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Recontextualizing Bodily Ornaments from North-Central Venezuela (AD 900–1500): the Alfredo Jahn collection at the Ethnologisches Museum Berlin

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Abstract. Large collections of beads, pendants and other bodily ornaments have been recovered from pre-Colonial contexts on the shores of the Lake Valencia in north-central Venezuela. Most excavations took place in the early and mid-part of the 20th century, but the ornaments have not been thoroughly studied to date. These artefacts were produced by the bearers of the Valencioid culture (AD 900–1500) and are currently held in several public and private collections dispersed throughout the world. This paper aims to recontextualize shell, lithic, and clay ornaments from the Alfredo Jahn collection, housed in the Ethnologisches Museum in Berlin. Production and use wear traces were investigated through microwear analysis and were combined with data concerning raw material acquisition strategies and depositional contexts. By combining these results with new, unpublished data provided by Jahn's excavation report from 1901 and with up-to-date Valencioid archaeology, we were able to recontextualize an indigenous tradition that encompassed ways of producing, decorating, and dealing with bodily ornaments.

[Bodily adornments, shell ornaments, microwear analysis, valencioid archaeology, museum collections]

Introduction

Bodily ornaments have been recovered in abundance from archaeological sites in the Valencia Lake Basin in north-central Venezuela, encompassing beads, pendants and nose rings made of shell, stone, minerals, ceramics, metal, and wood. Alongside a broad range of other artefact categories, notably ceramic figurines, the finds were excavated from the end of the 19th century to the mid-20th century and now integrate museum and private collections in different parts of the world (M. M. Antczak 2000). Over the last two decades, Valencioid contexts and material culture, both from inland and from the islands off the north-central coast of Venezuela, have been thoroughly researched (A. T. Antczak and M. M. Antczak 1999; M. M. Antczak and A. T. Antczak 2006). However, the biographies of bodily ornaments remain poorly understood.

The present article focuses on the study and contextualization of ornaments crafted by the pre-colonial indigenous inhabitants of north-central Venezuela. The ornaments, excavated by Alfredo Jahn in the early 1900s, have remained at the Ethnologisches Museum in Berlin (EMB thereafter) for more than a century, but details of the excavation and provenience of the artefacts were not previously known. The fundamental rationale behind this study is that the museum collections may be *recontextualised* if they (1) are composed of qualitatively variable sets of artefacts that once circulated together within the delimited temporo-spatial frames of the past culture; (2) are accompanied by documentary data that may contain some provenience and contextual information; and, (3) are integrated with the results of the related recent fieldwork (Pearce 1986, 1994; Danet and Katriel 1994; Pomian 1999; DiPaolo 2015; M. M. Antczak and A. T. Antczak, unpublished results). In this way, the results of cutting-edge analyses of museum objects can be successfully integrated into the larger project of recontextualisation. This approach will be illustrated by the study of bodily ornaments discussed here.

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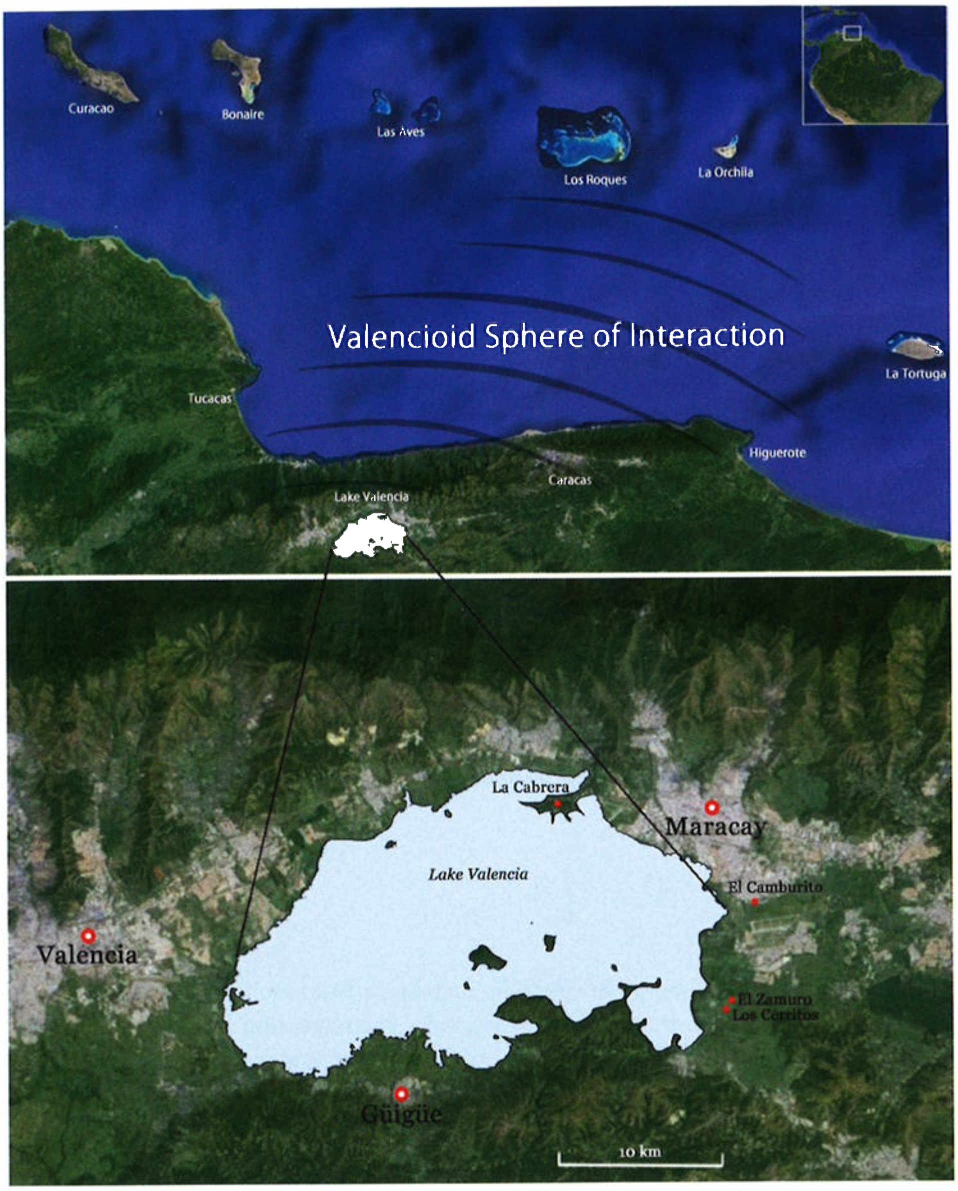

Fig. 1 Map of north-central Venezuela showing the main archaeological sites mentioned in this paper. Map made by Oliver Antczak.

In the present paper, microwear analysis is used to investigate the microscopic traces on the surface of 61 ornaments, in order to shed light on production sequences, toolkits, and technological choices, alongside modes and degrees of usage. A study of Alfredo Jahn's unpublished excavation report from 1901 was also carried out, in order to provide information on the biography of this collection and on the studied archaeological sites, as well as on the specific contexts of deposition of the ornaments. This combined study has provided a better understanding of not only the skillful carving of the shell and lithic ornaments, but also of how they relate to present knowledge about the occupants of the shores of the Lake Valencia from AD 900 to the Contact period.

Biography of the Jahn collection

In order to outline the biography of body ornaments from EMB collection, we should first discuss the geographical, environmental, and cultural frames from which these objects were extracted and in which they once thrived with vibrant social lives. The north-central Venezuela is a richly diversified combination of natural landscapes and ecosystems not easily duplicated elsewhere in South America (Fig. 1). From north to south, it comprises the offshore coral archipelagos, the Caribbean coastal bays, the tropical misty forest, the Cordillera de la Costa mountain range with peaks over 2800 meters above sea level, the Valencia Lake Basin, and the mountains, south of lake, that separate the region from the extensive savannas or *llanos* and the Orinoco Valley. The lake is the geographical centre of the study region, including islands, coastal shores, wetlands, and seasonally flooded alluvial/lacustrine valleys. It is the largest, permanent freshwater and land-locked lake in lowland South America, situated north of the Amazon River (Schubert 1980; Bradbury et al. 1981). The pre-colonial history of the Valencia Lake Basin is essential for any understanding of the broad interactions between the Andean area to the West, the Orinoquia to the South and the insular Caribbean to the North (Spinden 1916; Cruxent and Rouse 1958; Rouse and Cruxent 1963; M. M. Antczak and A. T. Antczak 2006).

Valencioid archaeology

The lacustrine environment, rich in fauna and flora, was a magnet for humans probably since the late Pleistocene-initial Holocene times (14,000–10,500 B.P.). The first agriculturists and pottery makers arrived to this region around the time of Christ. However, the presence of Valencioid culture bearers is not noted in the region until after ca. AD 800 (A. T. Antczak et al. 2017). At around that time, the Cariban-speaking migrants from the Middle Orinoco plains arrived to the Lake Valencia Basin and gave birth to the Valencioid culture whose bearers were the producers of the Valencia style pottery (Tarble 1985; Zucchi 1985). The newcomers entered in yet unknown forms of interaction with the bearers of local Barrancoid culture. Within the following 400 years, the Valencioid peoples had achieved control of the whole basin, the Cordillera de la Costa to the north, and most of the central-occidental Caribbean coast (Dupouy and Cruxent 1946; Cruxent and Rouse 1958; Rouse and Cruxent 1963). Since ca. AD 1200, they began to exploit the natural resources of the distant oceanic islands of Los Roques and La Orchila archipelagos. Thus, during the last three or four centuries before the European Conquest, the north-central Venezuela was covered by the network of inter-societal relationships of diverse nature and intensity that secured the success of the insular enterprise oriented towards the massive exploitation of the queen conch (*Lobatus gigas*) and other marine resources. These archaeologically inferred interactions gave rise to the so-called Valencioid Sphere of Interaction (A. T. Antczak and M. M. Antczak 1999; M. M. Antczak and A. T. Antczak 2006).

