Striking, colourful, smooth, rare: lithic resources and cultural choices in the architecture, sculpture and portable artefacts of the Palacio III tholos monument (Seville, Spain)*

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ABSTRACT

The investigation of the Iberian megalithic phenomenon has only recently begun to benefit from the expansion of the technical and scientific potential of modern archaeology. There are still very few Iberian megaliths for which high resolution scientific research has been carried out, providing detailed data on their design, uses and biographies. This paper presents the results of the multi-disciplinary study of the Palacio III tholos, part of a larger megalithic complex located in Almadén de la Plata (Seville). This study is based on a wide-spectrum methodology that integrates geoarchaeology, techno-morphological and functional analysis of portable material culture and graphic analysis, all combined within a meticulously contextual perspective. The results provide a wealth of data on how, through a series of carefully constructed cultural choices, this monument represents a true place of encounter between the locally available geological resources and other resources that were only accessible through contact with neighbouring communities. Whether in its raw state, finely carved in the form of engraved and painted sculptures or transformed into artefacts of high technical and personal value, the materiality of the stone in the Palacio III tholos acquires multiple cultural dimensions that only a modern scientific approach is able to reconstruct.

RESUMEN

Solo recientemente la investigación del fenómeno megalítico ibérico ha comenzado a beneficiarse de la ampliación del potencial técnico y científico de la arqueología moderna. Todavía son muy pocos los megalitos ibéricos para los que se han realizado investigaciones científicas de alta resolución, capaces de aportar datos detallados sobre su diseño, usos y biografías. En este trabajo se presentan los resultados del estudio del tholos del complejo megalítico de Palacio III (Almadén de la Plata, Sevilla), abordado mediante una metodología multidisciplinar que integra la geoarqueología, el estudio tecnomorfológico y funcional de la cultura material portable y el análisis gráfico, dentro de una meticulosa valoración contextual. Los resultados aportan datos muy novedosos respecto a cómo, a través de una serie de elecciones culturales cuidadosamente construidas, este monumento representa un verdadero lugar de encuentro entre los recursos geológicos localmente disponibles y los recursos accesibles mediante contacto con otras comunidades. Bien en su forma bruta, bien labrada en forma de esculturas grabadas y pintadas o transformada en artefactos de alto valor técnico y personal, la materialidad de la piedra adquiere en Palacio III múltiples dimensiones culturales que solo a través de la moderna investigación científica es posible reconstruir.

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1. INTRODUCTION

The Palacio III megalithic funerary complex is located 65 km north of Seville, in a sector of the Almadén de la Plata municipality known as Dehesa de Palacio (Fig. 1). This site was discovered in the mid-1990s by Miguel Ángel Vargas Durán and was later excavated jointly by the Universities of Seville and Southampton in two seasons that took place between 7 August and 7 September 2001 and 2 and 27 April 2002.

This complex consists of three different structures: a dolmen (Structure 1), which was found in a poor state of preservation; a well preserved tholos (Structure 2); and a monumentalised cremation area dated to the Iron Age (Structure 3). In the intervening years, a number of papers have dealt with various aspects of the on-going study, including summaries of the surveys conducted in the area (García Sanjuán and Wheatley 2003; García Sanjuán and Vargas Durán 2004; García Sanjuán et al. 2004), analysis of visibility and mobility patterns within the context of the megalithic landscapes in the region (García Sanjuán et al. 2006a; Murrieta Flores et al. 2011, 2014), preliminary excavation reports (García Sanjuán and Hurtado Pérez 2001: 39-41; García Sanjuán 2005; García Sanjuán and Wheatley 2006), and studies of the finds, including quartz and rock crystal objects (Forteza González et al. 2008), ceramics (Odriozola Lloret et al. 2009) and human remains (Díaz-Zorita Bonilla et al. 2009) from Structure 2 (tholos), as well as the Orientalising Iron Age hoard found in Structure 1 (dolmen) (Murillo-Barroso et al. 2015; García Sanjuán et al. 2020). A monograph is currently being drawn up which will provide extensive information about the results obtained from this site.

Fig. 1. Location map of the Palacio III megalithic complex showing the coastline at the time of the 3rd millennium cal BC. Above: within the Iberian Peninsula; below: within the Lower Guadalquivir river valley. Design Manuel Eleazar Costa Caramé and Leonardo García Sanjuán (in colour in the electronic version).
This paper deals with the analysis of the lithic resources used in the architecture, sculptures and portable material culture of Structure 2 at Palacio III. This structure appears to be a ‘classic’ corbelled-chamber monument (tholos) with a short corridor of 2 m in length and a maximum width of 0.6 m that leads to a circular chamber, partly cut into the bedrock (making it a ‘semi-hypogeum’) of between 2.3 m and 2.6 m in diameter. This structure was in quite a good state of preservation; the architectural elements were well preserved, including both orthostats and lintels in the corridor and the slabs lining the sides of the chamber; similarly, the engraved and painted elements on the slabs of the chamber and the three stelae identified were in a fairly good state of preservation, so much so that some of their painted motifs were identifiable to the naked eye during the excavation process. Regarding the grave goods, an estimated 184 artefacts were found, but it is difficult to establish a precise figure because of the high fragmentation involved in some cases. In addition, a large amount of stones was found inside the chamber. Our research establishes that these stones were also introduced in the chamber as offerings. The worst preserved element in the tholos is, without doubt, the organic record: no animal bone was found and the human remains identified were almost completely ground to dust. This has drastically undermined the possibility of a bioarchaeological study and has made it impossible to radiocarbon-date the monument.

