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Research Reports Andean Past 10

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PERU

Yanaorco

Recent Excavations at the Late Intermediate Period Village of Yanaorco in the Cajamarca Highlands

Jason L. Toohey (University of Wyoming, e-mail: jtoohey2@uwyo.edu) excavated at the site of Yanaorco in the Cajamarca region of northern Peru in 2003 and 2004 (Instituto Nacional de Cultura permit number C/138-2003/DREPH) with the support of a Fulbright Hays Dissertation Research Abroad Grant.

Radiocarbon dates and ceramic chronology place the occupation of Yanaorco within the Late Intermediate Period (LIP; A.D. 1000-A.D. 1465; Toohey 2009) when it was a major population center (Sachun 1986). It stands at approximately 3550 m.a.s.l. and its occupants practiced agro-pastoralism, taking advantage of both the upper Quechua ecological zone below 3500 meters and the *Suni* zone herding resources to its southeast (above approximately 3500 m.a.s.l.; Pulgar Vidal 1981).

Architectural and excavation data indicate that Yanaorco was substantially fortified and architecturally complex. Its population was socially and politically stratified. My results support a view of the Cajamarca LIP as a dynamic time when populations shifted residence from lower elevations to high elevation communities that were often fortified. Several archaeologists have characterized Yanaorco as an important Cajamarca population center during the LIP (Julien 1988, 1993; Ravines 1968, n.d.; Sachun 1986; Urteaga 1960). Surface survey of the site had also placed the occupation in the LIP (Martell 2002). Research at Yanaorco is the first community and household level investigation of an LIP fortified village in the Cajamarca region.

Yanaorco is on the continental divide near the headwaters of the Jequetepeque River. Its inhabitants were part of the Cajamarca culture. The town is on a defensible ridge, with natural drops of approximately 500 meters on its north, west, and south sides. To further improve the natural defenses of the site, its inhabitants constructed two sets of fortifications on its gently sloping eastern edge. Each set includes three large walls. The largest retaining walls stand up to three or four meters high and are two meters thick (Figure 1). Each wall has a dry ditch on its exterior side. Many of these walls also have abutting parapets along their interior faces. These works indicate that the location occupied by Yanaorco was important and contested.



Figure 1: Fortification walls preserved to a height of 3 to 4 meters. People are, from viewer's left to right, Jimmy Bouroncle, Wilder León Ascurre, and Mariano Esquivel.

In addition to occupying a defensive location, Yanaorco is situated strategically to oversee traffic along the primary route in both prehistoric and modern times between the coast and the highland Cajamarca Basin. Yanaorco overlooks the Gavilán Pass into the basin by 500 meters. Survey uncovered the remains of a prehispanic trail connecting the pass to one of the village's two entrances, physically tying the community to the pass. Leadership within the community would thus have been in a position to closely monitor, and possibly control, traffic through the pass.

The architectural organization of Yanaorco is complex and indicates that the original community was rapidly augmented at some point during its occupation. The site contains two principal architectural zones. The older sector is on the western end of the ridge upon which the site sits. This sector was ringed with three large fortification walls. At a later date, the community grew with the construction of a newer sector of adjoined rectangular rooms to the southeast, outside the original fortifications. Ultimately this new set of rooms was fortified with three additional walls and ditches, the longest wall connecting to one of the original walls and effectively completing the fortification of the entire community.

Within these fortifications are a series of distinct architectural zones integrated and connected by ramps and staircases. At least two areas of domestic terraces exist, broken generally into well-constructed elite terraces along the south slope of the village, and less well defined non-elite terraces on the northern slope. Three low platforms stand along the ridge line, dividing these domestic spaces. Although there are rooms on the summit of the largest of these platforms, the presence of multiple looted masonry tombs on all of the platforms implies both mortuary and domestic functions, possibly creating a visible symbol of collective commu-

nity identity for residents of Yanaorco. Non-domestic, public areas of architecture are also present, including a sector of possibly ceremonial spatial features. These include a large, U-shaped plaza (Architectural Unit 18A) closely associated with a set of two small rooms characterized by extremely limited and controlled access (Figure 2). Excavation in one of these rooms indicated the presence of a low bench along one wall and multiple niches recessed into the walls. Excavation in the open plaza revealed a level activity surface and several small serving vessels. In the future, excavation will include an area of four possible storage rooms, spatially associated with a zone of elite architectural spaces. All of these integrated architectural spaces indicate that the community may have been partially planned when first constructed and that it did not grow haphazardly over time.

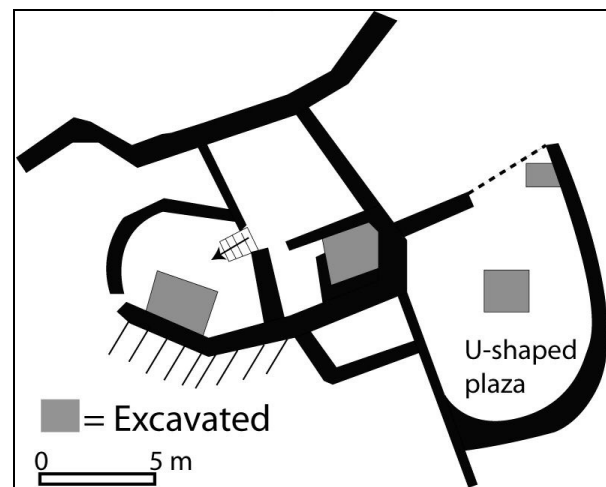


Figure 2: Plan of Architectural Unit 18.

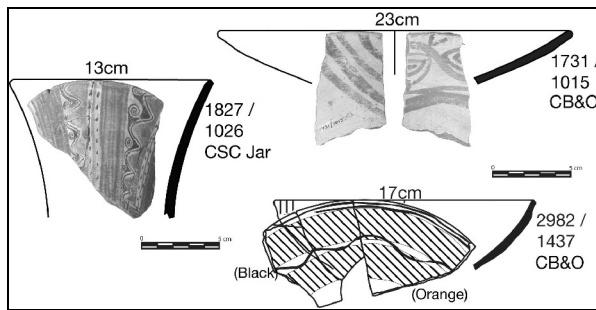


Figure 3: LIP Cajamarca Semicursive and Cajamarca Black and Orange sherds.

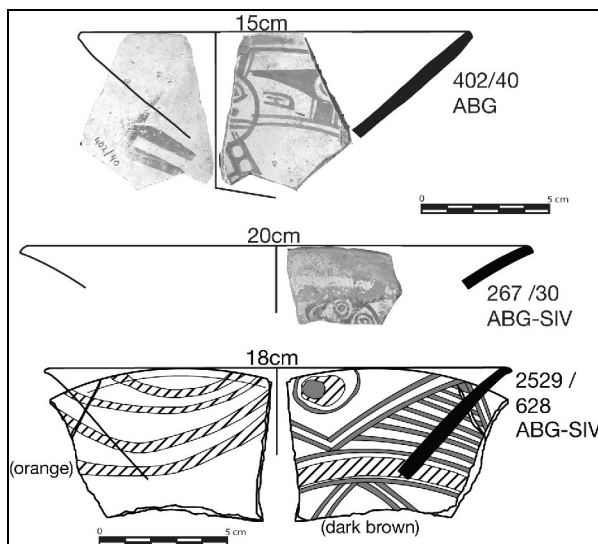


Figure 4: Late Horizon Amoshulca Black Geometric sherds.

Ceramic Assemblages at Yanaorco

I analyzed approximately 34,300 ceramic sherds from both surface and excavated contexts. These include a wide range of vessel forms and 18 distinct stylistic types, both decorated fine wares and domestic, utilitarian wares (Toohey in press). Types diagnostic of the LIP include Cajamarca Semicursive (CSC) and Cajamarca Black and Orange (CB&O; Figure 3). The Late Horizon, Amoshulca Black Geometric (ABG) style is also present in high frequencies (Figure 4).

Although the entire surface of the community was surveyed and all diagnostic ceramics analyzed, no direct evidence for ceramic production was uncovered. Indirect evidence included several small smoothing stones. It is likely that many of the vessels utilized in the community were made there, and future investigations will continue to seek direct evidence of production. There is little evidence for exotic, fine ware ceramics being imported into the community from other regions. However, a single exotic black ware rim sherd (Figure 5) was recovered from an excavated context, suggesting some level of coastal-highland interaction (Donnan 1990; Sandweiss 1995:161). This sherd was decorated with a press-molded design, a method that was not used in local Cajamarca ceramic production.

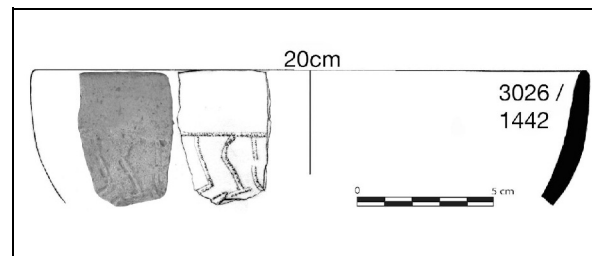


Figure 5: Exotic blackware ceramic sherd with press-molded design.

Unusual Artifacts at Yanaorco

Excavation and surface collection at Yanaorco also revealed a number of less common artifact types. Excavation within elite domestic room 22A (not shown in Figure 2, see Toohey 2009:276) uncovered four copper artifacts including copper tweezers and a *tupu* (stick-pin) that had been rolled or folded in on itself before entering the archaeological record. Inspection revealed that it was still in working condition when it was bent, indicating that it was purposefully rendered unusable before being deposited (Figure 6). This pin was originally 4.1 centimeters long. Finally, several small quartz crystals

were recovered from the same room. Interviews with local landowners revealed the presence of two ceramic whistles that had been collected from an area of the site now under cultivation. These whistles contained modeled human faces.



Figure 6: *Folded tupu.*

Social and Economic Stratification at Yanaorco

Architectural survey and variability in excavated materials indicate the presence of at least two social strata living at Yanaorco during the LIP. There is clear evidence for two distinct domestic zones at the site, marked by differences in room size, organizational complexity, and wall construction quality. Elite domestic spaces include both interior, roofed rooms and unroofed patios. Terraces are connected by well-defined staircases, and walls are made of faced and cut stone. Non-elite domestic spaces are less well preserved due to the lower quality of their walls and consequent poorer structural preservation.

While all households at Yanaorco probably engaged in agro-pastoral subsistence activities, including camelid herding, guinea pig raising, and corn and potato production, spatial analysis indicates variation in foodways and deposition patterns between elite and non-elite contexts (Toohey 2009). Elite households like those represented at room 22A seem to have had

access to camelid resources more frequently, and in larger amounts. Excavated faunal remains from this room include large limb bones with cut marks. Many fragments also exhibit evidence of burning or roasting. On the other hand, very small, friable bone fragments dominate the faunal evidence from non-elite spaces. These remains may indicate the practice of bone boiling in order to extract the maximum amount of nutrition from each available bone, implying a very conservative cuisine practiced by non-elite households. This pattern of conservative foodways in non-elite spaces versus the capacity in elite spaces to discard large, partially roasted bones is evidence for patterned variation in faunal use within the community.

Conclusions

The general settlement shift in LIP Cajamarca from lower elevations into often fortified and defensible higher elevation villages is important. This movement in population has two primary implications for life in the Cajamarca region during the centuries after the collapse of Wari influence. The shift to higher elevations, in the case of Yanaorco to an elevation of 3550 m.a.s.l., placed many communities at the boundary between the Quechua and *Suni* ecozones. This shift may indicate an increased focus on pastoralism during the LIP. At the same time, the settlement shift to more defensible locations, in many cases into substantially fortified communities, suggests the threat of armed conflict between communities during the LIP.

Excavation at Yanaorco indicates a dynamic community characterized by social and economic differentiation. Interaction between Cajamarca villages may have involved both exchange of fine ceramics and other resources, and armed conflict during the LIP. This investigation seems to show that interaction was primarily local and that little material exchange

occurred between highland communities like Yanaorco and coastal polities.

There are plans for future research at the site. These will include excavation of possible storage rooms associated with elite spaces. Because very little is known about mortuary activity, treatment, and practice in the Cajamarca region during the LIP, future research will also focus on unlooted tombs and will continue to investigate the nature of community organization, foodways, and militarism in fortified Cajamarca communities.

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A Colonial Human Burial Excavated in 1965 between Portals 5 and 6 at Huánuco Pampa

Monica Barnes (*Andean Past* and American Museum of Natural History, e-mail: monica@andeanpast.org), **Catherine Gaither** (Metropolitan College of Denver, e-mail: gaither@mscd.edu), **Robert A. Benfer, Jr.** (University of Missouri, e-mail: benferr@missouri.edu), and **Daniel Shea** (sheade@beloit.edu) report on a human skeleton excavated under the overall direction of John V. Murra at the Inca site of Huánuco Pampa in Huánuco Region.

From 20 July until 23 November 1965, funded by Peru's Paternato Nacional de Arqueología, the government entity then responsible for overseeing archaeological work, Murra undertook the "cleaning" (*limpieza*) and wall consolidation of the monumental portion of Huánuco Pampa (Morris *et al.* 2011:9-10; Murra and Hadden 1966). This was, in effect, a subproject of Murra's larger, National Science Foundation funded research, "A Study of Pro-

vincal Inca Life" (1963-1966). Under Murra's supervision was a small team of graduate students, young professional archaeologists, and Peace Corps volunteers including Mahlon [Lon] Barash, the late Luis Barreda Murillo, the late Gordon Hadden, the late Peter S. Jenson, the late E. Craig Morris, Daniel Shea, and James Stanton, the latter a civil engineer. Manual labor was performed by a team of approximately thirty local farmers. During the course of this work a human skeleton was uncovered. This is one of the few human remains ever found at Huánuco Pampa (c.f. Morris *et al.* 2011:31).¹ It was excavated on 4-5 September, 1965 by Shea and Barreda assisted by Barash² and witnessed by Morris and Hadden.