Within the core area of Lake Valencia, diverse archaeological remains have been attributed to the outstanding creativity and skillfulness of the Valencioid culture bearers: the pile-dwelling structures, the artificial mounded platforms for habitation and/or burials, the cemeteries filled with hundreds of large pottery urns and burial offerings, the complexes of petroglyphs, the lines of megalithic standing stones, and the geoglyphs, among others. The Valencioid also produced thousands of human pottery figurines with characteristic, disproportional large and elongated heads. These statuettes became the hallmark of the Valencia culture all over the world (M. M. Antczak 2000; M. M. Antczak and A. T. Antczak 2006, 2017). While some of these features are restricted to the Valencioid heartland, others may be found across the Valencioid Sphere of Interaction.

The archaeological research in the region started as early as in 1887 (Marcano 1971[1889–1891]) and the Valencioid artefacts attained world-wide notoriety in the 1889 Universal Exposition of Paris (Margolies and Suárez 1978; M. M. Antczak and A. T. Antczak 2006; Díaz Peña 2006). Much of our current knowledge on the pre-colonial past of the region has been built on the results of three stratigraphically controlled excavations that were carried out in the 1930s by North American scholars Bennett (1937), Osgood (1943), and Kidder (1944, 1948) (see also Berry 1939; Osgood and Howard 1943). This data has been complemented through the years with descriptions of fortuitous findings, few reports on large yet artefact-oriented excavations (Requena 1932; Peñalver 1965–1971; del Valle and Salazar 2009), and exhibition catalogues and pre-colonial art monographs that illustrated some of the Valencioid culture artefacts (Arroyo et al. 1971; Boulton 1978; Arroyo et al. 1999). Recently, the entire north-central Venezuela has been systematically incorporated into the concept of the Valencioid Sphere of Interaction operationalized from the perspective of dozens of Valencioid campsites found on the offshore oceanic islands of Los Roques Archipelago (A. T. Antczak 1999; A.T. Antczak and M. M. Antczak 1999; M. M. Antczak 2000; M. M. Antczak and A.T. Antczak 2006, 2017). The above-mentioned sources provide the basis for all current hypotheses on the social, economic, political and ideological life of the Valencioid culture bearers, their predecessors, and their early colonial destiny (see also Sanoja and Vargas 1974; Vargas Arenas 1990).

In sum, the state of archaeological knowledge in this region is still extremely limited. Except for the periphery of the Valencioid Sphere of Interaction, namely the oceanic islands of the Los Roques Archipelago (M. M. Antczak and A. T. Antczak 2006), the modern, 'high-resolution' archaeology has not arrived at the region yet. As a consequence, thousands of artefacts have been amassed in private and public collections in Venezuela and abroad. In these collections, objects accompanied by information on their provenience and contextual association are an overwhelming minority.

The Alfredo Jahn collection

The collection of Valencioid artefacts in the Ethnologisches Museum in Berlin is the largest of its kind in Europe. It originally contained over one thousand objects, including decorated pottery vessels, funerary urns, human and animal figurines, vessel rim and body *adornos*, pipes, whistles, ocarinas, as well as beads, pendants and tools carved out of stone, shell, bone and bituminous coal[1]. Many of these artefacts come from sites that no longer exist and are specimens of unique scientific and historical/cultural value (M. M. Antczak and A. T. Antczak, unpublished results). The objects were successively acquired by the EMB between ca. 1852 and 1933. Once they were withdrawn from their original archaeological contexts and transported to Berlin, a new setting was prepared for them in the museum. The only published reference on this collection is a short paper written by Karl von den Steinen in 1904 that draws from the manuscript written by Alfredo Jahn (1903), who provided the majority of the artefacts. Since then, they were largely forgotten. In late 1990s/early 2000s, an extensive research on this collection was carried out by M. M. Antczak and A. T. Antczak (unpublished results), who not only inventoried, analyzed, and described the collection, but also 'added flesh to bones' by incorporating it into the bulk of data on the late pre-colonial past of north-central Venezuela that is currently available; however, these results that are the baseline for this paper have not been published yet.

During the second half of the 19th century the archaeological objects from north-central Venezuela were arriving not only to the Museum in Berlin, but also to Hamburg, Paris, and Copenhagen (M. M. Antczak and A. T. Antczak 2006). This created the 'competitive' environment in which the Museum in Berlin directed by Karl von den Steinen, an eminent ethnologist, acquired from Alfredo Jahn two important collections in 1901 and 1903. Alfredo Jahn Hartmann (1867–1940) was born in Caracas in a family of emigrants who left Germany at the beginnings of the 19th century (Wagner 1986). Between 1882 and 1883, Jahn studied in Germany and in 1884, returned to Caracas where

1 Bituminous coal is a material commonly used to simulate jet, being made of a variety of fossilized plant debris (Pedersen 2004: 43).

he continued studying natural sciences at the Central University of Venezuela, under the tutelage of Adolph Ernst. The latter was a Prussian-born scientist, founder of the Museum of Natural Sciences and the National Library of Venezuela, and one of the most influential intellectuals of the positivist school of Venezuela. After the completion of his superior education in 1886, Jahn was appointed as a member of the Anthropological Commission created by General Guzmán Blanco, the President of Venezuela, and assisted Vicente Marcano in extensive excavations in the archaeological site of La Mata, on the eastern Lake Valencia shoreline (Marcano 1971[1889–1991]; Pérez Marchelli 1971, 1988; A. T. Antczak 1999). Between 1888 and 1902, Jahn was contracted by the German Company that constructed and administered the Great Venezuelan Railway. During these years he resided in the Valleys of Aragua gaining exceptional first-hand knowledge of the north-central Venezuela region, its natural environment, people and pre-Colonial remains. He systematically explored almost every corner of the Valencia Basin (Urbani 1987: 136) and published on varied subjects ranging from ethnography to natural sciences (Jahn 1927, 1932, 1940). The collection of his archaeological artefacts was sent to Berlin in two shipments: in 1901 and 1903.

The 1901 shipment consisted of 217 objects and the one from 1903, of 772 specimens. The collections comprised human bones, pottery, and artefacts made out of shell, bituminous coal, stone, and metal. Both assemblages make this by far the largest individual collection of pre-colonial objects from north-central Venezuela in Germany and elsewhere in Europe. This collection is also the most diversified in terms of object raw materials and techno-functional types. The localities represented in the collection concentrate around the Lake Valencia and its islands. Some objects were collected on the surface while others were purposefully excavated (von den Steinen 1904; M. M. Antczak and A. T. Antczak, unpublished results).

Comparison between diverse sources of documents indicates that some bodily ornaments sent by Jahn are missing in the EMB collection. In general, fewer objects are missing in the 1903 collection in comparison to those from 1901. However, the losses in the former collection seem to be more sensible, since they include more unique objects, such as necklaces, beads, pendants and a metal object that was possibly a nose-ring (M. M. Antczak and A. T. Antczak, unpublished results).

The most important category of body ornaments was made out of marine shells and the original EMB inventory contains 110 entries referring to these items. However, the number of individual items was in fact much higher than that indicated by the inventory given that many necklaces had more than 10 components, between beads and pendants. Some of the missing necklaces were made out of modified shells alone while other necklaces combined shell and stone beads, bird bones, and carved stone and shell pendants. The most sensible loss is of shell individual ornaments and of necklaces composed of combined shell, stone and bone described in EMB object-files. All but one out of six necklaces included in Jahn's 1901 shipment are missing (Table 1). Two missing necklaces

Table 1 Shell ornaments from north-central Venezuela present and missing from Alfredo Jahn's collections, Ethnologisches Museum Berlin

Object type	Collection 1901		Collection 1903		Total	
	Present	Missing	Present	Missing	Present	Missing
Necklaces	1	5	1	17	2	22
Beads	3	8	1	2	4	10
Pendants	10	3	4	5	14	8
Shell 'micro-pyramids'	1	1	203	0	204	1
Various	1	0	0	1	1	1
Total	**16**	**17**	**209**	**25**	**225**	**42**

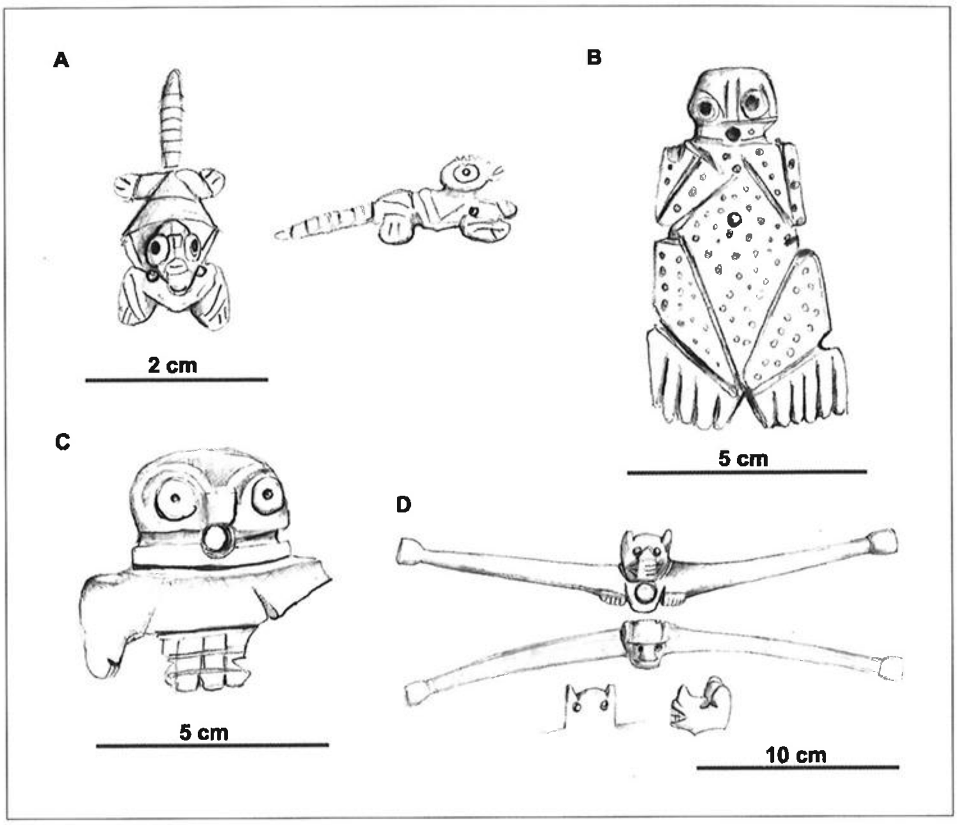

Fig. 2 Zoomorphic (a, c, d) and anthropomorphic (b) shell pendants from the EMB collection. Drawings by M. M. Antczak. Ethnologisches Museum, Staatliche Museen zu Berlin – Preußischer Kulturbesitz, V A 14017 (a), V A 14014 (b), V A 15425 (c). V A 14045 (d).

