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Benjamin Carter

Matthew Helmer

ELITE DRESS AND REGIONAL IDENTITY: CHIMÚ-INKA PERFORATED ORNAMENTS FROM SAMANCO, NEPEÑA VALLEY, COASTAL PERU

Benjamin Carter and Matthew Helmer

This article addresses two central components of the study of perforated ornaments recovered from archaeological contexts: 1) the explication and analysis of the relationship between perforated ornaments and identity production, and 2) the collection of data specific to perforated ornaments. By comparing perforated ornaments from the Chimú-Inka period (ca. 1470-1532) elite tomb at Samanco, Peru, to those from other sites, patterns in the use of perforated ornaments in identity negotiation may be identified and assessed. We demonstrate that perforated ornaments were deployed to demonstrate local, regional, and imperial identities, though in an ambiguous way that could have been mis- or reinterpreted. Although a central component of the assessment of identity negotiation involves comparison with perforated ornaments from other sites, this study is limited because they are rarely described in detail. In an effort to remedy this situation, we provide detailed methods and results as baselines for future comparison.

INTRODUCTION

Perforated ornaments, including beads and pendants, were central to the creation of social identity in societies throughout the world in the past and into the present (e.g., Sciama and Eicher 1998). The use of ornaments to adorn and characterize the self are arguably central to what it means to be human and their initial appearance may coincide with the development of the modern mind (e.g., White 1993; Zilhão 2007). As with all clothing and ornamentation, they are employed to modify the human body, establishing and negotiating identities that unify or distinguish through the creation of communities. These can be geographic; people within a certain area – whether a village, city, valley, or region – share similar ornament repertoires, allowing one to immediately recognize another as belonging. Or they can be gendered; certain materials and types of ornaments, or how they are situated, engender the body (e.g., Gassón 2000; Malinowski 1922; Meisch 1998; Sciama and Eicher 1998). In hierarchical societies, some forms of ornamentation, in kind, degree, or quantity, may be worn only by those in power and others may be restricted to those with little power. ThesFiguree communities intermingle in time and space. People across extensive regions may share the same set of materials, but deploy them uniquely to situate themselves within local communities, genders, and hierarchies. Those in power tend to use their increased access to resources to acquire more, larger, or more valuable ornaments.

Yet, perforated ornaments have infrequently been studied with identity production in mind and are rarely central components of archaeological analysis. Beads and pendants are often relegated to the "specials" categories and are seldom fully documented (*see*, however, Allen et al. 1997; Blick et al. 2010; Cabada 1989; Carter 2008; Masucci 1995; Moore and Vilchez 2015). While many report material and/or color in a general manner and may provide a minimal description of perforated ornaments, rarely are they more fully documented and analyzed. Currently the literature on perforated ornaments represents only a tiny fraction of the archaeological and ethnographic occurrence of these objects. The perforated ornaments recovered from an elite Chimú-Inka tomb at Samanco, Peru, present an ideal opportunity to demonstrate the value of in-depth quantitative and qualitative analysis of perforated ornaments with the goal of establishing how these objects were employed in the negotiation of identity.

The tomb at Samanco in the Nepeña Valley contained over 3,000 perforated ornaments along with the remains of four individuals from the Chimú-Inka period. In A.D. 1470, the highland Inka conquered the Chimú, an empire that was only a century old. The elites within this tomb operated within the Inka Empire, but their ancestors had worked within the Chimú Empire. An increasing body of literature demonstrates that local leaders, even though archaeologists have labeled them the Chimú-Inka, both participated in and actively resisted the hegemony of the Inka Empire (López-Hurtado and Nesbitt 2010; Mackey 2011). Mackey (2011) argues that, in the Jequetepeque Valley to the north of Chan

Chan, the Inka actively engaged local lords, cutting the Chimú lords, who had ruled the valley for more than 100 years, out of administration. Similar arrangements appear to have been established to the south among the Chincha as well (Nigra et al. 2014; Rostworowski de Díez Canseco 1970). Local lords appear to have utilized imperial material goods such as the aryballo, a specifically Inka form of ceramic, but in a hybrid variety that physically connected local concepts of ceramics with those of the empire (Costin 2015; Hayashida and Guzmán 2015; Mackey 2011). These people, who likely were neither Inka nor Chimú, have been labeled the Chimú-Inka, largely based on similarities to ceramics from the Inka and Chimú heartlands.

The elite burials at Samanco suggest a similar hybridity. Perforated ornaments reflect materials and types of ornaments with deep histories on the coast, but are also ambiguous enough so as to allow the wearer to visually claim connection to the imperial Inka. This article demonstrates the value of archaeologically recovered personal ornamentation in addressing questions of ethnic identity. It is, however, limited by comparative material from other sites as relatively few perforated ornaments have been published in any detail. Therefore, this article also presents data that can be used in future studies of perforated ornaments in South America and elsewhere. Similarly, because relatively few studies have explicated their methods, we describe and discuss how and why data were collected.

ANDEAN MARITIME SOCIETY AT SAMANCO

The arid coastal Andes have facilitated complex societies for over 5,000 years, fueled by a rich sea biomass and an array of cultigens. Bead use for adornment has been documented at least as far back as 2500 B.C. (Shady Solís 2006:58; *see also* Aldenderfer et al. 2008), a testament to the prominence of beads in Andean society. As Gassón (2000:583) notes, beads are particularly salient through their economic value and labor cost, and are therefore important indicators of socio-political processes. In the coastal Andes, beads and other adornments were a part of long-distance exchange systems that formed the basis of prestige economies (e.g., Burger 2008; Burger et al. 2002; Goldstein 2000; Marcos 1977; Paulsen 1974). Beadmaking and use eventually evolved into highly industrialized commodities aimed at the high-ranking members of society who are the focus of this article.

Early Andean societies focused corporate efforts on ceremonial temples until the 1st millennium B.C., or Early Horizon, when urbanization began to spread. Samanco, located in the small river valley of Nepeña on the north-central coast of Peru (Figure 1), developed as an important maritime trading town at this time. In 2012 and 2013, Matthew Helmer and Jeisen Navarro Vega directed 16 weeks of excavations at Samanco to analyze urban transformations associated with maritime lifeways (Helmer 2015; Helmer and Chicoine 2015; Navarro and Helmer 2013, 2014). This article addresses the beads recovered from an intrusive tomb associated with a re-occupation of the site some 1,500 years after its abandonment. The objects date to the Provincial Inka era of coastal imperial conquest during the 14th and 15th centuries.

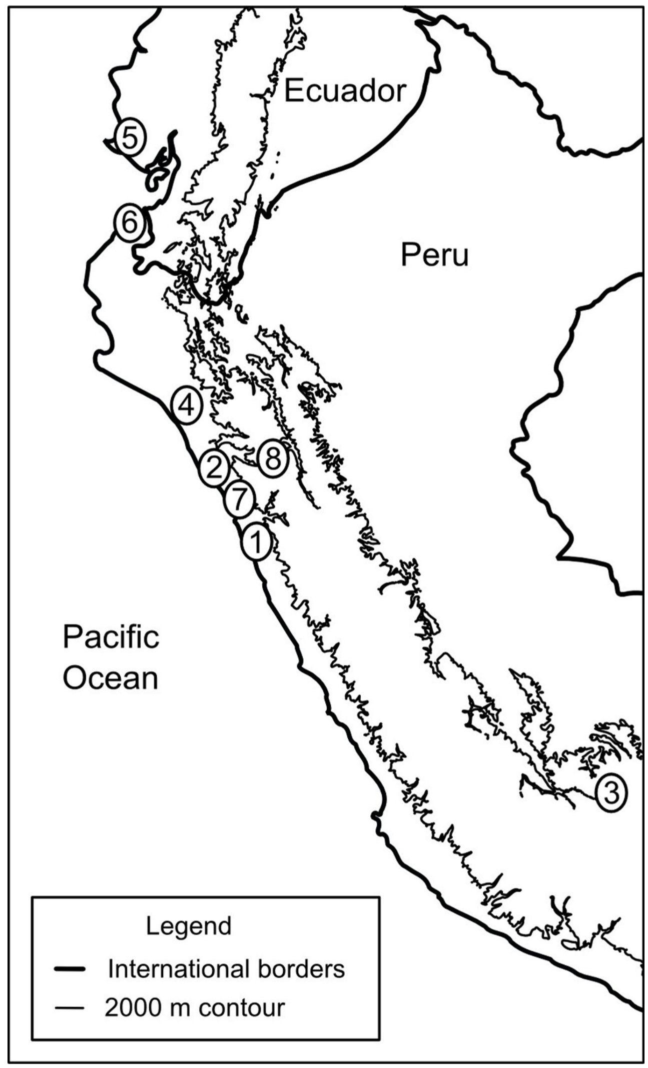

Figure 1. Map showing the location of sites mentioned in text: 1) Samanco, Nepeña Valley, Casma Valley, Huacatambo, and Manchan; 2) Chan Chan and Huacas de Moche; 3) Cuzco; 4) Huaca Loro, Pampa Grande, La Viña, and Sipán; 5) Loma de los Cangrejitos and López Viejo; 6) Cabeza de Vaca; 7) Jequetepeque Valley; and 8) Marcahuamachuco (base map from Wikipedia, shared under Creative Commons CC0 license, modified by Benjamin Carter).

The Samanco site is spread over some 40 hectares along the northern margins of the Nepeña Valley. The site was documented by early surveys (Daggett 1984:218, 1987:74, 1999:3-4; Horkheimer 1965:29; Kosok 1965:209; Proulx 1968:46-50). Helmer's project was the first to systematically map and excavate the site (Figure 2). Samanco is organized into stone-walled residential compounds dated to the 1st millennium B.C. (Helmer and Chicoine 2015). Samanco's ruins saw a rich pattern of mortuary reuse that constitutes the basis of this study.

Over the course of fieldwork, a number of mud-brick structures were documented that did not fit Samanco's typical pattern of stone-walled compounds associated with domestic refuse. At least four massive craters, some over 10 m across, were recorded with mud bricks (adobes) not associated with the early occupation. It became evident that the craters were probably intrusive structures from a post-abandonment occupation. Elsewhere at Samanco, the team knew of commoner burials of the later Casma Culture (A.D. 1000-1400) placed within the ruins of earlier architecture. They hypothesized possible looted funerary structures associated with the craters and completely excavated the largest crater located in the northern extent of the site. This crater corresponded with a rich subterranean multi-structure tomb (Figure 3) which yielded the beads discussed herein.

Tomb recovery involved the initial clearing of post-abandonment sand and debris to reveal associated architecture followed by systematic excavation. Initial cleaning revealed a 6x4-m platform structure at the north end that probably served as the tomb's entrance. Nearly 5 m of sand and rubble lay atop the subterranean tomb structures. Three interior chambers were discovered that measured approximately 2x4 m each and were 1.7 m deep. They had white painted adobe walls and were filled with grave goods. The central chamber had been looted and appears to have held the principal occupants. This chamber was characterized by a megalith placed in the center, either as a table to hold offerings or as a pedestal on which to place the bodies. Each side chamber was undisturbed and held a cache of offerings, as well as sacrificed human and animal attendants placed to accompany the central chamber occupants. At least four individuals were located in the central chamber. Helmer (2015) believes they were elite musicians and weavers, suggested by the wealth of musical and weaving goods found in the central chamber. Based on these items, Carol Mackey (2015: pers. comm.) suggests that the deceased may have been women. Preliminary skeletal analysis indicates that multiple individuals were female, but further study is needed. Analysis of the diverse tomb contents is ongoing.