The analysis of the lithology of the architectural elements and the portable artefacts in Structure 2 provides evidence of the greatest interest concerning how local prehistoric communities used the resources available to them. The Dehesa del Viar area, where the Palacio III burial complex is located, is a geologically-rich area, providing a great diversity of construction materials (CF1 and Fig. 2). At the same time, our study provides unambiguous evidence that the builders and users of this tomb had access to non-local raw materials. In this paper we discuss the nature and diversity of these lithological resources, and how they were used, over time, to create a complex palimpsest of material culture that blended together architecture, sculpture, graphic art and portable artefacts. Never
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before the stone materiality of an Iberian megalithic monument has been studied from such a comprehensive and multi-disciplinary perspective, including geology, technology and art.

2. ARCHITECTURE AND SCULPTURE

The selection of stone was a very important element in the design and use of Structure 2. The design on this tholos reveals an ‘uneven’ geometry: weights, dimensions, volumes and lithology (as well as grave goods) were used in a patterned way on both sides of the longitudinal axis that divides it in two roughly equivalent halves, a phenomenon that has been observed at other megalithic monuments in southern Iberia (Lozano Rodríguez et al. 2014). The design of the tholos, embedded in the bedrock, and the choice of building materials made it very stable. This reveals a deep empirical knowledge of the supporting capacity of the bedrock as well as the physical and mechanical properties of the stones used as construction material.

The striking diversity of lithologies in the architecture was noted early on during excavation. For this reason, samples of different rocks were taken which were later analysed through petrographic thin section (Figs. 3 and 4). Specific construction materials were used in each part of the monument. The choices involved took into consideration not only their intrinsic physical properties (resistance, mechanical and fracturing attributes, etc.) but also their external appearance (colour, texture). As a result, the architecture of this construction includes a considerable lithological diversity, a feature that, as will be shown later on, is also found in the portable material culture.

As a whole, the architecture of Structure 2 shows five main types of rocks, which were used in specific parts of the construction. All of them are available at a short distance from Palacio III:

(i) Blue and green phyllite. In total, 19 slabs made in this rock were used to line the rock-cut chamber. These slabs do not achieve any functional or structural purpose, their main aim being simply to make the chamber more beautiful and noble and, above all, to act as “canvasses” for the sophisticated graphic programme that was deployed on them (Fig. 5a and Tab. 1). Phyllite allows the production of very fine slabs of a large size and a smooth surface over which painted motifs can be made. These 19 phyllite slabs appear in two main formats: some are roughly square (Fig. 5b) while others are rectangular (Fig. 5c). The joint study of their form and the graphic motifs painted on them suggest that these slabs could also have had an anthropomorphic significance for the builders and users of the tomb.

(ii) Beige coloured sandstone. This rock was used to manufacture several parallelepipeds and rectangular blocs, which were then arranged onto the natural floor, just over the phyllite slabs, forming rows (Fig. 6). This arrangement of stones is particularly well preserved on the eastern side of the chamber where it reaches a width of almost one metre, with up to three or four rows of stones placed on top of each other. This architectural device can be best appreciated above slabs #13, #14 and #15 (Fig. 5a). The arrangement of these stones, each row leaning further inside than the one below it, suggests a corbelled vault. One very noticeable trait of these stones, measuring between 20 and 40 cm long and of a rather standardised size (some exceptional examples reach almost half a metre), is their long quadrangular shape, much like bricks. It is likely that sandstone was chosen to manufacture these standardised brick-shaped blocks due to its mechanical properties, which allow it to be cut with large, flat,
Fig. 4. Thin section micro-photographs of stone samples from the architecture of the Palacio III tholos: A and B: phyllite from the slabs lining the camber, formed by idiomorphic phenocrysts of albite (Ab) and other minerals of phyllosilicates type (Fil) which could be phengites, as well as iron oxides (Ox Fe), within a matrix of very fine argillaceous minerals, ilmenite and chlorite (perhaps providing the greenish colour to the stone). This rock also shows detrital grains of quartz (not visible in this micro-photograph). The minerals display an orientation as a result of schistosity; C and D: Arcose from the masonry above the phyllite slabs, made of quartz (Qtz), rock fragments (Fra), phyllosilicates (Phy) and glauconite (Gla) (hydrated aluminosilicate of iron and potassium exclusively formed in marine sedimentary environments and usually in shallow water). They usually appear as rounded pellets formed by aggregations of small crystals. Quartz is monocrystalline and slightly sharp, showing some clay as matrix as well as calcitic cement. It is therefore an immature detrital sedimentary rock; E-F: Vesicular spilite accessory minerals are zoisite (Zo), sphene, hematites, actinolite, and iddingsite, with vacuolar texture. Albite phenocrystals are sericitised sphene. This type of rocks is generated in oceanic ridge environments, where very hot water alters the basaltic rocks in formation. They are therefore pillow lavas incorporated among the sediments of ophiolitic complexes. The photos on the left column have been taken with parallel nicols whereas the ones on the right column correspond to crossed nicols. Much of the mineral abbreviations are to after Kretz (1983). Design José Antonio Lozano Rodríguez (in colour in the electronic version).
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Fig. 5. The Palacio III *tholos* chamber: A. Rows of sandstone blocks possibly used as base for the roofing system, just above slabs #13, #14 and #15. Examples of phyllite slabs: B. Slab #1. C. Slab #12. Photographs Leonardo García Sanjuán (A) and David W. Wheatley (B, C) (in colour in the electronic version).

