

**Early Ceramic Settlement in the Coastal Osmore Valley:  
Preliminary Report**

1993

Bruce Owen

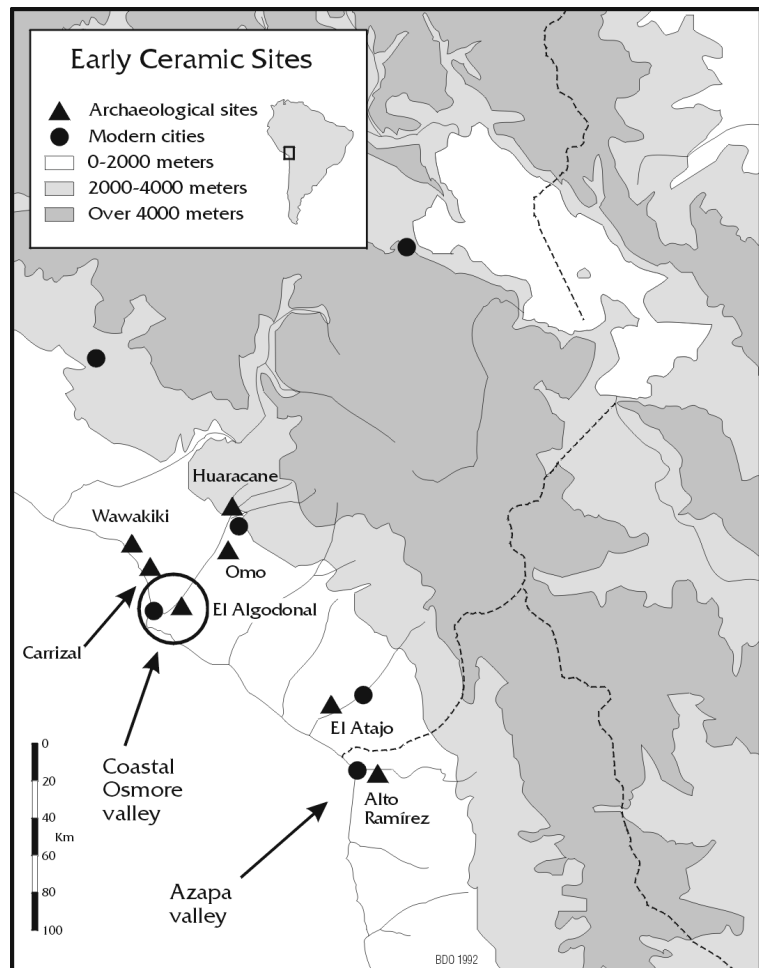
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**Abstract:** Despite many preliminary studies, the early development of agriculture, ceramic production, and social complexity on the far south coast of Peru are surprisingly poorly understood. This paper reports on systematic site survey, excavation in two early ceramic domestic and mortuary sites, radiocarbon dates, ceramics, and detailed midden analyses that clarify patterns of subsistence, settlement, mortuary practices, regional cultural affiliations, and chronology during early ceramic times in the coastal Osmore valley.

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Because pottery is useful for boiling starchy foods like maize and manioc, we often suggest that the adoption of ceramics marked the time when people became settled farmers. By studying the early periods of ceramic use, we hope to learn about the early stages of the ecological and social adaptations to agriculture that underpinned subsequent developments. On the far south coast of Perú, the early ceramic period formed the background against which the Tiwanaku state expanded, and may have embodied early expressions of cultural traits as varied as agricultural and craft technologies, ascribed social status, and multiethnic settlement in restricted areas.

In the coastal Azapa valley of northernmost Chile, domestic and mortuary excavations have yielded substantial information about the



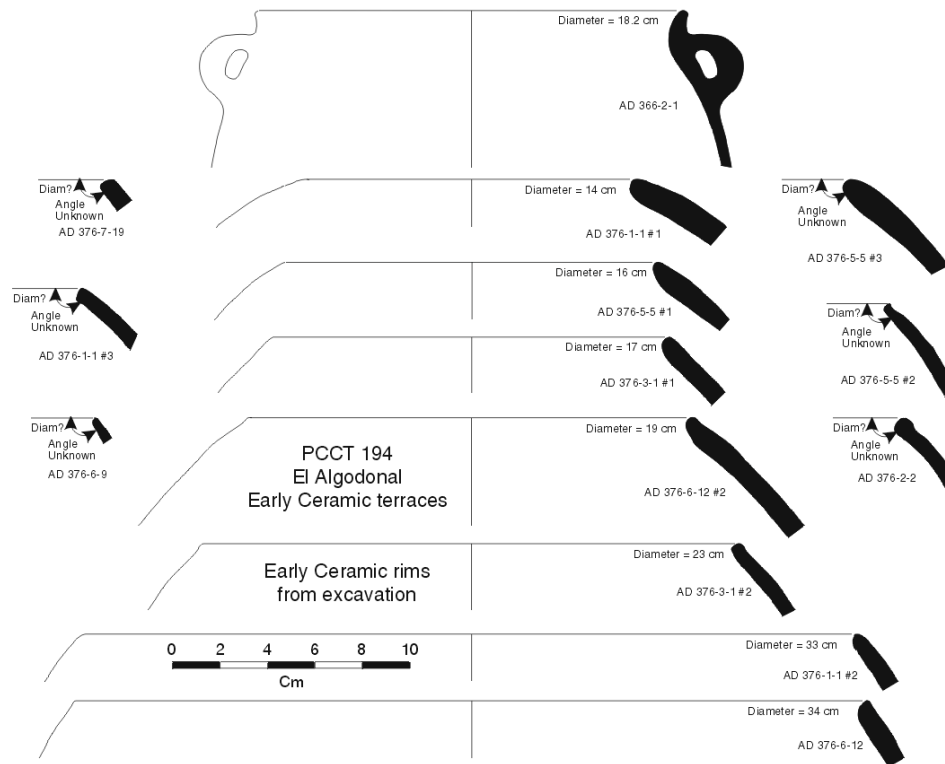
early ceramic Faldas del Morro and subsequent Alto Ramírez phases. These chronological phases are very long, and feature elaborate material cultures based on settled, mixed agricultural, maritime, and herding subsistence strategies probably bolstered in later stages by exchange relations with sierra and altiplano people (Muñoz 1987; Dauelsberg 1985).

