

HOW TO (RE)MAKE A “PREHISTORIC POT”? A SMALL SYNTHESIS BASED ON THE STUDY OF CHALCOLITHIC POTTERY OF ZAMBUJAL (TORRES VEDRAS, PORTUGAL) AND ALSO ON THE CURRENT MANUFACTURE OF MAPUCHE POTTERY (LUMACO, CHILE)

¿CÓMO (RE)HACER UNA “OLLA PREHISTÓRICA”?
UNA PEQUEÑA SÍNTESIS BASADA EN EL ESTUDIO DE LA CERÁMICA
CALCOLÍTICA DE ZAMBUJAL (TORRES VEDRAS, PORTUGAL) Y EN LA
FABRICACIÓN ACTUAL DE CERÁMICA MAPUCHE (LUMACO, CHILE)

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Abstract

This paper is presented as a proposal focused on the archaeological study of objects and their characteristics, considering that, to make history through material remains, it is necessary to understand how these objects were made and identify their manufacturing “signs”. For this, the result of two projects is here combined: on the one hand, the analysis of the ceramics from the Chalcolithic site of Zambujal (Torres Vedras, Portugal), carried out using different archeometric techniques; on the other, an ethnoarchaeological work, carried out with the Mapuche potters from Araucanía, in southern Chile. As an applied example of these crossed data, the classic tripartite division of the Chalcolithic of the Portuguese Estremadura is questioned, based on the typology of the decorative motifs of different ceramic productions and a reductionism of the stratigraphic analysis.

Keywords: Handmade pottery, Chalcolithic, Portuguese Estremadura, Mapuche Potters, Ethnoarcheology, Symmetrical Archeology.

Resumen

Este artículo se presenta como una propuesta orientada al estudio arqueológico de los objetos y sus características, considerando que, para hacer historia a través de los restos materiales, es preciso comprender cómo se hicieron estos objetos e identificar sus “signos” de fabricación. Para ello, se combina el resultado de dos proyectos: por un lado, el análisis de la cerámica del yacimiento calcolítico de Zambujal (Torres Vedras, Portugal), efectuado mediante el empleo de diferentes técnicas arqueométricas; por otro, un trabajo de carácter etnoarqueológico, realizado con los alfareros mapuche de Araucanía, en el sur de Chile. Como ejemplo aplicado de estos datos cruzados, se cuestiona la clásica división tripartita del Calcolítico de la Extremadura portuguesa, fundamentada en la tipología de los motivos decorativos de diferentes producciones cerámicas y un reduccionismo del análisis estratigráfico.

Palabras clave: cerámica a mano, Calcolítico, Extremadura portuguesa, alfarería mapuche, Etnoarqueología, Arqueología simétrica.

(...) Despite the (meta)theoretical shortcomings inherent to the subdiscipline, I want to suggest (...) that ethnoarchaeology, understood as a different way of dealing with people, things and time, can be fundamental in supporting a symmetrical project.
(González Ruibal, 2006: 112)

Introduction

A recent work (Olsen *et al.*, 2012) defends that archeology is, above all, a discipline of objects, rather than exclusively a discipline of the past. The objects found by the archaeologist are both past and present; they are from the past but are still here in the present. I agree with the authors of that work, but how can we understand objects if we do not know the essentials about them, about how they were made?

This paper tries to combine the theory of symmetrical archaeology (Olsen, 2003) with its practical use. For that, it combines two past studies about pottery without the use of the wheel. The first, based on an archaeometric analysis of Chalcolithic pottery from Zambujal, Portugal (Carvalho Amaro, 2012) and, a second, based on an ethnoarchaeological study of Mapuche potters from Lumaco, Chile (Carvalho Amaro/García Rossellò, 2012). It aims to draw attention to the potential of material culture —particularly ancient ceramic studies— under a non-Cartesian perspective, considering that a perspective centered in the process of making an object can give us further information about past cultures. We always considered the symbolical part of the object, emphasizing on decoration, but we forget the very physicality of objects. As archaeologists, we only have the object (materiality) but don't have the culture (the narrative from people).

We will start with a short overview on the context of Chalcolithic of Estremadura (the central coastline of Portugal), with chronologies within the 3rd millennium BC from 2800 to 2300 cal BC (Kunst/Luntz 2008; Cardoso 2014). Traditionally, this period is divided into three ceramic horizons or evolutionary phases. In this context ceramics are used as index fossil based exclusively on decoration (see Fig. 1):

1. Cannelure ware (Earlier Chalcolithic);
2. Acacia Leaf decorated vessels (Middle Chalcolithic);
3. Bell Beaker (Late Chalcolithic).