The information available on this burial consists of a series of eight black and white medium format photographs by Barash, fifteen black and white 35 millimeter photographs by Barreda, and one medium format black and white photo by Hadden taken during the excavation of the human remains, and seven photographs of the skull by Barreda, in addition to Shea's field notes. These are on file as part of the John Victor Murra Archive in the Junius Bird Laboratory of South American Archaeology, Division of Anthropology, American Museum of Natural History in the City of New York. The photos are reproduced courtesy of the AMNH. The roll and photo numbers in the captions of this report refer to Murra's original photo inventory. In addition, color photographs

of the excavation remain in the possession of Shea. The bones and associated artifacts have been destroyed.³

Context

To make the site of Huánuco Pampa more comprehensible, in his view, to visitors, John Murra removed large amounts of what he considered to be overburden from the monumental or central portions of Huánuco Pampa, including the *ushnu*, the buildings incorporating the series of aligned portals in the eastern portion of the site (the palace), the North and South *kallankas* bordering the eastern edge of the site, the bath, and the unfinished temple (*templete*). Although this was, in effect, an excavation, there is no indication found so far that the soils removed were screened for artifacts, that sections were created or drawn, or that environmental samples were taken. In addition, John Murra's team cleared vegetation from much of the fine masonry at Huánuco Pampa, reset stones that had fallen from walls, and removed boulders thought to interfere with foot traffic (Barnes 2010).

In the course of such work, Murra's team encountered the grave of a young person. The skeleton lay within the building of fine Cusco-Inca style ashlar masonry that encompasses the gateways known as Portals 5 and 6, the easternmost of the sets of aligned doorways leading to the Huánuco Pampa *ushnu* plaza (Figure 1; see Morris and Thompson 1985: figures 11, 13 for the location of this building). The individual was in a simple grave cutting a canal or drain that ran at or below the floor level of the building. The channel was lined with flat stones running along its floor and sides, and capping its top. The channel parallels the interior of the

¹ In May, 1964 John Murra and Peace Corps volunteer Peter S. Jenson encountered a looted stone burial chamber with a circular plan still containing human long bones in the Quellaycancha portion of Huánuco Pampa (Murra Archive, AMNH, Roll 15, photos 7, 8), another tomb (Roll 15, photo 9) and an apparently unlooted cairn tomb nearby (Roll 15, photo 10).

² Field notes by Daniel Shea, John V. Murra Archive, Junius Bird Laboratory of South American Archaeology, Anthropology Division, American Museum of Natural History, p. 7.

³ Letter from Craig Morris to Terence N. D'Altroy, November 17, 1976, Terence N. D'Altroy file, Junius Bird Laboratory, American Museum of Natural History.

south wall of the building, then makes a right-angle corner near Portal 5. From the information preserved and discovered so far, it is not possible to follow the entire course of this feature.

However, given its position at Huánuco Pampa, where it intersects a probable processional line from the eastern quadrant of the site to the *ushnu*, Huánuco Pampa's sacred center, as well as the importance of liquid offerings to *ushnus* (Meddens *et al.* 2010:186), it is tempting to suppose that this canal has some connection to the site's *ushnu*. A similar arrangement can be observed at Inca Pachacamac on the central Peruvian coast (Barnes, *vidi*, September 2011).

Because the creation of the grave would have interfered with the functioning of the canal, the grave must postdate the canal's use. An iron pin was found near the skeleton's neck (Shea, field notes, p. 8). This was not illustrated by Shea and does not appear in the photographs. Whether the pin was a shroud pin, or a *tupu*, an indigenous woman's shawl fastener, its material is a certain indicator that places the burial in colonial times, probably between 15 August 1539 when the Spanish settlement at Huánuco Pampa was officially founded and 2 February 1541 when it was abandoned. Shea also noted a few animal bones and Inca sherds associated with the burial but pointed out that these could have been elements of the grave's fill and not contemporaneous with the burial itself (Shea, field notes, p. 7). Some of the photographs show three or four small, light-colored conical objects and one small, light-colored round object in the center of the chest. These are not mentioned by Shea in his field notes. It is tempting to think of these objects as three bone arrow heads and one oxidized lead ball, and the proximate cause of death. If that is so, they represent exceptionally precise shooting by two assailants, one using a bow and the

other a long gun or pistol.⁴ Because the possible arrowheads do not resemble those used by Spanish bowmen, at least one of the shooters would have been an Indian. However, the photographs are an insufficient basis for the identification of these artifacts. Nevertheless, the stratigraphy and the position of the body, coupled with the iron pin, indicate that the burial is post-Inca.

No statistical treatment can be given to a single skeleton found in isolation. However, the burial context is important, although it cannot be fully interpreted. Publication of individual burials may, gradually and collectively, lead to insights that cannot be anticipated at present. Without publication, the information inherent in these burials remains unavailable to scholars for analysis and synthesis. For other examples of published single burials see Gaither *et al.* 2009; and Quilter *et al.*, this volume, p. 106, figure 12. An important caveat must, however, be stated. The authors had no access to the bones themselves, and worked only with photographs of the skeleton *in situ* and with views of each of the aspects of the skull. Furthermore, distortions may have been introduced by camera angle and lens. We do not know what photographic equipment was employed, except that it included a 35 millimeter camera, probably a rangefinder, and a medium format camera, probably a twin lens reflex. This situation poses obvious limits to analysis.

Description and analysis of the osteological and dental remains

The skeleton is extended, lying on its back, facing east, with the left forearm crossing the third lumbar vertebra and then crossing the right arm with the left hand resting on the right

⁴ For an unambiguous example of an Andean Indian killed by a firearm in the immediate post-conquest period see Murphy *et al.* 2010:641-642, figure 4.



Figure 1: Skeleton discovered in building encompassing Portals 5 and 6, Huánuco Pampa, viewed from the feet. Portal 5 is behind the skeleton and other portals leading to the ushnu can be discerned in the distance. Roll 26, photo 5.



Figure 2: Skeleton discovered in building encompassing Portals 5 and 6, Huánuco Pampa, viewed from the true left side. Roll 26, photo 4.

elbow. The right arm is extended with the elbow describing a 90 degree angle. The left humerus lies parallel to the vertebral column. The right leg is slightly flexed laterally at the knee (Figures 1, 2).

The deceased was possibly placed in the grave in a state of rigor mortis, which would put death anytime between three hours and three days prior to burial.

Sex. This cannot be established for a certainty from the pelvis. The subpubic angle of the os coxae appears to be narrow, indicating a male, with the caveat that views of the pelvis are not good, and there are some feminine indications. However, there is no ventral arc, further suggesting that the individual is male. The greater sciatic notch is indeterminate to probably male. The ischiopubic ramus is wide, and possibly blunt, also suggesting a male. However, a subpubic concavity, a female trait, is possibly present. The pubic symphysis appears to be beveled mesially, but this is uncertain from the photograph (Figure 2).

Cranial features including the mastoid process, glabella, nuchal crest, and the temporal line are indeterminate. There are large supra-orbital arches concentrated near the mid-line.

Age. All limb bone epiphyses visible appear to be fused. There are no visible osteophytes or enthesiophytes, suggesting an age at death of less than 40 years. Cranial sutures are all open, although the metopic, basilar, and incisive sutures are fused (Figure 3), suggesting an individual older than 20. The anterior median palatine suture is open, indicating a young adult. There is incomplete fusion of the zygomatic bone with the maxillary bone, also suggesting a young adult, someone who died between the age of 20-35. The pubic tubercle is clearly visible in the right pubic symphysis. Because this feature

disappears by about 25 this could be taken as an upper boundary of age.

Post-cranial pathology. Little can be said about the post-cranial bones on the basis of the photographs alone. However, Figure 2 shows a possibly arthritic surface for the proximal left radius. Alternatively, the photograph may be showing porosity common in the young. The pitting in the lateral superior right clavicle may be due to the stronger muscle attachment of a right-handed person, or it may represent the result of healing after torn ligaments. There is no obvious evidence of the right arm having been made unusable. This probably fits with the obvious lateral deviation to the left of the nuchal muscles (see cranium, below), but there is no evidence of tumpline use. There are no obvious parry fractures on the left forearm, but these would probably not be visible in these photographs. The right humerus appears to be quite straight, typical of agriculturalists. There is possible osteoarthritis on the right distal humerus on the lateral margin of the capitulum.

Cranium

Posterior. The posterior view of the cranium (Figure 3) shows pronounced asymmetry. The neurocranium is slightly flattened at lambda, with greater deflection to the right. There is a greater expression on the attachment of nuchal muscles to the left; the sagittal suture deviates towards the right parietal bone. The parietal foramina are moderate to large in size; it is unusual that the right is not closer to lambda.

There is occipital parietal flattening, possibly indicating deliberate cranial modification. There is slight, healed porotic hyperostosis in the squamous portion of the occipital bone. This suggests the individual may have suffered from anemia at some point in life.



Figure 3: Posterior view of cranium of individual depicted in Figures 1 and 2. Roll 26, photo 15.

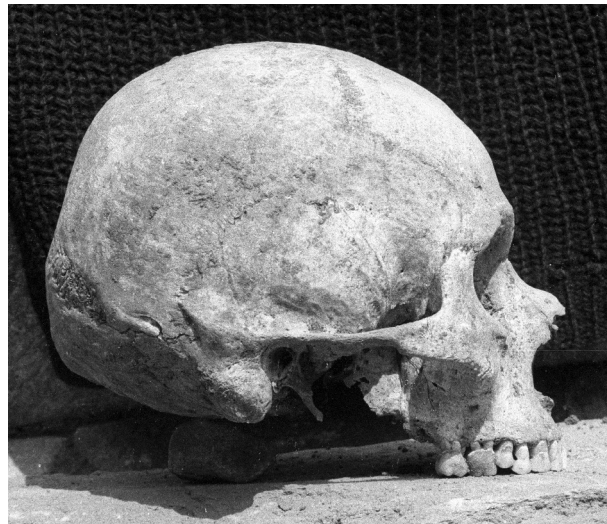


Figure 4: Right lateral view of cranium of individual depicted in Figures 1 and 2. Roll 26, photo 14.

Right lateral cranium. (Figure 4) The canal is nearly circular. There is a possible puncture wound at the superior articular border of the temporal bone. There is an accessory bone at pterion. The right temporal line is heavy for the individual's age. Alveolar prognathism is not pronounced. The ratio of the right mastoid length to the height of the skull at mastoid, as measured in the photographs, is 0.23; the ratio

of the left is 0.20. The right zygomatic arch also appears more developed than the left, indicating a larger masseter muscle for chewing. These observations are confirmed by the lack of molars on the left side.



Figure 5: Left lateral view of cranium of individual depicted in Figures 1 and 2. Roll 26, photo 17.

Left lateral cranium. There are no auditory osteomas on either side (Figure 5). The left auditory meatus is more flattened than the right, which suggests the loss of molars may have been during the early teen years (see dental pathology below) to have affected the development of the meatus. The left mastoid muscle attachment may differ from the right, with possibly more surface area for the sterno-cleido-mastoid muscle to attach. This may explain a greater expression at its insertion in the right clavicle. However, the left mastoid appearance may be due to the angle of the photograph. Damage to the superior temporal bone appears postmortem. Canals on the greater wing of the sphenoid are within normal range. The specimen exhibits an accessory bone at the asterion and in the occipital suture, reflecting sutural complexity. A depression on the left posterior parietal could be a healed wound, but it would require inspection of the inner table to confirm.

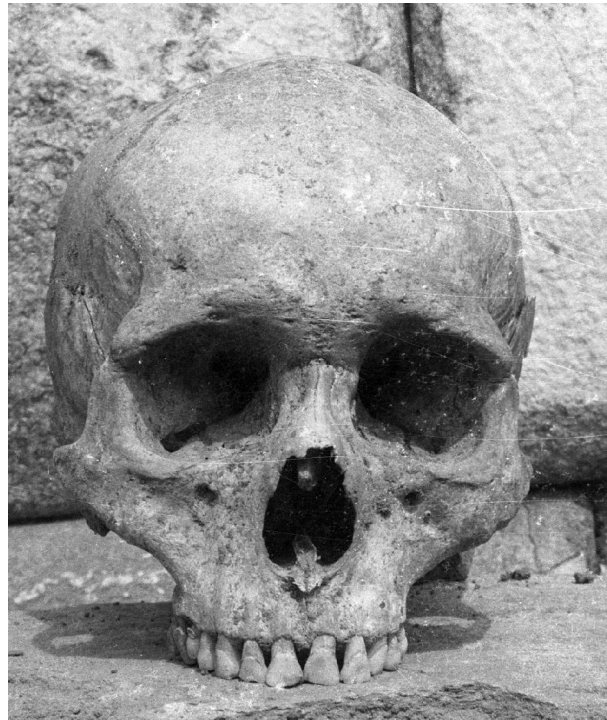


Figure 6: Frontal view of cranium of individual depicted in Figures 1 and 2. Roll 26, photo 14.

Frontal view. The frontal view of the skull (Figure 6) shows expansion of the supraorbital ridges medially. The nose is broad and the lower margin is guttered. The orbits are rectangular; the zygomatic arches are broad. There is substantial resorption in the sub-orbital regions. The temporalis muscle has marked the right frontal bone more than the left, indicating more chewing on that side, the one that retained molars. There is a possible cut superior to the right orbit. The supraorbital canal on the right is enclosed, the left not. Remnants of the metopic suture are visible above the nasion.

Inferior view. The right occipital condyle is divided and with a much smaller articulatory area than the left (Figure 7). The left occipital condyle shows temporal mandibular joint disease with the mandibular condyle moving forward to articulate with the sphenoid. The TMJ differences may represent the bad bite that developed from the loss of the upper left molars

and the need to exert more force upward and laterally from the mandibular right molars.



Figure 7: Inferior view of cranium of individual depicted in Figures 1 and 2. Roll 26, photo 16.

Dental pathology. The maxillary first and second left molars and first, second, and third right molars are missing antemortem. Tooth wear is evident, most notably on the anterior dentition. There is evidence of reactive bone, indicating active infection at the time of death. There is a carious lesion on the distal interproximal cemento-enamel juncture (CEJ) of the right maxillary first premolar. The left maxillary first premolar demonstrates a distal interproximal carious lesion on CEJ that could indicate para-masticatory behavior, although it could be coincidental. There is tartar accumulation on the right maxillary first and second molars. The second premolar is not in occlusion. A possibly granulating crypt for the right third molar is observed (Figure 4). This trait establishes a lower age boundary in the late teens. All three molars had been present and erupted indicating a minimum age of approximately 15 to 18 years.

Teeth show significant resorption of the alveoli, with pronounced porosity, which probably indicates chronic infection of the tissue. The central incisors are winged, deviating mesially and posteriorly. Enamel hypoplasia is not evident on the crowns (only extreme lines would be visible in the photograph), but there is some

effect on the roots at the coronas of the incisors. The suborbital (infraorbital) canal (artery) on the right side shows signs of osteitis. The palatine suture is irregular as expressed in the frontal view and also visible in Figure 7, an inferior view.