In contrast, until recently, relatively little was known about the early ceramic period in the region north of Azapa. Virtually all the limited data available is from the Osmore river area, on the far south coast of Perú. Aldo Bolaños (1987) reported an apparently early pottery style from the coastal spring site of Carrizal, north of the modern city of Ilo. Karen Wise (pers. com.) encountered presumably early ceramics in the uppermost levels of the preceramic K4 site, also on the coast north of Ilo. Maria Lozada (pers. com.) and other members of the Programa Contisuyu have excavated numerous burials from the early ceramic cemetery at Wawakiki, on the coast further north from Carrizal. Robert Feldman (1989) described the early ceramic Huaracane pottery from the Moquegua area, far up the valley from Ilo, and Paul Goldstein (1989a) salvaged some artefacts from a Huaracane shaft tomb at Omo, south of Moquegua. Probably early pottery has been found at the site of El Atajo in the Caplina valley southwest of Tacna (Manuel Garcia, pers. com.), but is known only from a deflated surface scatter.

Despite all this work, we still know little about the people of the early ceramic period. The only reference to early ceramic material in the coastal Osmore valley proper is Elias Mujica's comment, cited by Feldman (1989), that presumably early fiber-tempered pottery had been found near Algarrobal, some 8 kilometers up the valley from the coast.

The recent excavations and survey work that I will describe here show that the coastal Osmore valley was well populated in the early ceramic period, and provide a number of insights into early ceramic chronology, subsistence, affiliations, and social organization.

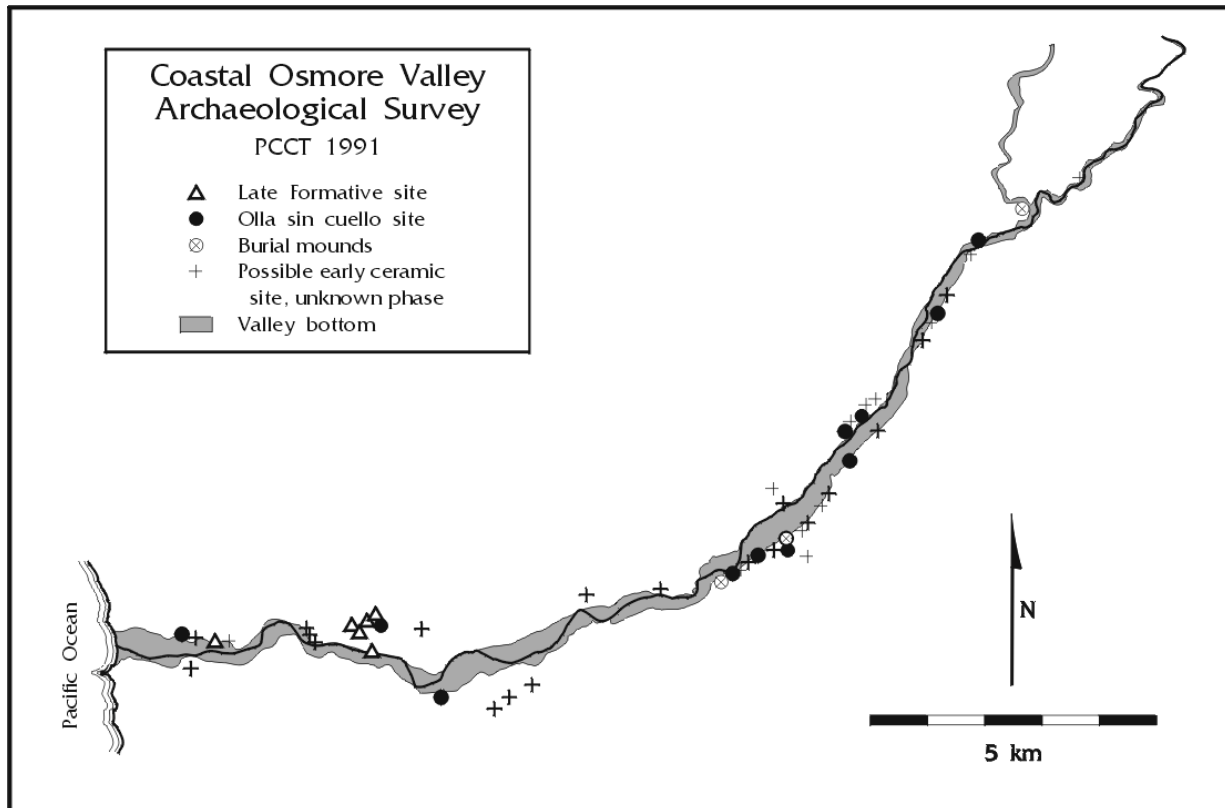
At present, I distinguish two early ceramic pottery styles in the coastal Osmore. I provisionally refer to the first as the "Olla sin cuello" style, which is known from excavations at two sites (the early ceramic terraces underneath the cemetery at El Algodonal, PCCT 194, and the hillside terraces at Loreto Viejo, PCCT 224) and surface indications at at least ten others. While a very few sherds of the Olla sin cuello style have small, thick handles or slight hints of necks, almost all of the ceramic assemblage comprises globular, restricted, neckless, round-bottomed vessels ranging from moderately large sizes estimated around 30 cm in maximum diameter to quite large sizes up to 55 cm in diameter. Surfaces are compacted and sometimes casually burnished, but are never decorated except for possible overall finishing with slip of the same dark grey to brown color as the ceramic paste. Details of the rim shape and wall thickness vary considerably, and many vessels were somewhat irregular in form. The paste, temper, and finishing are macroscopically similar to Late Intermediate Period utilitarian wares, which makes positive identification of early material in surface collections difficult. There is no noticeable fiber temper. Most of the sherds are fire blackened, and many are crusted with burned organic residues. They clearly represent utilitarian cooking vessels. With conservatively estimated volumes ranging from 10 to over 40 liters, the largest vessels suggest cooking for large groups of as many as 40 people at once.



