EARLY STONE BOWLS AND MORTARS FROM NORTHERN PERU

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Introduction

This paper describes a particular stone vessel form dating to the Initial Period (1800-900 B.C.) and Early Horizon (900-200 B.C.). The vessel form in question is a tall, wide-mouthed bowl or mortar, and almost all known examples have a slight, yet distinctive, flanged lip. This vessel form is believed to have been an important part of the cultural assemblage of several early north Peruvian societies.

Previously reported pieces have been described as bowls, mortars, or even cups (Fung 1969: 28-29, figure 2; Strong and Evans 1952: 40-43; Tello 1943: 137, figures 17 a,b, 1960: 300-304, figures 126-133). However, these variations in ascribed function are attributable to the small size and fragmentary nature of the examples found. Some whole examples are known, but almost all of these are from undocumented or undated contexts. Isolated fragmentary specimens with well-described contexts are known; however, the importance of these scattered examples was not appreciated until the recent discovery of over two dozen fragments from dated sites in the Casma Valley. Among the Casma specimens, several fragments may have been parts of deep bowls, but there is also evidence to suggest that at least some were parts of mortars. In the following sections these stone mortar or bowl fragments and their contexts are described and compared with other specimens from northern Peru.

Casma Valley vessel fragments

In 1980, survey and excavation of a number of sites in the Casma Valley dating between the Cotton Preceramic Period (2500-1800 B.C.) and the Early Horizon (900-200 B.C.) were carried out by the authors (S. Pozorski and T. Pozorski 1987). During these investigations, a total of 28 stone bowls and mortar fragments was found (Table 1). Twenty-five of the fragments were collected from Pampa de las Llamas-Moxeke, one from Tortugas, one from Las Haldas, and one from Pampa Rosario (Figure 1). Most of the fragments were found during survey and surface collection of the sites, but two were recovered during test excavations. Of the pieces discovered, 13 are rim fragments, nine are bases, two are possible lid fragments, and one is more definitely a lid fragment (Figures 2-4). Based on an assessment of the rim form, diameter, thickness, and material type, the 25 fragments from Pampa de las Llamas-Moxeke represent a minimum of 20 distinct mortars or vessels. Virtually all pieces are well-smoothed on their interior and exterior surfaces, although in two instances, portions of the exterior of basal fragments are less well finished. One specimen is decorated.

The Casma Valley collection exhibits a significant degree of consistency with respect to measurable vessel diameter and wall thickness. For the rim fragments (Figure 2), the inner vessel diameters distribute rather evenly within the 15 to 28 cm range, with an average of 21.5 cm and a median of 21 cm. Vessel wall thickness varies from 9 to 23 mm, with most fragments falling in the 14 to 22 mm range. The most distinctive features of the rim fragments are a flattened top and a slight flange at the lip which is demarcated by a shallow indentation varying from 6 to 15 mm below the top. Only one example lacks this flange. All rims flare out slightly from a vertical position.

Side wall fragments from near the rim and not associated with the vessel base reflect an inner vessel diameter ranging from 16 to 23 cm, with an average and median of 20 cm. Vessel wall thickness in this zone varies from 11 to 29 mm, with most in the 12 to 15 mm range.

Most of the basal fragments (Figures 3-4) consist of portions of both the vessel base and the vessel side wall, and measurements of the side wall fragments from both the lower part of the vessel and where they meet its bottom reveal a slight decrease in the inner vessel diameter and a corresponding slight increase in wall thickness from rim to base. For the topmost portion of each basal side wall

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Table 1. Stone bowl or mortar fragments from the Casma Valley.