<table>
<thead>
<tr>
<th>ID NUMBER</th>
<th>MATERIAL</th>
<th>MAXIMUM VERTICAL DIAMETRE (CM)</th>
<th>MAXIMUM HORIZONTAL DIAMETER (CM)</th>
<th>PAINTED MOTIFS</th>
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<tr>
<td>Slab 1</td>
<td>Greenish Phyllite</td>
<td>64</td>
<td>58</td>
<td>Triangles</td>
</tr>
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<td>Bluish Phyllite</td>
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<td>54</td>
<td>Unspecified</td>
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<td>36</td>
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<td>50</td>
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<tr>
<td>Slab 19</td>
<td>Greenish Phyllite</td>
<td>78</td>
<td>62</td>
<td>Triangles and zigzags</td>
</tr>
</tbody>
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Tab. 1: Description of the phyllite slabs in the *tholos* chamber.

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regular sides, as needed to place them one on top of
another (with the help of clay). The rows of sandstone
thus made may have been the support or base of the
corbelled dome of the chamber, if this is what the
roofing system of Structure 2 was like - a point that
we are unable to establish conclusively.

(iii) Red conglomerate. This rock presents a very
different colour, appearance and texture than the two
previous ones, and was only used in a very specific
part of Structure 2: the atrium. This atrium is located
in the outer part of the corridor and is made of two
red conglomerate uprights facing each other (on the
left and right-hand sides of the entrance to the corridor)
and covered by a third red-coloured capstone. These
are the only stones in the whole monument made out
of conglomerate and the only ones of red colour. The
space created by these three red stones was physically
separated from the rest of the corridor and the cham-
ber by a gate, as proven by a groove cut onto the
bedrock discovered in the excavation (Fig. 4). Furth-
ere, the stone located on the left-hand side of the
atrium, a piece 0.96 m high and maximum 0.56 m
wide, is a sculpture (stone #24 or stela #2) (Fig. 7).
This remarkable stone has a morphology similar to the
plaque idols that are often found in burials of the 4th
and 3rd millennia BC in south-western Iberia. This was
undoubtedly an apotropaic figure (perhaps female, as
it seems to have carved breasts) which protected the
access to the tomb. It is also interesting to note one
major physical property of conglomerates: their grain
size is inversely proportional to capillarity and unlike
sandstones they do not transmit humidity well. There-
fore, the presence of these conglomerate slabs at the
entrance of the tholos could have also achieved a prac-
tical purpose: to stop rain water from flooding the
entrance through capillarity.

(iv) Milky quartz. White quartz was found in two
different places within the Palacio III tholos in con-
nection with what, given their stratigraphic positions,
appear to be the earliest and latest instances of its use.
Firstly, an interesting nodule of white quartz was found
in the ‘basal chamber’, a cavity cut into the bedrock,
with an approximately oval base, measuring 103 cm
in maximum length (from SW to NE) and 82 cm in
maximum width (from NW to SE) and between 20
and 35 cm deep, which was found in the south-west-
ern quadrant of the chamber (Fig. 8). This structure
was limited on its western side by 6 large stones (the
biggest was 38 cm long and maximum 15 cm wide)
carefully arranged together (some of them had a sim-
ilar shape to the sandstones described above). On the
inside of the ‘basal chamber’, there was a clayish fill-
ing identical to the one excavated from the chamber,
and there were no remains of ashes or carbon although some parts of the bedrock showed evidence of combustion. The ‘basal chamber’ did contain, however, a set of five carefully arranged relatively large stones (labelled as A, B, C, D and Stela 3 in figure 12). Two of these stones stand out. Firstly, stone B is a baetyl more or less oval in shape with a sub-cylindrical section measuring 34.5 × 19.5 × 10.4 cm, showing various circular indentations, maybe carved (Fig. 9); secondly, Stela 3 is a very large piece (49 cm in maximum length and 26 cm in maximum width) and a remarkable parallelepiped shape, showing traces of paint. In addition to these stones, on the eastern side of the ‘basal chamber’, there was a white quartz pebble (measuring 4.7 cm of maximum diameter), very smooth to the touch and with a round shape and what appears as a flat ‘base’ (Fig. 10). This item, designated as ‘Ornament 7’ in the excavation record, was described in a previous publication (Forteza González et al. 2008: 141) and is very different to all others from the ‘basal chamber’. It probably is a portable personal object, since it shows signs of wear on the outside (perhaps due to use or handling). Together with its physical characteristics, the remarkably prominent position of this stone above stones A, B, C and D and ‘leaning’ against the stones along the western edge of the ‘base chamber’ (Fig. 12) suggest this was an object of special symbolic value.

The second instance of the use of white quartz in the Palacio III tholos was recorded at the upper level of its infill, and corresponds to the latest stage of its use. In this case there were various rounded stones of white quartz near Stela 1, a sculptural piece with a powerful parallelepipedal shape that clearly follows in
the tradition of its analogue (Stela 3) buried at the base of the tomb (Fig. 11). Around the base of Stela 1 there were various pebbles of white quartz with a maximum diameter of 10 cm, apparently laid out as a small ‘cairn’ to make its base more beautiful or noble.