This Olla sin cuello pottery is securely associated with three radiocarbon dates from excavated occupation deposits compacted onto intact living surfaces on two different domestic terraces. Including the one-sigma error terms, the calibrated dates fall between 100 BC and 380 AD (Beta 51062, 51063, 51064; calibrated using Stuiver and Reimer's (1986) University of Washington Quaternary Isotope Lab Radiocarbon Calibration Program, Rev. 2.0, bidecadal atmospheric calibration data, intercept method A.).

Olla sin cuello sites are found all along the coastal valley, starting a kilometer from the coast and reaching at least twenty kilometers inland. These settlements are sited to take advantage of the arable land of the valley bottom. Similar settlements may also have existed along the coast, but prehistoric and modern activity has obliterated any traces near the mouth of the river, and the present survey did not extend further up or down the coastline. Many of the sites have been completely buried and are visible only as strata in eroding hillsides, while others have been largely eroded away, so there is reason to suspect that there once were significantly more Olla sin cuello sites than can be detected now.

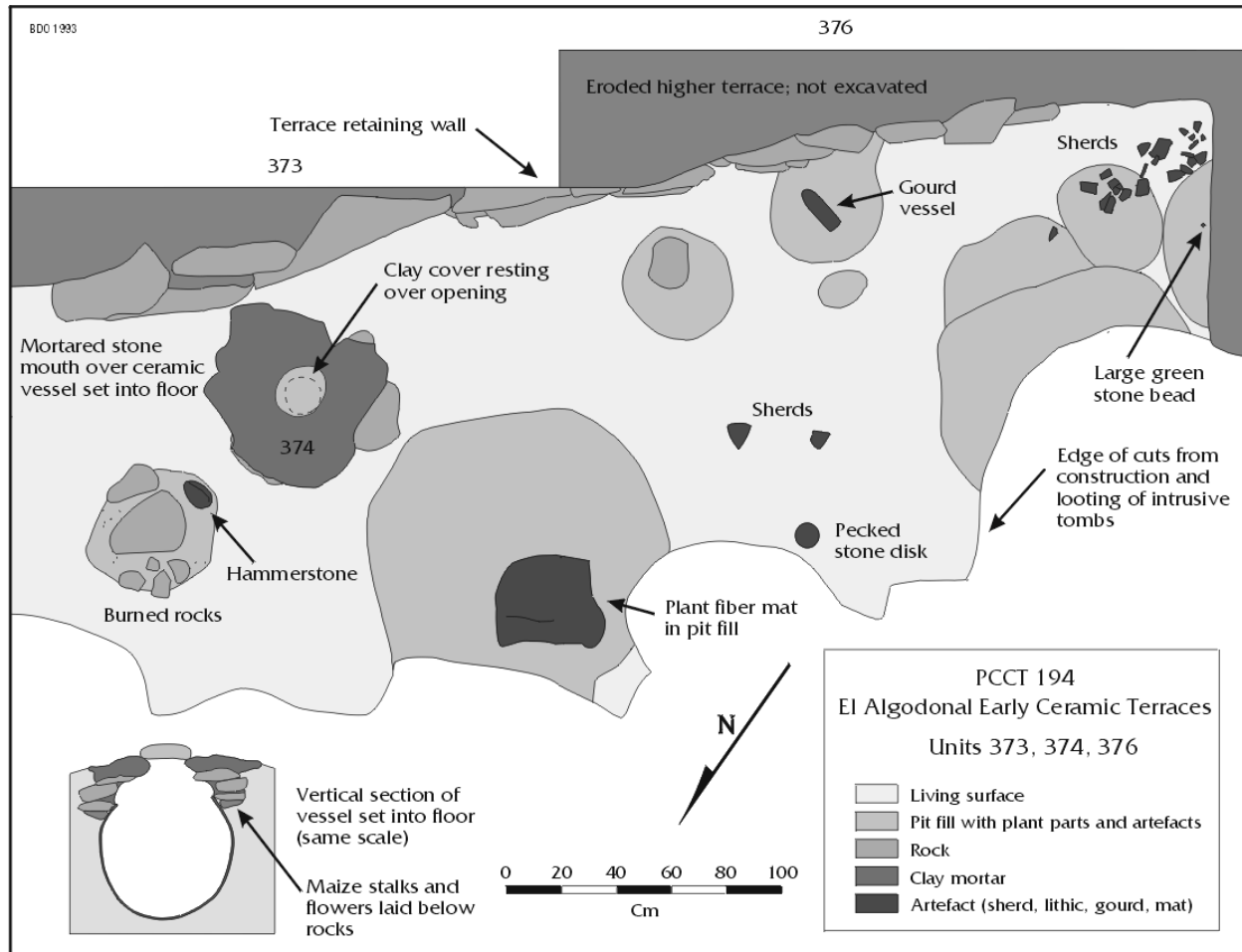
At least some of the Olla sin cuello sites comprised large areas of habitation terraces built on hillsides as steep as 30 degrees. The nearly 300 Olla sin cuello terraces at Loreto Viejo cover some 5.4 ha, and I suspect that this settlement was originally contiguous with sites both up and downriver. If the entire area was occupied at the same time, it would have formed a continuous settlement over a kilometer and a half long.



