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THE CHINCHORRO CULTURE:

A Comparative Perspective.
The archaeology of the earliest
human mummification



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Foreword UNESCO



Some of the earliest evidence for the phenomenon of mortuary behavior and funerary rites appears in the archaeological record with the species *Homo neanderthalensis* in the sites of Kebara Cave in Israel, and, more notable the site of Shanidar Cave in Iraq. Shanidar 4, which has been dated to around 70 kya, is colloquially known as “the flower burial”, as the site has yielded the skeletal remains of a male in his late 30s or early 40s, alongside several concentrated clumps of pollen. Upon the emergence of *Homo sapien sapiens*, evidence for burial rituals has become more abundant. These behaviors, which transcend cultural boundaries, are distinctly human and as such, are representative of several distinctively human behavioral characteristics such as the human propensity to search for transcendence. One example of this behavior is the process of deliberate mummification, which first emerged with the Chinchorro Culture in Chile’s Camarones Valley, is evidenced to have occurred across all continents. It is most widely known for the Egyptian process, which is conceived of as preparation for the afterlife. The mummification process, along with its representation of human world view, also speaks to the human curiosity which propels anatomical discovery.

In 1998 Council of National Monuments submitted the Archaeological Sites of the Chinchorro Culture for nomination to the Tentative List of the World Heritage Center of UNESCO. The nomination was justified on the terms of selection criteria iii: “to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared”. These pages provide a clear testimony to the Outstanding Universal Value of Chile’s Chinchorro Culture, while presenting case studies that forge the comparative analysis of the culture, which is notable for its gradual implementation of complex funerary rituals, which included preparing the remains of the dead through a sophisticated process of artificial mummification which was developed 3000 years earlier than the mummification technique of Egypt. This tradition lasted 4000 years. The Chinchorro Culture is also notable for their exceptional adapting to a coastal setting. For thousands of years the Chinchorro developed and kept alive their culture in one of the world’s most arid deserts.



The book which the reader holds in hand features several case studies from all over the world which present the results reached through the field work and investigations of national and international experts. The results of these investigations discuss the singularity of the Chinchorro Culture and other archaeological sites in the Pacific. It features contributions from 11 national and international experts representing 7 countries and 10 institutions. These pages support the elements for the formulation of the Outstanding Universal Value of Chile's Chinchorro Culture and provide in depth information, discussions and examinations of research, otherwise not available between one book binding. Here the reader will find information treating the Chinchorro human mummification processes and examples from other cultures and discourses of the raw materials used, which will allow the reader to contextualize these funerary rites. Further contextualization is provided in examination of the climatic conditions of the Archaic Period, when hunters began to exploit the extreme Pacific coastal environments.

UNESCO wishes to express its sincerest gratitude to the University of Tarapacá in Arica, Chile and the National Monuments Council of Chile for their dedication to the investigation and conservation of the Chinchorro culture and for their outstanding support of this endeavor. UNESCO also wishes to thank the national and international researchers who have made contributions to this volume for their efficacy in promoting the cultural heritage of the Chinchorro culture and for demonstrating a remarkable capacity for thinking within the parameters of the Convention's criteria and for building the bridges between scientific investigations and the World Heritage approach.

Nuria Sanz

Head and Representative of the
UNESCO Office in Mexico,
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HEADS World Heritage
Thematic Programme of UNESCO



Foreword

Perspectives from Chile



The University of Tarapacá (Arica, Chile) and the National Monuments Council of Chile would like to acknowledge the privilege and the pleasure of presenting this book, entitled “*The Chinchorro Culture: A Comparative Perspective. The archaeology of the earliest human mummification*”.

As a regional state university, the University of Tarapacá places a strong emphasis on the study, preservation, and promotion of Chile’s cultural heritage. Specifically, since the 1960’s, it has been inextricably linked, academically and scientifically, to the Chinchorro culture. To this end, it has conducted research, disseminated knowledge, and facilitated the local and national community the necessary inputs for the conservation of the Chinchorro culture. The present book is solid evidence of that fact. The university is delighted that scholars from Chile, Brazil, Peru, Canada, and France have shared their expertise and knowledge in Arica, in order to discuss issues related to the Chinchorro in a cross-cultural manner.

The Chinchorro began settling this area 9 to 10 thousand years ago by populating the fringes of the Atacama Desert, one of the most inhospitable regions in the world. As such, this culture represents one of the earliest components of archaeological evidence in a kaleidoscope of subsequent cultural groups.

Chinchorro studies have come a long way since the pioneer efforts of Max Uhle during the early 1900’s, and the work of our senior researchers Marvin Allison, Percy Dauelsberg, Guillermo Focacci, Luis Álvarez, Sergio Chacón, and Mario Rivera during the 1960’s-1980’s. Their seminal work, along with the collaboration of many national and international scholars from several universities, created the methodological foundations for Chinchorro studies. Now, new generations of scholars are taking Chinchorro studies to a new level of internationalization, and they are making an emphasis on the cultural and universal heritage value of the Chinchorro culture. Chinchorro complex mummification practices, the oldest in the world, their polychromatic mummies and their cultural materials bear witness to the common journey of humanity.



The Chinchorro were small groups of preceramic fishers that excelled in the art of artificial mummification; likewise, we are a small university working to shine in our academic endeavor. Thus, we hope this book will contribute significantly to promote future collaboration and scientific debate among scholars and institutions worldwide, particularly those sectors that are interested in the social complexity and biocultural evolution of ancient cultures.

In 1998, the uniqueness that is broadly described here, and that the reader may research in–depth in the present book, led the National Monuments Council to include the Chinchorro Cultural Complex as one of the sixteen properties that would make up the Tentative List of national sites that the State of Chile could submit for inscription on UNESCO’s World Heritage List.

Also, since the early 21st Century, and under the leadership of the University of Tarapacá, the newly created region of Arica and Parinacota has been focusing its efforts on the conservation, research, management, and dissemination that are related to these archaeological sites.

We are extremely grateful to the numerous researchers from the world’s most distant places for sharing their knowledge with local specialists and learning first–hand from the vestiges of the Chinchorro culture. We want to thank all Chilean colleagues whose studies keep up discussions on the singularity and uniqueness of this culture; the authorities and community members of Arica and Camarones, and the officials at the San Miguel de Azapa Museum, who facilitate enriching field visits.

This book was based on a UNESCO conference held in Arica during 2010. Thus, we would like to express our thanks to the editors for their hard work and dedication, to the scientists who wrote the various book chapters, and to the many anonymous collaborators that made this unique collective work possible.

Lastly, we wish to convey our deepest gratitude to Dr. Nuria Sanz, an archaeologist who, as Head and Representative of the UNESCO Office in Mexico and Head of the Latin America and Caribbean Unit of UNESCO’s World Heritage Centre, has always driven appreciation for the Chinchorro culture as one of the most unique and intricate periods of the history of humanity.

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Rector
University of Tarapacá
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Secretary General
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Pre-Hispanic cultures in the Atacama desert: a Pacific coast overview



Victoria Castro

The region of Antofagasta is part of Chile's Norte Grande. Human settlements are found across the region, from the highlands at 4,000 m altitude down to the coastal plains, a zone strongly influenced by the constant action of the Pacific anticyclone and boasting a desert climate characterized by banks of dense *camanchaca* fog. These fog banks occur at 300 to 900 m above sea level. They allow for a variety of flora, such as cacti, to flourish in this arid landscape, along with associated fauna, such as guanacos and foxes. South of where the Loa River flows into the Pacific Ocean stretches a completely arid coast that supports life only where freshwater is found. Despite its harshness, humans have traveled through and even occupied this coast for millennia, depending on two key factors –the bounty of the Pacific Ocean and the exchange with inland highland communities– which enabled their settlement between the abrupt, imposing coastal mountain range and the vast desert.

A LOOK AT THE COASTAL POPULATIONS OF ANTOFAGASTA REGION

To date, there are no known human settlements in this zone that can be attributed to the classic Paleo-Indian period. However, the Las Conchas site offers evidence of human groups in the Early Archaic period, in association with local fish species that are now extinct. Today, the pre-Hispanic sequence offers a series of chronological stages for the coastal zone of Region II (Llagostera, 2005).

Stage I (10,700 to 9500 BP), is represented by the initial occupations of La Chimba 13 and Quebrada Las Conchas (Llagostera, 1979, 1989, 1990; Llagostera *et al.*, 1997). El Obispo 1 and Los Médanos 2 (Llagostera *et al.*, 2000; Llagostera, 2005) and at the mouth of Quebrada Cascabeles on the Taltal coast. The last of these sites displays evidence of the efficient use of a rock shelter as a dwelling along with the consumption of shallow intertidal species obtained by diving (6 to 12 m depth), complemented by shoreline gathering (Castelleti *et al.*, 2010). The populations that lived here consumed basically the same fish and shellfish species found today, as well as smaller proportions of camelids, pinnipeds (fin-footed mammals), canines, rodents and birds. They were





fishing groups that made use of specific, efficient technologies and according to Llagostera (2005) embodied a tradition that was not experimental but a mature adaptation to life on the coast.

Stage II (9500 to 9000 BP)

The main feature of this stage, and the one that distinguishes it from Stage I, are the geometric stones associated with this period. These objects were usually fashioned from sandstone into rough discoidal and polygonal shapes and seem to have no direct function related to resource extraction. The variety and size of the ichthyological species remains the same as in the previous stage, indicating that no large scale changes in taxonomies or technologies had occurred. Stage II is therefore considered a continuation of the previous one, with the addition of some new cultural expressions (Llagostera, 2005). Ergological similarities with the so-called Huentelauquén Culture of the Norte Chico (Iribarren, 1961) drew Llagostera to propose the existence of the Huentelauquén Complex in the

Figure 1. Chilean northern coast between Arica and Los Vilos.

Courtesy of F. Maldonado R. from topography basis Laboratory SIG CASEB, PUC-Chile.



zone, taking into consideration analogous records obtained at the sites of La Chimba 13, El Obispo 1, Los Médanos 2, and others on the Copiapó coast, all of which contained geometric stone shapes that may have had a ceremonial function.

On the coast near Antofagasta no documented archeological evidence exists to date for *Stage III* of the Archaic Period, which runs from 9000 to 6000 BP (Llagostera, 2005). Nevertheless, recent studies in the locality of Taltal, at the southern edge of this desert region, have led to absolute datings of (9160 BP) for a pre-Hispanic mining operation in the San Ramón ravine (San Ramón 15), associated with stone hammers, flakes and mollusk remains. This mine produced iron oxide (Salazar *et al.*, 2009), the red pigment used by many prehistoric communities as body paint and for 'painting' on different media, including rock faces, and reveals that the societies of the times were not only expert fishermen but also skilled miners, a dual tradition that has endured to this day on the arid desert coast of Antofagasta region.

Stage IV (6000 to 5000 BP) is considered a southward extension of Stage II, along the arid coast Valles Occidentales (Western Valleys) sub-area, and coincides with Bird's (1946) 'First Preceramic Period', which is an extension of the Camarones Complex (Llagostera, 1989,1990) in Arica. The Stage is divided into two sub-stages: an Early period characterized by the circular shell hook and a Late period with prevalence of the circular fish hook with straight stem, both of which were of enormous importance for the fishing activities. Stage IV is represented by the sites Cerro Colorado and Punta Morada in Taltal; and Cobija 13, Abtao 1, Punta Blanca and Punta Guasilla (Llagostera, 2005) and also Copaca 1 (Castro *et al.*, Fondecyt 1100951, 2010 Pers. Com.) between Antofagasta and Tocopilla.

Stage V (5000 to 4000 BP) also appears to be an extension of Stage III in the Western Valleys coastal zone, coinciding with Bird's 'Second Preceramic Period' (1946) and with the Quiani Complex proposed by Llagostera (1989). The main feature of this stage is the disappearance of the seashell fish hook and its replacement by the cactus needle hook. This Stage V is present in sites such as Caleta Huelén 42 (Núñez L., 1971; Núñez *et al.*, 1975; Zlatar, 1983), Cobija-13 (Bittman, 1984) and Los Bronces 1, a site located south of the present-day city of Taltal approx. 200 m from the coast. The third site is a coastal settlement consisting of semi-subterranean structures (Contreras and Núñez, P., 2008), and is part of an early settlement pattern exemplified in the 1970s by the Caleta Huelén 42 site at the mouth of the Loa River (Núñez *et al.*, 1975), with different possible degrees of sedentarism. Schaedel (1957) characterizes this Stage as 'the phenomenon of maritime populations with architecture'.

Stage VI (4000 to 3000 BP) displays transitional features with regard to the form and the raw materials of the produced fish hooks. An example are the later residential and/or burial structures of Caleta Huelén 42 where human remains are buried underneath the dwellings and are sealed with mortar made from seaweed ash, adding a funerary function to the dwellings. This pattern of 'cemented' floors is also found at Cobija



and Punta Guasilla (Bittmann, 1984) and at the Los Canastos site on the Mejillones Peninsula between Antofagasta and Tocopilla.

In the Late Archaic Period the highland populations of the Atacama Salt Flat began to undertake short- and long-range journeys, possibly even reaching the Pacific coast, judging by the remains of mollusks *Oliva peruviana* (snail), *Pecten purpuratus* (scallop) and *Choromytilus sp* (choro) recorded at the highland sites of Tulán 52 and Tulán 54. At these sites bones of domestic camelids were also found, suggesting that the animals which carried loads may have given these groups the mobility they needed to reach the coast during the Tilocalar stage, ca. 3080 to 2380 BP. The Tulán 109 site shows evidence of the same interactions during this stage (Núñez *et al.*, 2008). These findings testify to the importance given to a diversified diet. Although throughout the long Archaic Period human groups in the Antofagasta region did not engage in complex practices like those of the Chinchorro culture in the far north of the country, they did share with that northern culture the extensive use of red iron oxide pigments. Evidence of this includes the huge quantity of stones used for grinding this pigment that have been found, as well as the use of the pigment for sealing tombs and powdering the bodies of the deceased, a practice that continued into the following period.

Formative Period: This period began about 3000 years BP and is characterized by the influence of highland groups, who acted as agents of sociocultural change in the coastal subarea of the western valleys, transforming these societies' modes of subsistence from gathering to producing. On the riverless coast, environmental conditions were not conducive to agriculture, so the conservative hunter-gatherer way of life endured with the gradual incorporation of new technologies. It is at the mouth of the Loa River that most evidence from the Formative Period has been found, mainly associated with graves located within burial mounds. Evidence of inland cultures has also been found at the Caleta Huelén-10, Caleta Huelén 20, Caleta Huelén-43 and Caleta Huelén-7 sites, ranging from 2400 to 1800 BP (Núñez, 1971). Findings include agricultural and livestock products, indications of copper metallurgy, implements for inhaling narcotic substances, and quinoa and camelid wool. These are all associated with contexts in which the exploitation of marine resource plays a central role. Little evidence of the Formative Period has been found along the Antofagasta coast, possibly due to a lack of focused investigation. To date, the Cobija 10 burial site (Moragas, 1982) marks the southernmost limit of the burial mound tradition first identified at the distant site of Alto Ramírez in Arica (Muñoz, 1980). Studies have proposed a chronology of 2300 to 1600 BP for these mounds on the riverless coast, characterized by: '[a] burial pattern composed of cactus posts or beds of plant fiber and the body itself, all covered with a very compacted cement. There is also evidence of symbolic tombs and secondary burials. This context corresponds to a population adapted to coastal hunting, fishing and gathering on land and sea' (Moragas, 1982).

Llagostera (1990) proposes that eel remains found in the archeological contexts of the Punta Blanca site, south of Tocopilla, are a bioindicator of navigation. This new



development in maritime economy emerged around 1720 BP, close to the date attributed to a miniature reed raft found in a burial mound cemetery just six km from the mouth of the Loa River and dated at 1735 BP (Carabias, 2000; Llagostera, 1990; Spahni, 1967). Notwithstanding the indirect evidence mentioned, the topic of pre-Hispanic navigation certainly requires further study.

Evidence of marine products dated around this time has also been found in the highlands. Mostny (1952) excavated dried sardines in a burial context at Chiu-chiu, and Pacific shells have been recorded at several Late Formative occupational and burial sites at middle and high altitudes (Pimentel *et al.*, 2010). In our prospecting activities on the coast south of Antofagasta and north of Tocopilla, we found that more than 19% of the ceramics collected can be dated back to the Formative Period and came from the Loa Medio, Salar de Atacama and Tarapacá zones. One fragment was dated at 1635 BP (Castro *et al.*, 2009) (Figure 2). These numbers point to a lively exchange among populations of the Circumpuna region and the coast, which continued during later periods. At the same time, shell artifacts and ecofacts were found in more than 30% of the graves of the Chorrillos cemetery in Loa Medio (2800 to 2200 BP): shell beads worked to different degrees, mortars/containers and pendants. Among the species identified, were artifacts made of *Argopecten purpuratus*, *Concholepas concholepas*, *Mytilidae* and *Lottiidae* (González and Westfall, 2010). One remarkable find was reported on a trail that linked sites 10 km from Tocopilla with the lower Loa River, and may have continued to the middle Loa River (Calama-ChiuChiu). This was a single grave consisting of a stone and sediment mound containing a body and an array of grave goods. The thorax and abdomen were covered by a textile, on top of which were five



Figure 2. Camanchaca, coastal fog.
Photo courtesy of F. Maldonado R.



small feathers. Close to the corpse's face was a woven bag displaying multiple repairs, a common feature of coastal textiles. Absolute dating indicates that this individual lived between 2730 to 1710 BP (Cases *et al.*, 2008). Among his recognized pathologies, the deceased showed signs of mild exostosis of the external auditory canal, a disorder typically associated with life on the coast, as one is 'more exposed to changes in pressure and temperature when one is active on the sea, diving or collecting shellfish' (Standen, 1997 in: Cases *et al.*, 2008). The authors also report 272 fish bone remains associated with this grave, which were found in a woven bag, in the individual's stomach and through sifting of sediment; these correspond to near-shore fish species (Cases *et al.*, 2008). Researchers have suggested that the pathway running by the grave was used by people coming from the coast, and that the grave site was an 'official resting place, an obligatory stopping place for interzonal travelers' (Cases *et al.*, 2008). Another study on 'roadways and associated evidence of the Loa Medio-Tocopilla Connection, Sierra de Angostura pass route' (Pimentel *et al.*, 2010) analyses the excavations of two *paskanas* or rest areas on the trail, and notes that 74% of the bone remains found were of fish, with also evidence of crustaceans and bivalves. The authors suggest that this route was probably used between 2750 to 1650 BP. These new findings contribute to our understanding of human mobility between different altitudes as they effectively link up reliable records with absolute chronologies.

On the coast, in the Museo de Mejillones, we examined an archeological recovery conducted by archeologist Raúl Mavrakis at the Lobera 1 site, located in the western zone of Cerro San Luciano on the Mejillones Peninsula. On a high coastal terrace 30 m above sea level and 100 m from the coastal bluffs, a recovery operation was carried out on two (possibly three) graves. One of the graves was intact and the other one was almost completely destroyed. The registered grave goods and offerings from grave number 1 were mostly everyday items related to coastal subsistence (Varela *et al.*, 2008).

According to a bio-anthropological report prepared by Maria Antonieta Costa (2003), the subject found in the grave is a male of approximately 50 years of age without nutritional pathologies and with wear on the crowns of his teeth, consistent with a coastal diet containing an abundance of hard food and the presence of sand. Cruz and Mavrakis (2003) dated these findings at between 950 to 650 BP. However, the ceramic offerings that were found, including a polished black cup from the Séquitor phase and a Quillagua Rojo Pulido type bottle (Uribe *et al.*, 2007), point to the Late Formative period. With regard to the technologies used, the darts and harpoons, ropes and cords are practically the same as those recorded for Archaic coastal groups (Llagostera, 1990). One difference observed, is the use of knives and chisels with handles, which do not seem to have been present among Archaic groups and may be innovations developed by later populations of the Formative period. Another innovation is the use of marine fiber, perhaps *lessonia*, as grips on the heads of the darts and harpoons. The fiber was always wrapped over the cotton or tendon cords that affixed the points and barbs to these instruments (Varela *et al.*, 2008).



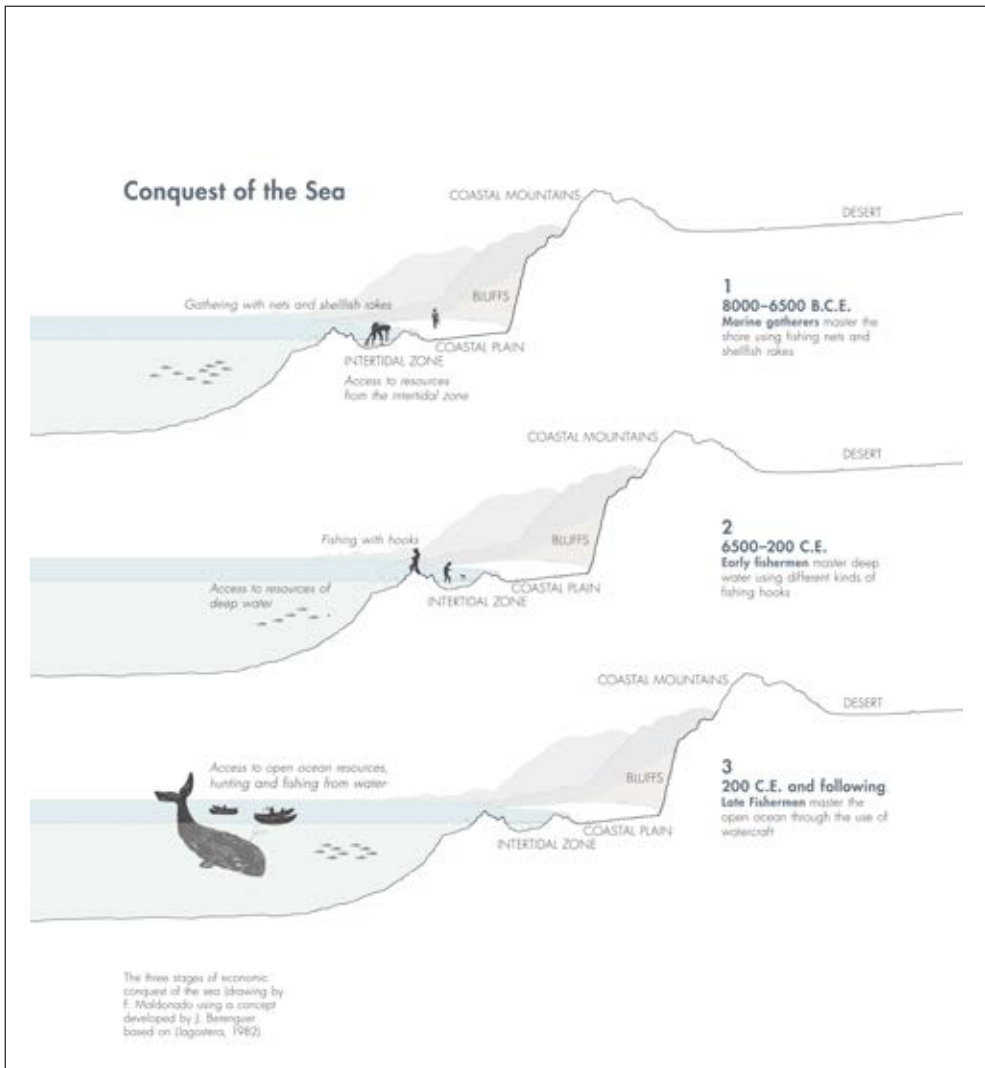


Figure 3. Three dimensions about sea conquest. Courtesy of F. Maldonado R., from *Pescadores de La Niebla*: 22, see bibliography.

This demonstrates a much more significant presence of Formative technology than that detected to date in the riverless coast of Antofagasta, as the findings of Latcham at Cobiya also suggest (1928).

Farther south, in Taltal, changes in dwellings can be seen that Casteletti summarizes in this way:



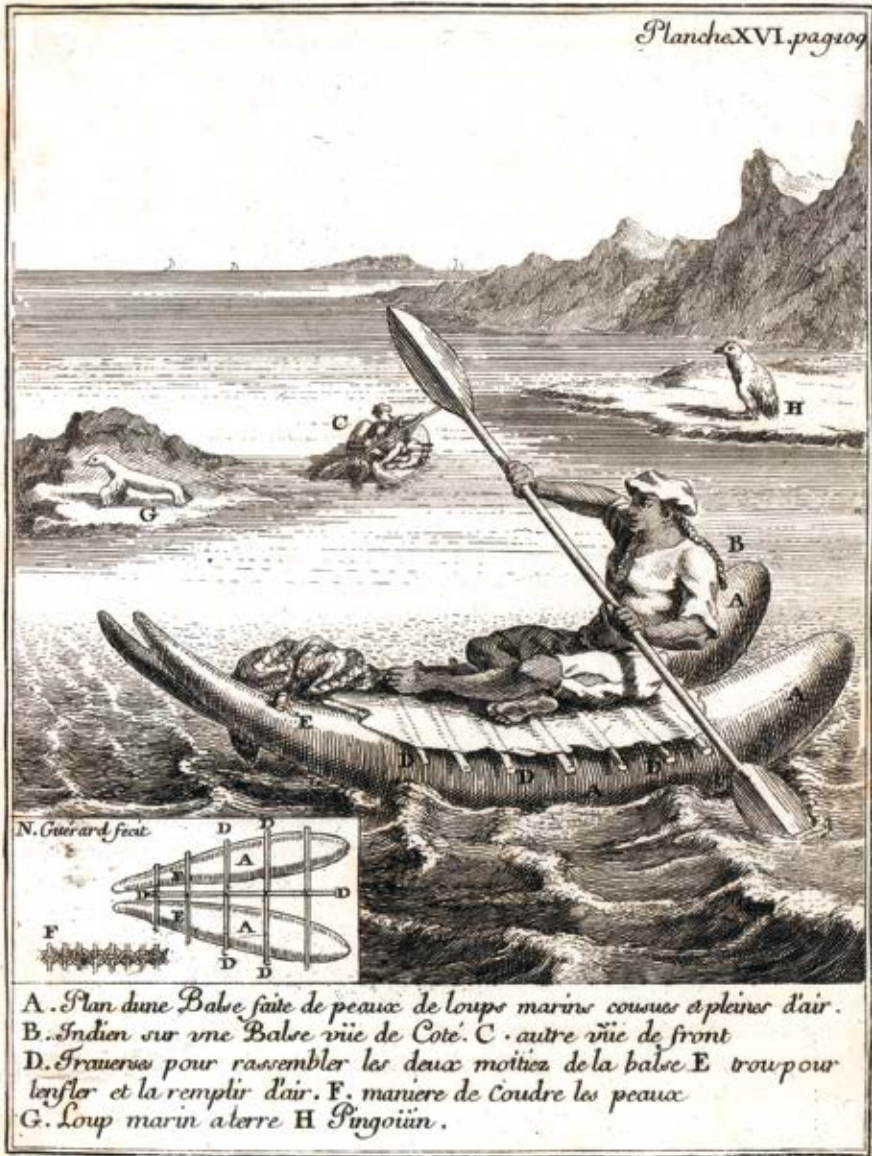


Figure 4. Engraving of sea lion skin raft. Frezier [1712], see bibliography.



Beginning in the Formative period, extensive settlements, some adjacent to traditional centers, others in new locations such as fluvial terraces at river mouths and new mountain passes, were used as the sites of new human settlements of varying size, some as large as 50,000 m². Without a doubt, however, it is the placement and frequency of dwellings within these settlements that marked the emergence of a new spatial pattern in the zone, with the grouping together of dwellings within each site, most of which are more or less contemporary' (2005, p. 55).

One interpretation that attributes dates to these sites similar to those obtained in previous studies (Núñez, 1984), explains this change in the settlement structure of Formative sites by the occasional or semi-permanent presence of foreign groups, which over time would have increased the population of the Taltal coast (Casteletti, 2005).

The *Middle Period* in Chile's Norte Grande is usually identified with the presence of Tiwanaku influences, although these are quite weak along this interfluvial coast. The only site with absolute dating that attests to the Tiwanaku presence on the coast is the Cádiz-3 cemetery of Stage IV or Cádiz Patache (Núñez and Moragas, 1982 in: Moragas, 1995), dated at 1190 BP ± 60 BP. Here again, most contexts show evidence of marine resource extraction, while the Tiwanaku presence is manifested in a decorated polychrome textile and instruments for inhaling psychoactive substances. Another coastal site suggested as a Tiwanaku colony in its final phase is Los Verdes-1, a cemetery located in a fishing cove 24 km south of Iquique, which is actually in the Tarapacá region. Here the Tiwanaku influence arrived indirectly, as it did in Patillos and Bajo Molle, through the communities of Pica (Moragas, 1995). To conclude, no evidence has been detected to date from the Middle period in the riverless zone.

Late Intermediate Period Classic evidence of this period is provided by the sites of Latcham (1910), Schaedel (1957), Berdichewski (1965), Larraín (1966) and Bittman (1980, 1984). Among these, Larraín notes the presence of ceramics from Arica, San Pedro de Atacama and the Diaguita area in the middens of Antofagasta. During the early part of this period, around 950 BP, Castellón (1989) assigns materials from the Chacance 1 site in the Middle Loa River, with remains from ichthyological and conchological fauna that point to intense relations of exchange or of access to coastal resources. Pointing to this fact is the presence of dried fish in six of the 16 tombs excavated and desiccated octopus in two of them. There is less conchological material here than at the Topater 1 site in the oasis of Calama, but what has been found is much more varied. We found specimens of *Concholepas concholepas* (abalone), *Argopecten purpuratus* (scallop), *Choromytilus chorus* (mussel), *Aulacomya ater* (mussel) and *Caliptraea (trochita) trochiforme* (chocha mollusc). All of these were of nutritional importance and the mussels and scallops had been collected by diving (Varela *et al.*, 2008).

Moragas (1995) proposes the existence of multi-ethnic contexts for this period. The segment stretching from the lower Quillagua to the mouth of the Loa River held



simultaneous occupations of populations from the Middle Loa, the Atacama oasis, the Pica-Tarapacá complex and the Arica culture. The coexistence of various groups in this place may be attributed to the attractiveness of the lower reaches of the Loa River, which offered marine, agricultural and forest resources (*Prosopis*) as well as mining opportunities. The author also affirms the existence of strictly coastal groups that maintained contact with these populations of inland origin through bartering or trade.

Our investigations confirm Moragas' assertions. In effect, the Cobija 1N and Cobija 24 sites, excavated by the researchers of Fondecyt project 1050991 provide evidence of continuous occupation during this Period, the dates of which we have determined as 750 to 550 BP. In this study we also note evidence of connections between highland populations, especially those of the Loa and Atacama Salt Flat, through ceramics (Varela *et al.*, 2007, 2008), textiles (Cases, 2007, 2008) and archeobotanical remains (Vidal, 2007). The first occupation of Cobija 24 and Cobija 1Norte may correspond to the initial period when highland groups established a direct territorial link (Aguayo, 2008). Around 710 to 630 BP, the occupation displays moderate extraction of ichthyological resources with a marked emphasis on mackerel, and a model of establishment on the two marine terraces. One significant element in these contexts is the extraction of *turritella*, a malacological resource of no economic importance but probably having symbolic value to pre-Hispanic populations. Between 630 and 550 BP, the level of *turritella* extracted remained the same or increased, while evidence related to northwest Argentina appears in the form of textiles.

Ceramics found in the coastal zone beginning in the Formative Period correspond to contributions from the circumpuna highlands and from the Western Valleys, especially the Arica-Parinacota region. These correspond to the Loa River and San Pedro de Atacama ceramic traditions and the Tarapacá Tradition. Nevertheless, recent studies have also noted the existence of monochrome ceramics manufactured on the coast. These were simple ceramic groups with unskillful surface polishing and completely undecorated (Varela, 2009).

Special mention must be made of the rock art of this Pacific coast strip, which provides a stylistic horizon with no absolute dates but is currently attributed to these Late times, as the most outstanding panels bear images of large cetaceans associated with water craft (Contreras *et al.*, 2008; Mostny and Niemeyer, 1983). The monumental master panels are found in the El Médano Ravine, within the Taltal archeological zone, on the southern edge of the absolute desert coast. But local variations representative of this same style can be found all along this coast, though the panels are more modest.

This artistic style has been defined by Berenguer (2009), who has also synthesized the assumptions that can be drawn from the execution of these paintings, for as indicated above, there is indirect evidence to situate pre-Hispanic navigation in earlier times. Whatever the case, these paintings are currently dated between the



fifth and sixteenth centuries (Berenguer, 2009). The style also includes depictions of camelid hunting, certainly guanaco, and images of various species of fish, as Mostny and Niemeyer affirm:

'Apart from a myriad of fish impossible to identify, species that can be discerned include whales, especially the black pilot whale, sperm whale and ballena; the sea lion, swordfish or albacora, hammerhead shark and turtle. One of these scenes shows the leatherback turtle (Dermochelys coriacea), which lives in tropical oceans and only occasionally visits the coasts of America'. (Mostny and Niemeyer, 1983, p. 47).

As it was throughout the entire American Andean region, the Late Period here is marked by the presence of the Inca. Cora Moragas (1995) has reviewed the Inca influence in the coastal desert zone. Close to the territory under study here, in the coastal mountains facing Iquique, is the Cerro Esmeralda site, which offers strong evidence of the Inca presence. A ceremonial burial of a girl and young woman, a *capacocha*, have been found there, with offerings of decorated polychromatic textiles, Inca Cuzco ceramics, gold and silver bracelets, silver garment pins, *Spondylus* shells, bags with coca leaves, Saxamar bowls in the Inca altiplano style, small bags decorated with green feathers, a white feather headdress and other articles from different ecosystems that were brought to the coastal mountains. The summits of the coastal range have not been intensely prospected to date, and may provide other discoveries of significance for the prehistory of the Norte Grande. Other coastal sites near Iquique that show Inca influence, although to a much lesser degree, include Patillos and Caleta Huelén-23, which is an extensive cemetery of the Late Intermediate Period that displays Inca influences in its final stage.

Our research in the Antofagasta coastal region has provided evidence indicating that during the Late Intermediate Period the coastal sector between Cobija and Punta Tames was inhabited by groups that later received Inca influences. This evidence is based mainly on ceramics, but further studies are required to flesh out the details of these linkages.

A broader question that could be posed that crosses time periods is 'What did these people eat?'¹ The Pacific Ocean is a limitless food source, offering abundant quantities and varieties of fish species, marine mammals, shellfish, algae and birds (Castro and Tarragó, 1993).

1 Segment of an article by Castro V. 2008 Ms. Sabores Ancestrales. Caza, recolección y producción de alimentos en el norte prehispano. En el norte ¿Qué comía la gente? Chapter 1 of the book, in press: *Historia, Alimentación y Cultura en Chile. Una mirada interdisciplinaria*. Universidad Católica de Chile. C. Schiolla ed. Editorial Sudamericana.



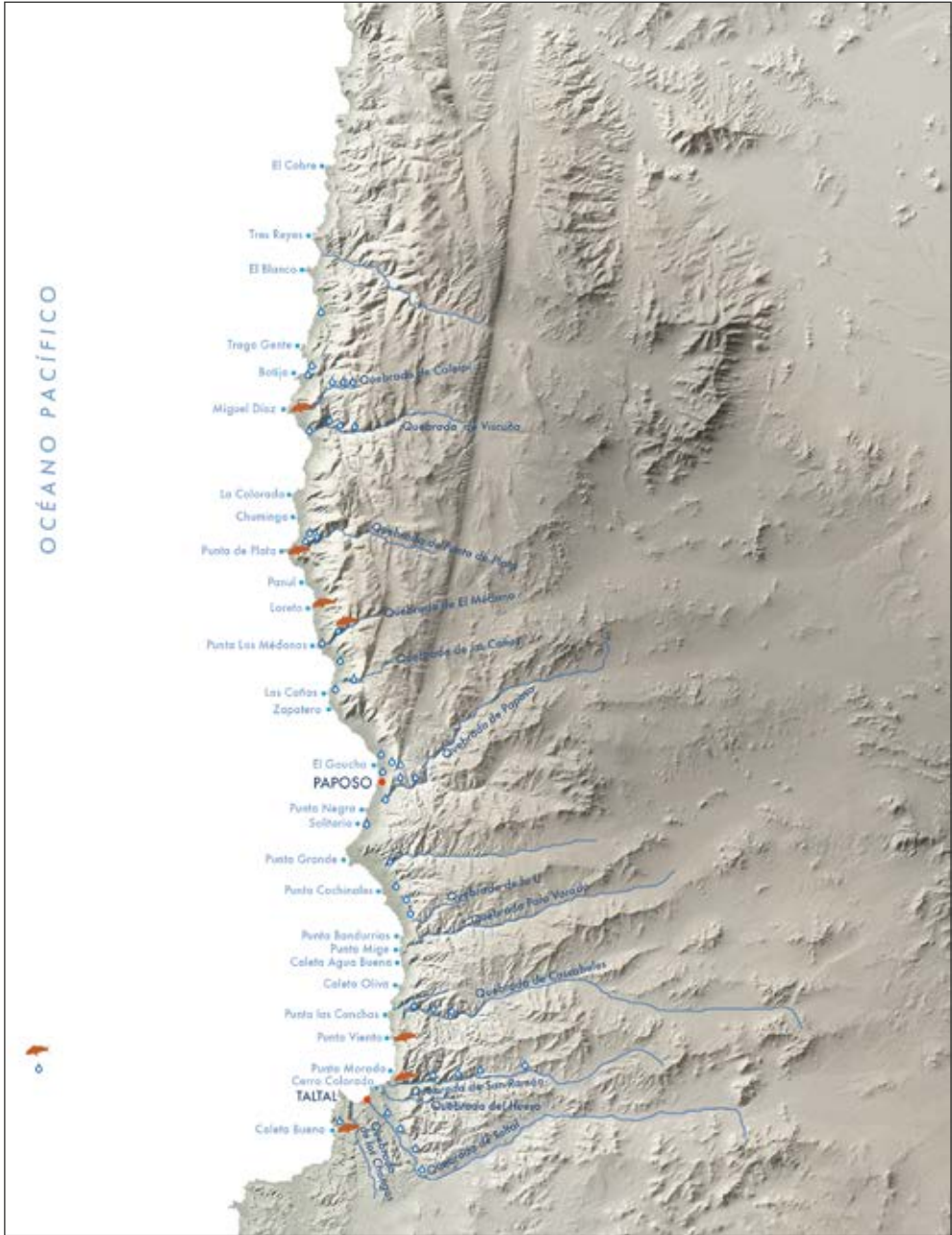


Figure 5. Map showing pictography area.
Courtesy of F. Maldonado.



The intertidal zone lies between the high tide mark and the low tide mark of the seashore. It is sub-divided into the upper, middle and lower intertidal zones, followed by shallow sub-tidal zones. The lower intertidal zone is delimited by the line of brown seaweed (*Lessonia nigrescens*), which separates it from the shallow sub-tidal zone (Santelices, 1989). This band of brown seaweed is only rarely un-submerged during low tide and the sub-tidal zone is always submerged by seawater. Thus, access to the shallow sub-tidal and sub-tidal zones can only be obtained by diving, and therefore only groups skilled in the extraction of coastal resources such as the abalone species *Fissurella latimarginata* could obtain access.

Just as plants and animals were domesticated over millennia, so did the extraction of marine resources and the technologies to facilitate this activity change over time. It has been suggested that, from the earliest occupation until late pre-Hispanic times, groups living on the coast extracted marine resources. In the first they gained dominion over the shore (longitudinal dimension), then followed the mastery of deeper waters (benthic dimension) and finally they mastered larger areas (latitudinal dimension) (Llagostera, 1982). In gathering shore resources these groups used nets made first of plant fiber and later of fiber and cotton. Food was abundant; even the mullet (*Mugil Cephalus*) could have been caught from tidal pools close to shore, just as children catch them today on the coast of the Norte Grande. Around 6500 BP the shell hook appears in these latitudes as a tool that revolutionized fishing. At this time, mackerel (*Trachurus symmetricus*) became a popular catch and the size of fish caught increases. Around this time local inhabitants developed the ability to master the second dimension - the ocean depths. As the cold marine oscillation withdrew, populations of choro (*Choromytilus chorus*), the bivalve used to manufacture the shell fishing hooks, also decreased dramatically and the people invented the cactus needle hook and, later and further south, the bone fishing hook. The expansion of the marine territory appears to have occurred during late pre-Hispanic times, around the same time seagoing vessels were invented. This corresponds to the third dimension of appropriation in which a quantitative increase and qualitative improvement in the extraction of marine resources is observed. These coastal groups had access to open water fish such as the large tuna (*Thunnus*) and Mahi Mahi (*Coryphaena*), semi-abyssal fish such as conger eel (*Genypterus chilensis* and *G. maculatus*) (Llagostera, 1982) and whales, which they used for different purposes. Among these products, special mention should be made of dried eel or 'charquecillo', which was made from surplus meat and used as a reserve food, as a trading good and even as tribute by these coastal groups during Inca times. Marine resources were and remain particularly important for the inhabitants of the riverless arid coast between the Loa River in the north and the Salado river in Chañaral in the south, as farming in this region was and is virtually impossible owing to the lack of drinking water. Rather, the knowledge of the sea and its resources led to surprising levels of sophisticated expertise related to fishing (Llagostera, 1982). These groups had reed rafts, miniatures of which have



been found deposited as grave goods and which were dated at around 1735 BP; another miniature figure found of a wooden raft has been dated at 1190 BP and came from the cemetery at Cádiz 3, a site south of Iquique. Yet another figure represents a vessel known as a single-hulled canoe, which is made of a single piece of wood and has been found near Arica in cemeteries that also contained some Inca materials. This figure has been dated at around 500 BP (Llagostera, 1990; Núñez, 1986). The most remarkable water craft of all, however, was the sea lion skin raft, probably made on the coast of the Norte Chico or near Antofagasta. These craft were still being made in the middle of the twentieth century (Niemeyer, 1965-66). All of these vessels expanded the area of operation into the vast Pacific Ocean, increased mobility between fishing coves, made long distance voyages easier and enhanced expertise in the use of harpoons for hunting whales, as has been documented in the rock art paintings of El Médano (Mostny and Niemeyer, 1983).

It is obvious then that in the late pre-Hispanic periods (approximately 1050 to 420 BP) the inhabitants of this region had access to a wide range of marine resources. Further proof of this is found in the diversity of species recorded at Cobija in Antofagasta region, including taxa from upper and middle rocky intertidal zones, as well as the lower intertidal zone and even the shallow subtidal zone (the *Megabalanus psittacus* or picoroco barnacle has also been found here) (Lucero, 2008).

