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Challenges for microwear analysis of figurative shell ornaments from pre-Colonial Venezuela

Catarina Guzzo Falci *, Annelou Van Gijn, M. Magdalena Antczak, Andrzej T. Antczak, Corinne L. Hofman

Faculty of Archaeology, Leiden University, Einsteinweg 2, 2333 CC Leiden, The Netherlands

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ABSTRACT

Figurative ornaments displaying biomorphic and geometric designs have often been recovered from pre-Colonial sites in the Caribbean and northern South America. Such artefacts are held in museum and private collections, but often have not been the focus of systematic research. On the other hand, recent research into ornaments worldwide has focused on simple beads and automorphic shell ornaments. In this article, microwear analysis is used to assess technologies of production and use-wear of figurative shell ornaments from north-central Venezuela. It is our goal to reflect on the challenges posed by such collections, in terms of reproducibility of traces through experiments, post-depositional and curatorial modifications, and the complexity of past attachment configurations. The underlying question is how to deal with the limitations posed by the very nature of the studied collection in terms of preservation and of the high skill required in the reproduction of figurative artefacts.

1. Introduction

In recent years, a number of microwear studies have been conducted on the topic of production technologies and use of archaeological bodily ornaments, especially beads and pendants. Specimens made of stone, minerals and hard animal materials, such as shell and teeth have received considerable attention (e.g., Bonnardin, 2008, 2012; D'Errico et al., 2009; Gorelick and Gwinnett, 1989; Groman-Yaroslavski and Bar-Yosef Mayer, 2015; Gutiérrez-Zugasti and Cuenca-Solana, 2015; Rigaud et al., 2014; Sax and Ji, 2013; Stiner et al., 2013; Van Gijn, 2006, 2014a; Vanhaeren et al., 2006; Vanhaeren and D'Errico, 2003). Automorphic shell artefacts and simple geometric beads predominate as the main objects of study. In spite of the abundance of shell and lithic ornaments recovered in the circum-Caribbean, a microwear approach has only seldom been applied to such artefacts (De Mille et al., 2008; Falci, 2015; Lammers-Keijsers, 2007; Serrand, 1999). It is our goal to show how the ornaments from the region can bring new insights for the field of ornament studies worldwide.

In the circum-Caribbean, figurative ornaments made of lithic materials and shells were recovered from Early Ceramic Age sites (400 BCE–600 CE/800) in the Lesser Antilles and Puerto Rico and from the Late Ceramic Age (600 CE/800–1500) in the Greater Antilles and north-eastern South America (Antczak and Antczak, 2006; Boomert, 1987, 2001; Chanlatte Baik, 1984; Falci, 2015; Hofman et al., 2007; Narganes Storde, 1995). The pendants depict beings with zoomorphic (e.g., frogs, turtles, and birds) and/or anthropomorphic (males, females, or undefined) traits. A wide range of lithic materials was used for the production of figurative ornaments, including calcite, plutonic rocks, jadeite, nephrite, and serpentinite (Boomert and Rogers, 2007; Hofman et al., 2007, 2014a; Murphy et al., 2000; Rodríguez Ramos, 2010, 2013; Watters and Scaglion, 1994). In northern South America, ornaments, especially frog-shaped pendants known as *muiraquitãs*, have been widely exchanged, as suggested by their wide occurrence across the Amazon and the Guianas during the late pre-Colonial period (Barata, 1954; Boomert, 1987; Moraes et al., 2014; Falci and Rodet, 2016; Rostain, 2006, 2014). The *muiraquitãs* are made of varied raw materials, including jadeite, nephrite, albite, variscite-strengite, and quartz (Meirelles and Costa, 2012). Bivalve and gastropod shells, common raw materials on the islands and the coast of South America, have also been shaped into biomorphic ornaments (Antczak and Antczak, 2006; Lammers-Keijsers, 2007; Murphy et al., 2000; Vargas Arenas et al., 1997). Such artefacts received attention from researchers interested in iconographic designs, raw materials, cultural interaction, and cosmologies in the circum-Caribbean (e.g., Boomert, 2001; Chanlatte Baik, 1984; Hofman et al., 2007, 2014a; Laffoon et al., 2014; McGinnis, 1997; Mol, 2011; Roe, 2011). However, technology and use-wear remain underexplored.

