TEMPORALIDAD DEL RECINTO DE FOSOS DE PERDIGÕES: CRONOLOGÍA ABSOLUTA DE ESTRUCTURAS Y PRÁCTICAS SOCIALES

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**Abstract:** Thirty five radiocarbon dates for the Neolithic and Chalcolithic ditched enclosure of Perdigões (Reguengos de Monsaraz, Portugal) are presented. After a discussion of some of the problems of dating negative structures, a chronological sequence is presented for the ditch structures and for the social practices related to funerary behaviours and the manipulation of human remains. A clear Neolithic phase is identified, well separated chronologically from the Chalcolithic one. The possibility of the gradual and eventually interrupted development of the site, is discussed. Funerary contexts and the manipulation of human remains are present from the earliest phase of the site, but the practices became significantly diverse during the 3<sup>rd</sup> millennium by the end of which the site seems to decay and significant activity seems to stop.

**Key words:** Ditched enclosures, funerary practices, Neolithic and Chalcolithic, chronology, Alentejo.

**Resumen:** Se presenta en este artículo un conjunto de 35 dataciones radiocarbónicas procedentes del yacimiento portugués de Perdigões (Reguengos de Monsaraz). A partir de esta información y tras reflexionar sobre la compleja tarea de datar estructuras arqueológicas en negativo, se plantea una lectura temporal y global de los diversos recintos que configuran el yacimiento. Así, se ha podido aislar una fase, la más antigua, claramente neolítica bien diferenciada cronológicamente de otra de la Edad del Cobre. También se discute la posibilidad de que el yacimiento haya crecido en extensión, aunque con interrupciones puntuales, a lo largo de su historia ocupacional. Finalmente se apunta cómo los contextos funerarios y la manipulación de cadáveres humanos, presentes desde las fases más antiguas del yacimiento, se modifican y cambian su significado durante el tercer milenio a.C. hasta que en el lugar decaen las actividades humanas y es abandonado definitivamente.

**Palabras clave:** Recintos de fosos, prácticas funerarias, Neolítico e Calcolítico, cronología, Alentejo.

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## 1. INTRODUCTION

A central problem in the understanding of long-lived, complex prehistoric contexts is precisely their temporality. The difficulty of prehistoric Archaeology in establishing short chronologies leads to the perception of medium or long-term change. Change tends to be identified by more or less abrupt jumps between extensive phases counted by millennia or half millennia. In that context, sometimes sites tend to be viewed as “wholes”, as if they have always had the same size, the same spatial organization or the same social role in a given social context during those long periods of time. As a result, analysis and interpretation are frequently based on “contemporaneities” that never really existed.

On the other hand, the difficulty in distinguishing, in the short-term, what comes first from what comes later generates an inability to understand how the earlier phases condition the later and this leads to distorted perceptions of the historical dynamics of the contexts under analysis.

These problems are of particular importance in the approach to prehistoric enclosures, not just in a general sense but especially when dealing with those large and complex sites with long and complex biographies.

In South Iberia, several of these large ditched enclosures suffer from the same general insufficiency: they lack an adequate temporal definition for their constructional phases, for the social practices that took place within them and for their overall spatial organization. The correlation of these three dimensions (time, space and practices) is essential for the understanding of any archaeological context, but difficult to achieve in short-lived sites, due to the low level of resolution of the dating methods most commonly used. In the large enclosures of South Iberia, however, circumstances are different: they indicate long-term occupation that can be divided into shorter phases by the available absolute and relative dating methods. This allows a more detailed sequence of time-frames to be identified and thus provides a more adequate understanding of their historical dynamics.

Questions such as - “What was the size of the site at the earliest and latest phase?”, “How fast did it grow or contract?”, “How and where did it grow?”, “Was it occupied continuously or were there periods of abandonment and reoccupation?”, “How was it spatially organized in its different phases?”, “What kind of social practices took place there during those stages and where?”, “How long were the different structural elements in use?”, “How many of these elements

co-existed?” – are central to our understanding of how these sites functioned and what were their social roles through time, and to overcoming the traps of dealing with them as “wholes”.

To do that, we need to develop not just projects designed to systematically date these structures and practices, but we also need detailed plans of the largest possible area of these sites, allowing the combination of time and space. This is what is in progress at the Perdigões enclosure. Having obtained a plan of almost the whole site by magnetometry (Márquez Romero *et al.* 2011), we are now developing a strategy of intervention designed to date the features and practices in an attempt to construct the “biography” of Perdigões.

Questions such as these are being addressed by the Global Research Program at Perdigões (coordinated by A.C. Valera), by integrating the goals and the work of several sub-projects developed on the site by a number of different researchers and institutions. In this paper we present an assemblage of 35 radiocarbon dates from 14 different structures and contexts, obtained in the course of three specific projects developed by NIA-ERA Arqueologia (directed by A.C. Valera), by CIAS/Coimbra University (directed by A.M. Silva and A.C. Valera) and by Málaga University (directed by J.E. Márquez Romero). In the analysis, we will also consider another ditch, though not yet dated by absolute methods, but with a solid relative chronology (Ditch 8). With this set of dates and relative chronologies it is possible to develop previous attempts at constructing the “biography” of Perdigões (Valera 2010; Valera and Silva 2011; Márquez *et al.* 2013) by focusing on two main issues: the temporality of the ditches and associated structures and the temporality and spatiality of funerary practices and the manipulation of human remains in the site.

## 2. A SYNOPSIS OF PERDIGÕES

The site at Perdigões comprises a set of ditched enclosures located in the municipality of Reguengos de Monsaraz, Évora district, in the Alentejo hinterland (South Portugal). It is located in a natural amphitheatre, open to East, towards the valley of the Ribeira do Álamo, where intense human occupation during Recent Prehistory has been documented comprising more than a hundred megalithic monuments dating from the Neolithic and Chalcolithic (middle 4<sup>th</sup> and 3<sup>rd</sup> millennium BC).

The site has been studied since 1997 and has already a long list of publications, regarding specific

