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Personal body ornamentation on the Southern Iberian Meseta: An archaeomineralogical study

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ABSTRACT

Beads and pendants from the Castillejo del Bonete (Terrinches, Ciudad Real) and Cerro Ortega (Villanueva de la Fuente, Ciudad Real) burials were analysed using XRD, micro-Raman and XRF in order to contribute to the current distribution map of green bead body ornament pieces on the Iberian Peninsula which, so far, remain undetailed for many regions. XRD, micro-Raman and XRF analyses showed that most of the beads from Castillejo del Bonete (Late 3rd millennium cal. BC) were made from variscite or green phyllosilicates, while Cerro Ortega's (Late 4th millennium cal. BC) beads were made out of fossil wood or Clinochlore. Significantly enough, while XRD pointed to variscite as the main crystallo-graphic phase, the elemental composition did not match any elemental compositions of known and characterised sources, thus suggesting an unknown south-eastern source or an extra-peninsular origin of these ornamental pieces.

1. Introduction

Green body ornaments have been recovered from different Late Prehistory sites around the Iberian Peninsula. Body ornaments made from green stone are classified as callaite although the term is generic – see Vázquez Varela (1975) – and includes a number of minerals under this general denomination — see Domínguez-Bella (2012). Despite the fact that Iberian sources and distribution of callaite pieces has long been a major research topic, the distribution map of these pieces on the Iberian Peninsula remains poorly detailed. The distribution map of callaite pieces on the Iberian Peninsula drawn by Prof. Ana María Muñoz Amilibia in the 1960's was restricted to the outlying areas of the Iberian Peninsula; the Portuguese (western) and Millarense-Argaric (south-eastern) settlements and tombs, the Basque megaliths (northern) and the Catalan pit graves (north-eastern), (Muñoz Amilibia, 1965, Fig. 104). Over time, scientists documented the north-west region (Guitián Rivera and Vázquez Varela, 1975; Fábregas Valcarce, 1991, p. 100), as well as inland areas such as the Duero (Campano Lorenzo et al., 1985), Guadiana (Odriozola et al., 2010a), Tagus (Ríos Mendoza and Liesau von Lettow-Vorbeck, 2011), Ebro (Baldellou et al., 2012) and the Guadalquivir basins (Odriozola and García Sanjuán, 2013). Our analysis of green bead body ornaments from the Copper Age of El Castillejo del Bonete and Cerro Ortega (Fig. 1) in La Mancha on the Iberian Peninsula contributes to the completion of the Iberian distribution map.

1.1. Archaeological context surrounding the findings

Castillejo del Bonete and Cerro Ortega are located on the southern edge of the Meseta Central in the region of Campo de Montiel (south-east of the Ciudad Real province, Spain). The site is situated along the southern border of the territory where the Motillas culture has traditionally settled. Evidence shows that the place was used as burial grounds during Late Prehistory. Body ornamentation was found in Los Parrales (Arenas de San Juan, Ciudad Real) which yielded 290 pendants made from bones and teeth (Benítez de Lugo et al., 2008). In addition, an amber bead was found (Poyato and Espadas, 1994) in El Castellón (Villanueva de los Infantes, Ciudad Real), and in La Encantada (Granátula de Calatrava, Ciudad Real) and El Retamar (Argamasilla de Alba, Ciudad Real) a number of stone beads of unspecified composition were discovered (Nieto Gallo & Sánchez Meseguer, 1980, p. 180 Fig. 45, pieces G and H; Galán Saulnier and Sánchez Meseguer, 1994, p. 107 Fig. 2).

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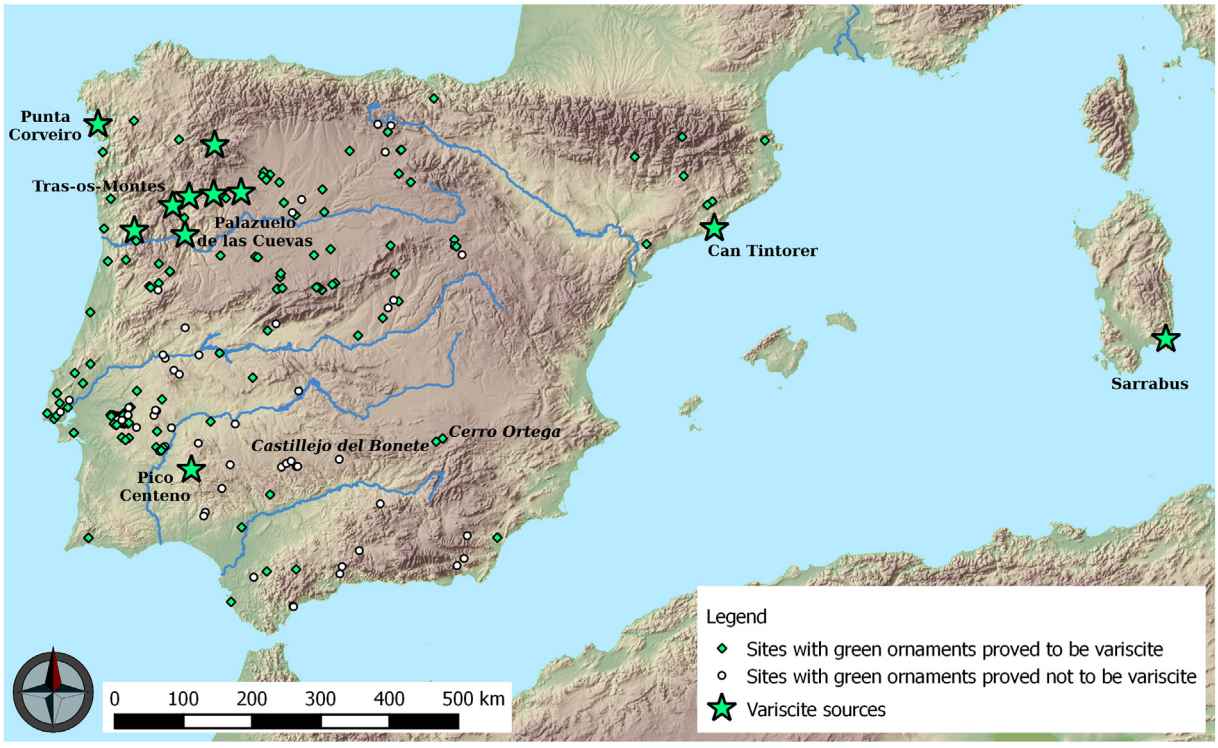