One of the main characteristic of this regional Chalcolithic is the pre-bell beaker pottery which has drawn the attention of archaeologists since it was discovered in the oldest strata of Vila Nova de S. Pedro: the cannelure ware (Earlier Chalcolithic). Since then, at the end of the 1940s and until today, researchers from Portugal and other countries (Paço, 1954; Sangmeister, 1956; Blance, 1959; Savory, 1959; Leisner, 1961) have investigated this type of ware. This pottery, with grooved and burnished decoration and fine walls, is basically characterized by a series of grooved horizontal lines (cannelure) along the edge and base of the piece, and by zigzag, chessboard or semi-circular burnished designs on the body. These

decorations are especially found on cylindrical pots and hemispherical bowls, and are also present on dishes, plates and spherical urns. Initially, this pottery was thought to be foreign, as also the fortified settlements from the Chalcolithic period where those ceramic fragments were found. These were interpreted as colonies or trading centers that were influenced by or originated in the Middle East. For this reason, the decorated pottery was referred to as *Importkeramik* or imported pottery. However, as we gradually obtained a clearer understanding of the cultures from recent prehistory in the Iberian Peninsula, as a result of a larger number of excavation projects, supported by radiocarbon dating and other methods, our interpretations changed to the point where there is now a tendency towards explanations focusing on a possibly local development during the Neolithic period. To some extent, after these conclusions were reached, interest in grooved ware has gradually waned, with research now reduced to morphological and decorative analyses.

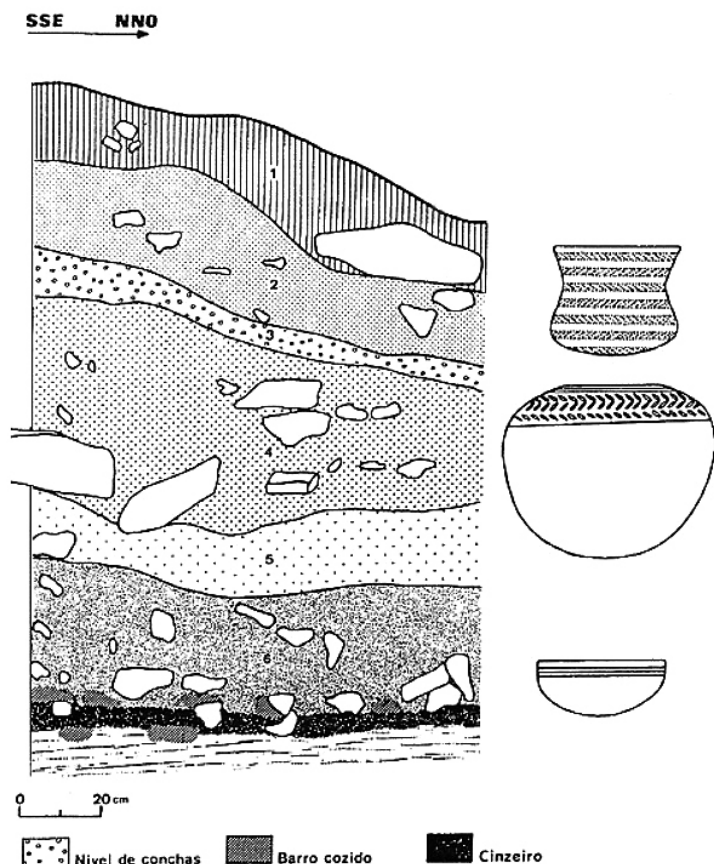


Figure 1. The three “horizons of the Chalcolithic of Estremadura. The stratigraphy of Rotura (Setúbal), with the hemispherical cups with grooves (no grooved ware cups were found in this site), the globular vessels with acacia leaf and finally the bell-shaped vessel (Silva/Soares, 1975: 86).

Since 2010 that we defend, after a PhD thesis, that these ceramic forms, particularly the grooved ware cups (Fig. 2), can give us very useful information. There is a strong possibility that they represent an antecedent of the bell beaker ceramics. This idea was influenced by Beatrice Blance (1971) and Michael Kunst (2001) and conceived considering that, in the case of Zambujal, there is no such thing as division in three stratigraphic horizons. As Michael Kunst (1987) pointed out, there is little difference between grooved ware and acacia-leaf in term of stratigraphic distribution. We also found continuity in the clays used for manufacture, using the same raw material and clay sources, with the site maintaining a pottery making tradition that prevailed throughout the whole of the Chalcolithic occupation in Portuguese Estremadura (Carvalho Amaro, 2010-2011; *Id.*, 2012; *Id.*, 2013). This perspective of continuity, based on archaeometric analysis must be complemented with other sorts of information like the forms and the process of pottery fabrication.