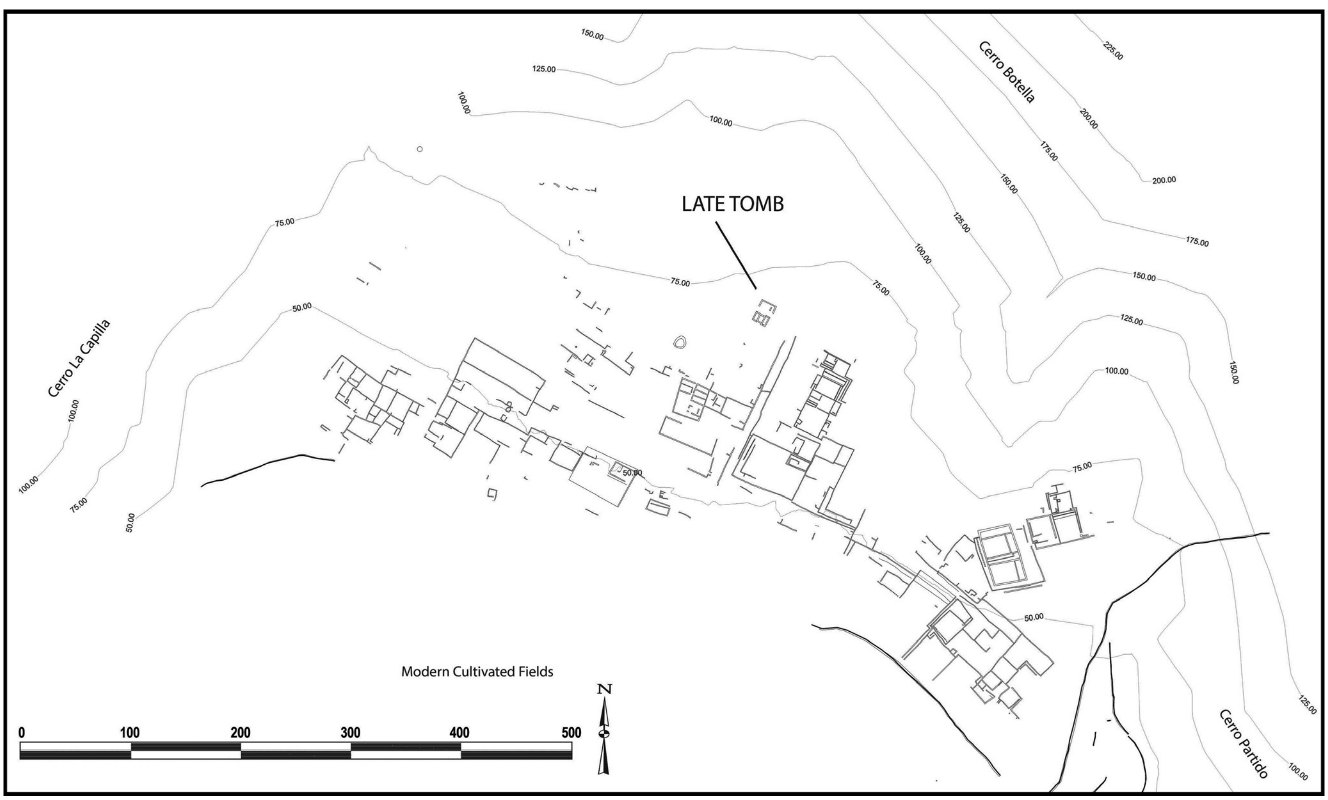

Figure 2. The location of the Chimú-Inka tomb at Samanco (drawing by Matthew Helmer).

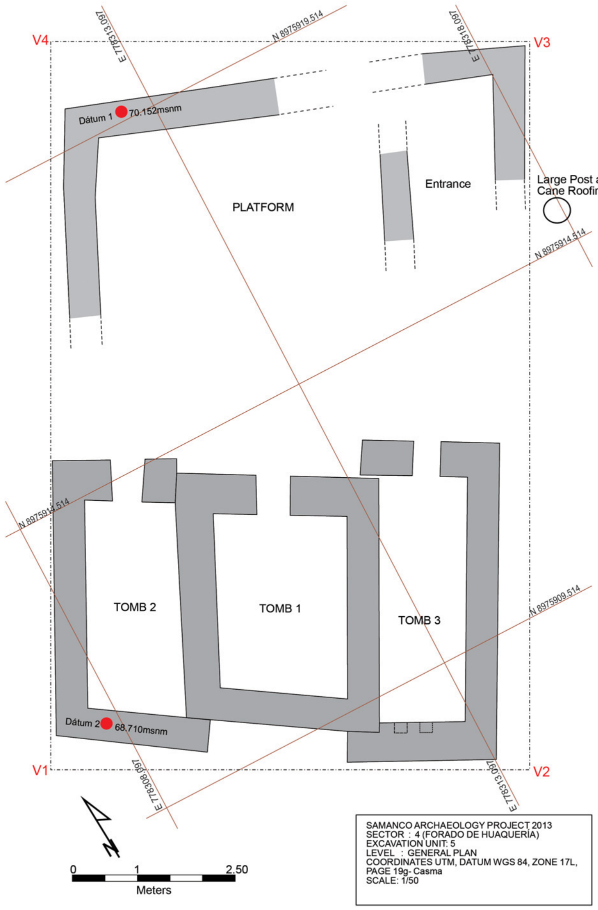

Figure 3. The placement of the tombs (drawing by Matthew Helmer).

All the perforated ornaments were recovered from the central chamber, signifying their close association with the principal elite occupants. The ornaments were meticulously recovered through 1-mm-mesh sieving. They were mixed in the disturbed sub-soil with other grave goods and did not occur in distinct features. They were all disassociated from their original arrangements, but were more heavily concentrated toward the base of the tomb and spread across the floor, suggesting little disturbance from their original contexts. Beads and pendants were most heavily concentrated around human bones and textile fragments, confirming their use as personal adornment for the deceased.

The grave goods indicate a cultural association with the Chimú-Inka era of coastal Andean society just prior to European contact. Examples include the emblematic Chimú blackware molded stirrup-spout bottles mixed with Inka style aryballo jars found in the tomb (Figure 4). From their growing adobe city of Chan Chan, the Chimú established themselves as one of the great empires of the Andes in the mid-14th century. The heart of Chan Chan, a city of approximately 20 sq. km, contained 10 royal compounds (Moore and Mackey 2008; Rowe 1948). These compounds, or *cuidadelas* (small cities), were sequentially occupied by a powerful ruler, his family, and associated nobles. Each cuidadela was ca. 6-20 hectares in size and contained hundreds of rooms in a formalized tripartite layout to which access was greatly restricted (Day 1982). From this city, the Chimú marched their armies north and south along the coast, conquering the people of coastal valleys and exerting significant influence from modern-day Tumbes to Lima, a distance of more than 1,000 km (Moore and Mackey 2008). They established administrative centers in nearby valleys that were used to extract goods and labor from the local population (Mackey 2011; Mackey and Klymyshyn 1990). Chan Chan developed into a metropolis of approximately 40,000 residents (Moore and Mackey 2008). The empire was short-lived, however. By 1470, the Chimú Empire had fallen to the highland Inka who proceeded to decapitate the coastal empire by razing and plundering Chan Chan and carrying leaders and their families off to their capital at Cuzco to be re-educated. Many lower-level local (i.e., non-Chimú) leaders were, however, allowed to retain their positions, now in the service of the Inka Empire, not the Chimú.

The area around Samanco was part of the southern sphere of the Chimú Empire, overseen by the provincial city of Manchan in the neighboring Casma Valley (Mackey 1987; Mackey and Klymyshyn 1990; Moore 1981; Moore and Mackey 2008) and the smaller Nepeña outpost of Huacatambo (Proulx 1968:125-126). By 1470, the Inka Empire had conquered the Chimú through much resistance, but appear to have kept local lords in power (Moore and Mackey 2008:801). The identity of these lords and the materials associated with them is still not well known.

ANALYZING LORDLY DRESS AT SAMANCO

The elite within the Samanco tomb were interred with a spectacular and diverse range of perforated ornaments. The richness of this tomb makes it ideal for study. Not only can the varieties and quantities of ornaments be analyzed, but the large sample size of many types of perforated artifacts means that measurements could be collected and descriptive statistics presented. Both quantitative and qualitative data reveal complex and negotiated identity of the local elite.

A total of 3,583 perforated ornaments are the subject of this study (Figure 5). The artifacts were individually cataloged with the exception of tiny shell beads which were subsampled and degraded plaques which were counted but not otherwise assessed. The objects were measured using a

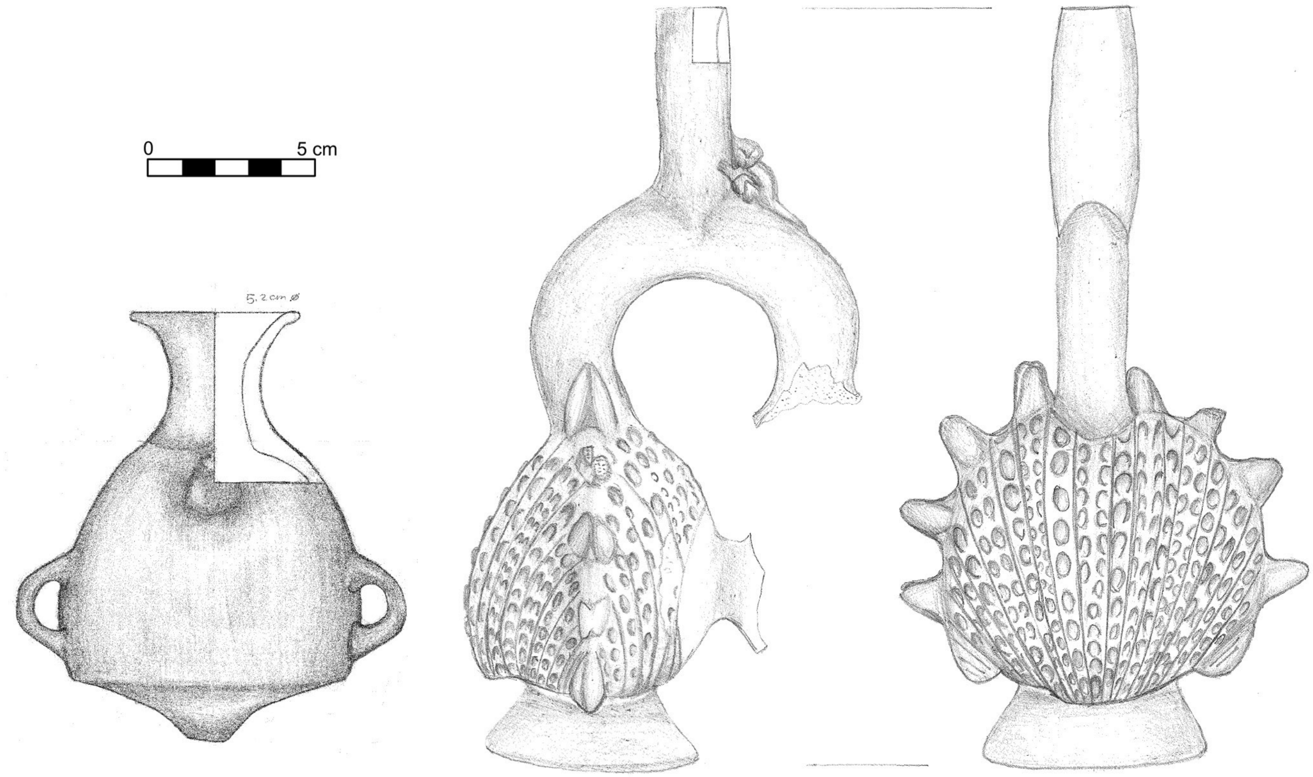

Figure 4. Chimú-Inka vessels from Samanco including an aryballo and a stirrup-spout bottle in the form of a Spondylus (drawing by Matthew Helmer).

Mitutoyo Digimatic six-inch digital caliper (Model CD-6”C) attached directly to a PC laptop using a Mitutoyo USB Input Tool (06ADV380C). These tools minimize error associated with the transcription of hand-written to digital data. Coloration, material, form, perforation form, production marks, and use wear were assessed using a handheld lens and a PC-connected DinoLite digital microscope (413T) with 20x-230x magnification via Dinocapture 2.0. Photographs were collected using a Canon SX 50-HS digital camera. All photographs included a scale and, therefore, when necessary (e.g., for strung beads) measurements could be taken from the photos calibrated using ImageJ, an open source program for digital calibration and measurement.