In this midden (Cobija 1 N), four clearly occupational events have been studied, all of short duration and relatively distinct. Only the first three layers were part of the midden. The first of these is one to two centimeter thick and therefore corresponds to a trampled, crushed and dry midden. The second layer reflects an intense exploitation of ichthyological resources, which seem to be more abundant than marine invertebrates, as well as marine mammals and birds. There is also evidence of gathering from the shallow subtidal zone, reflected in the presence of limpets (*F. cumingi*).

Of the species recorded in the fauna column, only limpets (*Fissurellidae*) and abalone (*Concholepas concholepas*) are somewhat difficult to extract, due both to their location and because they are strongly adhered to the rocks; nevertheless they were a popular food.

The site close to Caleta El Fierro 2 displays a significant presence of *Fissurellidae*, with abundant evidence of distinct species of limpets (*F. limbata*, *F. cumingi*, *F. crassa* and *F. máxima*). This means that the inhabitants were collecting not only the more accessible and abundant species, but also those that offered the most meat, such as the *F. cumingi*, which inhabits the shallow subtidal zone and is therefore more difficult to extract. While the *F. máxima* offers the greatest yield of biomass, it is not nearly as abundantly available. Its presence in the midden therefore denotes an effort to collect it despite its scarcity. It is notable that the *Concholepas concholepas* (abalone), although present, are much less abundant than the *Fissurellidae* (Lucero, 2008b). This situation is probably related to an ethnographic behavior, in which the abalones are shelled near their place of extraction in the shade of a rock overhang. In relation to the natural



layers recorded, it is notable that Layer 2 displays a large collection of Fissurellidae, followed by *Concholepas concholepas*. The latter occurs in less than half the number of Fissurellidae. In contrast, Fissurellidae (limpets) almost disappear in Layer 3, and *Concholepas concholepas* (abalone) become more abundant. On the contrary, all species of Trochoidea (black snail - *Tegula atra*, *Prisogaster niger* and *Diloma nigerrima*) are easy to access and extract, while the *Tegula atra* in particular is larger and therefore its consumption is inferred (Lucero, 2008b).

In regard to fauna identified on site, there is a clear emphasis on fishing and the consumption of species that inhabit rocky environments. The species *Cheilodactylus variegatus* (bilagai or rockfish), *Sicyases sanguineus* (pejesapo or clingfish), *Semicossyphus maculatus* (pejeperro), and the family *Labrisomidae* (trambollo), are typical taxa of the subtidal and intertidal environments of the rocky coastal waters of northern Chile (Berrios and Vargas, 2004). In its adult stage, *C. variegatus* grows to 30 to 35 cm in length. It is a typical coastal water fish and is found in small schools around forests of seaweed (*Macrocystis integrifolia*) (Torres, 2008).

For their part, the taxa *Paralichthys microps* (flounder) and *Cilus Gilberti* (Chilean croaker) are other species that live in the shallow coastal waters. This last kind of fish inhabits areas close to the coast, in breaker and sandy beach zones, and is even found in estuary waters.

In the late pre-Hispanic periods (approximately 1050 to 420 BP), there is a stronger emphasis on fishing and processing of fish of the mackerel taxon (*Trachurus symmetricus*) on the coast of Cobija and in the nearby fishing coves of the Antofagasta region. This species seasonally inhabits the shallow coastal waters of inlets and rocky shores, with the schools coming near the shore mainly in summer (Torres, 2008).

In the same region, the contextual features of Cobija 24 point to an extensive occupational site—with a diversity of artifacts observed on the surface as well as in lower layers—that can be defined as a midden camp due to the presence of abundant mollusk and other marine remains (Jackson, 2008). The site includes at least three pre-Hispanic layers that correspond to brief, continuous occupational events, although the presence of layers itself suggests brief unoccupied moments within the same temporal period, a factor that is also observed ethnographically. The pre-Hispanic occupational events display an obvious emphasis on the use of coastal resources, mainly mollusks but also crustaceans, equinoderms, seaweed, mammals and fish. There were a total of 43 mollusk species, but only 32 of these were gathered and consumed, while the rest were incorporated into the archeological context as epibionts adhered to other mollusks or through natural site formation processes that may have involved tidal surges.

In the first occupational event (Layer III) the exploitation of marine resources tends to be quite generalized, with some emphasis on the extraction of *Fissurellidos* (limpets), *Tegula atra* (black snail) and other mollusks with little biomass. The extracted malacological diversity includes 25 species. At the second occupational event (Layer II), dated between



690 to 680 and 590 to 560 BP, a more intense extraction of coastal resources was found, with a total of 34 species identified. Emphasize was on those with a greater consumable biomass (*Concholepas concholepas*, *Tegula atra*, *Protothaca thaca*, *Fissurellidos* and *Cbitonidae*), and focused clearly on the intensive extraction of mollusks. In the most recent occupational event (Layer I), the variety of species extracted decreases substantially to just 19 taxa, and although the level of extraction is low, it concentrates on *Fissurellidos*, which offer the greatest biomass.

The size-structure (width-height / length-width) of the *Tegula atra* and the *Concholepas concholepas* is small, especially for the latter species. Because size generally increases with depth, this suggests that they were gathered from the immediate intertidal zone. In this case, they were probably gathered from the shoreline itself. The gathering of mollusks high in biomass but small in size from the immediate intertidal zone suggests a non-discriminate gathering that has ethnographically and archeologically been associated with women and children (Bird and Bliege, 2000 in: Jackson, 2008). This hypothesis is reinforced by the presence of gathered mollusks with little biomass in this context. The above suggests that the extraction of mollusks was not specialized, which also implies that they were extracted by women and children.

Other marine resources such as crustaceans and equinoderms were not extracted in large numbers, while the abundant presence of seaweed suggests that some species were extracted for consumption and others were used as expeditiously technologies, possibly as knotted 'ropes'. Latham mentions that the activities of hunting and gathering by coastal groups in Northern Chile also included the consumption of seaweed. He notes that the Changos, who lived on the northern coast of Chile (regions I to IV), consumed 'two or three kinds of edible seaweed', without identifying which species, and probably traded these for other goods with inland groups (Latham, 1910).

In Chile the term *cochayuyo* is used for the seaweed species *Durvillea antarctica*. Chronicler Alonso de Ovalle (1649) has left detailed descriptions of the consumption of *Porphyra columbina* (luche) and *Durvillea antarctica* (cochayuyo). These species were gathered and dried, then exchanged with distant groups, some from across the Andes as far away as Cuyo and Tucumán in Argentina (Masuda, 1986).

It can be seen from these detailed archeological records and what they tell us of the diet of the coastal peoples, that most resources identified are associated with both consumption and trading of goods with highland groups over time. The diet of these coastal groups was complemented through different modes of exchange, as agriculture emerged gradually between the Altiplano and the inland oases (Murra, 1975; Salomón, 1983). Especially significant was the traffic in fresh, salted and dried fish (charki), which was taken from the Pacific coast to lands as far away as Chuquisaca in Bolivia (Aldunate *et al.*, 2010; Castro, 1997; Martínez, 1985).



The discovery of algarrobo in late pre-Hispanic contexts at Cobija on the Antofagasta coast indicates that this tree species was transferred from the interior, where it grows. Today the distribution of *Prosopis* is relegated to the regions inland of Arica, Iquique and Antofagasta, especially the Tamarugal Pampa and the inland ravines, some oasis ravines (Quillagua for example) and around the Atacama Desert oases. Assuming the distribution would have been similar in the past, the remains of *Prosopis* therefore represent the circulation of resources between inland and coastal groups. In this regard, there is no doubt that the linkages between coastal and inland groups can be associated with complex systems of reciprocity in which resources native to each sector were exchanged (Castro, 2008; Vidal, 2007). The guanaco (*Lama guanicoe*) was by far the best land-based source of protein, and its remains are found across archeological deposits.

In summary, we observe on the riverless desert coast or Atacama coast, two world views and two ways of living in the environment:

- 1) The deep-rooted millenary Archaic culture of the coast, which remained virtually intact over the years, relatively unmodified by the cultural changes occurring over the past two thousand years (Escobar, 2007; Marin, 2007). This was the way of life practiced by the local marine hunters, fishers and gatherers, completely adapted to the landscape and the resources available on the coast. These groups successfully appropriated this very rugged territory and its bountiful waters, taking advantage of all it had to offer. They found shelter in the hundreds of rock shelters that dot the landscape, protecting themselves from the elements and employing a mobile settlement system that allowed them to change places according to the availability of fresh water, the migration of species upon which they depended, and the changing seasons. These groups made use of the marine resources of this coast through a simple yet refined technology of hunting, fishing and gathering that also included sophisticated artifacts such as seagoing vessels. Most remarkable among these was the sea lion skin raft, a unique contribution of these seafaring groups to navigation on the sea (Núñez, 2008). Indeed, their way of life was so well adapted to the landscape and its resources that it has continued to this day, albeit with some adjustments.
- 2) A little less than two millennia ago the region was introduced to a system of settlement and territorial understanding that was completely different from anything known before: A millenary culture that had developed vast knowledge of the many different, sometimes remote, regions of the South American Andes and possessed sophisticated technologies for the domestication of plants and animals, as well as for textile making and metallurgy. These groups connected with different peoples and cultures, taking full advantage of the resources provided to them by different contexts and learning to master and establish a variety of relations with groups that they then incorporated into their habitational system. As groups living in the ravines and oases of the Atacama Desert, this Andean



culture crossed the inhospitable desert to reach this remote coast, incorporating it into their world and forging ties with the local fishing groups, which supplied them with the marine resources they required to complement their economic and ideological needs (Castro *et al.*, 2010).

On this arid coast, the strong presence of ceramic groups and, to a lesser degree, evidence of textiles from the Atacama highlands, offers proof of the presence of inland groups in this zone. These artifacts could not have come here any other way. The alternate explanation –that coastal groups journeyed inland on a large scale– is highly improbable and is not supported by our ethnohistoric information (Aldunate *et al.*, 2010; Casassas, 1974; Castro, 1997; Hidalgo and Manríquez, 1992), at least for the late pre-Hispanic periods, although there is isolated evidence of transit from the coast to the pampa in Formative times (Cases *et al.*, 2008). The most reasonable explanation is therefore that the people of the Atacama, who were skillful traders, travelers, and caravan drivers with a deep knowledge of the desert and its routes, took these prized goods with them on their journeys to the coast (Castro *et al.*, 2010).

It is also necessary to examine the kind of relations that developed between the highland groups that came down to the coast, and the local fishing peoples. Lozano Machuca (1581) wrote that the Atacameño people controlled the ‘Uro’ fishermen of Puerto de Atacama (Cobija), who supplied them with fish ‘as a sign of recognition’, implying a kind of vertical control with an unequal relationship between the two ethnic groups. Were the fishing peoples the ‘subjects’ of the Atacameño people, supplying the elite of the Salt flat with fish, or were they independent fishermen that since Archaic times at least had traded products with the people who came down to the coast from the interior? (Sandweiss, 1992) Considering that the presence of highland people on the coast has been documented since the Formative Period, one would have to determine when it became possible for an asymmetrical or symmetrical relationship to emerge between the two ethnic groups. The situation noted by Lozano de Machuca (1885) could well have been the result of changes that the Inca had introduced to benefit the Atacama elite, and could have been practiced by some of the fishing groups. At the same time, this kind of subjugation could have coexisted with trade relations between the people of the Atacama and independent fishing groups. Based on ethno-historic (such as Bibar, 1966 (1558)) and ethno-geographic documentation (Escobar, 2007), we assume that several classes of fishing groups existed in the past, some specialized in catching particular kinds of fish, others more expert at gathering seaweed and/or hunting certain marine mammals from the rocky intertidal zone, some of whom were skilled in diving. These factors can be demonstrated via bioanthropological, ichthyological, malacological and other analyses (Castro *et al.*, 2010).

Ethnohistory indicates that the Loa River marked the boundary between the dioceses of Charcas and La Paz (Casassas, 1974). This same boundary may have





Figure 6. Pictographs from El Medano.
 Courtesy of F. Maldonado R.

marked an ethnic frontier since pre-Hispanic times, especially during later periods. In effect, Núñez (1971) indicates that at the mouth of the Loa River during the Late Intermediate period there were stable, permanent populations of highland origin, mostly groups from inland Arica (San Miguel) and to a lesser degree groups from Atacama, Loa Medio and Pica. In our work at Cobija, we have found evidence of the exact opposite situation, with a much larger presence of groups from the Atacama and Loa Medio and little evidence of groups from Arica. It is therefore possible that the Loa was indeed a boundary (ethnic, ecclesiastic and political) that lasted at least from late pre-Hispanic times until the War of the Pacific. In any case, the pre-Hispanic coastal peoples of the Norte Grande practiced a very traditional coastal way of life that is implied in their particular ways of relating with the people of the highlands and other latitudes, and in the unique features they display from one end of the desert coast to the other.



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The Chinchorro culture: hunter, gatherers and fishers of the Atacama Desert coast



Vivien G. Standen and Bernardo T. Arriaza

The Chinchorro were the earliest human groups to settle along the coastal fringes of the Atacama Desert in northern Chile and southern Peru. These ancient populations were skillful pre-ceramic hunters, fishers and gatherers. This essay discusses the ecological setting, their subsistence strategies and settlements patterns.

THE ECOLOGICAL SETTING OF THE ATACAMA DESERT COASTLINE

The Chinchorro lived along the coast of the Atacama Desert, one of the world's driest deserts. However, the effects of the cold Humboldt Current made this area one of the world's richest environments of bird and marine wildlife. The geographic dispersal of the Chinchorro probably extended from Ilo in the north, to the Loa River in the south, over more than 600 km (18°-21°) (Figure 1). Despite this large territorial extension, the daily lives of the Chinchorro were confined to the mouths of the small valleys and streams that spring from the Andes, cross the desert and flow out into the Pacific Ocean. The coastline provided a stable environment with plentiful resources to sustain life, such as fresh water, rich marine fauna and terrestrial plants and animals (Figure 2). It is also likely that the Chinchorro hunting-gathering area included the lower valleys and distant oases about 40 km inland (Figure 3). In contrast, the coastal geomorphology interflows where cliffs fall abruptly into the sea were uninhabitable spaces, and leaving the rich natural margins of the mouth of the rivers meant facing the barrenness of the desert. Notwithstanding the difficult movement along the coastal cliffs and desert, the Chinchorro populations were never completely isolated from each other. Rather, they shared a maritime technology and a common funerary ideology for thousands of years.

THE ORIGIN OF THE PEOPLE OF NORTHERN CHILE

Three models have been proposed to explain the origin of coastal populations in this area: (a) a migration pattern from the tropical forest; (b) Andean hunters venturing down to the coast; (c) people with a coastal tradition migrating from southern Peru.



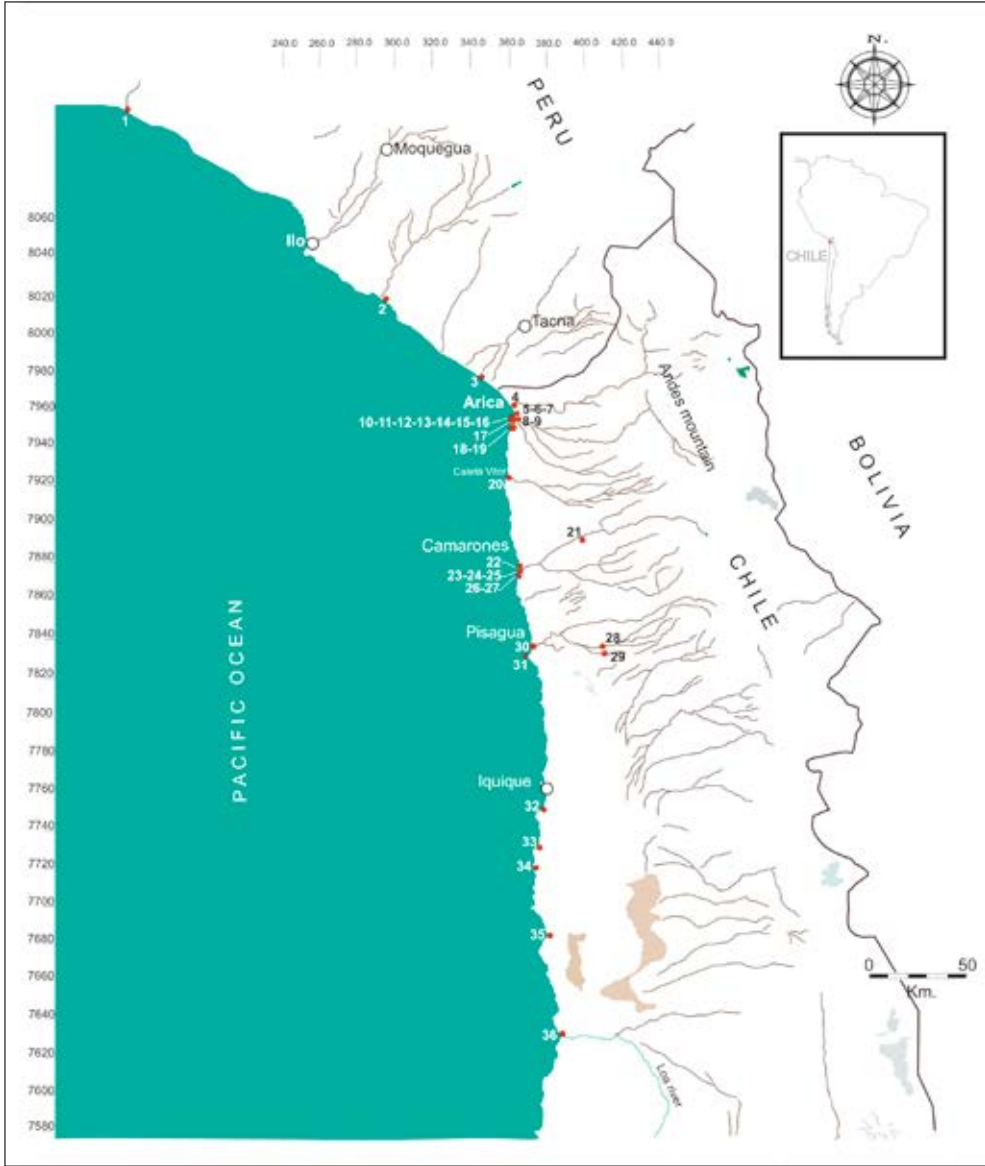


Figure 1. Map of northern of Chile and southern of Peru showing the main early archaeological sites: 1) Jaguay; 2) Tacahuay; 3) Los Burros; 4) Mina Macarena; 5) Chinchorro-1; 6) Maderas Enco; 7) Maestranza Chinchorro; 8) Acha-2; 9) Acha-3; 10) Morro-1; 11) Morro-1/6; 12) Morro-1/5; 13) Casa Bolognesi; 14) Yungay-372; 15) Colón-1; 16) Colón-10; 17) Playa Miller-8; 18) Quiani-9; 19) Quiani-1 y 2; 20) Vítor; 21) Conanoxa; 22) Camarones PN; 23) Camarones-14; 24) Camarones-17; 25) Camarones-8; 26) Camarones Sur; 27) Camarones-15; 28) Tiliviche; 29) Aragón; 30) Pisagua Viejo; 31) Punta Pichalo; 32) Bajo Molle; 33) Chucumata; 34) Caramucho; 35) Patillo; 36) Caleta Huelén-42.





Figure 2. The Camarones Valley river mouth.



Figure 3. Map of northern Chile showing the main coastal and inland territory.



Rivera (1975) argued that the initial settlement on the northern coast of Chile resulted from small groups of people migrating from the tropical forest as a result of demographic pressures. Once these migrant hunter-gatherers arrived, they would have reoriented their economy towards a maritime subsistence. This proposition was based on a set of cultural traits of Amazonian origin that appear in Chinchorro funerary contexts, among them tablets, bone tubes and spatulas for inhalation of hallucinogens, headbands adorned with tropical bird feathers, and the introduction of cultigens such as cassava and *Mucuna elliptica* seeds. However, these features first appear between 3500 and 3000 BP, which is several millennia after the Chinchorro settled in this area - the earliest Chinchorro evidence dates back to 9000 BP.

Núñez (1983) argues that the Chinchorro were highland hunters who redirected their subsistence strategies to a mixed terrestrial and maritime economy as a result of environmental pressures on the highlands around 8000 BP. These could have triggered the movement of early hunters towards the lowlands and the coast in search of new food sources.

Llagostera (1989) suggests that the coastal populations derived from similar settlements in southern Peru, given that the earlier groups would have brought with them a rudimentary kit for the exploitation of shoreline marine resources, such as shellfish gathering and hunting marine mammals. Current archaeological data support Llagostera's view.

CHINCHORRO: MORE THAN ARTIFICIAL MUMMIFICATION

Regional archaeology in northern Chile has tended to separate the Chinchorro mortuary practices from the early maritime adaptations, due to a predominant emphasis on identifying the Chinchorro by their artificial mummification practices. Thus, many concepts such as culture, cultural complex, phase and tradition have been used to define the Chinchorro (Arriaza, 1994; Bittmann, 1982; Bittmann and Munizaga, 1976, 1979; Llagostera, 1979, 1989; Núñez, 1969, 1983, 1999; Rivera, 1975; Rivera and Rothhammer, 1986, 1991; Schiappacasse and Niemeyer, 1984; Standen and Santoro, 2004; Wise, 1995).

In accordance with Arriaza (1995), this essay defines the Chinchorro culturally as groups of hunters, fishermen, marine and terrestrial gatherers who lived between 9000 and 3500 BP and who were able to sustain a sedentary way of life for over 5,000 years based on the abundant and diverse coastal resources (fish, mollusks, mammals and birds), complemented with other inland resources. Chinchorro technology (fishhooks, fishing lines, harpoons, nets bags, and a diverse stone industry) was sufficiently efficient to exploit the wide range of resources available. This early coastal exploitation and early sedentism does not preclude mobility along the coast and into the inland oases for additional resources and raw materials.

The Chinchorro groups were socially organized into kinship units somewhat larger than a nuclear family, which is reflected in the frequency of multiple burials of up to 20 individuals.



Some of the most fascinating aspects of the Chinchorro culture were their complex mortuary practices. This includes their artificial mummification practices, which are one of the oldest known in the world (Arriaza and Standen, 2008; Bittmann and Munizaga, 1976). This practice initially applied to newborns and even fetuses, but was subsequently used on men and women of all ages.

The local development of Chinchorro culture

On the south coast of Peru, sites like Takaguay and Jaguay dating back 11,000 years (Keefer *et al.*, 1998; Sandweiss *et al.*, 1998) and Quebrada Los Burros from 9,000 years ago (Lavallée *et al.*, 1999) show the presence of human groups with a maritime-oriented economy, from which the coastal population of northern Chile might have derived. An important aspect supporting the hypothesis of Chinchorro local development, namely their artificial mummification practices, is that these mortuary techniques appear to be unique to northern Chile. This mummification procedure dating back to 7000 BP does not appear to have been replicated anywhere else in the Americas.

Additionally, evidence of the habitational site Acha-2 (9000 BP) (Muñoz and Chacama, 1993) and the burial site Acha-3 (8300 BP) (Standen and Santoro, 2004), where a mortuary pattern with certain Chinchorro traits was identified, provide empirical data to support the hypothesis that this cultural tradition developed locally.

In Acha-2 the record of cactus fishhooks, weights or sinkers and a fragment of bone harpoon, indicates that a subsistence maritime technology was already in use 9,000 years ago. Further, the Acha-3 funerary features were characterized by a burial of three individuals, extended and wrapped in bundles of camelid fur and painted mats, containing a bone fishhook offering, decorated with headbands, and one appearing to have a grass skirt. These cultural features, including the funerary bundles prepared with a complex system of fur and mat layers tied with ropes (Figure 4) would appear,



| Figure 4. Wrapped mummy (8300 BP).





Figure 5a.
Fishhooks of
spines.



Figure 5b.
Shell hooks of
Choromytilus.

in our judgment, as a prelude to the complex mortuary practice that developed a millennium later (7000 BP). These complex mummification practices were found along the mouth of the Camarones River (Cam-14 and Cam-17) (Muñoz *et al.*, 1993; Schiappacasse and Niemeyer, 1984).

Technology and resource exploitation

The Chinchorro skillfully developed diverse and efficient instruments for hunting, fishing and maritime harvesting. They fished with hooks made out of thorns, *Choromytilus*



Figure 5c. Shaft of a composite hook.

shells, and bone (Figures 5a, b, c). To help sink the hook, a stone sinker was added to the fishing line (Figure 5d). This technology allowed access to deep-sea fish, widening the exploitation of food resources (Llagostera, 1989). In the funerary contexts, the fishhooks were associated mainly with women and infants, suggesting a connection between fishing activities and gender roles (Standen, 2003).

The rocky intertidal zone was widely exploited by the Chinchorros. In order to harvest shellfish (*Choncholepas*) and other bivalves (*Choromytilus*) they developed *chopes* or artifacts to release the mollusk from the rock. These *chopes* were made from sea lion ribs (Figure 6). In the funerary contexts, these *chopes* were associated with both sexes and all age ranges. Net bags (*chinguillo*) were used to catch small fish, to collect shellfish and/or to carry fishing equipment. One innovative technique developed by the Chinchorros was the use of a rigid piece of wood to keep the net bags open, thus facilitating the task of gathering and fishing. In the funerary contexts, small bags (10 cm by 15 cm) (Figure 7) were found next to infants, suggesting that children were involved in fishing from shore pools.

Instruments for hunting activities included harpoons with detachable heads to capture marine mammals (especially sea lions) and fish. Harpoon tips had



Figure 5d. Stone sinkers.





Figure 6. Bone artifacts to gather mollusks (*Chopes*).



Figure 7. Net bag (*chinguillo*).

lithic points and an attached bone hook (Figures 8a, b), which assisted in catching the prey. In funerary contexts, harpoons were found with adult men and women. Some bodies had harpoons tied to their hands, providing symbolic value to this artifact. For capturing seabirds they probably used *bolas* (Bird, 1943).

Another hunting tool, much less frequent than the harpoon, was an *atlatl* (Figure 9), which was used to capture camelids in the inland oases (Muñoz and Chacama, 1993; Niemeyer and Schiappacasse, 1963; Núñez, 1983). Paleodietary studies undertaken by Aufderheide (1993, 1996) showed that 10% of the diet came from terrestrial animals, 80% from marine food and the remaining 10% was of vegetal origin.

Lanceolate points predominate among the lithic technology (Figure 10) (Bird, 1943; Núñez, 1983; Muñoz and Chacama, 1993; Schiappacasse and Niemeyer, 1984), in addition to the rhomboidal lithic points found in early sites like Acha-2 (9000 BP) (Muñoz and Chacama, 1993). A wide variety of scrapers, polishers and blade type artifacts were also found.





Figure 8a. Harpoon tips with lithic.

Figure 8b. Harpoon tips with bone hook attached.



Chinchorro technology allowed for effectively exploiting all available resources in the immediate coastal environment as well as inland. From the wetlands at the river mouths and inland oases, they obtained aquatic plants such as cattails and reeds. These were important in all spheres of life: as food (they ate the rhizomes), shelter (mats for the roofs and rooms, blankets to rest and sleep), funerary rituals (wrapping the bodies and stuffing bodies during artificial mummification), clothing (grass skirts, loin cloths, headbands), ornaments (necklaces) and in the manufacturing of artifacts (net bags, fishing lines).

They also exploited the *Prosopis* trees, that were found inland: they ate the glucose-rich fruits, manufactured artifacts (harpoons shafts, darts, atlatls, knife handles), and used the twigs to shape and strengthen the skeletons of the Chinchorro mummies.

THE CHINCHORRO: SEDENTARY POPULATIONS

Several factors favored the sedentary way of life of the Chinchorro (Arriaza *et al.*, 2005). When the first human groups arrived in these coastal valleys more than 9,000 years ago, they found



Figure 9. Details of distal end of an atlatl with a decorated bone hook.

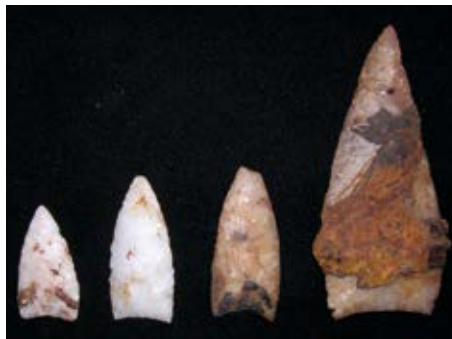


Figure 10. Lanceolate projectile points with concave bases.



pristine environments that had not been previously occupied (Figure 2). They had an abundant and stable supply of marine and terrestrial resources, including fish, mollusks, algae, mammals and birds. These became the basis of their subsistence since, other than for some migratory birds, the life cycle of these biotic resources is not subject to significant seasonal fluctuations.

Contrary to the abundance of food along the fringes of the Atacama coastal desert, fresh water resources were limited and patchy. The availability of fresh water from rivers, coastal lagoons, and water holes was therefore also a decisive factor for the groups to settle and remain in an area (Arriaza *et al.*, 2005; Santoro *et al.*, 2005). In addition, stable weather conditions with average temperatures ranging between 15°-22°C were favorable to human survival.

Archaeological evidence suggests that the early groups that arrived in this territory already possessed adequate technology to exploit marine resources (Llagostera, 1989). This would substantiate the hypothesis that these early populations moved southwards along the coast from Peru. Their background enabled their rapid adaptation and specialization of an efficient technology to access marine and terrestrial resources, while their extensive shell middens and cemeteries with hundreds of individuals, showing complex funerary practices, expressed an early sedentary lifestyle without agriculture (Arriaza *et al.*, 2005).

The Chinchorro's long-term residence in this area, estimated at 5,000 years, with a cemetery of at least 3,000 years, indicates a continuous occupation by several generations. This pattern also stimulates a sense of group membership attached to the occupied territory, and their use of the landscape clearly included resources for daily subsistence as well as ritual activities.

Although the current archaeological data are insufficient to determine the exact extent of the territory inhabited by the Chinchorro, on the coast it is likely that it coincided with the geographical limits and ecological characteristics of the mouths of the valleys and canyons (*quebradas*) of this region: Lluta, San Jose, Vitor, Camarones and Pisagua Viejo (Figure 3). Inland territorial use is even harder to define, but the presence of inland settlements (7810-3800 BP), such as Tiliviche, Conanoxa and Aragon, located at 40 km inland, is evidence of synchronic coastal-valley occupation and exploitation (Figure 3) (Núñez, 1983; Schiappacasse and Niemeyer, 1984).

Settlement patterns

Archaeological research on the settlement patterns of the Chinchorro indicates that the sites with greater occupational density are located at the mouths of valleys and *quebradas* (Arriaza *et al.*, 2005; Bird, 1943; Llagostera, 1989; Núñez, 1983*a*, 1983*b*; Muñoz and Chacama, 1982, 1993; Santoro *et al.*, 2005; Schiappacasse and Niemeyer, 1984; and others). The Chinchorro lacked the capacity to store and transport water,



except in small leather pouches, which required that they settle in the vicinity of this vital resource. Access to fresh water, the abundance and stable supply of marine resources and the favorable conditions to exploit them, partly determined the location of harvesting and habitational sites along the coastal zone and marine terraces on hillsides facing marine bays. Some early coastal sites could currently also be under the sea because it was only after 6000 BP, that the actual shore line stabilized, a process referred to as the Flandrian Transgression (Grosjean *et al.*, 2007; Llagostera 1989).

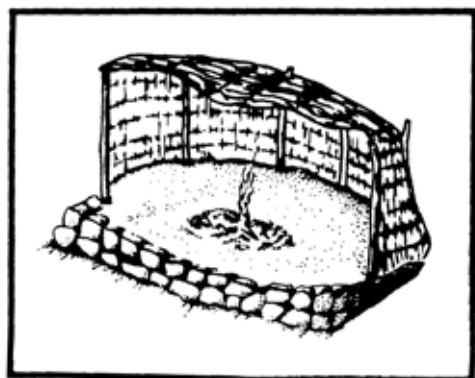
Bird (1943) mentions the presence of two water holes off the coast of Arica, one northeast of the Morro and the other in Quiani, on the south coast (Figure 1). Large shell middens (Quiani-1 and 2) and a habitational site (Quiani-9) were located in Quiani. It is interesting to note that at the Morro of Arica, three sites (Colon-1, Colon-10 and Yungay-372) present funerary and domestic remains. There is also evidence of early human occupation (shell middens) at the river mouth of Camarones, such as Cam-14 (Schiappacasse and Niemeyer, 1984), Cam-17 (Muñoz *et al.*, 1993), Cam-Sur (Rivera, 1984) and Cam-Punta Norte (Dauelsberg, 1971, cited by Schiappacasse and Niemeyer, 1984). Cultural and technological components are similar to those found in the shell middens of Arica, but there is a greater presence of shell hooks in the Camarones sites (Bird, 1943). However, there is no information concerning site formation processes and identification of habitational sites. We must underscore that these sites are close to riverine resources and swampy draining areas where the water table is high, thus in antiquity water holes or ponds could have been common, as is the case today. At the river mouth of Old Pisagua, though no systematic archaeological excavations have taken place, guano fossil extraction exposed the presence of extensive shell middens and cultural strata. Bird (1943) excavated a large shell midden in Punta Pichalo (Pisagua), located on a rocky outcrop 8.5 km south of the river mouth. Cultural and technological components found here were similar to the shell middens of Camarones and Arica.

South of Iquique, the rivers do not reach the Pacific Ocean, thus the area is dryer. However, several shell middens and cemeteries, such as Bajo Molle, Caramucho, Chucumata and Patillos, were found (Figure 1). These sites show lower population densities compared to those found on the coastal valleys (Arica-Pisagua).

Habitational sites

Considering the estimated 5,000 years of human occupation, the extensive shell middens and Chinchorro cemeteries, few habitational sites have been identified. This deficit could be explained by the fact that huts were built on very light structures, which would not lend themselves to natural preservation (except for Caleta Huelen-42) (Figures 11a, b, c). It is also likely that habitational sites were covered by the extensive shell middens.





c



b



a

Figure 11. Hypothetical models of house dwellings: (a) Acha-2; (b) Caleta Huelén-42; (c) Quiani-9 (Arriaza, 1995).

In Arica, only two habitational sites have been discovered, Acha-2 and Quiani-9. In Acha-2 (9000 BP) (Muñoz and Chacama, 1993), which is located on a fluvial terrace (5.9 km from the current shoreline), 11 small, raised soil features were found scattered over an area of 880 m². Each feature contained the foundations of a circular room between two and five metres in diameter, with a central fireplace and a double row of boulders and pole fragments, probably used for fastening reed mats and leather to cover the hut (Figure 11a). In Quiani-9 (6370-5250 BP; see Muñoz and Chacama, 1982), a site located near a shell midden facing the sea, the ancient inhabitants flattened the natural slope of the hill and dug up a semi-circular area of four to five metres in diameter to place the poles that supported their huts (Figure 11c).

In the Camarones valley, the Conanoxa Wa site (4500 BP) (Niemeyer and Schippacasse, 1963) showed similar construction features to those found in Acha-2, despite a gap of over 4,000 years between them. In Tiliviche, Tiliviche camp 1B (6050 BP) (Núñez, 1983) shows a semi-underground floor with pole holes that defined a semi-circular plan, similar to Quiani-9.

At the mouth of the Loa River, a marine terrace site called Caleta Huelén-42 (Núñez *et al.*, 1974; Zlatar, 1983) presented more complex construction features than those of Arica. In this area, around 4,830 years ago, the first semi-subterranean structures with a semi-circular floor layout were built. Then, about 3,830 years ago, the semi-subterranean structures became more elaborate (Figure 11b), with vertical stone



walls on a semi-circular floor (diameter 2.20 m) and openings (entrances) oriented towards communal spaces. The stones were secured with a mortar of ash, seaweed, sand and shells. This construction pattern has not been found north of the Loa River. Rather, it has been linked with techniques of the highlands. However, the presence of bodies buried in an extended position under the floors of some rooms showed traces of clay in the orbital cavities that were somewhat reminiscent of the Chinchorro treatment, suggesting cultural links. Thus, the Loa River site could correspond to the southernmost limit of Chinchorro occupation.

Cemeteries

Cemeteries are another significant indicator of the early sedentary hunting-gathering pattern proposed for the Chinchorro (Arriaza *et al.*, 2005). Burial grounds are generally located in areas adjacent, or close to the shell middens and habitational sites, suggesting that they kept their loved ones close to their daily activities.

It seems as if before 6,000 years ago, cemeteries such as Maestranza-1 and Cam-14, were small, containing between eleven and twenty-four individuals, suggesting a low population density. After 6000 BP, however, there was likely an increase in population density, since shell middens are commonly found and cemeteries show a more complex stratigraphy, both horizontally and vertically. These sites were intensively reoccupied, and show hundreds of burials. This is the case for the most studied areas and sites in Arica and Camarones (6000-3700 BP), namely Morro 1, Morro 1/6, Morro 1/5, Colón 10, Yungay, Casa Bolognesi, Mirador La Virgen, and Cam-15C, Cam-15D (Focacci and Chacon, 1989; Guillén, 1997; Rivera, 1984; Rivera *et al.*, 1974; Standen, 1997; Standen *et al.*, 2004).

At these sites, bodies were buried in an extended position, in groups of six to twenty individuals, next to each other. Some cemeteries show different kinds of funerary treatments, which has been interpreted as representing diachronic changes in practice (Arriaza, 1994, 1995; Llagostera, 1989; Núñez, 1999). However, the different treatments of bodies and the synchronous radiocarbon-14 dating suggest a co-existence of different mortuary practices (Arriaza *et al.*, 2005; Standen, 1997). It is likely that only some groups had the knowledge and specialists capable of intentionally mummifying bodies.

Some corpses were artificially mummified, others were coated with a layer of mud/sand without much intervention, while yet others were not treated at all but simply wrapped in mats, bird hides and/or camelid fur. At most of the cemeteries, one way or another, the bodies were carefully treated and buried accompanied with offerings, mostly subsistence artifacts and necklaces (Figure 12). Some burials contained additional symbolic items, such as wooden figurines (Figure 13).





Figure 12. Shell necklaces.



Figure 13. Wooden carved anthropomorphic figurine.

Lithic assemblages and inland camps

The presence of dense lithic assemblages located in Tiliviche and Conanoxa, forty kilometers inland, yet synchronous with the coastal sites (Núñez, 1983; Schiappacasse, 1995), suggests that the Chinchorro settlement pattern also included extra-coastal environments. They used the natural courses of rivers and canyons (*quebradas*) to move into inland environments (Figure 3) to access additional resources, absent on the coast. Schiappacasse (1995) argued that one of the reasons for this inland movement was to access lithic materials, particularly chalcedony. In those inland camps they would have reduced nodules, shaping preforms and flakes, as reflected in the lithic remains, and subsequently carried the smaller artifacts back to the coast, where they worked them into fine lithic artifacts (harpoons points, scrappers, and knives). This way, the Chinchorro avoided the burden of carrying large heavy blocks, and limited the time spent inland.



The presence of pestle (*manos*) and mortars (*matates*) further suggests grinding activities. Another benefit of inland movement was the possibility of hunting camelid and rodents. In general, inland camps show a low occupation density, compared to those on the coast. In addition, the absence of cemeteries prior to 4000 BP (Standen and Núñez, 1984) suggests a more transitory inland occupation in contrast with permanent settlements on the coast.

The early Chinchorro sedentary settlement pattern proposed by Arriaza (1995), and also suggested by Schiappacasse and Niemeyer (1984) and Núñez *et al.* (1974), cannot be perceived as static, isolated and grounded on the coastal area. Rather, as already discussed, their hunting-gathering territory would have included the valleys and *quebradas*, as well as the coastline.

Coastal mobility was motivated by social relationships, such as exchange partnerships and collective funerary ceremonies and rites with other groups living in different valleys who shared a common maritime tradition and funerary ideology.

One yet uncertain aspect is the issue of long-distance travel. Various types of materials of highland origin have been found on the coast, such as a few fragments of obsidian at Acha-2 (Muñoz and Chacama, 1993); remains of emu leather in a black mummy in Arica (Morro-1, 5130 BP) (Allison *et al.*, 1984) and vicuña skin in Camarones (Cam-14, 7000 BP) (Schiappacasse and Niemeyer, 1984). This evidence requires further research. In addition, the presence of a shark tooth and shells from the Pacific Ocean in highland sites, such as Las Cuevas (4,000 m above sea level), Patapatane (3,600 m above sea level), and Tojotojone (3,800 m above sea level), dating to 9500 BP (Santoro and Núñez, 1987) suggest Andean hunters also had access to coastal resources. In addition, tropical bird feathers and seeds were found in Late Chinchorro mortuary contexts in Camarones (Cam-15a) (Rivera *et al.*, 1974). The linear distance between the coast and the Andes is only 150 km, with an altitude range from sea level to 5,000 m. The diversity of these environments should not be considered a barrier to movements between the coast and the mountains, and even into the lower eastern lands. Instead, they ought to be perceived as offering complementary resources for the subsistence of these early settlers. Even though we do not know the precise mechanism by which these goods circulated, is it plausible that coastal hunter-gatherers travelled to higher lands and that Andean hunters reached the coast? Further still, were there more complex interactions between culturally distinct groups, located in these two major macro-ecological regions? These are important questions that must be addressed in future research.

FINAL REMARKS

In summary, the cultural history of the coastal valleys of northern Chile began 9,000 years ago when small groups settled in this area. Even though they settled in one of the most arid and inhospitable areas of the world, they initiated one of the most



successful adaptations on the Pacific coast of the Americas, which lasted for an estimated 6,000 years. The ability to develop an appropriate technology to exploit the wealth of the sea, the presence of small fresh water sources (streams and water holes) and the exploitation of terrestrial plants and wildlife on the coast were key factors in the success of this settlement process. Last, but not least, these ancient peoples developed spectacular and unique artificial mummification techniques for disposing of their deceased. This achievement, dating back to 7000 BP, reflects a complex and one of the oldest known manifestations of funerary ideology found among hunter-gatherers in the American continent.