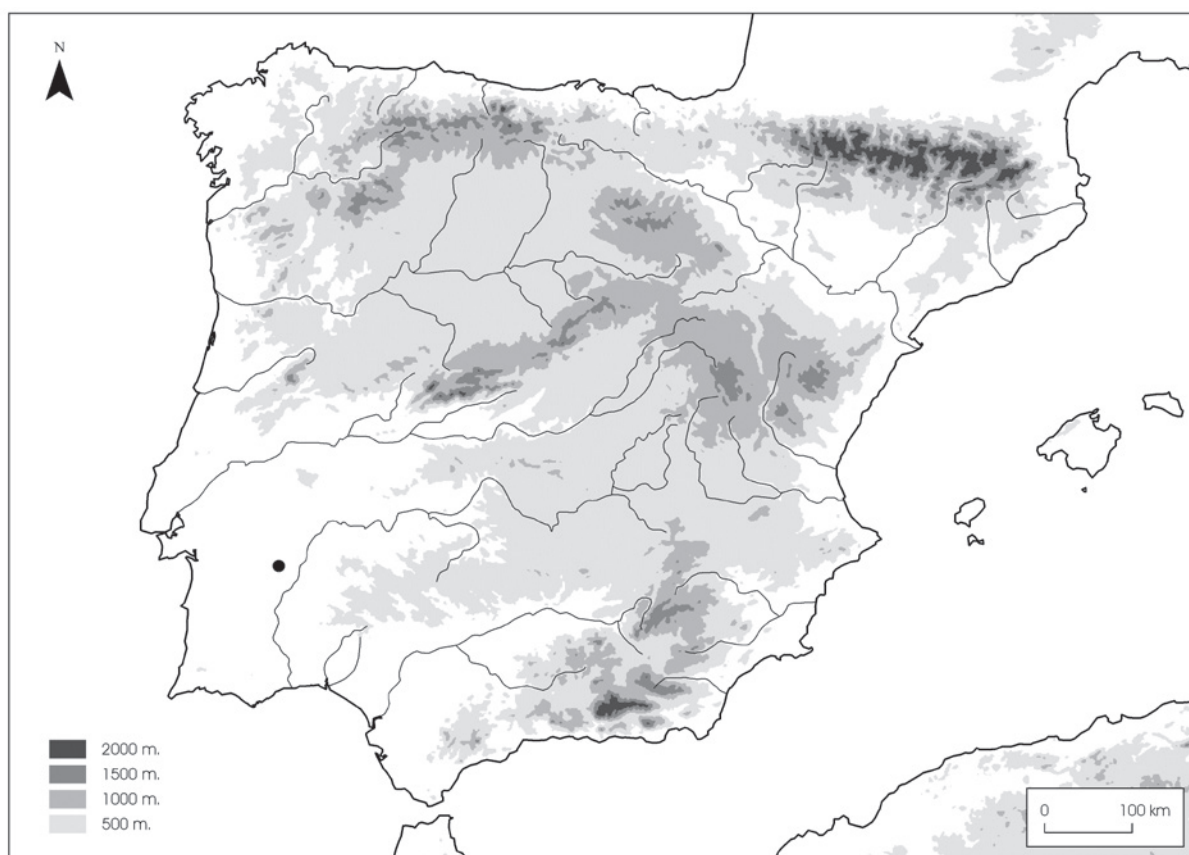


Figure 1. Location of Perdigões in Iberian Peninsula.

contexts, material studies, faunal and anthropological studies and general synthesis (see, for more general approaches, Lago *et al.* 1998, Valera *et al.* 2000, Valera *et al.* 2007, Valera 2008b, Valera 2010, Valera and Silva 2011, Márquez *et al.* 2011). Several enclosures were defined at the site comprising 12 roughly concentric ditches, with the inner circuits set in the lower central area of the amphitheater and the outer ditches running near the top of the slopes. Inside, several hundred circular pits were identified in the magnetogram but only about fourty of them have been excavated to date.

The ditches are broadly circular, but two of the inner ones break this trend by having a straight line in one of the sides of the gates. In general the ditches are simply curved but some are sinuous in lay-out. The two longest circuits run parallel to each other at the top of the slopes, forming an apparently double ditched system. In the eastern limit, where the amphitheatre opens to the valley, the outside ditch makes a semicircular detour to embrace an earlier necropolis where two of several tombs have been excavated. A megalithic cromlech

is located just a few meters from those tombs, once again to the East.

The correlation of the topographical location with the design of the enclosures and gate orientations denotes an astronomic imperative, orientated towards the sun-rise and sun-set at the summer and winter solstices (Valera 2008b, Valera and Becker 2011).

The archaeological record shows that Perdigões was a site of long duration, beginning in the Late Neolithic and reaching the transition to the Bronze Age. During this time span many episodes of opening and closing of negative features took place at the site, its spatiality changed but it maintained the same general relationship with topography and landscape. Specific areas saw modification or change in the activities that took place there and in their social roles, funerary behaviors diversified in practices, structures and spaces. In sum, Perdigões had a long and complex life spanning one and a half millennia and it is that biography that we need to progressively reconstruct if we aim to understand the successive social roles that the site played at a local and regional scale.

### 3. DATING NEGATIVE STRUCTURES: PROBLEMS AND LIMITATIONS

The absolute dating of negative structures such as ditches and pits presents problems that need to be kept in mind when selecting the samples and when evaluating and interpreting the results.

It is impossible to date the structure as a whole. Following the logics of stratigraphy, well defined contextual relationships can determine a sequence, but it remains difficult to estimate the amount of time over which this sequence took place and, furthermore, the precise date for the opening of the structures may be elusive. Only by modeling radiocarbon dates with low standard deviations within sequenced deposits can we hope to establish the precise date for the initial digging of a ditch. Even so, we can only date the filling of these structures and we must be mindful of the potential time span between the digging of the structure and the beginning of the filling process. We must be further mindful of practices such as the cleaning or recutting of ditches or sections of ditches so that the deposits we date are in effect the final fills.

There is also the problem of the rhythm of the filling processes. Slow or fast filling is not inconsequential to the interpretation of the functionality of the structures and of the social and natural activities involved in the filling processes. Here taphonomic information and structural configuration of the deposits are central, but a good absolute chronological framework will contribute to an adequate perception of the rhythm of the fillings and may help to establish relations between different structures in different moments of their stratigraphy. Once again, the available dating methods may not always provide the chronological precision that we need, but even so, certain differentiations can be made that have important interpretative impact.

Dating negative structures, especially in these large enclosures where hundreds or thousands of them were excavated over long periods of time (in the case of Perdigões more than a millennium) gives rise to another problem. The frequent cutting and reusing of existing pits and ditches can result in the accidental or deliberate redeposition of older material in more recent deposits.

This problem can only be avoided by the careful selection of the samples (for instance, by choosing articulated bones or seeds from large and concentrated assemblages) and detected by using a series of dates for the same general stratigraphic sequence, where outliers can be recognized.

Even then we have to consider another problem. Ditches frequently have several “biographies” that change from section to section and the chronological sequence of a ditch as a whole cannot confidently be generated from a single section. More than one section per ditch needs to be dated and the length of the perimeter of the ditch, the type of construction (some are composed of sections or partially re-excavated) and the type of fillings that can be identified in different sections need to be considered when choosing the samples.

A comprehensive and detailed dating program for a site like Perdigões is therefore extraordinarily expensive (the costs of the dating itself and of the archaeological excavations to obtain the samples) and can only be achieved in stages and by joining several different goals and players. That is precisely the type of research structure that we are trying to construct at Perdigões. The process, though, is still at an early stage, so the sequence of dates presented here is still quite short (despite being one of the largest for the Portuguese enclosures) and presents some of the problems outlined above. For example, we do not yet have more than one sequence of dates per ditch, some structures do not yet have an adequate sequence of dates and some samples clearly indicate residual or redeposited material (nevertheless the effects of these samples are minimized by the other dates in the sequences). The dates presented here must be regarded as the first step of an eventually more extensive dating program. Yet even so, it provides an important development regarding the chronology of the site’s structures and practices and provides a good example of the dating problems related to these kinds of contexts.

### 4. THE ASSEMBLAGE OF 35 C<sup>14</sup> DATES

All 35 dates were obtained from bone samples. Human bone was used for 19 dates and faunal remains were used for the remaining 16 (tab. 1). All were obtained by AMS at Beta Analytic. They are derived from 14 structures, comprising 6 ditches (12 have so far been recorded – fig. 2), 2 *tholoi* type tombs, 3 funerary pits, 1 funerary assemblage, 1 small trench and a large pit (or *hypogeum*). The calibrated intervals used in this paper are quoted at two standard deviations (2σ).

The critique of this sequence of dates should begin with the isolation and the rejection of outliers, identified by noting stratigraphic and contextual incoherencies. According to those criteria, three obvious outliers were detected, one in Ditch 4 sequence (tab. 1: date 10) and two in Ditch 1 sequence (tab. 1: dates 13 and 15).

Table 1. Radiocarbon dates (dates considered clear outliers are signalized in grey)