Beads

Beads were the most numerous artifact encountered with the burials, attesting to their cultural significance for the Chimú-Inka dead. As an artifact category, beads are centrally and/or longitudinally perforated artifacts used for decoration and, while they tend to be cylindrical or spherical, there are many possible forms (for greater detail, *see* Beck 1928; Dubin 2009:362-363). Beads were measured and categorized according to color, form, and form of the perforation (Figure 6). Evidence of production and use wear was also recorded (Allen et al. 1997; Carter 2008; Masucci 1995). A total of 3,357 beads were sampled, including 3,256 chaquiras (small beads), 83 large beads, 7 organic beads, 6 copper beads, 3 *torteros* (spindle whorls), 1 ceramic spacer bead, and 1 possible ceramic bead (Figure 7). Each type of bead required slightly different analytical protocols.

Because they are both numerous and relatively standardized, once separated by color and counted, unstrung chaquiras were subsampled. A representative sample of 20% of each color, rounded to the nearest ten, was selected. Any subsample that contained less than 40 beads was increased to 40 or, if n < 40, fully analyzed. A total of 706 chaquiras (21.9%) were fully analyzed (Table 1).

For all beads, at least three dimensions were measured: diameter; length (the distance between the two faces which, for cylindrical beads especially, may be called thickness; e.g., Carter 2008); and exterior perforation diameter (Figure 8); Tables 1-2). For chaquira, each bead was measured once. Measurements were doubled for the larger, more variable beads (Table 2; cf., Carter 2008:295-297). Strung chaquira could not be measured with calipers because they adhered to one another and the preserved organic fibers (Figure 9). Photographs and scaled photomicrographs were calibrated

Figure 5. All the perforated ornaments from the Chimú-Inka tomb at Samanco (photo by Matthew Helmer).

and measured with ImageJ. Chaquiras of stone and shell are very similar in size (Table 1); although not statistically significant, stone beads are a bit smaller than those of shell. Large beads are significantly bigger (Table 2).

Chimú-Inka elite employed diverse colors to ornament their bodies that provide grounds for classification and identification of the raw material. Chaquiras are the most diverse beads in terms of color with the following being recorded: black, translucent brown, dark opaque brown, green, reddish orange, white, red, pink, purple, and dark. Differentiating the first five colors is easy because these beads are made of different types of stone and, therefore, texture aids in classification. Texture is less useful for shell beads which are categorized according to color only. This necessitates additional explication. "White" beads range from brilliant white to light gray to light tan; all other colors are absent. "Red" beads include bright red, reddish orange, or reddish purple, but frequently contain some, and often much, white as well. "Pink" beads are white with muted pink streaks. Though not initially employed, "purple" was added for one bead that lacked any red. Beads categorized as "dark" are a muted gray to grayish brown, likely due to deterioration. They tend to be chalky and more fragile than the other shell beads.

Due to differences in material, large beads were separated using slightly different color categories. While a wide variety of colors were recorded initially, because certain colors are clearly from the same material and are difficult to separate analytically, they have been aggregated. These color categories include blue (including deep blue, gray blue, and dark gray blue), brown (translucent brown and dark opaque brown), turquoise (mottled turquoise, mottled bright green, and dark gray green) and translucent (includes pale translucent purple and pale translucent tan).

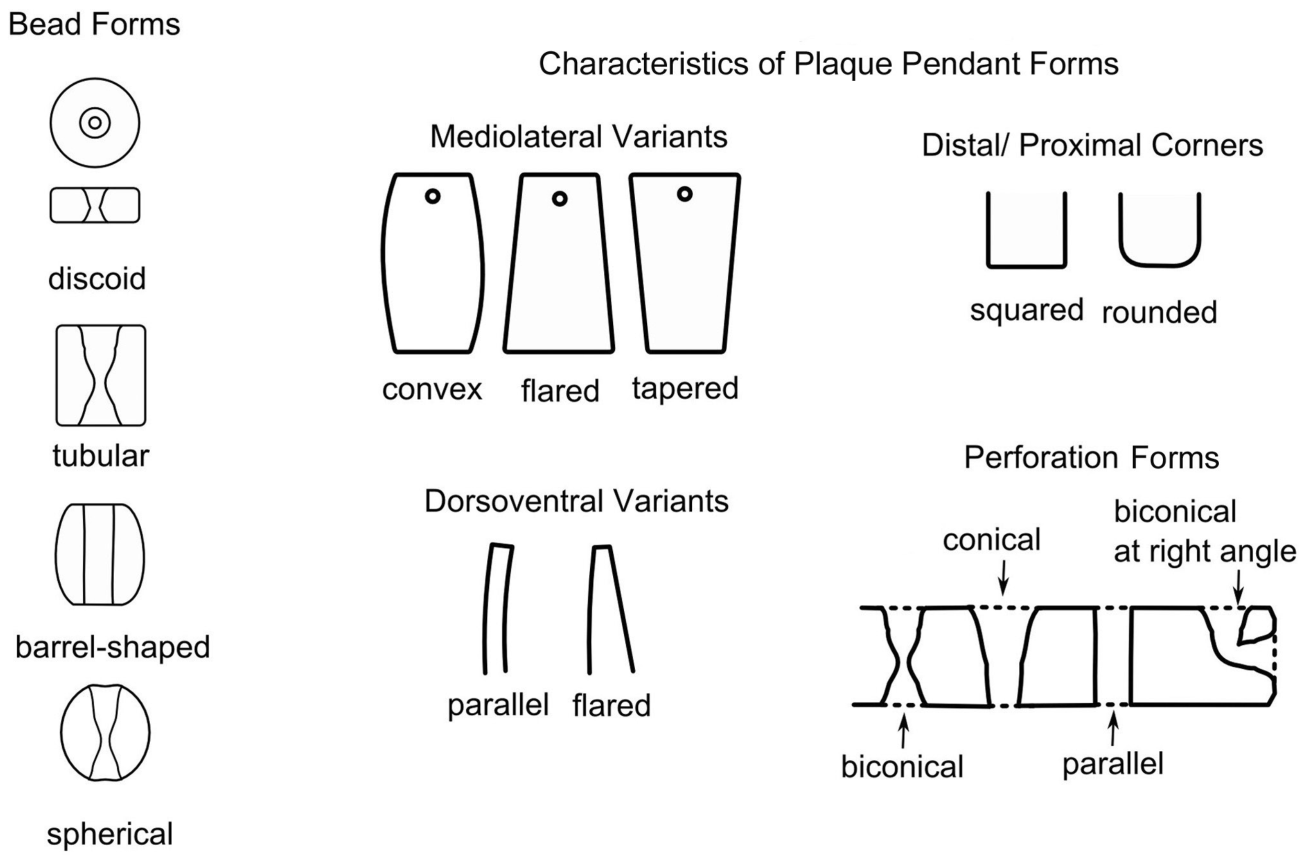

Figure 6. Bead forms and plaque pendant characteristics (drawing by Benjamin Carter).

Figure 7. Barrel-shaped shell beads (top row), ishpingo seed beads (middle row), ceramic spacer bead (middle row at right), possible stone *torteros* (three at lower left), and possible large ceramic bead (lower right) (photo by Benjamin Carter).

Table 1. Summary of Counts and Measurements for Chaquira by Color.

	Total	Measured	Diameter				Length				Perforation Diameter			
			m	std	min	max	m	std	min	max	m	std	min	max
Shell														
Dark	116	40	3.34	0.82	2.20	6.00	1.56	0.45	0.74	2.67	1.44	0.28	0.76	2.03
Pink	775	160	3.46	0.86	2.17	5.79	1.47	0.48	0.59	2.87	1.32	0.36	0.58	2.27
Purple	1	1	2.60	-	-	-	1.75	-	-	-	0.75	-	-	-
Red	867	179	2.97	0.57	1.81	5.92	1.32	0.34	0.66	2.55	1.10	0.28	0.56	2.01
White	639	161	2.88	0.62	1.62	5.56	1.47	0.42	0.73	2.92	1.22	0.30	0.50	2.00
Strung white	31	31	3.03	0.51	2.10	4.40	1.35	0.34	0.90	2.10	-	-	-	-
Stone														
Black	751	180	2.70	0.32	1.69	3.60	1.44	0.31	0.60	2.73	0.83	0.14	0.52	1.42
Strung black	30	30	2.60	0.44	1.90	3.60	1.45	0.31	0.60	2.00	-	-	-	-
Brown	37	37	3.06	0.36	2.50	3.72	1.71	0.38	0.95	2.60	0.90	0.16	0.39	1.23
Green	4	4	2.20	0.14	1.99	2.32	1.33	0.23	1.09	1.61	0.77	0.13	0.63	0.88
Red orange	5	5	3.27	0.50	3.00	4.16	1.45	0.63	0.76	2.27	0.78	0.19	0.54	1.03
All Colors	3256	767	3.01	0.67	1.62	6.00	1.44	0.40	0.59	2.92	1.12	0.34	0.39	2.27

Measurements are in millimeters; m = mean, std = standard deviation, min = minimum, max = maximum.

Table 2. Summary of Counts and Measurements for Larger Beads by Color.

	Total	Diameter					Length					Perforation Diameter				
		m	std	min	max	diff	m	std	min	max	diff	m	std	min	max	diff
Shell																
Purple	2	9.30	0.10	9.23	9.37	-	10.76	0.09	10.69	10.82	-	2.80	0.30	2.58	3.01	-
White	6	7.66	1.44	5.51	9.22	-	9.48	0.98	8.27	10.65	-	3.22	0.58	2.43	3.73	-
Stone																
Blue	53	7.22	1.63	2.88	11.89	0.27	3.60	2.38	1.72	14.03	0.39	2.25	0.43	1.55	3.42	0.43
Olive green	2	6.36	0.37	6.10	6.63	-	4.22	3.55	1.71	6.74	-	2.12	0.11	2.04	2.19	-
Translucent	15	11.08	4.35	6.23	21.70	1.34	8.52	3.89	3.77	15.56	0.61	3.83	1.95	2.09	9.57	1.94
Turquoise	5	7.28	0.78	6.12	8.07	-	2.36	0.68	1.52	3.05	-	1.74	0.52	1.27	2.64	-
All Colors	83	7.98	2.71	2.88	21.70		5.03	3.56	1.52	15.56		2.59	1.11	1.27	9.57	

Measurements are in millimeters; m = mean, std = standard deviation, min = minimum, max = maximum, diff = the difference between two measurements of the same dimension.

Beads come in a wide variety of forms, including discoid, tubular, barrel-shaped, spherical, and other (Figure 6). These terms are generally consistent with those used in Beck's (1928) classic, "Classification and Nomenclature of

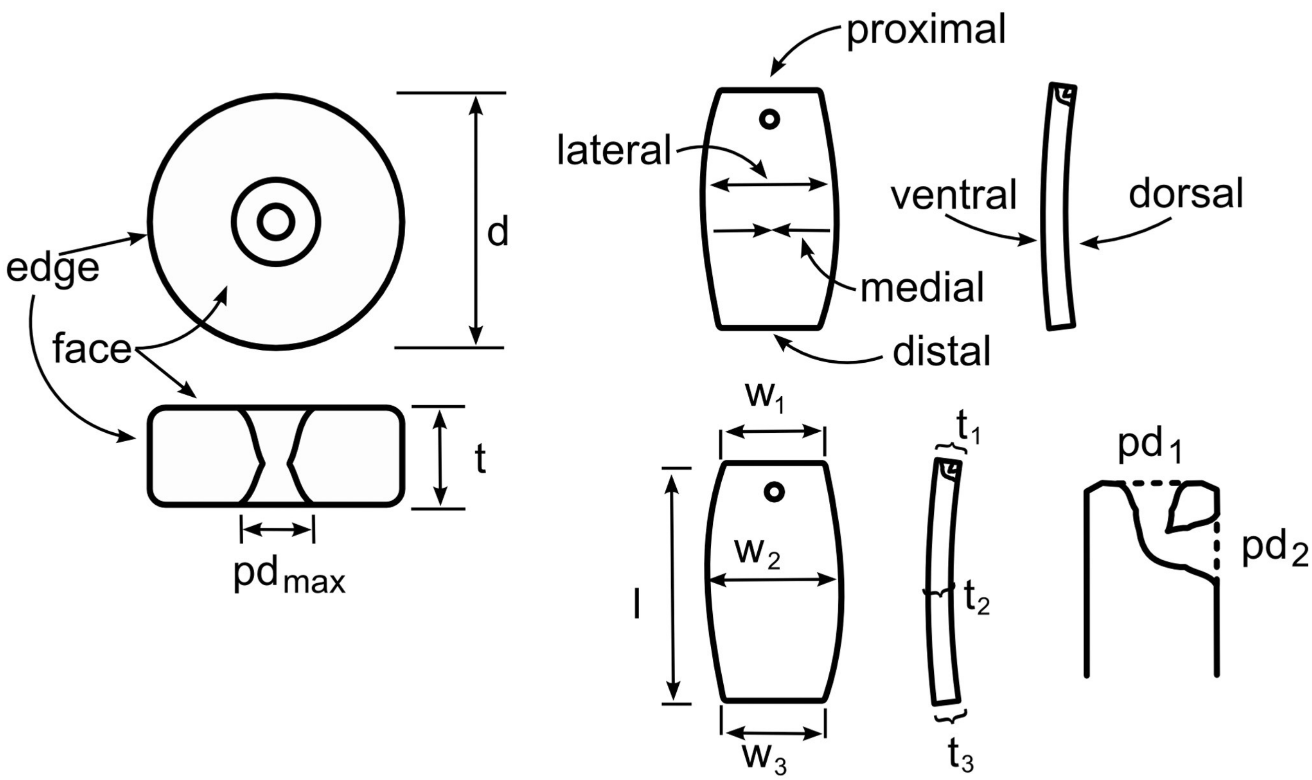

Figure 8. Bead and plaque pendant attributes (drawing by Benjamin Carter).