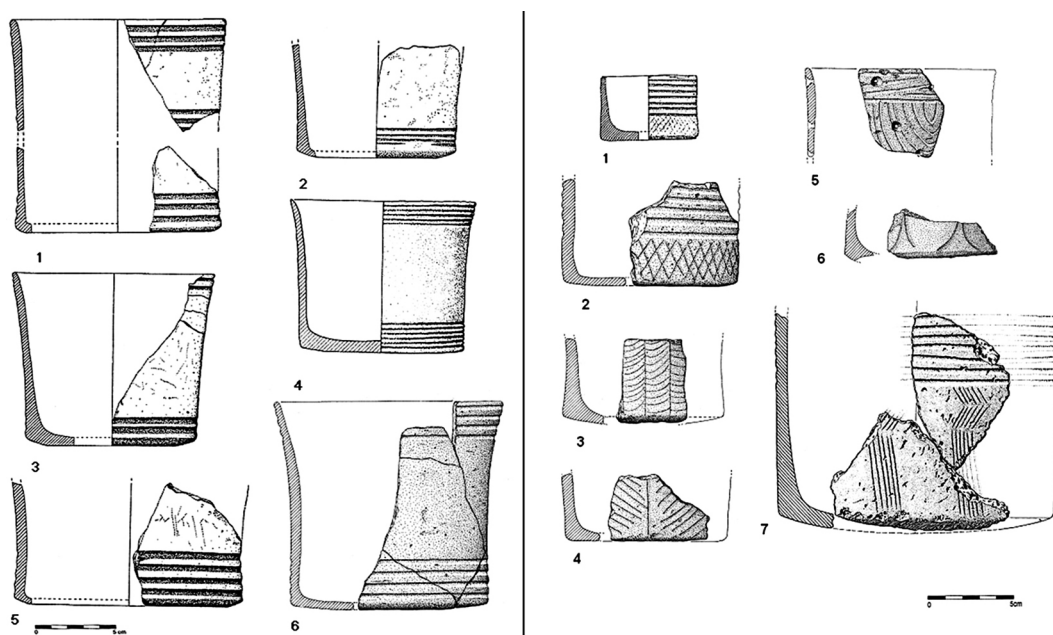


Figure 2. Typical grooved ware cylindrical cup from the Portuguese Estremadura. Left: Vila Nova de São Pedro (1, 3, 4, 6) (Ferreira, 2003); Casal do Pardo/Quinta do Anjo (2) (Soares, 2003); Leceia (5) (Cardoso, 2006). Right: Leceia (1, 4, 5, 6) (Cardoso, 2006); Outeiro de São Mamede (2) (Cardoso/Carreira, 2003); Vila Nova de São Pedro (3) (Ferreira, 2003).

In this short paper we would like to emphasize the importance of complementing archaeometric studies with other elements of analysis that could give us closer information about the relationship between people and their artefacts and, in the particular case of this study, in how Chalcolithic people made their pots. Because, according to my point of view, knowing only about typologies is not enough, we need to know more, we must end with the *Cartesian* dualism subject-object, or person-thing.

In order to understand how objects shaped people (because we only have material evidence), we need an approach to the manufacturing process: to know how to make a pot without the use of the wheel, to perceive the difficulties that they could have had making, decorating and firing a beaker. For that reason, we use a comparison with the ethnoarchaeological study about the *Chaîne opératoire* of Mapuche potteries (Carvalho Amaro/García Rosselló, 2013; García Rosselló/Carvalho Amaro, 2013), which provided many insights concerning pottery manufacture.

Mapuche potters, like the prehistorians, don't use wheel to make pottery and use open air fires to burn their ceramics. This field work among them allowed us to understand some particular practices in the modeling of shapes and firing of pots and on situations that failed, for example, in previous experimental studies (Carvalho Amaro/Anunciação, 2008-2010; *Id.*, 2013). We experienced that for a good firing process two elements were essential: the expertise of the potter in modeling, ensuring the homogeneity of the paste and the absence of air bubbles and also the gradual and balanced drying time of the pieces.