We excavated samples of two early ceramic terraces at El Algodonal, and three at Loreto Viejo. In at least four of the five examples, the front edge of the terraces were destroyed by erosion, aided at El Algodonal by intense looting of the Late Intermediate Period tombs in the overburden. The preserved rear portion of each terrace consisted of one or more intact superimposed living surfaces with many garbage-filled pits; stratified deposits ran up to 70 cm deep, and maybe deeper in one unit that was not dug to sterile. The living surfaces were clearly distinguishable, with plant debris and other artefacts compacted flat onto them.

The lower terrace at El Algodonal was backed by a substantial stone retaining wall originally at least 60 cm high. Unlike later masonry in the region, this wall was chinked with masses of rootlets or some similar fine plant material. The occupation deposits on this terrace were not thick, and since the pits all originate at about the same floor level, they may all have been dug over a relatively short period of time. One of the largest pits, about a meter in diameter and 60 cm deep, was apparently left open for a while, because long cane fragments laying on the living surface continued smoothly down the sides of the pit. The other pits at El Algodonal, however, seem to have been filled with garbage fairly quickly, without accumulating internal strata of soil or spreading out on the living surface.

The pits seem to have had varying purposes. One pit at Loreto Viejo had an unusually high concentration of coprolites, and may have been a latrine. Several of the garbage-filled pits at El Algodonal each had a single intact or otherwise noteworthy artefact in the center of the fill, close to the floor level. These artefacts included an intact gourd cup; a large, whole, peeled yuca root;



a unique large green stone bead; and a rectangular mat made of plant fibers bound with cotton string. Another pit had a single large stone in the center top of the fill. These items may have been placed for ritual purposes. A different pit had several burned stones and a hammerstone arranged against the sides and in the middle, but with no ash and little charcoal, it was clearly not a hearth or fire dump. The stones were at or protruding above the floor level, as if they had been neatly placed in an accessible location. Finally, one pit at El Algodonal and one at Loreto Viejo were specially lined at the bottom. The pit at Loreto Viejo had a dense wad of grass or fine plant stems packed into the bottom. The one at El Algodonal had two sets of reeds laid across the bottom perpendicular to each other, forming a loose latticework that would not have sealed the pit in any way.

Terraces at both sites had numerous small, unconstructed fire pits and ash and charcoal dumps; these little fires would have been useful for light, warmth, and perhaps the smallest of cooking tasks. One terrace at Loreto Viejo, on the other hand, had a hard, orange burned patch of ground some 70 cm across, and was entirely covered by superimposed broad layers of ash and charcoal up to 13 cm thick each, suggesting repeated, sizable fires in the immediate vicinity that might have been appropriate for cooking in the large pots. I prefer cooking to firing pottery as an explanation for these deposits because there were no wasters and just the usual low density of

sherds. This concentration of intense, repeated burning goes along with the large size of the ceramic vessels to suggest that at least some cooking or other fire-related activities were conducted in relatively large groups, rather than being dispersed on an individual or nuclear family basis.

At the back of the lower terrace at El Algodonal, a large neckless ceramic vessel was set into the ground with a mortared stone construction over it forming a small mouth at floor level. The vessel was found cracked but intact, with a thick, unbaked clay disk set over the opening. It was empty except for a mound of fine dirt that had filtered in from above. It might have served as a water cistern, but I suspect that it would have been more valuable and convenient for storing a dry agricultural product like maize kernels or beans.

In spite of the excellent preservation at these sites, there is no direct evidence of houses. Excavations of similar and smaller extent in Late Intermediate Period contexts consistently encountered wall trenches, stubs of cane walls, postholes, and the *in situ* bases of structural posts, often right along the back edges of terraces. Houses in Olla sin cuello times must have been fewer, smaller, or of more ephemeral construction. Alternatively, houses might have been located away from domestic terraces, or towards the fronts of the terraces which are not preserved. The lower terrace surface at El Algodonal had several times higher density of cane leaves and fragments than normal in Late Intermediate Period contexts, which suggests that any structures on the terrace were probably built of cane.

The flotation samples from these excavations have not yet been analyzed, but the exceptionally well preserved plant debris and other artefacts collected from 1/4 inch screening have been cataloged in detail both for the Olla sin cuello phase and for two Late Intermediate Period phases excavated by the same project at three nearby sites. I highlight the significant features of the Olla sin cuello material by contrasting it with the LIP data, which represents a large, more recent, more extensively studied, and presumably better understood population based on mixed agricultural, maritime, and herding strategies. Except where noted otherwise, all of the patterns I will describe are statistically significant at the .05 level using nonparametric Wilcoxon rank sum tests on a variety of measures of each trait.