Beads and Pendants." Note that the term cylinder is used as a broad category for all beads that are circular with flat faces and parallel edges, including discoid and tubular beads.

Discoid beads (Beck's cylinder disk or annular) are round with two flat, parallel, and perforated faces. The sides are perpendicular to the face and parallel to each other. There is a slightly rounded right angle where the side meets the face. Discoid beads have a diameter greater than their length. All chaquira are discoid. Discoid beads form the majority of all artifacts (n = 3,293 or 91.9% of the assemblage).

Figure 9. Chaquira on cordage from Samanco (photo by Benjamin Carter).

Tubular (Beck's cylinder or tube) beads are the same as discoid beads except that their length (or thickness) is greater than their diameter. Only seven tubular beads are present in the collection: one of shell and six of stone.

Barrel-shaped (Beck's barrel) (Figure 7) beads are similar to tubular beads in that they tend to be long and have two flat faces, but have convex instead of parallel sides. Bernier (2010a:94-95) calls these "elliptical." They tend to be larger than discoid or tubular beads. Most barrel-shaped beads, whether stone or shell, are purple, white, or clear.

Spherical beads (Beck's circular or ellipsoid) are similar to barrel-shaped beads but without faces. They tend to be elongated along the axis of the perforation; i.e., slightly ovoid or ellipsoid instead of truly spherical. All spherical beads are translucent and made from quartz/amethyst.

Degree of completeness is recorded using three categories: 100% complete, between 100% and 50% complete, and less than 50% complete (Carter 2008). Unlike at production sites where a large portion of beads are fragmented (Carter 2008; Currie 1995), only 13 beads were less than 100% complete at Samanco, suggesting excellent preservation and minimal effect on the chaquira collection by looters. Therefore, it can be established that these beads are far removed from their production context and consistent with worn adornment.

Shell Beads

Since Spondylus is one of the most discussed mollusks in Andean prehistory (e.g., Carter 2011; Cordy-Collins 1990; Marcos 1977; Masucci 1995; Paulsen 1974; Pillsbury 1996), accurate identification is particularly important. Two characteristics may be used to distinguish Spondylus from other shell: color and texture. A third variable, size, limits the usefulness of the first two. Shell artifacts exhibiting the colors red, orange, and purple[1] are likely made from Spondylus, but some other taxa, such as *Chama* sp. (e.g., Masucci 1995), can also be these colors. The texture of Spondylus is distinctive, however; the exterior layer of shell is a dense foliated calcite colored red, orange, and purple (Figure 10) while the interior layer is a white crossed-lamellar and/or prismatic aragonite (Carter 1990:388-389; Logan 1974:571-572; Waller and Yochelson 1978:354). On the exterior, red, orange, purple, and white radial lines are frequently found extending from the umbo. Therefore, colored Spondylus artifacts tend to have variable streaks of color that follow the foliated calcite.

Even when one takes into consideration color and texture, positive identification is limited by the size of the artifact or shell fragment. Because Spondylus develops thicker shell than most other mollusks, it is very unlikely that the larger colored plaques derived from any other mollusk. Conversely, the size of the tiniest beads means that one can be less definitive about their taxonomic origins. Still, considering that whole and partial shells of Spondylus have been recovered from shell artifact workshops in Latin America and elsewhere (e.g., Allan 1989; Allen et al. 1997; Carter 2008, 2011; Feinman and Nicholas 1993; Mayo and Cooke 2005; Moholy-Nagy 1989), there is relatively little doubt that many of the tiny chaquiras came from this shellfish. The red-orange stone beads, though easily distinguished from shell beads, provide a note of caution: not all that is red is Spondylus (for further precautions about the identification of Spondylus, *see* Blower 1995, 2000). We conclude that while the larger artifacts with red, orange, or purple are clearly Spondylus, for the smaller artifacts, especially the chaquiras, it is difficult to be definitive even though we consider it highly likely that chaquira with these colors are Spondylus because many appear to have a foliated texture. Pink chaquiras could be from a number of different species, including Spondylus. The white may be from the aragonite layers of Spondylus, but since it is very common in other shellfish, white beads could be from nearly any mollusk. Moore and Vilchez (2015) identify the raw material of white beads with a chalky surface as *Anadara* sp. but, in the Samanco assemblage, this chalky surface is present on larger artifacts, such as the degraded plaques that are clearly Spondylus. Therefore, we consider it likely that

Figure 10. Close-up of Spondylus chaquira showing foliated structure (photo by Benjamin Carter).

even the white beads were made from Spondylus, but cannot rule out *Anadara* sp. or other white-shelled mollusks.

Shell beads were made using the heishi technique which has been documented throughout the world (Allen et al. 1997; Blick et al. 2010; Carter 2008; Foreman 1978; Francis 1982, 1989; Holley 1995; Kenoyer 1984; Malinowski 1922; Masucci 1995; Mester 1990; Moholy-Nagy 1989; Yerkes 1983). Generally, this process includes four stages. First, the shell is broken into fragments slightly larger than the intended bead. Normally, this is done through direct percussion, but some blanks may have been cut from the shell. Second, the bead is ground on an abrasive surface (e.g., sandstone) to better approximate the size and shape of the intended bead. The result is normally a faceted disk. The bead is then perforated using a drill with a bit that is frequently made from chert or another fine-grained durable stone but can also be made from durable organic materials (e.g., cactus spines) or copper. In order to perforate shell with organic or copper drills, abrasive powders and/or weak organic acids (e.g., lime juice or urine) may be used to aid in the drilling process (Miller 1996). Once perforated, the beads are strung together and rubbed across an abrasive surface. To do this, the strung beads are held tightly together so that they form a long, irregular cylinder that is rolled across the surface while also being pulled perpendicular to the string. This rounds the edges of the beads leaving them similarly sized.

Direct evidence of production is limited in the chaquiras from Samanco. Striations from grinding the face edges are absent on most beads, but this may be due to use. Regular or frequent wearing of the beads would result in polished faces from rubbing against neighboring beads and polished edges from rubbing against clothing, skin, or other ornaments. The identification of the production technique therefore comes largely from the similarity of the Samanco beads to those from production locales (e.g., Carter 2008). The perforations of some beads are biconical, indicating they were drilled from both faces. Perforations with parallel sides may indicate a different perforation method or wear from the abrasive fibers upon which they were strung. The larger barrel-shaped beads have some facets on their faces suggesting that they were individually abraded by hand to achieve the barrel shape, not using the rotary method discussed above. Based on an extensive review of the literature, Carter (2011) suggests that chaquira production is limited to extreme northwestern Peru (*see also* Moore and Vilchez 2015), the coast of Ecuador, and a few small areas farther north. This is also the southern limit of the natural range of Spondylus, the shell from which so many chaquiras were produced. Chaquiras, therefore, were most likely produced on the Ecuadorian and extreme northern Peruvian coasts and exchanged southward, eventually to be used by the Samanco Chimú-Inka.

Stone Beads

While a variety of stone material was used for perforated ornaments, chaquiras and larger beads were made from different stone. Stone chaquiras were fashioned from turquoise, as well as green, red/orange, and black stone. Larger beads were made from turquoise, sodalite, and quartz/amethyst. It must be noted, however, that the identification of the parent material of these artifacts based upon color and texture is not ideal. For example, many of the minerals that Petersen (2010: Chapter 1) describes have overlapping colors. He states, "samples identified in archaeological samples as turquoise, topaz, lapis lazuli, and rose quartz may actually be chrysocolla, jade, citrine, dumortierite, garnet, sodalite, fluorite, or other possibilities" (Petersen 2010:3; *see also* Shimada 2013). Physical, elemental, or mineralogical analysis could be used for a more precise identification. All identifications herein are based only upon visual (macro- and microscopic) characteristics and, therefore, should be considered preliminary.

Stone chaquiras are similar in size and shape to the shell chaquiras (Table 1). It is, therefore, quite likely that they were also produced using the heishi technique, but because few production marks are present, this is difficult to state definitively. Comprising 23.1% (751/3,256) of the chaquira assemblage, black stone is one of the most common materials used for these small beads (Table 1). The identification of this material is uncertain. It does not appear to be common at other archaeological sites, though Moore (2010:413) describes "one or more strands of very small beads made from an unidentified black stone" from a Chimú-Inka-period tomb at Santa Rosa on the far north coast of Peru, and Donnan and Stilton (2010:16) recovered three stone (slate?) beads. These may be the same material used to make stone beads at Moche that Hélène Bernier (1999:26, 2010b) describes as a soft (ca. 2.5 on the Mohs hardness scale), gray or beige, "steatite-like local stone" from the Moche period deposits at Huacas de Moche. Beads were likely produced within the household. Evidence of production includes "blanks, cutting debris, beads, and pendants broken in the process of manufacture, as well as finished adornments" along with tools, including "copper needles and awls, polishers, blades, and grinding stones" (Bernier 2010b:98; *see also* Bernier 1999). Evidence suggests that the Moche used a technique similar to the heishi technique, but it is unclear how Moche beads were drilled since no lithic microdrills have been recovered. The edges of the perforations in some of the long (ca. 1 cm) broken beads (Bernier 2010b: Figure 5; *see also* Bernier 2010a: Figure 6) are incredibly parallel, a characteristic difficult to achieve with lithic drills, but easier with metallic drills (e.g., Kenoyer 2003).

The black stone from Samanco is unusual. The interior, as seen in broken beads, contains large crystals, but the exterior is a smooth glossy black without visible crystals (Figure 11). On the faces of a few beads, the exterior appears to be a distinct layer that looks much like glaze on ceramic. Glazes, however, were not used in Andean South America. Furthermore, known ceramic chaquiras, common on the Ecuadorian coast (e.g., Cabada 1989; Carter 2008), are manufactured in a distinct manner and do not look like the Samanco beads. The beads, therefore, are likely stone, but with a hardened exterior. What process – natural or anthropogenic – could have produced this is unclear, but heating is a possibility.

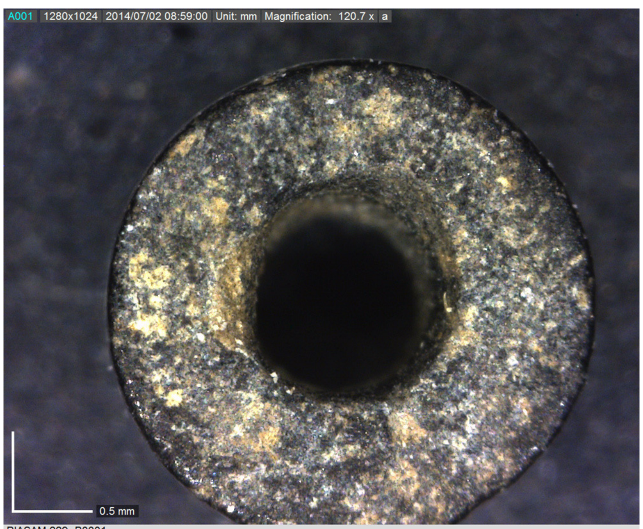

Figure 11. Close-up of black chaquira (photo by Benjamin Carter).