(v) Basalt and other volcanic rocks. Lastly, among some of the dressed sandstones described above, amorphous blocks of basalt and other black volcanic rocks were found that did not appear to form any discernible pattern. These rocks have a very uneven and angular texture, featuring small cavities, a trait that, as will be explained later, characterises some unusual stone objects found near the Palacio III megalithic complex.

Altogether, the architecture and sculptures of the Palacio III tholos shows a wealth of stone materials including phyllite, sandstone, red conglomerate, basalt and other volcanic rocks as well milky quartz (Tab. 2). The study of the stones deposited inside the chamber revealed the presence of grauwackes, olivinic basalts and arcoses. Therefore, this monument includes many of the geological elements present in the surrounding environment: in some ways Structure 2 seems to have been designed as a ‘metaphor’ of the surrounding geological landscape, a theme that will be addressed in the discussion section of this paper.

3. MATERIAL CULTURE

The assemblage of portable material culture found in Structure 2 amounts to an estimated 184 artefacts.

Fig. 10. White quartz pebble (Ornament 7) found on the eastern side of the Palacio III tholos base chamber. Maximum diameter: 4.7 cm. Photograph Miguel Ángel Blanco de la Rubia (in colour in the electronic version).

Fig. 11. Milky quartz pebbles found around Stela #1 on the upper levels of the Palacio III tholos chamber: A. In situ; B. Detail. Photographs Leonardo García Sanjuán (in colour in the electronic version).

The most numerous categories are ceramic vessels, with 64 items (of which 48 were complete or semi-complete pots and 16 were loose fragments), and knapped lithics, with 98 items including 55 arrowheads (Fig. 12), 22 blades (Fig. 12), 16 flake-blades, two perforators, a denticulate, a bifacial flint dagger (Fig. 13) as well as a little rock crystal blade (Fig. 14d). The technical quality of some of these items, particularly some blades, two arrow heads with long barbs and the bifacial dagger blade, are worth noting. Structure 2 also yielded three polished axes (Fig. 14a, 14b and 14c) nine stones described as baetyls or ‘pseudo-spherical stones’, seven personal objects designated as ‘ornaments’ (including five quartz objects, a perforated pendant and a perforated bead), a clay figurine (or ‘idol’), a small copper object and a piece of fossilised wood. Like the architecture, the Palacio III collection of portable objects also displays a remarkable geological diversity.

Among the 97 knapped items for which raw material characterisation has been obtained, 80 were made on sedimentary rocks, of which 58 (59.8%) are flint, 16 (10.3%) are opalite and 6 (4.1%) are jasper; a further 9 items were made on metamorphic rocks, includ-
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Tab. 2: Main rocks used in the architecture of the *tholos*.

<table>
<thead>
<tr>
<th>ROCK</th>
<th>USE</th>
<th>COLOUR</th>
<th>TEXTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phyllite</td>
<td>Lining slabs inside the chamber and “canvass” for pictorial programme.</td>
<td>Bluish,</td>
<td>Plastic, shiny and smooth texture</td>
</tr>
<tr>
<td>Sandstone</td>
<td>Dressed blocks for base of chamber roofing system (and perhaps a full corbelled dome).</td>
<td>Beige</td>
<td>Rough</td>
</tr>
<tr>
<td>Conglomerate</td>
<td>Stones #23, #24 (Stela #2) and #31. Outer threshold or atrium exterior of the corridor; support for the ‘guardian’ figure of the monument.</td>
<td>Red</td>
<td>Rough and coarse, with protuberances</td>
</tr>
<tr>
<td>Quartz</td>
<td>Pebbles found around Stela #1 on the upper part of the chamber’s infill and pebble found in base chamber.</td>
<td>White</td>
<td>Smooth and both irregular (around Stela #1) and rounded (base chamber)</td>
</tr>
<tr>
<td>Volcanic</td>
<td>Blocks found in the chamber’s infill and mixed with the dressed sandstone blocks forming the base of the roof.</td>
<td>Black</td>
<td>Rough and vacuolar</td>
</tr>
</tbody>
</table>

The three polished hand-axes were made from fibrolite (axe 1), amphibolite (axe 2) and volcanic rock (axe 3). Axe 1 (Fig. 14c) is particularly interesting, as fibrolite (a variety of sillimanite, aluminosilicate) has been identified at a relatively large number of Late Prehistoric sites of the Iberian south-east (Aguayo de Hoyos *et al*. 2006; García González *et al*. 2008; García González 2014). The morphology of Axe 1 is in keeping with other published items made in the same raw material: small size (it is not bigger than 5 cm) and asymmetrical edge suggesting its use as a chisel for woodwork (García González 2014: 402). Axe 2 (Fig. 14A) (actually an adze) was made in amphibolite and shows use-wear (micro-fractures) on its edge. Copper Age amphibolite hand-axes have been described for various Iberian regions (Lillios 1997; Read *et al*. 1997; Lozano Rodríguez *et al*. 2018). Axe 3 (Fig. 14B), made of volcanic rock, shows use-wear on both ends.