Fig. 1. Distribution map of Iberian variscite sources, studied sites and all the sites with beads demonstrated to be made out of variscite.

1.1.1. Cerro Ortega

The Cerro Ortega burial site (Villanueva de la Fuente, Ciudad Real) was discovered by chance in 1997 by Barrio and Maquedano (2000). The site had already partially been violated by treasure hunters by the time archaeological rescue excavation was carried out. Excavators found a stratigraphic unit sealed by the collapse of the shelter's canopy in the non-violated area. Human bones, faunal remains, lithic work, worked bone, 6 medium-sized black/dark grey beads (Fig. 2) and 8 small-sized slate beads (Fig. 3) (Gil Pitarch et al., 1999) were found.

Radiocarbon dating produced a 2-sigma calibrated age range from approximately the last quarter of the 4th millennium cal. BC sequence (Poz-73598, 4475 ± 35 BP, human long bone, 2-sigma: 3341–3027 cal. BC). Human remains distributed into selective groups were recovered. Some long human bones show evidence of defleshing. The performance of commensality rituals close to the burial site was suggested by the discovery of approximately 200 fragments of animal bone as well as a number of pieces of coal. Long bone rods with flat or round sections – some with decorated proximal ends – and small schematic anthropomorphic figurines were also found. In addition, nine blades no longer than 17 cm, some of whose edges had been retouched, were excavated along with other flint tools. Various pendants and beads made of bone were recovered as well. All of the materials were found accumulated together in a single stratigraphic unit.

1.1.2. Castillejo del Bonete

Castillejo del Bonete (Terrinches, Ciudad Real) is the site of a prehistoric tumulus complex (Benítez de Lugo Enrich et al., 2014). A metal copper arsenate needle (Montero Ruiz et al., 2014, p. 119 Fig. 8), fragments of carinated pottery with polished surfaces, undecorated Bell-Beakers and dotted ceramic were unearthed. Thirty-one beads and three roughouts (Fig. 4) made from green materials were recovered from UE 26019, documented in the West Survey excavated in Gallery 2. Absolute dating calibrated to two-sigma yielded 2465–2211 cal BC (3870 ± 30 BP Beta-350768). All beads from Castillejo del Bonete were located in the interior of the cave under the main tumulus.

Furthermore, stratigraphic unit 26013 in Gallery 3 contained an 80-cm-thick paleochannel or drain (Fig. 5) with a 2-metre slope, a length of 6 m and a width of 1.8 m. This level yielded pottery (105 shards), with protruding, sloped, round and ungulate sides, belonging to receptacles with smooth or polished surfaces, some of which were carinated. Faunal (vertebrae, herbivore metapods, a canine cranium and a coprolite), human (vertebrae, long bones, phalanges, cranium fragments) and lithic remains – such as a catapult projectile, flint arrowheads with appendices, a copper dagger and a seashell pendant – were also recovered.

2. Materials and methods

To understand their nature and identify their geographical origin, 41 ornaments from Castillejo del Bonete (Galleries 2 and 3) and Cerro Ortega were analysed using X-ray diffraction (XRD), X-ray fluorescence (XRF) and Confocal Dispersive μ-Raman Spectroscopy (DcμRS).

X-ray diffraction is an inexpensive, high-resolution technique which informs us of a piece's mineralogical composition. It is used to identify the mineral composition of a given material. After completing the baseline calculation with the X'Pert Highscore Plus 3.0 software and identifying all the peaks in the diagram, the numerical values obtained were compared with the 2004 ICDD (International Centre for Diffraction Data) PDF (Powder Diffraction File) database to identify the minerals that form the sample.

Confocal Dispersive μ-Raman Spectroscopy, also a non-destructive technique, is used to identify solids through vibrations in the crystalline lattice as it can detect the sample's composition, bonds, coordination environment and crystalline structure (Edwards and Chalmers, 2005; Smith and Clark, 2004).

On the mineralogical level, the Panalytical X'Pert Pro θ/θ X-ray diffraction equipment with Cu Kα (1.5406 Å) radiation was chosen and operated at 45 kV and 40 mA, equipped with a PixCel detector and