came from Camburito site on the eastern shore of the Lake Valencia. One of them, found in burial context, was made of elongated shell beads, 14 of which were carved in a shape of 'pelican'. The second necklace was composed of diverse shells with little modification (automorphic) and one anthropomorphic pendant. All but one out of 18 necklaces from the 1903 collection are missing. They came from Camburito and El Zamuro sites, both on the eastern shore of Lake Valencia. One of missing necklaces was made out of fourteen small shell carvings in form of human figure and two button-like shell discs. Another missing necklace was composed of toad and turtle figures carved in shell, one double-tone pottery whistle, and five elongated shell beads. Yet another specimen had figures and discs carved in shell, two toads carved in stone, and one stone pendant of undetermined shape. These missing necklaces carried rich imagery and reflected high ability of Valencioid and pre-Valencioid (Central Barrancoid) artisans (M. M. Antczak and A. T. Antczak, unpublished results).

The archaeological background information on the 61 body ornaments analyzed and discussed in this paper is based on the EMB inventory and object-files, Jahn's manuscript report on his excavations (1903), letters exchanged between Jahn and EMB authorities in 1901, and Karl von den Steinen's paper from 1904. It is also grounded in extensive research by M. M. Antczak and A. T. Antczak (unpublished results) on EMB archaeological collections from north-central Venezuela and on their long-term investigations on archaeology of this region in general (A. T. Antczak and M. M. Antczak 1999; M. M. Antczak and A. T. Antczak 2006, 2017).

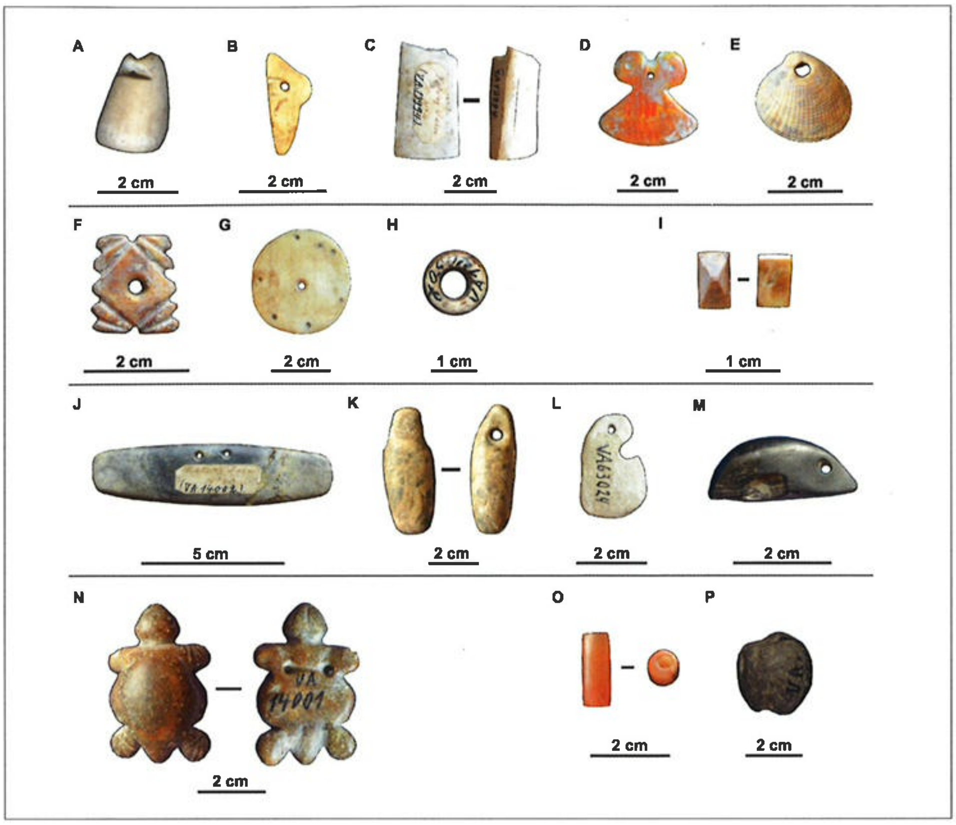

Fig. 3 Main ornament types included in the analyzed sample. Ethnologisches Museum, Staatliche Museen zu Berlin – Preußischer Kulturbesitz, V A 15411-VI (a), V A 15431-I (b), V A 13994 (c), V A 15522 (d), V A 15534-I (e), V A 14021-V (f), V A 14013 (g), V A 14050 (h), V A 15497-III (i), V A 14002 (j), V A 14004 (k), V A 63024 (l), V A 14038 (m), V A 14001 (n), V A 15525 (o), and V A 14050d (p).

Microscopic study of the ornaments

In the following sections, the bodily ornaments made of shell, lithics and ceramic from the Alfredo Jahn collection are discussed. While limited information is available for the specific contexts of recovery of these ornaments, a microscopic study of their surfaces can provide insights into their biographies, especially in regard to the production sequences and use life.

Studied sample

The studied collection encompasses 61 artefacts made of lithic materials, shells and ceramic (Figs. 2 and 3). They were selected among the collection presently in the Ethnologisches Museum on the basis of their identification as ornaments, especially due to the presence of perforations suggesting they were part of pre-colonial indigenous body ornamentation. Beads, pendants, and ornaments of unknown functionality were included in this study.

As noted in table 2, a small number of beads are part of this collection (n=10). Half of the beads have simple geometric shapes, i.e. tubular and disc-shaped (Figs. 3, h, o, p), while the other five beads have carvings that are reminiscent of folded frog legs (Fig. 3, f). This low number of beads is in contrast with the abundance of specimens reported in other collections from the Valencia Lake Basin, especially made of shell. This may

Table 2 Ornaments collected by Alfredo Jahn and currently present in the EMB collection. Length (L), width (W), and thickness (T) measured in millimeters and weight in grams; Unid: unidentified species

Number	L	W	T	Perf		Weight	Type		Raw material	
				Diam	N°		Main	Subtype	Main	Subtype
V A 13994	43	22	11	6	1	19820	Pendant	Axe-shaped	Shell	*L. gigas*
V A 14013	35	33	2	2	1	7140	Disc	-	Shell	*L. gigas*
V A 14014	76	46	3	3	1	25220	Pendant	Anthropomorphic	Shell	*S. americanus*
V A 14017	32	16	12	2	2	3000	Pendant	Armadillo	Shell	*L. gigas*
V A 14018	33	25	7	2	2	7410	Pendant	Turtle	Shell	*S. americanus*
V A 14019	22	40	2	2	2	3590	Pendant	Triangle	Shell	*S. americanus*
V A 14021-I	17	14	1	4	1	910	Bead	Frog-shaped	Shell	*S. americanus*
V A 14021-II	16	15	2	5	1	1030	Bead	Frog-shaped	Shell	*S. americanus*
V A 15421-III	19	17	1	3		870	Bead	Frog-shaped	Shell	*S. americanus*
V A 14021-IV	16	14	1	3	1	680	Bead	Frog-shaped	Shell	*S. americanus*
V A 14021-V	18	15	2	3	1	1410	Bead	Frog-shaped	Shell	*S. americanus*
V A 14046b	34	19	14	8	1	9530	Pendant	Automorphic	Shell	*O. reticularis*
V A 14050	14	13	6	7	1	1570	Bead	Disc	Shell	*L. gigas*
V A 14050b	15	14	3	3	1	910	Bead	Disc	Shell	C. sarda
V A 15406b	8	6	63	4	1	5770	Bead	Tubular	Shell	*L. gigas*
V A 15411-I	23	16	13	2	1	3620	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-II	20	12	10	5	1	2050	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-III	27	21	18	5	1	9170	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-IV	30	23	19	5	1	10290	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-IX	33	24	22	6	1	1250	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-V	27	20	15	5	1	8580	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-VI	26	18	14	3	1	5200	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-VII	23	15	13	2	1	3210	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-VIII	23	16	11	3	1	4150	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-X	25	18	16	4	1	6090	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-XI	23	17	14	3	1	6340	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-XII	23	18	10	5	1	2430	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-XIII	25	19	16	5	1	6240	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-XIV	32	22	9	5	1	10060	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-XV	36	24	17	4	1	9230	Pendant	Automorphic	Shell	*O. reticularis*
V A 15411-XVI	23	18	15	3	1	5840	Pendant	Automorphic	Shell	*O. reticularis*
V A 15425	49	48	5	6	1	31630	Pendant	Owl	Shell	*L. gigas*
V A 15431-I	24	10	2	2	1	830	Pendant	Knob-shaped	Shell	Unid
V A 15431-II	43	10	2	3	1	1370	Pendant	Knob-shaped	Shell	Unid
V A 15431-III	39	10	2	2	1	1330	Pendant	Knob-shaped	Shell	Unid
V A 15497-I	10	9	6	-	-	860	Pendant	Pyramid	Shell	*L. gigas*
V A 15497-II	8	5	4	-	-	180	Pendant	Pyramid	Shell	*L. gigas*
V A 15497-III	8	4	5	-	-	210	Pendant	Pyramid	Shell	*L. gigas*
V A 15497-IV	9	6	5	-	-	270	Pendant	Pyramid	Shell	*L. gigas*
V A 15497-IX	8	5	4	-	-	270	Pendant	Pyramid	Shell	*L. gigas*
V A 15497-V	8	5	4	-	-	220	Pendant	Pyramid	Shell	*L. gigas*
V A 15497-VI	8	5	4	-	-	250	Pendant	Pyramid	Shell	*L. gigas*
V A 15497-VII	8	4	4	-	-	230	Pendant	Pyramid	Shell	*L. gigas*