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Black and red Chinchorro mummies: construction, raw materials and social milieu



Bernardo T. Arriaza and Vivien G. Standen

INTRODUCTION

In this essay, we present and debate the unique mummification practices developed by the Chinchorro people about 7,000 years ago. The Chinchorro were highly skilled fisher folk who had similar technology as other early Preceramic (9000-3500 BP) coastal societies that developed along the Pacific coast of South America (Bird, 1943; DeFrance and Umire, 2004; Lavallée, 2000; Llagostera, 1992; Muñoz *et al.*, 1993; Sandweiss *et al.*, 1998; Standen, 1997). The Chinchorro, however, mummified their dead in a sophisticated and visually appealing way: 'It is their complex artificial mummification practices, small population sizes, simple sociopolitical organization, and their antiquity and persistence through time that make the Chinchorro culture a wonder of world prehistory' (Arriaza, 1995). This mortuary practice persisted for nearly 4,000 years along the coast of the Atacama Desert from Ilo, Peru, to perhaps Antofagasta, Chile. Interestingly enough, current bioarchaeological data suggest that the cultural core of this mortuary practice was the Arica-Camarones region (Arriaza, 1995; Arriaza and Standen, 2008). In northern Chile, these preceramic groups left many cultural testimonies along the coast, particularly shell middens and cemeteries such as in the Mina Macarena area, Chinchorro, Morro, Playa Miller, Caleta Quiani, Quebrada de Camarones, and Pisagua Viejo (Figure 1), indicating an extensive use of marine resources and settlement in coastal areas. Although they were skilled fisher-gatherers who made many elaborate and practical tools, such as fishhooks and reed baskets, their artificial mummification practices were one of their most remarkable achievements and are the focus of this paper. The dry environment, absence of rain and presence of nitrates in the Atacama Desert aided in the preservation of ancient mummies; however, the Chinchorro mummies were not a serendipitous or casual undertaking. On the contrary, the mummies were the result of well-planned, complex funerary rites that were so meaningful that they lasted for several millennia, spreading along the Atacama coastal region. The Chinchorro left no written records, so we must use bioarchaeological data and develop models for discussing what was at the core of



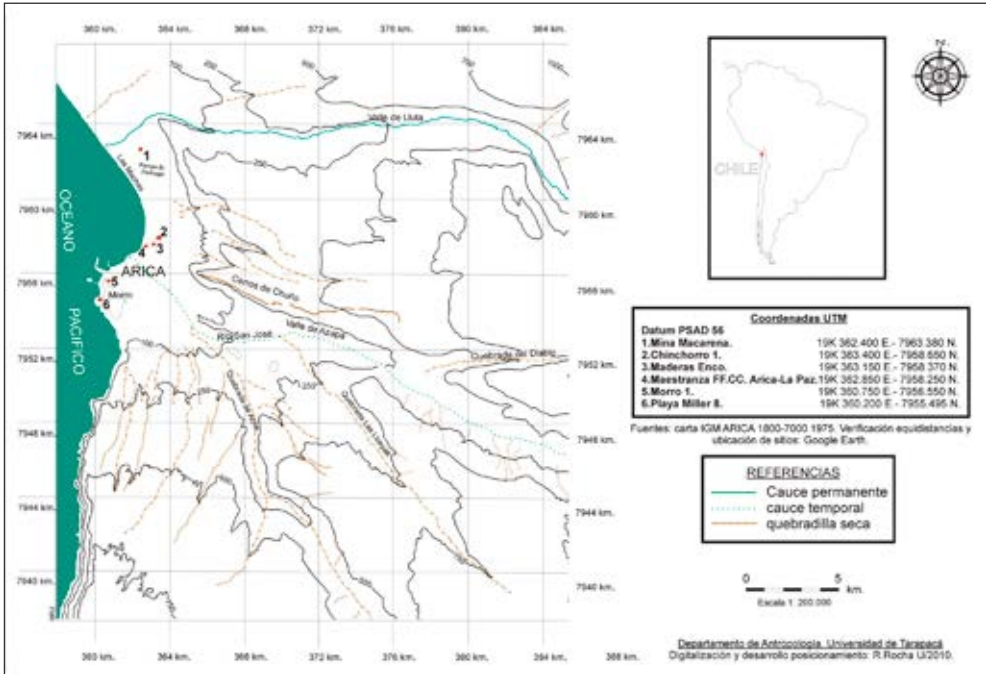


Figure 1. Main Chinchorro sites of Arica: 1) Mina Macarena; 2) Chinchorro-1; 3) Maderas Enco; 4) Maestranza Chinchorro; 5) Morro-1; 6) Playa Miller 8.

their mortuary practices. Therefore, we will briefly contextualize the mortuary rites, before we present Chinchorro mummification techniques.

Why did ancient cultures, such as the Chinchorro, spend so much energy and effort in preserving bodies? There are many theories that attempt to explain mortuary rites cross-culturally and in connection to the social milieu. For example, Saxe (1970) argued that formal disposal of the dead is rooted in territoriality and social organization. Brown (1981) believed that social position and *social persona* played an important role in determining how the deceased were treated. Binford (1971) argues that burial practices increased in complexity from hunter-gatherer to settled agriculturalists. In other words, in his view, burial complexity correlates with increasing social complexity, and artificial mummification can be seen as an achievement of a sociopolitically complex culture. But the Chinchorro prove otherwise and other models need to be examined in order to explain the Chinchorro mortuary culture. We need to consider post-processual views and social and ideological dimensions, such as the models of death as a social event and rite of passage, including rite of separation, liminality and



incorporation (Hertz, 1960; Van Gennep, 1960). Rakita and Buisktra (2008) wrote, ‘We prefer to view mummification as a method for sustaining the position of the soul in the liminal phase’. And according to Hertz (1960), ‘The emotion aroused by death varies extremely in intensity according to the social status of the deceased and may even in certain cases be lacking. At the death of a chief or a man of high rank, a true panic sweeps over the group ... On the contrary, the death of a stranger, a slave or a child will go almost unnoticed; it will arouse no emotion, occasion no ritual’.

Contrary to the above, the Chinchorro paid a lot of attention to newborns and children, mummifying them as well. Intentional transformation of human remains through mummification and particularly mummification of children was paramount to the Chinchorro ideology and their beliefs. Thus, contrary to preconceived notions, ‘the Chinchorro mortuary evidence shows that non-stratified societies can have elaborate mortuary rituals and craft specialists. Complex or lavish mortuary treatments of children were probably the result of parental grief rather than a reflection of social position of the deceased or their families’ (Arriaza, 1998).

It was perhaps this caring that made the Chinchorro morticians pay so much attention to details, as shown by the different types of mummies.

THE VISUAL BOUNDARIES OF THE MUMMIES

Types of mummies

Using pigments, clays, and reeds, the Chinchorro prepared their cadavers into highly artistic mortuary icons of various colors and styles (Allison *et al.*, 1984; Arriaza, 1995; Arriaza and Standen, 2008). Over time, a certain style –that is, a series of norms that allowed morticians to produce a given form– became recurrent. According to Wobst (1977) style is ‘that formal variability in material culture that can be related to the participation of artifacts in processes of information exchange’. The Chinchorro selected colors, shapes, textures and raw materials and applied them to a body to create a vivid and meaningful object, which in this case was a mummy. Morticians followed the norms stated within well-defined cultural boundaries and created polychromous and durable mummies to convey beliefs and information within the community. During the Preceramic period in northern Chile, and to some extent in southern Peru, these types of mummies occurred over a wide area and a long period of time (Allison *et al.*, 1984; Arriaza, 1995; Guillén, 1997; Wise, 1991, 1999). As such, they are a reflection of mobility and social interactions during the Preceramic.

Although there are several Chinchorro mummification types (Allison *et al.*, 1984; Guillén, 1997; Guillén, 2008; Llagostera, 2003; Uhle, 1919*a*, 1919*b*), from plastic and artificial mummification perspectives, we prefer to divide them into black, red, bandaged, and mud-coated mummies (Arriaza, 1995; Arriaza and Standen, 2008). Of





Figure 2. Black Chinchorro mummy, child. Well-defined facial features and wooden pole coming out at the top of the skull. Case M1T1C5.



Figure 3. Red mummy, child. Red clay helmet, black facial mask, and long black wig. Case M1T7C5.

these, the black and red mummies are the most colorful and intriguing (Figures 2, 3). The black, red, and bandaged mummies are subtypes of the ‘complex preparation,’ as described by Uhle (1919*a*, 1919*b*). The bandaged mummies can be considered a variation of the red mummies. Recently, Llagostera (2003) added another variation: mummies wrapped in reed cords as seen in the Camarones 15 and

Patillos sites near the modern city of Iquique. In general, the Chinchorro complex mummification styles changed over time and by region from black (ca. 7000-4800 BP) to red (4800-4000 BP) and from red to corded techniques. The mud-coated mummies seem clustered between the other types.

HOW WERE THE BODIES MUMMIFIED?

Body cleaning and disarticulation

We have postulated that black mummies were the result of secondary burials (Arriaza, 1995; Arriaza and Standen, 2008). Morticians would have proceeded by firstly defleshing the bodies, including scalping the hair; the bodies were subsequently buried,



exhumed and cleaned of all remaining soft tissue. Body exhumation, bone cleaning and display have been reported historically and ethnographically in many parts of the world at different times (e.g. in France, Greece and New Guinea) (Danforth, 1982; Weiss-Krejci, 2008). The Chinchorro lived in coastal swampy areas. Thus, to make the earliest black mummies, morticians probably buried the bodies in wetland areas where insects, water and humidity quickly aided the decomposition. Subsequently, the body was exhumed and all the bones were thoroughly cleaned of remaining flesh and organs. This process likely took one week or so to monitor the decomposition and to avoid bone loss from birds and animals, like foxes and rodents.

This type of body treatment would have been full of social and spiritual meaning that we need to reconstruct based on archaeological records. Death produces a sudden break in the social milieu and mourners are temporarily separated from the world of the living. As such, the uncertainty of the death and decomposition correlate with the social shock of the living. As Huntington and Metcalf (1985) wrote, ‘The corpse is feared because, until its reconstruction in the beyond is complete, part of its spiritual essence remains behind, where it menaces the living with threat of further death’. Death produces social grief and many rites swing into motion. The Chinchorro separation rite was a period where the corpse was placed aside to be permanently transformed. The decomposition stages and processing of the body created rites of transition, a liminal state (Figure 4). Subsequent exhuming and cleaning of the

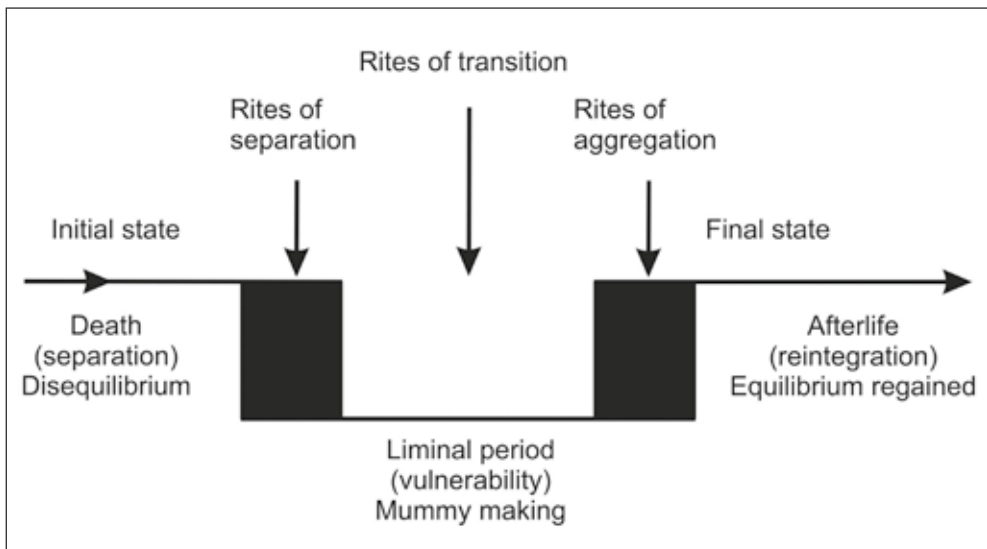


Figure 4. Stages of mortuary rites.





Figure 5. Black mummy with painted red stripes. Defleshed bones, rectangular shape of trunk and longitudinal pole. Case Maderas Enco C1.

bones, however, opened the door to the continuation of the Chinchorro rites (Figure 5). The liminal stage permitted social bonding, the aggregation of distant relatives and the transformation of the body, because only through death rituals do people stop feeling ‘betwixt and between’ (Turner, 1970).

BODY RIGIDITY AND ASSEMBLAGE

After exhuming the body, cleaning all the bones, and probably drying them in the sun, the morticians proceeded to place the bones in an anatomical position and to wrap the bones, sticks and reeds together, creating a rigid internal structure for the black mummies. Sometimes, eminences of bones were removed, either during the exhumation and cleaning process or during the assemblage of the skeletal structure. The morticians possessed great anatomical skills and knowledge and most bones are in the proper anatomical positions. Sometimes, however, ribs are missing, resulting in a rather rectangular or tubular mummy form, such as in the case of Maderas Enco C1 and others



Figure 6. Bone artifacts to gather mollusks (*Chopes*).





Figure 7. Hole in the cranium to introduce a wooden pole to anchor the skull to the body. Case Mina Macarena, Arica.



Figure 8. Red mummy. Hole at the vertex of the cranium used to introduce a long wooden pole to anchor the head to the body. Case Sermenia, Iquique.

(Figure 5). In addition, the skeletal structure was reinforced and secured with thin wooden poles, running from the head to the ankles and tied with reeds (Figures 5, 6). Sometimes bundles of reeds running from one forearm to the other and passing in front of the chest were added to reinforce the upper trunk. Also, bundles of reeds were sometimes used along the long bones. Bones, sticks, and reeds were wrapped with cords, particularly at the joints, creating a rigid skeletal structure that could be easily manipulated, turned, or moved. To remove the brain, the cranium was at times cut in two pieces or the mortician simply made a bigger hole at the base of the cranium (Figure 7). Often, an additional hole was made at the vertex to anchor the longitudinal stick to the skull (Figure 8). In this way, the complete skeleton was reunited.

It is clear that Chinchorro morticians and assistants had carefully planned all tasks: exhumation, bone cleaning, laying the bones in the proper anatomical position, as well as seeking a large amount of raw materials, such as clay—probably from a nearby swampy area—and sticks. In addition, during the liminal period, the Chinchorros collected large amounts of reed fibers (*totoras and junquillos*), which were left to dry and were subsequently twisted and transformed into cords (or bundles of fibers) to reinforce the skeleton. Community effort was required for these processes, from the acquisition of raw materials to their transformation into useful and symbolic elements.



BODY MODELING

At this stage, morticians probably laid out the rigid skeletal structure of bones, sticks, and cords onto a reed blanket and proceeded to embed it with a large amount of gray clay. This clay was composed mainly of SiO (75.1%), Fe₂O₃ (9.2%), K₂O (5.6%) and was mineralogically of quartz (30%), albite (26%), moscovite (17%), sanidine (15%) and other minerals (Arriaza *et al.*, 2012). Now, the body could be turned and all external and inner structures, such as cranial, thoracic, and pelvic cavities, could be covered in clay (Figure 9). Morticians must have proceeded quickly because the clay could start to crack when exposed to the sun. In addition, they added a short, black wig, made with locks of human hair that were intertwined and tied together (Figure 10). In the case of artificially mummified babies and human



Figure 9. Black Chinchorro mummy, adult. Gray clay used to model the whole body. Case MNHN, Valparaíso.



Figure 10. Details of wig. Hair locks intertwined. Mina Macarena, Arica.



embryos it is interesting to highlight that the hair belonged to adults (Figure 11). The face was also modeled with gray clay and morticians made small incisions for the eyes, nose and mouth. Sexual organs were modeled as well. The reshaping of the body brought back some of the original form and volume. At this time, morticians had masterfully created an anthropomorphic gray effigy from head to toe, wearing a short, black wig.

BODY FINAL APPEARANCE

After modeling the body with gray clay, covering it with patches of skin (sometimes its own) and adding a short human wig, the morticians proceeded to paint the body with a thin layer of black-blue paste-hence the name ‘black mummy’ (Arriaza, 1995; Arriaza and Standen, 2008). The paint consisted mainly of manganese oxide and SiO_2 (Arriaza *et al.*, 2008). Raw materials were likely collected in nearby areas, mixed



into a paste and applied to the body with bare hands, grass brushes, bone spatulas and stone polishers (Figure 12). The thickness of this paste generally varies between 1 mm and 3 mm, but the paste applied to the face tends to be thicker allowing for the sculpting of facial features (eyes, nose and mouth) (Figure 2).

The painting was one of the last steps in bringing back the image of the body. It was an important step toward regaining the balance of the Chinchorro social life. After finishing the mummification, we believe the mummy was

Figure 11. Human embryo. Long wig and segments of vertebral column. Maestranza Chinchorro T1C5A.





| *Figure 12.* Reed and twigs brushes.

presented to the community where rites of aggregation must have taken place. Following this process, many uncertainties could be put into the past, and the wounds of grief could give way to the beginning of the healing process. The balance of life could be regained. All of the Chinchorro community, especially parents and relatives, could now see a pleasant, painted effigy of the dead, not just bones or a decaying smelly corpse, 'the mummies nourished the spiritual emotions of the worshipers' (Arriaza, 1995). This must have been particularly intense when mummified fetuses and newborns were presented to the community. At last, the bodies were put to rest, lying on their back facing the ocean near the dwelling and cared for from time to time. The open eyes and mouth of the mummies obviously conveyed life. Now the dead and the living intertwined and shared the same landscape and the whole community could return to its daily rhythms.

OTHER CHINCHORRO MUMMIES

The red mummies (ca. 4800-4000 BP) were easier to make, and are visually more powerful than the black mummies. We believe this way of preparing the dead reflects cultural change and competition between the Chinchorro communities. To mummify





Figure 13. Lithic knife with wooden handle. Yungay 372 Est. 2 C8.

a body in the red style, morticians would have first collected long poles, dry grass, reeds, feathers from sea birds, such as pelicans and seagulls, as well as soils, and camelid fibers (e.g. *guanacos*). These were all essential materials for the mummification. The people also collected a large amount of red ochre (iron oxide), which was ground and made into a paste. Second, morticians worked directly on the corpse, using a stone knife (Figure 13) to make small incisions in the abdomen, shoulders, groin, knees, and



ankles in removing major organs and part of the muscles. The head was also detached from the trunk. After the organ removal, the body cavities were dried, possibly by using glowing coals and ashes. Subsequently, long wooden poles were placed under the skin along the arms, legs, and spine to provide support for the body. Finally, empty anatomical cavities and extremities were stuffed with different types of soils, feathers, and camelid hair, and the incisions were stitched together (Figure 14).

Figure 14. Red mummy, child. Abdominal suture and incision. MIT19.



The head was prepared differently from the black style. It was ornamented with a long wig (approx. 60 cm) made from locks of human hair. This wig was attached to the head with a thick paste of black manganese and painted red (Figure 3). The face was generally treated in a similar way to the black mummies. They created a life-like appearance by emphasizing open eyes and mouth. Having completed all the procedures, the entire body was painted with bright red ochre, and a manganese paste was applied, following the contours of the head and holding the wig in place. The face and wig often remained black. The final product was a powerful mortuary icon: a red body with a black face, open eyes, gleaming white teeth and a long flowing wig. As with the black mummies, the mummy was presented to the community. Looking at this polychrome body certainly must have aided in the healing process of a departed one. This red style first appeared around 4800 BP and the practice continued for almost 800 years (Arriaza, 1995; Arriaza and Standen, 2008), depending on the geographic region.

The black and red mummification techniques are the most elaborate styles. Other types, such as the bandaged mummies, seem to be either regional or chronological variations. Bandaged mummies were also reinforced by sticks, cavities were filled with soils, and they were provided with a long wig; however, the skin was replaced by bandages of 1 to 2 cm thick. Mummies of this type date back to around 4000 BP. The mud-coated mummies were naturally dried bodies that were entirely covered with a thick layer of mud, a mixture of soil, water, and an adhesive of unknown origin (Arriaza and Standen, 2008). Some date to 4600 BP and others to 3700 BP. The corded mummies represent bodies wrapped with thin reed cords, as found in Camarones 15, and that date to approximately 3000 BP.

WHERE DOES THE OLDEST CHINCHORRO MUMMY EVIDENCE COME FROM?

The area of the Camarones coves, south of Arica, shows evidence of intensive shell fishing and fishing and holds the oldest evidence of intentionally prepared mummies, dating back to 7000 BP (Schiappacasse and Niemeyer, 1984). Five babies were discovered, which all show evidence of artificial mummification, including clay filling, use of sticks, facial masks and wigs. Eighteen adults were naturally mummified. Similar findings were reported for Camarones 17 (Aufderheide *et al.*, 1993) (Figure 15). About 100 km further north, in Arica, artificial mummification in the black style appeared centuries later, around 6000 BP, and declined around 4800 BP (Maderas Enco site). In the sixth and fifth millennium BP, artificial mummification was common along the Atacama Desert coast. Sites containing black mummies include Camarones 17 and various Arica sites (Chinchorro, Maderas Enco and Playa Miller). Bodies were commonly buried in groups of four to twenty individuals (Arriaza, 1995; Aufderheide *et al.*, 1993; Standen, 1997) (Figure 16).

Regarding the origin of this unusual mortuary practice, Uhle (1919*a*, 1919*b*) believed that artificial mummification had its roots in Peru, while Rivera (1975) postulated an





Figure 15. Newborn showing artificial mummification. Oval grayish clay mask. Cam 17 T1C3.



Figure 16. M1T7 group of mummies during excavation at Morro 1 site.

Amazonian origin for the practice. Current bioarchaeological data, however, suggest that the Chinchorro mummification practice started in the Camarones Valley around 7000 BP and spread from there, declining around 3700 BP (Arriaza, 1995; Standen and Santoro, 2004, amongst others).



The central and hardest question remains: why did it begin? Mostny (1944, in Bittmann, 1982) argued that artificial mummification began as a practical issue, when people died far way from the main camp. It allowed the mourners to return the cadaver for burial. Wise (1991) postulated that the Chinchorro artificial mummification and cemeteries developed as a way to claim territory and to gain unlimited access to natural resources. Guillén (2008) stated that the Chinchorro practice was a cult to the ancestors and that the dead played an active role in the economic and ritual lives of the living.

Arriaza (1995) proposed that artificial mummification practices arose from empathy: 'Chinchorro burial practices arose neither as a consequence of social shock as used by Hertz (1960) and Van Gennep (1960), nor as competition for resources or political power, but as a manifestation of love, emotions, grief, and spiritual beliefs (for those departed)'. Arriaza (2005) complemented his model arguing that the arsenic laden environment and the Chinchorro artificial mummification of newborns and fetuses are connected. The high levels of arsenic in the environment predisposed pregnant women to have naturally occurring abortions, premature births, neonatal deaths and neural tube defects incompatible with life. Certainly, this is true for the sites of Camarones 14 and Camarones 17 where the earliest Chinchorro mummies are fetus and newborns. Chinchorro parents (or morticians) could have assuaged their grief by making efforts to somehow preserve their babies by mummifying them with clays and sticks. For this hypothesis to be accurate, the earliest Chinchorro mummies should all be babies and their bodies should contain high levels of arsenic and related pathologies indicating naturally-occurring arsenic poisoning (Boston and Arriaza, 2009). Recent studies by Byrne *et al.* (2010) and Arriaza *et al.* (2010) show that arsenic poisoning was recurrent during Chinchorro times. Examining the earliest Chinchorro evidence will be essential to further evaluate this hypothesis, to shed light on the roots, meaning and ethos of the Chinchorro burial practices.

FINAL COMMENTS

The Chinchorro mortuary practices were dynamic and changed during almost four millennia of mortuary traditions; however, the following commonalities can be found:

1. The nature of the Preceramic records with minimal crafts and grave goods often makes our studies biased toward strategies based on subsistence, mobility, and competition for resources. The Chinchorro contradict the general notion that Preceramic societies maintained a simple socio-political and ideological existence (Arriaza, 1995, 1996; Arriaza and Standen, 2008).
2. The mummification of fetuses and newborns shows extreme care. Moreover, the Chinchorro's care for dead babies is not necessarily related to rank, power, or territoriality. These practices must be related to extreme grief, empathy and ideological values, conditions that are hard to examine through bioarchaeological records.



3. The preservation of the body, particularly of small children, was paramount to the Chinchorro religious experience and human existence.
4. The Chinchorro mummies represent the earliest evidence of religious icons in the Andean area and are a testimony to the complex mortuary practices of the Preceramic people that spread along the coast of southern Peru and northern Chile.
5. Mummification brought back the deceased individual as a pleasant effigy, a mortuary icon that could be displayed and kept near the camp. Artificial mummification allows for a resting place for the soul, because many cultures believe that with the decomposition of the body, the soul would disappear and the living would lose contact with the deceased (Arriaza and Standen, 2008).
6. The bodies were mummified in order to convey the idea of life and of being among the living. After mummification, the Chinchorro mourners likely feasted with the dead, just as the Incas did thousands of years later parading their mummified ancestors and providing them with drink, food, clothes and other offerings. This allowed for a new social interaction between the dead and living.
7. The Chinchorro demonstrated an early specialization in mortuary practice, and morticians had great anatomical and technical knowledge for thanatological practices including the earliest evidence of craniotomy (Allison *et al.*, 1984; Arriaza, 1995). They undertook careful planning to accomplish the elaborate mummification processes and accompanying rituals.
8. Finally, it seems amazing that the Chinchorro people, although unfamiliar with complex tools and artifacts, such as ceramic vessels, metal knives, or looms mastered the art of mummifying the dead. Normally, such complex mortuary practices would be expected in politically complex societies, such as the Egyptians or Incas. If artificial mummification honored the elite, one would expect that bodies with complex artificial mummification would be in the minority, however, this is not the case (Arriaza *et al.*, 2005). Chinchorro studies show belief in the after life, and religion and grief are certainly at play.

In summary, the Chinchorro artificial mummification of the dead was technically and ideologically complex. The intentional mummification of the dead began approx. 7000 years BP and declined at around 3700 BP. The Chinchorro thanatological practices allowed for remarkable transformations of the dead into polychrome human effigies using mainly clays, sticks and pigments. Often, the treatment of the dead was influenced by socio-cultural, political and economic variables, but grief, religious, and ideological views played an important role in how the Chinchorro prepared their loved ones. Human remains were symbolically important for the Chinchorro and displaying them must have been central to their daily life. Having the dead visible was a cornerstone in Andean cosmology, even thousands of years after the



Chinchorro mortuary practices had vanished. This sentiment can be echoed in the words of Salomon and Urioste (1991): ‘Andean people considered Christian burial, which Spanish clerics forced upon them, an affliction because it precluded feeding and clothing one’s departed kin. Ancestors buried in Christian graveyards were imagined as starving and suffering while they decayed’.

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Living conditions, social system and cultural expressions of the Caral and Chinchorro populations during the archaic period



Ruth M. Shady

INTRODUCTION

Comparing human behaviour and understanding its manifestations in different places on the planet calls for us first to be familiar with the natural conditions of the inhabited land, and then to study the relationship that its inhabitants have set up with their environment, with each other and with the inhabitants of other lands.

With this premise, in an attempt to compare the societies of the Caral and Chinchorro cultures, we will take several variables into account: geographic - the territory and its resources; economic - the activities they carried out to ensure their subsistence; and social - the relationship between those who shared the same area and their relationship with other societies that had settled in neighbouring or distant places with which they could interact; and we will try to understand how or why such links were set up.

Our objective is to get to know the lifestyles of these societies in order to be able to explain the differences between the two social systems during the Late Archaic period, and at the same time to identify which aspects are similar in both; these would respond to manifestations of human conduct.

We share the position of trust in human creativity in general, and recognition of the permanent desire of our species to meet the challenges they encounter, to ensure the continuity of the life of the individual and society.

One of the problems identified is to find out why the coastal dwellers of the Caral civilization, in the north-central area of Peru, were part of a complex social system from 5000 BP. We know that they: (a) based their development on the surpluses produced by their farming-and-fishing complementary economy, enriched by transverse trading; (b) lived in groups of organized settlements of different sizes and constructive complexity; (c) had experts dedicated to the political conduction of the social group, the administration of the resources, and the production of knowledge



in science and technology; and (d) created a strong religious ideology, which was used by the authorities to reinforce social identity and cohesion, as well as to exercise coercion on the population.

Several of the cultural elements of this civilization were shared by other societies that lived in neighbouring or distant territories, in an area of at least 400 km by 300 km.

The prestige gained by this pristine civilization can be evaluated in the cultural expressions identified in it, which extended not only throughout the largest Andean area, but which also over time. These expressions are found as underlying structures or substrata shared by different cultures that assumed them as models and for their significance and symbolic importance in socio-cultural inter-relations.

The other problem is to find out why the coastal dwellers of the Chinchorro culture remained for more than 4,000 years, with a subsistence mainly based on marine resources, without any significant differences in the composition of their society, ways of dealing with conflicts and the great attention given to the mummification of their deceased.

The Chinchorro social system was different to that of Caral, however, the special attention paid to mummifying their dead indicates that their system, also, was probably based on a strong religious ideology, in the same way that religious ideology intervened in the more complex social organization of Caral; the deceased ancestors and relatives, although losing their material existence, remained among the living in their recomposed bodies as components of the group and protectors of it. They were probably symbols of identity and cohesion to guard the territory they lived in and the marine resources on which their existence depended from the arrival of strangers, during a period of progressive drought inland from the coastal area and in other regions of the area. In Caral, also, the buildings that were constructed marked identities for the organization of the social group and its integrated participation at the different levels of the social system.

On comparing the two social systems, we infer that:

Caral

The diversification of the economic activities increased their productivity; the coastal settlements made use of the marine resource by applying the technology of fishing nets made of cotton; and the settlements in the valley worked in farm production using irrigation canals:

- i. Part of the production from these specialized activities was exchanged between the populations of the coastal region to benefit them and their authorities; thus, fish and seafood were taken to the valley dwellers, and squash, beans, fruit, and cotton to the fishing communities on the coast;



- ii. The society took part in interaction and trading networks with populations of the area, which occupied different ecological zones, in the regions of Andean highlands and jungle; these were part of social groups with different cultures, they had managed to carry out different adaptation processes, they lived in sedentary, well-organized settlements, and they had production surpluses available;
- iii. The society –with a complementary farming and fishing economy, political authorities, and located in a river basin that was strategic for interaction– benefited from the exchange of products, goods, and knowledge. In this context, the oldest civilization of the Americas came into being.

Chinchorro

- i. These populations basically depended on the extraction of marine resources, complemented by hunting and gathering in other zones to which they moved temporarily;
- ii. Although there were contemporary inhabitants in the area, in different ecological zones, both near and far, these were hunters, gatherers, and small groups of stationary animal herders;
- iii. Towards 6000 BP a severe drought devastated the Andean territory and probably seriously affected the inland populations. Therefore, any contacts with these populations or interest in these ecological environments were not likely to have been favourable;
- iv. Faced with adverse climate conditions and the consequent migration of people in order to survive, the Chinchorros had to protect the resources of their coastal habitat from probable invaders. With ancestor worship or a cult to the deceased in their lineages, they strengthened the cohesion and identity of their own social group.

The information available backs up the assertion that not until 3000 BP did the Chinchorro groups start creating a new economic process based on the domestication of plants, complemented with contributions from the Andean highlands and Altiplano or high plateaux, namely, potatoes, quinoa, and camelids (Muñoz, 2004, p. 8).

THE CARAL CIVILIZATION AND THE NORTH-CENTRAL AREA OF PERU

The settlements of the Caral society are located in the Supe Valley, in the north-central area of Peru. This area consists of rugged terrain with a diversity of ecological zones and resources, including the Andes mountain range, the Peruvian Humboldt ocean current that cools the seawater, the Anticyclone of the South Pacific, and the trade winds (Figure 1). The following regions have been distinguished:



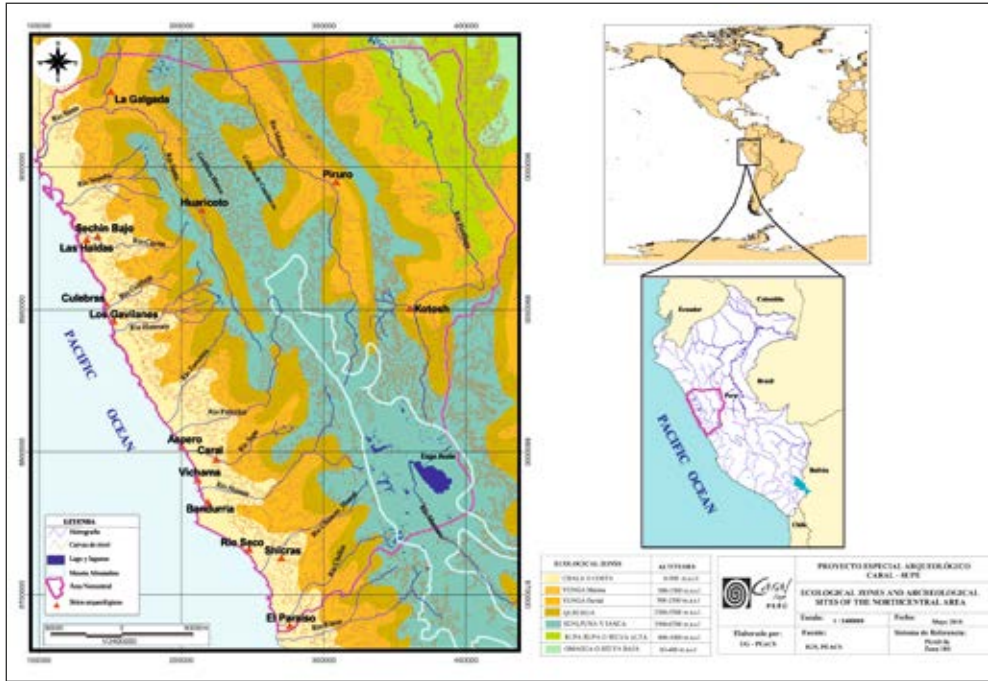


Figure 1. Distribution of the settlements per ecological zone in the north-central area © Proyecto Especial Arqueológico Caral-Supe.

- i. On the western slopes of the Andes mountain range, some 11 rivers flow down from the Altiplano to the Pacific Ocean, from north to south, for some 400 km, with abundant water from December to April and sporadic mud-and-debris slides that keep the lands fertile;
- ii. In the middle of the area, in the inter-Andean space, the extensive Santa River Valley crosses the so-called Callejón de Huaylas, from south to north, after which the river changes to a westerly direction and finally flows out in the Pacific Ocean;
- iii. To the north-east, the rivers Marañón and Huallaga flow into the hydrographic basin of the Amazon.

This large space of geographic contrasts, covering regions of coast, highlands, and jungle, which extends some 300 km in a transverse direction, has in each of these regions different climates, ecological zones, and resources (Pulgar Vidal, 1996, pp. 33-154).

The coastal valleys of the north-central area are characterized by having a variety of ecological zones relating to the different altitudes (Figure 2):

- i. The low section, or 'Chala', from sea level to 500 m above sea level, has different resources the length of its 30 km: at the shore of the Pacific Ocean, where the



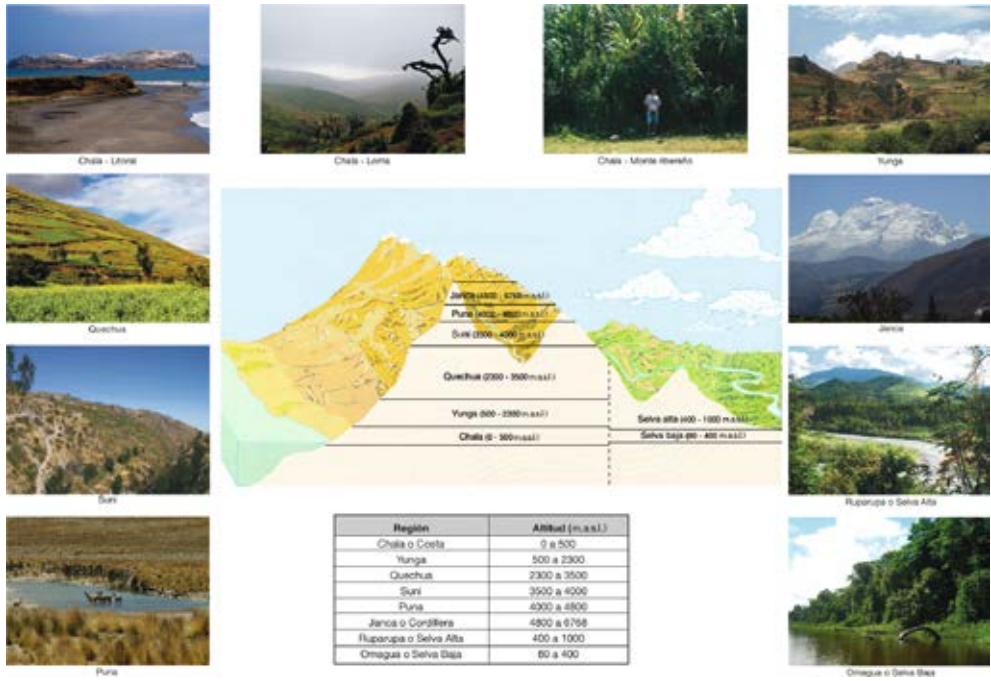


Figure 2. The north-central area and its ecological diversity © Proyecto Especial Arqueológico Caral-Supe.

rivers flow into the sea, there is a wealth of marine fauna-fish, such as the Peruvian anchovy (*Engraulis ringens*), regarded as the first link of the chain of marine life that lives in shoals, as well as mollusks and sea-lions (*Otaria* sp. and *Arctocephalus australis*); birds, such as the guanay cormorant (*Phallacrocorax bougainville*); and seaweed, all of which must have been conducive to the early human establishment of fishers and gatherers; in the wetlands, lagoons and marshes there are grasses, totora reeds (*Typha domingensis* and *Scirpus* sp.), rushes (*Schoenoplectus* sp.), as well as fish and birds, gathered and hunted by the people, in particular for obtaining plant fibres for making textiles; on the ‘lomas’ or hills, there are plants, such as the ‘papita de San Juan’ (*Begonia geraniifolia*), ‘mito’ (*Carica candicans*), and ‘tara’ (*Caesalpinia tinctoria*), as well as fauna such as snails, which subsist seasonally in the greater or less humidity in the coastal region from May to December and depend on the periodic climate changes; in the riverine woodland on both banks of the rivers there is abundant vegetation that includes cane (*Gynerium sagittatum*), willow (*Salix humboldtiana*), and fauna such as birds and deer, for gathering and hunting; on the cleared river banks, and on the terraces irrigated from the river or from underground springs, land was prepared for the cultivation of squash, arrowroot (*Canna indica*), ice-cream pods (*Inga feuillei*), guava (*Psidium guajava*),



ipu gourds (*Lagenaria siceraria*) and cotton (*Gossypium barbadense*), among others; and the ground covered with eolic sand was occupied by the huarango (*Acacia macracantha*) and the 'achupalla' (*Tillandsia* sp.).

- ii. Further up, from 500 m to 2,300 m above sea level, the environmental conditions in these valleys change. This zone, called 'Yunga' is hot, and has plant resources such as the 'molle' (*Schinus molle*), cabuya (*Fourcroya* sp.), and the epostoa cactus (*Espostoa melanostele*). Fruit trees can be grown here, such as the lucuma (*Pouteria lucuma*), custard apple (*Annona Cherimolia*), guava (*Psidium guajava*), and 'ciruelo del fraile' (*Bunchosia armeniaca*). In the Supe Valley, for example, the relief of this area ranges from a triangular valley in the low section or maritime Yunga, to an elongated valley with terraces bordering the rivers, or a narrow gully formed by the buttresses of the Andes, at the bottom of which flows the river, in the fluvial Yunga. The surface can be farmed using irrigation or dry-farmed, depending on the rains, but it is exposed to erosion and landslides or mudslides in the season of heavy rainfall.
- iii. From 2,300 m to 3,500 m above sea level, we find the zone known as 'Quechua', in the upper part of the gullies, mainly on the hillsides with a narrow piece of land at the bottom; the climate here is temperate with mist, drizzle, and seasonal rains. The rainy season is from December to March, resulting from the evaporation of the water from the ocean. When these strata collide with the clouds crossing the mountain range from the eastern slopes, there are thunder storms and torrential rains, which can cause landslides or mudslides. Among the typical flora is the alder (*Alnus jorullensis*); and the cultivated plants include maize (*Zea mays*), Peruvian white carrot (*Arracacia xanthorrhiza*), pumpkin (*Cucurbita moschata*), wild cucumber (*Cyclanthera pedata*), pajuro beans (*Erythrina edulis*), passion fruit (*Passiflora ligularis*), Peruvian ground apple or sweet-root (*Polymnia sonchifolia*), and beans (*Phaseolus vulgaris*).
- iv. Above 3,500 m, 4,000 m and 4,800 m above sea level are the cold or very cold zones in the 'Suni' and the 'Puna' regions, with broken, steep terrain and high plains or 'altiplanos'. The climate is cold, with marked differences of temperature between sun and shade, and day and night; snow falls between November and April. Plants at home in this climate are the queñual (*Polylepis racemosa*), and elderberry (*Sambucus peruviana*); and the following are grown here: 'mashua' (*Tropaeolum tuberosum*), quinoa (*Chenopodium quinoa*), 'cañihua' (*Chenopodium canihua*), 'tarwi' or lupine (*Lupinus mutabilis*), and the 'oca' (*Oxalis tuberosa*) and 'olluco' root crops (*Ullucus tuberosus*). Guinea-pigs (*Cavia porcellus*) are raised; they are abundant in the lower ecological zones. In the Puna zone, where there are no trees, we find champas grass, scrublands, graminaceous plants such as ichu, dwarf shrubs, and the 'puya' (*Puya raimondii*). This is the upper limit for producing potatoes (*Solanum tuberosum*), freeze-drying them, and processing them



to make chuño or potato flour. The puna vegetation feeds the camelids: llamas (*Lama glama*), alpacas (*Lama glama pacos*), vicuñas (*Vicugna vicugna*), and guanacos (*Lama guanicoe*). Here we find agricultural terraces, corrals, and wetlands; fauna also include condors (*Vultur gryphus*), mountain vizcachas (*Lagidium* sp.), and chinchillas (*Eriomis chinchilla*).