Figure 7 shows the lack of molars on the left maxilla, the alveoli filled or filling. The level of granulation in the upper jaw suggests that the left molars were lost in the last year or two of life. The right side shows what appears to be two molars above the occlusal plane but in fact is a second molar behind it, as can be seen in Figure 6. Its crypt was being granulated, but without seeing the floor, one cannot be sure whether it was present in life. There does not appear to be interstitial wear on the distal surface of M2, which argues against its having been present and in occlusion for any length of time. There may be a carious lesion on the occlusal surface of M2 and possibly M1. Two of the lower left molars were lost in life and resorbed, but the extreme recession of the alveolus in one so young suggests that infection could have played a role.

Conclusions

The last days of Huánuco Pampa were violent ones. By the late 1530s the site had been largely abandoned by its indigenous inhabitants. As Craig Morris, director of excavations at Huánuco Pampa after John Murra, pointed out:

The seven years immediately following the conquest are of special archaeological importance because it was during that time that most of the artifact associations in the Incaic sectors of the site were formed as native use patterns were discontinued under varying degrees of disruptions from both the conquering Europeans and the indigenous rebellions against new rule (Morris 1979:210).

The person discussed in this report is most likely part of the “associations” formed during Huánuco Pampa’s final occupation. The grave seems to have blocked the free flow of water or other liquids in an important part of the site, suggesting that maintaining this flow was no longer of importance. The prone position facing east, crossed arms, and iron pin all indicate a post-Inca burial. However, the cadaver was not placed in a Christian cemetery. It is not clear when such a cemetery was established at Huánuco Pampa. Documentary evidence only suggests that a hacienda chapel already existed in 1786 when it appears on a map of Huánuco Pampa (Sobreviela and Sierra 1786). In any case, the presence of a single human burial in this part of the site is intriguing.

ACKNOWLEDGEMENTS

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Mitomarca: A Possible Fortification in the Upper Huallaga Basin

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The Upper Huallaga Basin is on the eastern slopes of the Andes and is a mountainous region cut by the Huallaga River (Figure 1). It is an important ecological interface and a corridor between the central highlands and Amazonia.

During the 1960s, the University of Tokyo carried out intensive excavations at the sites of Kotosh and Shillacoto. Although this pioneer-

ing research established a fine-grained relative chronology of the region's Initial Period and Early Horizon, little archaeological research has occurred since then because of widespread violence during the 1970s and 1980s. As a result, there are considerable gaps in our understanding of the culture history of the region, especially for the long span of time between the first century A.D. and the years immediately prior to the incorporation of the region into the Inca empire in the late fifteenth century A.D. Therefore, for the purpose of amplifying archaeological understanding of the prehistory of the Upper Huallaga Basin, a settlement pattern study was conducted in 2001 by Kinya Inokuchi (University of Saitama, Japan), Yoshio Onuki (University of Tokyo), Eisei Tsurumi (University of Tokyo), Yuichi Matsumoto, and Alvaro Ruiz.

In 2005 and 2006, Yuichi Matsumoto and Jason Nesbitt conducted a follow-up study to the 2001 survey to understand the region's prehispanic water management. In 2005, it was observed that at least some of the Initial Period and Early Horizon sites in the upper Huallaga Basin were near possibly ancient canals. In 2006, we examined this possibility through survey of canal systems around the Early Horizon site of Sajara-patac. While elements of the canal near Sajara-patac are clearly modern (e.g. the use of concrete), other parts suggest greater antiquity. For instance, sections of the canal, especially on nearby slopes, are shallow gravity-fed channels cut into bedrock. Based on its proximity to Sajara-patac, we hypothesize that the canal may have been associated with the Early Horizon occupation. Therefore, in 2006, we followed this canal with the intent of determining if it was associated with other archaeological sites. We found that the canal passed by another, larger site enclosed by a massive perimeter wall. This site is locally called Mitomarca. We hypothesize that Mitomarca may be a

fortification dating primarily to the Late Intermediate Period.

Site Description

Mitomarca is in the district of Churubamba, close to the eastern end of the Upper Huallaga Basin. The site stands on a natural hill along the northern bank of the Huallaga River at an elevation of 2300 m.a.s.l. The Early Horizon ceremonial center of Sajara-patac (Inokuchi *et al.* 2003; Matsumoto and Tsurumi in press) is approximately 600 meters to the southeast, on the lower part of the same hill (Figure 1).

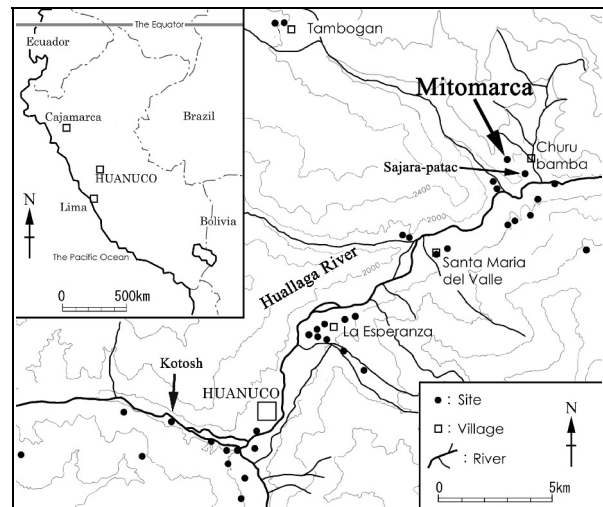


Figure 1: Location of Mitomarca and distribution of archaeological sites in the upper Huallaga Basin.



Figure 2: Southern perimeter wall of Mitomarca.

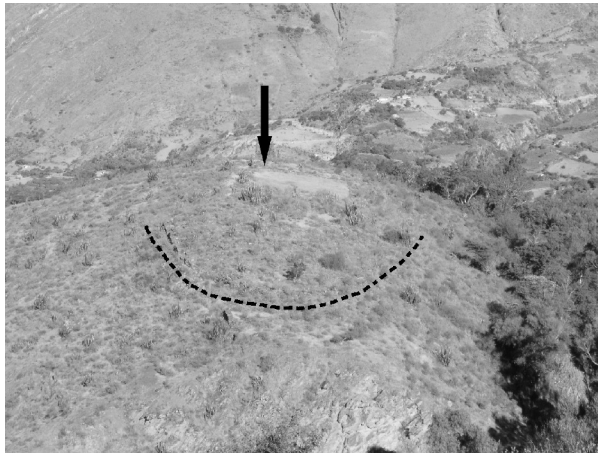


Figure 3: Mitomarca from the north, showing perimeter wall. The arrow indicates the location of the plaza while the dotted line shows the perimeter wall.



Figure 4: A platform construction in the northern area of Mitomarca.

Mitomarca extends over an area of at least 0.8 hectares, and many stone constructions are visible on the surface. A massive perimeter wall more than 1 meter wide and 1.5 meters high surrounds the hilltop (Figures 2, 3). Because the base of the wall is not exposed, the wall is probably much taller. In some sections the wall is double-faced and could be part of long narrow room, or hallway-like buildings. This massive wall curves in accordance with the natural landscape and forms a large ovoid enclosure. Its stone masonry consists of stacked, quarried, flat stones set with mud mortar. These materials

were locally available and the stones were probably quarried from the natural outcrops around the site. The flat sides of the stones were used for the wall faces. As noted above, a canal that may have been used from the prehispanic period runs from north to south along the exterior of the perimeter wall.

The area inside the perimeter wall contains several rooms and possible platform constructions (Figure 4). Although the central part of the area is one to two meters higher than other areas, it was difficult to determine whether a platform-like construction is buried below, or the rise is simply part of the natural landscape. Many lines of stone walls can be recognized in this area and most seem to be double-faced. Room constructions can be seen in the northern part of the enclosure. Although most of them are square, the size of the rooms varies, and the largest one measures approximately three by four meters in plan. To the north of the cluster of square rooms, three rectangular platforms protrude from the slope to the exterior.

In the southwestern area of the site, near its edge, there is a square plaza measuring twenty-three meters by twenty-three meters (Figures 3, 5). While the northern and eastern plaza walls are unifacial and the area behind them back-filled, the south and west ones are double-faced.



Figure 5: Plaza from the north.

Chronological Position of Mitomarca

The relative chronology of the Initial Period to the Early Intermediate Period is well established in this region (e.g. Onuki 1972). Ceramic style is the fundamental tool for establishing the chronological position of the Mitomarca site. Although potsherds were scarce on the surface, we recognize late Early Horizon (Kotosh Sajara-patac Period) and Early Intermediate Period (Kotosh Higuera Period) sherds. However, most of the potsherds do not fit within the typology established at Kotosh, and therefore probably postdate the Kotosh Higuera Period. Nevertheless, stylistic similarities with pottery from Kotosh and Sajara-patac suggest that the latter site was first occupied in the late Early Horizon or early part of the Early Intermediate Period. A radiocarbon date from Sajara-patac (Pta-9659) yields an uncalibrated date of 2140 ± 70 B.P. for this period (Matsumoto and Tsurumi in press).

However, the architecture exposed on the surface at Mitomarca seems to contradict the ceramic data somewhat. The architectural style is clearly distinct from that of the late Early Horizon and Early Intermediate Period of the region which share similarities. For example, while the Sajara-patac site is in close proximity to Mitomarca, the late Early Horizon architecture of Sajara-patac is much smaller in scale and the masonry is not as well constructed as that of Mitomarca (*ibid.*). For instance, the masonry of Sajara-patac is much coarser in style than Mitomarca and does not use quarried stone (*ibid.*). Moreover, sites dating to the Early Horizon or the Early Intermediate Period (Kotosh Higuera Period) did not use massive perimeter walls. These data accord with other lines of archaeological evidence, which suggest that warfare was not common in this part of the Huallaga Basin during the Early Horizon.

Instead, high walls made of stacked flat stones and massive defensive walls enclosing a hilltop show a great deal of similarity with the Late Intermediate Period and Late Horizon architectural styles of the central highlands (e.g. Bonnier 1997; Grosboll 1988; Mantha 2009; Morales 1984; Salcedo *et al.* 2000; Thompson 1967). Although the available data are scarce, the architectural style of Mitomarca seems to show affiliation to architectural styles distributed from the *quechua* to *puna* along the Marañón and Huallaga drainages and documented at sites such as Piruru (Girault 1981), Garu (Sánchez Murrugarra and Palacios 1988; Salcedo *et al.* 2000), and sites in the Rapayán Valley (Mantha 2009) and the Province of Dos de Mayo in Huánuco (Morales 1984). The existence of Kotosh Higuera Period Pottery at Mitomarca may suggest, as Grosboll indicated (1988:354-358), the considerable continuity in the pottery style from the beginning of the Early Intermediate Period until late prehistoric times. Isbell (1974) refers to a pottery style similar to Kotosh Higuera as the “CB series” shared in the central and south-central highlands. According to Onuki, this style existed until the Late Intermediate Period in the Upper Huallaga Region (Onuki 1982:219-220).

Mitomarca as a Fortification

Based on the hilltop location and presence of a massive perimeter wall, we hypothesize that Mitomarca probably functioned as a fortification. The data from the north coast and highlands indicate that the late Early Horizon was a time of political instability and social tension among different groups following the collapse of the Chavín sphere of interaction (Burger 1992). In these regions, radical changes in settlement patterns are recognized. Many fortified sites appeared and the population was clustered around them. Mitomarca contains a late Early Horizon component, and, therefore, it may seem appropriate to consider it as a fortified site that

appeared as a response to the political instabilities of this period. However, the general settlement pattern data clearly contradict this view. During the Kotosh Sajara-patac Period, the number of sites radically increased and new sites were distributed throughout the *yunga* ecozone in the Upper Huallaga Basin. Although new sites were constructed at higher elevations near the border of the *yunga* and *quechua* ecozones, bottomland sites also increased in frequency, but some of them were first occupied in the middle-early Early Horizon and continued to be occupied during the Kotosh Sajara-patac Period. Furthermore, most sites dating to this time did not utilize defensive architectural features. Therefore, in the Upper Huallaga Basin, it may be dangerous to assume the existence of increased conflict with neighboring regions during the late Early Horizon, and, thus, it is difficult to interpret Mitomarca as a fortified site of the late Early Horizon or beginning of the Early Intermediate Period.

If we accept that the surface architecture of Mitomarca was constructed some time after the Early Intermediate Period, probably during the Late Intermediate Period, it seems more probable that Mitomarca was a fort, because of the known tensions among different ethnic groups of the Huallaga region at that time. Although the cultural developments after the Kotosh Higueras Period, that is, from the Middle Horizon to the Late Horizon, are not well known in the Upper Huallaga Basin, the survey data of Sue Grosboll (1988) provide useful insights pertinent to this issue.

Grosboll surveyed the area where the Chupachu and Quero people lived, and she located many of the Late Horizon sites described in the *visita* document of 1549 and 1562 written by Íñigo Ortiz de Zuñiga (Ortiz de Zuñiga (1967, 1972 [1562])). According to Grosboll, the sites that belong to the Middle Period (500-1300 A.D.) in her terminology, tend to be found in

between 2400 and 2900 m.a.s.l., while the Late Horizon sites were frequently in the elevations between 3000-4000 m.a.s.l. (Grosboll 1988:75). As Daniel Morales (1984) points out regarding the Late Intermediate Period and Late Horizon sites in the Upper Huallaga Basin, it is very probable that the sites that Grosboll registered as Late Horizon have a Late Intermediate Period component as well. Therefore, the shift of settlements to higher elevations may have occurred during the Late Intermediate Period, rather than during the Late Horizon. If this change in settlement pattern reflected the political disintegration of ethnic groups, it might be possible to interpret Mitomarca as a fort. Alexis Mantha (2009) identified multiple site categories based on survey of the Rapayán Valley approximately 80 kilometers to the north of Mitomarca. He found that some of the high elevation sites of the Late Intermediate Period display both defensive and ceremonial characteristics, and named sites of this type as “Defensive, Ceremonial, and Communication settlement (DCC)” (*ibid.*:168-169). If, in Mitomarca, the square plaza had a ceremonial function, and the perimeter wall functioned as a defensive wall, this might be an appropriate term to represent Mitomarca.

Conclusion

Our preliminary observation of Mitomarca generated more questions than we had at the beginning of our field-work, rather than solving issues of the later prehistory of the Upper Huallaga Basin. Only further study of the site will make it possible to evaluate the hypotheses presented in this report. While the regional cultural context from the Preceramic Period to the Early Horizon is well studied, the period after the Early Intermediate Period is only poorly known. In particular, the Middle Horizon and the Late Intermediate Period of the Upper Huallaga lack basic archaeological data. Mitomarca is a multi-component site that probably

contains occupation during these periods. Thus, the site will be an appropriate research site to fill the gap in archaeological data and extend the regional chronology to the Late Horizon.