Number	L	W	T	Perf		Weight	Type		Raw material	
				Diam	N°		Main	Subtype	Main	Subtype
V A 15497-VIII	7	5	4	-	-	230	Pendant	Pyramid	Shell	*L. gigas*
V A 15497-X	8	6	5	-	-	230	Pendant	Pyramid	Shell	*L. gigas*
V A 15522	30	32	3	3	1	5220	Pendant	Bivalve-shaped	Shell	*S. americanus*
V A 15534-I	24	27	4	4	1	2370	Pendant	Automorphic	Shell	*T. mactroides*
V A 15534-II	24	26	7	5	1	2350	Pendant	Automorphic	Shell	*T. mactroides*
V A 15534-III	25	24	2	4	1	950	Pendant	Automorphic	Shell	Nacre unid
V A 14001	46	30	13	4	2	28340	Pendant	Turtle	Stone	Indetermined
V A 14002	22	86	2	3	2	17040	Pendant	Rectangular	Stone	Serpentinite
V A 14004	49	20	15	5	1	24020	Pendant	Elongated	Stone	Plutonic
V A 14016a	28	31	2	6	1	3930	Pendant	Round pendant	Stone	Slate
V A 14016b	29	32	3	5	1	5740	Pendant	Round pendant	Stone	Slate
V A 14049	33	28	2	3	1	4820	Pendant	Lozenge	Stone	Slate
V A 15536b	14	41	1	2	1	2400	Pendant	Rectangular	Stone	Serpentinite
V A 63024	30	19	2	3	2	2090	Pendant	Round pendant	Stone	Slate
V A 63025	18	40	4	3	2	4560	Pendant	Rectangular	Stone	Serpentinite
V A 14038	31	11	13	3	1	2130	Pendant	Elongated	Bit. coal	-
VA15525	6	6	19	6	1	1860	Bead	Tubular	Mineral	Chalcedony
VA14050d	12	12	14	3	1	2190	Bead	Barrel-shaped	Ceramic	-

be related to the lack of sieving during Jahn's excavations, but also to the loss of part of the collection during Second World War. A broad range of shell pendants is present, including elaborate zoomorphic depictions and simple shapes, interpreted as non-representational. Under the "zoomorphic" category are included pendants in the shapes of a turtle, an armadillo, an owl (Figs. 2, a, c; Fig. 3, n), and potentially a mollusc's valve (Fig. 3, d). One artefact depicts an unidentifiable being, potentially a human with folded legs (Fig. 2, b). A nephrite artefact depicting a winged bat also makes part of the EMB collection, but was not analyzed in the present study (Fig. 2, d). This specimen (V A 14045) was recovered from Güigüe, on the southern coast of Lake Valencia, and measures 25.1 cm of length and 4.18 cm of maximum width. Automorphic pendants are also part of the analyzed collection, notably in the form of 17 tinklers (Fig. 3, a). In addition, three umbo-perforated shell ornaments are present (Fig. 3, e). Ten non-perforated artefacts with a pyramidal shape are also part of the sample (Fig. 3, i), as they were preliminarily interpreted as ornaments.

The most common shell species used as raw material were the marine gastropods *Lobatus gigas* (*n*=16) and *Oliva reticularis* (*n*=17), followed by the bivalve *Spondylus americanus (n*=9). One bead made of the small bivalve *Chama sarda* was also noted, as well as two pendants made of *Tivela mactroides* valves and one made of an unidentified shell with nacre. However, it was not possible to identify the shell species used as raw material for three artefacts. They are flat and thin pendants, but it was not possible to assess if they were made of *L. gigas* or *S. americanus*, as they do not display a characteristic curvature or colour. While marine shell is the most common raw material in the collection, lithic and ceramic artefacts are also present. Different raw materials and various types are present among the lithic ornaments: an orange chalcedony bead (Fig. 3, o), rectangular pendants made of a dark green material, probably serpentinite (*n*=3;

Fig. 3, j), flat circular or oval slate ornaments (*n*=4; Fig. 3, l), one bituminous coal pendant (Fig. 3, m), a turtle-shaped pendant made of an unidentified rock (Fig. 3, n), and an elongated pendant made of a plutonic rock (Fig. 3, k). The latter has a light grey colour and small red minerals. The turtle-shaped pendant is made of a brown heterogeneous and medium-grained unidentified rock. The only artefact made of ceramic is a modelled barrel-shaped bead (Fig. 3, p).

Methods

The artefacts of the collection were studied through microwear analysis, an approach that has increasingly been used for understanding the biographies of beads and pendants from different regions and time periods (*e.g.*, Bonnardin 2012; Falci 2015; Van Gijn 2006, 2014; Vanhaeren et al., 2006; Vanhaeren et al., 2013). Through the observation of traces and their stratigraphy on the surface of artefacts, it is possible to assess the multiple and successive techniques used in their production, as well as the modifications the artefact has undergone during and after use. This includes whether they have been worn or not and the modes of stringing. Finally, it also allows us to record the modifications that took place after the artefact was deposited in the archaeological record and after it was recovered from it and joined the museum's collection. A similar approach has been previously used for the study of ornaments and ritual artefacts in the Caribbean, but they remain limited (Serrand 1999, 2007; Lammers-Keijsers 2007; Breukel 2013).

The artefacts were analyzed at the Laboratory for Artefact Studies of Leiden University (Netherlands). First, each ornament was examined with a stereomicroscope (model: Leica M80, with magnifications of 7,5x to 64x and a Leica MC120HD camera). The state of preservation, production traces and use-wear were observed with this microscope. The next stage of analysis involved the observation of each ornament under an incident light metallographic microscope (model: Leica DM6000m, with magnifications of 50x to 1000x, and a Leica DFC 450 camera). This microscope provides a view of the microtopography of the artefact's surface, allowing us to assess more precisely the associations of certain traces with specific activities and materials. The interpretation of the production traces was based on experiments focused on understanding the interaction between specific raw materials and tools that might have been used in their production. These experiments were previously reported elsewhere (Falci 2015; Falci et al., 2017; Breukel and Falci 2017).

A note of caution is, however, required. This approach is more commonly applied to recently excavated artefacts, whose post-excavation history is well known. Given the long post-excavation trajectories of artefacts that belong to early 20th century museum collections, they may have undergone multiple processes that left traces on their surfaces over the decades. Therefore, microscopic analysis has to be carefully and critically conducted, in order to identify modern traces and separate them from the ancient modifications.

Raw materials

Six different marine shell species were used for producing the ornaments from the Jahn collection. All marine shells were brought into the Valencia Lake Basin either from the Caribbean coast of Venezuela or from the off-shore islands. From AD 1000, if not earlier, marine shells were obtained by the inhabitants of the shores of the Lake Valencia through exchange with the bearers of Ocumaroid ceramics, whose sites can be found on the coast (Antczak 2000; M. M. Antczak and A. T. Antczak 2006). After AD 1200, the shells were directly collected by the inhabitants of the Valencia Lake Basin, who seasonally navigated to the off-shore islands. Abundant evidence of the initial processing of the *L. gigas* shell has been observed in the excavated contexts in the Dos Mosquises Island (Los Roques Archipelago), including the removal of blanks from the shell and even production of discs and beads (M. M. Antczak and A. T. Antczak 2006). In addition to being harvested directly from the sea, shells may also be collected from the beach. Evidence for this type of procurement is seen on the *C. sarda* bead (V A 14050b), which presents damage to its surface produced by the action of predators (Claassen 1998).

In total, seven different lithic materials were used for ornament production. The raw material acquisition strategies for lithic ornaments involved the maintenance of interaction networks connecting the north-central region with different areas of Venezuela. Slate is found locally, nearby the shores of the Lake Valencia (Schubert 1978). The material presents grey colour, natural foliation and a sheen produced by the abundance of mica in some specimens. The cleavage planes allow the natural fracture of the material in sheets with flat and parallel sides. On its turn, bituminous coal can be found in the Apure state, south-western Venezuela (Cirimele 1989). It is a soft and homogeneous material, with black colour and natural sheen. The green material used for the rectangular pendants was preliminarily identified as serpentinite. There is variation between the different serpentinite pendants in terms of colour, translucency and schistosity. Similar pendants are found in a workshop site in the Trujillo area on the foothills of the Venezuelan Andes. Most specimens are mainly composed of antigorite, which is a variety of serpentine and has a flaky and sheet-like structure (Wagner and Schubert 1972; Rapp 2009). Finished serpentinite ornaments or raw materials may have come to the Valencia Lake Basin from the Trujillo area (Wagner and Schubert 1972). In addition, an assemblage of serpentinite micro-axes and elongated pendants was recovered at the Valencioid campsite on Dos Mosquises Island (M. M. Antczak and A. T. Antczak 2006). The provenance of the other lithic materials used for the production of ornaments in the Valencia Lake Basin is not known. In any case, igneous and metamorphic rocks can be found locally and in the Cordillera de la Costa (Berry 1939; Urbani 2000; Urbani and Rodríguez 2003).