The inter-Andean valleys share the conditions of the Puna, Suni, Quechua and Yunga zones, but they are more vulnerable for human habitation, since fields have to be prepared on the mountain-sides. The production of these fields also depends on the rainfall, and they are exposed to recurring droughts. Crop farming is complemented with small animal husbandry (guinea-pigs) deer hunting, camelid hunting, and herding of alpacas and llamas.

The valleys, such as the Huallaga Valley, facilitate connection with the people and resources of the high and low jungle regions, rich in highly appreciated products such as annatto, hardwoods, snails, fish, bird feathers, parrots, monkeys, etc.

SOCIETIES CONTEMPORARY WITH CARAL IN THE NORTH-CENTRAL AREA

In the different river basins of this territory, dissimilar in terms of elevation, settlements of the Late Archaic with public architecture have been identified, which show cultures of their own, but also share cultural elements with those of Caral and the Supe Valley. Thus, on the western slopes, both on the coast and in the valley, the following settlements have been researched: Las Haldas (Fung, 1969; Matsuzawa, 1974), Huaynuná in the Casma Valley (Pozorski and Pozorski, 1990, 1993, 1999); Los Gavilanes in Huarmey (Bonavía and Castro de la Mata, 1982); Cerro Lampay, Caballete, Huaricanga and four others have been identified in the Fortaleza Valley and Upacá and six more in Pativilca (Hass *et al.*, 2004; Vega Centeno, 2004, 2005); Caral, Áspero, Miraya, Lurihuasi, Era de Pando, Allpacoto and 14 more in Supe (Feldman, 1980; Shady, 1997, 2007, 2009; Shady and Leyva, 2003; Williams and Merino, 1979); Vichama (Shady *et al.*, 2008) and Bandurria (Chu, 2008) in the Huaura Valley; Río Seco (Wendt, 1964) and Las Shicras in Chancay; Paraíso (Engel, 1967; Quilter, 1985); and Buena Vista in El Chillón (Benfer, 2004, 2007). In the inter-Andean valleys, we have Huaricoto (Burger and Salazar, 1980; 1985); Tumshukaiko (Bueno, 2001, 2005); El Silencio (Montoya, 2007) in the Santa Valley and La Galgada (Grieder *et al.*, 1988) in the Tablachaca Valley (tributary of the Santa River). In the valleys of the eastern slopes, work has been done in Piruro in the Marañón Valley (Bonnier, 1983, 1988, 1997; Bonnier and Rozemberg, 1988); and Kotosh in the Huallaga Valley (Izumi and Terada 1972; Onuki, 1999).

The results of the research studies enable us to infer that in this ample territory with a diversity of environments and resources, populations settled and developed different cultures, each with its own adaptations, knowledge, and different experiences; they



became sedentary, organized their respective social groups and united their efforts in the construction of public buildings, under the conduction of their authorities (Figure 3).

STRATEGIC POSITION AND PRESTIGE OF THE CARAL SOCIETY IN THE AREA

If we consider the distribution of the settlements within the geographic landscape of the north-central area, we find the following:

- The existence in the area of natural paths of ample geographic connection: a) the plain of the Altiplano, for land communication among the people of the 11 coastal valleys, of the inter-Andean valleys, and of the Amazon jungle; b) the Pacific ocean, for short- and long-distance navigation as far as the coast of Ecuador; and c) the navigable rivers of the Amazon watershed.
- The strategic location of the Supe Valley in the middle of the area and in a watershed where the inhabitants were able to remain in contact with other populations, by sea, land, and river. Only 90 km is the distance from Caral to the Altiplano plain, and from there people could travel to the coastal valleys, the inter-Andean valleys, and the Amazon basin.

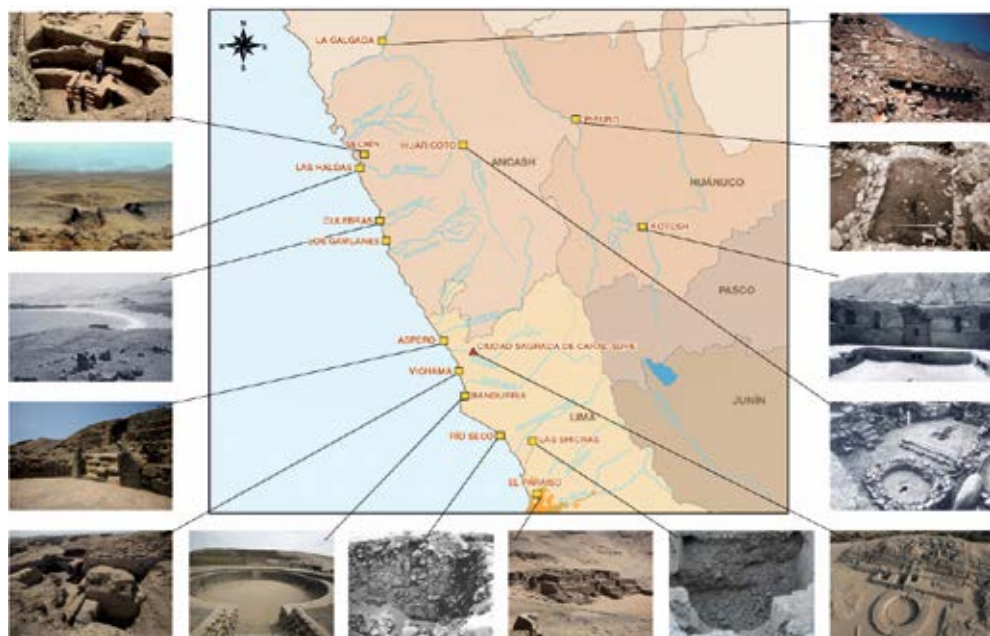


Figure 3. Societies contemporary with Caral in the north-central area. © Proyecto Especial Arqueológico Caral-Supe
© Proyecto Especial Arqueológico Caral-Supe.



- The access that the Supe society had to the resources of one of the world's most productive seas, with extensive sandy bays and rocky beaches, suitable for the easy extraction of fish, in particular shoals of Peruvian anchovy, mollusks, whales, and sea-lions.
- The favourable conditions of the low section of Supe Valley for agriculture, with land almost at river level and the surfacing of the water table in springs or small wells. The flat ground and abundant water resource facilitated the digging of irrigation canals without the need of sophisticated technology.
- The development of a complementary and mutually dependent farming-fishing economy, based on a permanent exchange between dried fish and mollusks to feed the farmers in the valley; and cultivated plant products, mainly cotton, whose fibre was required by the fishermen to make their nets for the mass extraction of fish.
- The interest of the populations of the area in a transverse management of resources and different products from the high Andean lands, partly to mitigate the effects of periodical environmental changes. This is why societies of different cultures that lived in different regions or ecological zones took part in trading networks.
- The greatest economic benefits of the area's productivity were absorbed by the Caral society thanks to the trading of products and the prestige of their religious ideology. The fame of their gods, ceremonies, and cultural creations extended throughout the area. This inference is backed up by the comparative study of the settlements identified in the area, which share certain cultural elements (Figure 3). It should be noted that the settlements of Caral-Supe show marked differences with the others in the area in terms of extension and volume of construction:
 - i. A larger size and greater complexity in the settlements of the coastal valleys compared with those found in the other regions. Based on this information, we can suggest that there was greater productivity in the populations living in the coastal valleys (Figures 4, 5);
 - ii. Also, comparing the settlements of the littoral zone and of the coastal valleys, we find that the most numerous, most extensive and those showing the greatest complexity are the ones found in the Supe Valley (Figures 6, 7).

THE SUPE VALLEY, CARAL SOCIETY SETTLEMENTS, AND THE ROLE OF WATER MANAGEMENT IN THE POLITICAL SYSTEM

Even though the Supe Valley is small compared to other valleys in the area, some 20 sites have been identified with monumental architecture in the first 50 km of the valley, in the low, medium-low, and medium-high sections.



Figure 4. Table and graph comparing areas of settlements in the coastal valleys and inter-Andean valleys © Proyecto Especial Arqueológico Caral-Supe.

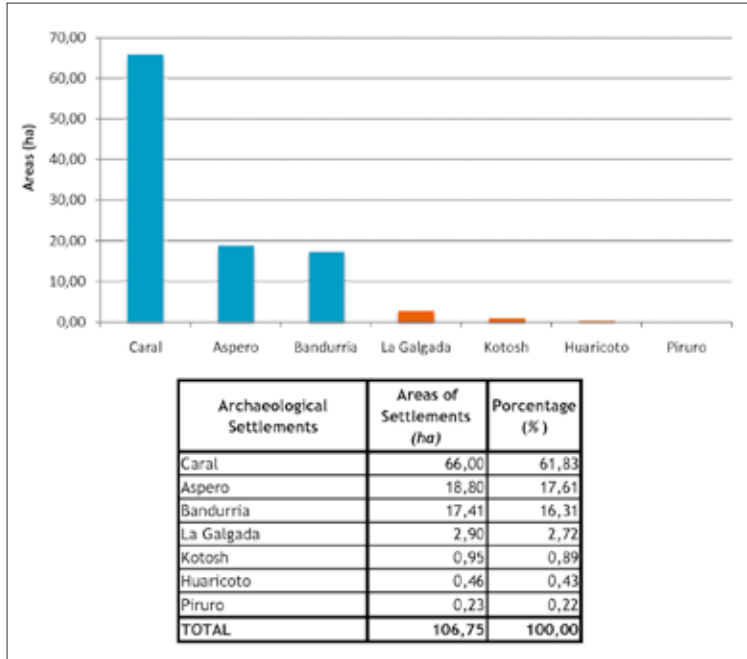
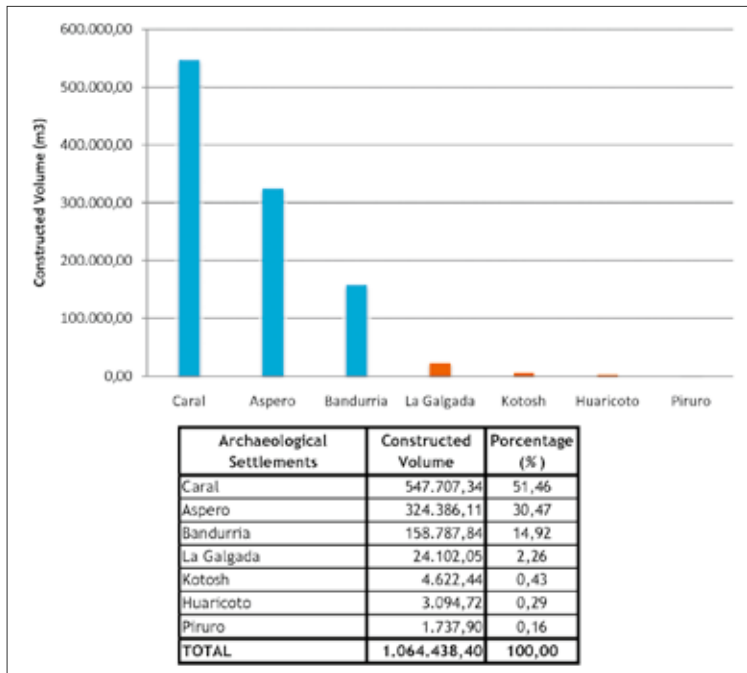


Figure 5. Table and graph comparing constructed volume of settlements in the coastal valleys and inter-Andean valleys © Proyecto Especial Arqueológico Caral-Supe.



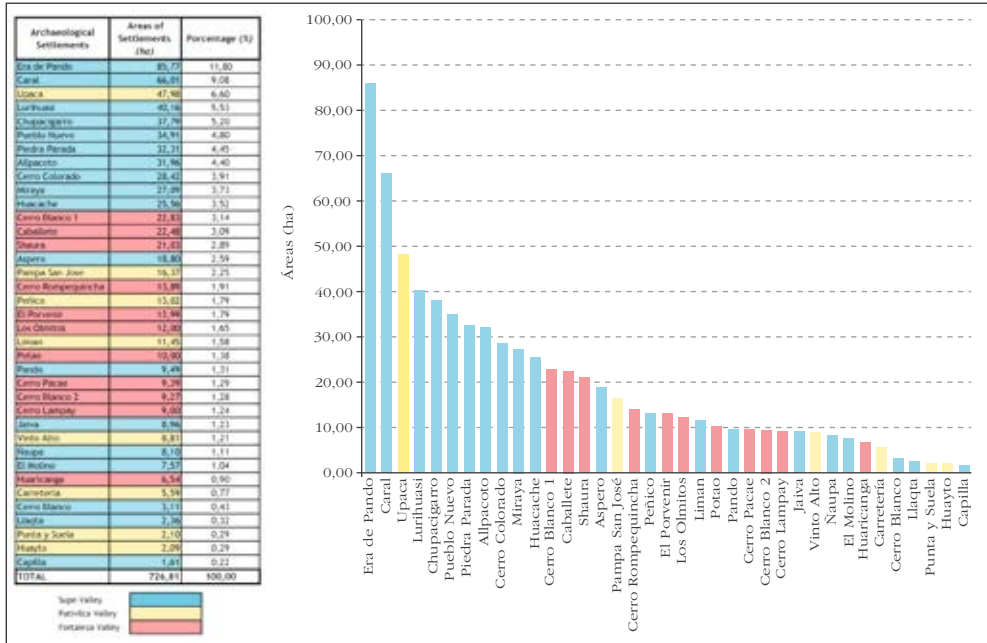


Figure 6. Table and graph comparing areas of settlements in the Supe, Pativilca, and Fortaleza valleys © Proyecto Especial Arqueológico Caral-Supe.

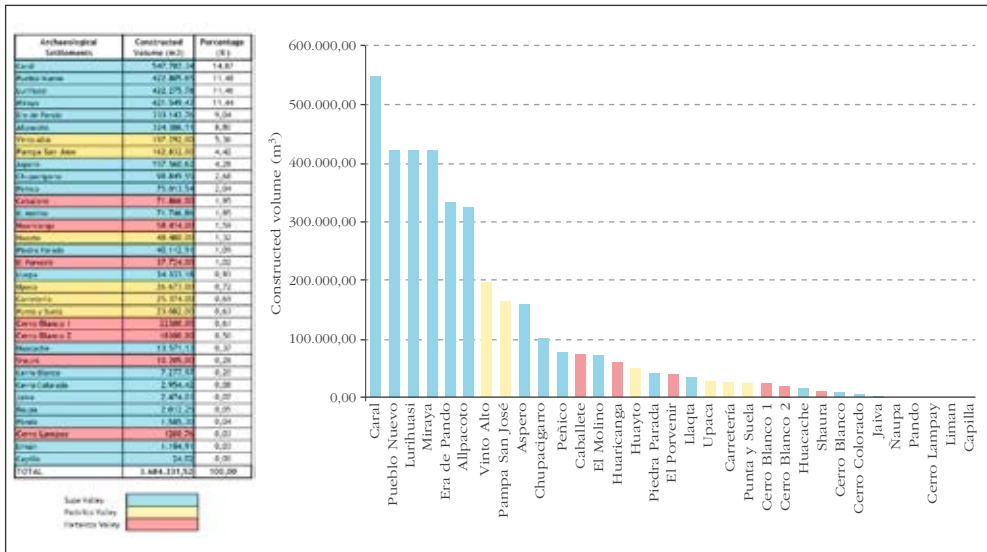


Figure 7. Table and graph comparing constructed volume of settlements in the Supe, Pativilca, and Fortaleza valleys © Proyecto Especial Arqueológico Caral-Supe.



The Supe River has a seasonal system, with a strong rise in level from November to March, when it is raining in the high Andean areas; and a practically dry bed the rest of the year. Periodic irregularities in its volume have also been recorded. At times there has been a very high volume that has caused the destruction of the farmland, the housing, and the division or separation of the valley on the two banks, making it difficult for the inhabitants to move freely; in other cases, when there is drought in the Andean highlands, the river has been greatly reduced. Nevertheless, the valley has a rich water table, and the water surfaces to form wetlands, or it is available in springs or wells found by making a small excavation.

The water resource was of the utmost importance, and access to it was regulated since the civilization was formed. Regulation continued throughout the pre-Hispanic social history, because the good or bad use of the water in a valley with these characteristics affects all the inhabitants. The administration of the waters has sustained the political organization of the settlements in the valley. A system of springs, main canals and secondary canals distributes the water throughout the valley, section by section, grouping a number of settlements in each sector with its respective authorities. Also, in each settlement the distribution of the plots of land for farming was organized based on the irrigation canals.

The sites of the Caral culture share the same settlement pattern:

- i. They are distributed on both sides of the river, with roughly the same number on each side;
- ii. They are grouped in sections: eight in the medium high section, eight in the medium low section, and six in the low section (Figure 8);
- iii. A certain order is followed in the inhabited space, and all the settlements have, on different scales, sub-groups of residential units and public buildings.

However, the settlements in the Supe Valley differ in terms of size and complexity. The most outstanding are the settlements located in the medium-low section of the valley, where the most extensive set of buildings is found, and that of the greatest monumentality. Paradoxically, this section of the valley is that which has less farmland than the other sections; therefore, that inversion had to be sustained based on resources from outside (Figure 8).

Comparing the different areas of built-up space, we find strong differences among the settlements, with regard to:

- i. The size, for example, ranging from 1.61 ha at the Capilla site to 66 ha at the Caral site. On the whole, those located in the medium-low section have the biggest dimensions; the smallest ones are in the medium-high section. Based on this indicator, four groups can be distinguished (Figure 9);
- ii. The constructed volume or investment in hand labour, which ranges, for example, from 1,104.91 m³ in Limán to 547,707.34 m³ in Caral (Figure 10).



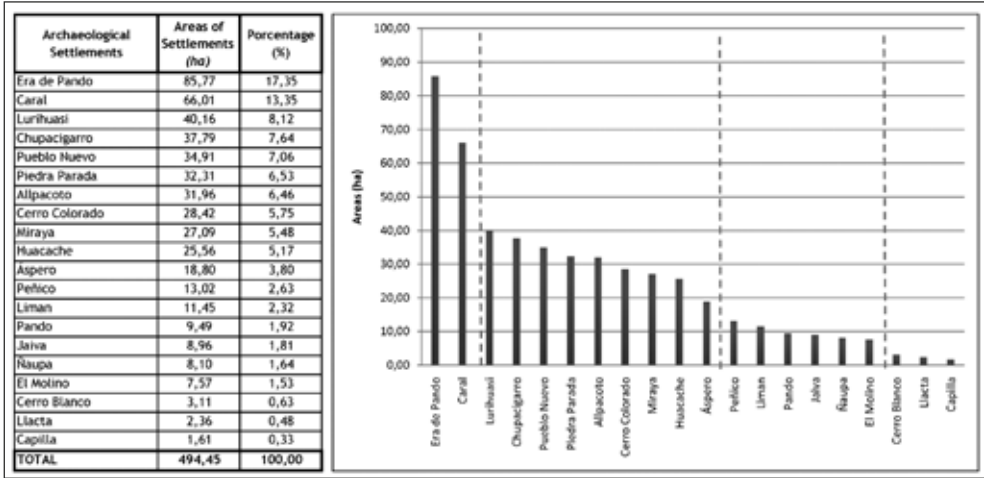


Figure 9. Table and graph comparing the areas of settlements in the Supe Valley © Proyecto Especial Arqueológico Caral-Supe.

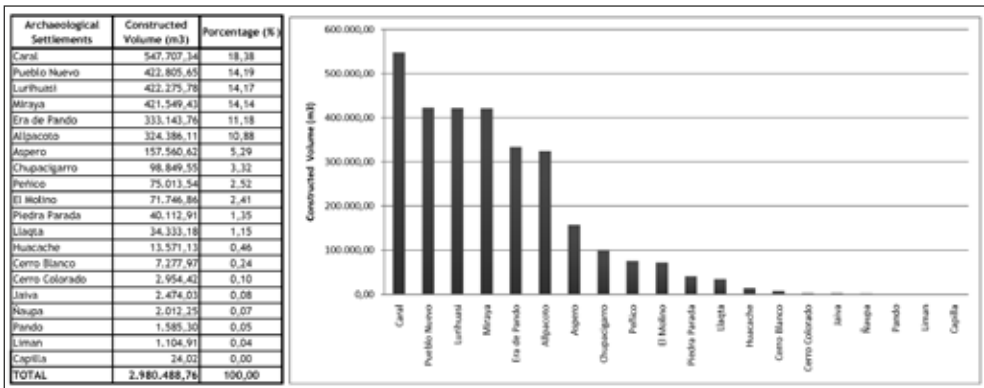


Figure 10. Table and graph comparing constructed volume of settlements in the Supe Valley © Proyecto Especial Arqueológico Caral-Supe.

It can be inferred from the indicators that it was not the settlements by the shore that benefited the most from development, but those located inland in the valley. Among these the most outstanding are the settlements in the medium-low section, where there is a smaller area of farmland. Therefore, it was neither fishing nor agriculture that sustained the comparative advantages, but rather the complementarity of the two activities through trading.



THE MEDIUM-LOW SECTION OR 'CAPITAL ZONE' OF THE SUPE VALLEY

This is an area geographically formed by the mountain range of the Andes, with hills that converge at the beginning and end of this section, practically enclosing a space of almost 10 km from north-west to south-east, following the direction of the riverbed. This territory is crossed by the Supe River, with almost flat alluvial lands on both river banks, which are very fertile. Dense riverine woodland, with abundant cane (*Gynerium sagittatum*), reeds (*Phragmites australis*), horsetail (*Equisetum bogotense*), and pájaro bobo (*Tessaria integrifolia*), among other plants, protected the land and farmland. Today, practically the whole of this strip or natural gabion has been cut down and incorporated into farmland for agricultural production.

Chains of hills limit the zone to the north and the south, following the direction of the river, and a series of empty terraces and gullies descend from the hills perpendicular to the river. The settlements were located on these arid areas, about 25 m above the valley floor, so the constructions did not reduce the extension of the fertile and irrigable lands for agricultural production. The inhabitants were also better protected from natural disasters, attacks by animals or aggression from other human groups.

On the largest of these empty terraces we find the most extensive settlements, distributed on both sides of the river: Pueblo Nuevo, Cerro Colorado, Allpacoto, and Llaqta on gullies and terraces on the right side (Figure 11); and Lurihuasi, Miraya, Chupacigarro, and Caral, on those located on the left-hand side. They are located one after the other, with a separation of 1 km - 2 km. Each settlement has its respective water springs, its system of main and secondary canals, and the corresponding farmlands.

It is interesting that the largest settlements, in terms both of area and constructed volume, are on the left side of this section of the valley, where less farmland is available than on the right side. This ratifies our inference that there was an economic and labour investment from other places, and that other variables apart from the agricultural production, intervened in the development and constructional splendour of these settlements.

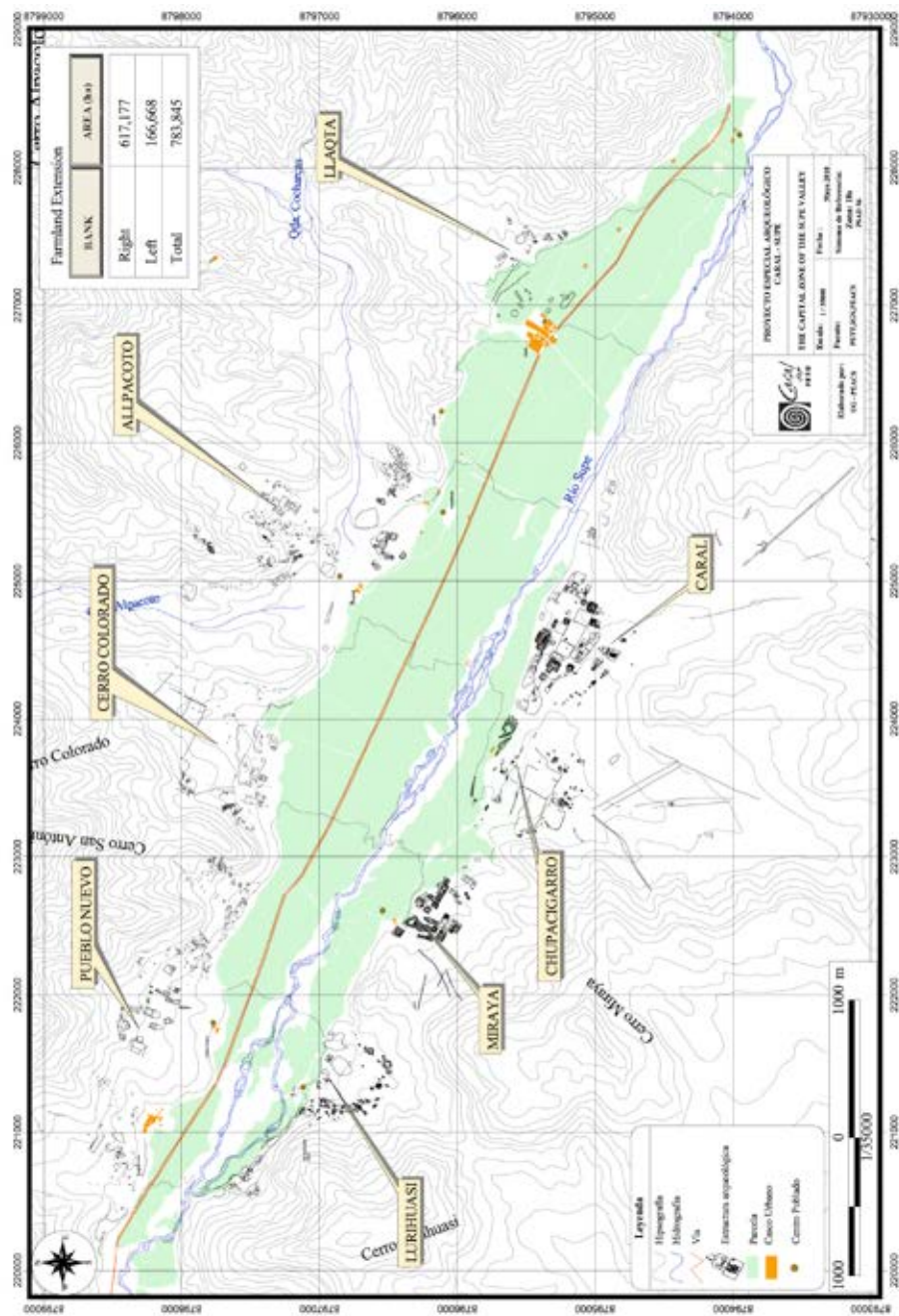
The people dwelling in the settlements on both sides of this section of the valley were frequently in contact through natural paths with the inhabitants of the neighbouring valleys. Those of the south bank of Supe were in contact with the people settled in the valleys of Huaura and Chancay, and those of the right bank with the inhabitants of Pativilca and Fortaleza. Interactions between these people –with either similar or different cultures, not yet sufficiently characterised– has been made evident by the shared components, architectural style and technologies, for example, between the sites of Caral, Las Shicras in the Chancay Valley, and Vichama in the Huaura Valley.

Among the settlements in this medium-low section of Supe Valley, the Sacred City of Caral is outstanding for its large area, the design of its constructed space, the volumen of the buildings it contains, and its greater age.





Figure 11. The Capital Zone of the Supe Valley © Proyecto Especial Arqueológico Caral-Supe.



THE SACRED CITY OF CARAL

Although it is true that all the settlements combine public and residential architecture, in the case of Caral special care was taken in the choice and design of the space that was occupied. The constructions were planned as a group from the Middle period, towards 4600 BP. Before this, although there are impressive palatial buildings, these are not pyramidal, nor are they associated with formal public spaces, such as the circular sunken plazas. In the more than one thousand years of occupation, the buildings were periodically remodelled; however, the intensity of this activity went in cycles. Around 4000 BP, in the Late period, the investment of labour in architecture began to decrease.

The place was selected bearing in mind its special geographic conditions, which were copied, as it were, in the constructed space. Thus, the urban design reflects the landscape of the mountains surrounding the settlement; the buildings, the works of man, imitate the hills of nature, which are divine works. The heavens were also taken into account, for the axes of the buildings are oriented in relation to certain stars, such as the sun, the moon, and the Pleiades (Figure 12).

In addition, the social organization and its internal differences were expressed in the architectural composition of the settlement.

In that Middle period, the earlier public buildings were remodelled using the same pyramidal design, regardless of the location and the size they had within the city, and



Figure 12. Design of the central part of the Sacred City of Caral © Proyecto Especial Arqueológico Caral-Supe.



a central stairway functioned as an axis guiding the location of the façades and the buildings, which were harmoniously positioned in relation to each other in specific spaces.

The buildings are distributed in two halves, upper and lower, each containing a number of lineages, but the differences between the two halves were expressed in the size of the buildings; those in the upper half were more extensive and had a larger constructed volume than those in the lower half. In each half, there is an architectural building with its circular sunken plaza. But only one of the two, the one in the upper half, has the greatest monumentality among all the public buildings in the settlement.

The design that connects the pyramidal building with a circular plaza, and which is recurrent in the settlements of the Supe Valley and other neighbouring valleys, is related to the religious ideology, which must have been a strong social need from that Middle period. If we look at the ethno-historical information available, this design allegedly expressed the Andean ideological concept of the three worlds: *Kay Pacha*, *Uku Pacha* and *Hanan Pacha*, the world here, where the living are; the underworld, of the ancestors; and the world above, where the stars are, and the gods of the stars. Each of the three worlds is watched over by its respective deities (Figure 13).



Figure 13. Greater Pyramid building and circular plaza in the upper half of the Sacred City of Caral © Christopher Kleihege.



For these reasons, it is obvious that the architectural design was not casual, but rather it reflects the world view and the socio-political organization of people who belonged to a complex social system.

A series of architectural elements, among other expressions, thus bear witness to the degree of development attained: group organization of labour for the construction of the public buildings and the application of scientific and technological knowledge to achieve the desired astral orientation; the structural stability of the buildings, which was gradually improved, with the reinforcement of the deposits of the platforms for the growth of the construction in pyramidal form, using *shicras* or woven bags as containers or gabions (Figure 14), and the application in the Late period of alternate layers of stones and clay; or keeping a permanent fire burning in ceremonial fireplaces by building underground ducts to channel the wind power (Figure 15).

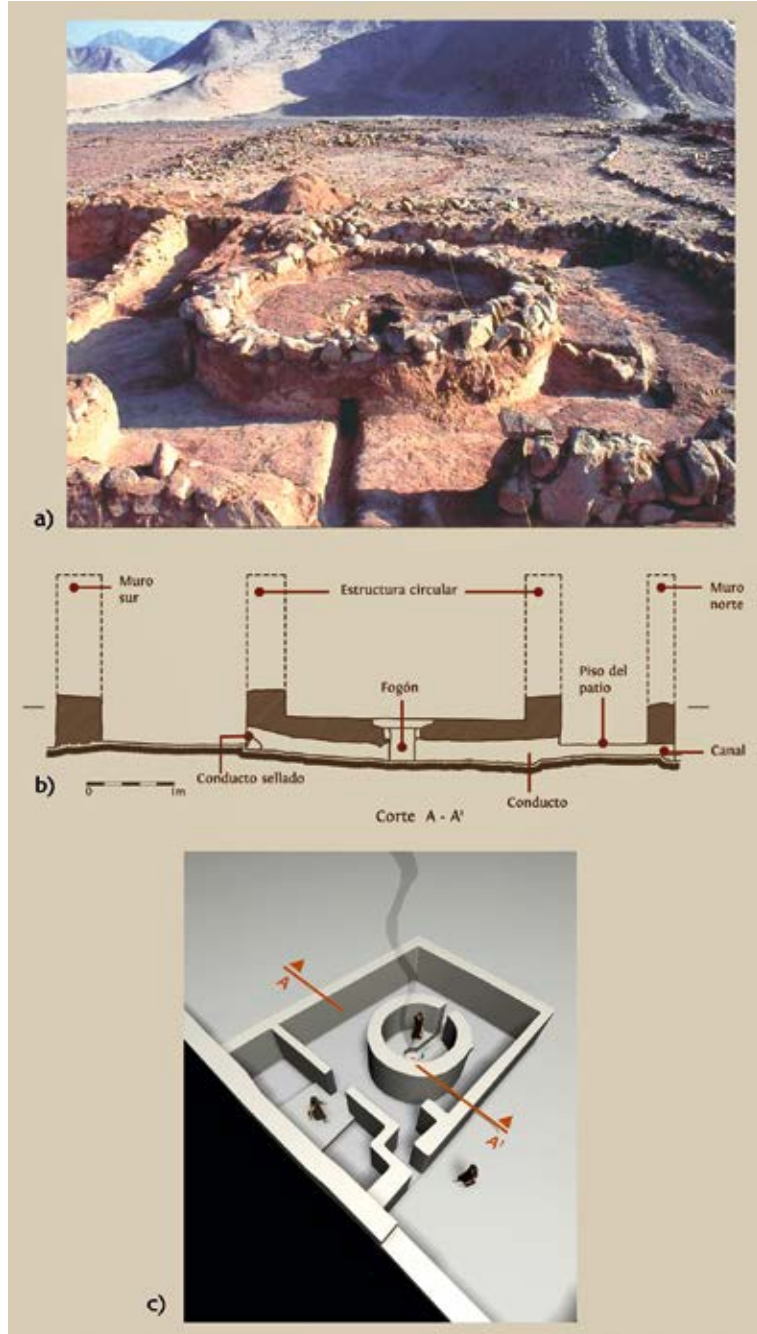
The dedication of specialists to these and other activities for the public good was possible thanks to the availability of surpluses produced by the social group. The authorities administrated these surpluses, which were not only local or from the rest of the Supe Valley, but from the whole north-central area.



Figure 14. Gabions in the Building of the Cornices, Vichama © Proyecto Especial Arqueológico Caral-Supe.



Figure 15. The Altar of the Sacred Fire at the Amphitheater Complex, Caral © Proyecto Especial Arqueológico Caral-Supe.



Group work organized to cope with unstable environmental conditions, farming-and-fishing complementarity in the local economy, inter-regional trading between sedentary societies with production surpluses, the strong religious ideology, and the

political organization, integrated in the social system, sustained the early development of the Caral civilization.

THE ECONOMY IN THE CARAL SOCIETY

In the Caral social system, the economy was based on the activities of fishing, agriculture, and exchange or trade. Specialised settlements on the coast and in the valley, the former dedicated to fishing and the extraction of mollusks, and the latter to the cultivation of foodstuffs and 'industrial' crops, took part in a complementary economic system by exchanging their products. The marine surplus production, in particular dehydrated *anchoveta* and the mussels and clams extracted by the fishermen, were eaten in the farming settlements, where no fishing nets or other fishing tools are found; likewise, the surpluses produced by the farmers went to the coast. The cotton fibre, in particular, was of considerable importance for the manufacture of nets that enabled the coastal dwellers to engage in the mass extraction of fish.

If we compare the marine remains recovered in the fishing settlement of Aspero with those found in the inland valley settlements such as Chupacigarro and Caral, we find that in both types of settlement the predominant species is the anchoveta or Peruvian anchovy (*Engraulis ringens*), with about 90%, followed by 9% sardines (*Sardinops sagax*) and 1% other fish; the percentage of anchoveta is even higher towards the Middle and Initial Late periods: 98%, 1.5% and 0.5%; but it decreases towards the Late period. It is obvious, from the scanty diversity of species and the predominance of the anchoveta, that although the fishermen lived in one of the most productive areas of the world in terms of marine species for human consumption (Béarez and Miranda, 2007, pp. 123-132) the species most frequently fished was the one that was easy to dehydrate, and this preference grew with the increased trade, the well-being of the people, and the prestige of the Caral culture. The presence and quantity of species varied, however, during the Late period, in relation with climate change (Sandweiss *et al.*, 2010).

The inhabitants of Aspero and Caral are also seen to have shared the selection of mollusk species consumed. Their preference changed over time. In the ancient period, clams (*Mesodesma donacium*) predominated; in the Middle period, mussels (*Choromytilus chorus*); and in the Late period, the ribbed mussel (*Aulacomya ater*). These changes were probably linked with the climate conditions.

The farmers in the valley grew cotton (*Gossypium barbadense*), which they managed to produce in natural colours, and which was in special demand for making clothes and for fishing nets. They also grew gourds (*Lagenaria siceraria*), which were also in great demand in preceramic societies for serving and storing food, and also for use as floaters for the fishing nets and boats. The following food products, among others, have been identified: pumpkin and squash (*Cucurbita* sp), beans (*Phaseolus vulgaris*), arrowroot (*Canna indica*), sweet potatoes (*Ipomoea batatas*), chili peppers (*Capsicum frutescens*),



guava (*Psidium guajava*), ice-cream pod (*Inga feuillei*), lucuma (*Pouteria lucuma*), lima beans or butter beans (*Phaseolus lunatus*), potatoes (*Solanum* sp.), avocado pears (*Persea americana*) and maize (*Zea mays - Confite chavinense*), all in the Late period (Shady, 2006; Shady and Leyva, 2003, pp. 107-122).

The fish, mollusks, and vegetable products circulated thanks to the exchange or trading of goods between the coastal dwellers and the valley dwellers; these products were the source of subsistence of the populations of the coastal region, and resources for inter-regional relations.

Exchange or trade with other regions is evident from the frequent finds of items from elsewhere: from the Andean highlands we find lloque wood (*Kageneckia lanceolata*), plant fibres such as the cortadere grass (*Cortaderia* sp), cabuya (*Furcraea* sp), pajuro (*Erythrina edulis*); as well as minerals, such as sodalite, from the Collao altiplano; and from the jungle region, annatto (*Bixa Orellana*), palillo (*Campomanesia lineatifolia*), huairuro seeds (*Ormosia* sp), calabash or tutumo (*Crescentia cujete*), as well as the shell of the land snail (familia Megalobulimidae). Spondylus shells from equatorial seas have also been recovered (Figure 16).

Figure 16. Table showing species from different ecological zones © Proyecto Especial Arqueológico Caral-Supe.



The material culture recovered consists of: digging sticks, spearheads, gourds, rush matting, baskets, weaving instruments, unbaked clay figurines, cotton dresses, adornments made of shells, flutes made of condor bones (*Vultur gryphus*), minerals, necklaces, quipus, etc., as well as fishhooks and nets in the coastal sites (Figure 17).



Figure 17. Caral material culture: a.) Woman's dress. b.) Baskets. c.) Spearhead. d.) Fish-hooks. e.) Spondylus charms. f.) Modelled figure of priestess. G.) Set of flutes. h. Fishing net. i.) Digging sticks © Proyecto Especial Arqueológico Caral-Supe.

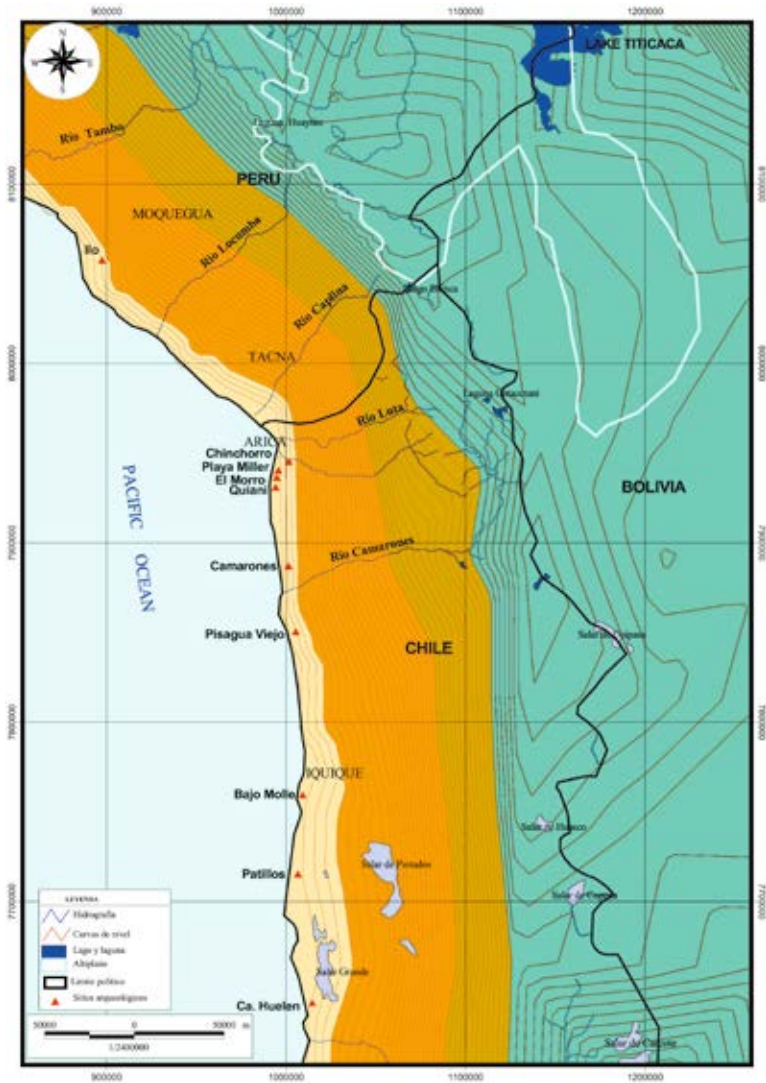


THE CHINCHORRO CULTURE: ENVIRONMENTAL FEATURES

The expressions of the Chinchorro culture, in particular their typical mummification of their dead, have been identified along the southern coast of Peru and northern coast of Chile, between Ilo, Moquegua and Antofagasta: 500 km of the coastal strip, between 17° and 21° latitude south.

In this area, we can distinguish arid lands, including some coastal plains; the coastal mountain range reaching as far as the sea; plateaus or pampas; and the Andean high plains of the Altiplano region (Figure 18).

Figure 18. The Chinchorro culture and its geographic location.



In the coastal region, the extension of the littoral zone varies from three to fifteen kilometers; the plains are more extensive to the north of Arica than to the south, at the mouth of the Chaca, Camarones, Tana, and Tiliviche gullies, but they widen again towards the south as far as Antofagasta.

This area has a desert climate, cloudy, with flora and fauna associated with the valleys and the coastal mountain range, which support harsh climate conditions and little availability of water. There is the Lluta River and the gully courses of Azapa, Vitor, and Camarones, which sometimes reach the sea.

Inhabitability depended on the natural resources, principally those extracted from the sea, and the water reserves of the Lluta, Azapa, and Camarones rivers. By the shore, and in oases and gully valleys, human occupation lasted for several thousand years; in some places it was sedentary and in others seasonal.