The group generically classified as ‘ornaments’ includes seven items that may have been used as amulets or charms (five cases) or personal adornments to hang...
from the body or from clothing (two cases). Ornaments #3, #4, #5 and #6 are made of unusual stones, including chalcedony (ornament #6) (Fig. 15A), milky quartz monocrystals (ornaments #4 and #5) (Figs. 15B and 15C) and a white quartz kidney-shaped pebble (ornament #3) (Fig. 15D). Four of them are of an intense white colour and all five have a smooth texture, as well as unusual shapes and appearances. This is especially the case with ornament #3 which, with a strongly oval shape and showing iron oxides ‘veins’, when looked at against the light produce a strong ‘organic’ effect (Fig. 15D, on the right side). It is likely that ‘ornaments’ #3, #4, #5 and #6 were used as personal charms, associated with specific individuals or groups and perhaps with an extended period of use before being eventually deposited inside the tomb. It should be noted that, as explained above, we do not consider ornament #7 to be just another grave good from the chamber of Structure 2 per se, but rather an item associated with the ‘basal chamber’.

An exceptional portable object is a small piece of fossilised wood, 3 cm in length (Fig. 15E), which, like some of the other ‘ornaments’ mentioned above, is likely to have been used as an amulet or charm. Fossil wood has rarely been described in connection to meg-
alithic monuments in southern Iberia, which makes this item all the more special. However, in this particular case the material is very likely to have been obtained locally. Some 6 km further down the Viar river, to the East of Palacio III, there are deposits with large-sized fossil trees. As it is well-known, fossil trees are a very rare occurrence world-wide. It seems obvious that even this very specific elements of the surrounding ‘geological landscape’ were known to the Chalcolithic settlers of the region, who selected them and perhaps used them as personal objects, charms or amulets.1

In the category of personal ornaments are also included ornaments #1 and #2, perforated beads made from muscovite and probably used as pendants. The presence of perforated beads in the Palacio III tholos is comparatively low, a point that will be returned to later on.

The series of stone portable artefacts from the Palacio III tholos ends with nine objects described as baetys. With a pseudo-conic or oval shape (three cases) or pseudo-spheres (six cases), these artefacts are made of various types of rock, including sillimanite (three cases) microbreccia (three), spilite (two) and other volcanic rocks (one). They are also relatively small: most of them are no larger than 15 cm in diameter, except for the baetyl found in the ‘base chamber’, as described above, with a maximum length of 34 cm. Although many of these baetys show signs of light roughing or little grooves, they all appear to be more or less in their natural form. They do not show use-wear traces resulting from their use as tools (for example grinding stones or hammers). Instead, they are more likely to have been symbolic objects left in the tomb as part of practices that resulted in the accumulation of dozens of medium-size and large stones in the chamber - to the tune of one metric tonne. In some cases, the morphology and raw material (spilite) of these baetys is analogous to others found at the entrance of the Palacio III tholos and in the vicinity of the two other megalithic monuments located nearby, the Palacio IV and VI dolmens (Polvorinos del Rio et al. 2002a).

While arrowheads and blades (Fig. 12) appear throughout the entire sequence of this monument, the three polished stone axes (Fig. 14) and all objects designated as “ornaments” (Fig. 15) belong to its early phase of use, which included deposition directly onto the rocky floor of the chamber, right above the ‘basal chamber’. No calendar chronology is available to interpret the various stages of use of this tomb, as all attempts at obtaining radiocarbon dates have failed due to lack of collagen in the human bone.

Altogether, the collection of portable artefacts found in the Palacio III tholos includes a wide range of raw materials, including flint, rhyolite, jasper, opalite, muscovite, milky quartz, rock crystal, chalcedony, fossilised wood, fibrolite, amphibolite, microbreccia, spilite and other volcanic rocks (Tab. 3). Many of these raw materials are not locally available, which implies that 3rd millennium users of the Palacio III complex obtained them from other regions. This suggests that the communities settled deep into the western Sierra Morena mountain range enjoyed a degree of connectivity much higher than hitherto assumed.

4. DISCUSSION

The architecture and the sculptures associated of the Palacio III tholos2 display a strongly patterned use of rock types according to their mechanical properties, colours and textures. Red conglomerate with a rough surface was reserved for the atrium; fine slabs only a few cm in thickness made from blue-green phyllite with a smooth, shiny texture were used to line the rocky sides of the chamber, and then painted with geometric motifs that gave them an anthropomorphic appearance; for the base of the chamber’s roofing system (and perhaps for the corbelling) beige sandstones carved with flat bases and sides to fit together were used; lastly, nodules of white quartz were used in specific places in the monument, such as the ‘basal chamber’, connected to Stela #3, and in the upper part of the infill of the chamber, around Stela #1, which corresponds to the final phase of the monument...

This carefully thought-out pattern suggests that different types of rocks had different and very specific functions and symbolic meanings. In general, at Copper Age and Early Bronze Age sites of southwest Spain, metamorphic rocks such as slate, schist and phyllite seem to have been strongly linked with grave-building. At the Chalcolithic mega-site of Valencina de la Concepción, only 65 km south of Almadén de la Plata, the presence of slate or schist slabs is almost invariably associated with the presence of burials (García Sanjuán and Diaz-Zorita Bonilla 2013: 393). In the Early Bronze Age, slate and schist were often used to build cist bur-

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1 Interest and curiosity about the fossilised wood from the region, still runs high nowadays. After various failed attempts to move it, on 10 November 2015 a massive trunk of fossilised Araucaria pine wood was finally installed at the Visitor Centre of the El Berrocal Natural Park, in the town of Almadén de la Plata (Veiga 2009). This trunk was 21 m in length and weighs more than 12 t and it is assumed to have been part of a tree that could have originally been 40 m tall and was buried in a volcanic eruption in the Upper Carboniferous and the Permian, “300 million” years ago (Cornello López-Cepero 2015). This trunk was one of the main finds from the study on the paleontological analysis of the Los Melonares dam area, carried out at the same time as the archaeological survey that we conducted (García Sanjuán et al. 2004).