Nº	Structure	Date ref.	Date BP	Date cal 2σ	%	Context	Sample type
01	Ditch 5	Beta-350352	4390±30	3093-2918	95.4	Q1[351]	<i>Ovis/Capra</i> mandible
02	Ditch 12	Beta-330092	4530±40	3365-3097	95.4	Q1[250]	Large mammal bone
03	Ditch 6	Beta-315242	4450±30	3336-2944	95.3	Q1[175]	Animal bone
04	Ditch 6	Beta-318359	4390±30	3093-2918	95.4	Q1[107]	Animal bone
05	Small trench	Beta-304756	4470±30	3339-3026	95.4	Q1[33]	<i>Ovis/Capra</i> mandible
06	Large pit	Beta-304757	4390±30	3093-2918	95.4	Q1[182]	<i>Sus scrofa</i> mandible
07	Ditch 3	Beta-285095	3980±40	2618-2347	95.4	I2[38]	Carnivorous tooth
08	Ditch 3	Beta-285096	4050±40	2851-2472	95.4	I2[58]	<i>Bos taurus</i> tooth
09	Ditch 3	Beta-285098	4050±40	2851-2472	95.4	I2[99]	<i>Sus sp.</i> tooth
10	Ditch 4	Beta-285099	4420±40	3328-2918	95.4	I2[18]	<i>Sus sp.</i> tooth
11	Ditch 4	Beta-285097	3980±40	2618-2347	95.4	I2[90]	<i>Cervus elaphus</i> tooth
12	Ditch 4	Beta-289264	3940±40	2568-2299	95.4	I2[90]	Human metacarpus
13	Ditch 1	Beta-315717	3980±30	2578-2411	95.4	L1[12]	<i>Cervus elaphus</i> astragal
14	Ditch 1	Beta-315716	3770±30	2290-2050	95.4	L1[11]	<i>Sus sp.</i> humerus
15	Ditch 1	Beta-315718	4060±30	2840-2482	95.4	L1[31]	<i>Sus sp.</i> mandible
16	Ditch 1	Beta-315720	3860±30	2463-2209	95.4	L1[116]	<i>Ovis/Capra</i> tooth
17	Ditch 1	Beta-315719	3780±30	2296-2059	95.4	L1[118]	<i>Ovis/Capra</i> tooth
18	Ditch 1	Beta-315721	3840±30	2459-2202	95.4	L1[122]	Middle size mammal bone
19	Ditch 1	Beta-315722	3890±30	2469-2290	95.4	L1[133]	<i>Sus sp.</i> tooth
20	Ditch 1	Beta-315723	3820±30	2454-2144	95.4	L1[134]	Middle size mammal bone
21	Ditch 1	Beta-315725	3890±30	2469-2290	95.4	L1[139]	Middle size mammal bone
22	Pit 7	Beta-289265	4430±40	3331-2922	95.3	I2[114]	Human foot bone
23	Pit 11	Beta-289263	4370±40	3096-2901	95.4	I2[76]	Human hand bone
24	Pit 16	Beta-289262	3990±40	2621-2350	95.4	Q1[74]	Human bone
25	Assemblage 1	Beta-308784	3900±30	2470-2296	95.4	Q1[109]	Human bone
26	Assemblage 1	Beta-308785	3970±30	2575-2350	95.3	Q1[177]	Human bone
27	Assemblage 1	Beta-313720	3850±30	2459-2206	95.4	Q1[128]	Human bone
28	Assemblage 1	Beta-313721	4000±40	2831-2356	95.4	Q1[263]	Human bone
29	Tomb 1	Beta-327750	4030±40	2836-2467	95.4	S1[173]	Human bone
30	Tomb 1	Beta-327748	4060±30	2840-2482	95.4	S1[93]	Human bone
31	Tomb 1	Beta-327747	4130±30	2872-2582	95.3	S1[84]	Human bone
32	Tomb 2	Beta-308789	3840±30	2459-2202	95.4	S2[232]	Human bone
33	Tomb 2	Beta-308791	4090±30	2860-2498	95.4	S2[458]	Human bone
34	Tomb 2	Beta-308792	3890±30	2469-2290	95.4	S2[429]	Human bone
35	Tomb 2	Beta-308793	3970±30	2575-2350	95.3	S2[231]	Human bone

Calibration by Oxcal 4.2, calibration curve IntCal09 (Ramsey 2013)

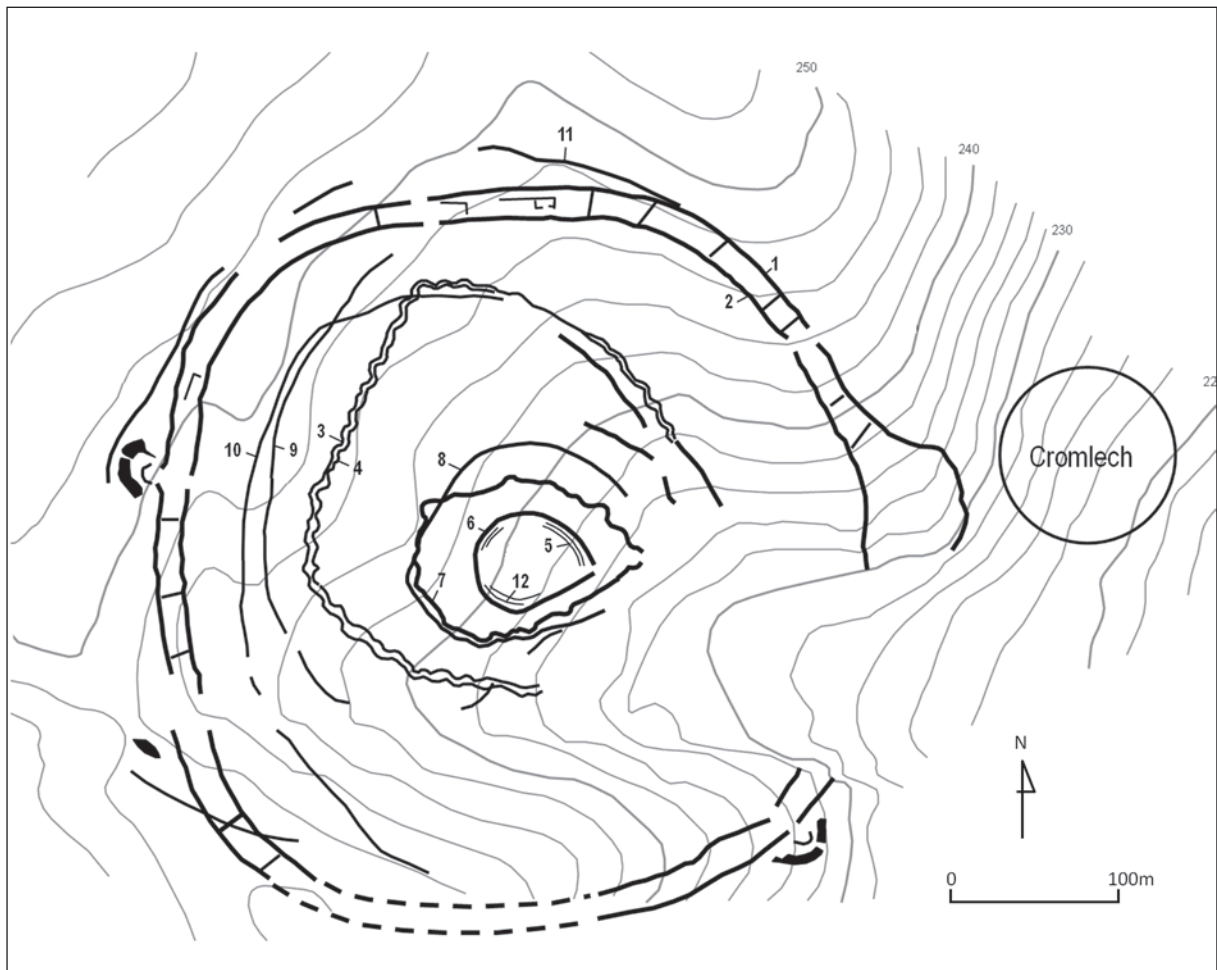


Figure 2 – General plan of Perdigões with ditch numbering.

The fills from Ditch 4 provided, from bottom to top, archaeological materials that correspond to well known Chalcolithic assemblages. The fills provided two Chalcolithic dates of the middle 3<sup>rd</sup> millennium for a lower level (tab. 1: dates 11 and 12) and a date from late 4<sup>th</sup> millennium for a top level (tab. 1: date 10). This later date is clearly an outlier, representing residual material (Late Neolithic) incorporated into the later fills. In an earlier paper (Valera and Silva 2011) it was suggested that the bone might have come from a documented Chalcolithic reopening of a pit (Pit 7), located just five meters away from the ditch section, that contained a burial from the Late Neolithic and has a similar date (tab. 1: date 22): 3328-2918 from bone in the top layer of the ditch; 3331-2922 from the human remains in the pit. The pit had clear evidence for the manipulation of human bones (probably corresponding to the removal of parts of the skeleton - Valera

and Godinho 2009). These human remains were associated with *Sus sp.* paw bones and it was a *Sus* tooth from the top layer of Ditch 4 that provided the outlier date). Although this hypothesis cannot be proved, it is nevertheless plausible and gives an example of the problems that can arise in dating programs such as this.