To the south of Arica, the western slopes of the coastal mountain range drop abruptly to the sea, and from there they form a compact massif, stretching 30 km to 60 km, in a west-east direction, cut by a series of gullies crossing it on their way to the coast (Chaca, Camarones, Tana, and Tiliviche). Abundant morning mists, a phenomenon known as 'camanchaca', cover this area, but there is very little rainfall, as little as 2.6 mm per year. From the coastline inland, the scanty resources, mainly shrubs and cacti, are home to a few rodents and marine birds.

Further inland, the intermediate depression or pampa consists of small areas of land between the gullies, at elevations ranging from 800 to 1,500 m above sea level, which become larger at the pampa of Tamarugal. It is extremely arid here also, drier than at the coast, hot during the day and very cold at night; vegetation consists of tough grass and scrub. Conditions are limited for hunters, gatherers, and farmers; there are prolonged periods of drought.

To the east, the foothills or piedmont zone, rise to the irregular terrain of the rugged Andean highlands; in the south, the piedmont climbs more gradually among gullies with alluvial deposits, and it becomes more extensive in the Tarapacá area. The temperatures are more moderate here, with rain falling in the summer months. Vegetation is sparse. The fauna consists of rodents, camellids and birds. As a consequence of human occupation in this area, there are terraces and irrigation canals for the cultivation of root crops (potato, oca, olluco) and quinoa.

The high plains, known as the Altiplano or puna, at 4,000 to 4,300 m above sea level, have low temperatures, and little rain; resources are limited to tough grass and vegetation such as tola (*Lepidophyllum quadrangulare*), llareta (*Azorella diapensicoides*), paja brava (*Festuca orthophylla*), and queñoa forests; here, also, we find camellids, rodents and birds. Human subsistence was based on hunting and herding, with migration to access the resources of other zones.

Generally speaking, these regions have little rainfall, and the scenery is arid; there is little availability of water, and some of the soils are saline. These tough conditions



must have affected the flora and fauna, as well as the human groups living there, mainly dedicated to a subsistence economy. The most favoured of them settled along the coast, where marine extraction supplied them with basic resources, complemented with hunting and gathering in the low-lying valleys and high gullies.

It must be noted that the conditions described above were altered in the past: a climate phenomenon of extreme aridity occurred between 8000 and 3000 BP, and it was at its most severe between 6000 and 4000 BP. The lakes and lagoons of the Altiplano dried up, and the land between there and the coast also became more arid. Only the marine resources remained as a source of subsistence for the coastal settlements, and for those who sought refuge and access to these resources. The climate is believed to have improved around 3000 BP, to make way for the present conditions. This could explain why the way of life changed as from that date: domesticated plants were introduced for cultivation, and camelids were herded (Barraza, 2003, pp. 57-61; Bradley *et al.*, 2003; Latorre *et al.*, 2005; Santoro, 2003, pp. 63-67).

POPULATIONS IN THE AREA, CONTEMPORARY WITH THE CHINCHORROS

Along the length of one of the driest coasts in the world, in the extreme north of Chile and south of Peru, remains of the Chinchorro culture have been recovered, which identify a population that faced the challenge posed by their –natural and social– environmental conditions with a singular lifestyle. Settled on the coast, they made full use of the variety and abundance of the marine resources, in addition to seasonal hunting and gathering expeditions; and during the period at which they lived, with intense drought and scarcity of resources in the inland regions, they showed great ingeniousness in creating an effective strategy to protect their habitat from foreign invasions. Their strategy was to strengthen their cultural identity through the permanent transmission of their religious ideology, manifested in the mummification and worship of their deceased ancestors, functioning as symbols of social cohesion.

They did not have the resources of an economy complemented by trade, as the Caral society did, nor were there any neighbouring or distant peoples with production surpluses in the transverse contact area; on the contrary, these semi-nomadic people, hunters of animals and birds and gatherers of plants, were staggering under the weight of the severe crisis caused by prolonged drought, and they were migrating in search of resources. In this context, once the Chinchorros had settled in the place where the present coast line had become consolidated, and were enjoying access to fresh water and marine resources, they had to invest their best efforts to cope with the environmental stress and the pressure of other peoples who would gladly settle in that ecological environment. Evidence of the tense atmosphere they experienced are the bone remains of Chinchorro people, showing fractures and lesions that bear witness to struggles and episodes of aggression (Santoro, 2003, p. 70; Standen and Arriaza, 1997, pp. 133-150).



THE CHINCHORRO CULTURE

Through the study of the mummies and the rubbish dumps or shell middens, in particular those found in the cities of Arica and Iquique, a description has been made of the people of this ancient culture, who faced up to the geographic challenge of the desert environment, attracted by the richness of the sea.

It is assumed that groups of hunters and gatherers from the coast or from the Altiplano started populating the littoral zone; the oldest remains, dating to 9000 BP, were found in Arica, in the Acha gully, at the entry to the Azapa Valley, some 6 km from the coast. They belonged to small groups, with a basic social organization, dependent on the marine resources, and enjoying abundant fish, seafoods, birds, fresh water, and a temperate climate. It was not until about 7000 BP that they begin mummifying their dead, according to evidence recovered in the Camarones gully, Arica, to transform them into icons. From this part of the coastal territory, considered the cultural nucleus, the Chinchorro culture probably extended to the populations that occupied the most favourable locations along the coastal strip: to the north up to the Ilo Valley in Peru; and to the south as far as the coast of Antofagasta. The inhabitants shared the cultural pattern of: a) mummification of their dead, following a procedure that changed over 3,300 years; and b) placing of the dead in group burials.

Natural and artificial mummification was applied to all the dead, and it was a process that lasted several weeks. Secondary treatment or artificial mummification involved removing most of the individual's body to leave its skeleton uncovered, and subsequently reinforcing it with pieces of wood placed along the limbs and the spine. The body was modelled with clay and covered with a layer of natural pigments. Special care was given to the head, which was dressed with a wig; the face was modelled with mud, and pigment applied.

In the mummification treatment, different styles have been identified, with some variations, apparently corresponding to different periods. Other variations have also been identified, about which there is insufficient information as yet. Generally speaking, the following styles are mentioned:

- a) The Black Mummies, from 7000 to 4000 BP, so named because they were covered by a paint that gave them a dark colour. The process consisted in taking the dead person's body apart, removing the organs and muscles; and restoring it with an internal structure of longitudinal sticks and rush matting, tied with totora reed ropes; then filling the cavities with clay and dried plants; modelling the body with clay paste to recover its normal volume; replacing the body's own skin or applying that of animals; painting the features of the face, and placing a short black wig of hair on the head. Finally, they painted it with blue-black manganese oxide (Figure 19).





Figure 19. Mummified adult Chinchorro woman, black mummy style (Arriaza and Standen 2009: 15).

- b) The Red Mummies, from 4500 to 3500 BP, distinguished by the application of red pigment. Although the processing techniques are simpler, they are based on a more advanced knowledge of the human anatomy than the black mummies. The mummifiers made incisions in the shoulders, groin, knees and ankles to remove the organs and some of the muscles; they cut the head from the body to remove the brain; they slipped thin sharpened sticks under the body's skin, and introduced sticks for the legs and spine; they dried the body cavities with embers

and ash, and then filled them with the feathers of sea birds, dried plants, different types of earth, and the skin of camellids; they filled the head in the same way, returned it to the body, and dressed it with a wig of black human hair, up to 60 cm long; they added a manganese paste to shape the features of the face, and finally painted the body with ferric oxide. A most elaborate figure was thus produced, reddish in colour, with a black face and black hair (Figures 20 and 21).

There is no information available to understand the following variations described in the mummification treatment, which were contemporary with the red mummy style:

- c) Bandaged mummies, which differed from the red mummies in the treatment of the skin, which was replaced in the form of bandages and painted red. These date from 4000 BP (Figure 22).
- d) Mud mummies, which were desiccated bodies covered with a layer of mud, prepared from soil, water and an adhesive. This style was used for a couple of centuries, disappearing around 3700 BP (Arriaza, 2003, pp. 137-141; Arriaza and Standen, 2008, pp. 15-36).
- e) Mummies obtained by a natural drying process –primary treatment– individuals or groups. Wrapped in the skins of camellids, birds, or sea-lions. They are not positioned in a lateral way order like those mentioned mummies, but are placed some on top of others.





Figure 20. Mummified male child Chinchorro, red mummy style (Arriaza and Standen 2009: 51).



Figure 21. Mummified infant Chinchorro, variant from red mummy style (Arriaza and Standen 2009: 137).



Figure 22. Mummified child Chinchorro, variant from red mummy style, with bandages (Arriaza and Standen 2009: 79).

During the period 4000 to 3700 BP there is a predominance of individuals with natural mummification encased in a mud paste. Cranial deformation was also more popular at this time, namely circular oblique deformation.

As mentioned, it has not yet been possible to identify the causes of the changes from one style or variation to another. If artificial mummification was contemporary with natural mummification, what proportion did they have respectively? And what was the significance of the different treatment? We do not yet know, either, the significance of individual versus group burials (Arriaza, 1994, pp. 25-47; Standen, 2003, p. 180).



An interesting gender role distinction has been noted: the women are associated with fishing implements (fishhooks, weights, and fishing lines), while the men are associated with hunting implements (harpoon shafts and barbs).

With reference to the group burial pattern, three to nine individuals, of different sexes and ages were placed one beside the other and covered with totora reed matting. It has been proposed that the group of individuals probably formed a single social unit, related with other units of a similar structure, dispersed along the mentioned coastal zone (Santoro, 2003, p. 72).

The houses were semi-subterranean, conical in shape, with a four to five meter diameter; they were constructed with wooden posts, cane, totora matting, and animal hides (Barraza, 2003, p. 75).

Once they had settled permanently in the littoral zone, their subsistence economy mainly depended on fishing, with sporadic migration for hunting and gathering; nevertheless, they developed an attitude of appropriation of the territory and its resources.

With reference to the economy, their principal activity was the extraction of marine resources, mainly mollusks such as scallops (*Concholepas concholepas*) and mussels (*Fissurella sp.*), fish, and pelicans. There is evidence that they hunted marine mammals, such as sea-lions, as well as wild camellids. Their seasonal incursions into the oases and gully valleys twenty to 40 km inland supplied them with cane, wood, totora reeds, and birds.

There are very few material goods associated with the dead: as few as two objects per individual, though this number increased between 4000 to 3500 BP. These materials consisted of fishhooks made of mussel shells (*Choromytilus chorus*) and Cactaceae; fishing lines made of plant fibres, reinforced with human or animal hair; polished stone weights for fishing; *estólicas* or dart throwers and harpoons; as well as garments and adornments: skirts, loincloths, necklaces, headbands; baskets; rush matting; wooden figurines, and wooden plates (Figure 23).

Nevertheless, in the context of the natural and social environment they lived in, the Chinchorros developed, in contrast to the material culture mentioned, knowledge of human anatomy, and they applied complex mummification techniques of dissection and desiccation, to preserve their deceased and transform them into statues and, likewise, they invested effort in the dissemination and maintenance of their ideology. When they processed the bodies of the dead to keep their shape and deposit them in shared spaces, the society was symbolically preserving the rights of the dead as a group over their habitat; by means of the mummies, society materialized those rights transmitted to the relatives who were still alive for the information of the outside social world; but, at the same time, it transmitted to its own group the security of being protected by their deceased. The group's identity was strengthened when they all participated in the same ideology, and, therefore, the members of the group regarded themselves as belonging to the same social structure.





Figure 23. Chinchorro material culture: a.) Camelid fiber fringe skirts. b.) Belt made with camelid fiber. c.) Awls of spines of marine animal. d.) Fish-hooks of thorns. e.) Pelican beaks painted with ocher. f.) Net made of plant fiber. g.) Bifacial projectile points. (Standen 2003: 184-199).



INFERENCES FROM SOCIAL-CULTURAL COMPARISONS

The populations of the Caral civilization and the Chinchorro culture showed the same interest in resorting to the immaterial culture in order to ensure the participation in the their society's structure of all its components; in this shared world view, the gods and the dead strengthened the group identity and they were successful in their joint, organized efforts to obtain the benefits required.

In Caral, and in other settlements of the Caral civilization, they built a number of monumental architectural constructions identified with specific deities, which were the responsibility of the authorities of the respective social units; these participated, under a political organization, in social groups of different hierarchic levels. Public buildings were regarded as symbols shared by the members of the lineages, in relation to their own community, but also in relation to the other settlements in the Supe valley and in the outside world. Social and political differentiation was expressed in the extension and constructed volume of the monumental buildings and of the settlements. Using this religious ideology, the authorities organized the participation of the population at the different levels of power for carrying out economic, social, and cultural activities; and they guaranteed the reproduction of the social system.

In Chinchorro the artificial mummification of the dead was also carried out in relation to a religious ideology that gave the dead social roles for the protection of the group. They were regarded as symbols shared by the members of the group to look after them and defend them as a whole group together, and to defend the resources of their territory.

On the one hand, the former, with better environmental and social conditions, progressed to the stage of forming civilization, organized by different levels of social and political authorities; on the other hand, the latter, in different social and economic conditions, had to invest all their efforts in dealing with the difficulties of survival itself, but they met the challenge, organized by the representatives of their social units, and they managed to survive for more than four millennia.

CONCLUSIONS

1. It was not the availability of the rich marine resource that sustained the development of the Caral civilization, and the same is true of the Chinchorro society. Although the fishermen of Peru's north-central area did, indeed make good use of the resources of one of the most productive seas on our planet, they had been living in groups all along the shore since at least 9000 BP. Only when, millennia later, they became integrated or replicated the model of social system of the Caral civilization, did they start building monumental constructions in a well-planned location, and under the organization of social and political authorities.



2. It was apparently not only the fishing or the farming, but rather the complementarity of the two activities that sustained the well-being of the people of the Caral-Supe civilization. The produce of the valley-dwelling farmers, especially the resistant cotton fibre that was needed for making fishing nets; and the mass extraction by the fishermen of anchoveta and mollusks that were needed in the diet of the valley dwellers, formed the basis of a permanent local exchange or trade, which subsequently extended to the different regions in the area.
3. The agricultural production in the inter-Andean valleys of the north-central area of Peru, complemented by the herding of llamas and alpacas, the hunting of guanacos and vicuñas, and the raising of guinea-pigs supported, at that time, sedentary settlements with production surpluses. Once the populations of these sedentary settlements became part of the inter-regional trade networks, this led to greater development and enriched the civilization process in this area.
4. Interaction and trading in societies with production surpluses were instrumental in the development of the north-central area. Development then made it necessary to strengthen cultural identity and social integration in order to consolidate the society and thereby ensure: the execution of a series of activities; the organized conduction of these activities; the maintenance of authorities and experts; and the justification of the unequal distribution of the benefits produced.
5. The prolonged-drought-induced crisis in the subsistence economy of the populations in the inland regions of northern Chile, contemporary with the Chinchorros but dependent on hunting and gathering, probably led to frequent incursions to the coast, to obtain marine resources. The Chinchorros sought to strengthen their cultural identity in order to protect themselves as a group and to defend their habitat.
6. The religious ideology in the two societies, which were at different stages of development, played an essential role in the strengthening of the social tissue, thus enabling them to give continuity to their existence and their cultural system.

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Sambaquis: hunters-gatherer coastal archeological deposits in Brazil



Levy Figuti

INTRODUCTION

On both shores of South America, near the Tropic of Capricorn, mankind has witnessed the rise of two remarkable archaic cultures of fishers-gatherers, each one exhibiting unique features of social and cultural complexity.

On the Pacific coast, between southern Peru and northern Chile, the Chinchorro culture displays unique and refined funerary rituals, represented by its famous mummies. These are, however, only one aspect of this culture, which flourished in one of the world's most severe deserts but also along one of its richest seashores.

The eastern shore of the Atlantic coast was the stage of one of the most long-lasting archaic cultures of the Americas. The Sambaqui culture occupied the south-southeast Brazilian coast for more than eight thousand years. Hundreds of shell mounds were built, from small heaps to true hills of shells (Figure 1). The Sambaquians exploited



Figure 1.
Sambaqui Rio do Cubatão,
Joinville, SC,
Brazil.
L. Figuti.



various tropical coastal environments, home to abundant aquatic resources and exuberant tropical Atlantic rainforest. These sites present the spatial combination of three important domains of daily life: they were the place where food was found, the inhabited space and the place of the dead.

The shell mounds are not a Brazilian exclusivity. These kinds of archaeological sites are present in many parts of the world (Claasen, 1991), and in other Brazilian wetlands archaeological sites of similar composition or shape can be found.

THE OLD MEN AND THE SEA

The occupation of the coastal ecosystems is a relatively late –but significant– event in human history. According to some researchers, the emergence of *Homo sapiens* between 200,000 BP and 100,000 BP in South Africa, along with the oldest evidences of seafood exploitation approaching 160,000 BP, are not a coincidence (Marean *et al.*, 2007; Volman, 1978). The discovery of the richness of the seashores provided mankind with the necessary nutrients for brain development. This is marked by the earliest use of pigment and the creation of some of the first stone blade tools, suggesting symbolic behavior and an important technological leap.

The coastal sites became more numerous during the Early Holocene. They displayed an ensemble of technological and economic traits of specialization in the exploitation of aquatic resources. But the transition from terrestrial to maritime subsistence left few vestiges and only a few sites (Clark, 1983) exhibit occupational sequences with a gradual transition from the tentative use of the sea resources to their systematic exploitation. The late adoption of the coastal resources seems to be further justified by the model proposed by Yesner (1987), in which the following factors are presented as having favored the presence and the establishment of communities along the coasts during the Upper Pleistocene (10,000 BP): climate changes, increase of human demographic density, extinction of megafauna and decrease of the herding mammals, rise of the sea level, stabilization of the coastal plains, and expansion of temperate forests and wetlands (marshes, swamps, bogs).

The combination of these events obliged human populations to explore new habitats, to adopt new subsistence strategies, and also created a favorable environment for settlement at the seashores. Unsurprisingly, many of the European Mesolithic cultures identified from that period were well adapted to the wetlands and coastal lands. A little later, between 10,000 BP and 8000 BP, the Archaic maritime gatherers in South America were occupying the Atlantic and the Pacific coastlines. Around the seventh millennium BP the human occupation of coasts was a worldwide event as testified by the presence of many shell mounds and shell middens.

The adaptation of different human groups to life in the coastal areas had different consequences for their behavior. It reduced the need for constant displacements,



which is characteristic for hunter-gatherer societies (Binford, 1980; Yesner, 1980, 1987). This nomadic behavior is characterized by the presence of one central place of foraging, from which the inhabitants would explore the neighboring areas. The use of aquatic transport would considerably reduce the costs of exploration and transport of the most distant resources.

Hence, the biotic factors influencing the degree of mobility of coastal nomads would be: (a) the size of populations of species-preys inside of the exploitation area and their potential regeneration (b) the frequency and the regularity of movement of sea species (migrations of fish, birds and mammals); (c) the spatial and temporal variation of banks of stationary organisms (bivalve, sea-urchins, etc.); and (d) variation in the quality of resources (lipid and protein content of a species according to the season).

The first factor imposes temporal limitations for the exploration of a given area, because if the population of species-preys is small, the occupation will be of short duration. On the other hand, if the population is large, the occupation will last longer, and even more so if the prey-populations have a high regenerative capacity.

Among the other factors mentioned, the temporal variation in the availability of resources is one of the most important. Some seashore only had abundant resources for limited periods, which determined the need for seasonal displacements. So the degree of mobility observed among contemporary coastal hunter-gatherers varies according to environmental conditions, as shown in the following examples:

- The Yagán, indigenous people of Patagonia: region with quite rigorous climatic conditions and rich feeding sources, although dispersed. Therefore, the Yagán moved frequently (Bird, 1946; Stuart, 1977).
- The Anbarra, indigenous people of the northeast coast of Australia: tropical environment. The Anbarra had two fixed annual camps, one in the mangroves for the rainy season, and another close to the beach for the dry season (Meehan, 1977).
- The Ozette, native people of the northwest of North America: temperate zone. The Ozette are practically sedentary, living of the salmon fishing, whales and seal (Schalck, 1977).

The relative abundance and predictability of the coast could provide support for large populations, as suggested by paleodemographic studies of prehistoric coastal hunter-gatherers (Hassan, 1981; Perlman, 1980), which indicate that coastal groups had more important contingents than their inland congeners (possibly more than 50 individuals). Another factor that might have influenced the formation of large groups of coastal hunter-gatherers is the tendency of certain sea resources to form recruitment zones-large concentrations of one species in a small area. Due to these concentrated resources, the mobility and dispersion of the groups decreased, because a large group could explore the resources in a more effective way than several small groups.



The degree of social complexity of these nomadic coastal groups can be also associated to certain environmental conditions. According to Cohen (1981), once a human group presents a high demographic density the coordination of the collective efforts for the exploration becomes essential. If the environment presents limitations in their resources, the coordination effort will be more important.

One case is the prehistoric coastal societies from Peru. They show a high degree of social complexity that is attributed to the fact that these groups had lived in the interface of poor terrestrial environments with very rich maritime environments susceptible to strong variations. The required management of these resources led to the development of distribution and stoking systems of provisions (Yesner, 1987), then to more complex forms of social organization.

What's a Sambaqui?

Sambaqui is the Brazilian designation for shell mounds, derived from the tupi words *Tamba* (mound) and *Ki* (shell). This appellation 'is applied to cultural deposits of varying size and stratigraphy in which shell is a major constituent, undoubtedly encompassing accumulations with arrange of functions and origins' (Gaspar, 2008). The *sambaquis* present many mostly round or oval mound shapes, with a large variation of dimensions (from 25 m to 500 m in diameter, and from 1 m to more than 30 m in height), and their sediment content has generally more than 80% of shells, with a wide range of mollusk species and other faunal remains, and frequently they have more than a few burials.

Under the term *sambaqui* we encompass two major clusters of coastal sites (Figure 2):

- 1) The northern *sambaquis* are present near the equatorial coast, or the Amazonian seashore, in the regions of Pará and Maranhão. Few studies made on these sites indicate dating between 7000 BP and 900 BP, but they also present one of earliest evidences of pottery in Brazil - the tradition of Mina ceramics.
- 2) The south-southeast *sambaquis* are located on the tropical and subtropical latitudes. Extensive research has shown that they are pre-ceramic fisher-gatherer sites, built between 8500 BP and 1000 BP. More than 300 sites have been identified.

The southern *sambaquis* are better known since they have been studied (non-systematically) since the nineteenth century, and they are the focus of this paper. The scientific interest in the *sambaquis* is relatively old, starting in the nineteenth century, but focused mostly on narrow questions related to the origins of the human remains, whether they are natural or man-made structures, but without any serious excavations carried out. The efforts to classify and organize the *sambaquis* were concentrated on the particularities in the composition of those sites, moreover regarding the visible proportion of shells, soil color, and some denominations were conceived regarding those differences reflecting the many hypotheses concerning the association between





Figure 2. Distribution of the Brazilian mounds, shell mounds and shell middens. L. Figuti.

composition and function (Gaspar, 1998), as ‘sambaqui limpo’, ‘sambaqui sujo’, Macaé Tradition, Itaipu Tradition, etc.

Since the 1980s research into the sambaqui took a more analytical and model-oriented direction, starting with more focused studies in zooarchaeology, archaeobotany, bioanthropology, environmental reconstructions and isotopic analysis, etc. At the same time research began in regional studies, settlement analysis, followed by site formation analysis and approaches of social complexity.

At first these analyses indicate a predominance of shellfish gathering, replaced by more intensive fishing. The results allowed the first ample interpretation of the cultural evolution of the sambaquis related to environmental change.

One must also consider the differential use of the space during the sambaqui development. Different activity zones were identified, but just a few tentative models were proposed to explain the internal organization and the growing process of the sambaquis. The main peculiarity of these sites is the amassing of great amounts of faunal remains. Several meanings have been attributed to this: ‘If the habit had been associated only with building up the land in flood areas, this could be not explain its continuing once a dry platform had been obtained, nor this habit recurring even in areas protected from water, such as on slopes’. (Gaspar, 1998).



Therefore, we must ponder the nature of the accumulation itself. Were the shells that compose the sambaquis just food remains (slow and continuous formation) or were they collected intensively as construction material (fast and episodic formation)?

Recently, an overall reevaluation of the sambaqui societies looked at whether we are dealing with small groups or complex societies of fisher–gatherers. Some researchers (Blais and Afonso, 1994; Gaspar, 1994, 1998) view the sambaqui from the latter perspective when dealing with hunter-gatherer complex societies. We adopt Arnold's concept (1996), which looks at complexity from an organizational point of view: hunter-gatherer societies that presented social and work relationships in which leaders had control over relationships beyond kin level, and with a hereditary social differentiation.

The Sambaqui's Time and Land

The sambaquis have flourished in the tropical and subtropical zones, between 18° to 29°S along 2,100 km of coastline. Mostly shell mounds were erected on the coastal wetlands of the 'Mata Atlântica' (Figure 3) - the eastern tropical Brazilian rainforest covered with mangroves, coastal lagoons, dunes and beaches. They were scarce on the coastal rock shores, which seem to not have been the best suited environment.

Hence, the sambaqui territory does not represent a hazardous colonization, but an opportunistic and well-adapted strategic development, closely associated with the warm and moist climate zone between the colder south and the drier north. This area



Figure 3. Canal do Palmital, Joinville, SC, Brazil. L. Figuti.



spans from the Serra do Mar to the coastal plains and lies at the confluence of the cold Malvinas and the warm Brazil ocean currents. It also has an enormous availability of basic nutrients from the hundreds of small rivers. This particular combination of conditions increased exponentially the primary productivity of these aquatic biomes.

Despite their insertion in the coastal environments, little evidence has been found of the sambaqui people's open seas exploitation. The location of the sambaquis suggests a preference for the shallow and closed waters of the lagoons, bays, channels and rivers, which were used as the central network of waterways and as food source (Figure 4) (Kneip,

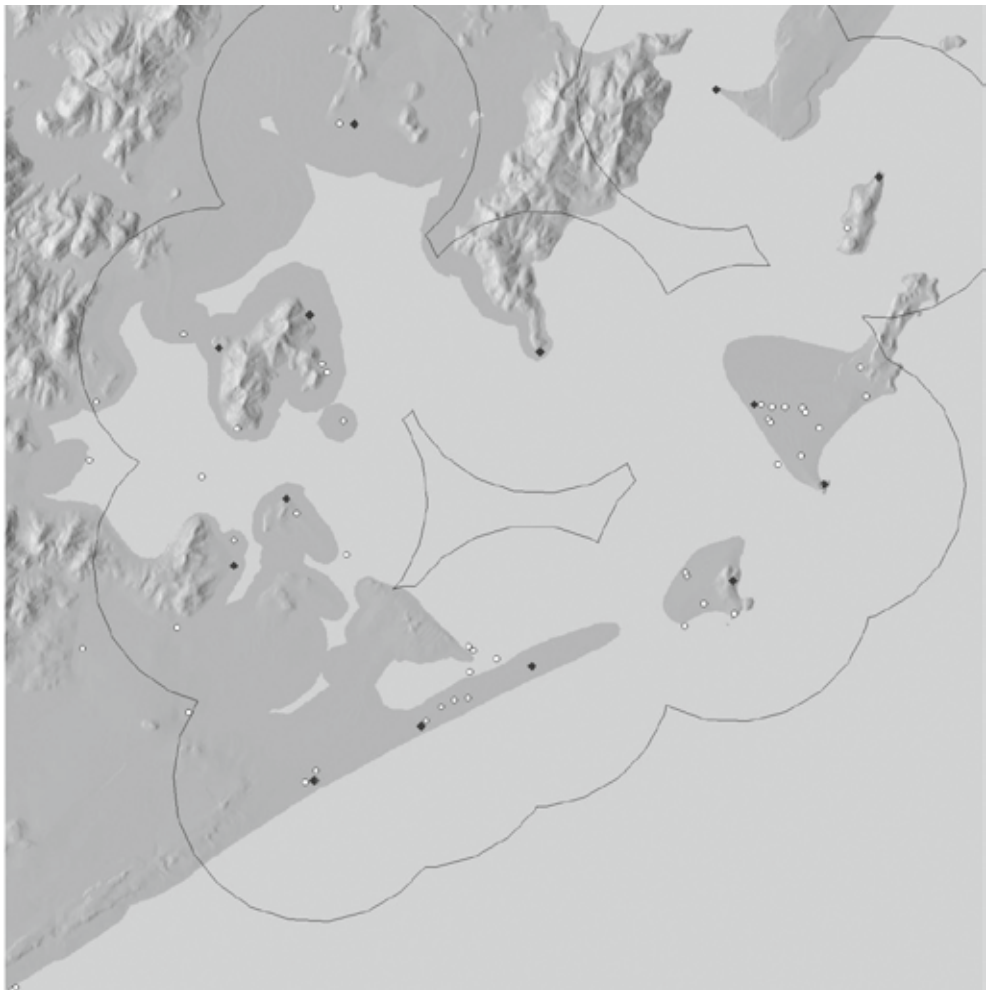


Figure 4. Sambaqui distribution at the Jaguaruna area, 4500 BP. Kneip, 2004.



2004). Some navigation skills are evident, but since evidence of the sambaquis is very scarce in deep water islands, their navigation capabilities would have been limited.

As observed above, the sambaqui culture spread over a wide area and over a long period of time. The oldest sites date back almost 8 millennia –Cambriu Grande (São Paulo), 7870 ± 80 BP (Calippo, 2004), and Algodão (Rio de Janeiro), 7860 ± 80 BP (Lima *et al.*, 2002)– and the most recent are dated around 1000 BP. The majority of carbon dating of the sambaquis pointed to between 4000 BP and 2000 BP. Around 1000 BP, the sambaquis became rare and no new ones were built.

According to the dating of the top and bottom layers, the large sambaquis display 1,000 years of occupation/building. On the other hand, the small sambaquis (less than 2 m high) sometimes present less than 50 years of activity.

So far, their relative cultural homogeneity suggests one single origin. Schmitz (1981) and Neves (1988) suggest the following model: the original area of the sambaquis was the coast between the Paraná and São Paulo states (around 25° S), which is the area of the major sambaqui concentration. From there the sambaquis population spread to the south and the north, and around 5000 BP the sambaquis had settled along a range of more than 2,000 km of coastline.

This coastline was the theatre of some significant changes in sea level: at the time of the first sambaquis, around 8000 BP, the sea level was two or three metres below the current level. Around 4500 BP, the level went up to more than two metres above the current sea level, and then retreated until the current level which was reached around 3900 BP. It rose again by more than one metre around 3000 BP, only to retreat slowly to the current level. Another important environmental event happened between 5000 BP and 3800 BP due to the effects of ‘El Niño’. As a consequence the rain average in the sambaqui area was much higher than now (Martin *et al.*, 1980, 1984, 1987, 1992).

From the bones

The large number of burials (Figure 5) found at these sites, allowed for extensive studies in physical anthropology since the nineteenth century (Lacerda, 1885; Ladislau Netto, 1882), which describe the sambaqui people as strong, robust and short stature (average 1,5 m in height).

The few morphometric studies made (Neves and Cocilovo, 1984; Okumura, 2007) suggest that the sambaqui people formed a biological unit with some variations among the southern and northern populations. This supports a single origin model for the sambaqui people. The sambaqui skeletons are subdivided in two groups: the Rio and São Paulo populations, and the Santa Catarina population. The samples from Paraná float between these two main groups (Okumura, 2007).





Figure 5. Burials 14 (adult) and 17 (infant), Sambaqui Cubatão I, Joinville, SC, Brazil. L. Figuti.

More abundant are the palaeopathological studies. These are mostly focused on dental pathologies (Wesolowsky, 2000, 2007) and usually show intense occlusal abrasion, which indicates a frequent presence of abrasive agents in the food (sand/phytolith), as confirmed in the dental calculus analysis by Wesolowsky (2007). Dental caries are relatively rare, suggesting a low intake of starch or the absence of domesticated crops.

Others palaeopathologies seem to indicate muscular stress on the arms, which is associated to canoeing/rowing and possibly archery. Other marks of diseases indicate pronounced anemia, especially during childhood (Mello e Alvim, 1991) and some endemic diseases (Storto, 1999).

More recently biochemical methods have been applied to the sambaqui skeletons. De Masi (2001) found peculiar data through stable isotopic analysis: the isotopic content of carbon 12/13 varies between -15 and -9 , and nitrogen 14/15 displays values between 12 and 23 (Figure 6).

These values indicate that the sambaqui subsistence was almost exclusively based on fish. Shellfish and plants seem to have contributed only marginally in the sambaqui diet. Further studies (Klokler, 2008) of other sambaqui samples confirm the De Masi data.





Figure 7. Zoolitos, Museu Arqueológico do Sambaquí de Joinville. V. Wesolowski.

of an incipient farming economy, but this is a very disputable view according the above-mentioned isotopic evidence.

The zoólitos are animal-like sculptures of polished stone, very elaborated, whose function remains conjectural. The zoólitos are found in coastal sites from Rio Grande do Sul to the south of São Paulo (Prous, 1977), mostly in sambaquis, but also in non-sambaqui sites of fisher-gatherers. These artifacts are a very compelling evidence of important symbolic activities, and are also evidence of the existence of specialized craftsmanship.

The most frequently found artifacts in the sambaquis are beads and the projectiles. The beads are usually made of shell (sea gastropod and bivalve) and teeth (mammals and sharks), and the projectiles are usually from bones (fish, rays and mammals).



Figure 8. Shell beads, whale bone beads, shark teeth and howler monkey tooth.

Wagner Souza e Silva;
V. Wesolowski.

Two types of shell beads have commonly been found: small polished circles of shell pierced in the middle (Figure 8), and small sea snails shells (Figure 9) with the apex cut. The beads usually formed long necklaces or headdresses with more than 100 beads per piece, which are found in burial sites. Other common beads are made of shark tooth (Figure 8) or mammal tooth, mostly from peccaries and howler monkeys.

The projectiles were usually small, between 4 cm and 6 cm long, and 0.5 cm and 1 cm wide. They were generally made from mammal, fish and ray bones (Figure 10). It is important to note the absence of hooks among the sambaqui fishing paraphernalia.

Artifacts made of bone, shell or stone, called 'fusiformes' and whorls, have also been found. These are associated to spinning and were probably used to make strings. However, the geochemical characteristics of the sambaqui sediment make the survival of botanical remains very difficult, and the only recognizable organic artifacts are some fragments of carbonized strings, woven fibers of baskets or carpets, and wood sticks and staffs (Figure 11).



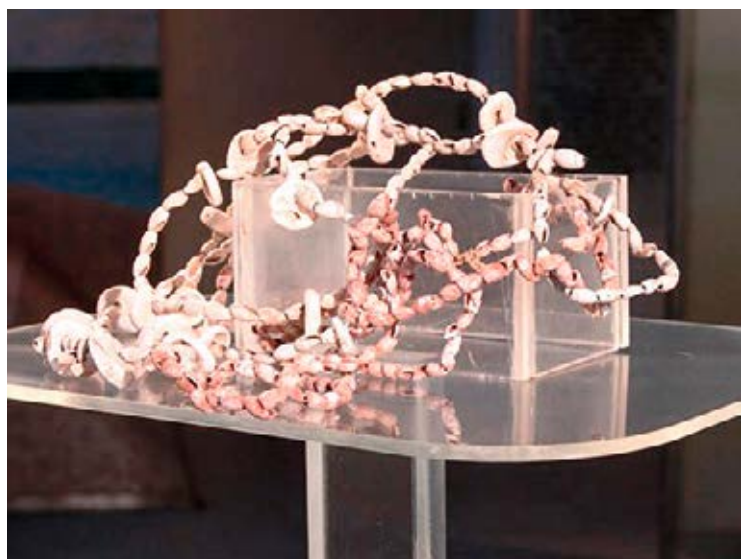


Figure 9. Shell bead necklace - *Olivella verreauxi*.
MASJ.



Figure 10. Bone projectiles, Sambaqui Moraes.
Wagner Souza e Silva.





Figure 11. Fragments of carbonized woven fibers (left) and strings (right). MASJ.

About shells and bones

Few sites are so favorable to zooarchaeological studies as the sambaquis, since their sediments are composed of faunal remains. However, until the 1970s only few studies were made on the fauna, and these were usually limited to lists of identified species, some notes on the occurrence of peculiar vestiges or relative data about elaborate bony and shell industries, usually made by zoologists and other researchers (there were few Brazilian archaeologists before the 1950s).

The first zooarchaeological studies were made by Caio Del Rio Garcia (1972), proposing elements of anatomical and taxonomic identification, the first comparative research between two coastal sites, a sambaqui and an 'acampamento conchífero'¹, with qualitative emphasis and some quantitative elements. Garcia knew the concepts of NISP (Number of Identified Specimens) and MNI (Minimal Number of Individuals). However, aware of the gaps in the identification of other anatomical elements, he limited his quantification to the number of vestiges, by class, and of some anatomical elements.

1 Brazilian coastal shell midden site which is flat and shallow, and present burials, skeletons, artifacts and chronology closely related to the sambaquis. The few found are in the sambaqui area.



Between 1972 and 1992, it became clear that the lack of referenced collections or identification manuals hindered zooarchaeology studies. Some studies of the fauna associated with the coastal sites were resumed by mostly descriptive notes on the presence of anatomical parts of certain species. This reflected the efforts to improve the identification of the vestiges. Therefore, most of the studies of that period on the sambaquis continued to present lists of species of faunal remains or of the osteodontological and malacological industries. (Azevedo *et al.*, 1982; Beck *et al.*, 1970; Coelho and Melo, 1977; Correa *et al.*, 1980, 1984, 1987; Cunha *et al.*, 1977, 1978, 1980; Franco and Barbosa, 1991; Gazzaneo *et al.*, 1990; Jacobus and Gil, 1987; Kneip *et al.*, 1975; Kneip and Santos, 1992; Mello, 1986; Santos *et al.*, 1989; Uchoa and Garcia, 1969; Vogel, 1983; Vogel and Kneip, 1983, 1987; Vogel and Magalhães, 1989; Vogel and Veríssimo, 1981, 1982).

From the late 1980s onwards, the zooarchaeological concept was adopted by archaeologists (Figuti, 1989; Lima, 1989; Lima and Silva, 1984, Vogel and Magalhães, 1989 *b*) following the principles of processual archaeology. Consequently, efforts were made to develop quantitative analyses of the sambaquis fauna (Bandeira, 1992; Figuti, 1992; Lima, 1991). These were associated to hypothetical models of subsistence, opposing two points of view: shellfish gatherers and fishermen.

The hypothesis most often used to explain the formation and the development of the sambaquis is influenced by cultural ecology, in which the cultural evolution is related to environmental change. In that view, sambaquis were classified based on the analysis of the faunal remains, which indicated an evolutionary scale, from mollusk gathering to fishing (Gaspar, 1998). Emphatically, most of the sambaqui researchers consider that the visible proportions of faunal remains reflect directly the diet of the population.

Lima (1991) and Bandeira (1992) propose indications of the subsistence change by an increase of fishing. Both presuppose that mollusk gathering had initially been the main subsistence. Based on their detection of an increase in the vestiges of fish in the superior layers or in more recent sites—based on accentuated difference in the abundance of MNI of the fish—they concluded that fishing increasingly replaced subsistence on mollusk gathering.

Bandeira (1992) studied the collected vestiges of a sambaqui which evolved from preceramic to a pottery-making culture. The bone remains, which were systematically collected, indicated a prevalence of fish, especially during the second phase. This suggests that fishing intensified with the appearance of the ceramic culture, and thereby the agriculture.

Lima (1991) studied six sites (five sambaquis of one region, and one distant insular 'acampanamento conchífero'), through a systematic collection of all the vestiges. This way, she quantified the vestiges and obtained MNIs showing the predominance of mollusks followed by fish. She noted that the abundance of fish increases significantly in the



upper levels and in the insular site, which was the most recent. Lima (1991) attributes those results to a decline in shell gathering and an increase in fishing activity. That decline would be due to the increase in population to a point in which the banks of mollusks alone could not guarantee the needs of the groups, forcing them to increase fishing and colonize new coastal habitats, such as the rock shores and distant islands.

Lima used MNIs and estimated the living weight of the fish through allometric calculations based on otolith dimensions, but she did not have equivalent data for the bivalves. Therefore, her estimation that the builders of the sambaquis were shellfish eaters remains without supporting data.

Figuti (1992) proposes another conception of the sambaqui population subsistence, based on models of optimum diet and carrying capacity (Chernokian, 1989; Pearlman, 1980; Waselkov, 1987, Yesner, 1987), ethnographic examples (Legoupil, 1989; Meehan, 1977) and environmental data. He argues that basing resources on mollusk gathering was economically and ecologically unviable, and that given the conditions of the environment, fishing would always have been the main subsistence activity. The gathering of mollusks would thus have been complementary, due to the environmental and nutritional limitations of the use of the mollusks as food as opposed to the wealth and availability of fish.

Figuti used samples of four small sambaquis (2 m to 4 m high, and 30 m to 50 m wide) from Cubatão (SP), with systematic collections of the bone vestiges and column samples of sediments. The results of the NISP and the MNIs of the bone vestiges show the predominance of fish among the vertebrate remains: more than 90% of MNI and NISP.

Inspired in some works of the 'California School of Midden Analysis' (Bailey, 1975; Botkin, 1980; Casteel, 1970), Figuti sieved column samples of sambaqui sediment (assembled by Garcia), separated and weighed the components (greater than 2 mm). The results showed that shells were the major component of the sediment (more than 80% of the weight). Though when comparing the prevalence of hard to soft parts—starting from the principle that the exoskeleton of the bivalve corresponds to about 80-70% of the living weight of the animal, while the skeleton of the vertebrates corresponds to about 20-30%—the results showed the predominance of fish (more than 70% of the estimated weight) at all sites. This confirmed his hypothesis.

Later, the same author and team (Figuti and Klökler, 1996), analyzed a large sambaqui (15 m high, 400 m long). The stratigraphical analyses indicate huge layers at the base with a high predominance of shells and percentages near to zero of bones and other components, while the superior layers show results similar to the ones from the small sambaquis. The authors suggest that the massive layers of shells would not just be food remains but also accumulations of shells picked up with the exclusive purpose of construction, while the upper levels would correspond to food remains of



occupations. That question could be solved if we can establish the rate of deposition (or construction), using ranges of radiocarbon dates for those episodes of sambaqui formation.

TO FISH OR TO SHELLFISH - THAT IS THE QUESTION...

The enormous proportion of shell remains found at the sambaquis led the researchers to the inevitable conclusion: the shell mounds are the discards of bivalve and gastropod consumption. Although, according to the ethnological literature (Waselkov, 1987), the economy of nomadic coastal peoples is frequently based on fishing and/or the hunting of sea mammals, which present better returns for the activities. Then, why so much shell fishing?