Specimen	Type of fragment	Inner diameter (cm)	Thickness (mm)	Material type
Pampa Llamas Figure 2a	rim	20	13-22	gabbro
Pampa Llamas Figure 2b	rim	27	15-23	coarse-grain andesite
Pampa Llamas Figure 2c	rim	21	14-22	andesite
Pampa Llamas Figure 2d	decorated rim	23	14-20	weathered gabbro
Pampa Llamas Figure 2e	rim	24	14-16	gabbro
Pampa Llamas Figure 2f	rim	26	13-20	metamorphized graywacke
Pampa Llamas Figure 2g	rim	18	15-21	andesite
Pampa Llamas Figure 2h	rim	19	14-17	gabbro
Pampa Llamas Figure 2i	rim	21	12-22	medium-grain diorite-gabbro
Pampa Llamas Figure 2j	rim	15	9-16	weathered fine-grain gabbro
Pampa Llamas Figure 2k (excavated)	rim	28	13-14	medium-grain gabbro
Tortugas (Figure 2l)	rim	21	14-16	fine-grain gabbro
Pampa Rosario (Figure 2m)	rim	17	13-18	andesite or andesite tuff
Pampa Llamas Figure 2n	lid	32	16-23	metamorphized basalt

Table 1, continued.

Specimen	Type of fragment	Inner diameter (cm)	Thickness (mm)	Material type
Pampa Llamas Figure 3a	base	20 top 19 bottom	26-31 body 67 bottom	basaltlike rock with red hematite
Pampa Llamas Figure 3b	base	15 top 13 bottom	24-31 body 39-48 bottom	porphyritic andesite
Pampa Llamas Figure 3c	base	17 top 14 bottom	13-26 body 22-33 bottom	basalt, dikelike lamprophyre
Pampa Llamas Figure 3d	base	21 bottom 40-49 bottom	22 body	partially oxidized andesite
Pampa Llamas Figure 3e	base	18 top 16 bottom	19-22 body 59-64 bottom	andesite
Pampa Llamas Figure 3f	base	23 top 21 bottom	22-33 body 49 bottom	andesite
Las Haldas Figure 3g	base	22 top 19 bottom	13-19 body 23-27 bottom	gabbro
Pampa Llamas	body	18	13-14	oxidized, slightly porphyritic basalt-andesite
Pampa Llamas	body	20	11	gabbro
Pampa Llamas	body	23	12-15	gabbro
Pampa Llamas	body	22	22-29	dark andesite with red hematite
Pampa Llamas (excavated)	body	16	13-14	andesite
Pampa Llamas	base or lid?	-	19	basaltlike rock with red hematite
Pampa Llamas	base or lid?	-	5.5	light andesite or metagraywacke

fragment, the inner vessel diameter varies from 15 to 22 cm, with an average diameter of 19 cm and a median diameter of 20 cm. At the base of each fragment, where it joins the bottom, the inner vessel diameter ranges between 13 and 21 cm, with an average of 17.5 cm and a median of 19 cm.

The vessel body thickness measured in these pieces varies from 13 to 33 mm, with the thickest dimensions occurring near the base portion of each piece. The thickness of the vessel bottom varies widely--from 5.5 to 67 mm, with a majority of the pieces in the 40 to 49 mm range. The unusually thick base fragments and those having only roughly finished exteriors are likely to be from unfinished vessels. It is also possible that the two pieces with the smallest thickness, 5.5 mm and 19 mm, are not base fragments. These two examples are very small and exhibit neither the curve typical of body fragments nor the upturning indicative of a base to side wall juncture. Therefore, they may be lid fragments.

It is clear from the available measurements that the stone vessels are all fairly straight-sided and almost cylindrical, with slightly flaring side walls such that the inner diameter at the lip is only a few centimeters wider than the inner diameter at the bottom of the vessel. Since only fragments of these vessels were encountered, and none extends from rim to base, the exact height of the vessel type in question can only be estimated. Most were probably rather tall, 20 to 30 cm or more (Figure 5), given the 13 cm height of one rim fragment (Figure 2a) and the thickness of the basal vessel fragments. Others perhaps stood only 15 cm high or less. The projected height of the taller vessels is in accord with the dimensions of complete stone mortars of this type on display at the Museo Casinelli in Trujillo, Peru. The smaller vessels (15 cm high or less) would be similar to the example recovered by Fung (1969: 28-29, figure 2) at Las Haldas.