2 Stela #2 was integrated into the architecture of the monument as the first upright of the corridor on the left-hand side when entering.
called ‘plaque idols’ that, painted or engraved with materials were also commonly used to manufacture the so-called ‘canvass’ over which graphic motifs could be painted, hence conveying notions of ancestry and mythology (Bueno Ramírez et al. 2013). It should be remembered that these materials were also commonly used to manufacture the so-called ‘plaque idols’ that, painted or engraved with geometric motifs very similar to those on the slabs in the Palacio III tholos, did also evoke deities or ancestors (Bueno Ramírez and Balbín Behrmann 1992; Bueno Ramírez et al. 2008; Lillios 2008; Bueno Ramírez 2010).

White quartz also seems to have had a very definite function and/or symbolic meaning at the Palacio III tholos. This raw material was used to highlight the location of Stelae #1 and #3, as well as personal objects (monocrystals). As discussed in a previous paper (Fortezza González et al. 2008) there are numerous examples of the use of white quartz in megalithic monuments throughout southern Iberia. A close example is Tomb 7055 (another tholos) at La Orden–El Seminario (Huelva) where large accumulations of white quartz pebbles were found both in the entrance to the corridor and in the chamber, producing a marked contrast between the white of the quartz and the dark of the slate slabs used in the construction (García Sanjuán and Linares Catela 2009: 151). Furthermore, the study of the find spot of two ‘warrior’ stelae found a mere 3 km to the Northeast of Palacio III as the crow flies showed the presence of several hundred white quartz pebbles around the clearance cairn where both stelae were found (García Sanjuán et al. 2006b: 145). Is it entirely coincidental that at Almadén de la Plata, at a very short distance from each other, there are two sites with prehistoric stelae that are formally different (and chronologically distant) associated with white quartz pebbles? As it has been claimed, the tradition of monumentalising sites with white quartz, first occurring as part of the megalithic phenomenon, continued into the Bronze Age and the Iron Age. The use of certain rock types seems to have provided a sense of cultural continuity, even within sharply different cultural backgrounds (García Sanjuán 2005, 2007; García Sanjuán 2011: 542–544).

Regarding the use of the red conglomerate, its unmistakable red colour must have played a key role in their choice. Although in Iberia there are no published parallels of the architectural use of red conglomerate in megaliths of the 4th and 3rd millennia BC, there is plenty of evidence of the intense use of red colour – through pigments. This topic has been widely studied (Rubio de Miguel 1989; Domínguez-Bella 2010; Hunt Ortiz and Hurtado Pérez 2010; Briceño Briceño 2011; Lazarich González et al. 2010; Domingo-Sanz et al. 2012; Inacio et al. 2013; Briceño Briceño et al. 2013, 2015; Emslie et al. 2015, 2016; etc.). Not far from Almadén de la Plata, red colour had an important role in some of the large tholos-type monuments of Valencia de la Concepción (Rogerio-Candelera et al. 2013; Bueno Ramírez et al. 2016a; García Sanjuán et al. 2016a). This is particularly true of the beautifully dressed slate slabs lining the large chamber of Montelirío, which were coated with a thick layer of cinnabar paint (Bueno Ramírez et al. 2016: 366–374; García Sanjuán et al. 2016a: 537–538). In this sense, it is interesting that no traces of red pigment were found in the Palacio III tholos. This may have been due to a cultural choice made by the communities that used this tomb or else because they could not access or afford the necessary raw materials. Red conglomerate may have been an alternative to using red pigments to cover the stones in order to make them look like the slates in the large chamber from the Montelirío tholos. It is important

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SUGGESTED FUNCTION</th>
<th>MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ornament 1</td>
<td>Personal ornament</td>
<td>Muscovite</td>
</tr>
<tr>
<td>Ornament 2</td>
<td>Personal ornament</td>
<td>Muscovite</td>
</tr>
<tr>
<td>Ornament 3</td>
<td>Amulet or charm</td>
<td>Quartz</td>
</tr>
<tr>
<td>Ornament 4</td>
<td>Amulet or charm</td>
<td>Milky quartz</td>
</tr>
<tr>
<td>Ornament 5</td>
<td>Amulet or charm</td>
<td>Milky quartz</td>
</tr>
<tr>
<td>Ornament 6</td>
<td>Amulet or charm</td>
<td>Chalcedony</td>
</tr>
<tr>
<td>Ornament 7</td>
<td>Amulet or charm</td>
<td>White quartz</td>
</tr>
<tr>
<td>Lithic 14</td>
<td>Amulet or charm</td>
<td>Fossil wood</td>
</tr>
<tr>
<td>Hand axe 1</td>
<td>Tool?</td>
<td>Fibrolite</td>
</tr>
<tr>
<td>Hand axe 2</td>
<td>Tool</td>
<td>Amphibolite</td>
</tr>
<tr>
<td>Hand axe 3</td>
<td>Tool</td>
<td>Volcanobolite</td>
</tr>
<tr>
<td>Betil 1</td>
<td>Cult object?</td>
<td>Sillimanite</td>
</tr>
<tr>
<td>Betil 2</td>
<td>Cult object?</td>
<td>Sillimanite</td>
</tr>
<tr>
<td>Betil 3</td>
<td>Cult object?</td>
<td>Microbreccia</td>
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<tr>
<td>Betil 4</td>
<td>Cult object?</td>
<td>Microbreccia</td>
</tr>
<tr>
<td>Betil 5</td>
<td>Cult object?</td>
<td>Spilite</td>
</tr>
<tr>
<td>Betil 6</td>
<td>Cult object?</td>
<td>Spilite</td>
</tr>
<tr>
<td>Betil 7</td>
<td>Cult object?</td>
<td>Microbreccia</td>
</tr>
<tr>
<td>Betil 8</td>
<td>Cult object?</td>
<td>Sillimanite</td>
</tr>
<tr>
<td>Betil 9</td>
<td>Cult object?</td>
<td>Volcanic rock</td>
</tr>
</tbody>
</table>