The other two outliers can be detected in the dated sequence of Ditch 1. The chronological sequence obtained is, in general, consistent with the stratigraphic sequence of the samples, except for dates 13 and 15. Those dates, from samples collected from the top layers of the ditch fills, are clearly older than all the other dates obtained for previous layers, including the basal fills. Once again we are dealing with residual and/or re-deposited material.

Though these outlier dates are important in their own right and in the total site history (the involuntary

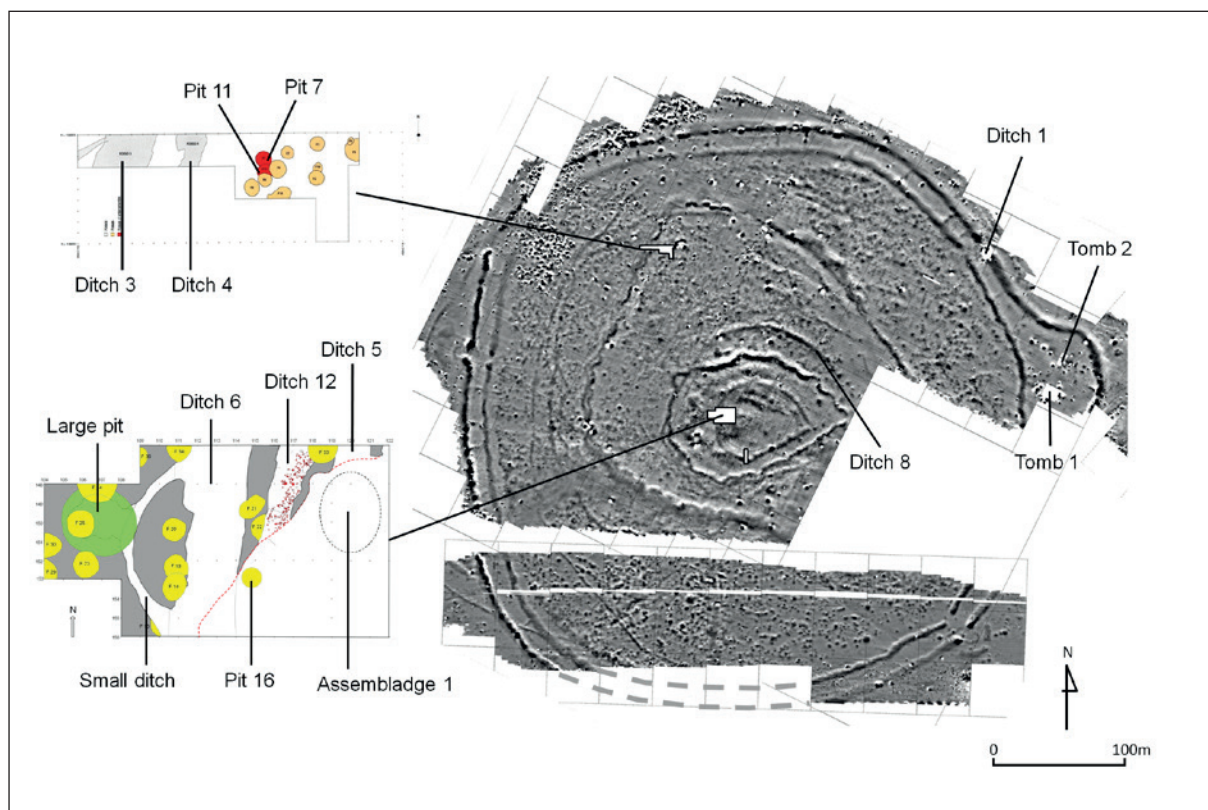


Figure 3. Identification of the structures dated.

or intentional remobilization of previous deposits), they will not be included in the following analysis.

With the outliers cleared, the first point to be underlined, in the overall image of the sequence, is a break around 2900 cal BC (fig. 4). This break corresponds to a well marked “border” between contexts that can be assigned to the Late Neolithic (last four hundred years of the 4<sup>th</sup> / first hundred years of the 3<sup>rd</sup> millennium cal BC) and to Chalcolithic occupations (after 2900). This break is significant in certain aspects of material culture, technology and iconography (substitutions of dominant pottery shapes, the emergence of copper metallurgy, changes in some ideographic items), but also in the funerary data available for the site (discussed below). The existence of this “milestone”, if real (see final remarks), in the development of the local communities is also suggested by this sequence of dates from Perdigões. What that “break” might mean in terms of social process, however, is an issue that will not be addressed in this paper, but it does permit a segmentation of the sequence and sustains some chronological assumptions based on material assemblages.

## 5. THE TEMPORALITY OF ENCLOSURES: THE CURRENT IMAGE

Based on these dates and the associated material culture we can start to isolate a “Late Neolithic Perdigões”, although we still do not have an overview of its spatial and structural extent.

### 5.1. Late Neolithic Perdigões

The centre of the set of enclosures, in the lower contours of the natural amphitheatre, is occupied by an enclosure defined by a medium-sized ditch (Ditch 6: 2,9m wide by 1,9m deep in the excavated section in Survey 1 of Sector Q - fig. 3) and by two inner parallel small ditches (Ditch 12: 1,5m wide by 1m deep in Survey 1 and 1m wide / 0,60m deep in Survey 2 of Sector Q. Ditch 5: 1,6m wide by 0,54m deep in Survey 2 of Sector Q). Starting at the gate, these three ditches define a circular enclosure for about two thirds of their circuits, after which their circularity is broken by a straight line directly aligned with the gate. The two small inside ditches were

initially interpreted as palisade foundations. If this interpretation remains valid by the fill recorded in Survey 2, the filling of Ditch 12 in Survey 1 is more complex and suggests that this structure had a more diversified function than previously suspected (Valera 2012a). There it showed a complex stratigraphy, with the deposition of “Almeriense Idols” at the bottom and of pottery shards closing the filling sequence. Between, there were layers with agglomeration of small stones and abundant faunal remains and pottery, followed by moments of erosion of the inside walls of the ditch and deposition of structured large stones. This sequence is not easily compatible with a palisade infrastructure. That could mean a different use or a reuse for different purposes.

The three ditches have already been dated. Ditch 5 has just one date (tab. 1: date 1) obtained in the Survey 2 of Sector Q, with a result placed in the transition from the 4<sup>th</sup> to the 3<sup>rd</sup> millennium BC (3093-2918 cal BC).

Ditch 12 has also only one date (tab. 1: date 2), but obtained in Survey 1 of Sector Q. The sample was located just few centimeters away from the set of “*Almerienses Idols*” deposition at the bottom of the ditch (*Idem*). The radiocarbon result puts that deposit in the second half of the 4<sup>th</sup> millennium BC (3365-3097 cal BC). However, the date obtained from this deposit is older than the one from Ditch 5, so it is possible that, although these two ditches run in parallel, they did not function simultaneously.

The third ditch dated is Ditch 6. Much larger than the two previous ones, it has two dates (tab. 1: dates 3 and 4). The stratigraphic sequence of the filling shows two fills sequences separated by an episode of localized erosion of the outside ditch wall. The first half of the sequence is mainly characterized by horizontal and intercrossed layers. After the erosion episode, postholes were dug into the resulting surface made from geological sediments and stone and earth deposits start to become diagonal, sloping from the outside. There is a date for one of the bottom deposits (3336-2944 cal BC), which is almost identical to the one from Ditch 12. The other date (3093-2918 cal BC), from one of the upper layers, is statistically different if we consider the probability distribution of the two dates (fig. 4) and clearly points to the transition from the 4<sup>th</sup> to the 3<sup>rd</sup> millennium BC. Furthermore, this date is statistically similar to the one obtained for Ditch 5 so these results suggest a close contemporaneity of the open and initial functioning of Ditches 6 and 12 (the geometric layouts of these ditches already suggested that), but also suggest that Ditch 5 (close and parallel to the others) was opened later, when ditch 6 was already half filled.