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An Initial Period Domestic Occupation at Huaca Cortada, Caballo Muerto Complex

Jason S. Nesbitt (Yale University, e-mail: jason.s.nesbitt@gmail.com) reports on his recent excavations at the Caballo Muerto site in the lower Moche Valley.

Caballo Muerto is well known in the archaeological literature as a large multi-mound Cupisnique center in the lower Moche Valley. Pioneering research at Caballo Muerto in the late 1960's and 1970's established that each of the mounds dated to the Initial Period or Early Horizon (Chauchat *et al.* 2006; Pozorski 1983; Watanabe 1976). Between 2007 and 2008, I initiated new excavations at Caballo Muerto (Nesbitt *et al.* 2010). The goal of the excava-

tions was to examine Cupisnique social, religious, and economic organization from a diachronic perspective. To that end, my research consisted of excavations within the monumental buildings of Huaca de la Cruz, Huaca Cortada, and Huaca Curaca. (For a map of Caballo Muerto and the relative position of its various mounds see Nesbitt *et al.* 2010: figure 2; Pozorski 1976: 295, figure 2). This research established a long sequence beginning in the early Initial Period and continuing into the middle Early Horizon.

Another aspect of my excavations at Caballo Muerto was the location and excavation of domestic occupations. Caballo Muerto presents a number of logistical and methodological challenges to the location of small scale, non-monumental architecture. Earlier excavations around Huaca Herederos Chica and Huaca Herederos Grande, located 250 meters to the south of Huaca Cortada, determined that the Initial Period ground surface was buried by approximately four meters of alluvium (Chauchat *et al.* 2006). Therefore, if residences are outside the areas of public architecture, the substantial depths at which these occupations are likely to be found make it difficult to uncover them. During my research at Caballo Muerto, I conducted four test excavations in the agricultural fields between Huaca Cortada and Huaca Herederos Grande (Figure 1). Each of the four units was positive and showed evidence for deeply buried domestic occupations and small scale ceremonial architecture. Here I report on one of these excavations: Unit 2, which yielded household features, as well as artifactual, zooarchaeological, and archaeobotanical materials that date to what I term the Cortijo Phase, tentatively dated to the early and middle parts of the Initial Period.

Excavation of Unit 2

Unit 2 was a two by four meter excavation, in the agricultural fields just to the south of Huaca Cortada (Figure 1), a large terraced platform mound that measures one hundred by ninety meters at its base and twenty-one meters in height. Radiocarbon dating places the earliest occupation of this mound at approximately 1500 cal BC (Nesbitt *et al.* 2010). As is discussed below, the Unit 2 domestic occupation is contemporary with Huaca Cortada.

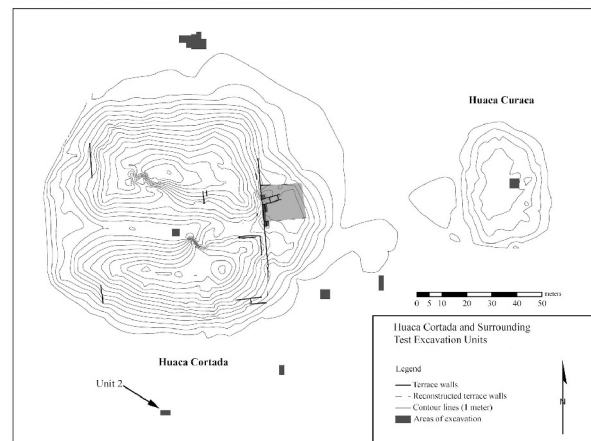


Figure 1: Plan of Huaca Cortada and Huaca Curaca with the location of test units (shaded areas).

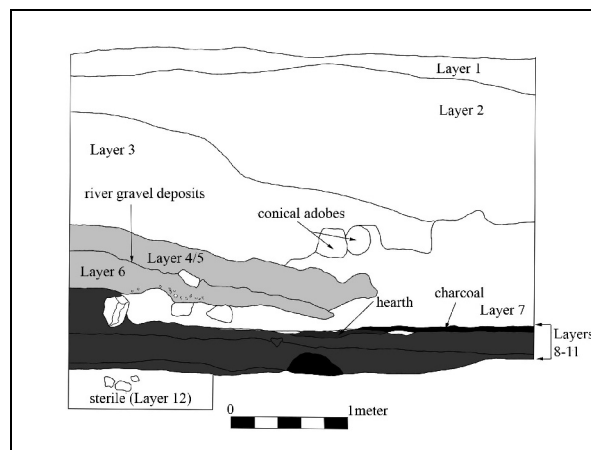


Figure 2: The southern profile of Unit 2.

I identified twelve layers during the excavations of Unit 2 (Figure 2). The first (uppermost) layer was a mixed surface deposit of cobble-sized

rocks and a small quantity of Chimú style pottery. Chimú ceramics and stone wall foundations were common in other test units around Huaca Cortada, indicating the presence of a Chimú occupation postdating the use of the monuments at Caballo Muerto.

Directly underlying this first layer were light brown (7.5YR6/3) clayey soils with large cobbles and small boulders that contained Initial Period pottery fragments (Layer 2). Associated with these materials were small pieces of charcoal, eroded conical adobe fragments, and numerous burned, orange clay fragments with cane and cordage impressions. In some cases these clay pieces had traces of white paint on their exteriors. However, no occupation surface was associated with these materials.

Beginning at a depth of 1.46 meters below the surface was a brown (7.5YR4/4) silty soil (Layer 3) that had fewer rocks, but an increasing abundance of broken conical adobe fragments, some of which can be seen in the southern profile. Within this layer were also thin lenses of light-colored sand and a small circular carbon concentration. There were no diagnostic pottery rims, but the pastes of the body sherds were consistent with Cortijo Phase ceramics. Interestingly, this layer was not continuous, but instead represents a cultural layer that post-dated a probable flood of the Río Seco, now a dry quebrada that runs just to the west of Huaca Cortada.

This flood deposit was a thick series of layers that sloped to the west (Layers 4-6). These layers together range from fifty-six to ninety centimeters in thickness and were composed of a brownish yellow (10YR6/6) coarse sand containing small pebbles and rounded cobbles. There were no artifactual materials recovered from these layers. In terms of color, composition, and thickness, these layers were quite distinct from the overlying and underlying

layers. I hypothesize that these layers originated from the flooding of a branch of the Río Seco during an El Niño event that covered the underlying Initial Period domestic occupation described below.

Layer 7 consisted of a brown (7.5YR4/4) silty soil with several broken conical adobe fragments, some of which also can be seen in the southern profile. Mixed within this layer were deposits of light-colored sand. Just to the east of the adobe fragments was a small, circular carbon concentration. The artifact assemblage consisted of a small number of non-diagnostic body sherds with Initial Period pastes. As will be discussed below, this layer was not continuous, but instead seemed to be a layer that pre-dated a flood of a branch of the Río Seco.

Intact Initial Period occupation surfaces (Layers 8-11) were uncovered beginning at a depth of approximately 2.20 meters below the ground surface. These layers consisted of a series of superimposed domestic occupation layers (discussed below). Each layer is described separately below.

Layer 8 was a surface or floor made up of a brown (7.5YR4/3) compacted earth mixed in places with fine-grained yellow (10YR7/6) sand. The floor also had concentrations and flecks of charcoal and ash that began in the western profile of Unit 2 and continued to the east. The profile exhibited a discrete lens of charcoal and red (2.5YR5/6) earth that formed a probable hearth measuring approximately eighty centimeters in length. The presence of a hearth in the southern profile indicates that the occupational surface continues to the south.

The Layer 8 floor yielded some refuse, including mammal, fish, and charred shellfish remains. Burned, orange clay fragments continued to be abundant and a single adobe fragment was found resting on the surface. Pottery was

relatively abundant in this layer and I found numerous blackened, neckless olla rim fragments resting horizontally on the surface. In addition, I found a small, flat, stone circular ornament with two holes in the center of the artifact (Figure 3l).

Layer 9, a second occupation surface, was found at a depth of 2.35 meters. It is a compacted brown (7.5YR4/3) deposit with few rocks in the matrix. Throughout the surface, there was red (2.5YR5/6) burned earth, as well as carbon concentrations. Near the center of the unit I found a long-neck bottle rim that corresponds to the Cortijo Phase (Figure 3b), and an associated rough spherical stone (Figure 3m). Other fragments of pottery were found resting horizontally on the surface of this layer.

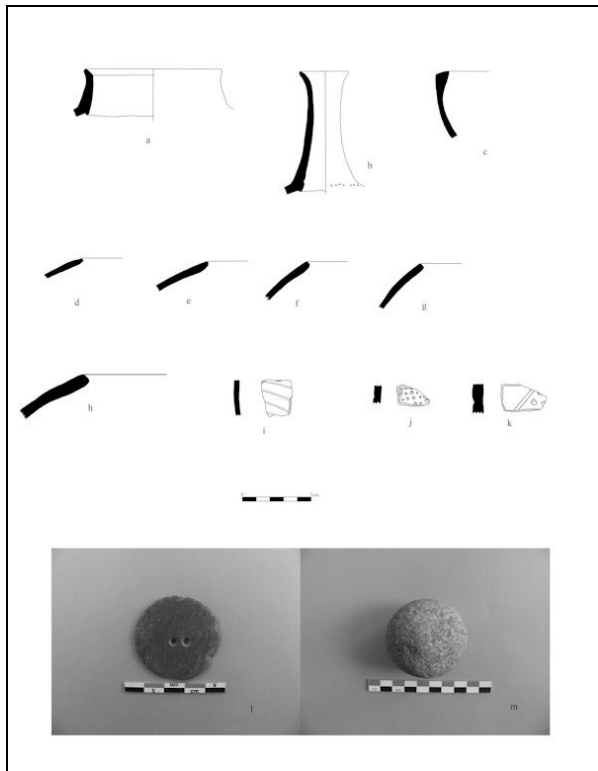


Figure 3: A sample of artifacts from Unit 2; a-k show Cortijo Phase pottery; a) short-necked jar, b) bottle, c) bowl, d-h) neckless ollas, i-k) decorated sherds; l and m show the lithic materials described in the text.

As with other layers, there were abundant burned clay *quincha* (wattle-and-daub) fragments, with cane impressions. Shellfish remains were also present in this layer.

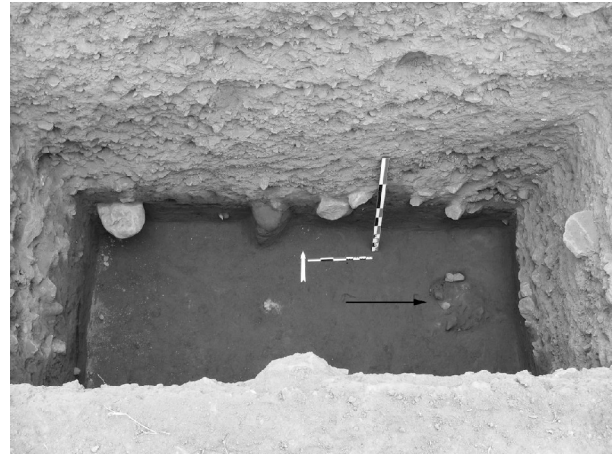


Figure 4: Photograph of the Layer 10 floor with arrow indicating the location of the hearth. The apparent difference in dimensions between Figures 2 and 4 is due to parallax error of the lens employed in taking the photograph.

Layer 10 represented a third occupation surface found at an average depth of 2.6 meters below the present ground surface. The main feature from this layer was a circular hearth in the eastern part of the unit. The hearth measured approximately fifty centimeters in diameter. The outermost part of the hearth was lined by fire-reddened clay. Within the central part of the hearth were a series of fire-cracked rocks, as well as abundant charcoal and ash (Figure 4). I took a sample of the hearth for radiocarbon dating and flotation.

Layer 11 was a thin layer of coarse yellow (10YR7/6) sand underlying the floor. In this deposit I found sixteen non-diagnostic sherds with hearth-blackened exteriors and Initial Period pastes. In addition, two small fragments of human bone were recovered. Unfortunately, the part or parts of the skeleton they represent could not be identified.

Layer 12 was a sterile deposit consisting of loosely consolidated cobbles within a coarse sand matrix. No artifacts were recovered from this layer. Layer 12 was first found at a depth of 2.7 meters below the present ground surface and the excavations were terminated at just over three meters below the surface.

I interpret Layers 8 through 11 as representing a probable domestic occupation associated with Huaca Cortada. The evidence that supports this conclusion includes the presence of superimposed hearths, cooking vessels, and refuse such as animal remains. The abundance of adobe fragments and burned clay fragments with cane impressions and, more rarely, pieces of mud plaster, throughout most of the layers in Unit 2 suggest that the domestic unit was a wattle-and-daub building.

The superposition of hearths and occupation surfaces characterizing the domestic occupations in Unit 2 appears to represent the accumulation of households, perhaps over several generations. As Hirth (1993:24) observed, these types of accumulated deposits create problems for investigating household composition synchronically. To get around these problems, Hirth uses the term “household series” to define the remains that amass from a succession of households occupying the same physical space (or “homestead” in Hirth’s [*ibid.*: 24] terminology). Layers 8 to 11 of Unit 2 can best be interpreted as a household series accumulated during domestic occupations, probably over a relatively short period of time during the Cortijo Phase.

Chronology

No absolute dates currently exist for the occupation of Unit 2. However, a pilot radiocarbon dating project focusing on the earliest phases of monumental architecture at Huaca Cortada indicates that its first architectural phase dates to around 1500 cal BC (Nesbitt et

al. 2010). The small assemblage of pottery associated with this phase demonstrates close parallels with Cortijo Phase ceramics recovered from Layers 8-11 in Unit 2. Cortijo Phase pottery in Unit 2 consists of unslipped wares with oxidized pastes and coarse inclusions. The most common form from the Cortijo Phase is a neckless olla. Some examples have simple incised or punctate decorations (Figure 3 j-k). The most diagnostic vessel form from this time, however, is a type of long-necked bottle, with small punctations ringing the area where the base of the neck meets the bottle chamber. Analysis of Cortijo Phase pottery at Caballo Muerto shows broad similarities to a variety of early and middle Initial Period ceramic traditions including the Montegrande (Ulbert 1994) and early and middle Guañape (Strong and Evans 1952) styles from the nearby Jequetepeque and Virú Valleys. At present, based on cross dating with Huaca Cortada, I tentatively date the Cortijo Phase to approximately 1500-1200 cal BC. A radiocarbon dating project is underway to create a more detailed absolute chronology, which will be available in the near future. More relevant to this report, the ceramic data clearly show that the occupation described for Unit 2 is coeval with the earliest known phases of use of Huaca Cortada.