Tab. 3: Function and raw materials used for non-knapped lithic artefacts.

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https://doi.org/10.3989/tp.2019.12236
to note that in the Palacio III tholos, red colour was clearly reserved for one space in the monument, and that space only: the atrium. This differs clearly from the pattern seen at Montelirio, where all slabs in the main chamber were made to look red by coating them.

Furthermore, the use of red conglomerate in the Palacio III tholos may be further nuanced by the fact that this material was widely used in the architecture of the earlier Palacio III dolmen (Structure 1), located barely 10 m to the west of the tholos. In fact, it is tempting to think that these particular elements of the tholos are a re-utilisation of some of the stones missing from the dolmen. This practice has been documented in other Iberian megaliths such as Katillotxu, in the Basque Country (Bueno Ramírez et al. 2009): here a later dolmen displays materials probably re-used from an earlier dolmen located in the same mound.

A similar pattern of specific choices and selections applies in the portable material culture. In this case, however, apart from reflecting the complex geology of the region, the assemblage includes raw materials brought from further afield. Among the materials found, there is spilithe, a rock previously described in connection with cult objects found around the megaliths from Dehesa de Palacio (Polvorinos del Río et al. 2002a). The small piece of fossilised wood, which does not appear to have been worked, stands out because of its local character as well as its rarity. Fossilised wood is an exceptionally rare material, which is only found in a handful of locations around the world. Apparently, its presence in the Viar river basin was not unbeknownst to the Chalcolithic settlers of the region.

Among the non-local raw materials, blades and arrowheads were manufactured on flint from Sierra de Malavé (Málaga), the Campo de Gibraltar Complex (Cádiz) and the ‘Milanos Formation’ (Granada), up to nearly 300 km away from Almadén de la Plata. Altogether, the sourcing of this flint matches well what has been revealed at major Copper Age settlements of southern Iberia such as Los Millares (Lozano Rodríguez et al. 2010; Afonso Marrero et al. 2011) and Valenciennes (García Sanjuán et al. 2016b), suggesting that the small communities settled deep in the western Sierra Morena mountain range had access to the same raw materials than communities living at larger settlements located in better connected areas and endowed with better agricultural resources. Other non-local raw materials are the rock crystal micro-blade, the two milky quartz monocystals, the perforated muscovite pendant and bead, the chalcedony amulet or the amphibolite hand axe. The few studies available on Copper Age rock crystal technology show that potential sources are far and between (Morgado Rodríguez et al. 2016). Regarding fibrolite, no sources exist either in the Western Sierra Morena or in the Iberian southwest, which means that we can reasonably conclude that this stone came from one of the locations suggested in the literature, such as Serranía de Ronda (Málaga) or Hoyazo de Nijar (Almería) (García González 2014: 399).

Concerning the use or function given to the objects manufactured in ‘distant’ raw materials, it is worth noting the presence of a small but important series of what were probably ‘personal objects’, including white quartz monocryils, fossilised wood, a nodule of chalcedony, etc. Many of these items have in common the intense white colour and smooth texture, as well as an unusual or ‘striking’ aspects; this is especially noticeable in ‘ornament 3’, which has various streaks of iron oxides that produce an intense ‘organic’ effect when held against the sunlight. Similarly, there are various objects that could be labelled as ideotechnic artefacts, as with the nine elements of sillimanite, microbreccia, spilithe and volcanic rock in a pseudo-spherical or oval form, the large baetyl and the small nodule of white quartz from the ‘basal chamber’.

In the Palacio III tholos there is a noticeable scarcity of perforated beads. In south-west Spain, megalithic monuments of the 4th and 3rd millennia BC often include hundreds if not thousands of perforated beads. To list but a few examples: 1589 perforated beads were found at the Alberite dolmen (Villamartín, Cádiz) (Domínguez Bella and Morata Céspedes 1995, 1996; Domínguez Bella et al. 1997, 2001), while in Tomb 3 at La Pijotilla (Solana de los Barros, Badajoz) 657 were counted (Polvorinos del Río et al. 2002b), and in the dolmens in El Pozuelo (Huelva) hundreds were also recorded. The most accomplished example of this practice is, again, Montelirio, where tens of thousands of perforated beads were used to weave ceremonial mantles or clothing deposited in the Large Chamber (Díaz-Guardamino et al. 2016). Once again, with respect to the configuration of the portable material culture deposited in the tomb, Structure 2 shows a definite personality. This must have resulted from a combination of social circumstances, cultural patterns and personal choices made by the community (or communities) that built and used the tomb. Against the large numbers of perforated beads in the some of the collective burial sites of 4th and 3rd millennia, the Palacio III tholos stresses the importance of stones with unusual shapes, striking colours and suggestive external appearances, probably used as charms and amulets.