One other stone fragment from Pampa de las Llamas-Moxeke can be more definitely called a lid (Figure 2n). It has a rounded profile and a slight flange like the rim fragments, but, instead of a flattened top, it has a definite curve when viewed frontally. The diameter along its outer edge is 34 cm, whereas the diameter along the inner curve of the flange is 32 cm. Although it is conceivable that this fragment was part of a very flat circular plate or tray, it appears more likely, given the projected diameters, that it was part of a lid for one of the larger stone vessels. The slight flange would have facilitated gripping and removing the lid from the top of one of the vessels.

Three examples from Pampa de las Llamas-Moxeke, one base and two body fragments (Table 1,) have traces of red pigment, probably hematite, ground onto their interior surfaces. This suggests that at least some of the stone vessels were used as mortars for pigment preparation. The base fragment (Figure 3a), in addition to having red pigment on its inner surface, has traces of red pigment ground into the broken edge of the body portion of the fragment, indicating continued use as a mortar after the vessel was broken. Long, ground-stone pestles are exhibited along with one whole example in the Museo Casinelli.

The evidence that these vessels were used in pigment preparation does not mean, however, that they were used for everyday grinding purposes. None exhibited wear from frequent use, such as is present in numerous mortars and mortar fragments from earlier and later prehispanic cultures. Red pigment was frequently used by prehispanic Peruvian cultures, especially in ritual or ceremonial contexts (Donnan and Mackey 1978: 18-19; S. Pozorski and T. Pozorski 1979a: 417, 420, 1979b: 356; T. Pozorski 1976: 109-110, 360, 372), and it is not surprising that evidence for its use abounds at Pampa de las Llamas-Moxeke. Red pigment was used to color the friezes of the Moxeke mound (Tello 1956: 60-64). Many whole bivalve shells from the site show evidence of use as red-paint receptacles or palettes, a practice that has also been documented within the Moche Valley (S. Pozorski and T. Pozorski 1979a: 420-421; T. Pozorski 1976: 110).

Although the presence of ground red pigment suggests that some stone vessels functioned as mortars, most fragments do not bear evidence of pigment processing. It is possible that some of the vessels were used as mortars to grind other ritual substances, such as hallucinogens, as suggested by Zeidler (1988: 243-249). The case for this proposed use, however, is strongest for mortars decorated

with feline designs or shaped like felines (*ibid.*: 273-274). None of the Pampa de las Llamas-Moxeke examples exhibits such designs.

Hence, whereas some of the stone vessels from Pampa de las Llamas-Moxeke were used as mortars, others may have served as elaborate, deep bowls for storing or serving special foods or beverages. The presence of at least one and possibly three lid fragments in the Pampa de las Llamas-Moxeke sample would support a storage or serving function for some of the vessels. On the other hand, the low ratio of lid fragments to other vessel parts suggests that most of the containers did not have lids.

The archaeological contexts of the stone bowl and mortar fragments provide both chronological and functional information. As mentioned above, most of the fragments were collected from the surface of Pampa de las Llamas-Moxeke. Twenty-two radiocarbon age determinations (uncalibrated) from various stratigraphic and architectural contexts at the site range from 1795 to 1120 B.C. (S. Pozorski 1987: 17, table 1; S. Pozorski and T. Pozorski 1987: 10-11, table 2, 32, 1990: 483-486, table 1), and, along with associated ceramic and textile evidence, place it firmly in the Initial Period.

The surface finds of stone bowl and mortar fragments recovered during the 1980 survey at Pampa de las Llamas-Moxeke were concentrated in the southwest portion of the site in the general area designated by Figure 6C. Many were found near or on top of eroded stone wall foundations which suggests that once a stone bowl was broken, during manufacture or use, the fragments were used, along with other nearby stones, for wall construction or repair.

One excavated body fragment was found embedded in the floor in the back room of a small, two room structure (Figure 6A). The other excavated specimen, a rim fragment, was found on the floor of a small circular structure (Figure 6B).