Archaeometric analysis

Fragments of different types of Zambujal pottery were subjected to an archaeometric analysis, regardless of their shape, characteristics and stratigraphy (bell beaker, “acacia-leaf”, grooved, impressed ware and undecorated ware), alongside samples of clay from the region close to the site and some from Sintra (previously indicated by Blance (1959) as the likely source of the clay used for the grooved ware). A total of 113 samples of pottery and clays were studied. The analytical techniques used were thin section petrography (TSP), scanning electron microscopy (SEM), X-Ray diffraction (XRD) and total reflection X-Ray fluorescence (TXRF). The study was carried out at the Interdepartmental Research Service (SIdI) of the Autonomous University of Madrid, Spain. The aim of the analyses was to identify the physical, mineralogical and chemical features of the pottery, evaluating its similarities and differences, as well as its evolution on site during its occupation in the Chalcolithic period. The choice of Zambujal was due to the level of archaeological preservation of the site and also due to the presence of all the different phases of Chalcolithic occupation in Portuguese Estremadura; something that is unique in the region, which is fundamental for an archaeometric work.

The results of the archaeometric analyses carried out on the Zambujal pottery provided us with a series of very interesting data (Carvalho Amaro, 2012), which in summary were the following:

1. The presence of more compact fabrics in the case of the grooved “vases” and bowls, which is evident in the TSP and SEM, an aspect that is probably associated with their function.
2. The identification in the results from the chemical and mineralogical characterization of three main groups: one with a majority presence of calcite, another with quartz and the last one mafic minerals. Particularly evident in the chemical analysis used as an example to illustrate the case.
3. The first of these three groups (calcite) is evidently associated with undecorated ware, and its presence in this case is due to its use as a temper (Figs. 3-4).
4. The absence of a clear difference between the chronology and type of piece (bell beaker or grooved cylindrical cups) in the chemical and mineralogical data.
5. Verifying that there are several sources of clay near the Chalcolithic site which are identified with the different types of clays used, including clays with minerals of volcanic origin, all within a radius of 5 km from the site.

Making a pot with a Mapuche potter

Proposing a work on ethnoarcheology can be a complex task. As we know, this science or auxiliary method of archeology (depending on how it is preferred to be mentioned) had its apogee within processual archaeology thanks to one of its precursors, Lewis Binford (1983). In the last 30 years, ethnoarcheology has been reconsidered from the works of Hodder (1982), Shanks/Tilley (1987) and Ingold (2005). Within this perspective ethnoarchaeological research has undergone some changes, leaving its character of observation with a comparative and explanatory purpose used by Binford (1983), to move to another, assuming that we are dealing with a sort of archaeology of the present “*in that it deals with people that are alive and things that are in full use*” (González Ruibal, 2006: 112). Following this idea, our ethnoarchaeological perspective focuses on the study of the material culture of the groups from the present. In this way, it is intended to contribute to the reflection on the linkages between material culture and the manufacturing process, such as Gosselain (1992, 2000), Stark (1991) and González-Ruibal (2005). This isn’t a search for analogies. We don’t want to affirm that the *chaîne opératoire* used by the Mapuche potters could be used as a model to those used in the Chalcolithic period. On the contrary, what we want to do with this ethnoarchaeological analysis is to understand how to make a pot under similar circumstances such as modeling without using the wheel, with less decanted clays and firing at open air.

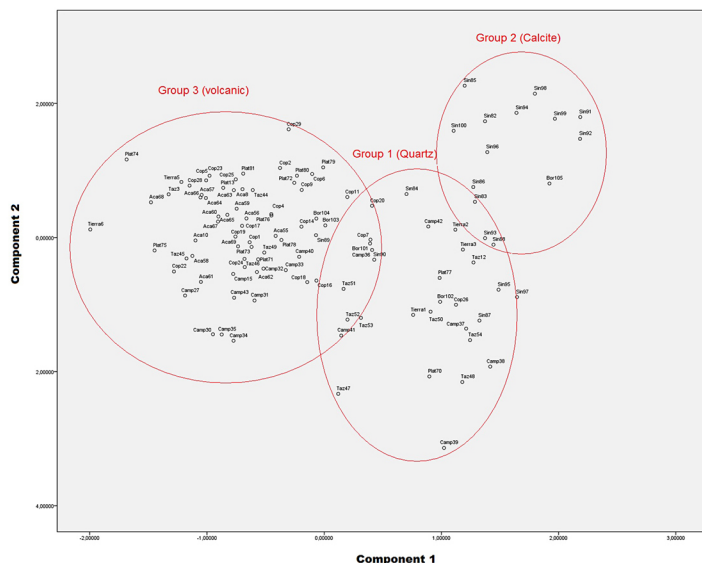


Figure 3. Analysis of the principal components after logarithmic transformation of elemental concentrations of 109 samples. Representation of the samples and their groupings obtained by cluster analysis (Carvalho Amaro, 2012: 202).