State of preservation

The preservation conditions of the Jahn collection varied considerably, sometimes preventing a detailed microscopic analysis. Several artefacts (30; 49,18%) presented different degrees of surface erosion, commonly observed as detachment of an upper coloured layer of shells or pitting of surfaces in shell and stone. A white and chalky surface is present on artefacts that were probably exposed on the surface of the sites, undergoing dissolution through changes in the water level of the lake. Likewise, 31 artefacts (50,81%) presented sediment from the archaeological deposits encrusted on their surfaces. Other damage to the surfaces is related to excavation, transport, curation or storage. A few artefacts (3; 5,08%) presented fresh breaks or scratches, which took place either in depositional or (post-) excavation contexts. Evidence of curatorial practices are the remains left by systems of identification of artefacts, such as stickers (7; 11,47%), nail polish (16; 26,22%) and ink writings (29; 47,54%). Both stickers and ink markings were sometimes observed on the same artefact, which is possibly related to successive recording episodes. The ink marking has the identification number of each artefact (*V A number*) and the stickers often include *Katalog Jahn* in cursive letters and a different number (Figs. 3, c, h, j, l, n). A freshly broken artefact, a serpentinite bat wing pendant, was glued back together. Glue, nail polish and ink create a thick and reflective layer on top of the surface of artefacts. The analysis of these areas with a high magnification microscope is rendered impossible. Lines made with a pencil were also noted on the sides of six artefacts (9,83%), preventing the observation of these surfaces. Finally, stringing artefacts and storing them together in small containers may also have caused damage, which can be mistaken for production or use-wear traces.

Production sequences

The techniques used for the production of the bodily ornaments can be organized according to different production stages: blank acquisition, shaping, perforation, decoration and polishing. Certain techniques can be used for different stages, that is, they involve the same tools and gestures but can be used for achieving different ends. In the following sections, the different techniques will be discussed according to this ideal sequence of production.

Shell ornaments

As the shell ornaments are highly modified finished products, it is not possible to assert which techniques were used for blank production of 17 specimens (34,7 % of 49 shell ornaments). Sawing was identified on 13 artefacts (26,53 %) as a blank acquisition technique. A preliminary cut groove was made and followed by the snapping of the piece in two. These are flat artefacts with straight sides, including the frog-shaped beads (Fig. 4, a), some of the biomorphic, and the "knob" pendants. As marine shells are not locally available in the Valencia Lake Basin, sawing may have been chosen in order to save material. This technique was also used for shaping a *L. gigas* biomorphic ornament. As the *L. gigas* shell is thick and tough, sawing is quite time-consuming for blank acquisition. Flaking the shell is faster and more efficient for separating different shell parts (Antczak 1999). Both the lip and the body whorl of the *L. gigas* shell were used as blanks for making ornaments. In the case of the 20 automorphic artefacts, whole specimens were directly used as blanks, being subjected to only minor shaping and perforating.

Shaping techniques are generally applied to a blank to approximate its morphology to the desired end-product. In the analyzed collection, it involved both sawing and grinding. Notching is a specific variety of sawing that creates an indentation on the side of an artefact. Through this procedure, elaborate features were created on the pendants, such as the morphological traits of the depicted animals. This procedure was observed on 11 ornaments (22,44 %), half of them made of *S. americanus* (n=6) (Fig. 4, b). On seven artefacts (frog-shaped beads and "knob" pendants), the notches have a V-shaped section with deep striations inside. Such notches were likely made with a hard lithic tool. On biomorphic pendants made of both *S. americanus* and *L. gigas* (n=6), the notches are U-shaped and have marked striations on their bottom (Fig. 4, c). The morphology of the notches points to the use of a soft tool together with slurries (*e.g.*, quartz sand and water) to widen previously made V-shaped notches.

Grinding was observed on all shell raw materials and artefact types (Figs. 4, d, e). The resulting microtopography, flat and striated, suggests the use of mineral hard materials for grinding, such as a stone platform or a stony coral (*Acropora palmata*). Grinding was also used to remove the apex of the *O. reticularis* shells (Fig. 4, f), in order to produce tinklers in all but one specimen (V A 14046b). The apex and inner whorl of the latter were removed by pounding. However, it is possible that pounding was also used on the other specimens, but its traces were erased by grinding. In any case, experiments have shown that the inner whorl of the shell starts to break as a result of grinding (Falci 2015).

The positioning of perforations in pendants is normally associated to the way in which the ornament is to be worn. The perforation on the automorphic bivalve pendants was made by rubbing the umbo against an abrasive surface until a hole was formed (Fig.

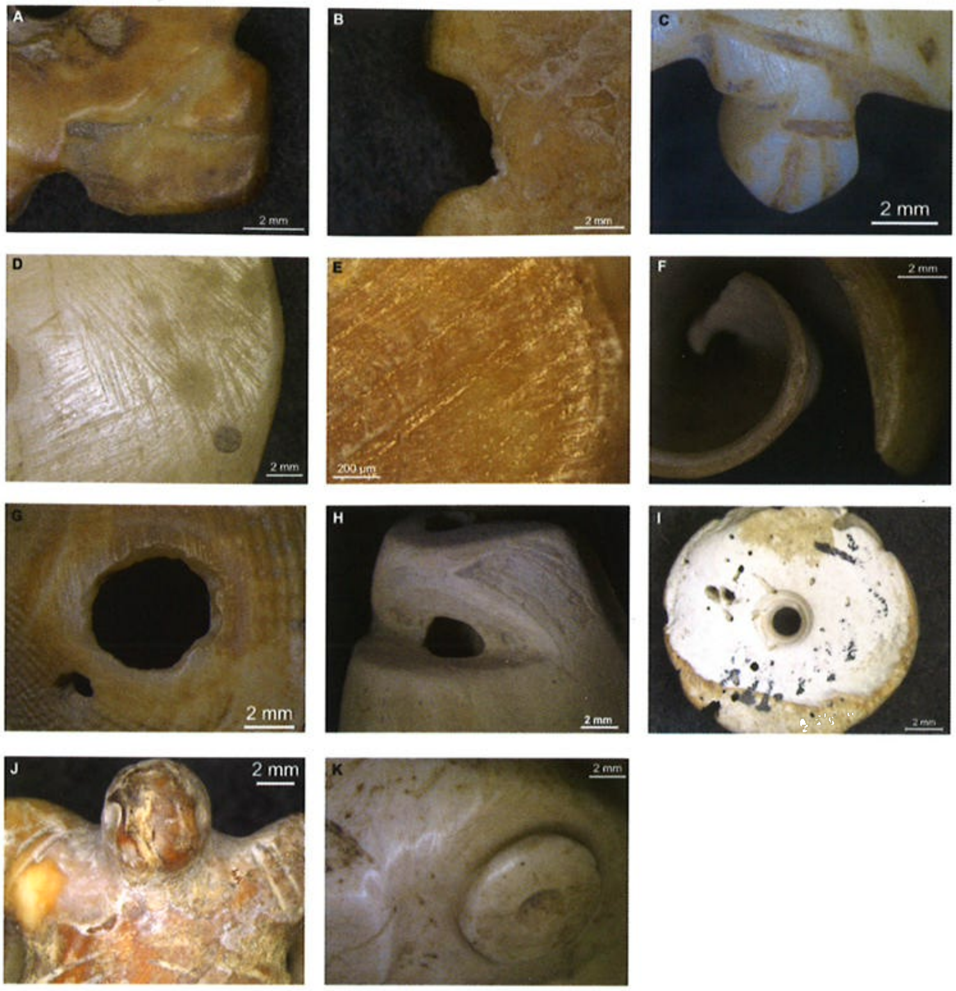

Fig. 4 Production traces observed on shell ornaments. Ethnologisches Museum, Staatliche Museen zu Berlin - Preußischer Kulturbesitz, V A 14021-IV (a), V A 14014 (b), V A 14017 (c), V A 14013 (d), V A 15497-VII (e), V A 15411-I (f), V A 15534-II (g), V A 15411-III (h), V A 14050b (i), V A 14018 (j), and 15425 (k). Photos by C. G. Falci

4, g). This technique reduces the risk of breaking the fragile shell while perforating. Three different techniques were used for creating the side perforation on tinklers: drilling, pounding and sawing. Pounding was used on one specimen (V A 14046b), creating a large hole with ragged edges. Sawing produced holes with a characteristic wide elliptical shape with striations inside (Fig. 4, h). The most common perforating technique was drilling (n=34), used on all analyzed shell species. The holes were generally made from both faces of an artefact with the two cones meeting in the centre (Fig. 4, i). The perforations have a rounded, but flat leading edge. In addition to thin circular striations, the walls of the perforations have large circular furrows of different widths. These features contrast with the ones obtained by drilling with flint drill bits. The micromorphology of experimental perforations made with *Guaiacum officinale* wood resembles more closely the archaeological ones, including the furrows and a flattened leading edge (Falci et al., 2017). The furrows could have been caused by accumulations of abrasive powder and debris, and by the wearing of the wood, which would produce a blunt and large tip. More experiments need to be carried out to test this hypothesis. Other hard woods available in north-central Venezuela might have been used and produced a similar result to guaiacum. The perforation of the tubular bead (V A 15406b) is cylindrical.

The raw material and drilling mechanism used for producing such a long perforation (63 mm) without breaking the blank is not clear. It also presents cut marks on its rims, possibly made to widen the rim and guide the string of attachment. Other three shell ornaments also display grooves next to their perforations: the owl-, the turtle-, and the bivalve-shaped pendants. Such grooves served to keep the string in place and better accommodate it, so it would not protrude on the back of the pendants.