In general, the Olla sin cuello people were apparently more specialized agriculturalists than the Late Intermediate Period groups. Olla sin cuello midden has a much higher density of maize cobs, husks, and flowers. Maize cobs and husks account for almost 20% of the mass of plant material in Olla sin cuello contexts, versus less than 3% in the Late Intermediate. Olla sin cuello plant debris contains more tubers and tuber peels by mass (2% vs. less than 1%) (virtually all probably manioc), and more beans and bean pods (1.2% vs. .3%). Olla sin cuello midden also includes pallar beans and pods, which are unknown in later contexts. Shells of crayfish from the river, while comprising only .6% of the total midden mass, are far more common in Olla sin cuello midden than in the Late Intermediate.

In contrast to this emphasis on maize, yuca, beans, and crayfish, other foods are much less common in Olla sin cuello contexts. All the tree crops used in the Late Intermediate, including

pacay, molle, algarrobo, lucuma, and guayaba (guayaba  $p=.07$ ), are significantly less common or absent in the Olla sin cuello material.

There is also much less animal bone in Olla sin cuello midden, .5% by mass versus 11 to 21%, mostly reflecting the extreme scarcity of large mammal bone. There is also only one fragment of leather from an Olla sin cuello context, significantly less than the 47 Late Intermediate pieces recovered. Oddly enough, there is no significant difference in camelid dung, which comprises 2 to 6% of the total midden mass, and in fact is most prominent in the Olla sin cuello sample. The Olla sin cuello people apparently had as at least many camelids near their domestic areas as did later groups, but they apparently ate them less, or perhaps processed them differently or elsewhere, such that the bones and hide products did not end up in domestic garbage. Two medium-sized concave-base chert points may suggest some hunting, but either hunting contributed little to the diet, or butchering was completed away from the domestic areas.

There is no significant difference in fish remains, which comprise just 1 to 3% of the midden mass. There is less shell in Olla sin cuello midden (12% by mass) than in either Late Intermediate phase (16 to 31%), but the difference is not quite statistically significant ( $p=.11$  to  $.19$ ). As with the plant assemblage, the shellfish exploited in Olla sin cuello times were much less diverse than in the Late Intermediate. The Olla sin cuello shell is dominated by a single bivalve, *Choromytilus* sp., which makes up 76% of the shell mass, compared to 32% in Late Intermediate assemblages. Several shellfish species important in Late Intermediate times, including clams (8.5%), limpets (16%), and chitons (30%), are significantly scarcer or absent in Olla sin cuello midden. Marine algae is also much less common in Olla sin cuello remains (.04% versus .5%;  $p=.08$  to  $.09$ ). Although reconstructing diet from remains as disparate as shell, bone, and dried algae is problematic at best, the midden remains suggest that marine resources were a modest part of the diet in Olla sin cuello times, probably were less important than in the Late Intermediate Period, and certainly were more limited to a few preferred varieties.

Olla sin cuello textiles are mostly made of camelid wool. Textiles overall are somewhat less common in the Olla sin cuello material, but the difference is not significant. Interestingly enough, the proportion of colored wool threads to plain ones in midden deposits is also not significantly different between the Olla sin cuello debris and that of the Late Intermediate Chiribaya, who are known for their elaborately colored and embroidered textiles. By some measures there is significantly more cotton in Olla sin cuello midden than in Late Intermediate deposits, but other measures are not significant. What is different, though, is that significantly more Olla sin cuello textiles are at least partially constructed of cotton. Two-ply yarns composed of a wool thread and a cotton thread twisted together turned up in eight separate Olla sin cuello contexts; I have only one example of this hybrid material from Late Intermediate excavations.

The overall impression of Olla sin cuello subsistence is of farmers focussing on a few favored crops, with modest contributions of marine resources, also emphasizing a few preferred varieties. Camelids were present, probably in significant numbers, but contributed principally wool, rather than meat or hides. The plentiful river crayfish, which today are a highly limited seasonal resource, may indicate smaller or more transitory human populations than in later times.

Optimal foraging theory suggests exactly such a pattern: when populations are small relative to carrying capacity, the best strategy emphasizes a few preferred resources. As population grows, as it clearly did in the Late Intermediate Period, people diversify into more marginal resources. Two alternatives to the optimal foraging model also seem reasonable. In the first alternative, the Olla sin cuello terraces might represent only a part of a larger, more diversified subsistence strategy involving similarly specialized stations in other resource zones. These might have been exploited concurrently by different members of the same group, or sequentially as members moved from station to station. The second alternative is that the Olla sin cuello farmers were indeed as comparatively specialized as the excavation data suggest, not by preference as in the optimal foraging model, but because their access to other resource areas was limited by the presence of other groups.

Much of the information about the Alto Ramírez phase (500 BC to 200 AD) in the Azapa valley has come from excavations in burial mounds (Muñoz 1987). These mounds are constructed of thick layers of reeds or other plant material alternating with layers of dirt and rocks. The burials, often with a few grave goods such as textiles, combs, food, or ceramics, are found both below and within the constructions. Some are evidently secondary burials, and some are missing body parts. Similar mounds have been reported in the Tacna area (Manuel García, pers. com.), but not further north until now.