The present research focuses on figurative ornaments from the eastern shore of Lake Valencia in north-central Venezuela. Produced in the area from approximately 800 CE to 1500, the ornaments have been associated with other *muiraquitã* production centres, due to the similarity in iconographic motifs (Boomert, 1987; Rostain, 2006, 2014). Many artefact assemblages from the Valencia Lake Basin are the result of

* Corresponding author.
E-mail address: c.guzzo.falci@arch.leidenuniv.nl (C.G. Falci).

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unsystematic excavations during the late 19th and 20th centuries (Antczak and Antczak, 2006; Díaz Peña, 2006). A collection of ornaments made of shells and lithics is currently housed in the Ethnologisches Museum Berlin (formerly the Museum für Völkerkunde). The artefacts display multiple perforations, notches and figurative elements. Such elaborate morphologies lead us to questions regarding the presence of highly skilled and specialized craftsmen in the region, as suggested by other researchers (Vargas Arenas et al., 1997).

At the same time, designing a research methodology necessitates an evaluation of whether task-oriented experiments can offer us insight into production technologies and patterns of wear. Similarly, post-depositional surface modifications (PDSM) and long post-excavation trajectories have to be taken into account during analysis. It is necessary to assess how detrimental those are to a microscopic analysis. The aim of the present article is therefore threefold: 1) to present the results of the microwear analysis of the ornaments and suggest new avenues for future research in the studied regions; 2) to discuss the challenges faced during laboratory analysis and interpretation; and 3) to demonstrate how microwear analysis can shed light into the complex biographies of figurative ornaments which involve multiple stages of production and use.

1.1. The Valencia Lake Basin

The north-central Venezuela region comprises a rich combination of diverse geological and topographic features, and ecosystems. From north to south it includes: 1) the oceanic islands and archipelagos; 2) the Caribbean coast; 3) the Cordillera de la Costa mountain range; and 4) the Valencia Lake Basin with islands and alluvial/lacustrine fertile valleys (Fig. 1). To the south, the Serranía del Interior separates the lake from the llanos (savanna plains) and the Orinoco River valley. The geographical centre of the study region is Lake Valencia, a landlocked formation that dates back to the Middle Tertiary (Böckh, 1956; Schubert, 1978, 1980). Located in an area with seasonally dry tropical climate, the lake is the largest, permanent freshwater reservoir in lowland South America, north of the Amazon (Bradbury Platt et al., 1981; Curtis et al., 1999; Leyden, 1985; Raymond and Chardón, 1941; Xu and Jaffé, 2008). It rests at an altitude of 402 m ASL, and has a spill point at 427 m ASL, attaining a maximum depth of 38 m. It covers an area of 350 km^2 with a watershed of 2646 km^2. In the recent past, the lake reached a maximum areal extent of 1050 km^2 and a maximum depth of 63 m (Berry, 1939). The Valencia Lake Basin and the Cordillera de la Costa mountain range to the north are geological formations rich in a variety of rocks of igneous and metamorphic origin (Berry, 1939; Urbani, 2000; Urbani and Rodríguez, 2003).

The basin was a magnet for humans probably since the late Pleistocene-initial Holocene times. It housed pottery making horticulturalists since the beginning of the Common Era, and from 800 CE, the bearers of Valencioid material culture. Around 1200 CE, these societies fostered the conformation of the Valencioid Sphere of Interaction that covered the entire north-central Venezuela region (Antczak and Antczak, 2006). On wide geographical scale of northeastern South America, the region has been portrayed as an entrepôt of interregional exchange, and the circulation of peoples and ideas to and fro the Andean west, the insular Caribbean north, and the Tropical Lowland south (Kidder, 1944, 1948; Osgood, 1943; Osgood, 1943; Rouse and Cruxent, 1963).