In total, 11 shell ornaments present decoration. Drilling was used to produce dots, eye sockets and mouths on six artefacts (Figs. 4, d, j, k). For this operation, the same toolkit is used as for the production of the suspension hole; however, as the perforation is not finished, only a stepped circle is present. Incision is a form of sawing and also produced U-shaped grooves with striations. It was the most common technique (*n*=9), being used to carve decorative lines (Figs. 4, c, j). Excisions are produced as the outcome of multiple incisions and notches, isolating a portion of the material to create heads, tails and eyes (Figs. 4, j, k). This technique demands considerable planning and was present only on three biomorphic artefacts. Decoration techniques are often found in combinations on an artefact: incising and drilling (*n*=1); incising, excising, notching and drilling (*n*=3); and incising and notching (*n*=5). However, a "sloppy" attitude can be observed on some specimens in relation to the application of decorations: on the anthropomorphic pendant, for instance, misplaced cut marks were not removed by grinding and no concern was invested in the distribution of decorative perforations; the latter were often placed too close together, sometimes overlapping. In relation to the frog-shaped beads, one of them is clearly more finely-made than the others, as it is carved symmetrically on both sides. The other specimens are carved on only one face without care for the number of side notches and for the careful placement of incisions.

Lithic ornaments

Raw material and blank acquisition strategies depend on how specific lithic materials are found in the environment and on their properties. Similarly to shell, almost no traces of blank acquisition techniques were observed on the lithic ornaments. Techniques commonly used worldwide include flaking and sawing (*e.g.*, Lothrop 1955; Pelegrin 2000; Beck and Mason 2002; Sax et al. 2004; Wright et al. 2008; Falci and Rodet 2016). Two lithic ornaments were probably made using natural pebbles as blanks: the elongated (V A 14004) and the turtle-shaped pendants (V A 14001). For both artefacts, oval pebbles with a convex side opposing a relative flat one could have been selected and further ground in shape. The presence of ink markings and stickers on the flat surface of both pendants prevents further investigation concerning the techniques used. The blanks for the slate artefacts were probably also similar to the desired end products. This material was probably collected as small flat and thin sheets that only needed further shaping. For the chalcedony bead, knapping was probably used as this material is as hard, isotropic and brittle. However, no evidence remains on the artefact. Information regarding where and in which state the raw material can be collected would help in addressing this issue. In relation to the serpentinite, Wagner and Schubert (1972) report that rectangular pendant blanks were obtained by sawing in the Venezuelan Andes. However, no evidence of this stage was observed on the studied pendants. In the case of the bituminous coal pendant, cut grooves are visible, which suggest that the blank was produced by sawing, probably groove-and-snap (Fig. 5, a). While the cuts appear to be V-shaped, it is not possible to examine them due to the presence of nail polish on top.

Grinding striations, faceting and flattening of grains are present on all lithic artefacts (Fig. 5, b). This combination of traces suggests the use of a hard, stone-like material. Striations, while very common on shell artefacts, were not observed on some lithics, for instance the slate pendants. Under the microscope, flattening of the microtopography was visible, but grinding striations were only present on the side of one slate artefact. In

Fig. 5 Production traces observed on lithic (a – h) and ceramic (i) ornaments. Ethnologisches Museum, Staatliche Museen zu Berlin - Preußischer Kulturbesitz, V A 14038 (a), V A 15525 (b, e), V A 14001 (c, d), V A 14002 (f), V A 63024 (g), V A 14049 (h), and V A 14050 d (i). Photos by C. G. Falci

association to grinding traces, scraping marks were observed on the turtle-shaped artefact (V A 14001). The use of this technique is associated to a further delineation of the side and is also accompanied by notching. The notches on this artefact were produced with a hard lithic tool, such as flint, given its sharp V-shaped appearance. Notches were also created on the elongated pendant made of the light grey igneous rock (V A 14004), in order to flatten and narrow the area where the perforation would be placed (Fig. 6, h). There are no visible cut marks, probably due to erasure of traces by use-wear.

The only lithic artefact with decoration is the turtle-shaped pendant (V A 14001), in which different sets of techniques were applied alternatively: scraping, grinding, and sawing, in order to reach the desired shape. After the shape was complete, incisions were made on the head and limbs of the turtle, depicting eyes, mouth and fingers of the animal (Figs. 5, c, d). These grooves also have a sharp V-shape with an overall fresh appearance. Small unfinished holes were made on the centre of the eyes in order to depict the eye sockets.

All lithic ornaments present evidence of drilling with a massive drill point, producing a biconical perforation. The specific raw material of the drill bit is not clear and may have varied according to the worked material. The chalcedony bead displays thin circular scratches on the walls of perforation, which are evidence of the use of a hard stone drill (Fig. 5, e). The same traces are observed inside the perforations of the serpentinite pendants (Fig. 5, f). The perforation was made in a narrow angle on one end of the bituminous coal artefact by a massive drill in more than two stages, as indicated by the presence of multiple cones. The perforation of slate pendants differed from the others, involving more than one technique (Figs. 5, g, h). The presence of grooves entering the perforation holes indicates that the perforation involved a combination of drilling and sawing, alternated in order to widen and break the hole. Instead of pendants, the circular slate artefacts were probably nose rings. For the production of such pieces, the perforations had to be widened and expanded until the top edge, creating two separate points that could be placed in the nostrils. It is not clear how they would be kept in place. An oval slate pendant (V A 63024) presents two perforations: a broken one, made by drilling and sawing, that would allow the piece to be used in the nose; and a second small hole made by chiselling (Fig. 5, g). Together with the addition of this second perforation, the artefact also had one of its sides reground, in order to gain an oval shape. In this way, the nose ring was recycled into a pendant.

A deep groove was carved between the two perforations on the back of the turtle-shaped pendant; likewise, shallow grooves were made on the top of the perforations towards the shoulders. At least the groove between the holes was made in order to better accommodate a string. This groove is U-shaped, probably due to the wearing caused by the string. Cut marks were also made on top of the rim of perforation of the elongated pendant, probably also with the purpose of guiding a string. The traces are V-shaped and could have been done with a flint-like, hard stone tool.

Polishing is present on the tubular bead (V A 15525), the elongated pendant (V A 14004), and the turtle-shaped pendant (V A 14001). On the latter, polishing can be identified not only on the general surface, but also under the V-shaped notches. The surface was polished after the first set of techniques, partially erasing the scraping traces. Polishing was carried out with a soft material in order to reach small areas and generate a smooth and rounded appearance. For such activity, cotton fabric, plant leaves with a high-silica content, wood and leather could have been used.

Ceramic bead

The sequence of manufacture of a ceramic object differs considerably from that of the objects described thus far, as rather than being an extractive-reductive craft, it is a transformative craft (Miller 2007). The irregular and asymmetrical shape of the bead suggests that a lump of clay was modelled by hand in a rough circular shape. In sequence, a stick of an unknown material was inserted in the middle of the bead successive times and from both sides. After removal of the stick, the excess of clay removed from the inside was pushed and folded to the side, creating a raised area around the holes (Fig. 5, i). This procedure also left a distinctive shape on the inside of the perforations: rather than being one circle, it is composed by two or three circles, impressions of the different times and positions in which the stick was inserted. This also shows that the perforation was not regularized before or after firing. This technique also indicates that at the stage of perforation the clay was not leather hard, but soft enough to be easily removed from the inside and folded. The bead was also burnished, displaying a flat polish on the higher and more pronounced sectors, associated with striations. This was produced by a stone platform after firing.

Use-wear

Traces related to the use of artefacts are formed on top of manufacture-related traces, causing rounding and erasure of the latter. This evidence gives us insight on whether the ornaments have been worn on the body prior to their deposition or whether they were especially produced for placement in a given context, for example, a burial.

Shell ornaments

Polish and rounding on the rim of perforation are the most common types of use-wear traces observed on shell artefacts (26 out of 33 artefacts: 78.7 %); it is caused by the contact of the string of attachment with the rim of perforation (Figs. 6, a–e). It could not be observed on artefacts in which the rim was severely damaged, covered by sediment or by post-excavation features such as on the frog-shaped and disc beads. On a few oc-

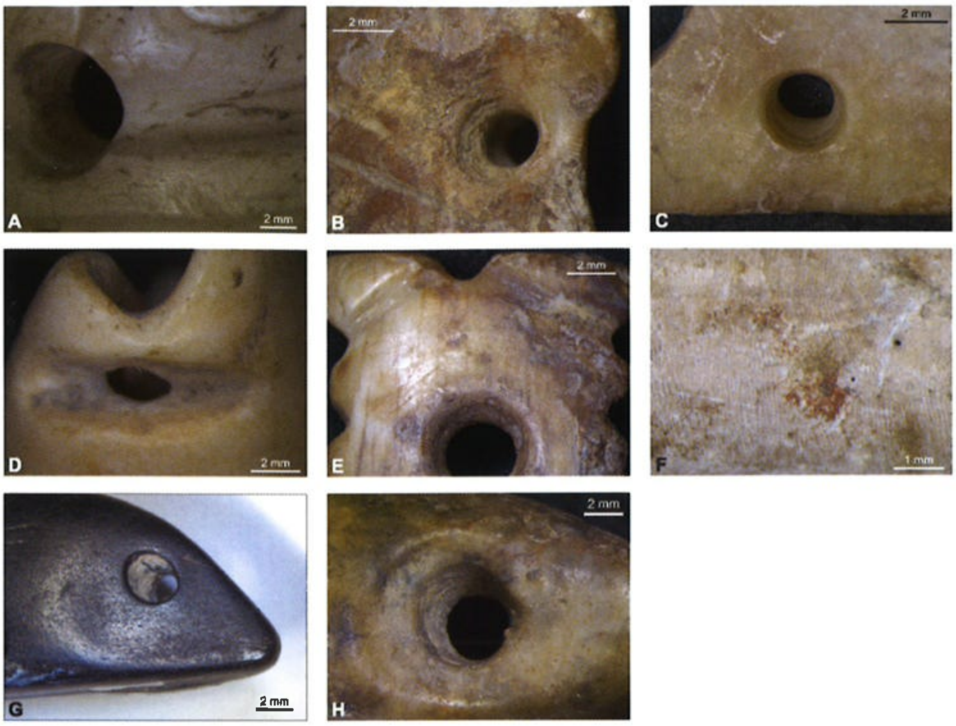

Fig. 6 Use-wear observed on shell (a – f) and lithic (g, h) ornaments. Ethnologisches Museum, Staatliche Museen zu Berlin - Preußischer Kulturbesitz, V A 15425 (a), V A 14018 (b), V A 15431-III (c), V A 15411-VI (d), V A 14021-I (e), V A 15406b (f), V A 14038 (g), and V A 14004 (h). Photos by C. G. Falci