There are at least three areas of Alto Ramírez-like burial mounds in the coastal Osmore valley. The mounds at El Algodonal and Loreto Viejo are adjacent to Olla sin cuello habitation terraces, and are presumably associated with them. We excavated a test pit on the peak of the smallest of the approximately 20 mounds at Loreto Viejo, which is about 6 meters in diameter and stands a meter above the original ground level. This mound had evidently been constructed in a single episode directly over a small cylindrical pit tomb dug into the original ground surface and sealed with canes laid over it as a roof. The dirt from digging the tomb had been piled next to it on the original ground surface, and before the mound was constructed, a small fire was burned on top of this backdirt heap, leaving behind not only ash and charcoal but also some burnt shell. Next to the dirt pile, we found a darkened, hardened area of soil that might be the trace of spilling a dark liquid such as chicha.

Inside the tomb was the partially mummified body of a three year old child, without textiles or other offerings except for leaves and twigs stuffed all around the body. The arms had been separated from the body and placed in the pit first, the torso was broken near the top of the lumbar vertebrae and the two pieces placed parallel but in opposite orientations, and the head was placed on top, at the opposite side from the apical cervical vertebrae. Within these chunks, the bones were articulated and considerable soft tissue was preserved. The leaves and dirt at the bottom of the pit were discolored and cemented together, as we usually found below Late Intermediate Period mummy bundles, which suggests to me that the body was not yet desiccated when it was broken up and buried. The odd treatment of the body may have been part of the initial burial ritual, rather than secondary reburial as is suggested in Azapa.



We abandoned a larger test pit in another mound when we encountered much more complex stratigraphy, more varied plant materials, and various burned areas. Unlike the smaller mound, this one may have accreted over the course of a number of different construction and ritual events, like the mounds in the Azapa valley. Several maize cobs were found in this larger mound, strengthening the suspected link to the Olla sin cuello maize farmers living nearby.

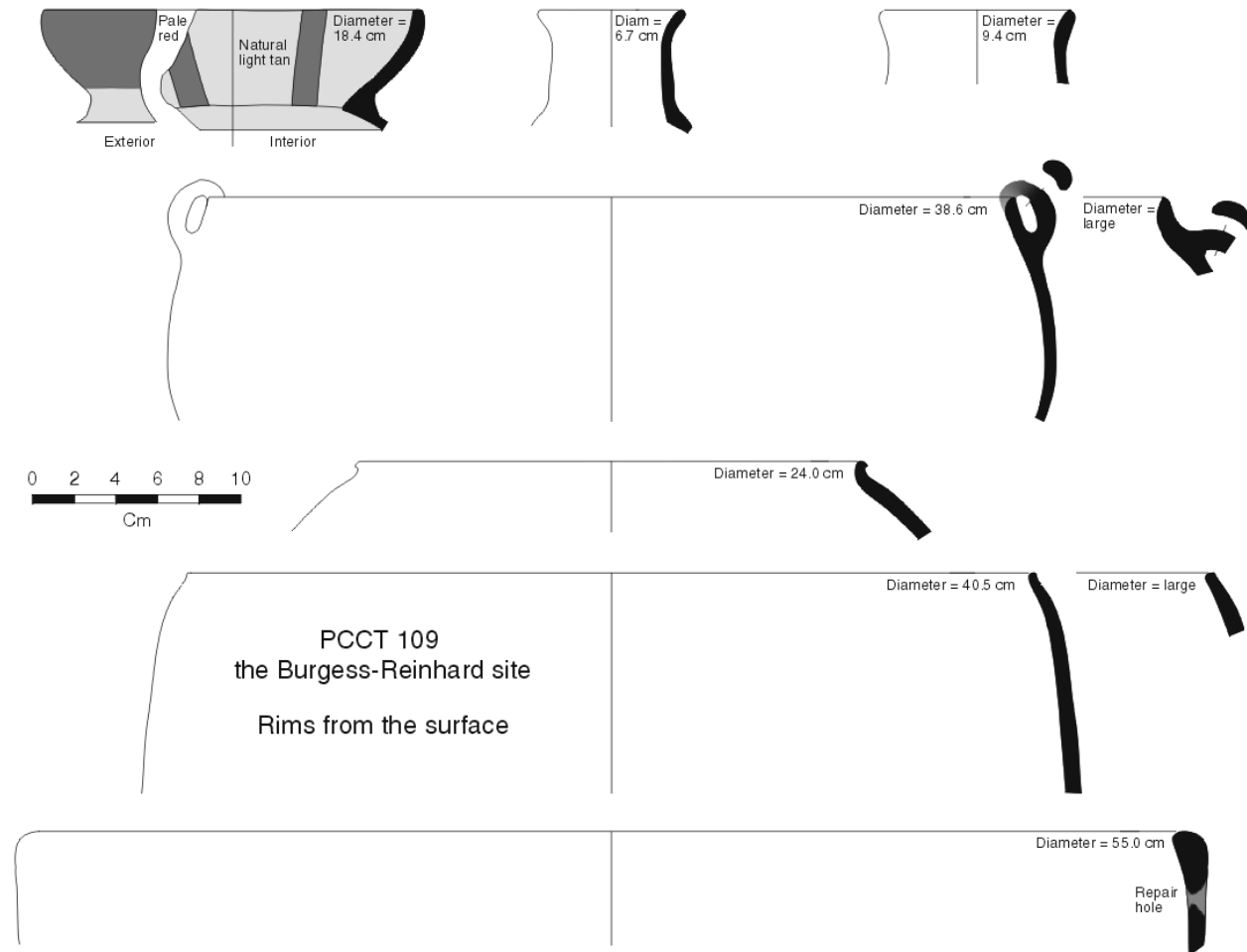
The Olla sin cuello people did not bury everyone in mounds. Not only do there not appear to be nearly enough mound burials to account for the population of such extensive habitation terraces, but also we found an example of a presumably lower-status burial directly in a domestic terrace floor. This adult was buried in a shallow pit in an extended, face down position, wearing a very worn plain wool shirt cinched at the waist with a rope. The burial was accompanied only by a concave-based chert point found in the fill next to the head, and it was covered with large rocks. The terrace had been in use for some time prior to the burial, and continued in use afterwards.