If one observes a decreasing order of revenue (acquisition cost/benefit obtained in calories/hours) of several subsistence activities (Perlman, 1980), the most profitable activity is the hunting of large gregarious mammals, followed by fishing with nets and fishhooks. The shellfish gathering –in the best conditions– gives medium revenue.

The bivalve mollusks are food of little caloric content, so gathering is only profitable when the costs of their acquisition, preparation and consumption are low. Accordingly, the data show that this activity is usually done by individuals who are not engaged in the main subsistence activities –women, old people and children– (Chernokian, 1989), and whose shellfish gathering is frequently limited to the time of the diurnal low tide. The shellfish concentrations are easily found, gathering is done with the bare hands and/or with simple implements, and is limited to the banks of mollusks relatively close to the camp (Waselkov, 1987).

The nutritional value role of the mollusks may have been a limiting factor in the prehistoric diets. In the first place, the mollusks possess few caloric elements - low carbohydrate content and tiny amounts of lipids (Nettleton, 1985), so their caloric revenue is low. Consequently, the energy invested by gatherers in their acquisition, preparation and consumption should be low.

Although the protein content of these organisms is relatively high, it remains inferior or equal to the ‘worst’ fish. Therefore, the gathering of mollusks cannot be exclusively associated to their protein value.

In fact, what differentiates mollusks from other sea organisms, and what gives them an important role in the diet is their carbohydrate content, which is superior to fishcarbohydrate content. In terms of nutrition, mollusks are among the few sea animals which have enough calories in their meat to balance the caloric expense necessary to metabolize the protein from that meat. The consumption of other sea animals will require a caloric complement to allow their proper digestion, in other words mollusks are very digestible (Chernokian, 1989).



Meanwhile, data show that hunter-gatherer economies based on the gathering of mollusks would be of little value from the nutritional and –above all– energetic point of view. But, they confirm the important role of the mollusks as an essential nutritional complement in the diet of hunter-gatherers.

Based on the presented hypothetical picture, what kind of economy do the great archaeological deposits of shells reveal? It is necessary to consider certain allometric parameters of the fauna for the coastal groups and the expected taphonomic effects. First, we have the subject of the relationship among the edible matter and the disposable matter, in other words: *meat x bone/shell*.

The mass of edible matter of mollusks is usually less than 30% of the total mass, while for the vertebrates the edible mass is usually more than 70% (Glassow and Wilcoxon, 1988; Reitz, 1987). The consequence of these ratios was shown in the classic work of Meehan (1977) when she observed the subsistence activities of the Anbarra Australian aborigines, verifying the following quotas for the fishing and the gathering of bivalve:

Table 1. Fishing and gathering of Anbarra. WT: weight (kg) of the acquired total mass; WC: weight (kg) of the consumed mass; WD: weight (kg) of the discarded mass (Meehan, 1977).

Fauna	WT	%	WC	%	WD	%
Mollusk	2159	52.45	453	22.43	1786	81.35
Fish	1957	47.55	1566	77.57	391	18.65

When analyzing the amounts of discarded matter in relation to the composition of a sambaqui, a predominance of bivalve remains over other animal remains is evident. However, this is the result of a subsistence based on fishing and not on the gathering of bivalve (since the former activity produces comparatively much more reject for a relatively small mass of food).

According to the statement of Meehan (1977) concerning the Anbarra group, shellfish was a supplementary food. Considering the data of other archaeological works and ethnographic reports, the occurrence of groups on the gathering of bivalve it is very unlikely.

In the past, the most common assumption among Brazilian archaeologists about the role of the shellfish in the sambaquis was the most obvious: food remains disposed randomly for ‘architectural means’ by mollusk eaters. In the last few years, some archaeologists are rethinking that logic. As pointed out by Claassen (1998) one cannot forget the possible symbolic meaning of the shell itself, which was used by



many indigenous American peoples as a symbol of birth, fertility and other cosmic symbolism. Prestige can also be one possibility, according to Meehan (1982), as the Anbarra made huge feasts (resulting in great accumulations of food remains) to show their richness to visiting people, and the sambaquis are a very clear testimony of the richness of the sambaqui area.

It is important not to conceive the sambaquis in a simplified manner. First, the shell layers seem to have been carefully structured around burial features (single or multiple burials), so the massive gathering seems to have focused on some special events during a sambaqui lifetime.

Second, the role of the shellfish in the diet should be reconsidered: the relation between shell and meat, and between bone and meat respectively, makes clear that shellfish consumption produces a refuse of kilos of shell for a few grams of meat. Alternatively, fish consumption produces only few grams of bones for several kilos of meat (Figuti, 1992). So the relative value of the shellfish is reduced to a mere 10 to 20% of the diet or a secondary source of food.

Finally, when some sambaqui human bones were analyzed about their stable isotopes (De Masi, 1997), the ratios observed indicate a diet oriented to seafood, most specifically fish, with few or no traces of mollusk consumption.

Thus, if shellfish gathering had another purpose than as a food source, it seems to have been primarily to build the mounds. As a consequence, perceiving the shellfish gathering in terms of calories, proteins or fat may be irrelevant. The challenge to understanding the shellfish gathering at the sambaquis will be to define which factors had dominated the decision-making process and the work orientation behind shell gathering for building mounds.

When observing the stratigraphy of a sambaqui (Figure 12), one can see conspicuous layers, each one with a different proportion of shells species, different levels of fragmentation, exposure to fire, oxidation, etc. Comparing the data from various researches (Azevedo *et al.*, 1982; Bandeira, 1992; Coelho and Melo, 1977; Crancio *et al.*, 1993; Figuti, 1989, 1992, 1997; Garcia, 1972; Gazzaneo *et al.*, 1990; Jacobus and Gil, 1987; Klökler, 2001, Kneip *et al.*, 1975; Lima, 1989; Mello, 1986; Nishida, 2001; Rosa, 1995) one can see that those layers usually have different proportions of the main 'ingredients' of a sambaqui: oysters (*Ostrea sp.* and *Crassostrea rhizophorae*), mussels (*Brachidontes sp.*, *Mitella guyanensis*), quahogs (*Lucina pectinata*) and clams (*Anomalocardia brasiliiana*). We can also observe some taxonomic variation according to the region: at the southern sambaqui area (Santa Catarina and Rio Grande do Sul) layers of coquina (*Donax sp.*) and yellow clam (*Mesodesma mactroides*) have been found, while the northern sambaquis (Rio de Janeiro and Espírito Santo states) contained significant percentages of *Pinctada imbricata* and *Spondylus americanus*. Within the same region, a few sites show some important layers of sea urchin (*Echinometra lucunter*) remains.





Figure 12. Profile East A, Sambaqui Cubatão I.
L. Figuti.

The sea snails are not abundant but they're frequent, and the most common species are the *Thais haemastoma*, *Astrea sp.*, *Cypraea sp.*, *Tegula viridula* and *Strombus pugilis*.

Otherwise, the variety of shellfish in a sambaqui can be very large, more than 65 different species in some sites, but the three or four main species assembles 80% and 90% of the weight/individuals in the deposit (Figure 13). Some sambaquis are mussel predominant, and a few are oyster or quahog predominant, but the majority and the greatest sambaquis usually have the clam, *Anomalocardia brasiliana*, as a primary ingredient.

All principal species were common in the surroundings of each site. So the site of shellfish gathering seems to have been mainly controlled by the immediate availability of malacofauna. In fact, the range of the site catchment area must be large since the sambaqui builders used canoes, or other kind of simple water transportation.



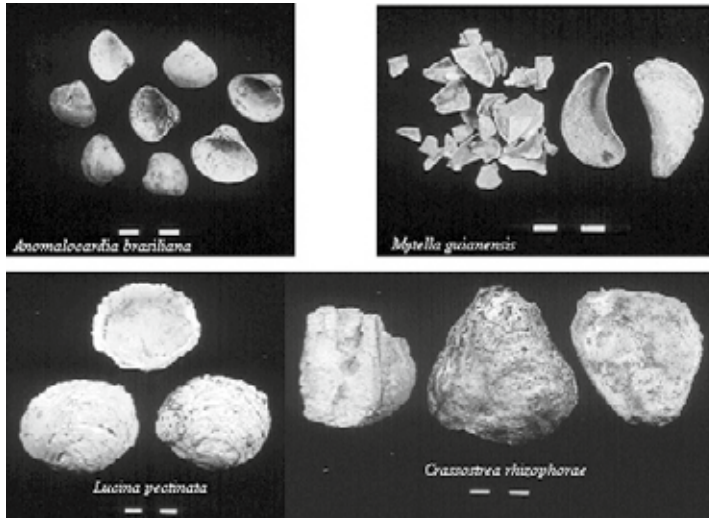


Figure 13. The sambaqui ingredients.
L. Figuti.

The species also reflect the preferential exploitation of sand/muddy bottom areas, with low wave/tidal energy: the mangroves (oysters and mussels), the sand/mud banks at the channels and lagoons and the long beaches. The rocky shore species are present in numbers only if the sambaqui is located near a rocky shore, and sambaquis are much less frequent on rocky shore coasts.

Some species seem to have been collected for more specific reasons. One species was frequently used as beads: the sea snail *Olivella verreauxi*, which is rarely found in the shell deposits, but was frequently used as burial decoration, in a necklace or headdress. Some large beads made of sections of *Strombus pugilis*, and other big sea snails were also found. Other kinds of shell artifacts were scrappers made of oyster or *Lucina pectinata*.

Studying the sambaquis implies a need for different types of analyses and approaches for a zooarchaeologist. One must face an archaeological site made of faunal remains. Instead of strategies to maximize the archaeofaunal recovery, one must find ways to take a minimal sampling, which are representative but can avoid the terrifying perspective of analyzing millions of shells.

From this perspective, we must analyse the shells as sediment, and use the traditional zooarchaeological field techniques for the other faunal remains.

When we compare some sambaqui stratigraphic samples, we reached the conclusion that the low ratios of bones and crabs at the clam layers were the result of a intensive and concentrated effort of shell gathering to build the mound (Figuti, 1995; Figuti and Klokler, 1997). The higher ratios of bones and crabs in the mussel layers were interpreted as evidence of a more diversified range of activities during the layer formation.



But the comparison between these sites indicates that some of the shell properties of each species will influence the properties of the shell matrix itself.

The first property is the *Density* of each layer, and this is closely related to the *Fragmentation* and the *Composition* of each layer. The thinner mussel shells produce a compact and dense sediment composed by tiny fragments of shells, or a sediment with a low granulometric index. On the other hand, the more robust clam shells produce a less compact and dense sediment, composed by complete valves and/or larger fragments (which also seems true for the oyster and quahogs), therefore having a higher granulometric index.

First, the assumption based on these data is that the gathering and deposition of a number clam shells produced larger accumulations compared to the same amount of mussel shells, so a clam layer deposit grew faster than a mussel layer.

Second, if there is a fast ratio of accumulation, the traces of activities other than shell gathering will be spread wider throughout the sediment matrix. Consequently, in the samples of clam layers, we will find few remains of fishing and other activities.

This line of reasoning could invalidate the notion that shell mound building focused on only one activity (shell gathering). One argument in favor of the choice of *Anomalocardia*, as the main material for mound building is that this species provides more volume, and more quickly as compared to mussel gathering. If one observes the great mud banks in today's environment, one will find huge concentrations of clams. On the other hand, mussels and oysters were gathered at the mangrove's roots, which meant they were more difficult to gather.

So far, the difference between the great sambaquis and the small sambaquis can be considered as a result of the availability of bivalve species, the consequent choice of 'building material', and the size of the human group related to that event.

Nevertheless, this model requires more refined data from the sambaquis: dating more layers to estimate the rate of growing of those sites, and analyzing the lines of growth from the valves of each layer to verify if they were collected during the same season.

As stated above, fishing was the main source of food gathering in the sambaquian economy and a range of studies was made on the archaeoichthyological remains. The research on the fish remains became relatively intense since the 'sambaqui made by fisherman' model was established, and provide enough data for a broader comparison.

The fish bones found in the sambaqui usually count for 90% of the vertebrate remains, and they represent a large variety with dozens of identified fish species. However, just a few of these were the main resources of the sambaquis. Usually the most frequent and numerous were sea-catfish (*Ariidae*), croakers and drums (*Scienidae*), and grunts (*Haemulidae*). The Chondrichthyes or cartilaginous fish, rays and sharks, are frequently present but it is very difficult to evaluate their importance in the sambaqui diet.



Comparison among a dozen sambaqui ichthyofaunal analyses seems to suggest the following (Figuti, 1998):

- The types of fish exploited at all these sites are generally small individuals (less than 20 cm long), which are incompatible to the fish gear (projectiles) that was found. This leads to the possible use of nets and other forms of traps.
- The predominant fish species are those species that are locally available all year round. Fish species that were only seasonally abundant, were much less exploited. This suggests the existence of year round settlements and a low investment in fishing gear or in the production of fishing nets specialized to catch one species.
- The sambaquis in a same area show a very similar composition in species and percentages, despite great temporal differences, which reflects the environmental stability and the cultural/technological stability of the Sambaquians.

Other animal remains of aquatic vertebrates such as sea mammals (dolphins, whales), turtles and alligators are much less common, but not rare. The terrestrial fauna is represented by the frequent but scarce remains of mammals (peccaries, deer, monkeys, armadillos, opossums, raccoons) and lizards (tegu) from the rainforest. Birds are relatively rare.

Apparently food sources from hunting complemented the sambaqui diet. If we consider the great importance of terrestrial mammal bones and teeth in the artifacts industry, they seem to be relatively fundamental to the sambaqui economy as a whole.

The Mound of the Dead and other stories

The amassing of such great amounts of faunal remains related to feeding is a peculiarity of these sites, but there is no logical explanation for that practice. As Gaspar (1998) says, 'If the habit had been associated only with building up the land in flood areas, this could be not explain it's continuing once a dry platform had been obtained, nor this habit recurring even in areas protected from water, such as on slopes'.

The sambaqui seem to be the manifestation of many aspects of the funerary activities of the sambaqui society.

As observed above, the shell gathering and accumulation are purposely arranged for burial preparation and deposition. Intensive research in the sambaqui Jabuticabeira II (Klokler, 2008; Nishida, 2007; Villagrán, 2008) have shown the complex disposition of shell layers related to the burials. Among them one feature was especially intriguing: the pockets of dark sediment around the burials, which are composed of fish bones, ashes and charcoal. That singular context has been interpreted as a funerary feasting remains, since the zooarchaeological analysis indicates that the regular shell layer samples have less than 50 fish and the burial pocket samples has more than 100 fish.



Also the preliminary estimation by Fish (2000) of the number of burials leads to some astonishing figures for Jabuticabeira II:

- Estimated sambaqui volume: 320000 m³. Estimated extent: 700 yr;
- Estimated number of burials: 43840;
- Burials per year: 63.

These estimations indicate an important demographic density to the sambaqui, which can be supported by the environmental and technological resources available. The archaeological indicators for complexity in hunter gatherers societies suggested by Arnold (1996) are high demographic density, monumental works (sambaquis?), presence of specialized craft, prestige material (zoólitos?) and rank (burials with differentiated treatments?). Are we dealing with complex societies? Given the profusion of sizes, forms and types of composition of the sambaquis, this won't be an easy answer yet.

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The Chinchorro mummies: waiting to return to life?



Gary Urton

INTRODUCTION

How should we approach the question: What did the Chinchorro people think they were doing when they mummified the bodies of their dead? Can we even be certain that this is a relevant question to ask of this society, which occupied the north coast of what is today Chile, beginning around 9000 BP? That is, can one necessarily assume that the long line of Chinchorro technicians and ritual specialists who crafted these mummies over a period of some 5,700 years (Arriaza, 1995, pp. 126-132) were collectively aware of and could articulate a common set of ontological principles and ideological, or what we might term 'moral', values that motivated and directed their actions in artificially mummifying their dead? Even a moment's reflection will make one aware that attempting to account for what people in the past intended by their actions, particularly when they themselves did not leave an accounting of their intentions (e.g. in written texts), is to confront ourselves in a particularly poignant way with the core ambiguity at the heart of the archaeological interpretive enterprise: since artifacts cannot speak for themselves, how might we speak for them?

In addition to this general conundrum, there are two other potentially problematic assumptions embedded in the question posed at the beginning of the previous paragraph. For instance, why should we assume that the object of the manipulations and restorative activities realized in the production of the Chinchorro mummies were the 'bodies' of the dead, rather than, for instance, the 'souls' of the deceased? And secondly, how can we be certain that the mummified bodies found in the area associated today with the Chinchorro culture were, indeed, the remains of Chinchorro peoples? Perhaps some of the bodies were those of outsiders, even enemies. These are just a few of the topics on which doubts may arise as we set about trying to formulate sensible and meaningful interpretations of these remarkable objects—the Chinchorro mummies—that were interred in the Pacific coastal desert of South America from around 9000 to 3500 BP.



In discussing the Chinchorro mummies, I state from the outset that anyone who hopes to address such complex material in a serious way must take as a point of departure the excellent and insightful interpretive works of Bernardo Arriaza (1995) and Arriaza and Vivien Standen (2008, 2009). These two scholars have spent years closely studying the Chinchorro natural and artificial mummies, as well as the archaeological contexts from which the mummies were recovered. Their publications provide critical insights for further speculations on the Chinchorro mummies and, therefore, I make frequent reference in what follows to Arriaza and Standen's publications. But these comments beg the question: What new approach might one hope to make in interpreting the Chinchorro mummies, particularly by a person –like the author– who has not had the advantage of years of close study of these objects?

Briefly, my argument herein is the following. This ancient tradition of mummification challenges us to consider Chinchorro ideas about the nature of and the relationship between life and death, as well as the significance of transformations of bodily forms in the course of the life cycle, as these states and statuses were conceived of and experienced by the Chinchorro peoples themselves. From what we can observe in terms of 'post-life' manipulations of bodies in Chinchorro mummification practices, the bodies of the dead (including fetuses and children) were subjected to complex procedures of de-composition, artificial re-construction and, finally, coating or sealing, with black or red paint or a mud paste (Arriaza and Standen, 2007). My assumption is that the bodies of the Chinchorro dead were manipulated and re-worked into such life-like forms to serve the social needs and interests of the living. In particular, I assume that these procedures were aimed at the perpetuation of Chinchorro society - that is, maintaining and rationalizing the existing social order.

This interpretation draws directly from observations and reflections on the social significance of death and death rituals in Robert Hertz's brilliant essay, '*A Contribution to the Study of the Collective Representation of Death*' (1960 [1907]). For instance, discussing the practice, common among Native American peoples, of constructing ossuaries for the storage of the bones of the dead, Hertz comments that '*{b}uman bones... contain the germ of a future existence, and must therefore be treasured as security for the continued existence of the group*' (1960, p. 70). From his comparative studies, Hertz found that the actual bones of the deceased are often intimately linked with the souls of defunct members of society (1960, pp. 68-9). Such an association could have important implications for our thinking about what Chinchorro specialists in mummification may have supposed was at issue in their manipulation of the bones of the dead.

Drawing further on Hertz's insights, we find that the transition from the living to the status of 'the dead' is often conceived of, by analogy, as comparable to the passage through other transitional stages in the life cycle. Most notably, death is often likened both to birth and to initiation (from childhood into adulthood), as these events represented crucial times of transition and transformation in the identity and status



of individuals. These observations are consistent with Hertz's findings to the effect that, in many societies, ceremonies celebrating death emphasize the notion that death is not final, but rather, that the dead may once again arise and inhabit the world of the living; that is, much of the preoccupation with death and the dead centers on the hope for and expectation of the resurrection and transformation to a new state of the dead. Following this association through the wide range of beliefs and forms of ritual activity linked to death in societies around the world, Hertz argued that what we could term biological, or physical, death is often compared with or projected onto initiation, in the sense that, in initiation, youths are considered to die and to be reborn into a new state of being. As Hertz phrased the matter:

'This statement is not a mere metaphor; if death, for the collective consciousness, is indeed the passage from the visible society to the invisible, it is also a step exactly analogous to that by which a youth is withdrawn from the company of women and introduced into that of adult men. This new integration, which gives the individual access to the sacred mysteries of the tribe, also implies a profound change in his personality, a renewal of his body and soul that gives him the religious and moral capacity he needs. The similarity of the two phenomena is so fundamental that this change is often brought about by the pretended death of the aspirant, followed by his resurrection into a superior life'. (Hertz, 1960, p. 80).

The interpretive position I take from the foregoing is that, just as youths are forced to withdraw from society at the time of initiation in the process of which they undergo what is conceived of as a social death and the subsequent transformation of the body (i.e. from an adolescent to a mature state), so too were the dead removed from Chinchorro society and, through artificial mummification, the bodies were renewed and placed in what we could term a suspended state of (potential) animation and transformation. It is on the basis of this analogy between initiation and death that I constructed the conceit in the sub-title of this paper: *'Waiting to Return to Life'*. I suggest that the Chinchorro mummies were conceived of as having been placed in a state of transition, or prepared for the transformation of re-birth, much like youths who undergo rites of initiation are considered to be reborn into adult status. According to this interpretation, the dead were waiting to re-enter the social world where they would once again play active roles in the constitution and perpetuation of Chinchorro society. In short, the Chinchorro mummies are not evidence of a preoccupation with death, but rather, with re-birth and life.

The interpretation I am developing herein is similar in certain respects to one articulated by Bernardo Arriaza. In his view: *'...Chinchorro mummification practices can be interpreted as a system to achieve continuity with life, rather than regeneration of life ...In other words, in Chinchorro ideology, the dead became an extension of the living ...That is, artificial mummification provided a resting place for the soul and therefore the mummies were considered living entities'*. (1995, p. 30).



The principal difference between Arriaza's interpretation and my own has precisely to do with the question of regeneration. Arriaza rejects a focus on regeneration primarily, it appears, because he disagrees with the emphasis placed on that concept by Bloch and Parry (1982). The latter had argued not only that death was a positive force in the generation of life, but that the ancestors held the knowledge and the power of fecundity and regeneration and that this was the explanation for the worship of the dead—specifically, the ancestors. Arriaza sees a greater degree of integration and continuity between the worlds of the living and the dead than is suggested by Bloch and Parry. My own view on this is to emphasize the importance of regeneration but of a different quality than that proposed by Bloch and Parry. That is, I would emphasize the importance of regeneration as realized in processes of renewal, or rebirth, the prime social instance of which would be the transition from an earlier status to a later one along a continuum of multiple transformations. This would be realized in the cycle from birth, through initiation, on to death—and, with rebirth, around again (and again). Thus, I am arguing for an emphasis on transformation within a long-term process of multiple life phases, or stages, rather than regeneration as realized in the context of a hierarchical notion of a unique, specialized force or source of knowledge and (generative) power.

SEEKING ANALOGIES FOR INTERPRETING THE CHINCHORRO MUMMIES

The interpretive orientation on the Chinchorro mummies laid out in stark outline above emerged over several months of study and my development and reflection on the Andean context of the Chinchorro mummies. Initially, I had the notion that the most relevant analogies in Andean societies would be drawn from the record—both textual and archaeological—of Inka mummies. Another potential source of analogies contemporary with the Inka material might have been the collection of more than 220 well-preserved mummies found in the northern Peruvian Chachapoyas area, at the site of Laguna de los Cóndores (Guillén, 1999), a collection with which I had gained some familiarity from my earlier studies of the *kipus* found at this site (Urton, 2001). As my reading and research expanded, however, my attention turned increasingly to the information pertaining to the initiation rituals and myths among early modern peoples of southern Patagonia and Tierra del Fuego during the late nineteenth and early twentieth centuries, especially the Selk'nam and their neighbors to the south, the Haush (formerly known, respectively, as Ona and Yamana), both of whom occupied the island called Isla Grande.

Two items, or sets of materials, from the Selk'nam, Haush and other Southern Cone of South America peoples struck me as particularly relevant and interesting for thinking about possible analogies for, if not (pre-)historical links to, the Chinchorro mummies. One pertains to Selk'nam initiation; the other to myths relating to birth and death. Although there are reasonably extensive materials drawn from societies other than the Selk'nam, nonetheless, the richest and most in depth anthropological



material (both ethnographic and archaeological) derives from the works of travelers, archaeologists and early ethnographers who visited, and in some cases lived for long periods of time among, the Selk'nam (McEwan *et al.*, 1997). Included among the latter were the remarkable ethnographic researches of the German anthropologist and priest, Martín Gusinde (1886-1969). Gusinde had traveled and lived among the Selk'nam from around 1918 to 1923, and he (famously) participated in the male initiation ritual conducted within one remnant Selk'nam community in 1923. Additional recent ethnographic work among the Selk'nam was carried out in the 1960s-1980s by the American anthropologist Anne Chapman who, unfortunately, died in Paris a few months before this article was written (see Chapman, 2008a, 2008b).

The focus of much of the research on the Selk'nam by Gusinde, Chapman, and others was the great male initiation ritual, the *Hain* (see Chapman, 2002). In brief, during the Hain, uninitiated boys were removed from their households and taken to a hut in the woods, just off a cleared ceremonial area. In the hut, the young men were subjected to terrifying encounters with a variety of (supposed) spirits and ancestral beings who were impersonated by adult Selk'nam men. The men wore a variety of different types of headgear and their bodies were painted in a rich array of primarily geometrical configurations. Hain was the setting for the rituals that brought about the transformation of boys into adult men. The core event of initiation was the separation of the boys from their mothers and their subsequent introduction to secret traditions that explained and rationalized the dominance of men over women in Selk'nam society. These events and transformative processes of initiation were directed and overseen by the cast of characters who visited the community during the Hain from the spirit world (Figures 1, 2).

One extraordinary aspect of Selk'nam initiation rituals was the focus on the body as the site of transformation from childhood to adulthood. This included exposing the boys to extremes of hunger and cold, aggressively pushing them around, tugging violently on their penises, painting their bodies and, in some cases, covering the body of one of the boys, who was referred to as *K'terrnen*, with the down feathers of sparrow hawks, or owls (Chapman, 2008b, pp. 140-144; Figure 3). What struck me most powerfully in studying the literature, and a large number of late nineteenth and early twentieth century photographs from the Hain (Alvarado P. *et al.*, 2007), were a few remarkable similarities in the appearance of the painted bodies of Selk'nam adults and youths during Hain ritual celebrations, on one hand, and certain of the Chinchorro mummies, on the other (Figures 4, 5). The question that these similarities raised for me was: Might there have been some deep cultural (i.e. religious, ritual, social, ideological) connection between these two South American societies, one, that of the ancient Chinchorro peoples of the Pacific coast of northern Chile, in which there was a strong emphasis on death and mummification, and the other, the early modern (now extinct) Selk'nam of Tierra del



Figure 1. Subordinate *Sboorts* - Aggressive Spirits Attendant at Selk'nam *Hain* Ceremonies. (From Chapman, 2008b, Fig. 32; photograph by Martín Gusinde, 1923).

Fuego, that emphasized an elaborate tradition of initiation? I return to consider this question below.

The second body of materials that seemed to point in the direction of a connection between Selk'nam and Chinchorro societies came from a reading of Selk'nam myths relating to the origins of birth and death. These myths, especially a series concerning the Selk'nam culture hero, *Kenós's*, creation of humanity and his later attempts to die, seemed to point in the direction of significant and meaningful linkages between thoughts about the nature of birth, death, and transformations between different stages in the life cycle, especially initiation. The mythological traditions in question are included in the compendium of myths collected by Martín Gusinde and translated into English by the great anthropologist and folklorist, Johannes Wilbert (Wilbert, 1975). Before turning to the Selk'nam myths, it will be important to provide a general overview of the types of mummies that characterize the Chinchorro tradition as a basis for later considering the possible linkages between the mummies and Selk'nam myths of life and death.

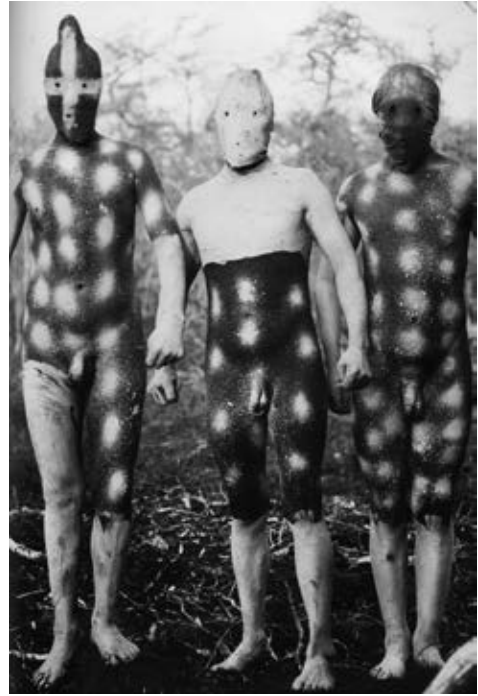


Figure 2. *Kataix* ('Horned Clown') - *Hain* Spirit (From Chapman, 2008b, Fig. 38).





Figure 3. K'ternmen, 'Baby' Initiate, Reborn in Hain Ceremony (From Chapman, 2008b, Fig. 37; photograph by Martín Gusinde).



Figure 4. Ulen ('The Elegant Clown') - Hain Spirit (From Chapman, 2008b, Fig 44; photograph by Martín Gusinde, 1923).



Figure 5. Chinchorro Black Mummy with Red and Yellowish Strips (thought to be an adolescent) (From Arriaza, 1995, Plate 19; drawing by D. Kendrick-Murdock).

THE CHINCHORRO MUMMIES: 5,500 YEARS OF TRANSFORMING AND PRESERVING THE DEAD

We cannot go into extensive detail here in describing the range of types of body manipulation undertaken in the production of mummies. This job has been done admirably by Bernardo Arriaza (this volume, and 1995) and his colleagues (see esp. Arriaza and Standen, 2008, 2009). In summary, there were two basic types of mummification undertaken in preserving bodies in the Chinchorro tradition: natural and artificial. In the former, the body was prepared for burial and was placed in the ground. This involved wrapping the cadaver in a reed mat or camelid skin, or covering the body with mud, and burying it in an extended position (Arriaza, 1995,



p. 17). The extremely arid conditions of the coastal desert of what is today northern Chile accomplished the desiccation and, hence, preservation (i.e. mummification), of the body. In artificial mummification, or what Arriaza terms ‘complex treatment’, more extensive interventions were undertaken on the body. That is: ‘... *bodies {were} artificially preserved by removing all of the internal organs, filling the cavities with human or animal hair and grass, and stitching the incisions. The deceased was painted with earth colors, usually red, a human hair wig was added, and the body was then buried in an extended position*’. (Arriaza, 1995, p. 7).

There were several different types of artificial mummies, including black, red, mud-coated and bandage mummies. The earliest and arguably most complex of the artificial mummies were the black mummies, which were constructed over the period from around 7000 to 5000 BP (Arriaza, 1995, p. 129). These were made by completely skinning and disarticulating the cadaver and removing the organs and muscles. The skeleton was then rearticulated and was reinforced with sticks and totora reeds. The newly formed body was stuffed with various materials, the skin was rolled back into place, and the whole construction was painted with a layer of black-blue manganese paint. The mummies were often given wigs and the faces –and occasionally the genitals– were modeled in clay and painted as well (Arriaza and Standen, 2008, p. 80). The red mummies, which appeared around 4000 BP and continued for around 500 years, while elaborate, were not as technically intricate as the black mummies. The bandage mummies were a variation of the red mummies, but in which the skin was reattached not in sheets, but in bandage-like strips and painted red. Finally, the mud-coated mummies, which, as the name implies, were dried and covered with a layer of mud, were produced from around 4600-3700 BP (Arriaza and Standen, 2008, p. 81).

Again, I ask the question posed at the beginning of this article: What did the Chinchorro ritual specialists and technicians think –and think about what– they were doing when they constructed these extraordinary objects? As I argued earlier, I think the most productive place to turn in thinking about these questions is to the material from peoples farther to the south of the Chinchorro homeland, in Patagonia and Tierra del Fuego. Rich ethnographic records inform us on such matters as how the Selk’nam conceived of life, death, bodies and transformations of individuals in the course of life - i.e. including the passage to death.

SELK’NAM MYTHS OF THE ORIGINS OF BIRTH AND DEATH

How did life and death come about in Selk’nam cosmological thinking? And what, if anything, do Selk’nam ideas on these matters have to do with the Chinchorro mummification tradition? I will return to address these questions after presenting a few, core myths from the collection made by Martín Gusinde (see Wilbert, 1975).



a) The Origin of Humans, or: ‘How the Ancestors Came to Be’

This myth concerns *Kenós*, an important mythological figure whom Gusinde’s informants characterized as an intermediary between *Temáukel*, ‘Someone-up-there’ (which Gusinde glosses as ‘Highest Being’) and the inhabitants of earth.

‘When Kenós had wandered over the whole wide world he came back here. This land he gave to the Selknam. In those days Kenós was all alone. No one else was on the earth. He looked about him, and then went to a wet (swampy {Gusinde’s gloss}) place. Here he dug out báruwenbhos (lumps of mud with matted roots, grass tufts with the earth sticking to them) and squeezed out the water. From this he formed a seés (male sexual organ) which he placed upon the ground. Then he dug out another lump of mud from which he likewise squeezed the water, and from it formed an áskén (female sexual organ). This he put beside the first. Kenós now left those two objects there and went away. During the night the two lumps of earth joined. From this rose ... something (looking) just like a human being: kórke hówenh pená = the first ancestor. Those two objects of earth now separated but remained lying there, one beside the other. The someone, however, grew big at once (into a fully developed person). During the following night the two objects of earth joined again. Again someone arose instantly...’ (Wilbert, 1975, pp. 21-22).

The myth proceeds to describe how the ancestors of the Selk’nam emerged slowly, over time, in the process recounted above. In this myth, mud is projected as the substance from which humanity was first created. Conceived of as a highly fecund matter, mud may have been conceived by Chinchorro peoples as a powerful, regenerative substance which might bring about the regeneration, or resurrection of the dead. Coated in fecund mud, like the damp, swampy earth (*báruwenbhos*) out of which the first Selk’nam ancestors were created, the mud-coated mummies (Figure 6) might have been considered prepared for re-birth.

b) The origin of Death, or: ‘How Kenós Brought New Life to the Old Ones’

Once humans were created, they walked around Selk’nam territory and lived out their lives. The problem that emerged over time was: How could humans –the Ancestors– achieve death? The process, arrived at by *Kenós*, is explained in the following myth:

‘Kenós had been on earth for a long time. Three men stayed close to him, following him everywhere. The four were found together almost all the time. When Kenós reached old age there were already many ancestors. Then Kenós tried to fall into a long sleep (transformation sleep {Gusinde’s gloss}). He tried this again and again and finally succeeded. He lay like dead. The three other men tried the same. They also lay down without moving. They lay that way for a long time and sleep came over them. They did not die, however, but soon rose again, to find themselves exactly as before.’ (Wilbert, 1975, p. 23).





Figure 6. Chinchorro Mud-Coated Mummy (From Arriaza, 1995, Plate 18; photography by V. Standen).

The myth now recounts that, in their attempt to reach a state of death, Kenós and his three companions walked from where they were, in the south of Selk'nam territory, to the north. They dragged themselves slowly along, speaking feebly and in low voices. The myth continues:

'Toiling onward they reached the north, and there they let the other people wrap them in their mantles and put them into the ground (Gusinde adds here, in a footnote: "they underwent the same treatment as a dead body at a burial"). Now these four men remained lying there completely motionless; they were really like dead. But after just a few days they began to stir. They moved slowly, a little at first, then more. Next, they started to move their lips. They whispered a little, spoke first in a low voice, then louder. Finally they rose up and stood erect, gazing upon one another. Those other people had watched all this happening in their midst. Much surprised, each looked the four men over carefully. Then they rejoiced for those who had come back to life again. All the people had wept very much over those four, mourning them deeply, so that now their joy was the greater. The four men lived from that moment on, feeling well, fresh once more, and wholly youthful. They had finally succeeded (i.e., in dying and being reborn)!' (Wilbert, 1975, pp. 23-24).



These circumstances, in which the dead returned to life after passing through a ‘transformation sleep’, were not to go on forever. As another myth collected by Gusinde details the matter, death, as a continuous state (of non-being), came about when the older of a pair of brothers (both named Kwányip) died and, as he began to awaken from his death sleep, his younger brother, who was a powerful shaman (*xon*) approached his older brother’s sleeping body. ‘{The younger} *Kaányip* gathered his entire power as *xon*, straining at his labors: his brother was not to rise and come alive! And so the elder *Kwányip* woke no more’ (Wilbert, 1975, p. 37). From that time forward, the dead were no longer able to awaken from the sleep of death. Despised by the people for bringing death as a state of transformation to an end (i.e. thereby causing permanent death), the younger Kwányip painted his body red and went into the sky, where he became ‘that red star up there in the sky’ (Wilbert, 1975, p. 38).

The myths recounted here provide insights into Selk’nam ontological conceptions on the origins of life and death and the transformative forces of different material substances. Materiality emerges as a critical component of these conceptions. It is the swampy mud (*báruwenbhos*) mixed with roots, grass and earth –like the material often stuffed into the Chinchorro mummies (Arriaza and Standen, 2008, p. 80)– that contains the qualities of animation, complementary sexual attraction, and the property of seemingly inexhaustible replication which the first myth projects as the forces responsible for the creation and reproduction of human (i.e. Selk’nam) life. At the other end of the life cycle, Kenós and his mates are wrapped in guanaco (*lama guanicoe*) hide mantles as they are prepared to enter the transformative sleep of death. The Selk’nam are said to have commonly wrapped the dead in guanaco hides before disposing of them in the ground (Prieto, 1997, p. 175). The guanaco was one of the principal animals hunted by the Selk’nam and other peoples of the Fuegian-Patagonian steppe-lands.

It is on the basis of the above characteristics associated with life, death and transformation among the Selk’nam that I suggest that this hunting and gathering society at the southern tip of South America of the late nineteenth and early twentieth centuries is a productive place for us to seek analogies for attempting to account for the values, beliefs and ideological principles that motivated the transformation of dead bodies in the tradition of Chinchorro mummification of a much remoter time period in the past.

THE LINK BETWEEN ARCHAEOLOGICAL AND HISTORICAL CULTURES

The reader may justifiably be curious at this point exactly what kind and degree of connection I am proposing between the Chinchorro and the Selk’nam. More pointedly, can it be supposed that the ancestors of the latter were culturally and genetically related to the former in the distant past? Addressing this critical question in a detailed way is beyond the scope of this paper. Nonetheless, by way of laying out a hypothesis for further study, I argue below for a close connection between these two



ancient populations. The point of departure for such an argument is the peopling of the continent of South America.

As we have learned from the archaeological investigations carried out by Tom Dillehay at the site of Monte Verde (Adovasio and Pedler, 1997; Dillehay, 1997) on the central coast of what is today Chile, hunting and gathering populations occupied the Chilean littoral zone beginning by at least ca. 13,000 BP. The presumption of every model of the peopling of the continent of South America that I am familiar with, from Paul Martin's 'blitzkrieg' model (1973) to Dillehay's proposals relating to Monte Verde, is that ancient Amerindian populations entered the continent from the north, either by land or by sea, and moved inexorably southward. When resources allowed them to do so, these early settlers remained in place, exploiting a given environment, or they continued to move southward, ultimately filling up the continent. The Chinchorro peoples, who occupied the central and north coastal strip of Chile were presumably one such group of these early settlers who became adapted to the exploitation of the littoral zone and the riverine resources of that region, by ca. 11,000 BP (Arriaza, 1995).

In the region of southern Patagonia and Tierra del Fuego at this time, we have very good archaeological evidence of Early Man sites from the Selk'nam home territory, the island called Isla Grande. That is, in the 1930s and later in 1969-70, the American archaeologist Junius Bird carried out extensive investigations at several cave sites (i.e. Fell's Cave, Palli Aike, Cerro Sota Cave and Mylodon Cave) in what came to be Selk'nam territory (see Bird, 1988). At Fell's Cave, for instance, Bird found extensive evidence of Early Man activities (i.e. chipped stone points, burins, blades, etc.) beginning around 11,500 BP. The question that is of utmost interest to us here is: Were the peoples who occupied the region on and around Isla Grande in 11,500 BP the ancestors of the peoples who were encountered by Europeans in this region from the seventeenth to the nineteenth century and who were first known as Ona and Yamana and later (respectively) the Selk'nam and Hausch? This was the principal research question of a project carried out by a team of archaeologists, beginning in 1981 (Massone *et al.*, 1993). While the results of this research were not definitive, Massone and colleagues identified numerous similarities in the material culture, adaptation to a hunting and gathering lifestyle and general use of the land between the ancient inhabitants of the region and the historic Selk'nam and their neighbors (Massone, 1993, pp. 33-40).

The generalized suggestions for a connection between the Selk'nam and Chinchorro people suffers from the great stretch of time that separates the two societies. The critical question that this chronological separation raises is whether or not there are grounds for arguing that the Selk'nam might have been descended from much earlier inhabitants of the continent of South America, even from those earliest settlers who occupied such sites as Monte Verde and the coastal sites of the Chinchorro peoples. In fact, such evidence does exist; this is in an exceptionally important study of mitochondrial DNA lineages in extinct populations from Tierra del Fuego-Patagonia



(Lalueza *et al.*, 1997). This study proceeded by extracting DNA from the bones and teeth of sixty individuals from four extinct (i.e. late nineteenth-early twentieth century) groups in the region noted: Selknam, Yamana, Kaweskar and Aonikenk. Analysis of the mitochondrial DNA (mtDNA) of these individuals showed a complete absence of two of the four primary mitochondrial haplotype groups present in contemporary Amerindians. That is, of the four haplotype groups –A, B, C, and D– the Fuegian-Patagonian individuals carried only groups C and D. Haplogroups A and B were not recognized in any of the southern individuals. Lalueza *et al.* cautiously conclude that ‘...the initial Paleoindian settlers, at least those migrating into South America, possibly lacked haplogroups A and B’ [i.e. like the Selk’nam and the three other Fuegian-Patagonian groups sampled] (1997, p. 44). The authors go on to state that: ‘...the exclusive presence of lineages C and D at the Southern extreme of the continent traces back to a population of more ancient ancestry, distinct from those Amerind populations harboring all four primary mtDNA lineages and spread out through North, Central and, partially, South America’. (Lalueza *et al.*, 1997, p. 45).