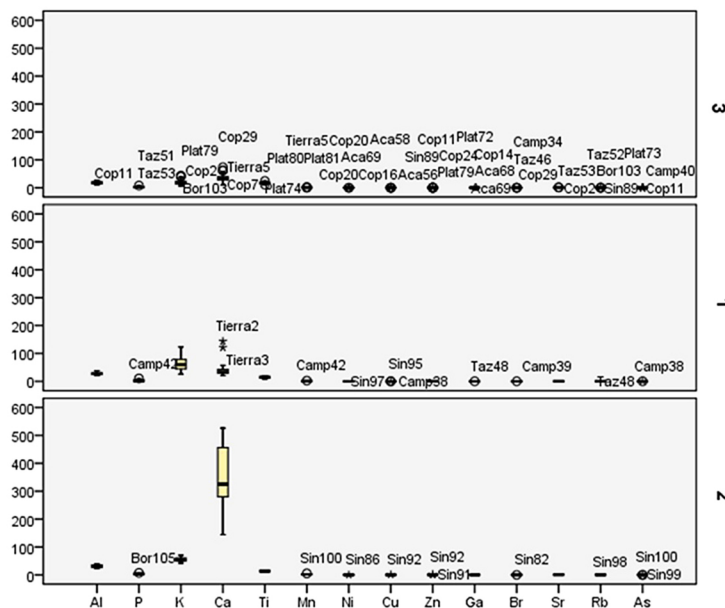


Figure 4. Distribution elemental concentration percentages by groups, using a box and whisker graph. (Carvalho Amaro, 2012: 206).



Figure 5. Recording the making of some pottery pieces in Divulko, Lumaco, southern Chile. Potter Ema Tranamil (photo by Jaume García Rosselló).

During 2011, we have analyzed handmade pottery of Mapuche potters in the Araucanía region, southern Chile, documenting all the process from the collection of raw-material to its use while firing (Carvalho Amaro/García Rosselló, 2012; *Id.*, 2013; García Rosselló/Carvalho Amaro, 2013). That ethnoarchaeological experience (Fig. 5) gave us a different knowledge about pottery making, overcoming some prejudices which in a way were influenced by our discipline and by the impregnation of contemporary concepts about pottery.

When accompanying these Mapuche potters, we were able to realize essential elements in ceramic production. We could note that cultural habits and traditions are generated in the process of making a pot. Some have a clear symbolic character, but others are more related to what Pierre Bourdieu referred as *habitus* (Bourdieu 1963). We noted that, despite being separated by about 100 km, isolated potters from Divulko (Lumaco) and Pilmaiquenco (Trovollhue) maintain the same ways of modeling clay and the same technical

gestures. This last aspect interests us the most and can be replicated in the context of other ceramic studies and other chronologies.

After Chile we could understand why some aspects in the reconstruction of the Chalcolithic *chaîne opératoire* of Zambujal failed, during some experimental archaeology practices.

The processes that we have observed in Chile which allowed us to draw some conclusions about the ceramic manufacturing process are:

1. The potter's expertise in recognizing good clay;
2. A good or a bad modeling almost always has an effect on firing;
3. The pots can be made at any time of the year, although there are drying variations according to the seasons;
4. The drying period is fundamental. The proper knowledge of the drying characteristics and times that allows the decoration—which is made in an intermediate period—does not affect the integrity of the pottery in the firing;
5. Firing does not necessarily have to be prolonged for several hours. It was possible to verify that the pots could be fired, effectively, in less than an hour;
6. With a good management of the fire and good selection of the type of wood it is possible to easily reach nearly 1000 C° (Fig. 6).