This marked difference in burial practices, especially considering that the more elaborately treated individual was a three year old child, hints at a considerable degree of variation in social status or roles that may, moreover, have been hereditary or otherwise ascribed. Unfortunately, the present sample of two is a bit limited to push much further on this point.

The other early style of ceramics recognizable in the coastal Osmore I provisionally refer to as "Late Formative". This style is known only from limited amounts of surface material from a few sites. Some of it is quite similar to the Olla sin cuello pottery, but there are more handles, including strap handles that are not seen in the Olla sin cuello assemblage, hints at necks on globular vessels, restricted jar or bottle necks, and unrestricted or just slightly incurving basin-like forms. The largest vessels continue to be in the same range as the big Olla sin cuello pots. One odd form with a bowl-like neck is known from two large sherds of different vessels. Both had smooth but unburnished sandy tan surfaces, and one was decorated with a pale, washy red paint around the rim and outside of the neck and in roughly vertical stripes inside the neck.

There are two principal wares in this assemblage. The first has a light tan, sandy, moderately fine tempered paste that is very distinct from the Olla sin cuello ware, but is not easy to separate from various minor wares of the Late Intermediate Period. This ware is generally not burned. The other is very similar to the Olla sin cuello ware, but often seems to be even coarser and has a more reddish color. If it is actually distinct from the Olla sin cuello and Late Intermediate wares it resembles, it will be hard to distinguish reliably in the field.

I suspect that this material falls in the apparent temporal gap between the Olla sin cuello and Alto Ramírez dates, which run up to around 400 AD, and the arrival of settlers from the collapsing Tiwanaku state around 950 or 1000 AD. At present I know of no other material that might date to this period, although it is possible that the Olla sin cuello tradition carried on through this time with little change. The added variety of forms, pastes, tempers, firing techniques, and decoration of the "Late Formative" material suggests that it might be a later development. Alternatively, the "Late Formative" pottery might represent a different social

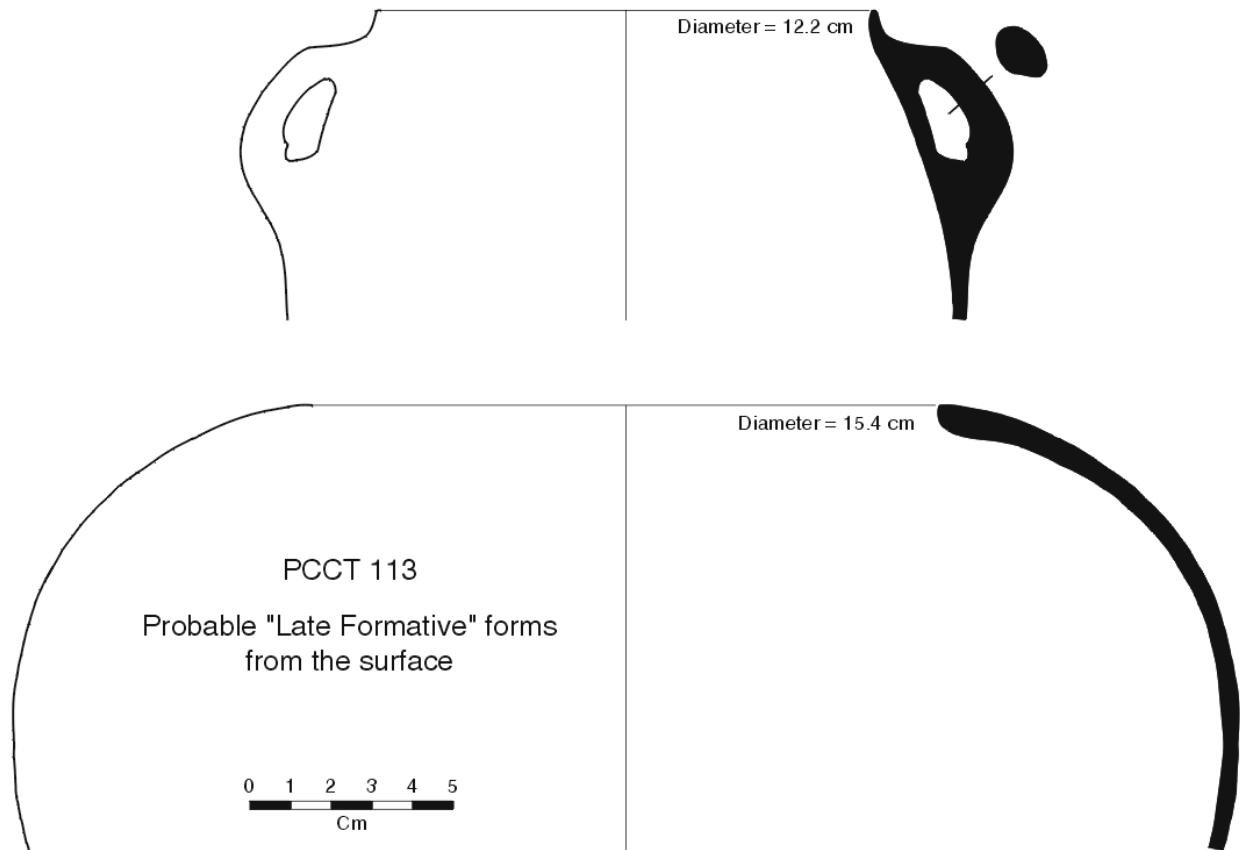


group contemporary with the Olla sin cuello tradition.