The rest of the stone chaquiras comprise a minor proportion of the assemblage (46/3257 or 1.4%) (Table 1). The material used for the brown stone beads is also difficult to identify; it may not even be stone. It is heavier than shell and a distinct shiny medium brown. It is possible that these beads are made from brown/tan shell where the muscle attaches in bivalves; the "aragonitic prismatic adductor myostracal layer" (Logan 1974:572). This portion of the shell is harder and denser than much of the rest and is frequently a darker tan or brown, especially in Spondylus (Skoglund and Mulliner 1996). Some of the brown beads also have dark irregular streaks that are unlike streaks in Spondylus shell, possibly suggesting a terrestrial origin. Green stone beads, which are likely a variant of turquoise, also comprise a minor component. If it is turquoise, it was likely drilled with lithic microdrills. Otherwise, there are only minor production marks remaining that suggest a process similar to the heishi technique.

Red stone beads may be important because their coloration is similar to Spondylus (*see* Chapdelaine et al. 2004:75). Upon close inspection, these "red" beads are a darker and richer red mottled with dark brown or black patches and, therefore, unlike the red of Spondylus. This suggests that the color of the bead may have been more important than the parent material. Are these beads imitation Spondylus chaquiras? Were they easier to manufacture and obtain? It is possible that local stone (red stone may be found at numerous locations along the hills that border the Nepeña Valley) was used as a replacement for Spondylus that came from a much greater distance. The material may also be a type of steatite (Bernier 2010b). Of course, the limited number of these beads (n = 4) suggests that, if they are imitation Spondylus, they did not contribute greatly to elite dress. An important question is whether or not red stone beads were employed by those lower in the local hierarchy.

Nearly all the large beads (75/83 or 90%) are made of stone and the majority of these are sodalite (53/75 or 71%) (Figure 12). Sodalite beads are more variable than the chaquiras and include different forms, production processes, and sizes. Three are cylindrical, while the others are discoid. Many of the corners (i.e., the interface between the face and the edge) of the larger beads are irregularly faceted and rounded. This clearly indicates that the larger beads were made individually, not en-masse as in the final stage of production of chaquiras by the heishi technique. The dimensions of sodalite bead are, therefore, quite variable. Discoid bead diameters range from 2.9 to 11.8 mm with a length of 1.5-5.1 mm, while cylindrical beads are much thicker/longer (11.2-14.0 mm). Two measurements were recorded on sodalite and quartz/amethyst beads for diameter, perforation diameter, and length. On average, beads from these two materials are highly variable. For example, the average difference between the two diameter measurements for sodalite (0.27 mm) and quartz/amethyst (1.34 mm) is much greater (0.15 mm; N = 2968) than for the finished chaquiras studied by Carter (2008: Table 8-4).

Sodalite beads represent a significant investment of time largely because the material is more difficult to work (Mohs hardness of 5.5-6; shell is 3-4). The sources of sodalite are difficult to pinpoint, but it was widely used in prehistory and, like turquoise and chrysocolla, likely originated from cupriferous deposits in Peru, Chile, or Bolivia (e.g., Gijseghem et al. 2013). Although Chile and Peru are currently the top producers of copper in the world

Figure 12. Sodalite beads from Samanco (photo by Benjamin Carter).

(Bebbington and Bury 2009) and deposits are widespread, sources of semi-precious gemstones, such as sodalite, would have been highly localized. Knowledge of these localized deposits is limited.

Quartz and amethyst beads comprise 15% (14/83) of the large-bead assemblage and are unusually irregular (Figure 13). Nearly all are spherical or roughly spherical (12/15 or 80%), a form not used for other materials. Of the three non-spherical beads, only one is of a form (barrel) used for other materials and the other two are curious variations on common forms: rectangular barrel and irregular cylinder. Four of the largest translucent beads are perforated in a distinct manner (for a Chavín example, *see* Dubin 2009:253). Instead of bearing the concentric rings left by a spinning drill, perforations are wider at the opening, rough, and pitted (e.g., the upper left bead in Figure 13). They appear to have been pecked, a rare but not unknown method of perforation (e.g., Kenoyer 2003:16). The beads are also faceted, but no striations remain from grinding and the intersections of facets are highly rounded.

The irregularity of the bead forms, the need for pecked perforations, and the rounded facets all suggest that artisans took advantage of natural shapes and used any technique available to them (pecking in this case) to craft the beads. They did not necessarily aim for a particular form as a finished product, but appear to have focused on rounding, color, and transparency. This is not surprising since quartz is the hardest material (Mohs 7) used for beads in the assemblage and it would have been very difficult to achieve a particular shape. Each quartz bead is a unique product of the combined elements of raw material shape, color, and artisan skill. Quartz is a local material commonly found as

Figure 13. Quartz and amethyst beads (photo by Benjamin Carter).

unworked chunks in refuse pits around Samanco. One of the main sources of quartz crystals is Mina Adán (Petersen 2010:3, 11), approximately 40 km south of Samanco. Quartz crystals from this mine are exceptional; they commonly measure 45 cm in length and 20 cm in diameter, with a weight of 15 kg (Tumialán de la Cruz 2003:361). Access to this source of highly variable and difficult-to-work material at a nearby locale would not have been lost on local elites.

The last group of larger stone beads is olive green (n = 2) and blue-green (n = 5) in color. The blue-green specimens are clearly turquoise which is a bright, semitransparent aquamarine to bluish green with veins of dark black or reddish brown. The raw material of the olive-green beads remains uncertain. They are dark, opaque, and consistent throughout. These beads are similar in size to those crafted from turquoise. Gorelick and Gwinnett (1994) studied turquoise beads from the famous Moche tombs of Sipán. Comparing the archaeological specimens to those drilled with lithic microdrills and those drilled with copper drills and an abrasive slurry, they found that production marks from lithic microdrills best matched the beads from the tombs. This suggests that lithic drills were used to perforate turquoise as well as shell. Yet, as Gorelick and Gwinnett (1994:179) state, "flint or chert drills have not been excavated, as yet, in Sipan." Nor have they been recovered at other Moche sites (Carter 2011). Although it is still not clear where the turquoise originated (e.g., Valdez 2008:885), sources exist in northern Chile (González and Westfall 2008; Salazar et al. 2013) and may exist in both southern and northern Peru (Ruppert 1983; Stöllner 2009:400; Stöllner et al. 2013). It is, therefore, unclear over what distance the turquoise may have been traded, but it was likely not a local material.

Copper Beads

The Samanco bead assemblage also contains seven copper specimens. These are of three different forms, including a four-pointed star (n = 5), bivalve (n = 1), and coiled wire (n = 1). The stars are rectangular sheets of copper ca. 20 mm across and < 1mm thick whose edges have been pinched inward to create a four-pointed form (Figure 14). By doing this, the center of one face was made convex and the opposite concave. The center exhibits two holes that were made by a cylindrical object such as a punch from the concave side. Evidence of twine is present on the concave face around both holes suggesting that the objects were strung.

The second type looks like a bivalve shell in that it is made from a bilobular sheet of copper, each half of which was shaped into a concave hemisphere. The sheet was then folded so the two halves face each other (Figure 14, upper center). The bead is approximately 10 mm wide, 8 mm long, and 7 mm thick. The sheet is < 1 mm thick and the perforation is ca. 1.5 mm in diameter.

The final copper bead consists of a wire tightly wound into a spiral form with a central passage for stringing (Figure 14, right). The reason this artifact is considered a bead is because a single chaquira is clearly encased in it. Presumably, the wire was wrapped around one or more of the chaquiras to form a compound bead. In addition to the perforated copper ornaments are three segments of wire, eleven globules, and one fragment of sheet copper.

Copper ornaments have a long history on the coast of Peru (e.g., Shimada et al. 2000) and there is little doubt that they were made in a coastal workshop.

Organic Beads

There are seven organic beads (Figure 7), all of which appear to be *ishpingo/espingo*, a category that includes a variety of beads (Eeckhout 2006). One of the most important is *Nectandra* sp. (Montoya Vera 1996, 1998, 1999) which appears to be derived from the Bolivian Amazon and, therefore, its presence on the coast is a result of long-distance trade. Montoya Vera (1999) argues that the alkaloids in *Nectandra* sp. may have been used as a narcotic during rituals, possibly contributing to a painless death during human sacrifice. *Nectandra* sp. beads tend to be associated with the Chimú (Cutright 2013; Eeckhout 2006; Montoya Vera 1996, 1998; *see also* Klaus et al. 2010) and with women in particular (Carol Mackey 2015: pers. comm.). Eeckhout (2006) argues that ishpingo are part of a ceremonial complex not exclusively associated with burials. He adds that ishpingo and Spondylus are not found together. This is clearly not true at Samanco, nor in some Sicán/Lambeyeque (Klaus et al. 2010) and Chimú burials (Cutright 2013; Montoya Vera 1998). Eeckhout (2006) clearly articulates that although *Nectandra* sp. is used largely during the Late Intermediate period, it was used by different peoples in very different ways.

Ceramic Beads

Ceramic beads (Figure 7) are represented by a three-hole spacer and possibly a large roughly disk-shaped form. The latter is unlike most other ceramic beads (e.g., Cabada 1989) and it is unclear if this is a bead. It is included to ensure full documentation.

Torteros

Although their primary use may have been in textile production, three possible *torteros* (spindle whorls) made of

Figure 14. The copper beads and other copper artifacts from Samanco (photo by Benjamin Carter).

stone (Figure 7, bottom row) are included here because they were found with the beads and could also have been strung and worn like them. They are made from a shiny black stone (1) and a speckled gray one (2). Many burials have documented *torteros* as part of weaving kits, however. The forms vary, but they differ from beads in that the perforation is much larger than those of other beads, averaging slightly less than 5 mm.

Pendants

Pendants are elongated artifacts perforated at one end or edge allowing them to be strung, and each one contains a greater amount of raw material than a chaquira. All the Samanco pendants are made of shell and fall into two major categories: those made from portions of shells and those made from whole shells.

Plaque Pendants

Pendants made from shell segments are roughly rectangular or trapezoidal, a form frequently termed "plaque" (Figure 15). Only a representative sample of well-preserved plaques was fully analyzed. Originally, plaque pendants were separated by the excavators into two groups: large (N = 246) and small (N = 68). Many of the larger plaques were so deteriorated that any color assessment or measurement would have provided an inaccurate representation of the original artifact (e.g., Figure 15a, plaque at the right). Nevertheless, because the deteriorated plaques appear very similar in shape and size to the larger Spondylus pendants discussed below, the measured plaques likely represent the deteriorated ones as well. Ninety-nine deteriorated large plaques were not measured, while 147 large plaques and all 68 small plaques were fully analyzed (Tables 3-4).

Plaques are described using directional terms (Figures 6, 8). Proximal is defined as the perforated end and distal is the opposite end. Medial is toward the axis running down the center of the object from the proximal to the distal end while lateral is away from this axis. Ventral is towards the front of the object. This may be identified by three traits: the ventral side tends to be unperforated, has more coloration (especially red), and is convex. Dorsal is towards the back and is always perforated, frequently whiter, and may be concave. For a minority of plaques, ventral may be indistinguishable from dorsal because they are flat, perforated dorsoventrally, and have similar coloration on both sides.