5. CONCLUSION

The broad-spectrum study of the stone materials used in the architecture, sculptures and portable material culture of the Palacio III tholos tomb leads to a number of conclusions.
(1) The communities that designed, constructed and used this monument had access to a remarkably broad range of abiotic resources. The list of rocks used in the architecture and portable material culture is very long. As architectural elements it includes phyllite, sandstone, red conglomerate, arcose, basalt and other volcanic rocks, milky quartz and white granite; portable artefacts were made of flint, opalite, jasper, pink quartzite, rock crystal and rhyolite among the knapped lithic tools and fossilised wood, chalcedony, muscovite, milky quartz, fibrolite, amphibolite, splite, microbreccia and limonite among the other artefacts. This list of abiotic resources should also include copper - only one small item of this metal was found in the tomb. These raw materials are both local and non-local, which suggests that the local populations had broad knowledge of the lithic resources locally available to them, as well as access to exchange networks for non-local materials. Evidence of this diversity of raw materials is widespread among late megalithic monuments of southern Iberia, in the context of a marked increase in the making and exhibition of personal ornaments and prestige objects (Bueno Ramírez et al., 2010; Martínez Fernández, 2016).

(2) The architecture of the tholos appears to mirror the rich geology of the surrounding region. All of the rocks used in the architecture are available locally, while, at the same time, many of the elements of the surrounding ‘lithological landscape’ are present in the construction – each with a very specific purpose. This reveals that local communities had a very accurate knowledge of their geological landscape and they developed precise cultural, technical, ideological and even emotional ties with it. The diversity of raw materials in the architecture matches what is found in the portable material culture. This underlines the social investment made in the construction and maintenance of this burial complex, which lived on to have a long biography well into the Iron Age.

(3) Some of the artefacts found in the Palacio III tholos conclusively show that Copper Age people were very curious about (and sensitive to) rocks with striking shapes, textures and colours. This is the case with ornaments #2, #3, #5, #6 and #7 as well as other lithic pieces, such as the fossilised wood, the fragment of limonite, etc. Ornament #3 has a strange oval shape and is noticeably translucent, showing a remarkable ‘organic’ texture when held up to the light; ornaments #4 and #5 have prismatic shapes and striking colour; ornament #7, in turn, has a pseudo-spherical shape and an outstanding white colour; some of the baetyls and pseudo-spherical stones, especially the splitites, have a duality of concentric textures inside them.

(4) Given the carefully defined patterns in the selection of stone materials for the architecture and portable material culture, the different uses given to them, the strong contrast between the textures of the rocks (smooth-rough, straight-rounded, dark-light, etc.), colours (green, blue, beige, red, white, black) and the combination of the architecture, sculpture and painting across the monument, it seems likely that, as well as being selected because of their physical and mechanical properties, each of the raw materials was endowed with a specific meaning or symbolism within the worldview the funerary practices were part of. This is fully in line with recent findings concerning the roles colours played in megalithic architecture across Europe (Bueno Ramírez and Balbín Behrmann, 1997; Jones, 1999; Owoc, 2002; Scarre, 2002; Rojo Guerra et al., 2005, 2013; Bueno Ramírez et al., 2015; etc.).

(5) The combination of construction elements and sculptural pieces made from different raw materials, shapes, textures and decorative elements must have generated an intense effect of symbolic references inside the monument. This artistic and sensorial ‘overload’ is most clearly present at the magnificent Montelirio tholos, where colours, solar light, painted motifs, sculptures and offerings were combined in a highly ‘choreographed’ way in order to create a powerful atmosphere. At a more modest scale, the Palacio III tholos also shows how stone was used to full effect in order to create the basis for the scenography required by the social practices it provided the stage for.

As a whole, the study of the stone elements found in the Palacio III tholos suggests that the communities that built it and used it had access to ‘foreign’ resources, including materials that came from hundreds of km away. In addition, they also had an intense connection with the landscape surrounding them, a landscape that provided the materials used to build the final resting place of the dead. This duality of cultural experiences suggests that, although living in a relatively isolated region, deep in the Western Sierra Morena mountain range, they had access to exchange networks for abiotic resources that stretched out across southern Iberia and perhaps even further afield. Given that the Viar river basin is not a region that was often passed through, it can be reasonably assumed that these people regularly participated in social practices that took place in nearby central places, such as for example the Valencina mega-site, located only a day and half’s walk away, and which probably acted as the ‘gateway’ giving them reach to people, goods and informations from distant lands.

ANNEX: COMPLEMENTARY FILE

In the electronic version, a figure is available as complementary material.
CF1. Location map of the Palace III megalithic complex (Seville) on the local geological cartography. Design José Antonio Lozano Rodríguez.

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Striking, colourful, smooth, rare: lithic resources and cultural choices in the architecture…