Subsistence economy

Careful recovery techniques, including fine-grained screening and flotation of Layers 8 through 11, allowed the collection of floral and faunal materials that shed some light on the subsistence economy of the Cortijo Phase occupation of Caballo Muerto. Faunal materials from Layers 8 and 9 include the remains of shellfish, including clams (*Donax* sp.) and mussels (*Choromytilus chorus*). In addition, the zooarchaeological analysis found one bone from a gull (*Larus* sp.) as well one drum otolith. A single thoracic vertebra from a deer (*Odocoileus virginianus*) was found in Layer 9. Flotation of the

hearth from Layer 10 yielded abundant fish remains including fifty-one anchovy (*Engraulis ringens*) vertebrae and four drum (*Sciaena deliciosa*) vertebrae.

Starch grain residue analysis was conducted by Víctor Vásquez (Universidad Nacional de Trujillo) on a small sample (n=4) of cooking vessel sherds. The results of this study revealed starch grains from manioc, potato, and maize.

In summary, the faunal, botanical, and residue data point to a mixed economy during the Initial Period. This economy was based on agricultural products as well as on significant protein resources from the Pacific coast, approximately sixteen kilometers to the west. These data accord well with research done on subsistence in the Moche Valley by Shelia and Thomas Pozorski. They hypothesized that during the early Initial Period there was a well developed relationship between the coastal fishing community Gramalote and the inland Initial Period monumental center of Caballo Muerto (Pozorski and Pozorski 1979). This may have been typical of coast-inland relations in the region.

Conclusions

Unit 2 represents one of the first known domestic occupations at Caballo Muerto and has given new insights into its economy and the nature of its Initial Period occupation. Nevertheless, many questions remain, which I am attempting to answer in my dissertation-in-progress. In particular, I hope to determine in greater detail whether occupations like that described for Unit 2 represent permanent occupations around large mounds like Huaca Cortada, or if they represent temporary structures used seasonally by peoples living in other parts of the Moche Valley who came to Caballo Muerto periodically for rituals.

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Marine Exploitation and Paleoenvironment as Viewed through Molluscan Resources at the Early Horizon Center of Huambacho, Nepeña Valley, Coastal Ancash

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In 2003-2004, twenty-three weeks of field-work at Huambacho yielded important data on Early Horizon societies in the lower Nepeña Valley, Coastal Ancash, Peru. Chicoine directed the field-work as part of the Proyecto Arqueológico Huambacho. Rojas carried out the first-hand identification and classification of the molluscan remains. Analyses of architecture, material culture, and radiometric measurements indicate that between 800 and 200 cal B.C.E. (2 σ) Huambacho represented a small elite center with strong public components (Chicoine 2006). Settlement patterns and more recent field-work elsewhere in Nepeña suggest that the Huambacho community was related to the larger complex of Caylán located further inland, on the north bank of the river, some fifteen kilometers from the littoral (Chicoine and Ikehara 2010).

Significant numbers of artifacts and ecofacts were recovered during field-work, including mollusk remains and fish bones. This report focuses on the place of the molluscan assemblage within the faunal remains and implications for understanding past diets, economies, social organizations, and aquatic ecologies. In particular, taxonomic analyses reveal patterns of marine exploitation and bioindicators. Paleoenvironmental reconstructions are, in general, consistent with the cold waters typical of the Humboldt Current and little evidence supports the occurrence of major climatic disturbances, including those related to the El Niño-Southern Oscillation phenomenon or ENSO.

Background and research at Huambacho

The Early Horizon (900-200 B.C.E.) is usually seen as a time of increased interregional interactions tied to the Chavín phenomenon in some regions of what is now Peru. In coastal Ancash, economies were mainly based on irrigation agriculture, animal husbandry, the exploita-

tion of marine resources, and trade. Popular plant domesticates included varieties of tubers, fruits, cucurbits, and legumes, as well as maize, introduced in the region at the beginning of the Early Horizon. In a continuation of Initial Period (1800-900 B.C.E.) socioeconomic processes, irrigation farming and inland settlements gradually gained more importance than settlements dependent upon coastal adaptations. Nevertheless, studies of marine resources are scarce, and our knowledge of coastal economies in Ancash is still preliminary (Pozorski and Pozorski 2003). The Huambacho molluscan data allow a preliminary assessment of Early Horizon marine economies and their associated trade networks, as well as local environmental conditions.

Huambacho is on the south bank of the lower Nepeña Valley, some eight kilometers from the littoral. It consists of two distinct complexes of stone-walled enclosures, patios, and monumental plazas originally covering an area of more than twelve hectares. Our excavations have yielded a variety of cultural remains, including more than 4,000 diagnostic pottery sherds, and faunal and botanical remains, mostly from secondary refuse deposits. Field-work results suggest that an elite group permanently resided onsite, while most community members likely lived in peripheral areas.

The analysis of vertebrates allowed the identification of a minimum number of 1,300 bones (NISP), including both wild and domesticated animals (Table 1). Fish and birds include many species of marine and riverine animals. Rodents include guinea pigs (*Cavia porcellus*) and also rats and mice. Bone fragments of dogs (*Canis familiaris*) and sea lions (*Otaria flavescens*) were also identified.

Animal bones are dominated by *camelids* (c. 40 percent). Further analyses will be needed to assert the relative importance of each category

of the vertebrates (e.g. meat weight, quantity of animal protein, identity of *camelids*). The high frequency of *camelids* contrasts with Initial Period sites in coastal Ancash where these animals are usually rare or absent. As pack animals, *camelids* would have been useful in the Early Horizon context of intensified interregional interactions.

At Huambacho, the virtual absence of meat cutting tools, such as obsidian blades, and the lack of intensive fracturing or burning of *camelid* bones contrasts with typical patterns of meat consumption. At the same time, members of the project collected large amounts of shell remains, highlighting the importance of seafood. The evidence from Huambacho is consistent with comparative data from Casma, the neighboring valley to the south, where the local subsistence economy was mainly based on maize agriculture, as well as the exploitation of marine resources and, with less intensity, animal husbandry.

Category	Total	
	NISP	percent
Camelid	517	39.77
Rodent	464	35.69
Fish	144	11.08
Bird	55	4.23
Other/Unknown	120	9.23
TOTAL	1,300	100.00

Table 1: Number of individual specimens (NISP) of animal bones, counts, and percentages.

Shell remains

Apart from fish remains, members of the project also recovered large numbers of sea animals, including crustaceans (i.e. arthropods), echinoderms, and mollusks. Crustaceans are represented by crabs (*Platyxanthus orbignii*; n=26) and echinoderms are represented by seasonally comestible black sea urchins (*Tetrapygus niger*; n=4). Most of the corpus consists of mollusks; almost 20,000 shell fragments were recovered. More than 75 percent of the sample

came from secondary trash deposits, mainly construction fill.

The analysis of mollusk remains was facilitated by their good preservation. Rojas was able to identify genus and species in more than ninety-nine percent of the cases. She used reference collections and the published literature (Álamo and Valdivieso 1987; Ramírez *et al.* 2003). The quantification procedures favored Minimum Number of Individuals (MNI) over the Number of Individual Specimens (NISP) and weight. For bivalves, MNI were evaluated by separating and counting left and right hinges, and using the higher of the two counts for each taxon. For gastropods, MNI were defined by the number of univalve apices.

The analysis identified 11,274 MNI and a total of 53 molluscan taxa pertaining to the classes *Monoplacophora* (MNI=1, 0.01 percent), *Polyplacophora* (MNI=528, 4.7 percent) *Gastropoda* (MNI=1,138, 10.1 percent), and *Pelecypoda* (bivalves); (MNI=9,551, 84.7 percent). Rojas was unable to identify 55 fragments (0.49 percent). The high number of MNI allows for a confident assessment of the taxonomic composition of the assemblage (see Evans 1972:12). The assemblage is taxonomically rich, but not very diverse, with three species, *Perumytilus purpuratus*, *Semimytilus algosus*, and *Donax obesulus* accounting for eighty percent of the corpus, which hints at a narrow exploitation spectrum.

Temp *	Taxon	MNI	%	Sub- strate	Supra- littoral	Meso- littoral	Infra- littoral
	Monoplacophora						
I	<i>Chiton</i> Sp.	528	468	R		•	
C	Polyplacophora						
C	<i>Neopilina ewingi</i>	1	0.01	R	•		
	Gastropoda						
I	<i>Fissurella crassa</i>	145	1.29	R		•	
I	<i>Fissurella limbata</i>	182	1.61	R		•	
I	<i>Fissurella maxima</i>	16	0.14	R		•	
I	<i>Fissurella peruviana</i>	11	0.10	R		•	
I	<i>Fissurella</i> sp.	38	0.34	R		•	
I	<i>Scurria viridula</i>	10	0.09	R		•	
I	<i>Prisogaster niger</i>	329	2.92	R	•	•	•
W	<i>Hipponix panamensis</i>	1	0.01	S		•	
W	<i>Hipponix pilosus</i>	1	0.01	S		•	
I	<i>Calyptrea trochiformis</i>	1	0.01	R		•	
I	<i>Polinices uber</i>	2	0.02	S		•	
C	<i>Concholepas concholepas</i>	7	0.06	R		•	•
C	<i>Thais chocolata</i>	125	1.11	S		•	•
I	<i>Thais delessertiana</i>	2	0.02	S		•	•
I	<i>Thais haemastoma</i>	49	0.43	S		•	•
I	<i>Thais</i> sp.	1	0.01	S		•	•
W	<i>Ancistromesius mexicanus</i>	44	0.39				
I	<i>Tegula atra</i>	1	0.01	S		•	•
I	<i>Tegula</i> sp.	1	0.01	S		•	•
W	<i>Crepidula lessonii</i>	4	0.04	R		•	
I	<i>Crepidipatella dilatata</i>	11	0.10	R		•	•
I	<i>Crucibulum lignarium</i>	2	0.02	R		•	
I	<i>Crucibulum monticulus</i>	4	0.04	R		•	
W	<i>Olivella columellaris</i>	1	0.01	S		•	
W	<i>Prunum curtum</i>	15	0.13	S		•	
W	<i>Umbraculum ovale</i>	1	0.01			•	•
—	<i>Scutalus proteus</i>	128	1.14	L			
—	<i>Scutalus</i> sp.	6	0.05	L			
C	<i>Siphonaria lessoni</i>	1	0.01	R		•	•
	Pelecypoda						
C	<i>Choromytilus chorus</i>	23	0.20	R		•	•
C	<i>Perumytilus purpuratus</i>	3404	30.19	R		•	•
C	<i>Semimytilus algosus</i>	4000	35.48	R		•	•
I	<i>Atrina maura</i>	1	0.01	S		•	•
I	<i>Ostrea megodon</i>	1	0.01	S		•	•
W	<i>Pecten sericeus</i>	1	0.01	S		•	•
W	<i>Argopecten circularis</i>	19	0.17	S		•	•
C	<i>Argopecten purpuratus</i>	5	0.04	S		•	•
I	<i>Argopecten</i> sp.	19	0.17	S		•	•
I	<i>Leptopecten</i> sp.	3	0.03	S		•	•
I	<i>Lyropecten subnodosus</i>	2	0.02	S		•	•
I	<i>Trachycardium procerum</i>	7	0.06	M		•	•
C	<i>Mesodesma donacium</i>	386	3.42	S		•	•
C	<i>Mesodesma</i> sp.	1	0.01	S		•	•
I	<i>Donax obesulus</i>	1617	14.34	S		•	•
I	<i>Donax</i> sp.	15	0.13	S		•	•
W	<i>Tagelus peruvianus</i>	6	0.05	M		•	•
I	<i>Semele corrugata</i>	1	0.01	S	•		
I	<i>Semele</i> sp.	17	0.15	S	•		
W	<i>Chione subrugosa</i>	21	0.19	M		•	•
W	<i>Chione peruviana</i>	2	0.02	M		•	•
	Unknown	55	0.49				
	TOTAL	11274	100.00				

*Water temperature: C, cold water; W, warm water; I, indifferent /unknown (i.e., qualifies poorly as a temperature indicator; based on Álamo and Valdivieso 1987; Peña 1970, 1971; Roselló et al. 2001); Substrate: R, rock; S, sand/silt; M, mangrove/muddy; L, land.

Table 2: Molluscan data from the Early Horizon site of Huambacho. *Spondylus* sp. not included.

Mollusks have different tolerance ranges to a number of variables and species dwell in different environments. Basic distinctions can be made between (1) soft (e.g. sandy, muddy) and (2) hard (e.g. rocky) substrates, as well as between (1) cold and (2) warm water. As seen in Table 2, the Huambacho data indicate the exploitation of various biotopes. Analyses reveal the exploitation of land snails (*Scutalus* sp.; MNI=134, 1.2 percent), but the bulk of the assemblage is composed of marine taxa. Most are typical of the cold Humboldt Current and the Peruvian Province of the Pacific (0°N-40°S). The sample is dominated by two species of small rock-dwelling mussels: *Semimytilus algosus* (MNI= 4,000, 35.5 percent) and *Perumytilus purpuratus* (MNI=3,404, 30.2 percent). Other rock-perching species include limpets (*Fissurella* sp.; MNI= 392, 3.5 percent), *Chiton* sp. (MNI= 528, 4.7 percent), the mussel *Choromytilus chorus* (MNI= 23, 0.2 percent), as well the gastropod *Prisogaster niger* (MNI=329, 2.9 percent).