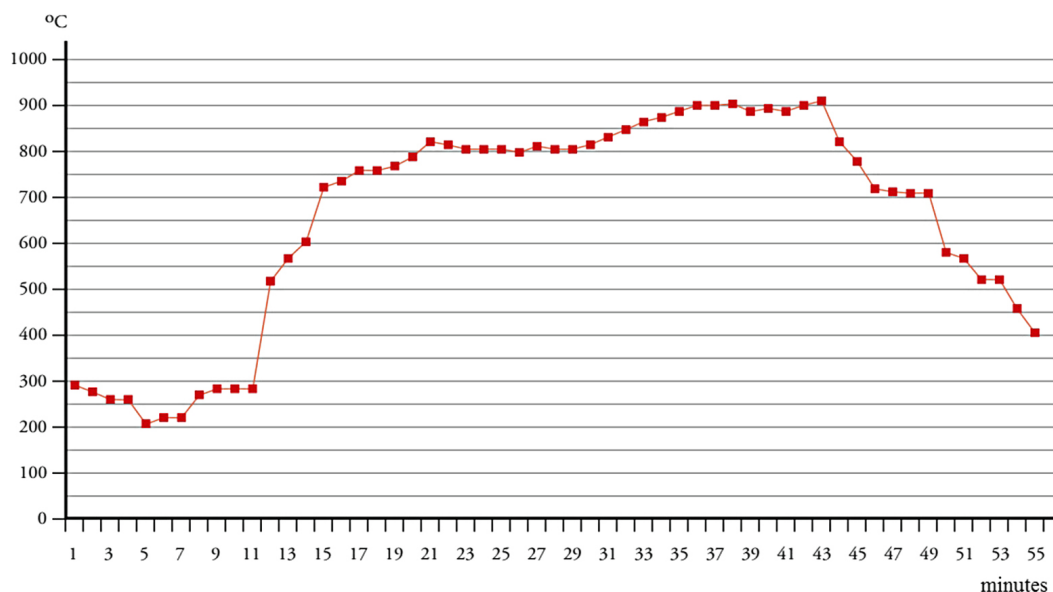


Figure 6. Evolution of temperatures during the cooking period in an open fire of Mapuche pottery, documented by a pyrometer (Carvalho Amaro/García Rosselló, 2012: 66).

Discussion and interpretation

Most archaeologists who work with pottery do not know how to make a pot. In our opinion, this is an important flaw that could have implications in the interpretation and study of the materials. We think that the conjugation of an archaeometric study, with others of ethnographic and experimental characteristics allow us to get a better understanding of the way in which these pots were produced.

For example, archaeometric analysis of 105 fragments of pottery and 8 soil samples from the Torres Vedras and Sintra area¹ indicate that the differences identified by typology and decoration are not recognized in the mineralogical and chemical analyzes.

An analysis of the decoration of the ware and observation using TSP and SEM indicated that the three ceramic considered “index fossils”, one for each three horizons of Chalcolithic in Estremadura (Fig. 1) may differ in surface treatments, theme and decorative technique, but not always in temper and modelling technique. For example, the following mineralogical and chemical characterization study revealed that at least two of those “index fossils” (channeled ware and Bell beaker) have common features regardless of their archaeological strata, indicating a continuous use of same clay throughout the period of occupation of Zambujal. We can therefore consider that the differences between these potteries are essentially connected to their production (temper, porosity, and wall thickness) and not the type of decoration or use. These main discrepancies are surprising and are probably associated with the function of the ware and not its clays.

The manufacturing process used to produce grooved ware and bell beaker pottery did not have any significant differences in its production stages. We may assume that raw materials were selected locally, a small amount of temper was used, the fabric clays are fine and the decoration is carefully executed. In both cases, the work carried out on these types of ware would have involved a certain degree of specialization, certainly implying the decantation of the clays, modelling and decoration, which in this case is of a quality that could only have been achieved with skill and experience, something that was also documented in our experimental reproduction (Carvalho Amaro/Anuniao, 2008-2010; *Id.*, 2013). In turn, the process would have been different for common pottery. In that case we find less care taken with the fabrics which are more porous, with thicker walls and a larger number of calcite granules as temper. Calcite would have been used to make the pottery more resistant to thermal shock (Hoard *et al.*, 1995).

In the case of common ware, we find the widespread intentional use of calcite granules, although in the rest, due to the smaller size of the temper and compressed nature of the clays, it is extremely difficult to make this differentiation. Neither was the TSP significant in this case, which, due to constraints of time and money, was not applied to all samples, and there were also problems in properly preparing the slices, as a result of which

¹ Three samples from Chalcolithic strata of the Sizandro river basin —prehistoric sediments withdrawn at depth and less than 3 km from Zambujal— Three superficial samples from Cabo da Roca region —30 km from Zambujal— and 2 superficial samples from Runa —5 km from Zambujal—.

they were very dark and difficult to view. Nevertheless, it was possible to identify different minerals such as feldspars, quartz, olivine and amphiboles, amongst others that are generally within the typical characteristics of the soils and clays analyzed. The mineralogical and chemical characterization analyses carried out revealed small differences between the fabric clays. However, there are some exceptions verified in almost all the undecorated wares (without traces of mafic minerals and large amounts of calcite), and a small group of ware which, regardless of its shape or type (with the exception of the “acacia-leaf” wares), did not reveal the presence of clays from volcanic soils.

Considering these aspects, the characteristics of clay are not related to the period’s occupation or stratigraphy but probably with the type, size and functionality of the artifact. Even with a certain degree of uncertainty inherent in any research on prehistory, it can be stated that the people who lived in the region of Zambujal produced their own pottery with a certain degree of specialization.