Thus, it appears from the study of Selk’nam, Yamana, Kaweskar and Aonikenk mtDNA cited above that the ancestors of these peoples, who were driven to extinction in the late nineteenth and early twentieth centuries, were indeed descendants of (some of) the most ancient settlers who moved into the continent during the initial peopling of the continent. It is not unreasonable, therefore, to suggest a possible ancestral link between the Selk’nam and Chinchorro peoples, as we have argued in this paper.

In conclusion, there may well have been significant continuity in the genetic and cultural identities of peoples in the region of Isla Grande and elsewhere in the Fuegian-Patagonian area from ca. 11,500 BP until the early twentieth century, when the Selk’nam and their neighbors were virtually exterminated by Europeans (McEwan *et al.*, 1997). The basic elements of this theoretical construction are represented in the accompanying chronological table (Aldunate and Gallardo, 1997; Figure 7), which shows close relations, if not continuity, between archaeological and historical societies in Chile.

It was in the early twentieth century when the German priest Martín Gusinde collected the myths recounted above of Selk’nam beliefs about the origins of humans and of death. These myths, I suggest, chronicle beliefs whose antiquity went back to the more northerly ancestors of the Selk’nam from a much earlier time – the Chinchorro peoples of north and central coastal Chile who preserved their dead in the transformative forms of natural and artificial mummies.

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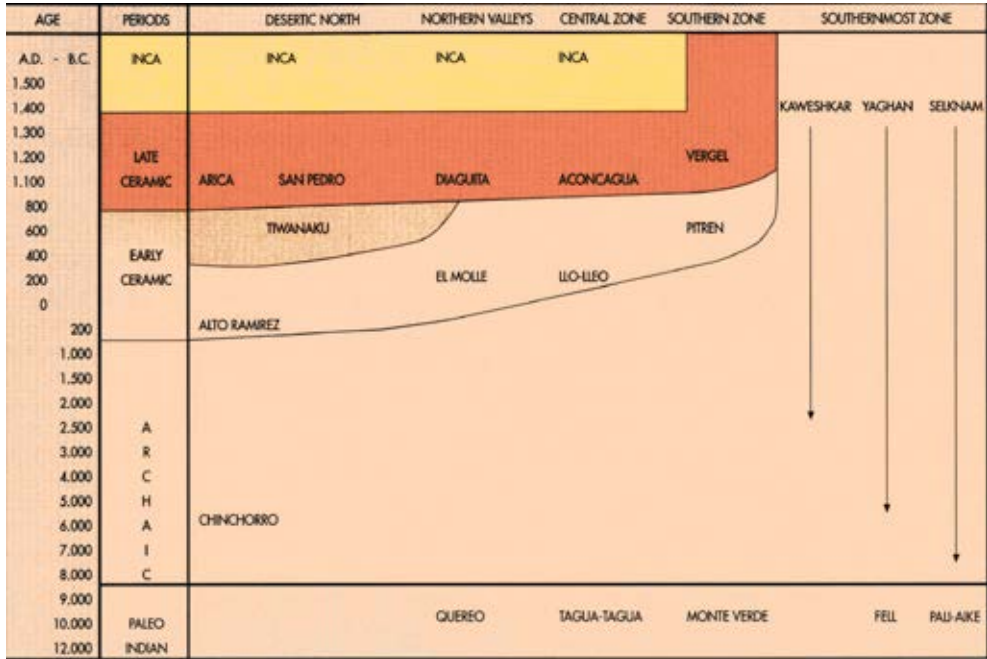


Figure 7. Chronological Chart Showing Relationship between Archaeological Cultures and Historic Patagonian/Fuegian Cultural Groups (From Aldunate and Gallardo, 1997, p. 4).

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Chinchorro mortuary ritual and the thesis against “hunter-gatherer” religions



Edward Swenson

INTRODUCTION

‘Intriguing’, ‘exceptional’, ‘enigmatic’, and ‘remarkable’ are the common stock of words employed to describe the Chinchorro culture, semi-sedentary communities of pisciculturalists that inhabited the arid Atacama coast of Northern Chile from 9000-3500 BP (Allison *et al.*, 1984; Arriaza, 1995*a*, pp. 15-17, 1995*b*, 1998; Arriaza *et al.*, 2005; Bitmann, 1982; Moseley, 1992, p. 93; Rivera, 1994; Schiappacasse, 1994; Standen, 1997; Wise, 1994). The sophisticated mummification practices of this long-lasting cultural tradition can account for the popularity of adjectives expressing the incomparable qualities of this archaeological culture. The Chinchorro have been cast as anomalous for complex mortuary treatments and eschatologies are considered highly uncharacteristic of non-hierarchical and economically undifferentiated societies of this kind (Binford, 1971; Chapman and Randsborg, 1981; O’Shea, 1981, 1984 - see discussion by Arriaza, 1998, pp. 192-193; Woodburn, 1982). Certainly the point of this paper is not to uncritically reject the thesis of Chinchorro exceptionalism, and I endorse the mission of this volume to foster recognition of the Chinchorro as an extraordinary cultural-historical resource of universal outstanding value deserving of international scholarly attention. However, I argue that simply accepting (or ‘explaining away’) the Chinchorro as ‘exceptional’ in terms of its poor fit with preconceived typological categories represents an unsatisfactory solution to central problems in anthropological inquiry. Instead, an investigation of this culture’s mortuary practices and religious beliefs is of special ‘outstanding’ value in revealing fundamental deficiencies in cultural, ecological and evolutionary theories that continue to be widely employed in archaeological investigations of hunter-gather, semi-sedentary, or generically conceived ‘egalitarian’ societies. Indeed, all cultures are exceptional, and the deployment of the comparative method in anthropology is imperative. Not simply to explain cross-cultural commonalities, but to interpret and properly contextualize the historical particulars of past social formations (Gregor and Tuzin, 2001).



In adopting such a comparative perspective and by mobilizing the Chinchorro database as a specific case-study, the main thesis of my paper is to refute the unequivocal existence of 'hunter-gatherer religions' as a singular complex, an antiquated assumption that subsistence and economic infrastructure pre-determine worldview and the permutations and varied materializations of ritual praxis. To be sure, most archaeologists would agree that the Chinchorro defy classification as hunter-gatherers in the pure sense of the term; intense exploitation of rich fishing grounds enabled protracted periods of sedentism and permitted communities to invest time, labour and resources into complex mortuary practices and the propagation of highly elaborate religious beliefs (Allison *et al.*, 1984; Arriaza, 1994, 1995*a*, 1998; Arriaza *et al.*, 2005; Standen, 1997). Nevertheless, this very reasonable perspective still implies that ritualism is largely prefigured by economic and ecological factors, a viewpoint that tends to sideline the theological, cosmological, and cultural dimensions of the Chinchorro mortuary ritual as sociologically unimportant or simply unknowable. Although subsistence strategies are far from irrelevant, and they unquestionably set certain preconditions for the nature of religious exegesis in particular societies, the former alone constitutes a poor explanation for the nature of spiritualism and ritual performance in past societies (Mathias, 1997; Woodburn, 1982). I argue that investigations of the Chinchorro mummy complex should not be restricted to functionalist interpretations which reduce mortuary ritual to passive reflections of the politico-economic organization of hunter-gatherers (and on this point I am in complete agreement with the excellent interpretations offered by Arriaza, 1995*a*, 1998). Nor should it be confined to extreme constructivist (culture-based) analyses wherein the Chinchorro phenomenon is understood as one of the earliest manifestations of an enduring 'structure of practice' peculiar to the Andes. Although somewhat sympathetic to the latter perspective, archaeologists must be wary of essentializing the Chinchorro as an ancient relic of an unchanging Andean religious and political ethos predicated on the worship and curation of the physical remains of deceased ancestors. Of course, long-term continuities in religion and social organization are both intriguing and in the realm of possibility, but the interpretive pitfalls of reductive *lo andino* models require recognition and critical scrutiny (see Salman and Zoomers, 2003). In the end, the Chinchorro phenomenon can only be fully appreciated through an examination of its historically distinctive characteristics. Therefore, I propose that archaeologists investigating the Chinchorro mummification practices would benefit from a consideration of new developments in ritual theory, frameworks rarely applied to archaeological cultures of this kind given preconceived biases on the streamlined and ecologically calibrated religions of band-level, hunter-gatherer societies (Woodburn, 1982). Theories that explore the prediscursive and embodied aspects of a ritual as a mode of action could be of particular value in interpreting some of the more elusive meanings, spiritual dimensions, and political implications of Chinchorro mortuary rites (Bell, 1992; Dornan, 2004; Handelman, 2005; Houseman and Severi, 1998; Swenson, 2008, 2010; Wyszogrod, 1990).



THE ARCHAEOLOGY OF HUNTER-GATHERER RELIGIONS: FUNCTIONALISM TRIUMPHANT

For many in archaeology, Durkheim's (1965) theories provide the principal source of inspiration for interpreting ancient religious practices: material residues of past ceremonial events are analyzed in terms of social function, whether 'integratively' benign or more cynically as ideology. The reduction of religion to ideology constitutes a Marxian variant of functionalist theory; belief systems and their codification are interpreted simply as instruments of social control that lead to greater complexity or the institutionalization of social memory and collective identity (Bloch and Parry, 1982; see Morris, 1987). Functionalist and evolutionary studies of ritual in archaeology are problematic in that inference is reduced to *measuring* quantifiable political inequality, social integration, ecological adaptation, or economic development from homogenized ceremonial contexts (see Swenson, 2008). That is, prehistoric religion is investigated simply as a mirror of (or a mystification of) social structure and ecological adaptation. How ritualization as a mode of action actually empowered, divided, impressed, and transformed is deemed less important than its role in passively gauging changes in socio-political organization and productive relations (ultimately in *a posteriori* fashion) (Swenson, 2008).

Archaeologists interested in the religion of hunter-gatherer societies in particular, commonly adopt a cultural ecological theory or rely on cognitive psychological approaches that explore neuropsychological structures of the 'mind-brain' (Lewis-Williams, 2008; Winkelman, 2008; Whitely and Hays-Gilpin, 2008). Unfortunately, perspectives of this kind are highly suspect, for ritual practice is reduced to an epiphenomenal instrument of adaptation. Although equating ritual with adaptive behaviour would seem to invest the former with considerable power, evolutionist frameworks commonly treat religious behaviour as a mere reflection and regulator of structure (or psychology) as opposed to a potential vehicle for the critical contemplation and transformation of society itself (Graves and Ladefoged, 1995; Rappaport, 1971). For instance, Winkelman (2008) regards shamanism as the universal substratum of hunter-gatherer religions and as the original mode of ritual intercession. In his view, its origins can be found in the evolution of the paleo-mammalian and neo-mammalian brain, and ecstatic, altered states of consciousness fulfilled emotional and therapeutic needs as well promoted social solidarity and thus the 'inclusive fitness' of the species. Such generalizations pitched as scientific truth completely ignore the fact that ritual experience commonly instils fear, dread and anxiety or serves as a critical medium of 'meta-social commentary', heightened awareness, social reversal, experimentation, and political contestation (Apter, 1994; Bell, 1992; Crapanzano, 1981; Geertz, 1973; Turner, 1967, 1982, 1990, p. 8).

Moreover, these explanations are generated in a complete historical and cultural vacuum and elide the fact that contemporary hunter-gathers defined by 'shamanic



religions' (which Winkelman (2008) believes provide modern-day analogues for ancient Paleolithic and hunter-gatherer religions) were significantly transformed by colonial encroachment or interactions with sedentary societies (Thomas and Humphrey, 1996; Woodburn, 1982). The common association of shamanism with improvisation, creativity, political resistance, sorcery, identity politics and ambivalent social status (Francfort and Hamayon, 2003; Hamayon, 2003; Kendall, 1985; Vitebsky, 1996; Whitehead, 2002) is explained away as the adulteration of primordial ecstatic religions with the formation of class-based societies. Simplistic analytical dichotomies and an air of primitivism prevail (even if romanticized in the spirit of Rousseau), whereby hunter-gathers serve as the natural representatives of pure human thought, behaviour and ultimately religious belief (see critique by Kehoe, 1999). In fact, many scholars have shown that ecstatic religious programs are not emblematic of an unstructured society but are promoted in response to the oppressive demands of 'excess' structure (Thomas and Humphrey, 1996). Anthropologists have analyzed possession and shamanistic trances among disenfranchised groups as a form of subaltern empowerment and rebellion against increasing social constraints (Comaroff and Comaroff, 1991; see also Weber, 1965). The implicit acceptance of evolutionary and functionalist schemes has led archaeologists to uncritically view all hunter-gatherer societies as intrinsically shamanistic to that point that Bahn (2003) has referred to archaeologists as 'shamaniacs'. Rock art painting and other religious paraphernalia are assumed to represent the visions and tools of the shaman if the subsistence of the society in question was based on foraging. The culturally specific and possibly polyvalent meanings, efficacy, and spiritual underpinnings of such representations are ignored or downplayed as a consequence. As Smith's contribution to the volume demonstrates, both hunting magic and shamanistic religious practices were completely absent among the diverse foraging communities of aboriginal Australia, many of which adapted to desert environments similar to the Chinchorros. Elaborate mortuary rituals of indigenous Australians, orchestrated through formally choreographed movements in sacred space (geographic totemism), further illustrate the nuance and complexity of hunter-gather religious practices (see also Charlesworth *et al.*, 2005).

An uneasy spirit of primitivism, and even elitism in certain instances, also inheres in many cognitive psychological interpretations increasingly popular in neo-evolutionist thought (see Whitehouse and Laidlaw, 2007; Whitley and Hays-Gilpin, 2008). For instance, the religious beliefs of both hunter-gatherers and commoners in stratified societies have been identified as 'cognitively optimal' as opposed to the cognitively costly theological musings of elites or religious specialists in complex societies (Whitehouse, 2004). Cognitively optimal refers to the formulation of religious representations that are economical, intellectually unchallenging, intuitive, and pragmatic, while cognitively costly designates thought processes that are highly counter-intuitive and require an investment of memory and interpretation. Cognitivists argue that religious concepts resonating with innate dispositions of cognition are more likely



to succeed and spread. Thus, Sperber's (1996) 'epidemiology of representations' posits that religious representations which fit inputs of evolved cognitive modules developed in their original domains (hunter-gatherer subsistence in the Pleistocene environment) will prosper and proliferate, while those which lack such a fit will more likely disappear. As a result, the pervasiveness and spread of certain beliefs can be charted historically to a substratum of representations that conform to innate dispositions and neurologically determined cognitive processes. Such popular and cognitively optimal modes of 'representation' of supernatural agency (upon which all religious thought is based for cognitive psychologists) contrasts with the 'cognitively costly' ratiocination of elites who alone interpret the philosophical and cosmological significance of complex theological concepts, including the 'trinity' or 'nirvana', subjects of little interest to everyday householders, peasants, commoners, etc. (see Barrett, 1999; Whitehouse, 2004). Therefore, the elites in hierarchical polities are identified with reflexive thought and theological exegesis while hunter-gatherers are implicitly placed closer to nature, their religious understandings conforming to cognitive intuition and common-sense functionalist assumptions on supernatural causation (Lanman, 2007). Although anthropologists have long been interested in 'popular religion', few would seek to explain socially variegated religious practices in terms of neurologically-based cognitive processes, a position I also find highly untenable. A vast ethnographic literature demonstrates that political, social, and economic variables account for the differentiation of popular and institutional forms of religion - and that the popular can be equally esoteric and far removed from functionalist pragmatics, as the Chinchorro case-study seems to strongly indicate (and a point compellingly made by Arriaza, 1995a). In considering more 'egalitarian societies', how could the complex cosmologies and ritual practices of the Sambia of Papua New Guinea (Herdt, 1993) or the funerary rites of the Wari of Brazil (Conklin, 2001) be viewed as adaptive or 'cognitively optimal' representations (see also Lan, 1985)?

Certainly, the prevalence of animistic beliefs, shamanistic practices, animal imagery, and 'naturalistic worldviews' in foraging societies has been traditionally interpreted as reflecting the interpenetration of hunter-gatherer subsistence practices with the rhythms of the natural environment (Godelier, 1978; Mathias, 1997; Steadman, 2009; Woodburn, 1982). In a similar manner, the absence of private-property (moveable wealth), inheritance protocols, and ascribed positions of authority in African hunter-gatherer societies is thought to explain the lack of ritual investment in the formal disposal of the dead as well as the relative dearth of codified beliefs in the causes and social consequences of death. Woodburn (1982, pp. 204-209) describes foraging societies holding such practical attitudes toward mortality as grounded in 'immediate-return' economic systems, unlike the 'delayed-return' economies of more complex hunter-gatherers, pastoralists, and sedentary agriculturalists. The latter are all characterized by more elaborate funerary rites and beliefs in the afterlife. The 'presentist' orientation of immediate-return foragers precludes interest in the past or future (afterlife) thus



accounting for the rarity of symbolic linkages between death, fertility, and socio-natural reproduction common in agricultural communities (see Bloch and Parry, 1982). Once again, the Chinchorro confound such economic rationalizations. Despite the rich fishing-grounds of the Atacama coast, there is little evidence to suggest that Chinchorro subsistence could be defined strictly as a delayed-return economy.

The predominance of animistic cosmologies in foraging culture is also thought to confirm the egalitarian nature of their social relations. In Durkheimian fashion, high-ranking deities could only be found in stratified polities, for the religious system inevitably reflects, legitimizes, and sacralises the presiding social structure. Although materialist and ecological variables are certainly deserving of consideration (as Woodburn's comparative study would indicate), relegating the religious to the superstructure, whereby ritual practices follow in lock-step the demands of economic and social reality, is often unsubstantiated by ethnographic case studies. For instance, material explanations fail to account for the practice of funerary cannibalism among the Wari' of the Amazon (Conklin, 2001). Even if such rites reinforced relations between affines, the rationale for such practice derives principally from symbolic and cosmological precepts that defy tidy functionalist or sociological explanations.

Bernardo Arriaza (1995*a*, 1995*b*, 1998), who has synthesized the most comprehensive survey of the ancient Chinchorro, has rightly criticized the shortcomings and poor explanatory power of cultural ecological and materialist interpretations. His foregrounding of symbolism, aesthetics, emotion, and grief in interpreting Chinchorro mummification practices is both refreshing and convincing (see also Tarlow, 2000). Simply explaining variations in mortuary treatments among these early fisher folk as reflecting social inequalities or as expressing the intensification of competition over territory and resources obviously fails to capture their full nuance and cultural and religious significance (Rivera, 1991; Standen, 1997; Wise, 1994). Building on Arriaza's important contributions, I argue that our understanding of the Chinchorro phenomenon would benefit from a consideration of new developments in the anthropology of ritual as a particular form of practice or action centered on the body (Joyce, 2005; Meskell, 1999; Price, 2008). This important theoretical corpus has been largely ignored by archaeologists interested in hunter-gatherer religion given the implicit adherence to cultural-ecological and functionalist models critiqued above. In the following section, I suggest how theoretical insights concerned with ritual as embodied action could ideally shed new light on the significance and meaning of Chinchorro rites of mummification.

RITUAL THEORY AND CHINCHORRO MORTUARY PRACTICES: THE SEARCH FOR MEANING IN PRACTICE

Adopting a practice approach to the study of ritual as inspired by Bourdieu and Giddens, Catherine Bell (1992, 1997) argues that 'meaning' (whether religious, political, or otherwise) can be generated within the framework of ritual and is not simply *a*



priori. In other words, ritualization entails formalized performances that qualitatively distinguish and differently valorize action (and often their performers) in relation to habitual practices. Although on first inspection this theoretical positions appears to reinvent Eurocentric theoretical distinctions between the sacred and profane, Bell notes that that ritual's differentiating and valorizing power does not always entail a move from the realm of the mundane to the sacred, nor is it simply predetermined by rigidly codified liturgies or widely shared belief systems. Ritualization as practice is also rarely divorced from the realm of the quotidian (Bradley, 2005). Other anthropologists emphasizing ritual as a mode of action have shown that religious meaning is often polysemic, ambiguous, and paradoxical; ritual acts invite a multitude of possible significations with diverse political and social repercussions (Gerholm, 1984; Houseman and Severi, 1998; Humphrey and Laidlaw, 2004). In other words, and to reiterate, the meaning of ritual is not always prior to but emergent in ritual action. This is not to say that beliefs never come first or that rituals do not commonly entail the following of liturgical scripts - where rites can be understood as myths in action, i.e. 'mythopraxis'. Nonetheless, foregrounding ritual as practice or embodied action demonstrates the complexity of religious experience in its political, cultural, and social aspects. Cross-culturally, the ritual is an extraordinarily diverse phenomenon that is variably articulated as grand theatre or in the context of everyday activities, such as prayer, agricultural rites, food preparation, etc. However, a ritual is almost universally characterized by a peculiar disconnect between action and normative intention and is defined as a mode or quality of practice that is performatively and symbolically enhanced (Humphrey and Laidlaw, 2004). As Bradley (2005, p. 33) notes, '*ritualization is both a way of acting which reveals some of the dominant concerns of society, and a process by which certain parts of life are selected and provided with an added emphasis*'. In truth, archaeologists should move beyond narrow symbolist views of the ritual that cast it '*as concerned primarily with expression and communication of meaning rather than with 'doing' things*' (Gerholm, 1988, p. 198). As Brück (1999, p. 326) contends, '*cosmologies are not abstract ideological/ symbolic systems but enable people to understand the world and to get on it by providing a logic for action and an explanation for the universe*'. '*Any practical action is also symbolic because it reproduces the sets of values and social relations which are embedded in cosmological schemes*'. Certainly, the aesthetic and symbolically charged qualities of a ceremony are largely created through theatrical *performance* involving the embodied and affective ballet of rule-governed encounters (Bateson, 1986; Bell, 1997, pp. 158-159; Bloch, 1989; Cohen, 1981; Swenson, 2006, 2007a, 2007b, 2008; Tambiah, 1990; Turner, 1982). As many theorists have shown, the ritual, as a common vehicle of signification and efficacious transformation, is predicated on dramaturgical displays centered on the body that propagate an aesthetic which inculcates experience as authentic and real (whether just 'felt', rationalized, or both). However, what is actually communicated, signified, or accomplished through the phenomenology of rite varies according to the intentions and subjectivity of the individual in question (Gerholm, 1988; Humphrey



and Laidlaw, 2004). Indeed, the meanings, if any, ascribed to the sensual and experiential framework of ritual performance can vary considerably from subject to subject, even among socially related individuals who share a general cultural understanding of the connotations and intended function of a specific ceremony.

Despite the inherent difficulties interpreting the dialectics of structure and practice as relates to the Chinchorro mortuary rites, it could be argued that a great deal of attention has been paid to the former at the expense of the latter. This is rather ironic, for the new directions in ritual theory briefly detailed above, hold great potential for archaeological inquiry given that *'archaeology studies the remains of people's actions and practices, rather than the underlying meanings to which these practices referred'* (Nilsson Stutz, 2008, p. 163; see also Fogelin, 2007). In fact, the techniques and artistic actions of the mortician that transformed and reconstituted the cadaver into black, red, and statuette mummies should be understood as key rituals in and of themselves - practices that no doubt reproduced and transformed structures relating to widely shared cosmologies, eschatologies, and indigenous theories on pollution, decomposition, and the afterlife. That is to say, the embodied aspects of Chinchorro ceremony are relevant both to the remains of the mummy and to the actual gestures, skills, and technologies of skilled morticians who were likely viewed as preeminent ritual specialists. The detailed reconstructions by Arriaza, Standen, Allison, and others on how different mummies were prepared and embalmed point to a fascinating and highly elaborate *chaîne opératoire* (Dietler and Herbich, 1998; Lemmonier, 1986) of ritually mediated mortuary practices. Variations within such embodied sequences of symbolically charged and potentially dangerous acts might aid in fine-tuning our understanding of political and cultural diversity within the larger Chinchorro horizon. In other words, a focus on the ritual as an embodied action might reveal that 'structures of practice' among the Chinchorro were possibly multiple and dynamic. To be sure, this culture has been invariably interpreted as highly conservative, changing little over the course of more than 3,000 years, beyond the three broad phases indexed by changing mummification practices and fishing technologies (Arriaza, 1995a). Radiometric analysis demonstrating the co-existence of natural and artificial mummification is certainly suggestive, revealing that the body served as polyvalent symbol in Chinchorro culture (Arriaza *et al.*, 2005).

Perhaps most significantly, emphasizing the transformative power of the mortician acting through her or his body on the deceased subject offers an interpretive base from which to formulate more robust inferences on Chinchorro symbolic schemes and systems of ideas related to death and the afterlife (Joyce, 2005). A focus on practice permits transcendence of purely sociological arguments that privilege the socially integrative and functional role of ceremony in the tradition of Durkheim (see critique above). As Arriaza notes (1995a, pp. 98-99): *'To make these black mummies, the body was altered to such an extreme that they were converted into sophisticated statues or death images because of the reinforcement of their inner skeletal structure and removal of most of the soft tissue. They were literally disassembled and reconstructed bodies'*. This process of methodical disassembly and



reconstruction - entailing the smoking of the cadaver, evisceration, skin removal and replacement, bone filing and reinforcement with sticks, modeling of facial features, and coating of the body with ash paste and manganese-based plaster - finds no parallel in the ancient Andes (Figure 1). Although divergent practices do not necessarily imply radical differences in beliefs (and archaeologists will always grapple with issues of equafinality in interpretations of structure-practice dialectics), the extraordinary *chaîne opératoire* of the mummification process points to cultural constructions of spirituality and the afterlife that diverged significantly from later mortuary traditions in the Andes. Although I do not discount the possibility of long-term continuities in Andean ancestor veneration, the Chinchorro rites of mummification strike me as far removed from Late Horizon *huaca* worship and mummy bundle cults.

Isbell has also challenged archaeologists who uncritically force Andean mortuary evidence into the mold of Inka ancestor worship and funerary ritual (Isbell, 1997, pp. 101-111). From the Formative Period (3800 BP) to the time of the conquest, mummification,

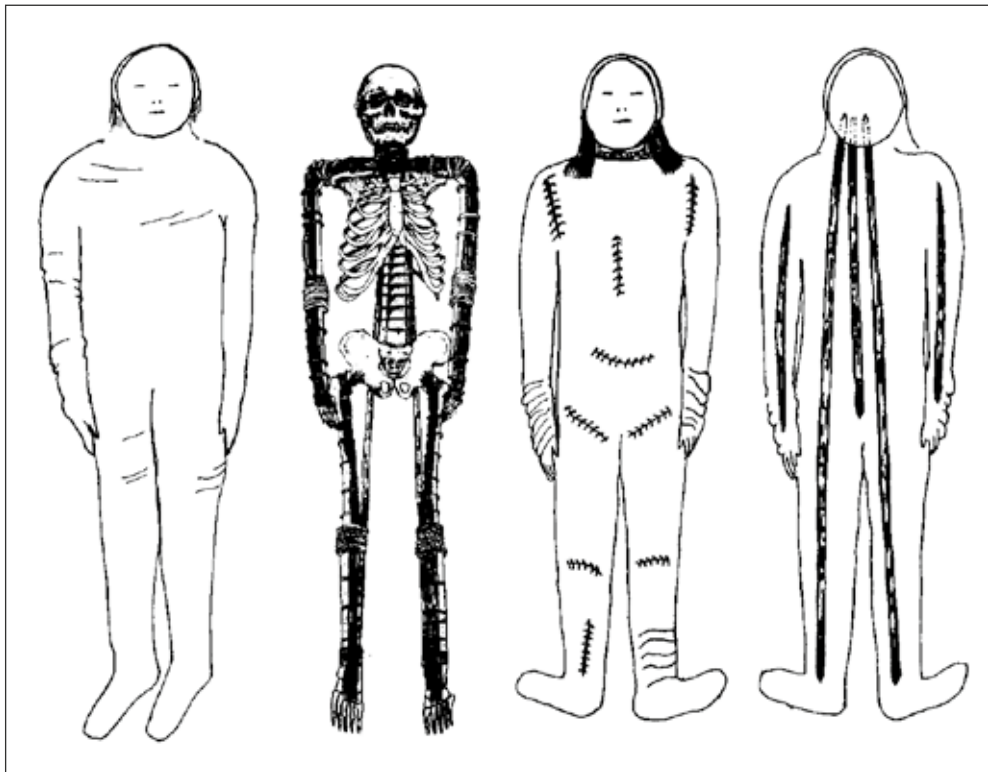


Figure 1. External and internal body modifications of a Black and Red Mummy. Redrawn from Arriaza, 1995a: Figure 1.



corpse visibility/accessibility, and elaborate rituals of secondary treatment have been recorded; nevertheless, the sheer variety of divergent practices ('choices' and 'techniques' determining the sequence of mortuary treatment) are staggering and just as significant as the perceived similarities (Dillehay, 1995; Rowe, 1995). It is misleading to impose the same meaning and function to distinct mortuary complexes simply on the basis that they are 'Andean' and thus presumably structurally and culturally congruent. In fact, little research has been undertaken to explain why certain polities in the Andes practiced exclusively primary interment (such as the Moche and Chimú of the North Coast of Peru), while secondary treatment predominated in many others societies (as among the Nasca and Paracas cultures).

Of course, secondary treatment of the deceased is commonly interpreted as indicating the importance of ancestor worship in the belief systems of different societies: the dead remain vital social actors in order to bestow legitimacy on the living; their visibility and continued participation in social life ensure rights to the communal resources of the group in question, sanction the current power structures, and provide a medium of communication with divine forces (Gose, 1996; MacCormack, 1991; Salomon and Urioste, 1991). In fact, Isbell (1997) argues that archaeological evidence of mummification, secondary manipulation of the corpse, and large stone *chullpa* burial towers (open sepulchres) in which mummies were displayed and temporarily stored constitute material signatures of *ayllu* social organization –the economic, ritual, kin, and land-holding corporation common to the Andes at the time of the conquest (Figure 2).¹ Contrary to conventional theory, Isbell contends that the *ayllu* did not represent an ancient and 'essential' feature of the Andean civilization, but that its appearance and dissemination was more recent and a product of resistance to state formation beginning in the second century AD in the Altiplano region (Isbell, 1997, p. 113). For Isbell, ancestor veneration as evinced by corpse accessibility and open tombs expressed principles of exclusion, group solidarity, ownership, and boundary formation (Isbell, 1997, pp. 135-138). In light of his critique of processualist approaches, it is ironic that he adopts a narrow sociological framework of interpretation; Isbell downplays the cultural and symbolic context of mummy curation and *ayllu* social organization.

Evidence of repainting and the perceived mobility of Chinchorro mummies also suggest that they were not immediately buried after their preparation and that they continued to play an important and highly visible role in the religious and political life of Chinchorro communities - a fact that would seem to weaken Isbell's original thesis. However, as Arriaza (1995a) has cogently argued, archaeological signatures of secondary treatment, in which the cadaver appears to have been accessible to the living, do not simply point

1 Although varying in scale and organization, the typical Andean *ayllu* consisted of nested, homologous and dyadic social units centered on the worship of a founding progenitor ('*huaca*').





Figure 2. Chullpa Towers from the Sillustani region, Peru (lower register), and a depiction by Guaman Poma de Ayala of the feeding and worship of the remains of deceased ancestors in the Collasuyu province of the Inka empire (top register) (Guaman Poma de Ayala 1980: ill 293).



to the veneration of ancestors as a sociopolitical institution. Instead, open sepulchres, mummification, secondary interment, or evidence of incomplete burial may in fact be related to liminal rituals of ancestralization, in which protracted time periods (often years after death) are required before the deceased becomes a complete spiritual entity - an entity that may no longer have played as active a social role among the living (as in later Andean

societies). Rituals of this kind relate to Hertz's interpretation that the body represents a natural symbol and that its secondary manipulation is an effective way of both representing and socializing death (Hertz, 1960; Metcalf and Huntington, 1991, p. 34).

Hertz (1960) argued that differing cultural rationalizations of death were inevitably the product of three sets of relationships (often termed the 'Hertzian triangle'): the relationship between 'the living and the mourners' and 'the corpse and the burial' (which accounts for differentiation of social personae and scale of rites); the relationship between the living and the mourners and 'the soul and the dead' (which would determine the 'procession of rites and transformations of personae'); and finally, the relationship between the corpse and the burial and the soul and the dead (which would be implicated in the 'form and symbolism of rites') (David, 1992, 1995, pp. 182-183; Metcalf and Huntington, 1991, p. 66). David is critical of the disproportionate attention paid to the first relationship by archaeologists and warns that the two other sides of the triangle could have had an equal or greater effect in shaping the material form and symbolic content of mortuary rites. He states: *'The archaeology of death ought not to be limited to mortuary sociology but should also*



embrace its symbolic component, the process of ancestralization and the ideological transformations involved in the realization of any particular Hertzian triangle' (David, 1992, p. 184, 1995).² Of course, Hertzian inspired interpretations have been criticized for projecting the specifics of secondary burial treatment from the Southeast Asian context to other cultures and for distilling certain suites of practices (say the 'scale of a ceremony') to an exclusively sociological function (see Bloch and Parry, 1982, pp. 4-6). Nevertheless, the Hertzian triangle can still serve as a useful heuristic given its sensitivity to issues of meaning, practice, and social structure (the latter of which Hertz admittedly prioritized, having been a student of Durkheim).

Anthropologists have long recognized that death represents the ultimate rite of passage in many societies, and that perceptions of the corpse, decay, and decomposition play a significant role in the structuring of mortuary ritual (Turner, 1967; Van Gennep, 1960, pp. 146-165). For Turner, the process of rotting and dissolution is inherently liminal, not only symbolizing the period of transition from human to spirit/ancestor/non-person (depending on the culture in question) but also serving as a metaphor for social and moral transition. The liminal phase of 'death' (decomposition, ancestralization - the third relationship of the Hertzian triangle) is perceived as a necessary process in which society is reintegrated without the lost member (thus possibly reinforcing the primary, sociological side of the triangle).

As Arriaza (1995a) has argued, the Chinchorro mummification practices appear to have performed rites of both social reproduction and liminal transition involving the reconstitution of the 'spiritual' essence of the dead (Metcalf and Huntington, 1991, p. 113). In fact, the unique features of this early mortuary complex strongly suggest that rites of liminal transformation were of greater significance than in later Andean mortuary traditions. The complex, post-mortem social life of the Chinchorro, involving resubjectification as death statues, display and veneration in encampments, and then interment in cemeteries that simulated the intimate social and family relations of the living, points to a conceptual and cosmological framework far removed from the worship of *huacas* - mummified apical ancestors and progenitors of *ayllus* common at the time of the conquest. As many archaeologists have noted, the Chinchorro are unique for artificial mummification was not reserved for elders, elites, or community founders, but was widely practiced on all members of society, including fetuses, children and women (Muñoz *et al.*, 1993; Schiappacasse and Niemeyer, 1984). The special attention paid to children is particularly intriguing, and the archaeological record from Camarones 14 and 17 suggests that the earliest evidence for mummification among the Chinchorro

2 Metcalf and Huntington, who were among the first to demonstrate the value of the Hertzian approach, argue that symbolic and social factors (and their interrelationship) must be given equal attention: '*The separate developments of the sociological and symbolic aspects of Hertz's work serve to point out how specialized anthropology has become in certain decades*' (Metcalf and Huntington, 1991, p. 35).





Figure 3. Children mummies of the Chinchorro culture from the Museo Arqueológico Universidad de Tarapacá, Arica, Chile. Left-hand register: Sin número, Caso 42, 6 to 12 months old; Right-hand register: T23C10, Caso 19, 0 to 6 months old. See also Arriaza and Standen, 2009: 78-81, 136-139. Photographs by author.

(7050 BP) targeted infants exclusively (Arriaza, 1995a, pp. 59-60; Muñoz *et al.*, 1993; Schiappacasse and Niemeyer, 1984) (Figure 3). Indeed, the emphasis placed on children is particularly fascinating, and traditionally anthropologists have argued that they were rarely the subject of elaborate funerary ritual, especially among foraging societies, given high infant mortality rates in the past and their incomplete ‘human’ socialization (see MacFarlane, 1982; Stone, 1977; Woodburn, 1982). Similarly, a dramatic decrease in infant mortality has been correlated to intensified emotional reactions and formal ritual responses to child fatalities (MacFarlane, 1982). However, this position ignores both the cultural construction of childhood (as status, ontological category, etc.) and emotion more generally speaking (see Humphreys, 1981; Tarlow, 2000; see below).³

3 In stressing the function of funerary rituals to mend the social fabric and realign structural roles disrupted by the death of a community member, Hertz wrote: ‘*the death of a stranger, a slave, or a child will go almost unnoticed; it will arouse no emotion, occasion no ritual*’. (Hertz, 1960, pp. 76, 84; emphasis added). Obviously the Chinchorro database contradicts this classic assertion.



The mummification of children indicates that the conceptions of the afterlife, spirituality, and death were peculiar to the Chinchorro, and that our search for meaning must rely on analogues beyond Inka or generic 'Andean' models. In some cultures, death is analogized to rebirth and understood as a reciprocal passage of spiritual entities from one realm to another, often construed in a relationship of complementary inversion (or even predicated on mutual exchanges of predatory consumption - see Conklin, 2001; Viveiros de Castro, 1992 and Urton this volume). Conception is interpreted as the return of ancestral spirits to the wombs of child-bearing mothers, while death involves the passage of spirits to the land of the ancestors, perhaps on a temporary basis and before re-entering the world as new-born babies (Bloch and Parry, 1982; Malinowski, 1974; Strathern, 1981). In such worldviews, infants are often perceived as closer to ancestral or natural forces and thus require both spiritual and cultural socialization (even humanization) in order to become fully integrated into the realm of the living. Such processes of socialization are often consummated through initiation rites that logically replicate the symbolism of seemingly interminable cycles of death and rebirth (Bloch and Parry, 1982). For instance, in ritualized headhunting raids among the Qaqachaka of Bolivia and in various regions of the Amazon, women played a significant role in 'curating' and metamorphosing heads of enemy warriors captured by men (Arnold and Hastorf, 2008; Arnold and Yapita, 2006). The preparation and embalming of these disembodied heads would transubstantiate enemy spirits residing within the severed skulls into the souls of new babies of the women's respective communities. The ambivalent and transitional status of newborns is exemplified by the belief that they initially continue to harbor allegiances to their former communities (of enemy warriors) and are treated harshly as a consequence.

Although the Qaqachaka curation of enemy heads has little to do with Chinchorro mummification practices, it still can serve as an illuminating analogy to comprehend the original focus on infant mummification. Perhaps the early mummification of foetuses and children among the Chinchorro served as recognition of the supernatural and liminal qualities of the young; their transformation and preservation as statuettes were deemed necessary to ward off dangerous and malevolent powers engendered by their premature death and to compensate for their arrested spirit-to-human gestation. Interestingly, the ambivalent feelings toward the death of a child and their differential post-mortem treatment have been documented for other societies, including in the Andes. Among the Laymi of Bolivia, the spirit of an unbaptized infant is viewed as harmful to crops and the living, unlike the souls of recently deceased adults who ultimately contribute to community and natural fertility (Harris, 1982, p. 64). Certain groups of the south-central Andean highlands also recognized the perilous powers of infant remains, and the skulls of aborted foetuses were employed to protect crops and ward off malign spirits (Arnold and Hastorf, 2008, pp. 113-144). Therefore, it is possible that the ritual practices of the Chinchorro morticians and subsequent mortuary rites ensured completion of the interrupted passage of stillborns and deceased children



- even if the passage was one of reversal, facilitating a return to the realm of ancestral spirits. At the same time, the child mummy might have been conceived as an ideal interlocutor with supernatural forces given the betwixt and between status of these 'life-like' death icons. That is to say, the suspended if humanly remedied liminal state of subadult mummies rendered them powerful mediators with the divine. In truth, the idiom of transformation is paramount in Chinchorro artificial mummification; cooking the body, eviscerating organs, crafting visually arresting death masks, among other intricate ritual techniques, speak to a direct need to intervene in the metamorphic process of death and rebirth and to see to completion possibly interrupted rites of passage (including 'social' birth or spiritual rebirth). As Arriaza (1995a, p. 59) notes: *'It appears initially {that the Chinchorro} gave more emphasis to those who never achieved their potential, like seeds that never germinated. When a fish catches a small fish, it is customary to return it to the ocean for a second chance at life. This image fits aptly the Chinchorro preparing their dead children for a secondary chance'*. Such practices contrast sharply with secondary burial customs documented in other regions of the world, wherein the corruption of the corpse and its later reassembly after decomposition paralleled the slow, multi-staged transformation of spirit(s) as they travelled hesitantly to the netherworld (Metcalf and Huntington, 1991). In fact, it seems highly unlikely that Chinchorro mummification can be equated to a desire to extend life as lived by mortals; instead it may have been implicated in maintaining strict boundaries between the living and the dead.

Arriaza's focus on grief, fear, and compassion are compelling, but the cultural and cosmological inflection of human emotions requires careful consideration (Humphreys, 1981; Tarlow, 2001). As previously mentioned, the mummification of foetal bones and infants indicate that concepts pertaining to ancestors and the afterlife differed considerably from those held by Andean people at the time of the conquest. Certainly, upon the death of a notable *kuraka* or related individual, a transition was recognized and ritualistically executed; extended mourning rites and corpse preparations were variably observed in ethnohistorically recorded cultures of the Andes (Dillehay, 1995; Ramirez, 1998; see Urton, this volume). However, a systematic objectification and resubjectification of the deceased was not undertaken to the extent documented for the Chinchorro. In fact, the mummified ancestors in the central highlands during the Late Horizon continued to bestow advice, divine the future as oracles, fertilize the fields of their living kin, and ensure the well-being of their descendants (Figure 2). Care and feeding of the huacas (*malquis*) was the responsibility of the living, and a symbiotic relationship of mutual reciprocity and respect prevailed. The embalming of the dead entailed the physical and metaphorical desiccation of the corpse - a process that rendered the ancestor analogous to a generative seed that would draw water, moisture, and life-giving energies to his or her descendants (Gose, 1993, 1996). At the time of the conquest, the death of a powerful individual involved a transformation in power, identity, and ontological condition, but one that was predicated on continuity in genealogy, persona, and social status of the deceased figure in question (for a somewhat



similar situation among the Greeks see Vernant, 1982). This pertained especially to elite notables, in which mummy curation rites maintained the individual identity (*camaquen*-spirit) of the deceased figure in question (Gose, 1993). In contrast, the Andean equivalent of soul (*upani*) of lower status *ayllu* members did not serve their communities as huacas but were insatiably drawn to the watery ancestral realm of Upaimarca (the Pacific Ocean or Lake Titicaca) (Duviols, 1978). This journey entailed a process of indifferentiation and loss of individual and kinship identity (Gose, 1993, pp. 500-505). Such a transformation is reminiscent of rites of secondary burial and skeletal reassembly in Madagascar; the rotting of flesh represented the negation of the individual and its divisive connotations among the Merina, while the incorporation of the dried bones of the dead in the ancestral tomb affirmed the endurance of the social collective as a unified, moral, and homogenous force (Bloch, 1971; Bloch and Parry, 1982).