Five characteristics are used to describe plaque pendants (Figure 6): 1) the shape of the lateral margins, 2) dorsoventral thickness, 3) finishing of the distal corners, 4) finishing of the proximal corners, and 5) the arrangement of the perforations. Lateral margins (Figure 8) may be convex (wider at the midpoint than at the proximal or distal ends: $w_1 < w_2 > w_3$), flared (wider distally: $w_1 < w_2 < w_3$), or tapered (wider proximally: $w_1 > w_2 > w_3$). Dorsoventral

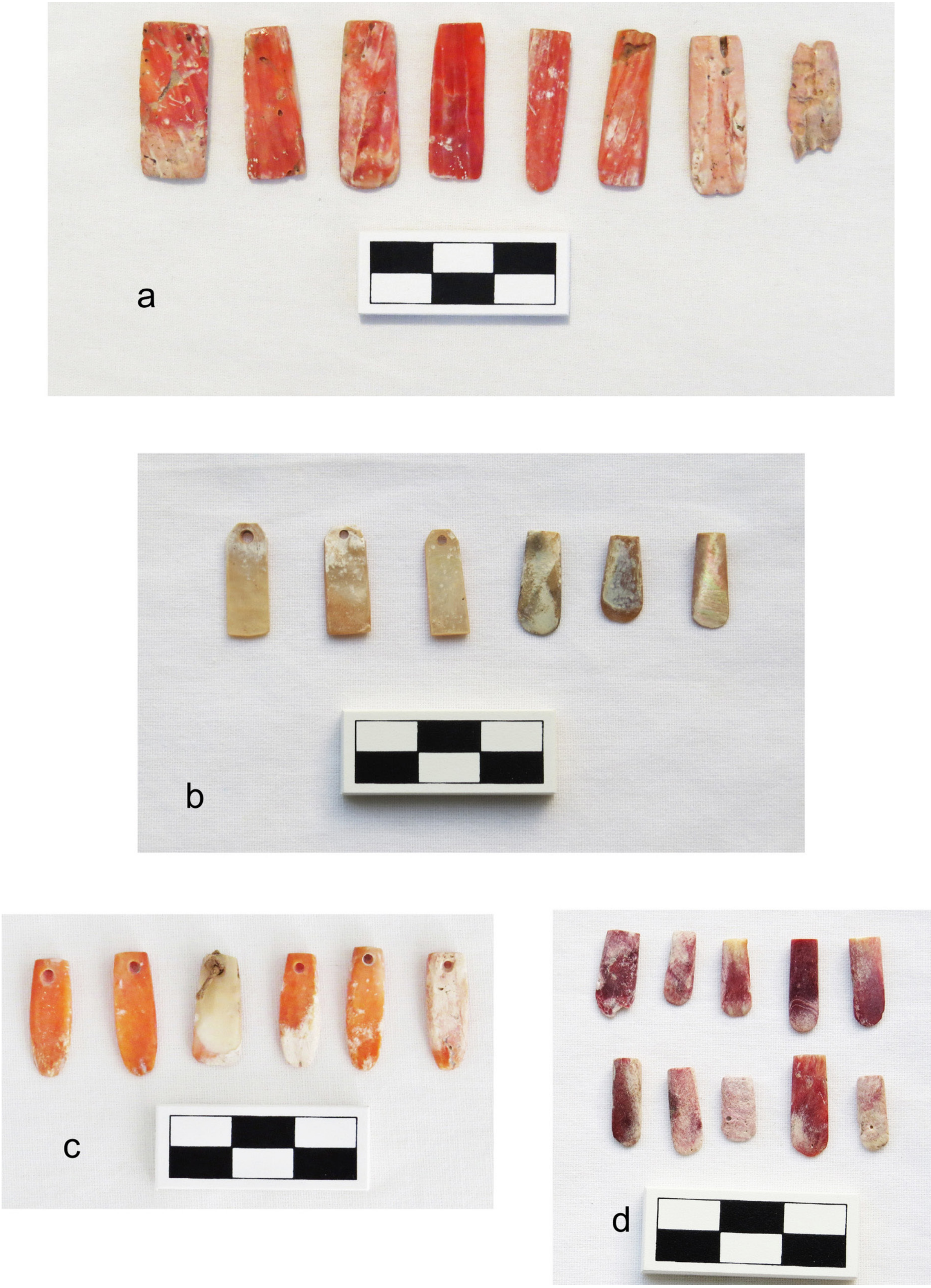

Figure 15. Plaque pendants from Samanco: a) red, b) iridescent, c) orange, and d) purple (photo by Benjamin Carter).

Table 3. Plaque Pendant Forms by Color.

Form				Color								Total
Distal Corner	**Prox. Corner**	**Dorso-ventral**	**Med./ Lateral**	**Irides-cent**	**Orange**	**Purple**	**Pink**	**Red**	**Red/Orange/ White**	**Red/Purple/ White**	**Red/ White**	
Rounded	Squared	Equal	Convex		1							1
Rounded	Squared	Tapered	Convex	4	5	2	9	1	63	4	10	98
Rounded	Squared	Tapered	Flared	14	1	8	10		41	1	2	77
Rounded	Squared	Tapered	Pointed				1		3	1		5
Squared	Rounded	Equal	Convex	16								16
Squared	Rounded	Equal	Flared	15								15
Squared	Rounded	Equal	Pointed	3								3
Total				52	7	10	20	1	107	6	12	215

Table 4. Summary of Frequency and Measurements of Plaque Pendants by Color.

Color	N	Length				Width				Thickness			
		m	std	min	max	m	std	min	max	m	std	min	max
Iridescent	52	16.09	2.22	11.25	18.85	6.05	0.81	4.18	7.56	1.53	0.40	0.82	2.42
Orange	7	20.28	2.59	17.99	25.83	6.57	0.82	5.71	8.13	3.00	0.33	2.68	3.62
Purple	10	13.61	1.76	10.51	16.49	5.06	0.55	4.42	6.08	1.96	0.22	1.48	2.36
Pink	20	26.00	1.67	22.59	28.17	9.30	0.97	7.81	11.52	3.33	0.33	2.72	3.84
Red	1	25.67	-	25.67	25.67	8.53	-	8.53	8.53	2.59	-	2.59	2.59
Red/orange/white	107	25.31	1.96	19.16	28.52	8.60	0.95	6.21	10.92	3.25	0.38	2.27	4.26
Red/purple/white	6	26.30	1.78	24.15	28.31	9.41	0.89	8.35	10.75	2.88	0.27	2.67	3.37
Red/white	12	25.08	1.89	21.69	27.88	8.97	0.89	7.21	10.14	3.43	0.36	2.93	4.05
All Colors	215	22.54	4.83	10.51	28.52	7.86	1.62	4.18	11.52	2.77	0.84	0.82	4.26
Measurements are in millimeters; m = mean, std = standard deviation, min = minimum, max = maximum.													

thickness may be equal throughout the artifact ($t_1 = t_2 = t_3$) or taper towards the distal end ($t_1 < t_2 < t_3$). Distal and proximal corners may be square or rounded (Table 3).

A perforation may consist of two conical holes perpendicular to one another; one in the proximal surface of the pendant and another in the dorsal, known as dorsal/proximal. Or they may be biconical and aligned ventral to dorsal. All the perforations of the first type are biconical, as are many of the second type. Because the pendants were strung (a few retain cordage), the absence of a biconical perforation suggests that the perforations have been worn through use and may have originally been perforated biconically. Based on the presence of twine in three of the perforations (e.g., Figure 15c), they were clearly strung and likely knotted on the dorsal side. Pendant forms show a distinct pattern (Table 3; cf. Figure 15b to 15a, d).

The color of the plaque pendants was recorded to include the greatest amount of information and, because plaques are much larger than chaquiras, in a manner different than for beads. Each artifact was coded with as many of the following codes as was appropriate: r (red), o (orange), p (purple), w (white), ir (iridescent), and pink (pink) (*see*

Carter 2008: Chapter 4 for a discussion of the use of this method for chaquiras as well). For example, a pendant containing red, purple, and white was coded as rpw. This is different from the technique used for chaquiras for which a "red" bead may also contain orange, purple, or white. As previously mentioned, artifacts containing red, orange, and purple are likely manufactured from Spondylus, while the iridescent artifacts are certainly mother-of-pearl (*Pinctada mazatlantica* or *Pteria sterna*).

For each analyzed plaque, nine measurements were recorded, including one length, three medial-lateral widths, three ventral-dorsal thicknesses, and two perforation diameters (Figure 8; Table 4). Width and thickness were recorded at the proximal end, the midpoint, and the distal end. Where the distal end was rounded, the measurement was recorded proximal to the curve. These dimensions were recorded to obtain a width measurement, as well as to demonstrate numerically the forms discussed above. The maximum diameter of both perforations, whether perpendicular or aligned, was measured.

Plaque pendants were fashioned from two materials: Spondylus and mother-of-pearl. The production sequence for plaque pendants, while long posited, has recently seen definitive evidence. Shimada and Samillán Torres (2008) present clear evidence of the production sequence of plaques (*see also* Shimada 1994). A shell artisan, unearthed at the Inka administrative center of La Viña in the Lambeyeque Valley, north coast of Peru, was interred with the tools, in-process artifacts, and finished objects that allow the detailed reconstruction of the production process of a wide variety of artifacts, including plaques. Spondylus shells were ground initially to remove spines from the exterior surface into which lines extending from the distal edge towards the umbo were carved using saws made of hard, dark grey, fine-grained sandstone and slate. The semi-triangular sections were incised to form trapezoidal or rectangular plaques which were then snapped apart. The plaques were carved into miniature figurines. Similar plaques were produced at Tumbes Viejo at about the same time (Moore and Vilchez 2015). Shimada recovered in-process Spondylus plaques from a workshop at the earlier site of Pampa Grande (Shimada 1994:213-216), suggesting that they had been made on the northern coast of Peru for many hundreds of years before the Inka invaded the coast. Similar plaques were also produced near the Chimú capital of Chan Chan (Iriarte 1978; Schaedel 1966). As Spondylus plaques were also fashioned on the Ecuadorian coast (Carter 2011), they appear to have been produced across a broad area that included much of coastal, and perhaps highland, South America. Unlike chaquiras, the production of which was limited to extreme northwestern Peru and coastal Ecuador, Spondylus plaque production was widespread. Mother-of-pearl plaques were produced on the Ecuadorian coast (Mester 1990; *see also* Bushnell 1951; Meggers 1966; Meggers and Evans 1965). Both Spondylus and mother-of-pearl plaques were frequently perforated and have been recovered from sites along the Andean coast and in the highlands in the form of large composite necklaces (Carter 2011).

Most pendants are rounded at the distal end, but squared at the proximal as well as tapered dorsoventrally and either convex or flared medially/laterally; 82% (176/215) of the analyzed pendants are included in this group (Table 3). The only major alternative form is distally squared, proximally rounded, dorsoventrally equal, and mediolaterally convex or flared. This includes 31 pendants (14% of analyzed pendants), all of which were iridescent and likely made from mother-of-pearl. Clearly this type of pendant could only be made from mother-of-pearl, although this material could be used for other types. Iridescent mother-of-pearl and orange and purple Spondylus pendants are also significantly smaller (< 7.5 mm in width and < 20 mm in length) than most other pendants (Table 4; Figure 16, cf. Figure 15a to 15 b-d). These patterns have not been recognized elsewhere, largely because bead and pendant metrics are rarely collected, much less reported.

Whole-Shell Pendants

As the largest and most modified artifacts, whole-shell pendants were the centerpieces of the Samanco jewelry assemblage. Six whole-shell pendants were recovered and analyzed. All were made of individual valves of *Spondylus princeps* (Figure 17). Length and width were recorded. Length was measured dorsally/ventrally from the umbo to the ventral edge of the shell along the axis of maximum growth. Width was measured anteriorly/posteriorly, approximately perpendicular to the length measurement. Spines, which frequently extend beyond the lip of the shell, were not included in the measurements. All six shells have two perforations near the umbo along a line perpendicular to the axis of maximum growth. They were likely used for stringing the shell on a necklace or as a pectoral. The maximum diameter of these perforations was measured. The exterior of the shells was heavily modified and striations created by grinding Nevertheless, five observations suggest were clear. In order to assess how these shells were modified, extensive notes and diagrams were recorded paying special attention to the location and direction of the striations.