Considering the examples from Chile, we may assume that they extracted clays within a radius of 5 km², probably in open cast mining in the area of Runa. The process for preparing the clay, modelling, decorating and firing the pottery would have taken somewhere between two weeks and a month. The whole of the operative chain would probably have been carried out by a single individual or a group of individuals (if the amount of clay is considerable and if more people are needed for transportation, excluding that, generally, the master potter carries out the whole process, from clay sourcing to firing)

It is most likely that the diverse stages of the activity would have been carried out in all seasons, though more frequently during the warmest months. Based on the different identified factors, it is plausible to state that the stylistic and technical changes seen in pottery produced during the Chalcolithic period would have been local developments and that, in the case of Zambujal, the same mines were used for one thousand years, from where clay was extracted to make the grooved ware and bell beaker pottery.

Another important aspect, together with the continuous use of the same raw materials for the pottery from Zambujal, refers to the origin of the bell beaker phenomenon. As we know, in the early 2000’s, Laure Salanova (2000; *Id.*, 2002) considered that, based on the high percentage of fragments of bell beaker pottery found in Portuguese Estremadura and its age, this region could be proposed as a possible origin source, considering that the maritime style of the bell beakers are the ancient ones. In fact, bell beaker shapes that are found in the area are very similar to the cups shapes. In this case, the best known examples are those from Alapraia (Cascais), the hypogeum of Quinta das Lapas (Torres Vedras) and the hypogeum of Quinta do Anjo (Palmela), with the latter dating from a period after maritime bell beaker

² One of the most interesting issues concerning the grooved ware pottery from the Portuguese Estremadura was its association with a foreign origin. Since 1959 Beatrice Blance, following a petrographic study, indicated that the characteristics of its volcanic clays belonged to the Portuguese region of Estremadura, affirming that those potteries were local, proposing the mountain range of Sintra/Cascais as their point of origin. In fact, as we mentioned most of the samples contained mafic minerals (characteristic of soils with a volcanic origin), although the majority of clay mines in non-industrialized societies are located at less than 5 km from the habitat of the potter, see Arnold (1985), Gosselain and Livingstone (2005).

pottery. In a Chalcolithic context in the *tholos* of Serra de Mutelas (Torres Vedras), a cylindrical vessel has been found with a more curved profile than the type typically seen in a “grooved cup”, decorated with horizontal bands and with three grooves over the whole body, even on the bottom (something typical on bell beaker pottery, but absent in the “cups”). This vessel is very interesting, as it seems to demonstrate a gradual conceptual change between one shape and another: the decorative technique is typical of the “grooved cups,” while the decorative theme developed in symmetrical horizontal stripes is more typical of maritime bell beaker pottery.

Meanwhile, we should not forget that according to the classic division model (Gonalves, 1971; Soares/Silva, 1975; Cardoso, 1997), pottery with “acacia-leaf” decoration would be grouped alongside grooved ware and maritime bell beakers. In fact, it is possible to find “cup” type cylindrical shapes in some sites for a little longer than grooved shapes with this decoration, however, they are rare and no more than a dozen have been found, mostly in Leceia (Cardoso, 2006). Their existence also justifies a continuity of shapes from Early to Late Chalcolithic. Nevertheless, from our point of view and taking the current data into account, we believe that these pieces may be an exception, both in terms of their decoration, clays and even their shape. Such a small number does not make it possible to justify that they had a specific function within the “acacia leaf culture”. Also, I believe that the justification of an horizon for pottery with these features is very tenuous, as this type of decoration is absent in funerary contexts, and it is almost exclusively associated with one specific shape: the globular vase.

Taking these factors into account, we could still consider an association between the cylindrical shapes of the Early Chalcolithic and the more sinuous forms from Late Chalcolithic that were adopted according to the decorative and formal tastes of each period; in other words, an evolution of the grooved ware towards the maritime bell beakers (Carvalho Amaro, 2012). It is also interesting to see that essentially in the shape of the maritime bell beakers (Alapraia type), in the region we studied, the pottery has profiles that are not particularly sinuous and instead appears to be a transitional shape from the “cup”.