casions, stringing left scratches entering the rim (*n*=3), which were likely caused by the material the strings were made of, such as high-silica plants. Deformation of the rim of perforation, either producing a "sunken", lowered area or deforming it to a particular side was noted on 11 artefacts (33.3 %) (Figs. 6, a, c, d). It was caused by intensive contact between the string and adjacent areas, probably connected to the usage of an ornament for a long period of time. Deformation was clearly observed on the cut-out pendants, which displayed groove-like sunken features on both faces, extending from the perforation to one of the edges of the artefacts (Fig. 6, c). This is indicative of strings being tied on both sides of the pendant. Contact with surfaces, such as the body and clothing, caused a distinctive polish around the edges of artefacts on the non-decorated, concave faces (*n*=8) and on both faces (*n*=10). A large percentage of the assemblage did not display use-wear traces (16; 32.7 %), including the ten pyramid-shaped artefacts which have an overall fresh appearance and do not present perforations. This suggests that the pyramids are likely preforms. A grainy reddish substance, reminiscent of a colouring material such as ochre, was observed on a spot on the face of the tubular bead (Fig. 6, f). The artefact was not subjected to chemical analysis, which prevents any further consideration. This preliminary identification of residue should, therefore, be regarded with caution, as it could be from the soil or from post-excavation processes.

Lithic ornaments

All lithic ornaments have evidence of being worn. Polish and rounding on the rim of perforation were observed on 72.7 % of these artefacts (Figs. 6, g, h). Scratches entering the perforation were observed on two artefacts, namely the turtle-shaped and a rectangular pendant. The disposition of polish suggests that a string linked the perforations on both faces of the serpentinite pendant and also linked them with the edge of the artefact.

One of the broken serpentinite pendants (V A 63025) has remains of a grainy red substance, similar to ochre. However, these remains have not been subjected to chemical analysis. Some scratches were observed on the rim of perforation of the bituminous coal pendant, which may have been caused by stringing with a metal wire in the museum; other scratches, associated with polish and rounding, are more likely related to the use of string in the pre-Colonial period. Deformation of the rim by continuous wear was also noted on the turtle-shaped, the elongated and the bituminous coal pendants. For the latter two, a broader deformation of the perforation area was caused by the presence of small beads or knots attached in contact with the pendants. It was difficult to observe and interpret potential use-wear traces on the slate artefacts due to the foliation of the material. One slate nose ring displays polish on a pointed area of its top, which could be associated to contact with the interior of a nose.

Ceramic bead

The rim of perforation presents rounding and polish, which suggests that the bead was used. The use-wear is not extensive and the different grooves made by the insertion of the stick to create the perforation are still clearly distinguishable. Immediately below the rim, inside the perforation, it is possible to note polish and rounding. This may have been caused by the presence of a small knot or bead, entering the perforation.

Discussion

The systematic analysis of the Jahn collection has allowed us to perceive patterns and recurrences in the production of both shell and lithic ornaments. Standardization seems to have been present in the making of ornaments. For instance, shell working is clearly part of a technological system: artefacts were transformed in similar ways, using a restricted set of techniques to produce a standardized repertoire of shapes. The animals and the specific ways in which they were depicted (i.e. stylization of specific anatomical features and decorative motifs) are recurrent in the assemblages. The same techniques used to craft shell were used for the stone turtle: not only general techniques normally used for bead making (such as drilling and grinding), but a similar sequence. In general, the skill level in shell working is relatively high and the same can be argued for the stone turtle. The makers' skill levels and choices can be perceived in the variability between specimens of a same ornament type. Biomorphic artefacts are the primary examples of high skill in crafting, but the low presence of technical errors in other ornament types also attests a high technological achievement. Small variations such as lack of care in erasing traces left from previous operations or misplaced cut marks can also be noted in many artefacts. Therefore, whereas the shaping stage is recurrently made with high skill, the same technological investment is not always observed for the decoration. Poorly placed and/or superficial incisions on the anthropomorphic (V A 14014) and on the frog-shaped beads (V A 14021-I–V) are examples of lack of care in the decoration. However, in terms of the conceptualization of the ornaments, it does not seem to make sense to separate the "purely decorative" motifs on the centre of the bodies from those that mark anatomical features (*e.g.*, fingers, eyes and mouth). Not only are the techniques and tools used for both motifs the same, but also the decorative patterns often occupy places where the animal species that inspired them have their own corporeal patterns. In this sense, they are also anatomical features. The incised cross-hatched and punctuation motif is often depicted on ceramic zoomorphic and anthropomorphic figurines found in the Valencia Lake Basin (Antczak 2000).

Limited information is available regarding the depositional contexts of the studied materials from the Valencia Lake Basin. According to Jahn (1903), many ornaments come from burial contexts (19; 31,14 % of 61 artefacts). There are at least four different burial contexts: a burial at Los Cerritos, an urn burial in Camburito Mound 8, another (non-specified) burial in Camburito, and an urn burial from Hacienda Mariara. With the exception of the urn burials, it is not known whether the denomination burial refers to single contexts or to more than one burial in each site. There is little bioarchaeological information for the burials excavated by Jahn. It is known, for instance, that two infant urn burials were excavated, accompanied by ceramic vessels: one from El Zamuro and another from Camburito (Antczak 2000: 214). Ornaments were not found in these burials. A monkey burial was also excavated by Jahn, containing shell ornaments around its neck (Antczak 1999). It is not known whether any of the components of this "necklace" were analyzed here.

The pyramid-shaped artefacts analyzed in this research came from the urn burial at Camburito Mound 8, from which 203 specimens were recovered (Antczak 2000). These artefacts can be grouped according to size: one larger, two medium, 199 small and one even smaller. In this research, only 4,92 % of the total was studied (n=10), all part of the medium and small groups. The consistent variation in sizes may be evidence that they were used in a composition of inlayed pieces, structured around the size difference. If they were inlays, the apex of the pyramids was likely inserted in previously cut areas in a larger artefact made of perishable material. However, only one pyramid displayed possible evidence of use, while the other specimens are fresh, which may indicate they were preforms. It is not clear why such pieces were placed in a burial or if they were originally attached to a larger artefact. The other urn burial was recovered from the Hacienda Mariara, on the northern shore of the lake; however, none of the analyzed artefacts come from this context.

Another group of artefacts was recovered from a burial context in Los Cerritos, on the eastern shore of Lake Valencia. This includes many biomorphic shell ornaments analyzed here: the stone and shell turtle-shaped, the armadillo-shaped, the anthropomorphic, and the triangular pendants. However, it is not clear if they belonged to the same burial. All of them demand considerable skill and time-input to be produced. If all pendants belong to the same context, it may suggest the burial of an important individual. Most ornaments display considerable evidence of use-wear (medium and highly used). The systems of attachment of the figurative shell ornaments have been discussed elsewhere (Falci et al., 2017). While the biomorphic pendants can be grouped together in relation to the position of perforations, production sequences and representational character, they were generally strung in different ways. For instance, there are differences between the systems of attachment of the two turtle-shaped ornaments. The shell turtle (V A 14018) would be attached by a simple string, with knots on the sides (Falci et al., 2017). On its turn, the distribution of use-wear polish on the stone turtle (V A 14001) is more complex and does not appear to be coherent with a single system of attachment. Therefore, the stone turtle may have been attached more than once during its life and in different ways. Pendants with two perforations, such as the turtles and the armadillo (V A 14017), were probably meant to have a complex attachment system, associated to a central position in a composite ornament. The use-wear evidence does not suggest that the artefacts were just hanging on a necklace; rather, they were probably attached to woven bands, either for the head, arm, neck, or waist (Falci et al., 2017). However, two figurative pendants from this context do not present evidence of wear: the armadillo-shaped and the anthropomorphic ones (V A 14014). The lack of use-wear and their deposition in a burial suggest that they were produced with this single purpose. A serpentinite rectangular pendant (V A 14002) also came from this burial in Los Cerritos. The use-wear on the studied serpentinite pendants suggests that they were not attached on a surface, but were hanging. Strings would have connected the two perforations on both faces and would go up, towards the edge of the artefact. Vargas Arenas and colleagues (1997: 144–145) postulated this as one of the possible attachment systems of the shell bat-wing pendants.

The frog-shaped beads were collected from Los Cerritos as well, from a group of 11 similar specimens. They probably belonged to the same composite ornament, potentially attached to a surface. However, the studied specimens do not present secure evidence of wear. Some specimens show limited polish around the rim of perforation, but these areas of the beads are generally eroded. There is, nevertheless, polish along the edge of the concave (back) face of the beads. This polish may be evidence that when in use, the artefacts laid against a surface. This could be the surface of an object, a fabric or the body. Their interpretation as inlays may be correct, but there is not sufficient evidence for such a claim.