In contrast to later Andean practices centered on prestigious *ayllu* members, the process of transformation engineered by the Chinchorro morticians seems to have been rooted in a radical alteration in the subjectivity of the defunct - where a literal objectification of the body was necessary to permit spiritual transition and identity reconstitution (Figure 3). In fact, an intermediate status of the 'abject', where the recently dead were viewed as dangerous, socially destabilizing, and cosmologically aberrant, might account for the methodical and systematic disassembly and recreation of corpses among the Chinchorro. As stated above, this interpretation could very well explain the special treatment devoted to subadult individuals in the early phases of the Chinchorro sequence. Nilsson's (2008, p. 167) argument that the handling of bodies in all mortuary rites 'involves passage of the corpse from abject to object' and thus the successful separation of the living from an increasingly objectified or externalized ancestor is not supported by the Inka or related Andean practices, where continued communion as opposed to separation prevailed. However, her theory is perhaps to interpreting the Chinchorro database. Nevertheless, Arriaza (1995*a*) and others have noted that the open mouths of the red mummies among the Chinchorro reveals that they were possibly fed, feted, and incorporated into the rituals and routines of the living, similar to the *malquis* of later Andean *ayllus* (Figure 3). Although this is a reasonable inference, the rather homogenous treatment of the earlier black mummies -in which a generic image of death was reconciled with certain individualizing features of the corpses, especially sex roles- indicates that mummification functioned in part to revert the spirits of the deceased into collective ancestral or spiritual condition (as opposed to a strictly personalized or kin-specific ancestral status). In fact, the rather inexpressive and hauntingly passive gaze of the modeled plaster masks, which endured throughout the Chinchorro sequence, argues against the post-mortem maintenance of individual roles and identities (Arriaza and Standen, 2009) (Figure 3). The boundaries between the living and the dead appear to have been more rigidly maintained for the Chinchorro despite possibly frequent rites of communion as indicated by the



accessibility and mobility of the mummies. The eventual burial of the ‘death statues’ implies that a complicated trajectory of objectification, resubjectification, integration with the living, and final separation characterized the complex and protracted mortuary rites of the Chinchorro.

It is especially telling that many Chinchorro mummies (including infants) were wrapped in camelid hides or pelican skin bandages and were interred with elaborate wigs (Figure 3). Animal skins, camelid wool, and vegetable fibers were also commonly sewn into their cured and reconstructed bodies (Arriaza, 1995*a*; Arriaza and Standen, 2009). The literal *incorporation* of adult hair and animal remains strongly suggest that the newly engineered identity of the deceased did not conform to an ancestralized individual who retained mortal social roles or qualities. Instead it points to a radical overhaul in the character and power of the Chinchorro dead, who possibly became fertility agents and ritual conduits for (super) natural forces. As previously stated, the original mummification of children would indicate that the Chinchorro perceived them as intrinsically liminal beings in an animated state of metamorphosis, possibly encapsulating the blended, dangerous, and yet to be differentiated qualities of animal, human, and sacred. The interweaving of animal parts, pelican skin wrappings, masks, and adult hair would support this argument. However it is impossible to determine whether the artful resubjectification of the mummies intended to harness and channel these possibly ambivalent powers or whether they served to neutralized and negate them in the end.

CONCLUDING REMARKS

The interpretation that artificial mummification among the Chinchorro constituted a unique force of luminal transformation dissimilar to later Andean practices requires future testing and refinement. However, more nuanced investigations of the *chaîne opératoire* of mummification as a form of embodied ritual practice will ideally advance understanding of the distinct spiritual and eschatological underpinnings of Chinchorro mortuary ceremony. It should further aid in the interpretation of the spatial and temporal variability of Chinchorro mummification practices (and possible variations in the underlying significance and purposes of artificial corpse remodelling). Indeed, this fascinating and long-lasting cultural tradition demonstrates that there is no such thing as a hunter-gatherer religion writ large. Of course, most anthropologists would agree with this rhetorical statement, but it serves to emphasize the dangers of reducing hunter-gather ceremonialism to functionalist explanations or materialist theoretical frameworks. Although most likely aligned with Chinchorro understandings of subsistence and perceptions of the natural world, their elaborate treatment of the dead appears to have been largely independent of economic forces. At the same, the religious complex cannot be interpreted as representing one of the earliest forms of Andean huaca or ancestor veneration. As the above analysis demonstrates, Chinchorro



funerary rites and artificial preparation of the dead differed on many accounts from later Andean ancestor worship.

To conclude, the Chinchorro culture forces us to reappraise the shortcomings of both functionalist theories and problematic *lo andino* explanatory models that continue to dominate studies of religion in both non-stratified social formations and Andean prehistoric contexts respectively. The outstanding universal value of this archaeological culture does not simply lie in the exceptional artistry and beauty of the mummies or in the extraordinary occurrence of elaborate funerary rituals within an egalitarian society adapted to one of the harshest desert environments in the world. The Chinchorro are also of incomparable value in exposing deficiencies in archaeological interpretations of the belief systems, mortuary practices, and ritual traditions of ancient foraging communities.

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Neolithic plastered skulls from Tell Aswad (Syria). A funerary tradition in the Near East



Danielle Stordeur

INTRODUCTION

There is a funerary practice, present across time and space that is found on virtually every continent (Aufderheide, 2009). It consists of restoring the appearance of a living person to the skull of a corpse by applying a plaster mask, often painted, which represents a face. The earliest evidence of this practice has been discovered in a clearly defined region of the Near East: the southern Levant. Here, a fairly uniform cultural tradition connects a group of sites occupied by agriculturalist-pastoralists who settled in large villages between 9200 and 8000 BP.¹ But both in the prehistoric Near East and in other historical and archaeological settings, this custom is rare. It was still being practised in Oceania some 50 years ago. However, while almost everywhere it was the skull alone, removed from the skeleton, which was paid this homage, there was one exception to this rule: in the Chinchorro culture (northern Chile) the entire body was reconstructed by plastering the skeleton with clay. This plastering technique was also combined with selective mummification of some soft tissues, such as the skin (see Arriaza, this volume). Thus as early as 7000 BP, the Chinchorro had developed an extremely sophisticated method of treating the bodies of their dead which would not have been possible without specialist technical skills and well-established social differentiation. It should be added that the material culture of the Chinchorro was one of small fishing settlements which added to their basic diet of seafood by hunting and gathering (Arriaza, 1995; Arriaza and Standen, 2002; Santoro *et al.*, 2005).

This paper will deal solely with the Neolithic plastered skulls from the Near East, and more specifically from a single site: Tell Aswad, in Syria. The culture can be placed in the context of a long process known as the Neolithic Revolution or Neolithization, during which hunter-gatherer societies made the transition to societies based on subsistence farming.

1 Raw BP dates are given here to facilitate comparison with the Chinchorro culture. As a guide, in calibrated dates, the Pre-Pottery Neolithic period with which we are concerned ran from 10,200 to 9000 BP.



TELL ASWAD AND NEOLITHIZATION

In the Near East between 12,200 and 7500 BP a lengthy ‘revolution’ led hunter-gatherer societies to make drastic changes in the established way of life that had enabled them to survive, in a variety of often harsh environments, since the beginnings of the human race.

Initially, between 12,200 and 10,000 BP, groups of hunter-gatherers settled in small villages consisting of round houses half buried in the ground (Valla, 2008). But these small villages were still rare, and some of the population remained nomadic.

From 10,000 BP crops began to be grown and, a little later, animals were domesticated. The first crops were grain, such as wheat and barley, and legumes such as chickpeas and lentils, whose existence in the wild was limited to this region and which were easy to grow (Willcox *et al.*, 2008). The first animals to be domesticated were goats, sheep, cattle and pigs, which were also found wild in this area (Helmer, 2008). The domestication of animal and plant species for food thus occurred particularly early in this part of the world, and this knowledge subsequently spread to Europe (Cauvin, 1994). With the development of these new customs between 10,000 and 9200 BP, village settlements grew in size. A study of their architecture gives us some idea of their social structure, which seems to have been fairly centralized, since these groups were able to design and build collective buildings. Similarly, individual houses are arranged in a regular pattern around these buildings, as if their position were part of some predetermined collective plan (Stordeur, 1999).

It was from these beginnings that towards 9200 BP, large villages began to appear whose main economic activities were farming and herding. Pottery for everyday use was found only towards 8000 BP, which is why we speak of the Pre-Pottery Neolithic. In Syria, Tell Aswad (Figure 1) –not far from Damascus– is one of these large villages. It was settled uninterruptedly between approximately 9300 and 8000 BP (Stordeur *et al.*, 2009). It was surrounded by desert steppe, but was situated next to a large lake which has since disappeared. This presence of water encouraged the development of agriculture and herding. But hunting and gathering did not disappear and many of the wild animals available on the steppe (gazelles) and the shores of the lake (waterfowl) were consumed in abundance (Helmer and Gourichon, 2008).

PLASTERED SKULLS FROM THE PRE-POTTERY NEOLITHIC

The funerary tradition of plastered skulls was not a very widespread custom in the Pre-Pottery Neolithic in the Near East. It was limited in time and is to be found only at sites dating from between 9200 and 8000 BP. It was also limited in space, occurring only in the southern Levant (Figure 2). In fact, in an area not exceeding



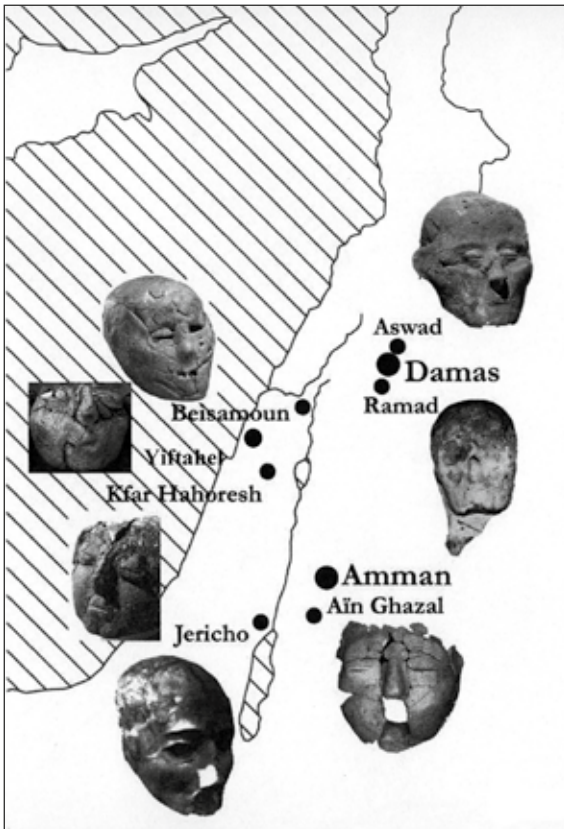
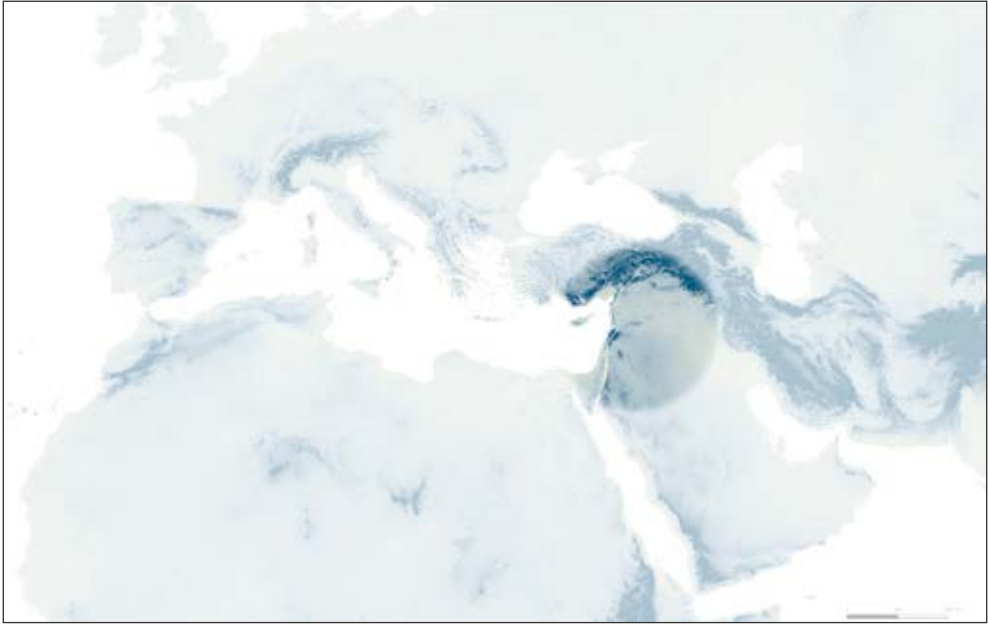


Figure 1. Geographical location of Tell Aswad. It is found in the Near East (top) close to Damascus, in Syria (down). In the Neolithic period the village was nearby a big lake.

Figure 2. Location of Near East Pre-Pottery Neolithic modelled skulls.



200 km north-south by 100 km east-west, plastered skulls have only been found at seven sites.²

ONE OF THESE SITES IS TELL ASWAD

In Tell Aswad we see a change in funerary practices. When the village was first settled, the dead were buried in the houses themselves, either beneath the floor or in the walls. Sometimes the dead were laid on the floor and then covered by a little mound of earth to protect them. Everything was done as if all the occupants of the house were still together after death (Stordeur and Khawam, 2008). Towards the end of the period during which the village was settled, we find a twofold change: firstly, the dead are gathered in cemeteries, and, secondly, plastered skulls make their appearance. Both events suggest that the role of the dead in society had increased, now being the concern of a larger circle than just the family.

What is a plastered skull?

Plastered skulls are to be found in various archaeological cultures³ and the practice was still alive in Oceania until a few years ago, especially in New Guinea in the Middle Sepik area (Aufderheide, 2009; Kocher-Schmid, 2009). Ethnographic publications as well as photographic, cinematographic and museum records on this subject represent a valuable source in helping to understand the archaeological remains. We shall return in our conclusion to the caution that needs to be exercised when using these types of records for this purpose.

As far as the Neolithic Levant is concerned, it has been possible, thanks to the observations of various researchers, to establish the main stages of the technical process used to produce a plastered skull (Bonogofsky, 2006; Hershkovitz *et al.*, 1995; Khawam, in preparation; Strouhal, 1973). There are variations in detail, of course, but we shall not discuss them at length here.

2 Tell Ramad in the Damascus basin, like Tell Aswad (Contenson, 2000), Beisamoun (Lechevallier, 1978; Ferembach and Lechevallier, 1973), Kfar HaHoresh (Goring-Morris *et al.*, 1994-95; Goring-Morris, 2005), Jericho (Kenyon, 1957 and 1981; Strouhal, 1973), 'Ain Ghazal (Rollefson, 1983 and 2000), Yiftahel (Khalaily *et al.*, 2008; Milevski *et al.*, 2008 and 2009), and lastly Tell Aswad.

3 These cultures are present on every continent except sub-Saharan Africa and extend from earliest antiquity up to the present day. A work just published (Aufderheide A.C. (ed.) 2009) offers a valuable survey, from which we shall draw some examples. In Egypt the practice was rare, but plastered skulls have been found in a Middle Empire tomb in Gizah, and it would seem that two of the bodies had also been plastered (Junker H. 1914). In Europe, there is evidence of the practice in Ukraine ('Catacomb culture' between 4000 and 3600 BP) and Siberia (4th century AD: the Minusinsk culture in the Altai). North America was familiar with this practice through the Blackduck culture (1200-600 BP), among others.



What, then, is the chain of operations that starts with the body of the deceased and ends with a plastered skull? The body is first buried. When decomposition is sufficiently advanced for the operation to be carried out easily, the skull is removed. It is cleaned, and the lower jaw, which has come off, may sometimes be re-attached to the base. The skull is filled with a malleable substance (clay, lime, a mixture containing plant fragments). The same type of material, although usually finer and smoother, is then used to fill in the face's cavities and orifices (eye sockets, ear cavities, nose cavities). It is also used to model the mask that will cover the whole of the face and extend round the sides to the back of the skull, already forming the rough shape of the face. It then remains to affix separately moulded ears and a nose if they have not been produced by modelling the mask. Lastly, the face is often painted and reconstruction of facial features is sometimes completed with inlays: shells may be used to represent open eyes, as is the case in Jericho and Yiftahel, for example (Kenyon, 1981; Khalaily *et al.*, 2008; Milevski *et al.*, 2008, and 2009).

This process requires very special technical skills and –wherever direct observation has been possible– it has been accompanied by specific rites and considerable precautions to protect the people in charge. It is carried out by a special group of people who have been initiated into both its technical and spiritual secrets, and is thus limited to a few individuals (chosen on the basis of various social or religious criteria), independent of the historical or geographical setting.

THE PLASTERED SKULLS FROM TELL ASWAD

Two cemeteries in Tell Aswad, on successive archaeological levels, have been partially excavated - for convenience, these will be referred to as the 'old cemetery' and the 'new cemetery'. Each contained several dozens of tombs. The first question is how representative these cemeteries were. Their location and size suggest that they hold the dead of only part of the village, perhaps a particular lineage. Future DNA analysis could help to bring to light family connections, but at the moment the question cannot be solved. We know that the purportedly oldest tomb in each of these cemeteries contained plastered skulls. However, here again, nothing can be stated with certainty, since the relative chronology of the different tombs is almost impossible to piece together accurately. As far as practices and customs are concerned, it has been possible to show that the place was clearly marked out and very actively frequented. Hearths were periodically used at its edges to mark out the area, and it is possible that they may also have been used to burn offerings.⁴ Furthermore, all the tombs show signs of having been reopened and of frequent handling of the remains that they contained,

4 Stordeur *et al.*, 2009: D. Helmer notes the remains of very young animals in these hearths, and G. Willcox draws attention to accumulations of the remains of pistachio nuts in the burnt deposits.



especially the moving of skulls. These cemeteries are thus evidence of a constant and active bond between the world of the living and the world of the dead.

Structure and content of tombs with plastered skulls

Like all the other graves, the two tombs containing plastered skulls have been reopened many times, and successive funerary deposits have been made. Each is therefore a collective tomb.

The collective tomb with plastered skulls in the old cemetery originally took the form of a round shallow hollow. The plastered skulls were the first objects to be deposited, arranged in two groups forming an arc (Figure 3). In due course, half a dozen individuals –adults, children and an adolescent– were placed on top of them. At each deposit, the tomb seems to have been protected by a mound of earth. The



Figure 3. Tell Aswad. A group burial of modelled skulls in an old cemetery. Six other people had been buried after the modelled skulls deposit.



only mound of which we have a thorough knowledge is the last one, raised after the burial of an adolescent boy adorned with a neck chain. It consists of a burnt black deposit and is contained by a very low wall.

The collective tomb with plastered skulls in the new cemetery took the form of a small narrow pit. Four plastered skulls were originally deposited there. They form a solid, compact structure arranged concentrically around the non-plastered skull of a child of about six years old. A fifth plastered skull was added subsequently. The original pit was then redug to deposit the body of an adult. Later, it was opened again and dug so deep that the deposit of plastered skulls was damaged – one of them, the fifth and last to have been deposited, possibly even having been torn. The pit was dug deeper for the primary burial of a newborn child (Figure 4), probably using a blunt instrument to judge by the fracture that it caused to the back and side of one of the plastered skulls. This one- or two-month old child is separated from the plastered skulls by a sort of cushion of moulded clay in which it is embedded. But at the same time, its head is



Figure 4. Tell Aswad. Group burial of modelled skulls in the recent cemetery. Inhumation grave of a newborn child above the modelled skulls deposit.



partly enclosed by the skull that was broken when this child was placed there. Was the association of this newborn child with the deposit of plastered skulls deliberate? We incline to think so, even though the roughness of the operation, or just the failure to take any precautions when the child was buried, calls for caution. The practice of skull plastering was directly connected with the collective memory of the group. This association, which happened at a later stage and was a very distinctive act, might, if confirmed, provide indications as to how this memory worked.

The plastered skulls in the old cemetery

Of the four plastered skulls deposited as if to inaugurate this cemetery, only two (671-CS2: Figure 5, and 671-CS3: Figure 6) are preserved well enough to allow detailed observation. The faces and the techniques used to make them are fairly different, but they have many characteristics in common. Both are complete, since the lower jaw was fixed back in its proper place before plastering. The limits of the plastering are also the same. It covers the area from the eyebrows to the base of the chin and extends to the temples. At the back of the skull, it plugs the occipital bone. Other important points in common: the ears and nose are added, and the eyes are represented as closed.

The larger skull (671-CS2: Figure 5) was set upright on its base. Four coatings have been used: clay, white plaster and two coats



Figure 5. Tell Aswad.
Old cemetery.
Modelled skull
641-CS2.





Figure 6. Tell Aswad.
Old cemetery.
Modelled skull
641-CS3.

a black charcoal line suggesting eyelashes where the lids meet. The unquestioned norm at Tell Aswad was thus to show the face with its eyes shut. The cheekbones are high, the nose large, straight and long - so much so, that it projects over the upper teeth. The mouth area is damaged. Only one of the moulded ears has been preserved; it is small and pointed.

The smaller skull (671-CS3: Figure 6) was set at an angle, almost flat. A white plaster of dolomitic calcite (which might be lime) is applied directly to the bone and covers the face from the eyebrows down, including the chin and the temporal bones. Behind, it plugs the foramen magnum. Red colouring is present in the form of a thin coating on the left cheek and residual spots preserved in the grooves along the bottom of the right cheek. The features are regular and fine. The nose is broken.⁵ The eyes, which are oval and slightly bulging, present a horizontal slit marking the place where the closed lids meet, as in 671-CS2. The cheekbones are high and the mouth small, with thin lips. The chin is oval and slightly pointed. Lastly, the only ear preserved is small and flat and shaped very realistically. Together, these features produce a regular, oval face that is very gentle.

The plastered skulls in the new cemetery

The four plastered skulls found together at the bottom of their pit are all fairly well preserved. Nevertheless, we shall select only two (741-CS1 and 741-CS3: Figures 7-10),

5 During restoration, it was found pressed against the nearest skull. The fracture shows interesting traces of percussion, as if the nose had been broken deliberately.





Figure 7. Tell Aswad. Collective burial of modelled skulls in the recent cemetery. The modelled skulls surround a child's cranium.

which are preserved almost in their entirety and are touchingly beautiful. But before describing them in detail, it is important to note what these four skulls have in common as regards plastering techniques and the reconstruction of their features. Some of these characteristics in common are similar to those we listed for the first deposit. Thus, the lower jaw has been put back into place and fixed to the base of the skull, the eyes are still represented as shut, and the nose is affixed separately. The same materials are still being used for filling, plastering and painting but with options that suggest further refinement. Other points in common are different from the earlier customs: the limits of the plastering have changed, the ears are no longer modelled separately but are now part of the mask, and a support is moulded for the base of each skull.

Skull 741-CS1 (Figure 7) was set upright on its base. Plastering begins fairly high on the frontal bone and covers the face and the temporal bones round to the ears. It continues behind down to the base of the skull, where it meets an oval mass of yellow clay which penetrates the foramen magnum, plugs it and extends beyond, hugging its edge. The cohesion of the whole shows that this preparation was made and put in position at the same time as the plaster, probably shortly after the skull had been filled. The short support is cylindrical in shape, suggesting a neck.



Reconstruction of the face took place in several stages. The plaster coating was white and then painted in red ochre once all the features had been modelled or affixed, apart from the eyelashes. The contour of the plastering on the forehead is straight and clearly defined. It continues round to the temples with a right-angled indentation. The entire top and side edge of the coating was thus delineated in a single movement while the plaster was still soft and therefore damp. It was carefully cut with a sharp tool. At the same time, the ears were suggested by simply folding the edge of the plastering outwards. The auricles are rounded, thick and fairly crude. The eyes, on the other hand, are represented very carefully. The small volumes of plaster which fill the eye sockets protrude to give them a slightly bulging appearance. In the middle of the eyeball, a horizontal slit suggests the meeting of the lids, and a line of bitumen was then applied to represent the eyelashes, the eyes being portrayed, as always at Tell Aswad, as shut. The mouth is a simple groove cut in the still soft plaster, with a slight, summarily executed, relief to indicate the lips. Lastly, the nose is long and slender, perfectly shaped, with a suggestion of the nostrils. There is a crack halfway down the right-hand side of the nasal septum that seems to have been repaired. We shall consider the possible implications of this action at the end of this paper. The skull plastering is realistic, and the face is slender, very fine-featured and, for most observers, male rather than female.

Skull 741-CS3 was set on its side. It was almost stuck to CS1 and the two faces formed such a harmonious whole that we are tempted to think that they were put together deliberately (Figure 8). The technique used is different from the others as the colour,



Figure 8. Tell Aswad.
Recent cemetery.
Modelled skull
741-CS1.



a vivid yellow ochre, is not applied on top of the plaster coating but mixed into the plaster itself. The texture is very fine and the surface carefully smoothed. But this is as far as the difference goes, since all the other characteristics of this plastered skull are similar to the skull we have just described. Here again, the line on the forehead is very straight and continues to the temples with an even more distinct right-angled indentation. Here again, the ears are broad, with the coating simply being turned outwards. These limits, which are the same for all the skulls in this deposit, follow a rule and probably reflect a necessity - very possibly the need to preserve an additional, perishable, element which would seem to have disappeared. This might have been hair, since the indentation follows the hairline very exactly.

The eyes, still protruding, are slightly more oval than those of CS1; they have preserved intact the line of bitumen that represents the eyelashes. The skill and knowledge involved are particularly evident in the nose, which is slender, straight and even better proportioned here in relation to the face. The base of the nose is modelled in detail, showing closed nostrils separated by the septum. The mouth is represented by a thin groove cut in the still damp plaster. The regularity and fineness of the features are very striking. They are milder than those of CS1, with more rounded cheeks and cheekbones that form an even curve. Some people think this is the face of a child, others that it is the face of a woman.

A few additional comments. We should add some technical and typological information gathered from the plastered skulls in this deposit that were less well preserved, since their fractures have been used to collect information about how the interior was filled. The inside of the skull was stuffed with pellets of earth containing plant fragments. These pellets were individually shaped, one by one. They were also used to fill cavities such as the lower part of the cheeks. On other parts of the face the plaster is applied directly to the bone. The varying thickness of the coating is then used to suggest volume: it is fairly thin on the forehead but thicker on the cheeks.

TECHNIQUES AND PROCESS

According to our observations of the plastered skulls from Tell Aswad, there do not seem to have been any lengthy breaks in the course of their production. A number of actions could be carried out only if the substance used to fill the cranium and the cavities in the face was still malleable. Thus the support, shaped separately, was inserted into the skull through the foramen magnum to combine with the filling already present. The mask coating applied to the bone was equally malleable. All the edges (on the forehead and temples) are well-defined, showing the characteristic bevel marks left by a knife when cutting a soft and plastic substance. When the plaster coating was turned up on the temples, to represent the ears, it offered no resistance and was therefore still malleable. Equally, we see no flaking on the slit that bisects the eyeball to represent the meeting of the eyelids; this slit seems to have been obtained by pressure, as if a



blade had simply been pushed into a soft and damp material. We do not know when the line of bitumen was affixed to this slit, but the bitumen was hot – the only state in which it can be shaped and stuck. In one case at least, a coat of red paint had already been applied to the plaster and had coloured the bottom of the slit.

CHOICE OF COLOURS

The colours found on plastered skulls from the Near East are always the same. The main colour is white, because white substances were used to paint them, but the plaster used for modelling was itself often white. The latter is usually dolomitic calcite, which is sometimes a little too hastily dubbed 'lime' when it may also be crushed limestone mixed with water but not calcined. Red is also very common; it comes from crushed ochre and is used for paint applied to either the whole or part of the plastering. Yellow is more unusual and was also derived from ochre. This colour is used in one of two ways: applied on top of the plaster coating in the same way as the red, or mixed with the modelling plaster itself. This last procedure is rather rare, and only one of the plastered skulls from Tell Aswad clearly demonstrates this type of mixture with a very bright mustard yellow.

These same colours were used for more modern skulls discovered by ethnographers, who studied the significance of these colours for the peoples whose words we have been able to record. Unfortunately, one should be cautious - for two reasons. First, the colours found today are the ones that are the easiest to preserve, since they are mineral in origin. While mineral blues and greens also exist, these are much rarer and much more difficult to turn into colourings. This can therefore be seen as a case of cultural convergence in which any serious attempt at comparison is impossible. The second reason is even more serious. The range of meanings attributed to a certain colour in various cultures is so broad that the most conflicting explanations can be found. We must therefore avoid the temptation of comparative ethnography, for it is hard to use it objectively.

Should we thus abandon possible analogies? We have observed in a number of settings, for example among the Iatmul of Sepik River in Papua (Le Fur, 1999), that the colours and especially the designs used to decorate plastered skulls indicate membership to a group (a clan or lineage, for example). These colours and designs are also found on three other mediums: they serve to adorn the bodies of ritual dancers during certain ceremonies; they are found in the decoration of masks; and some of the dead are painted with these same designs before burial. No painted designs have yet been identified on Neolithic plastered skulls. When traces of paint are found, they are monochromatic. Why then should we ask ourselves whether these sorts of connections existed in the Neolithic? First, because the decorated masks, of which we were previously unaware, made their appearance at the same time as the plastered skulls; and at a site such as Nahal Hemar for example, they clearly show traces of paint (Bar-Yosef and Alon,



1988). Second, because traces of colouring are found on certain skeletons, suggesting to their discoverers the practice of body painting. This is the case at Halula, a site contemporary with our plastered skulls (Molist, 2007). Third, statues and statuettes from this period are decorated with red designs, which again may be interpreted as indications of body painting. This type of representation has been found at a number of sites of the period: Tell Aswad, 'Ain Ghazal and Jericho (Garstang *et al.*, 1935; Rollefson, 1983; Stordeur *et al.*, in press). We are suggesting a possible new use of colour for the purpose of marking and distinguishing both the living and the dead.

SPACE AND TIME

What are the principles that lie at the basis of the custom of plastering human skulls among the groups described by ethnographers (Bateson, 1958; Kocher-Schmid, 2009; Le Fur, 1999)?⁶ Like any other tradition, this one belongs to the set of rules and beliefs of a particular society and is therefore related to many other types of behaviour. Studies reveal a wide range of people chosen to receive this treatment as well as a wide range of meanings attached to it and techniques employed. In any case, its significance is always rather more complicated than the concept of 'skull worship' which is too often taken as the sole explanation by archaeologists.⁷ In addition to the many variations, there are also some constants in the structure of these practices and we shall consider a few of them. First, skull plastering is a tradition with a collective meaning connected to the memory of the entire group. Second, carrying out such treatment is generally restricted to a few individuals in the group, as it calls for high technical skill, and – probably – spirituality. The small group of recognized individuals are bound to each other by an initiation rite. Third, a sequence of actions and rites, adhering to strict norms, takes place between the death of the individual and the burying of his or her plastered skull.

When examining the archaeological record we thought it necessary to use these constants to look for any signs that they might have existed in the Neolithic period in the Near East. Our questions cover the two main categories of space and time. With regard to space, we had to define the place in which the plastered skulls were

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- 6 We have chosen to restrict our recourse to ethnography to a search for constants in the structure of the practice. We have therefore been concerned with contexts and sequences of actions without going so far as to compare symbolism and meanings. Since this approach is at a very early stage, our choices have been guided mainly by two ethnologists, C. Kocher-Schmid and M. Stanek, whom we should here like to thank.
 - 7 Apart from the differences between one culture and another, we sometimes find two categories of plastered skull in the same context: those of the group's enemies, a sort of "trophy of war", and those of individuals from the group itself. Of course, the treatment of these skulls and the meanings attached to them are totally different (Le Fur, 1999).



deposited. Was it a private place used by the family unit? Or was it a public place used by all or part of the group? Regarding time, we have had to determine whether these actions and rites reveal a sequence comparable to that which regularly occurs in ethnographic contexts.

It is difficult to separate the concepts of time and space, since each stage of the practice corresponds to a different place. It is therefore better to consider them together, stage by stage, and compare what ethnology has to tell us with what can be inferred from the archaeological remains. The initial stages of the process (preparation of the corpse, place where the corpse is deposited, waiting period between death and removal of skull) will not be considered here since they cannot be identified from the archaeological record. We shall therefore start from the moment when the skull, already plastered and painted, is complete.

In societies where the practice of plastering skulls still exists, there are two further, strictly separate, phases. At the first stage, the plastered skull is put in a secure communal place (communal building, men's house, etc.), which is usually accessible only to a part of the group (men, initiates, etc.). Here, it may be repainted or restored if necessary, for it has been handled, particularly on the rare occasions when it has been shown to the rest of the group: for certain ceremonies, the plastered skull is perched on a dummy representing the rest of the body and carried around outside (Bateson, 1958; Kocher-Schmid, 2009). With these appearances, the individual returns, as it were, to the world of the living. At a second stage, once it loses its ceremonial value, the plastered skull is buried, either in the same place or in a cemetery. It is then 'withdrawn'. Most living accounts point to a communal place for both stages. But what does the archaeological evidence tell us about these two stages?

The two stages of the practice

This division of the practice into two stages seems to be confirmed by various sources of evidence. We start with that provided by the remains of Tell Aswad. Here we find the plastered skulls buried at the bottom of a pit, underneath a number of other individuals. They had thus become permanently inaccessible. Yet a number of facts show that this was not always the case and that at one time they were exhibited, handled and repaired.

Exhibition is demonstrated by the existence (at least in the most recent deposit) of supports forming an integral part of the skull. Carefully modelled, smoothed and attached deep in the foramen magnum, the support was not made for the purpose of depositing the skull at the bottom of the pit, since some skulls are set upright, while others are on their side. It seems that the existence of the support was of no further importance when depositing the skull. This therefore suggests that the support was used to keep the plastered skulls upright in a different context from the one in which they were found.





Figure 9. Tell Aswad. Recent cemetery. Modelled skull 741-CS3.



Figure 10. Tell Aswad. Recent cemetery. Modelled skull 741-CS1 and 741-CS3.



Handling, repair and restoration are evidenced by a number of plastered skulls from Tell Aswad. There is the skull whose nose was broken and repaired as well as those to which several layers of paint have been applied. Similarly when, for example, one of the ears is missing, we think that it was lost elsewhere and not replaced.

WHAT DO PLASTERED SKULLS FOUND AT OTHER SITES TELL US?

Plastered skulls found at other sites provide further proof in support of the existence of a two-stage practice. At Tell Ramad (Contenson, 2000) small headless anthropomorphic statues in clay have been found near plastered skulls. These seem to be a natural complement to the skulls, and, while they are too small to serve as pedestals as Contenson observes, they may symbolize the dummies on which the skulls may have been perched.

On the other hand, the context of the deposits varies, and at some sites, unlike Tell Aswad, we see the plastered skulls in their position for the first stage of the ritual. This is the case at Beisamoun and for some of the skulls at Jericho and 'Ain Ghazal, which were found on the floor of buildings and not at the bottom of a pit.

THE COMMUNAL CONTEXT

The plastered skulls of Tell Aswad were obviously deposited in a communal context, since they were contained in a tomb in a cemetery - and probably not just any tomb. Their deposit might have inaugurated the funerary area itself, although there is no definite proof for this. What about the other sites of this culture? A critical analysis of these various contexts elsewhere has been made (Stordeur and Khawam, 2007). Our premise, at the end of the investigation, was that plastered skulls were also to be found in a communal context at other sites, but with two variations. In some cases, the skulls were deposited inside a building, which was not an ordinary house, such as at Beisamoun, Jericho, 'Ain Ghazal and perhaps at Tell Ramad. In other cases, they were found away from buildings, in a cemetery, as we see not only at Tell Aswad but also at Kfar HaHoresh. We therefore suggest that the context for PPNB plastered skulls was communal rather than domestic, although possibly with a gradation. A first 'closed' context would be behind the walls of a building. A second, more open and extensive, would be the cemeteries. Do these two contexts correspond to the two stages of the ritual? There is no simple answer. While the cemetery context seems definitely to match the second stage, the house context is ambivalent, since inside buildings we find both skulls laid on the floor and skulls buried in pits.

CONCLUSION

Neolithic plastered skulls from the Near East are certainly the earliest evidence of a desire, whatever the motive, to give back new life to the most symbolic part of



an individual: the skull (Gary Urton in this volume) stresses the “living” nature of plastered skeletons and mummies and suggests an analogy with initiation rites. Why call it the most symbolic part? Very early on, human beings became aware that their heads were radically different from the rest of their bodies. All the senses are concentrated there (even touch, which seems to be provided by the rest of the body). Most key types of expression, particularly speech, come from the head - even if the whole body can be used for expression as well. In the Near East, it was at the very start of Neolithization, in the Natufian (Valla, 2003), that the skull began to be separated from the rest of the body in funerary deposits, and plastered skulls are a logical continuation of these early types of behaviour. The Chinchorro did not make this distinction, reconstructing the entire individual through both plastering and mummification. It would certainly be well worthwhile comparing both attitudes and trying to understand their meaning. In the meantime, a less ambitious project, but one which seems very promising, would be to compare the techniques used for the plastered skulls from the Near East and for the Chinchorro mummies. This would be a simple comparison, as the sociological, geographical and chronological distance is too great for us to make a genuine comparison without lapsing into commonplaces. But a detailed comparison of actions and procedures would provide a sound basis on which to start a theoretical discussion. One great advantage of the collaborative and international scientific discourse perpetuated by UNESCO has been to bring together researchers who would otherwise never have collaborated and reveal the need to do joint research. This collaboration has resulted in the pooling of expertise in order to strengthen the arguments for comparison of this culture with other archaeological cultures both near and far.

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The singularity and uniqueness of the Chinchorro Culture



In a harsh desert coastal environment, in which survival depended almost exclusively upon marine resources, the Chinchorro people of Northern Chile from 9000 to 3000 BP, by means of extraordinary practices of mummification and bodily transformation, created unique prehistoric testaments to death and life that is virtually unparalleled in human history.

The Chinchorro archaeological sites are nominated to the World Heritage List because they have an exceptional value:

1. They show successful adaptation of a hunter-gather society to an extreme geography, represented by juxtaposition of a hyper-arid coastal desert, extraordinary rich marine resources, and the Andes cordillera.
2. The exceptional preservation of sites and landscapes associated with the Chinchorros –combining extensive archaeological sites, with deep stratigraphy and extraordinary preservation of cultural and organic remains– provides a rich early record of the development of early complex hunter-gatherer societies in the south central Andean region.
3. They show early development of complex mortuary practices involving the dismantling and systematic re-assembly of corpses to create artificial mummies that have extraordinary sculptural and artistic qualities and which reflect the vital social role of the dead in human society.

ABOUT CHINCHORRO ARCHAEOLOGICAL SITES:

1. Show a highly successful early adaptation of a hunter-gatherer society to an environment characterized by the juxtaposition of a hyper-arid coastal desert, extraordinarily rich marine resources, and the Andean cordillera.
2. Demonstrate exceptional preservation of the sites and landscapes associated with the Chinchorro people –combining extensive large archaeological sites, with deep stratigraphy and extraordinary preservation of organic and inorganic



remains— provides a rich early record of the developments of complex hunter-gather societies in the south central Andean region.

3. Show the world's earliest tradition of complex mortuary practices, involving the dismantling and systematic re-assembly of corpses to create artificial mummies that have extraordinary cultural, technological and artistic value, and which reflect the vital social role of the dead in early Amerindian cultures.

World Heritage Criteria to be taken into consideration: 2

By means of highly sophisticated practices of mummification and bodily reconstitution, the Chinchorro people from 9000 to 3000 BP created profoundly moving artistic and sculptural objects that represent unique masterpieces of human creative genius.

Chinchorro archaeological sites combine deep stratigraphic depositions with a record of material cultural development that testify to the complexity of early hunter-gather societies in the south central Andean region.

The Chinchorro people invented and continuously innovated on the earliest practices of artificial mummification in the world, showing the extraordinary technical virtuosity of these early American hunter-gatherers.

The Chinchorro sites encompass outstanding examples of coastal shell middens on a hyper-arid coast line, vulnerable to shifts in the ENSO climatic cycle, together with a specialized tool assemblage for exploiting marine resources.

The rich material remains and mummification techniques of the Chinchorro peoples are of utmost global scientific importance because of the insights they provide into comparative beliefs and practices regarding the living and the dead, as well as for the ways in which they challenge our understanding of the belief systems, ritual practices, diseases and social organizations of hunter-gatherer societies.

COMPARATIVE WORD-WIDE EXAMPLES:

1. Hunter-gatherers:

Northwest Coast Indians, Australian aborigines/Arnhem Land, Kalahari Bushmen, 19th Century Patagonia/Tierra del Fuego Peoples (Ona, Alacaluf, Haus).

2. Coast/desert:

South West Africa: Walvis Bay/ Khusieb Delta, Eland's Bay Cave, Northwest. Australia: Shell middens and rock shelters including Mandu Mandu Rock Shelter and Jansz Rock Shelter.



South America: Valdivia Culture in Ecuador and Paracas Coastal Peru.

3. Mortuary Practices:

Artificial / Natural Mummification was present in Egypt, Europa (Bog bodies, Otzi), China (Xianjiang), Greenland (Aleutian Islands), Peru (Chachapoyas, Paracas, Inka mountain sacrifices), Colombia (Muisca).

Body Reconstruction was present in Preceramic Neolithic of Southern Levant (Tell Aswad, Jericho, and Siberia).

FINAL REMARKS

In summary, the Chinchorro people maintained an enduring funerary tradition that involved artificial mummification requiring highly developed skills and specialists. This special treatment was complemented by the unprecedented practice of the reconstruction and remodelling of the bodies of the entire individuals, including all ages, but emphasizing infants and fetuses.

Finally, the rich material remains and mummification techniques of the Chinchorro people are of utmost global scientific importance because they challenge the scholarly community to reappraise our current understanding of the belief systems, ritual practices, and social organization of early hunter-gatherer societies.



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