The idea of an initial ditch with a double palisade inside might, therefore, be questionable, but the number of dates is still insufficient to correctly evaluate this suggested sequence.

From this general period there are two other structures dated in Sector Q (a small semicircular trench and a large pit or *hypogeum*) and two pits with human bone deposit in Sector I (fig. 3). The date from the small semicircular trench (tab. 1: date 5) that starts and ends by the outside edge of Ditch 6 (it is not clear yet if it was cut or is structurally related to it) is statistically identical to the dates from the bottom of Ditches 6 and 12 (3339-3026 cal BC). The date available for the large pit is from an upper level (date 6) and is statistically identical (3093-2918 cal BC) to the date for the upper level of Ditch 6 and to the date from Ditch 5. Since those two sets of dates are just slightly overlapping, it is suggested that we can start to distinguish two phases or episodes inside Neolithic Perdigões: one roughly between from 3360-3000 cal BC and another associated to the transition of the millennia (3100-2900 cal BC). The first mainly connected with the opening and initial filling of the structures (with the exception of Ditch 5) and the later with the final fills.

It is interesting to notice that the two Neolithic pits with funerary remains, located 200 meters NW of these central enclosures, are also indicative of these phases: Pit 7 (tab. 1: date 22) was dated to 3331-2922 cal BC and Pit 11 which cuts Pit 7 (tab. 1: date 23) was dated to 3096-2901 cal BC.

Still in the central area, although not yet dated by radiometric methods, ditch 8 (fig. 2), can also be attributed to the Late Neolithic from its associated material culture, but it is not yet possible to identify phases as work on the artefacts is still in progress.

Finally, other observations regarding the stratigraphy at Neolithic Perdigões can be made. First, it can be seen that Ditch 8 is cut by Ditch 7. Having no information regarding the filling of the latter, we can only note that it is later than Ditch 8. Nevertheless it is interesting to notice that Ditch 7 is the only one with the same general plan as Ditch 6 and that it is parallel to it. Secondly, there is a strong possibility that the eastern megalithic cromlech, 350m meters from the central enclosures and located in front of the gates (fig. 2), is also associated to this Neolithic phase.

Taking all this data into account, it appears at present that Late Neolithic Perdigões can be summarized by plan 1 of fig. 5. It is characterized by the location of the enclosures in the central and low area of the natural amphitheatre, surrounded by the slopes and higher



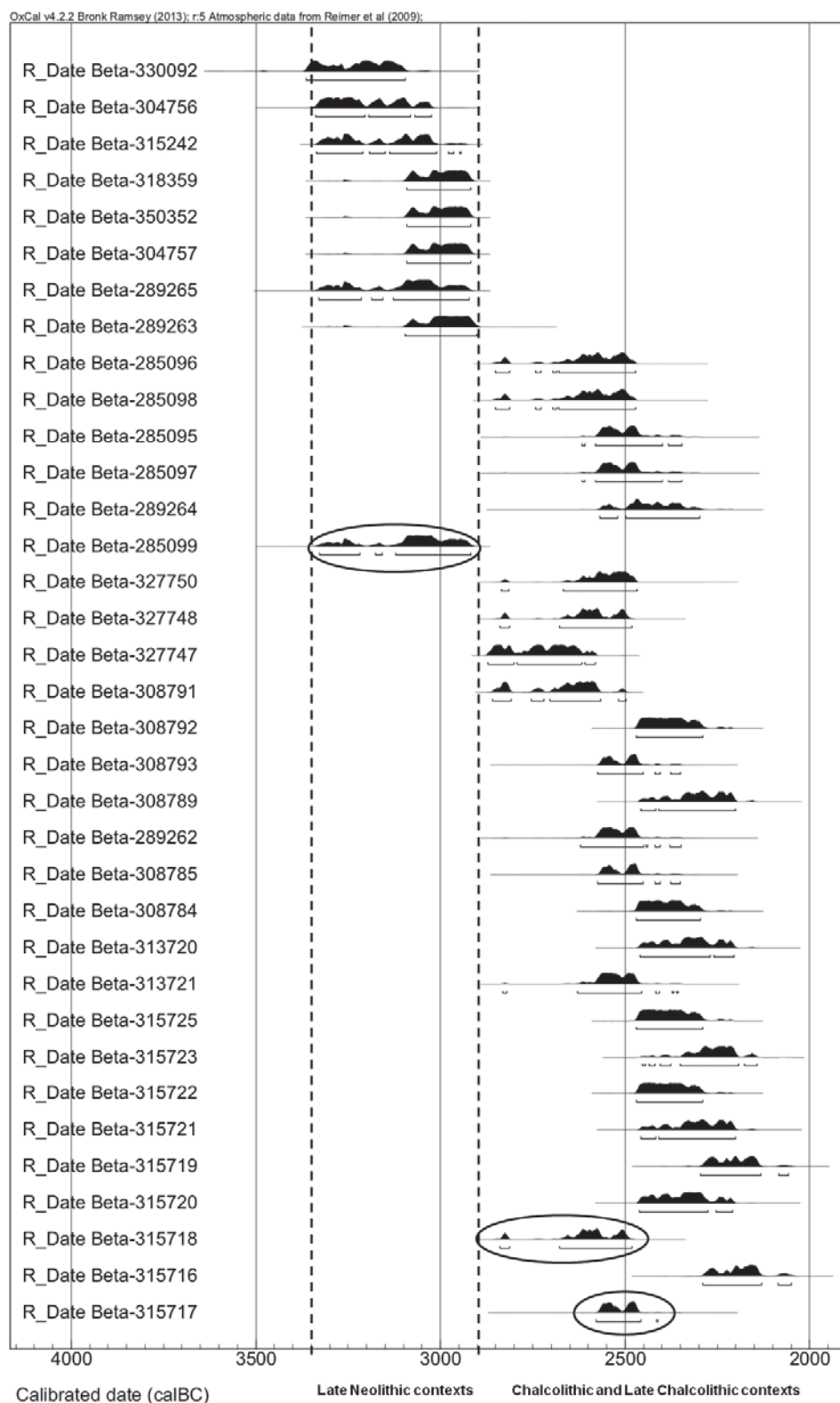


Figure 4. Representation of the statistical distribution of the radiocarbon dates.

topography except to East, where visibility is directed over the valley of the Ribeira do Álamo through the open side of the amphitheatre banks, which are roughly coincident with the summer and winter solstices (Valera 2008b; Valera 2010). The choosing of this specific location and the relationship with the local landscape was, therefore, made in a clear Neolithic mental framework that valued East and specific solar events. The overlapping of some structures, the filling sequences and the available chronology indicates that at least two phases might be identifiable in this period but whether they are continuous or represent an interruption in the occupation of the site is something to be investigated further. The changes in the filling processes in Ditch 6 and the intermediate layers of geological material resulting from the erosion observed both in ditch 6 and 12 suggest that a period of abandonment might have occurred. This is something to be tested with the study of the material assemblages and by the extension of the dating program.

## 5.2. Chalcolithic Perdigões

For the period between 2900-2100 cal BC we have a set of 24 dates, 12 of them related to the fillings of ditches 3 (4,7m wide by 1,7m deep), 4 (2,5m wide by 1,9m deep) and 1 (6m wide by 3m deep).

Ditches 3 and 4 were surveyed in Sector I (fig. 3) and dated from the second quarter / middle of the 3<sup>rd</sup> millennium BC. They are quite near to each other (just 2-3 meters apart) and have a sinuous design. The outside one (Ditch 3) revealed a stratigraphic sequence with two specific phases and processes of filling. In the bottom half, a sequence of horizontal structured deposits of stones, pottery shards and faunal remains (and two human bones – see below) was recorded, separated by thin earth layers (Valera 2008a). The bottom and the top of this sequence were dated (tab. 1: dates 8 and 9), revealing precisely the same result (2851-2472 cal BC), suggesting a relatively rapid formation of the sequence. Then an interruption occurred in the filling process and a small canal of hydraulic erosion was formed in the top of the earlier deposits. The second phase of the filling of the ditch (the top half) resulted from different processes, with no stone deposit, smaller fragments of pottery and bones and thicker and more clayey layers. One intermediate layer of this second phase was dated (tab. 1: date 7) with the result 2618-2347 cal BC. Although this date is not statistically separable from the two others, the fact that it covers the upper part of

the probability distribution associated with the relative stratigraphic positions of the samples, seems to corroborate the existence of a slight interruption of the sequence of deposits when the ditch was half filled.