Other six ornaments can be generally assigned to El Zamuro/Camburito sites. The three automorphic pendants studied here are among the artefacts attributed to either of the sites. In the EMB, they were stored together with a group of 21 shell fragments. Other four tubular beads of chalcedony were also found, suggesting that the one analyzed here, which is heavily worn, was used in association to beads of the same raw material and type. The bivalve-shaped pendant (V A 15522) was also generally attributed to both sites. A similar specimen is depicted in Jahn's manuscript (1903), with another artefact glued to its top, in the position where the perforation and the top notch are placed (Fig. 7, a). Jahn (1903: 3) states that the resulting composite artefact depicted a bird, probably a *guacamaya*. He also notes the presence of a second specimen without the top piece and with unfinished perforations, which he interprets as a preform. It is possible that the second piece was the studied shell-shaped pendant (Fig. 7, b), as it displays two unfinished perforations (here interpreted as decorative). Jahn also mentions a not-yet attached head, which appears to depict a *zamuro* (*Sarcoramphus papa*). However, without the presence of this head, this interpretation remains speculative. In addition, the use-wear data goes contrary to this interpretation: the studied pendant presents use-wear characteristic of string wear and there is no evidence for the presence of another shell artefact or glue attached to its top (Fig. 7, c).

From the El Zamuro site, a ceramic pipe bowl (V A 15406a) was recovered next to the *Lobatus gigas* tubular bead (V A 15406b). It has been suggested that the bead was in fact a pipe stem. It is indeed different from tubular beads recovered from other sites in the Valencia Lake Basin. It is also possible that the artefact was originally used as a bead and later reused as a pipe stem. However, use-wear evidence for the use as a pipe stem has not been recognized. In addition, the bowl and stem in pottery pipes were generally made as a single piece and not as two separate artefacts. The owl-shaped pendant (V A 15425) was also from El Zamuro, but there is no further information available on its context of recovery. It presented considerable use-wear on opposite sides of the perforation on both faces, suggesting that strings were attached there (Falci et al., 2017).

The 16 tinklers were recovered from El Zamuro, probably in association to each other. It is not clear if they were strung together during their use lives, as they present different degrees of wear. The analyzed specimens often present polish around the rim of perforation and general rounded aspect, but only a few specimens display deformation on the rim, suggesting the presence of a string from which the artefact would hang. Seven knob-shaped pendants were also found in this site; three of which were analyzed. The studied knob-shaped pendants present clear evidence of a system of attachment. They were kept in place by two or three strings attaching the pendant to a band. As they are generally found in large numbers in Lake Valencia contexts, they were probably strung next to others of the same type, although not in direct contact.

No evidence is available for other 18 ornaments regarding their contexts of deposition, such as the axe-shaped, the bituminous coal and the elongated stone pendants, or the ceramic bead. Necklaces were assembled in the Valencia Lake Basin with beads and

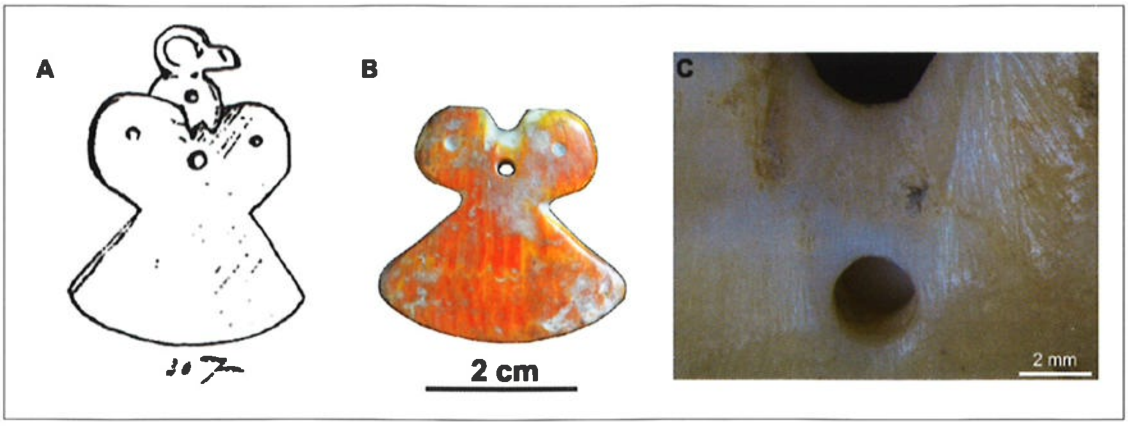

Fig. 7 a) Alfredo Jahn's drawing of a composite ornament found in an earthen mound at a depth of 1.35 m in Camburito site. It was found inside or below a human skull together with several other body ornaments made of stone, shell, bituminous coal, and metal. Accordingly, the upper part, a head of a bat of bituminous coal (*azabache*) was glued to a lower part of reddish-yellowish shell depicting a macaw (*guacamaya*) (Jahn 1903: 3);

b) the studied pendant, and c) the use-wear observed on its perforation. Ethnologisches Museum, Staatliche Museen zu Berlin – Preußischer Kulturbesitz, V A 15522 (b, c). Photos by C. G. Falci

pendants of varied raw materials and, therefore, of diverse origins. The ornaments were evidence of the wide ranging networks of contact and exchange established by the inhabitants of the Valencia Lake Basin. In this sense, they may have displayed the capacity of the wearer to maintain relations with faraway peoples and domesticating these potencies in order to produce local identity. The production of ornaments thus took place in both local and regional scales. The individual beads and pendants discussed here are only part of this process: their biographies are always shared with those of other things and humans.

Conclusion

The study conducted in this paper allowed us to recognize the presence of a craft tradition in north-central Venezuela between AD 900 and 1500 focused on the production of shell bodily ornaments. This tradition could be identified by the existence of homogenous production sequences, techniques, gestures and toolkits that were used in the manufacture of adornments currently present in the Ethnologisches Museum in Berlin. The evidence brought to light in this study also suggests the existence of high skill levels and technological investment, which may be related to craft specialization. Despite the difference in raw materials and in shape of the final products, the production of the figurative adornments was carried out in a similar way, whether they were made of marine shells (*L. gigas* or *S. americanus*) or stone. Such a similarity in the production sequences is indicative of a local production of an important part of the analyzed specimens. This would indicate that many adornments were crafted by Valencia culture bearers.

The information on the contexts of deposition indicates that several adornments came from funerary contexts. At the same time, the use-wear analysis suggests that only two figurative pendants may have been produced with the single purpose of being deposited in a burial. All the remaining ornaments present use-related traces, having been suspended in necklaces or incorporated to woven arm or thigh bands, before being purposefully deposited or discarded. The finding of certain adornments types such as the tinklers, knob-pendants, frog-shaped beads, and the chalcedony bead within a single depositional context may suggest that artefacts of a same type might not only have been deposited together, but also could have been worn and circulated in groups of morphologically similar complements. It is not possible to state the same about the category of figurative adornments, as their depositional data is limited and, therefore, we do not know which of them come from the same burial or whether there were other adornments associated to them. As highlighted by Falci et al. (2017), the figurative adornments were most probably attached to woven bands, rather than just hung on necklaces.

Raw materials used in the production of the adornments indicate networks of exchange that stretched beyond the diverse surroundings of the Lake Valencia Basin and the mountains that separate it from the Caribbean coastal bays. Abundance of adornments made out of marine shells indicates networks of connection between the basin and the distant offshore islands to the north (M. M. Antczak and A. T. Antczak 2008). Moreover, the Valencioid exchange networks were most probably reaching the Venezuelan Andes where the serpentinite materials might have been obtained. Still farther west, towards today's Colombian Sierra Nevada de Santa Marta, lie the territories from where metal nose rings might have been coming into the Lake Valencia Basin (A. T. Antczak et al. 2015).

This study also poses new questions for the understanding of body ornamentation among the Valencia culture bearers. Sample limitations in the present collection prevent us from further addressing the type and degree of craft standardization and specialization in the region. Likewise, the existence of specialization in a given craft does not imply the existence of part- or full-time specialists. The study of other ornament collections from the Valencia Lake Basin, as well as of toolkits and workshop contexts would help shed light on such issues. Continuing research will allow us not only to better characterize this tradition of making body ornaments, but also to assess how it evolved from a technological and culture-historical point of view: in deep time perspective, how does this Valencioid tradition relate to its local predecessor, the Central Barrancoid culture? How can it be understood in the light of the purported Middle Orinoco origin of the Valencioid culture bearers (see A. T. Antczak et al. 2017)? How does this tradition relate to the assemblages of body adornments crafted by the Valencioid neighbours, especially the Ocumaroid and Dabajuroid culture bearers (see Sýkora 2006)? Other questions pertain more directly to the meaning of the ornaments, such as whether their production and use was restricted to specific age, gender, or ethnic groups. While more data on Valencioid sites and burial contexts will provide evidence on the relation between social identities and body ornamentation, a systematic study of the indigenous narratives and uses described in ethnohistoric and ethnographic sources will also allow us to gain insights on the use and conceptualization of ornaments and the body among the indigenous populations of the region.

As we demonstrate in this paper, the study of early museum collections can provide valuable information about the biographies of objects, especially when accompanied by the biographical research of the collections as a whole. Apart from the objects discussed in this paper, hundreds of other body ornaments from the Valencia Lake Basin are held in public museum collections in Venezuela (in Caracas, Maracay, and Valencia) and abroad (in Paris, Washington D.C., New York, New Haven CT, Cambridge MA, and Rio de Janeiro) (Díaz Peña 2004; M. M. Antczak and A. T. Antczak 2006). Many other items are also held in private collections in Venezuela and elsewhere. While we have already inventoried and examined the majority of these collections, a few of them still await systematic examination (M. M. Antczak and A. T. Antczak 2006). Therefore, new collection research coupled with microwear studies may confirm or disapprove some of the phenomena discussed in this paper. Likewise, it is also expected that future systematic excavations will provide new material, as well as sound depositional data and absolute dating that would allow us a better understanding of the social roles of indigenous bodily ornaments from north-central Venezuela and their distant interconnections.

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