The whole-shell Spondylus pendants have been worked extensively to make the shell smooth and shiny while retaining the essential essence of the shell – the spine. The

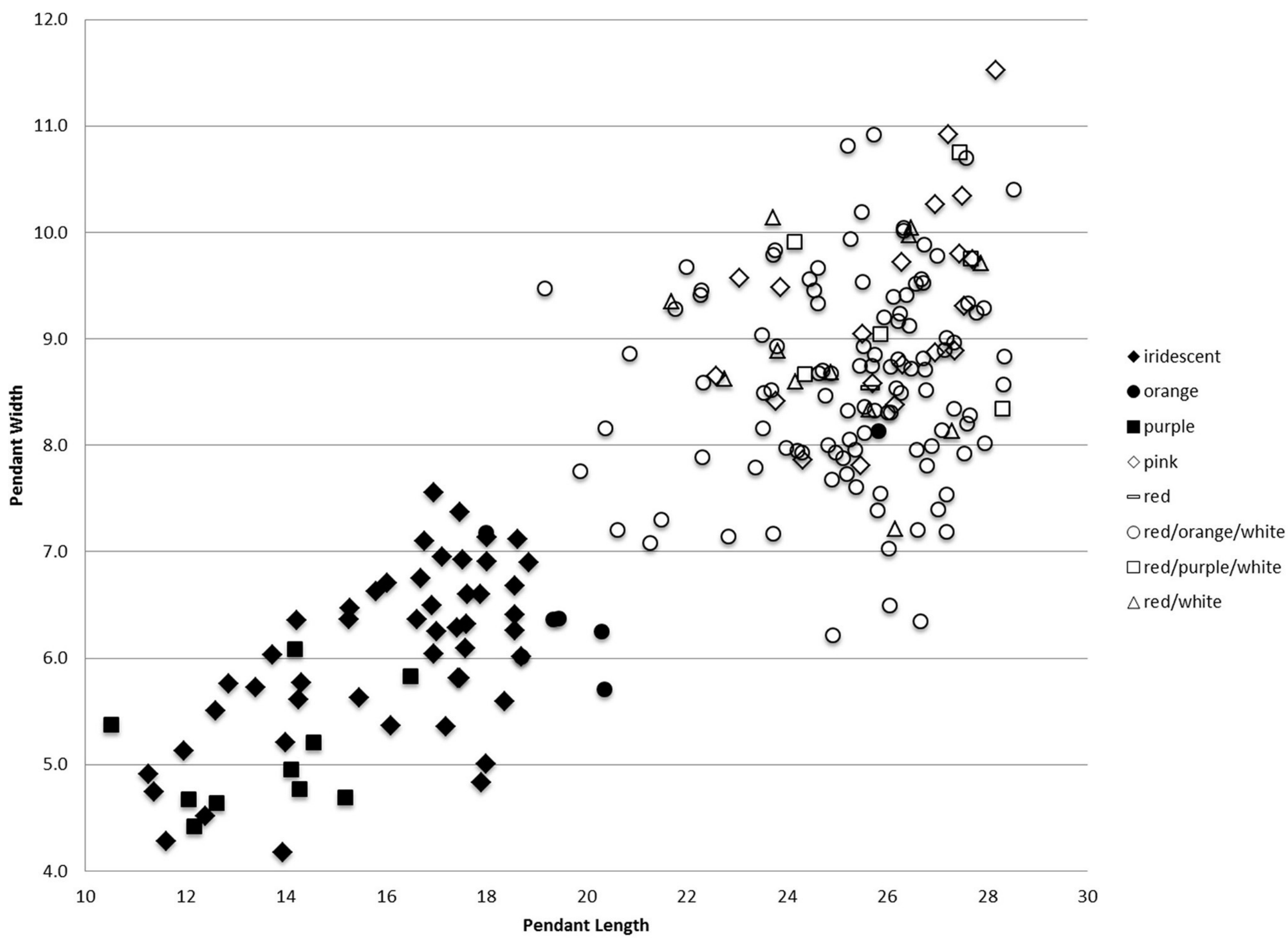

Figure 16. Plaque pendant length versus width by pendant color (graph by Benjamin Carter).

pendants appear to have been fashioned from *S. princeps*, rather than *S. leucacanthus* or *S. calcifer* (Coan et al. 2012; Skoglund and Mulliner 1996). Unlike *S. leucacanthus*, these shells are red to orange on the exterior, have wide color bands on the interior of the margins, and "spathate" spines instead of long and narrow ones (Coan et al. 2012; Skoglund and Mulliner 1996). *S. leucacanthus* would have been more difficult to harvest prehistorically because it lives at a depth of at least 18 m below the surface, while the other two are much more available (*S. princeps*: 3-28 m; *S. calcifer*: intertidal to 18 m) (Skoglund and Mulliner 1996: Table 2). It is more difficult to differentiate between *S. princeps* and *S. calcifer*. Although *S. princeps* has frequently been identified as red and *S. calcifer* as purple, taxonomists have described *S. princeps* as "dusty rose, purple with orange spines" (Skoglund and Mulliner 1996: Table 2) and "dusty rose with purple and orange spines" (Coan et al. 2012), while *S. calcifer* is "purple/orange, orange/yellow, all orange, all purple" (Skoglund and Mulliner 1996: Table 2) or "red-purple, yellow-orange, never white" (Coan et al. 2012). Therefore, color does not provide adequate analytical separation for definitive identification, but one could say that *S. princeps*, while including orange and purple, tends toward red and *S. calcifer*, while including red, tends towards the orange and purple. Nevertheless, five observations suggest that the whole-shell pendants are *S. princeps*. First, they are in the orange-red range of possible variation, more in line with *S. princeps*. Second, they are all approximately the size of *S. princeps* adults. Researchers indicate that the maximum size for *S. princeps* is between 130-143 mm, slightly more than half the size of *S. calcifer* adults which average 248 mm (Coan et al. 2012:311; Skoglund and Mulliner 1996:102). The average of the six specimens is 90 mm (range: 79-101 mm), significantly smaller than the maximum for the smaller *S. princeps*. Third, two right (lower) valves are present, but rarely does one see a right valve of *S. calcifer* because they are solidly attached to the rocky substrate and can be removed only with great difficulty and then in pieces. Right valves of *S. princeps*, which are not as tightly cemented to the substrate, are much more likely to have been collected.

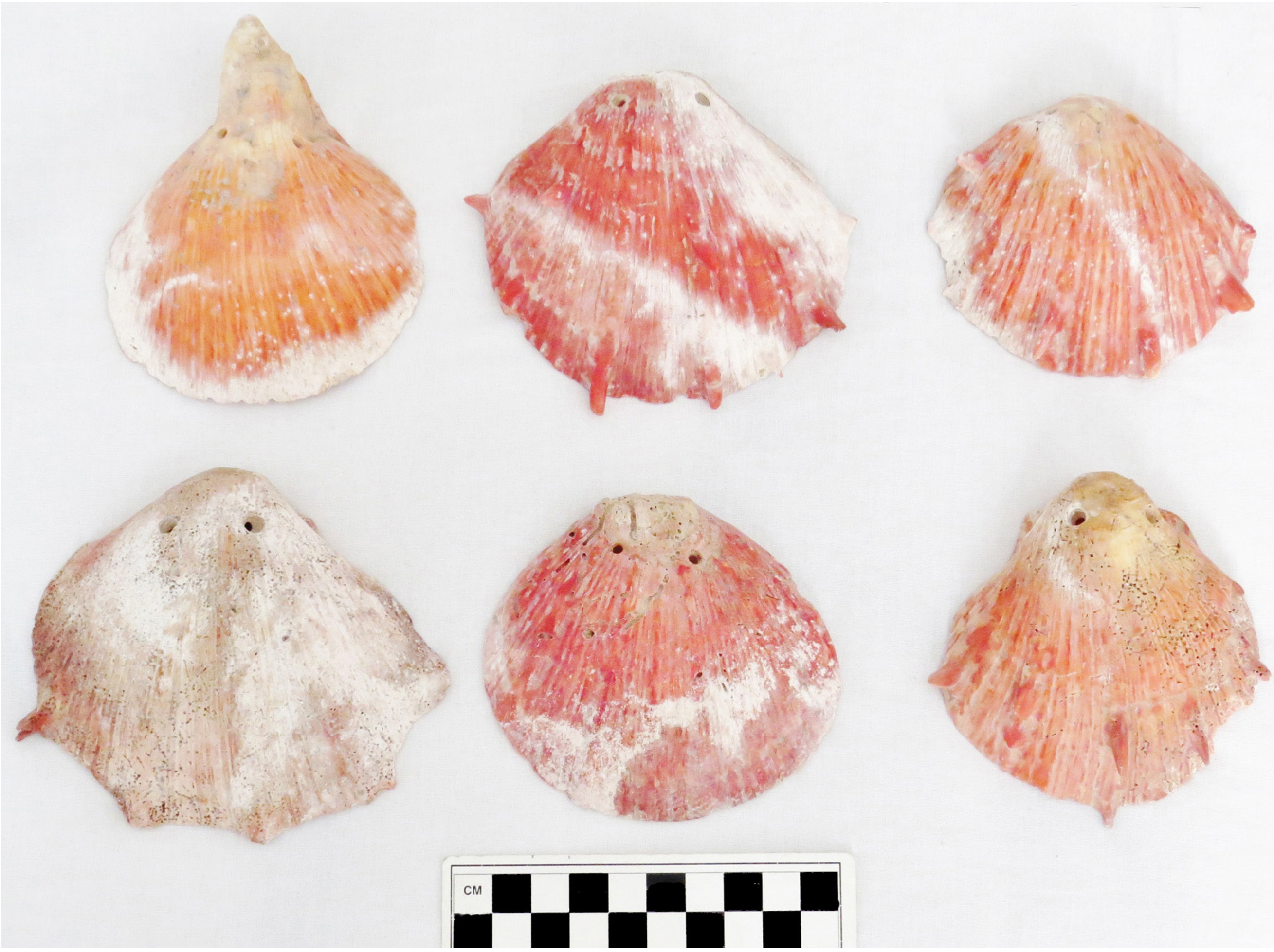

Figure 17. Whole-shell Spondylus pendants (photo by Benjamin Carter).

Fourth, the two right shells do not have apparent attachment areas. *S. princeps* tends to have small areas, but *S. calcifer* has large connection areas that tend to distort the right valve. Lastly, the spines that remain are long and pointed, like *S. princeps*; *S. calcifer* tends to have blunt and spatulate spines. The whole-shell pendants are, therefore, likely fashioned from *S. princeps*. Large adult valves may have been in high demand and large artifacts of entire worked Spondylus may have been highly valued.

The valves are perforated and ground. All six shells have two biconical holes on the dorsal portion of the valve near the umbo. The holes are an average of 20 mm apart and have an average exterior diameter of 4.64 mm (2.71-5.82 mm range). The more dramatic modification is the grinding of the exterior of the shell. On five of the shells, grinding can be recognized on nearly all exterior surfaces; only on the degraded SWS 4 (Figure 17, lower left) is grinding difficult to identify. Near the ventral margin, nearly all striations run perpendicular to the margin, largely because they appear to follow natural rows of spines that extend from the umbo to the margin. Artisans ground off the majority of the spines, but also ground out the grooves between the rows of spines leaving them deeper and smoother, accentuating the spines. On four shells, one or more spines remain, but the majority have been ground off. The spines that remain have been ground on nearly all sides and frequently, by grinding the dorsal portion of the spine, a groove was made at its base. The grooves between removed rows of spines and at the base of remaining spines make it clear that a thin (< 5 mm) abrasive (e.g., sandstone) saw was used. All of this abrasive work resulted in a shell that is smoother and shinier than the raw shell, magnifying luster and coloration. Some spines remain, however, retaining the quintessential and identifiable characteristics of the shellfish. Similar artifacts have been recovered at shell workshops and elsewhere (e.g., Cordy-Collins and Giannoni 1999:141; Shimada and Samillán Torres 2008; Topic 1989). The extensive modification of the shell to stress the few retained spines, the gloss, and the color of the shell suggest that these aspects were potent signifiers of identity.

HISTORICAL AND CULTURAL CONTEXTS

The Chimú-Inka elite of Samanco wore ornaments in death that layered and intermingled multiple signifiers producing a dynamic and potentially ambiguous identity. A number of conclusions may be tentatively drawn in this regard based on the collected data. We say "tentatively" for two reasons. First, the tomb was looted and it is likely that, although an array of artifacts made from a variety of materials was present, other objects, such as those of gold or silver, the object of the looting, were removed. We can never know what these may have been. Second, comparison with other samples is tentative because records of ornaments from other sites are rather minimal. Here, we address the possible composition of the compound artifacts based on use-wear as well as associated artifacts. We also demonstrate that the composition of these artifacts suggests clear continuity of long-term patterns of consumption largely restricted to the coast. Because the Inka had conquered the coast in the Late Horizon, this tomb clearly implies the imposition of limited control by the highland Inka and likely the deployment of perforated ornaments to stress both local and coastal identities, as well as attempts by these elite to signal Inka identity to those in power, even if it was done ambiguously.