In contrast, sand-dwelling species are less common. The most popular is the small tide-zone clam *Donax* sp. (MNI=1,632, 14.5 percent), while the medium-sized sand-dwelling clam *Mesodesma* sp. (MNI=387, 3.4 percent), the scallop shell *Argopecten* sp. (MNI=43, 0.4 percent) and the gastropod *Thais* sp. (MNI=177, 1.6 percent) are found in lesser proportions. The collectors that supplied the Huambacho community also exploited, with less intensity, muddy biotopes as exemplified by the presence of the mud-flat clam *Chione* sp. (MNI=23, 0.2 percent), the razor clam *Tagelus peruvianus* (MNI=6, 0.1 percent), and *Trachycardium procerum* (MNI=7, 0.4 percent). Although the Huambacho assemblage is dominated by food refuse, data also point toward shells that were worked and transformed into artifacts, as well as carcasses too small to be edible that were brought to the site as by-products (e.g. the small gastropod *Olivella collu-*

mellaris, MNI=1, 0.01 percent). Several examples of perforated *Prunum curtum* (MNI=15, 0.1 percent) have been noted. Also, a total of 115 specimens of the thorny oyster *Spondylus* sp. were collected. Most specimens came from surficial and/or disturbed contexts, often in proximity to looted burials associated with post-Early Horizon occupations. Hence, the *Spondylus* data are difficult to interpret and have not been included in the taxonomic quantification provided in Table 2.

Shellfish exploitation in coastal Nepeña

Taking into account the position of the site eight kilometers inland and the virtual absence of fishing implements at the site, it is likely that the Huambacho mollusks were acquired through interactions with groups that inhabited the littoral. In the Moche Valley, coastal La Libertad, research suggests that during the Initial Period, the coastal, marine-oriented community of Gramalote was tied to the inland complex of Caballo Muerto (Pozorski 1979: 173). Caballo Muerto animal protein was supplied by marine and inland resources while increasing importance was given to agriculture, including maize cultivation. Gramalote's subsistence economy was also primarily marine-oriented and supplemented by inland animal protein, in particular deer and llama. Further south, Haas and Creamer (2006) have recently suggested the existence of similar coast-inland exchange networks during the Preceramic Period in the Norte Chico region.

Based on geographical proximity, the Huambacho mollusks were probably collected from the southern portion of the Nepeña coastline and/or the northern portion of the Bahía de Tortugas. Exploitation mainly focused on rocky cliffs where species of mussels and, to a lesser extent, limpets and gastropods were available. These species are still abundant, especially in the coastal area near the modern settlement of

Los Chimús, where prehistoric shell middens have been reported (Thompson 1962:206). Huambacho is only a two hours' walk from Los Chimús. In contrast, the northern portion of the Nepeña coastline, as well as the southern portion of the Bahía de Samanco, is dominated by sandy beaches of the Nepeña Delta.

From a comparative perspective, the recent recovery of more than 20,000 MNI of shell remains during the 2009 excavations at the Early Horizon site of Caylán brings insights into patterns of marine exploitation in the lower Nepeña Valley (see Chicoine and Ikehara 2010). At Caylán, preliminary analyses indicate the predominance of the sand-dwelling *Donax* sp. (c. seventy percent), while rock-dwelling mussels are represented in lesser proportions (c. twenty-five percent). Both the Huambacho and Caylán assemblages are dominated by the same three species, but the diametrically inversed emphasis of sandy vs. rocky substrates is striking. This observation is consistent with the location of Caylán, three-and-a-half hours' walk from the Nepeña delta and the Bahía de Samanco, where sandy environments are ample today.

Available data from Early Horizon sites suggest that marine resources in Nepeña travelled through multiple networks. Indeed, preliminary comparisons argue against a single, centralized redistributive or exchange system. Rather, several different, probably independent, coastal providers and satellites have to be hypothesized from the Bahía de Tortugas to the Bahía de Samanco. Archaeological surveys will be necessary to find and document these communities.

Finally, preliminary comparisons point towards multiple exploitation strategies, perhaps both specialized and unspecialized. As noted by Roselló *et al.* (2001:77), the sand-dwelling clam *Donax* sp. is easily collectible by hand in large numbers. On the basis of their observations of

modern collectors in Huanchaco, Roselló *et al.* (*ibid.*) suggest that individual fisherfolks can collect up to thirty kilograms of clams in three hours of work using rudimentary rakes. Conversely, the authors suggest that collecting rock-dwelling species is a more perilous enterprise requiring more specialized practices. From that standpoint, Roselló *et al.* (*ibid.*) interpret the predominance of *Donax* sp. at the Early Intermediate Period site of Huacas de Moche (c. 80 percent of the faunal assemblage) as an indicator of the unspecialized exploitation of beach environments. In Nepeña, more research will be needed, but the available data suggest diverse strategies to exploit molluscan resources.

Molluscan bioindicators and paleoenvironment

Marine mollusks are adapted to specific ecological parameters (*e.g.* water temperatures, salinity, oxygen, pH level, availability of adequate substrate). As such, they represent potential bioindicators useful for the reconstruction of local environmental conditions. In coastal Peru, molluscan data are particularly helpful in discerning climate fluctuations related to the occurrence of major ENSO events (Díaz and Ortlieb 1993; Rollins *et al.* 1990; Sandweiss 1996). The most salient marine manifestations of ENSO are related to an increase in water temperature and changes in salinity, proportions of dissolved oxygen, and tidal patterns (Díaz and Ortlieb 1993:161,164). These changes typically cause indigenous mollusk species to migrate or disappear. Only a few taxa are found in greater abundance during ENSO events including *Argopecten purpuratus*, and *Thais chocolata* (*ibid.*: 165, Table 1).

In addition to the well-known tropicalization of the normally cold Humboldt environments, ENSO events impact the long-term regeneration of certain species. Researchers have suggested that *Mesodesma donacium*, a sand-dwelling species of clam, may take up to a decade or

longer to recolonize its habitat after a major ENSO event. In contrast, rock-perching mussels like *Perumytilus purpuratus* and *Semimytilus algosus* are found six months or less following an ENSO event (Rollins *et al.* 1990:471; Sandweiss *et al.* 2001:604).

In order to reconstruct environmental conditions, archaeomalacologists need to consider the impact of cultural preferences, prescriptions, and proscriptions on the exploitation of marine taxa. In other words, the archaeological absence of a species cannot be straightforwardly equated with its unavailability. Conversely, mollusks can be transported great distances and their presence at a site does not automatically represent local conditions (Rollins *et al.* 1990:470-471). Finally, some species preserve better and have a higher probability for archaeological recovery.

Keeping these considerations in mind, the Huambacho sample is dominated by cold water taxa typical of the Humboldt Current. With the exception of two species (*Ancistromesus mexicanus*, *Argopecten circularis*), the presence of tropical species is sparse. Indeed, less than one percent of the total MNI is represented by species better adapted to tropical water. Also, some species were clearly imported for their value as adornments and perhaps currencies. *Spondylus* is a good example. With the exception of a complete shell, *Spondylus* specimens at Huambacho are all worked into beads and blanks. The same rationale applies to *Prunum curtum* specimens found with drilled holes to hang them. Overall, as viewed through the mollusk evidence, the Huambacho data does not lend weight to the occurrence of a major tropicalization of local oceanic conditions typical of ENSO.

Conclusions

Results of the malacological analyses confirm the importance of marine resources in local Early Horizon economies and indicate the exploitation of various biotopes. Rocky cliffs and intertidal sandy substrates were particularly favored by the Nepeña collectors. Preliminary comparative data hint at the existence of diverse strategies of marine exploitation potentially tied to independent economic networks. Meanwhile, the predominance of typical Humboldt Current taxa lends little weight to the occurrence of major climatic disruptions during the Huambacho occupation.

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CHILE

Tarapacá, Norte Grande

Architecture in the Coastal Desert

The Chilean National Fund to Support Science and Technology (Fondo Nacional de Apoyo a la Ciencia y Tecnología [FONDECYT]) financed projects 1030923 and 1080458, directed by **Mauricio Uribe** (Universidad de Chile, e-mail: mur@uchile.cl). Co-investigators **Simón Urbina A.** (Universidad Austral de Chile, e-mail: simon.urbina@docentes.uach.cl), **Leonor Adán A.** (Universidad Austral de Chile, e-mail: ladan@uach.cl), and **Estefanía Vidal M.** (Universidad de Chile, e-mail: estefania.vidal.monetro@gmail.com) report on the prehispanic architecture of Tarapacá.

According to sixteenth and seventeenth century chroniclers, the indigenous societies of Tarapacá were equipped with light architecture, or with structures exhibiting the civilizing influence of settlers arriving from the Altiplano during the Early Formative Period (900 B.C.-A.D. 200; Núñez 1971; Núñez and Moragas 1977). This viewpoint promotes the interpretation that the coastal groups were conservative and materially precarious, and had been passively integrated into the economic and cultural changes promulgated from interior farming and herding zones (Sanhueza 1985).

In contrast, the study summarized here emphasizes the social complexity of Tarapacá's coastal desert (running from approximately 19°55' to 21°43' south) by analyzing the architecture of sites located between the mouths of the Camiña and Loa Rivers, a north-south stretch of about 208 kilometers. In FONDECYT Project 1030923, "The Pica-Tarapacá Complex: Proposals for an Archaeology of the Societies of the South-Central Andes", and in FONDECYT

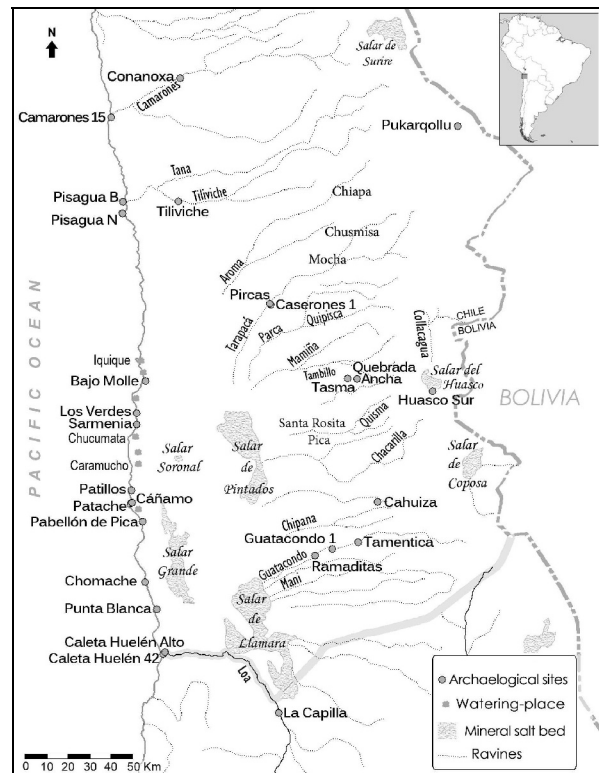


Figure 1. Map of northern Chile showing archaeological sites mentioned in the text and other Formative Period settlements in the Tarapacá region (900 B.C. to A.D. 900).

Project 1080458 "The Formative Period in Tarapacá: Progress and Social Tragedy in the Evolution and the Early Cultural Complexity of Chile's Norte Grande, South-Central Andes", we systematize the variability and change within a coastal architectural tradition, beginning in the Late Archaic Period (1500-900 B.C.) and moving forward through time. Finally, we offer a current and diachronic appreciation of the southern stretch of the western valleys of the south-central Andes.

The initiation of the coastal architectural tradition

In the north of Chile, Archaic coastal architecture (9000-900 B.C.) has been defined as ". . . dwellings of light material . . . in which perishable substances such as vegetable fiber,

bones, and marine mammal leather are used” (Muñoz 2002:489).

The earliest known occupations with architecture on the coast of Tarapacá are documented at the Caramucho-3 site, where an extensive shell midden, dating to 4030 B.C. (Morgas 1995) and incorporating fish hooks, cactus remains, and shells, and with collapsed stone structures, has been recorded (Olmos and Sanhueza 1984:146). According to Moragas (1995:77), settlements on the interfluvial desert coast between Iquique and the Loa Valley occur preferentially in certain sectors near water holes or where the concentration of mists permits human life. The time of occupation has been determined by radiocarbon and thermoluminescence dating (Urbina *et al.* 2011).

Núñez (1965:24) describes an extensive shell midden at Bajo Molle 1, graves prepared in sand, and a few potsherds, next to dwellings built of stone (B-1A sector), that could date from the final phase of Chinchorro (Momias Rojas, 2850-1850 B.C.; Olmos and Sanhueza 1984:144). Probably these stones supported props and flexible covers that were easy to transport during annual migrations between water holes and coves.

The Caleta Huelén 42 site, at the mouth of the Loa River (Figure 1), constitutes the earliest evidence of more elaborate and stable structures within the area of study, with stone houses with mortar incorporating ash and organic remains. The beginning of occupation is dated at 2830 B.C. (Zlatar 1983). There are stratified mound deposits over the houses, similar to those described south of the Loa River (Schaedel 1957), particularly at the site of Los Bronces 1, south of Taltal. None of the thirty structures beneath the mound exceeds ten square meters of internal space (Table 1). Stone pillars were used to organize the interiors and the floors were sealed.

Clusters of structures were organized around central patios (Figure 2).

Site	N° Enclosures	Built-up area (m ²)	Settled area, hectares	Density - residences/hectare	% ground occupied
Pisagua N	25	432.21	0.090	277.78	48.02
Los Verdes	1	12.25	N/R	N/R	N/R
Sarmenia	8	66.68	0.294	27.21	2.26
Pabellón de Pica	1	87.55	N/R	N/R	N/R
Chomache	5	63.07	0.021	238.10	30.03
Punta Blanca	8	78.04	0.125	64.00	6.21
Caleta Huelén Alto	159	1299.82	1.354	117.43	0.95
Caleta Huelén 42	30	70.79	0.328	91.46	4.29

N/R - Not Recorded

Table 1: Main architectural traits of coastal settlements.

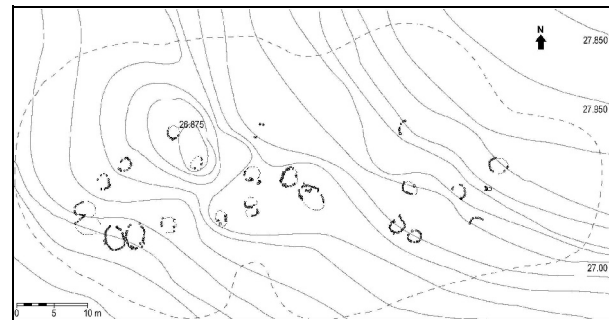


Figure 2: Plan of the Caleta Huelén 42 site (after Zlatar 1983: Figure 1).

A notable trait of the coastal desert architecture at the end of the Archaic (2010-870 B.C.) is the presence of sealed mortar floors on a base of seaweed ash, within which the dead, wearing mud masks, were buried, making “these habitations as well as funeral structures” (Llagostera 1989:70).