Possibly because the pottery is hard to identify when it is mixed with later material, only a few "Late Formative" sites have been recognized, clustering on the north side of the valley, within five kilometers of the coast. Much of the known settlement is up on the rim of the valley, rather than along the floodplain. This location may be a compromise allowing access to both the river bottom and the *lomas* grazing and hunting areas outside the valley. The apparent absence of "Late Formative" sites further up the river suggests that marine resources might have been important. Residents of these sites probably had to haul water up from the river except during rare rainy seasons.

Most of the sites comprise scatters of pottery and some stone grinding equipment, and some sections appear to be terraced. A few similar apparently terraced areas in the same vicinity have no artefacts on the surface, but may pertain to the same occupation. The sites are relatively small and few, which suggests a much shorter time period or a much smaller population than is represented by the Olla sin cuello sites.

The best preserved terraces and richest surface scatter are at site 109, the Burgess-Reinhard



site. This site totals about 0.9 ha and appears to be residential. About 120 meters up a small draw are two areas on the slopes at either side of the draw that are marked by small clusters up to a meter in diameter of stones and sherds. The surrounding terrain has no stones on the surface at all. Each cluster has several rocks and up to dozens of sherds. The sherds in each cluster apparently come from a single "Late Formative" vessel. I suspect that these odd features may mark burials. A human occipital found in the draw offers tenuous support for this hypothesis.

On a regional level, the early ceramic period seems to be characterized by considerable spatial variation. The Huaracane ceramics from the Moquegua area date to around 50 AD (Goldstein 1989a), contemporary with the coastal Osmore Olla sin cuello material. Yet the Huaracane ceramics (Feldman 1989) are conspicuously marked by fiber temper, two distinct pastes, painting, and many more open forms. The neckless ollas from Carrizal (Bolaños 1987) look similar in form to the coastal Osmore Olla sin cuello pots, but are made from four different pastes, none of which sounds quite like the coastal valley ware, and are accompanied by various open forms that do not appear in the Olla sin cuello assemblage. The Alto Ramírez burial mounds, dated contemporary to the coastal Osmore Olla sin cuello sites, are extremely similar to the coastal Osmore ones. Yet details such as the tomb construction are different, the Alto Ramírez pottery is more elaborated in forms and plastic decoration, and the combs, spoons, and other grave goods items are unknown in the coastal Osmore early ceramic period. The Wawakiki

cemetery is dated around 340 AD, probably contemporary with the Olla sin cuello sites, yet the pottery again is different. Wawakiki pots have different, sometimes cruder forms and finishes, and one example has a simple painted decoration. The burial practices at Wawakiki, involving a cemetery of unmarked shallow pit graves furnished with plant fiber mats and other goods, are also quite distinct from any noted in the valley.

It appears that during the early ceramic period, at least up to 400 AD or so, there may have been numerous distinct social groups living in different parts of the coast and valleys in this region. The dates suggest that many may have been contemporaneous, although clearly more data is needed to be certain.

The evidence for the Olla sin cuello time period is scanty, but it becomes almost nonexistent for the subsequent 500 to 600 years. Maybe the "Late Formative" ceramics fall in this gap. Unless we arbitrarily extend the known earlier periods for an additional half millennium, the only likely point of comparison for this material is with the even less well known El Atajo surface scatter southeast of Tacna. For the moment, I suggest that this lack of evidence may reflect a real decline in population during the Late Formative. Moreover, the location of the presumed Late Formative sites up on the rim of the valley suggests that these people were not focussing on farming as had their predecessors.

This apparent abandonment of the valley bottom seems to occur a bit early to be linked to events of the Middle Horizon, but the dating is far from precise. I still suspect, as I have suggested before, that the increasing use of large irrigation works in the middle valley by Tiwanaku IV and V people (Goldstein 1989a, 1989b) may have reduced the flow of the coastal Osmore river sufficiently to markedly reduce the carrying capacity of the valley and to make agriculture unattractive. The coastal valley population dropped dramatically, and settlement and subsistence shifted towards the *lomas* and marine resources outside the valley bottom.

What we know with a little certainty is that the far south coast of Perú was populated by a variety of distinct groups in the early ceramic period, with distinct material cultures, supernatural beliefs as reflected in burial practices, and probably distinct social organizations and scales of interaction. Members of the Olla sin cuello group in the coastal Osmore were specialized, settled farmers, who conducted some daily affairs like cooking in relatively large groups, lived in large settlements, and had some individuals of high or at least distinct status that may have been ascribed rather than achieved. Whether they enjoyed an under-utilized farmer's utopia, shuttled back and forth among economically specialized settlements, or were limited by territorial neighbors remains to be determined, but they apparently reached a level of population density, regional ethnic diversity, and perhaps social complexity that was to be unequalled in the coastal valley for over 500 years. I am tempted to lay the blame for the coastal Osmore's decline on the doorstep of Tiwanaku expansion.

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