Although disturbed, the distribution of the perforated ornaments suggests that they decorated the bodies of the four principal individuals. While many decorative options are possible, the most common along the coast is wearing the artifacts as bracelets, simple necklaces, and pectorals which are large complex necklaces composed of multiple strings of perforated artifacts that drape in concentric rows over the chest. Necklaces, pectorals, and bracelets were common among the Moche (e.g., Alva and Donnan 1993; Donnan and McClelland 1997; Ruiz 2008; *see also* Carter 2008), Sicán (Shimada 1995; Shimada et al. 2000, 2004), Chimú (Rowe 1984), and post-conquest coastal people (Donnan and Silton 2010). Based on the artifacts, we suggest that large compound necklaces were the central component of the dress of these elite. This includes a minimum of two separate necklaces, one necklace containing at least three strands, and one containing the six whole Spondylus shells. It is likely that the differently sized, shaped, and colored pendants formed separate necklaces as well. There were certainly more.

Spondylus chaquiras were the quintessential coastal perforated ornament. Frequently, especially among the Moche, chaquiras made up a sizable portion of pectorals that covered much of the chest in a single layer of beads. They were made from white, red, orange, and purple shell beads, many of which were derived from Spondylus. The red, pink, purple, white, and dark chaquiras from Samanco indicate that compound artifacts of Spondylus (and possibly other shellfish) remained important. Spondylus chaquiras were employed only to a limited degree by highland groups during late prehistory (Carter 2011). Major finds of Spondylus chaquiras in the highlands of Peru are limited to Marcahuamachuco (Topic 1989, 1991; Topic and Topic 2000) which produced ca. 3,000 chaquiras (but, for the highlands of Ecuador, *see* Doyon 1988, 2002). Among other highland groups, chaquiras were relatively uncommon and are almost completely absent in excavated and published Inka contexts (Carter 2011). Indeed, although societies on the coast of Ecuador were the primary producers of Spondylus chaquiras from ca. A.D. 200, around A.D. 1100-1200 production dwindled. After that, production persisted only at Cabeza de Vaca (Moore and Vilchez 2015) where a relatively small number of chaquiras (n = 152; compare this to the ca. 10,000 chaquiras from López Viejo; Currie 1995, 2001) were recovered among the 50 kg of Spondylus.

Although chaquira production continued, it appears to have been a minor component of the repertoire of shell artisans. Until further evidence for production is uncovered, we suggest that the chaquiras at Samanco are just as likely curated artifacts fashioned centuries before interment. This is supported by the difficulty in identifying production striations within the bead perforations as well as the frequency of parallel-sided perforations, both of which suggest extensive wear produced by abrasion against fibers such as cordage and clothing. The chaquiras may have been heirlooms passed down from the predecessors of the deceased or recovered from older tombs or graves by the Chimú-Inka of Samanco. The chaquiras, therefore, suggest not only a clear continuity in coastal ornamentation, but provide evidence for intentionally retaining (or recovering) and deploying heirloom artifacts that connect the local elite to a long line of local elites and distinguish them from the peoples of the highland and from the Inka imperium.

The prehistory of non-Spondylus chaquiras is less well known. The black stone examples appear at approximately the same time as Spondylus chaquiras, but have a more limited distribution. They are best represented in later Moche IV (5th-8th centuries) domestic contexts in the urban sector at Huacas de Moche (Bernier 1999, 2010a, 2010b). These non-elite contexts included numerous beads made from a local "steatite-like" stone which may be the black stone at Samanco. These beads were made at the site (Bernier 2010a) and may be the same material present in a Chimú-Inka burial at Santa Rosa, near Tumbes (Moore 2010:546), and in Late Horizon contexts at Chincha

(Kroeber and Strong 1965:51-52). With the exception of black beads in a pectoral purportedly recovered from the Chimú capital, Chan Chan (Rowe 1984:167), black stone beads appear to be associated with non-elite contexts. At a workshop at Huacas de Moche, extensive waste suggests to Bernier (2010a:27) that this material was local and "not of great material value." The black stone chaquiras appear to be rather rare and production was restricted to Moche IV at Huacas de Moche. Therefore, because there are nearly as many black as red beads, the 751 black stone specimens are an exciting, but difficult to interpret, find. Could they also have been curated or recovered from burials? If so, could the fact that they are heirlooms convert a relatively "cheap" material into one more valued?

Based on the average thickness of the chaquiras (1.44 mm) and the total number (3,256), these beads could have formed a single strand approximately 4.69 m long. Clearly, multiple strands were employed and would have formed necklaces and bracelets. Based on the small ceramic spacer with three perforations (Figure 7), one of the compound artifacts was composed of three strands. Evidence suggests that the beads were arranged by color and material. The few beads that remain strung together are all a single color, either black stone or white shell, suggesting that bead strands, or portions of them, were monochrome. Yet, a single white chaquira found within the spiral copper bead clearly indicates that at least some strands contained beads of a variety of materials. A number of blue sodalite beads were indented around the perforation, perhaps from being strung next to chaquiras that abraded the sodalite beads through small movements over a long period of time. It is, therefore, likely that the chaquiras comprised adornments that included beads of different materials similar to the compound ornaments recovered from Sicán (Lambeyeque) (Shimada 1995; Shimada et al. 2000) and Sipán (Alva and Donnan 1993) sites. We suggest that compound necklaces and bracelets would have been designed to create figures (as was done at Sipán). These artifacts should be seen, not as strands of beads, but as beadwork – as colors used to construct images much like textiles or tilework (e.g., Cordy-Collins and Giannoni 1999; Rowe 1984). On this note, it is interesting to ponder what iconography may have been deployed via the chaquiras pectorals. Were these imperial, local, or ambiguous images? Geometric? Iconographical?

Plaque pendants have a long history in coastal and highland Peru (e.g., Cordy-Collins and Giannoni 1999:135-137). These artifacts are present at many Moche sites, including a workshop for Spondylus plaques at Pampa Grande (ca. A.D. 550-650/700) (Haas 1985; Shimada 1994:213-216). The Chimú also fashioned them. Schaedel (1966) recorded evidence of large-scale production of these artifacts, along with inlay, from Spondylus at Huaca el Dragón in the Moche Valley. Plaques continued to be made after the Inka conquest. At the Late Horizon site of Cabeza de Vaca, plaques were the important product fashioned at the Taller Conchales (Moore and Vilchez 2015). Similarly, the shell artisan interred at Late Horizon La Viña (Shimada and Samillán Torres 2008) also made plaques. They appear in the highlands at Marcahuamachuco and at Huari and some Inka sites as well (e.g., Llullailaco; Reinhard and Ceruti 2010:83). Plaque pendants indicate that the Samanco interments are part of the contemporary cultural tradition of making Spondylus plaques that spanned social segments and geographical regions. If chaquiras demonstrate a deep connection with "antique" or "heritage" ornaments that are no longer produced and must be obtained from the ancestors, Spondylus plaques reveal a connection to active, but deep, traditions of production. The plaques from Samanco would have yielded a single strand approximately 2.4 m in length (7.859 mm average width x 314 pendants). Since there are clear size differences between smaller orange/purple/iridescent pendants and larger white pendants with traces of red/orange/purple, there were at least two different strands and likely more. Plaques may have been used in necklaces, but decoration for textiles is also an important possibility, the mother-of-pearl artifacts in particular (Mester 1989).

Whole Spondylus shells have been frequently noted, but relatively few have been described to the degree that they can be compared to the whole-shell pendants from Samanco. The few well-documented examples come from a wide variety of sites in the highlands and along the coast (Cordy-Collins and Giannoni 1999:141; Iriarte 1978; McEwan 2005:30-32, 47-48; Menzel 1977; Topic 1989). These types of artifacts are, however, present in many of the small museums along the Peruvian coast and, therefore, were likely more popular than a survey of the published literature suggests. It is quite likely, based upon available imagery (Cordy-Collins and Giannoni 1999:141), that whole-shell pendants formed a single necklace. The six whole-shell pendants from Samanco would have formed a large necklace that rested on the other necklaces and blocked their imagery. This should not necessarily be seen as negative since layers of necklaces would have been both impressive in their complexity and created a virtual palimpsest of identities upon the chests of the wearers.

Of the larger beads, those fashioned from sodalite and quartz/amethyst are particularly distinctive, but also poorly documented. Neither of these materials has been adequately studied (Burger 2013:331; Petersen 2010:11). Cylindrical sodalite beads are found in the highlands and along the coast. Indeed, the earliest worked gold is arranged into a necklace with cylindrical "possibly sodalite" beads (ca.

2000 B.C.) (Aldenderfer et al. 2008:5004). Sodalite, which may be a catch-all category for bright (or not so bright) blue stone that should more accurately be labeled chrysocolla, azurite, etc., is well represented through prehistory in the highlands (e.g., Bandy 2004; Cantarutti 2013) and along the coast. It is especially numerous in the Huaca Loro tombs of the Batán Grande area (Shimada 1995; Shimada et al. 2000). The Huaca Loro tombs also contain quartz beads, but this material, perhaps because it is so ubiquitous, has not been well studied and quartz beads appear to be relatively rare (Bernier 2010b:94). The proximity of an important source of quartz at Mina Adan (Petersen 2010:3, 11) and the difficulty in working this material, suggests that it was an important component of local identity.

The remaining beads of wide-ranging materials (copper, seeds, turquoise, etc.) also connect the wearer with local and imperial identities. Turquoise and copper were widely used on the coast and in the highlands, and it may be that particular types of beads are associated with certain identities. This requires further investigation. Ishpingo beads, however, are restricted to late prehistoric coastal identities; i.e., Chimú and Chimú-Inka (Eeckhout 2006; Montoya Vera 1996, 1998, 1999).

CONCLUSION

The Chimú-Inka tomb at Samanco highlights the nested, and potentially ambiguous, manner in which perforated ornaments were deployed in the dynamic crafting of identity in Andean South America. Nearly all of the materials and forms of perforated ornaments used by the principal individuals (or, perhaps, by the mourners) can be considered part of a coastal identity. Yet, numerous forms were also employed by highlands peoples. The deployment of coastal materials and artifacts (e.g., ishpingo seeds, black stone chaquiras, and Spondylus chaquiras) – and even some that were highly localized (e.g., quartz and amethyst) – would have vividly and clearly documented elite identity to those around them. These perforated ornaments would have screamed "We are like you!" to the people in local settlements, while at the same time the quantity and variety of artifacts demonstrated the privileges, rights, responsibilities, and power of the elite. To coastal elites beyond local settlements, these artifacts demonstrated their shared identity as the privileged few with collective rights to local power and intergroup competition and negotiation. More broadly employed artifact types (e.g., Spondylus plaques and possibly whole-shell pendants) allowed elites to demonstrate shared identity with both distant highland peoples and locals. The ambiguity of these artifacts permitted elites to speak with different visual "voices" to diverse audiences, creating connections to peoples with alternative world views and, therefore, conceptualizations of the same perforated ornaments. The wide range of materials allowed the wearer to literally layer his or her identity. Unfortunately, many aspects of bead use cannot be identified at this tomb. Which materials and forms were in the outermost, highly visible layer? Which messages or nested identities were stressed? Could these be rearranged based upon the audience?

There is little doubt that perforated ornaments were a highly significant component of identity production and projection on the late prehistoric coast of Peru. Unfortunately, this study is hampered by the relative lack of a comparative sample. Although general types can be productively compared, this study would have been greatly enhanced by more detailed documentation (e.g., measurements, color, and material) of perforated ornaments from regional sites. We, therefore, offer methodological details in order to advance the study of perforated ornaments, as well as identity production and negotiation in the Andes and beyond.

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ENDNOTE

1. It has been suggested that purple beads are made from *Spondylus calcifer* because this species tends to be purple more frequently than *S. princeps*. Nevertheless,

because *S. princeps* can contain purple, it is difficult to determine in a small sample, such as chaquira, from which species the bead originated.

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Benjamin Carter
Sociology and Anthropology
Muhlenberg College
Allentown, PA
bcarter@muhlenberg.edu

Matthew Helmer
Sainsbury Research Unit
University of East Anglia
Norwich, UK
M.Helmer@uea.ac.uk