This sequence was also recognizable in the study of faunal remains that revealed taphonomic marks related to pedogenetic processes inside the ditch, that is to say, to a period of soil formation and plant growth on a stable surface, establishing a contrast between the two stratigraphic phases (Costa 2010, Costa 2011).

As to Ditch 4, since the date from a top layer was considered an outlier (tab. 1: date 10), we are left with just two dates (tab. 1: dates 11 and 12) to a thick bottom layer, also with structured depositions and human remains. The dates are statistically similar (from animal and human bones – see below): 2618-2347 and 2568-2299 cal BC. These date ranges are also statistically similar to the one obtained from the top sequence of Ditch 3. This suggests that when the filling of Ditch 4 started, Ditch 3 was already partly filled, but not totally. It is also possible that Ditch 4 was open later than Ditch 3, raising the interesting question as to why open a new ditch, on the inside of an earlier half filled one and just two or three meters away.

In fact, no functional explanation seems adequate to deal with this combination of data: the wavy pattern of the ditches (that multiplies the effort of construction), the proximity between them, the kind of selective and structured depositions in the bottom half of both ditches, the probable chronological differences between them and the strong possibility that when the second was open the first one was just partially filled. As has been argued elsewhere (Valera 2012b), the design of these sinuous ditches seems to relate more to ideological perceptions of the world than to purely practical reasons.

Therefore we see that from approximately 2800 until 2450 cal BC new enclosed areas were defined at Perdigões, first by ditch 3 and possibly later by ditch 4. In the same general period at least two *tholoi* type tombs were built on the eastern side, between this enclosure and the cromlech. It appears that they may originally have been outside any enclosure, but they were built next to (and in the same direction as) an earlier highly symbolic area of the site (the cromlech). In the central area a large circular structure (over 20m in diameter) was excavated and filled with occupation deposits and stone structures and was later cut by pits in which cremated human remains were deposited (see below). Several scattered pits that can be attributed to this phase were also excavated in different sectors. Many of these

structures cut earlier, Neolithic, ones, especially in the central area of the enclosure.

The new enclosure surrounded was concentric to the earlier deactivated ones from the Late Neolithic, although its design is not perfectly geometrical. In doing so, it enlarges the enclosed area, but maintains the same general pattern of location in the middle of the amphitheatre and the same visual relationship with the local landscape already established in the Neolithic (fig. 5: plan 2).

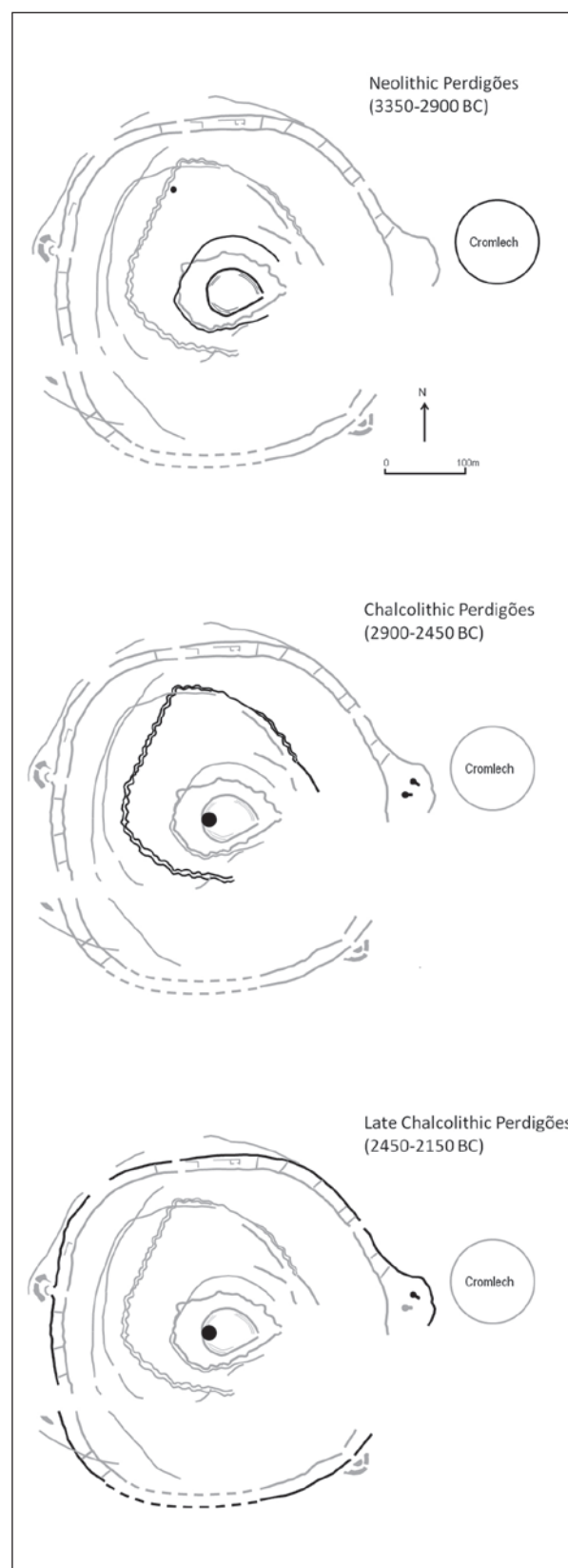
During the second half of the 3<sup>rd</sup> millennium at least one new ditch was opened. For the moment we only have a chronology for Ditch 1 (Márquez *et al.* 2013), the outside ditch of what appears to be a double system (ditches 1 and 2 and several perpendicular connections between them), and we still need confirmation of the construction sequence by excavation and radiocarbon.

Ditch 1 has an assemblage of nine dates (Márquez *et al.* 2013), with two of them considered clear outliers (tab. 1: date 13 and 15). The older dates (tab. 1: dates 18 to 21) show that the lower deposits, with structured depositions, short episodes of erosion of the ditch wall and opening of pits in the sediments inside the ditch (Márquez *et al.* 2011), were formed in the third quarter of the 3<sup>rd</sup> millennium BC. This suggests that the opening of Ditch 1 might be relatively late, around the middle of the millennium, therefore later than the necropolis that it embraces on the eastern side. For the upper deposits we have slightly later dates (tab. 1: dates 17, 16 and 14), from the transition between the third and the fourth quarter of the 3<sup>rd</sup> millennium BC, already associated with the presence of Bell Beaker pottery inside the ditch, and perhaps corresponding to a partial re-cutting of the earlier fills.

At the same time as this ditch was being filled, one of the *tholoi* was emptied and reused (see below) and the deposition of cremated human remains continued in the central area of the enclosure.

The general concentricity of the outside ditch to the earlier ones, its adjustment to fit the topographical limits of the natural amphitheatre, the astronomic orientation of the gates to both solstices, the respect for the necropolis and the reutilization of at least one tomb show, near the end of the millennium, a general continuation of the principles that informed the earlier architecture of the site and with some earlier practices (fig. 5: plan 3).

Figure 5. Representation of the actual understanding of the chronological development of Perdigões.



## 6. MANIPULATING HUMAN REMAINS

As argued above, the approach to temporality must combine time and space with social practices. Of all the practices that took place in Perdigões during its life, only for those involving the manipulation of human remains do we have a relatively good chronological sequence (from 18 dates). The general picture, particularly during the 3<sup>rd</sup> millennium, is of a progressive diversification of rituals and locales involving the deposition of human remains (fig. 6).