As we showed before, the classical analysis of ceramics based exclusively on typology and “horizons” was insufficient to demonstrate different ceramic traditions or cultural differences in the Chalcolithic of Portuguese Estremadura. In fact, in the case of Zambujal, it isn’t possible to identify different occupation periods related to the three previously mentioned ceramic horizons. Clay analyses demonstrate the inexistence of a relation between ceramic type and chronology, instead, the differences are related to the type of the pot and probably its use or function. Pots are not human beings but they are made by humans. Considering this, placing objects in a different plane could be unproductive. That’s why we agree with the symmetrical approach in archaeology (Olsen, 2003; Olsen, *et al.* 2012) and the important role of ethnoarchaeology in this process (Gonzlez Ruibal, 2006). For example, in the case of ceramics, there is a huge potential behind the analysis of the technical gesture, the act of modeling has an enormous interpretative potential (Garca Rossell/Calvo Tras, 2013). For that, it is important to understand how to make pots; we must pay attention to

the “traces” (such as crackling fissures due to firing or to failures in the modeling process, restorations, surface preparation evidences or initial decoration) that remain from the manufacture observation on contemporary potters without the use of the wheel to later be able to “look for them” in ancient pots, identifying that, for example, that crackle was due to bad modeling, firing, etc.

Conclusion

Within this short text we revisited previous works about pre-Beaker pottery in Portuguese Estremadura. In these works, the traditional tripartite division of the Chalcolithic of the region has been questioned, considering that, in the archaeometric analysis, there are no significant differences between the clays of classical forms used for index fossils. Differences were identified only in the case of pieces of different forms and probably with not the same functions. According to this, grooved ware cylindrical cups were similar to bell beaker vessels and distant from globular forms with “acacia-leaf” decoration and common use pottery.

We decided to associate to these conclusions an ethnographic component, based on the study of Mapuche potters that, in our opinion, could give us a better understanding about the process of manufacture. Though both analyses, it was possible to identify a plausible way in which chalcolithic potters from Zambujal made their pots using different clays concerning forms and uses of the ceramic artefacts. Although the clays of grooved ware cylindrical cups were similar to bell beaker vessels, SEM analysis indicates that the majority of fragments from the first had less impurities and finer quality. Observation of the preparation of clays with the Mapuche potters led us to assume that there certainly was a previous decantation process in their preparation of the clay used in the grooved ware cylindrical cups, and also there were some different methods in the preparation of the surfaces.

Grooved ware ceramics tend to have darker colors and bell beakers tend to have reddish colors. This is not related to the firing method (less oxygen darker colors) but with the addition of gray slip and possibly manganese. In both cases, we could notice that the firing was irregular, exposed to different amounts of oxygen, as it was possible to see on the edges the traditional sandwich mark when pottery cracks.

Experimental archaeology and ethnoarchaeological analyses allow us to assume that, in the Portuguese Estremadura Atlantic, bell beaker pottery was apparently easier to produce than grooved ware, presenting a less time-consuming process of modeling, decoration and also, in some cases, clay sieve, and this aspect was probably identified by the first archaeologists that discovered these vessels in the mid twentieth century.

To conclude, we may say that the essence of archeology lies in its interdisciplinarity and in the way in which it is applied to understand human beings and their relation to the environment and materiality. Its role as an intermediate discipline between the social sciences and the natural sciences would probably represent its greatest strength and its greatest

achievement in the study of history, a more relevant aspect than the “Foucaultian” quest for authenticity (Foucault, 2005). Creating typologies, decorative styles and presenting a complex stratigraphy will have no meaning or a reading if these incomes are not used to understand the way of life of past populations and their engagement with material culture.

The main concern of the archaeologists who study the Chalcolithic of Estremadura has been to create artificial layers of understanding. Grouping objects in a Cartesian division in three moments, or cultural horizons, but they didn't emphasize to understand the materiality object, the ceramic, how it has been made, without reflecting on how the object influences us. Many times objects last and people die, and that is a way of influencing people through their present, shapes, characteristics and materials. According to Tim Ingold (2011, 29): *“Things are alive and active not because they are possessed of spirit —whether in or of matter— but because the substances which they comprise continue to be swept up in circulations of the surrounding media that alternately portend their dissolution or —characteristically with animate beings— ensure their regeneration”*.

So, when we try to rewrite the past through material culture we must consider that objects can contribute in shaping archaeological “cultures”; in the words of Christopher Tilley (2004: 218): *“Objects are generative of thought and action: both constituted and constituting”*. That is why it is so important to understand how to make a prehistoric pot and that is also why, in my opinion, considering the archaeometric analysis of pottery from Zambujal, the distribution of the three index fossils in Chalcolithic sites in Estremadura (Carvalho Amaro, 2012) it is inefficient to understand objects. It may seem that a symmetrical proposal is object-centered, but, in reality, it seeks to respond to a contemporary understanding of time and historical narrative. It is important to change our perspective considering archaeological remains, we must pay attention to the material language of remains (Olsen, 2003: 100) and not impose a language in them.

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