The settlements studied at Punta Patache and Cãnamo show the Archaic-Formative transition (2010 B.C. to A.D. 325) of these construction elements. At Patache a habitation pattern is defined by shell middens adjacent to rock outcrops (for example, at the Patache A, M, N, and P sites). Sometimes there are small, free-standing, circular structures (for example,

at Patache G) with low walls and interior spaces of less than five square meters. At Patache G the body of a young adult, covered with a textile, was buried in an extended position, directly below the living surface, without a sealed floor. The textile yielded a radiocarbon date of cal. 195 B.C. (Urbina *et al* 2011). The pattern of circular structures beneath shell middens, and near rock outcrops, is represented farther to the north, in the southern part of the Sarmenia site. There, two contiguous structures with interior spaces of 4.2 cubic meters and 4.6 cubic meters, respectively, were recorded.

Consequently, it is established that the coastal populations of Tarapacá, from the end of the Archaic and the beginning of the Formative Period, were related to the Chinchorro tradition found farther north (Arriaza and Standen 2002) as well as to other, more southern, architectural manifestations (Schaedel 1957).

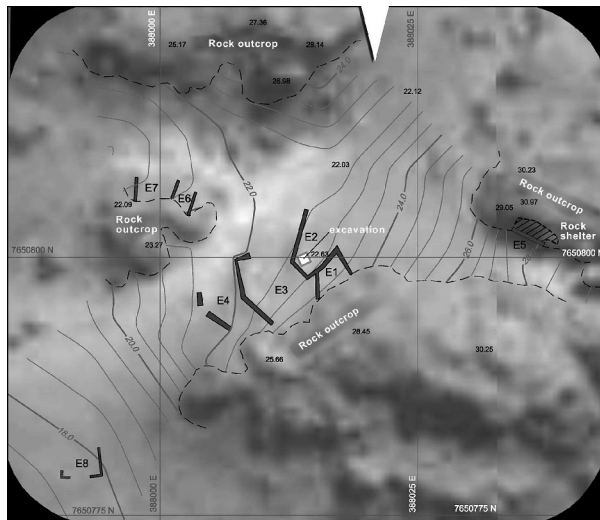


Figure 3. Plan of the Punta Blanca site.

Formative Period architecture

Archaeological survey along the Iquique-Loa River coastal transect identified a significant complex of Formative Period occupations that presented elements of both architectural continuity and innovation. Ninety-one Formative

Period settlements were recorded out of a total number of 1,307 sites.

The first architectural form is an expedient architecture recorded at the Punta Blanca site (390-620 cal A.D.). There, sub-rectangular structures of restricted dimensions and simple, adjacent stone walls are irregularly dispersed at rock outcrops or beneath small rock shelters (Figure 3). They lack prepared mortar and pillars with buried foundations and can be defined as a type of light architecture.

The second architectural form was recorded at the mouth of the Loa River at the boundary of the second marine terrace and the coastal mountain range. The Caleta Huelén Alto site, characterized by ceramic types dating between A.D. 200 and 900 (Uribe 2009), presents dispersed stone structures of expedient construction on a terraced hillside extending more than a kilometer. There, small parapets built with low stone walls were associated with the site's numerous footpaths. Notable is the absence of food remains and the abundance of lithic debris, copper minerals, and granite hammer stones, occurring in walled work areas, or in open spaces with otherwise clear floors. Included among the habitation units are ovoid structures with interior spaces of less than five square meters, and others with sub-rectangular plans up to fifteen square meters. Caleta Huelén Alto combines construction elements that resemble those at the southern sector of Sarmenia, and at Punta Blanca and the Chomache 1 sites which exhibit widely-dispersed occupations.

The Chomache 1 site represents a more agglutinated form of architecture in a later chronological context (cal. A.D. 650-1290). A new pattern can be observed. There are five structures with rectangular plans, and with architectural elements absent in the Archaic Period, such as terracing of the site, and internal

division of spaces by means of partitions or substructures (Figure 4).

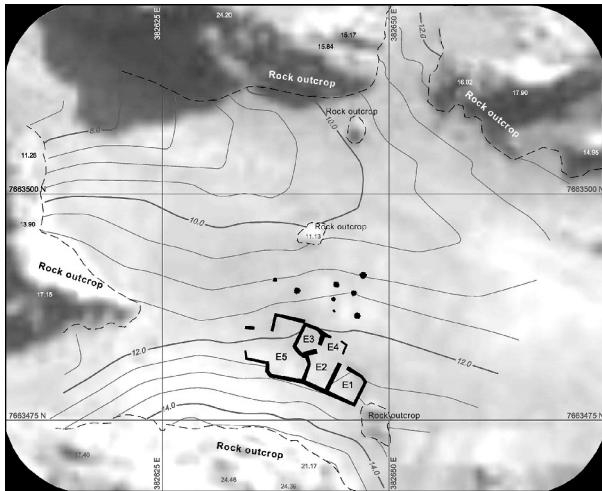


Figure 4. Plan of the Chomache 1 site. Substructure 5A does not appear in this plan.

Located next to a large rock outcrop, is a structure (Edificio 5) with slightly curved corners and pillars with stone foundations, all traits present in earlier buildings. A more compact residential unit with a greater investment of labor is evident.

The architecture of Chomache 1 represents a transformation in the way the coastal area of Tarapacá was occupied at this time. Similar sites are Caleta Huelén Alto and Punta Blanca, as well as a more northern site, Pisagua N. This latter site was occupied from the Late Formative Period until the Late Intermediate Period or from A.D. 290 to 1470 (Urbina *et al.* 2011). The latest ground plan consisted of 25 agglutinated stone structures with square, rectangular, and trapezoidal plans. These structures were constructed over time on terraced surfaces (Figure 5). Excavations revealed rows of reeds that were incorporated into the stone walls, to construct façades of organic material (*quincha*).

At Pisagua N, as at Chomache 1, domestic spaces were made sacred by means of foundation offerings such as the burial of a dog's head next

to a wall in Pisagua N's Edificio 19, and that of a marine mammal cranium in the northeastern corner of Structure 1 at Chomache 1. Both sites achieve similar levels of agglutination (Table 1), and both are adjacent to a rocky shore lacking nearby fresh water. Because of this it was necessary to develop techniques for condensing the coastal fog (*camanchaca*).

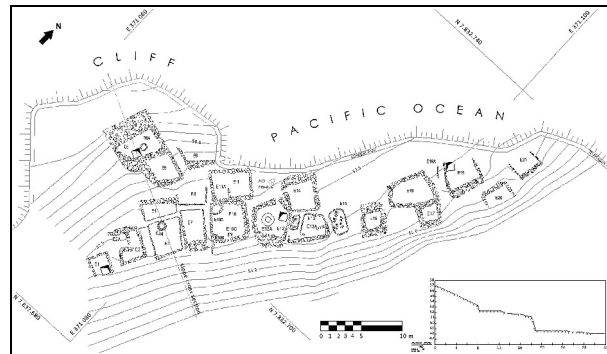


Figure 5. Plan of the Pisagua N site.

The architecture of Punta Blanca, Chomache 1 and Caleta Huelén Alto reveals a form characteristic of the desert coast south of Iquique and Tarapacá, where domestic environments are now separate from funerary spaces (Llagostera 1989). On the other hand, the re-occupation of Chomache 1 and Pisagua N indicate that a pattern with an agglutinative tendency was current until the Late Intermediate Period (A.D. 900-1450). This architecture had greater functional variability than that of earlier sites, to judge from the sizes and forms of its structures.

Late coastal dwellings

Among the Late Intermediate Period sites including Chomache 1 and Pisagua N are other forms of residences. One is represented by Structure 1 at the Pabellón de Pica-1 site (Figure 6), dated between cal A.D.1280 and 1430. This is a large sub-circular area (85 square meters) made of curved, double-faced stone and mud walls more than 50 centimeters thick and

laid in courses, features that resemble those of the Caserones-1 site. The unusual height of Structure 1's walls, greater than 1.5 meters, is remarkable, as is the high proportion of mortar in its facing. In accordance with its formal characteristics, position, and visibility, it may have been a communal and public space near residential spaces.

In addition, three settlements built on shell middens in an otherwise flat area, with Archaic and Formative Period evidence on their peripheries, or directly on top of them, were recorded. At Los Verdes-1 (cal A.D. 1160-1280), Structure 1 is a free-standing building with a rectangular plan and double stone walls laid in courses and joined with ashy clay mortar. We recorded the same sort of building in the Northern Sector of Sarmentia at Structures 6 and 7 (Figure 7). This differed from the earlier Southern Sector where we recorded two structures separated by twenty-nine meters, one of which had been enlarged to form a conglomeration with exterior structures (Structures 6, 6A, and 6B).

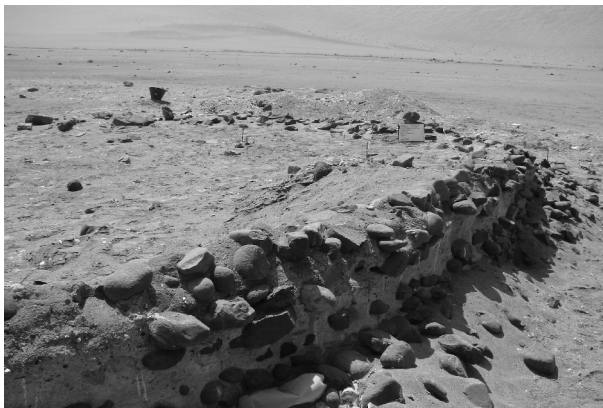


Figure 6. Pabellón de Pica site, Structure 1.

The placement of these dispersed structures with rectangular and quadrangular plans on flat ground with shell deposits also occurred at the mouth of the Tana/Camiña Quebrada at the site

of Pisagua B (Figure 8) with dates ranging from A.D. 1496 to 1556 (Urbina *et al*, 2011).



Figure 7. Sarmentia site, Structure 5 in the northern sector.

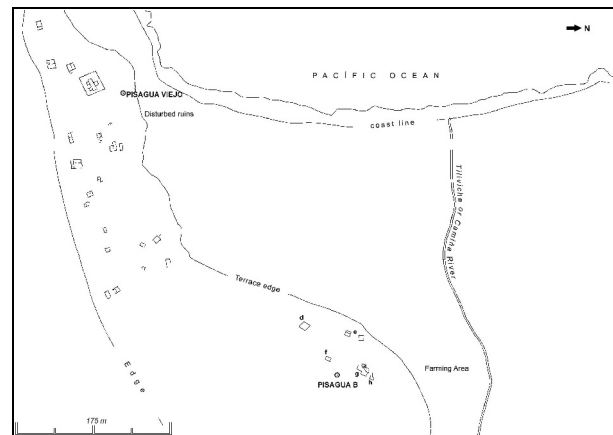


Figure 8. Plan of the Pisagua B and Pisagua Viejo sites (after Núñez 1970: figure 1).

At present we can state that during the Late Periods there were settlements with dispersed structures built according to a rectangular plan, with stone foundations and wattle-and-daub (*quincha*) walls, as well as others with higher stone walls. These latter buildings give an idea of individual houses that were absent in the Formative Period. This format had a correlate at the Spanish Colonial Period indigenous site of Pisagua Viejo (Núñez 1970:53).

Conclusions

The sites analyzed in this report indicate social transformations made manifest as a greater diversity and complexity in architectural expression. These show a change in the occupation of space from the end of the Archaic Period until the Formative Period, in which an increase in size took place, as well as a change to more permanent houses, while structures with sealed floors were abandoned. During the Formative Period architecture permitted the development of productive activities including the obtention of marine resources, the collection of fertilizers for agriculture, and the processing of minerals. It facilitated movement along the coast, for example, to places with more stable water resources. Some sites began to become more compact and internally subdivided, while other indigenous camps continued to function as temporary accommodation with more disperse and expedient constructions. Until the Late Horizon and Colonial Period, sites dating from the Formative Period continued to be reoccupied, while new ones were founded with structures that incorporated *quincha*, and individual modular stone houses of great solidity.

This report reinforces the idea that “. . . architecture, as a technological innovation, appears to be promoted in social contexts relevant to the communities” (Adán and Urbina 2007:26). Equally, the data contradict the idea generally accepted in Northern Chilean archaeology that “. . . societies with a long tradition of maritime adaptation persisted without large variations from stages earlier than Chinchorro” (Sanhueza 1985:57). Based on the evidence of the distinct types of architecture found on the Tarapacá coast, at least, the strictly conservative behavior of the coastal populations, described in an essentialist manner by most Chilean archaeologists, dissolves. Instead there seems to have been processes of transformation and social and

cultural innovation that were the products of their own dynamic histories.

*Translation from the Spanish
by Monica Barnes
with the assistance of Simón Urbina*

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ARGENTINA

La Bolsa 1 Site, Tafí Valley, Tucumán Province: Household Mortuary Practices in a South Andean Village (First Millennium A.D.)

Julián Salazar (Centro de Estudios Históricos Segreti, Concejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Universidad Nacional de Córdoba, e-mail: jjsalba@hotmail.com) presents new data about South Andean mortuary practices and the construction of kin-based relationships. The data have emerged from recent field research on Early Ceramic Period (c. 500 B.C. to A.D. 850) contexts from the Tafí Valley.

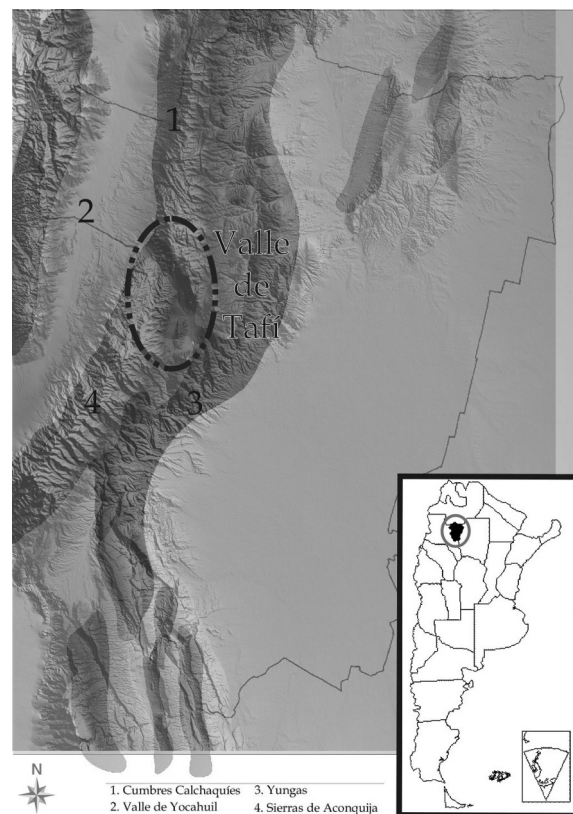


Figure 1: Map of Tucumán Province, showing the location of the Tafí Valley.