The first evidence of funerary contexts corresponds to two pits in sector I, dated from the Late Neolithic. In Pit 7 lower limbs of an adult female, fragments of phalanges of a child and fragments of an adult skull were all recorded. As mentioned earlier, this pit was disturbed in the Chalcolithic and the missing bones might result from this disturbance or alternatively the original deposit may have comprised fragmentary cadaverous material with some soft tissue still preserving partial articulation (note that no bone from the axial skeleton was recovered). This pit was dated (tab. 1: date 22) to the second half of the 4<sup>th</sup> / transition to the 3<sup>rd</sup> millennium BC. Pit 11, slightly cutting the previous one, produced skeletal remains of three children/adolescents in a primary deposit and produced evidence for body manipulation after the process of decomposition had started (Valera and Godinho 2009). DNA analyses indicate that they were male, but with no matrilineal relationship between them (different haplogroups). This pit was dated (tab. 1: date 23) to the transition from the 4<sup>th</sup> to 3<sup>rd</sup> millennium BC. So far, these Late Neolithic pit graves are the only funerary contexts in Perdigões where primary depositions have been clearly documented. We do not yet know whether these two pits were bounded by some of the unexcavated ditches that define larger areas but they are certainly outside the central enclosures that can be attributed to this period.

Later, two *tholoi* tombs were built and used in the eastern side of the site, near the earlier cromlech. They have circular chambers, partially excavated into the bedrock, with walls of vertical schist slabs, a small passage (in one case made with small diorite monoliths) and a small circular or oval atrium also lined with schist slabs. They have been intensively used for secondary deposits of remains of more than a hundred individuals each (no primary deposits were recorded during the field work, but the anthropological study is still in progress). Sometimes there is clear evidence for the spatial organization of specific bones. It is interesting to notice that these monuments started to fall into ruin, with the

collapse of the schist slabs, but the process of deposition was not interrupted nor were the structures rebuilt, thus suggesting a use from time to time of monuments in the process of structural decay. The construction and primary use of these two tombs was dated to the first half of the 3<sup>rd</sup> millennium BC (2900 – 2500 cal BC): dates 29 to 31 for the chamber of Tomb 1 and date 33 from the chamber of Tomb 2. These dates are clearly older than the dates available for the basal fills of Ditch 1 that enclose these structures, showing that they were built outside the existing enclosures and were later embraced by a semi-circular detour of this outside ditch, when it was built in the middle of the millennium.

It is precisely at this time that a significant diversification of practices relating to the human body can be perceived, revealing different body treatments and the use of different structures and spaces for the deposition of human remains.

In Sector I, the deposits of the first filling sequence of Ditch 3 (with the formal depositions of stones, faunal remains and pottery shards) revealed the presence of some human bones (cranial and radius fragments) and the bottom deposit of Ditch 4 produced hand phalanges (possibly from the same hand) whilst another phalange was recovered in an upper layer of that ditch (Valera and Godinho 2010). The contexts of Ditch 3 were dated to the second quarter / middle of the 3<sup>rd</sup> millennium (tab. 1: dates 8 and 9) and the bottom context of Ditch 4 to the middle / third quarter of that same millennium (tab. 1: dates 11 and 12). The nature of these human bones in the ditch deposits is generally comparable with the animal bones or pottery shards, suggesting that the human remains and other materials shared a similar status in the construction of the meaning of those formal deposits. It is clearly not a situation where human remains being escorted by votive material, but rather a circumstance where they participate as one more element in the construction of contextual meaning.

In the same chronological span (middle / third quarter of the 3<sup>rd</sup> millennium BC) the atrium of Tomb 2 started to be used for secondary deposits (tab. 1: dates 32 and 35), the chamber of that same monument was partially emptied and reused also for secondary deposit (tab. 1: date 34) and, in the centre of the enclosures, cremated human remains were deposited inside pits and in the open. In this central area, the cremated remains (at least nine individuals) in Pit 16 were dated to the middle of the 3<sup>rd</sup> millennium (tab. 1: date 24). Nearby, another pit with cremated human remains is still under excavation. It was covered by thin uncontained deposits of cremated human bones (at least 100

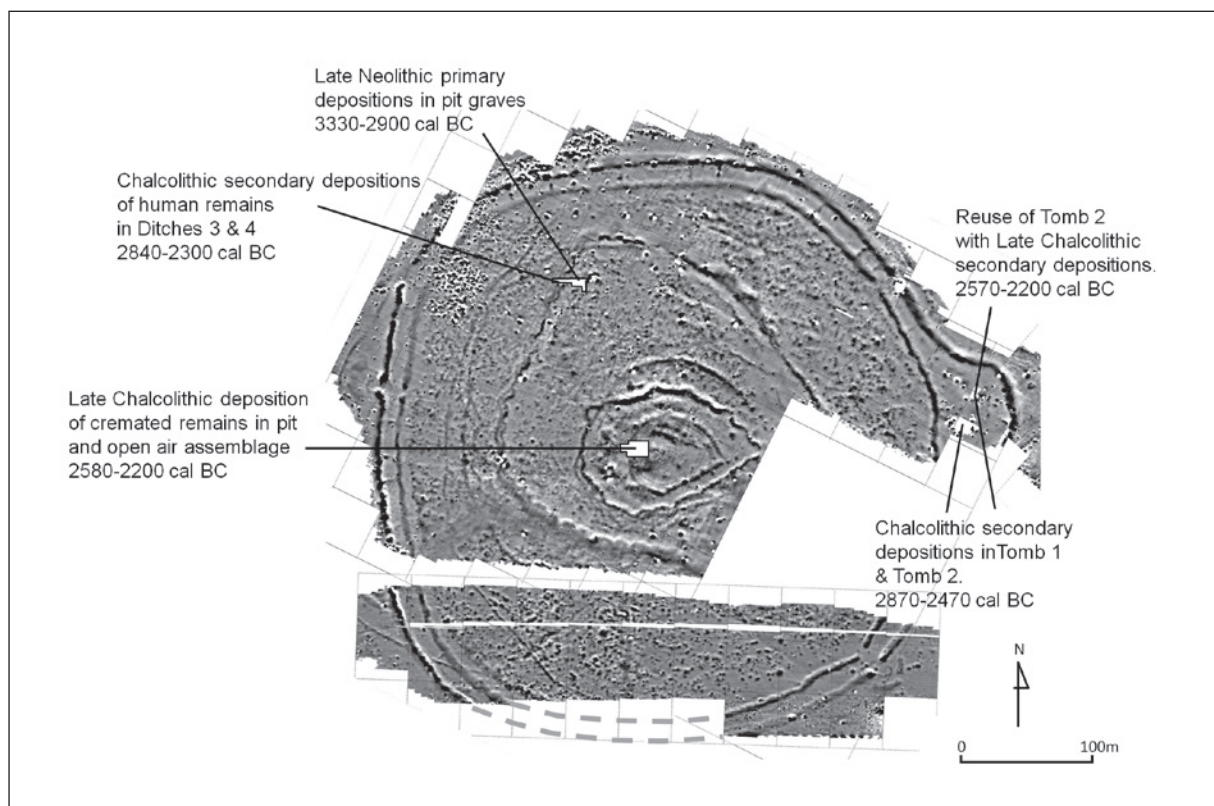


Figure 6. Distribution of the known funerary contexts or context with manipulated human remains.

individuals to date) that also cover a stone cist structure later than the pit. Although very thin, two layers were defined in those deposits and dated. The lower one dates to the middle of the 3<sup>rd</sup> millennium BC (tab. 1: dates 26 and 28) and the upper layer to the third quarter of that millennium (tab. 1: dates 25 and 27): the date ranges clearly do not overlap (fig. 4). This means that either the secondary deposition of cremated remains in that area was continuous and long-lived or that these depositions were made over a shorter period but incorporated bones cremated at different times.