Thousands of artefacts have been collected by amateurs and scholars since late 19th century (Ernst, 1895; Marcano, 1971[1889–1891]; Requena, 1932). However, attention was placed on artefacts with perceived "museum value", leading to a limited collection of non-formal lithic tools. In the cases when lithics were collected in stratigraphically controlled excavations (Bennett, 1937; Del Valle and Salazar, 2009; Kidder, 1944; Osgood, 1943), they were not thoroughly studied. Preliminary studies were conducted on lithic artefacts from the north-central coast (Martín, 1995) and from the Los Roques Archipelago (Antczak and Antczak, 2006). Diverse lithic raw materials have been reported in tools from the Valencia Lake Basin, including chert, schist, andesite,

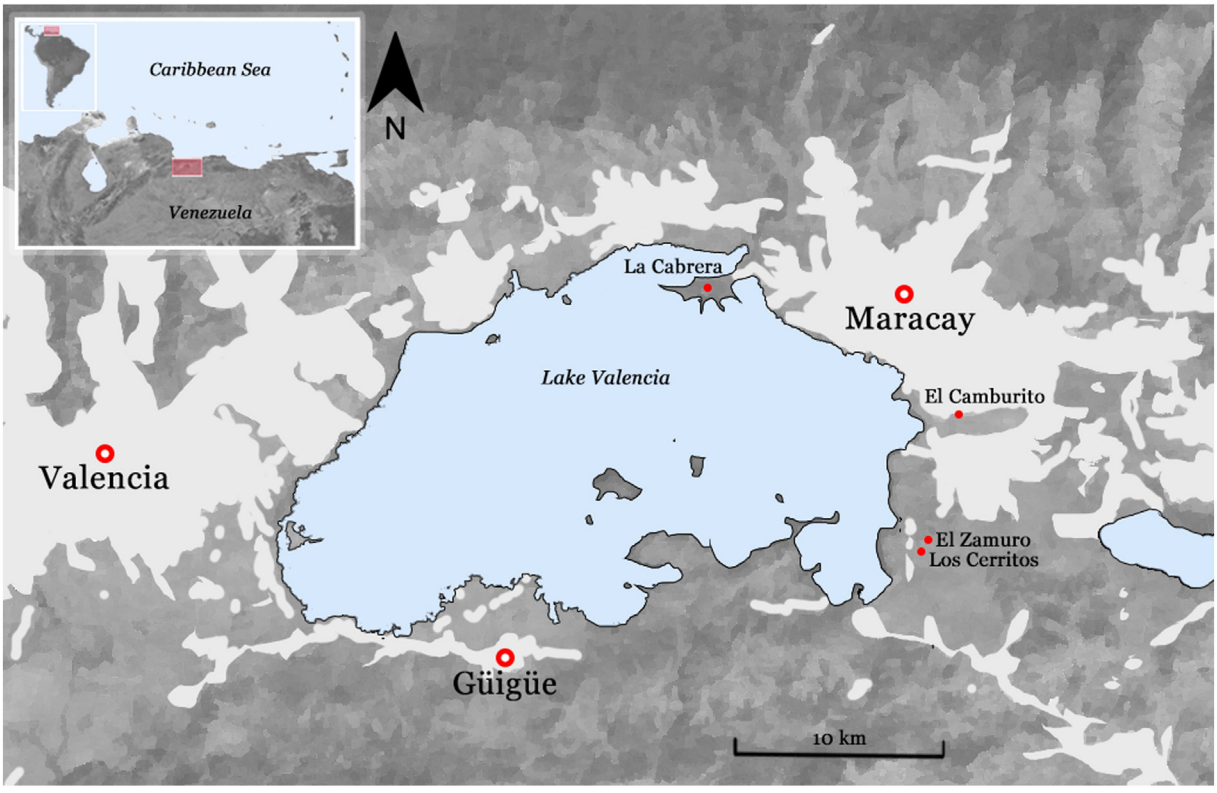

Fig. 1. The north-central Venezuela region with Lake Valencia in its centre and the archaeological sites of Los Cerritos, El Zamuro, El Camburito and La Cabrera situated on its eastern and north-eastern shores. Maracay, Valencia and Güigüe are modern cities surrounded by urbanized and industrialized areas. Map by Oliver Antczak.