This small valley lies between the orographic systems of the Sierras de Aconquija and the Cumbres Calchaquíes, and is east of the Yoca-

huil Valley, at an average attitude of 2500 m.a.s.l. (Figure 1). Throughout the first millennium A.D., its inhabitants were sedentary villagers who practiced agriculture based on maize, potatoes, and beans and who herded llamas. Intensive food production permitted demographic growth, seen in the proliferation of village settlements, and an increase in social complexity, the latter evident in ceremonial mounds and monolithic carved sculpture (Berberían and Nielsen 1988; González and Núñez 1962). Nevertheless, this population growth and increase in complexity appear to have been based on autonomous households rather than on political centralization.

My research aims to establish relationships between daily practices and social reproduction strategies and household strategies, and to analyze the active role of household material assemblages in the construction of kinship relations and identity. Consequently, I carried out field-work in residential compounds at the La Bolsa 1 site.

Ancestor Worship in Household Compound LB1-U14, La Bolsa 1 site

La Bolsa 1 is a concentrated village site in the north of the Tañi Valley. La Bolsa 1 was inhabited between 2100 B.C. and 850 A.D. This settlement includes twenty-one household compounds and a twenty-five hectare complex system of agricultural structures. The site layout shows spontaneous expansion rather than formal community planning. Household compounds are spatially segregated architectural units of about 200 square meters that incorporate both food storage facilities and craft production workshops and show strong traces of kin identity. The dwellings include circular structures around open patios, with walls built of large fieldstones (Figure 2).

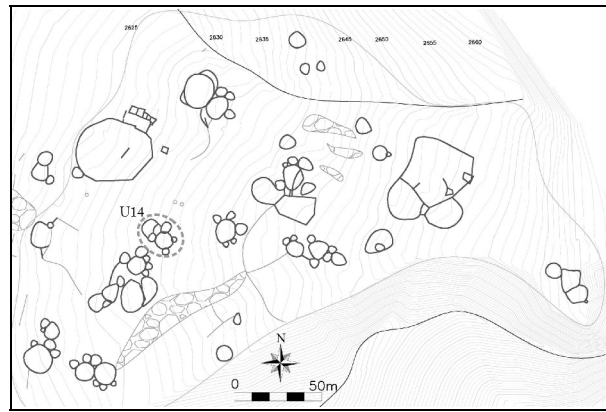


Figure 2: Plan of the central area of the La Bolsa 1 site, showing some of the architectural compounds.

I excavated two household compounds, LB1-U10 and LB1-U14, and diverse outdoor contexts in the central area of La Bolsa 1. Here I analyze the burial context recovered in the LB1-U14 residential unit.

LB1-U14 is a 200 square meter residential unit. It includes a circular patio, R1, four smaller enclosures, R2, R3, R4, and R6 linked to it through formal doors, and two peripheral structures entered through R4 and R6 (Figure 3).

The compound's plan is that of a recurrent pattern, seen contemporaneously in other geographical settings near Tañi, such as the Yocavil Valley and the Cajón Valley (Aschero and Ribotta 2007; Berberían and Nielsen 1988; Scattolin 2007). Centripetal domestic spaces are arranged around a central patio, the only structure with direct access to the exterior. This central place is a circular unroofed enclosure of eighty square meters which controls movement within the unit and mediates access to the roofed structures of the house. I excavated the residential compound completely and recorded evidence of all the construction, depositional, and post-depositional events that left material traces.

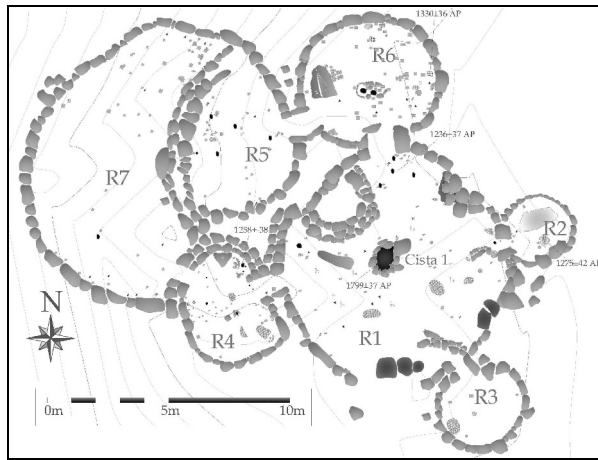


Figure 3. Plan of the LB1-U14 residential compound.

Analysis of architectural features and artifactual assemblages, soil chemistry studies, and phytolith identification allowed the recognition of activity areas in various parts of the residential compound. The occupation floors of five of the seven structures were dated from cal AD 650 to cal AD 850, corresponding to the last occupation of the compound before its abandonment.

The small peripheral enclosures show evidence of specific activities, especially food processing and cooking. In Structure R6 a few cooking vessels were broken around a central stone hearth. Maize (*Zea mays*) phytoliths were identified from within the soil samples taken from this area. Other activities detected are tool storage and sleeping and resting.

Diverse activities were detected in the central and biggest structure, R1. These include maize grinding, food storage within a special room, and ritual deposition of ceramic animal representations. Non-locally manufactured pottery fragments were present. In the central portion of this open patio, an oval feature was found. It was an underground, bell-shaped, stone-walled chamber, with a false dome closure protruding thirty centimeters above the occupational floor. This structure, "Cista 1", is a cista, a

typical tomb type in Tafi Valley Early Ceramic Period sites.

At first glance, the cista could be seen as a single feature interpretable as simply evidence of a single household's veneration of an ancestor because of the power, wealth, or kinship relations he or she accumulated during life.

Indeed, this is the regular interpretation made of other, similar contexts. Nevertheless, the excavation of this burial showed that it was the result of complex depositional processes (Figure 4).

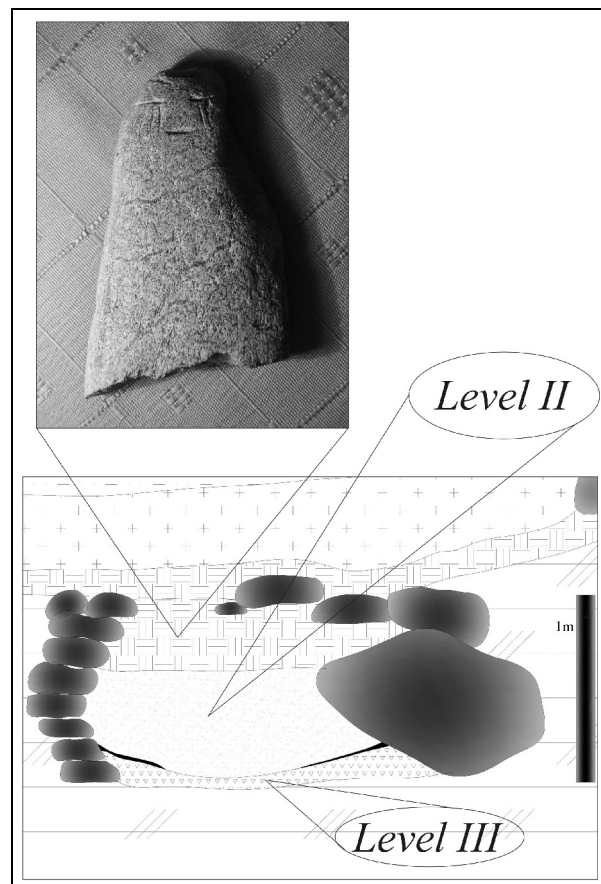


Figure 4: "Cista 1" section.

Just after the cista closure was removed, about thirty centimeters below the patio occupational floor, a small figurine was found. It is an anthropomorphic stone statuette of a woman.

Her face has carved lines descending from her eyes which could represent tears, face paint, tattoos, or scarification (Figure 4, top). The lower portion of this artifact has a flake scar, suggesting that it was intentionally broken or “killed” before deposition.

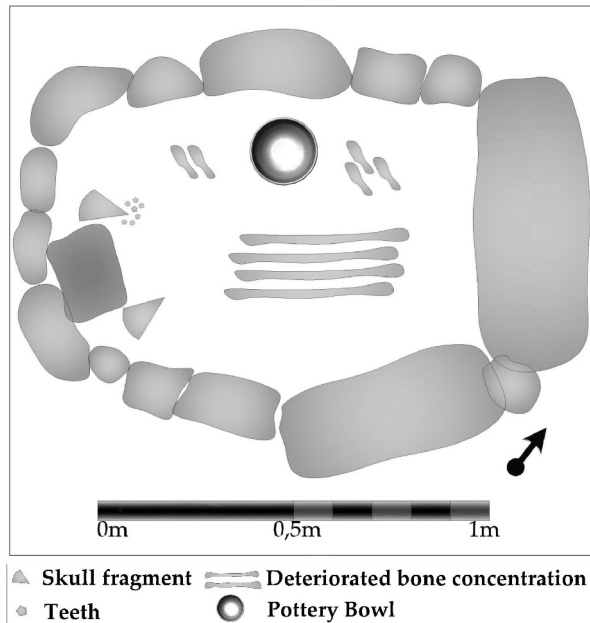


Figure 5: Schematic plan of Level II burial.

Next to the Level II base (80 centimeters below the occupation floor) I found human bones, in a very bad state of preservation, associated with a gray pottery bowl (Figure 5). Identifiable bone fragments were two skull pieces and twelve teeth. Studies of tooth wear traces and roots allowed us to establish that this person was an adult. Hundreds of unidentified bone fragments were recovered from the central area of the burial. Within these maize (*Zea mays*) and cucurbit (*Cucurbita* sp.) phytoliths were identified. These could be interpreted as the remains of the deceased’s final meal, or as part of the grave goods accompanying the dead. The ceramic bowl, buried horizontally, is a fine, undecorated pottery vessel which could be typologically dated to *ca.* A.D. 500 to A.D. 900.

Below this level, a thin layer of burnt clay covered the entire structure. After its removal I detected a more compact stratum, Level III, where traces of another burial were present (Figure 6). It was composed of an adult’s osteological remains, in a very bad state of preservation, associated with three coarse fabric vessels. The human remains were fragments of a skull and a jawbone in the western margin of the base of the cist, and hundreds of unidentified little pieces of bone. The skeletal remains were accompanied by a cup (made of ordinary red clay, with a rough surface finish, a lip handle vertically attached, and a modeled anthropomorphic face decoration applied on the side opposite the handle; Figure 6 top), a jar (technologically similar, with a uniform surface finish, no decoration, and a thick soot layer on the outer surface), and numerous fragments of vessels with similar characteristics. None of the pottery presents complex decoration, nor corresponds to what is known as “fine” craftsmanship for this period. Charred wood was recovered from this level and dated to 1799 ± 37 BP, cal. AD 130-260, the earliest date for LB1-U14.

The disposition of material indicated an intentional disturbance of the earliest burial, before depositing the final one. Bone remains were disposed next to the structure’s wall and the ceramic jar was between the jaw and the skull.

Archaeological evidence recovered from the burial structure of household compound LB1-U14 allows me to propose that this context was created by many events of digging, opening, depositing, firing, closing, and burying, forming a material palimpsest. Although palimpsests are common archaeological contexts, they are typically viewed as a handicap.

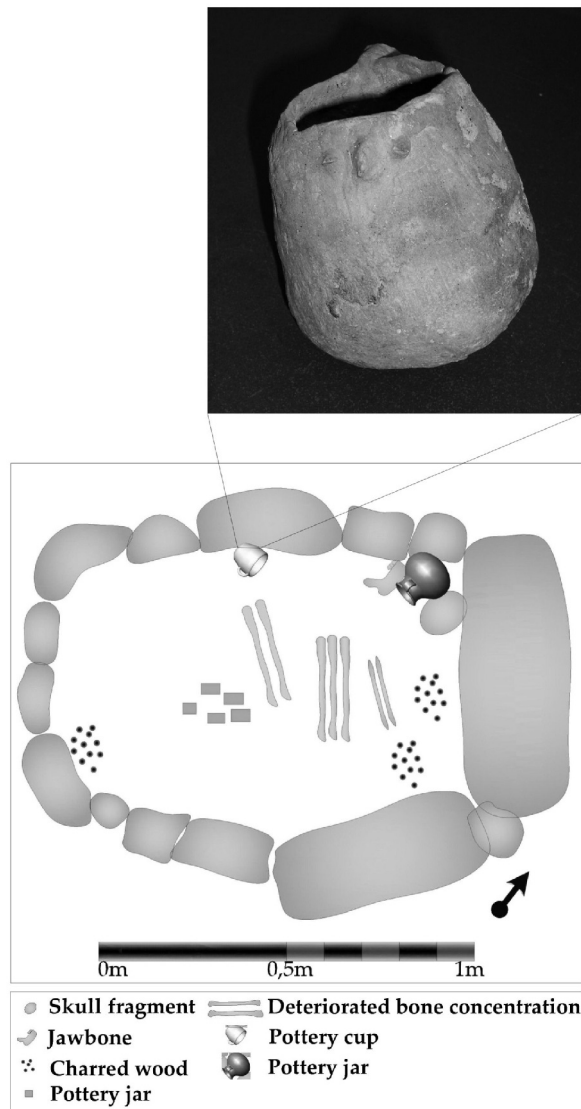


Figure 6: Level III burial.

On the contrary, I emphasize the information provided by this particular mixture (Bailey 2007; Lucas 2005; Olivier 1999). It demonstrates that ancestral corpses were not socially dead: they were continuously taken from their tombs, exhibited, worshiped, fed, and reburied. In addition, this mixture indicates that they were part of daily activities. The material configuration of the burial feature generated a permanent interaction with the living. It was located in the center of the house, in a place of necessary passage, the locus where vital practices such as maize grinding and food storage were carried

out. A major part of quotidian life took place there.

Gillespie (2001) states that the construction of social persons derives from acting within a context, as part of experience and daily practices. This includes relations between people, dead and alive, groups, and material objects (Brown and Walker 2008). The mortuary palimpsest analyzed in LB1-U14 is precisely the materialization of practices that create and strengthen kinship relations as living people interact with their ancestors' physical remains. These practices regarding death have a long duration, from the first centuries A.D. to ca. A.D. 850. They formed the relationships between house dwellers and ancestor, which built the foundations of the household competitive group identity (Dillehay 1995).

The construction of various kin groups with strong internal identity is a possible explanation for the formation of a complex society with a lack of political centralization, a process that was characteristic of the first millennium in the study area.

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