Therefore, at Perdigões, in the middle and third quarter of the 3<sup>rd</sup> millennium, human remains were being formally deposited inside ditches, cist graves were being built, secondary deposits of human remains were being made in pits and on open surfaces and earlier *tholoi* type tombs were being emptied and reused for secondary depositions of human bones. If, according to our present data, the funerary contexts seem to be near but outside the enclosures during the 4<sup>th</sup> and early 3<sup>rd</sup> millennium, from middle of the third millennium onwards they clearly are embraced by the enclosures, generating a contextual plurality where human remains are

concerned. These contexts contain diverse practices, in architectures as well as in the material assemblages. For instance, although belonging to exactly the same chronological span, the material assemblages in the cremation contexts differ significantly from those recorded in the reutilization of *tholoi* tomb 2. For example, anthropomorphic ivory figurines only appear in the cremation contexts, the morphology of arrowheads is totally different, necklace beads are from different raw materials and so on, suggesting that the different treatment of the body is associated with contrasting material assemblages, possibly expressing different group identities or people of different social rank. The assemblages from these late funerary contexts also differ from those initially present in the *tholoi* tombs: pottery, abundant in the earlier contexts, almost disappears in the later ones and at the same time long blades and the abundance of ivory objects increase. In general, the management of the dead seems to become a central, but diversified, issue amongst the social practices that were taking place in Perdigões in the middle of the 3<sup>rd</sup> millennium and the associated material assemblages indicate a growing integration of the site in a large interregional circulation network.

## 7. SOME FINAL REMARKS

Temporality, as spatiality, is central to the understanding of any human context, but if the unit we define and decide to analyze (being a region, a culture, a site, a construction) has a long duration, then temporality becomes critical. Understanding an archaeological site such as Perdigões is, in a way, writing its biography. We can start to recognize its rhythms, its phases of growing and contraction, the ways in which the earlier constructions were conditioning the later ones, how previous ideas imbedded in architecture were perpetuated, changed or abandoned. We can begin to analyze what social practices took place there and how they behave through time, what social roles the site played at both local and regional scales during its lifetime. Only by that biographic effort can we expect to understand such a site and its historical performance.

Due to the size and complexity of the large south Iberian enclosures, this is a hard task that will take a lot of time and money to achieve, but nevertheless a start has been made in some of those enclosures, such as Marroquies Bajos (Zafra *et al.* 2003; Cámara *et al.* 2012), Valencina de la Concepción (Costa *et al.* 2010), both in Andalusia, and Porto Torrão (Valera 2013a) and Perdigões, in Alentejo.

At Perdigões, following earlier reports (Valera 2010, Valera and Silva 2011), we now have a more extended sequence of dates that allow us to go deeper into the task of disassembling that outstanding image provided by geophysics (fig. 3 and 6). Even so, only half of the ditches (and only in one section each) and a very small number of other contexts have so far been dated, so the present remarks have to be seen as the initial stage of a long process. Perdigões has not been dated, it is being dated.

At this point in time we can establish a time span for the site of more than a millennium, with 3400 BC as the lower limit and 2100 BC as the upper. We do not know whether the site was continuously occupied during this time span (if we consider it as having a permanent occupation at all) or whether it was permanently in use (if we think of it as a place for temporary or seasonal activities). The clear chronological division between the Late Neolithic and the Chalcolithic contexts could suggest an interruption or period of abandonment. However, in evaluating this clear separation we must take into consideration the fact that many features still remain to be excavated and dated. Nevertheless, and on our current understanding of the chronology, possible periods of abandonment should be considered.

Another scenario suggested by the sequence of dates is that Perdigões was expanding through time. The

earlier enclosures are in the centre, dating from the late 4<sup>th</sup> millennium BC, the intermediate enclosures date from the first half of the 3<sup>rd</sup> millennium BC and the outside ditch would have been opened by the middle of that millennium and filled during its second half. Once again we have to be careful with this interpretation. One of the unexcavated larger ditched enclosures may yet prove to be Neolithic. For instance, Ditch 11 defines a large enclosure earlier than Ditch 1. It runs round the outside of Ditch 1 in the northwestern part of the site and seems to be reused by it in the northeastern sector. In the southern area it is crossed by Ditches 1 and 2 and runs on the inside. We do not know yet the chronology of this ditch. If it is Neolithic, then Perdigões would have had a similar size in the Late Neolithic as it did in the Late Chalcolithic and therefore the model of expansion over time would become obsolete.

One observation seems to be more secure: namely the preoccupation with eastern orientations, and the eastern vista provided by the natural amphitheatre and that can be detected in the earlier enclosures. These were located in the central lower area where visibility was restricted to the East, in the direction of a cromlech. The limits of that visibility were roughly coincident with the summer and winter solstices and the gate was orientated towards the summer solstice. This orientation is maintained in the later phases. Tomb 1 is precisely orientated at 90° to the Monsaraz hill that marks the horizon at the equinoxes, and the enclosure defined by Ditches 1 and 2 is adapted to the topographical limits of the amphitheatre, with the gates also orientated towards the solstice events. The same general ideological background seems to be embedded in the architecture throughout the site's history even if there were changes through time in the social role of the enclosures.

As to the social activity that can be documented at Perdigões, besides the intense excavation of ditches and pits, activities such as weaving and copper working are also well documented during the 3<sup>rd</sup> millennium BC. Food processing and consumption can be recognized through all phases of the site. Local cereal production has been documented in pollen records for the Late Neolithic (Danielson and Mendes 2013). To date, the faunal studies show a predominant consumption of domestic animals through the site's history (especially *Sus*, but also *Bos taurus*, *Ovis aries*, *Capra hircus* and *Oryctolagus cuniculus*) though there are also some remains of hunted species (such *Bos primigenius*, *Cervus elaphus*, *Equus* sp., *Sus scrofa* and *Lepus* sp.) and river molluscs (Coelho 2008, Costa 2010, 2011).

Although these activities could suggest the establishment of perennial settlement areas, the fact is that there is little evidence for residential structures even when we take into consideration the damage done to the site by deep plowing in preparation for the planting of a vineyard. Daub fragments are also quite rare especially if we take into consideration the size of the site, the time and the density of the negative structures within it, and when we compare it with neighbouring settlements such as Mercador or Moinhos de Valadares, that have produced tons of fired clay (Valera 2013b). Even if some small stone walls and stone alignments were recorded in the Chalcolithic occupation of the central area, the actual evidence for stone or clay houses is residual in each phase and structures that could be interpreted as “pit houses” have not yet been recorded (for a critique of these kinds of structures see Márquez and Jiménez 2010).

With regards to the ditches, we can observe formal depositions inside them throughout the site sequence. For example, Neolithic Ditch 12 contained deposits of Almeriense idols in the bottom and a layer of pottery shards at the top, and Ditch 8 which contained formal deposits of stones, pottery shards and faunal remains. Similarly, the Chalcolithic Ditches 3, 4 contained formal deposits of stones, pottery shards, faunal and human remains and Ditch 1 produced an idol, faunal remains and pottery shards in the lower levels. The same general process of formal depositions was also recorded in some pits dating to the Chalcolithic in Sectors I, Q and P, but has not yet been observed in the Neolithic, with the exception of the two pits with primary human funerary deposits.

The funerary practices and the manipulation of human remains in different contexts emerges in the 3<sup>rd</sup> millennium BC as one of the major rites being practiced at Perdigões. An understanding of these practices can hardly be achieved without linking them to the ideological principles that are present in (and reinforced by) the location of the site and the meaningful relationship it establishes with the local landscape (both terrestrial and celestial) as well as in the architectonic design of the enclosures or in the practices of filling ditches and pits with intentional and formal deposits.

By the middle of the 3<sup>rd</sup> millennium BC, Perdigões seems to have reached its peak but continuing into the third quarter of the millennium. Its impact on local communities would have been one of strong aggregation. Raw materials, more or less exotic, artifacts or styles indicate that the site was part of a large social network. The intensity of occupation at the site seems to increase and larger and deeper ditches were excavated.

By that time it would be hard to find a ten meter square within the enclosure that did not contain some old or recently excavated feature. By the time we enter the last century of the 3<sup>rd</sup> millennium this sequence of occupation(s) seems to rapidly disappear, the opening and filling of ditches ends and the evidence for short-lived occupation episodes or activity in the 2<sup>nd</sup> millennium, though present, are extraordinarily scarce.

This is, however, but a short, incomplete and still quite blurred biography of Perdigões. A lot of information is still being processed and may lead to some significant advances in the near future, but this extraordinary site, and its extraordinary complexity, is very demanding and, as with other enclosures in Southern Iberia, it will continue to dominate our researches for a considerable time.

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