Of the 25 stone bowl and mortar fragments found at Pampa de las Llamas-Moxeke, one rim (Table 1, Figures 7-8) is unusual because it has a decorated exterior. This rim was found in a small quebrada at the base of Cerro San Francisco that bounds the site along its western edge (Figure 6C). Enough of the incised design is present to suggest its general placement in the early iconography of the desert coast, but not enough to make any further interpretations. In terms of form, the shape coincides with the undecorated examples, and the rim has a slight flange present at the lip extending to 13 mm below the top. The incised design begins immediately below this flange. Viewed upright, the design represents the back portion of a leftward-looking profile head with a semirectangular eye (rounded corners on the upper half), two segmented bands depicting a headdress or hair and two vertical bands delimiting the back of the profile head.

Viewed upside down, the design becomes a rightward-looking profile head with a semirectangular eye (rounded corners on the lower half), two segmented bands depicting rectangular teeth apparently beginning to curve upward along the front of the face, and two vertical bands forming the back of the profile head. Tello (1956: 52) reported two stone mortar fragments from the quebrada surface at the foot of Cerro Pan de Azucar over a kilometer north of the site. One of these had "Chavín" designs on it, but no details or illustrations are provided. Former members of the expedition do not recall these finds (Donald Collier and Toribio Mejía Xesspe, personal communications).

The remaining three stone vessel fragments, one base and two rims, were found at three different sites. Though the small number of finds precludes conclusions concerning function, some chronological ties can be made.

The rim found at Tortugas (Figures 1 and 21) is very similar to examples from Pampa de las Llamas-Moxeke. The three radiocarbon dates from our excavations at Tortugas are somewhat earlier than those from Pampa de las Llamas-Moxeke (S. Pozorski 1987: 17, table 1; S. Pozorski and T. Pozorski 1987: 10-11, table 2, 46). However, we feel that these dates may be inaccurately early because they place the site of Tortugas chronologically earlier or contemporary with the coastal Cotton

Preceramic site of Huaynuná, 1.8 km away. Moreover, the ceramics, textiles, and subsistence evidence all strongly indicate that Pampa de las Llamas-Moxeke and Tortugas are contemporary and in fact had a close symbiotic relationship (S. Pozorski and T. Pozorski 1987: 30-51). The stone bowl evidence strengthens this connection.

The base fragment from Las Haldas (Figures 1 and 3g) was a surface find from the edge of a platform located about 80 m east of the highest temple structure, structure 1 on Grieder's 1975 map (Grieder 1975: figure 1). Las Haldas was occupied from the late Cotton Preceramic Period into the Early Horizon (S. Pozorski and T. Pozorski 1987: 16-30), therefore it is not possible to accurately date this specimen. However, this piece has three places where attempts were made to drill holes, possibly in an effort to rework the piece into a net weight. This evidence of reuse suggests that the original use of the fragment may belong with the earlier, more prevalent, Initial Period refuse which is chronologically contemporary with Pampa de las Llamas-Moxeke (S. Pozorski 1987: 17, table 1).

Fung (1969: 28-29, figure 2) reports two bowl fragments (called *tayas* or cups) from the surface of Las Haldas, and these are reconstructed with a profile almost identical to the rims found at Pampa de las Llamas-Moxeke and Tortugas. The height of the vessel she reconstructs, however, is only half as tall as that indicated by several of the specimens in our larger sample. The dating of these surface specimens is also problematical.

The last rim fragment was recovered from the surface in the central portion of the site of Pampa Rosario (Figures 1 and 2m), but not associated with any structure. The site has three radiocarbon dates ranging from 810 to 450 B.C., which place it within the Early Horizon (S. Pozorski 1987: 17, table 1), and the remaining artifacts show a single occupational component distinct from Pampa de las Llamas-Moxeke (S. Pozorski and T. Pozorski 1987: 65-70). This rim is quite likely a fortuitous occurrence and may have been derived from Pampa de las Llamas-Moxeke which is just on the other side of Cerro San Francisco. However, without better contextual data, we cannot rule out the possibility that the use of stone bowls or mortars in this area continued into the Early Horizon.

All of the stone bowl and mortar fragments were macroscopically examined and tentatively identified as to material type by geologists George Harlow of the American Museum of Natural History, Jay Noller of the University of Colorado at Boulder, and Lisa Wells of Stanford University. The specimens are fashioned from a number of basic rocks, including gabbro, andesite, and basalt (Table 1). According to recent geological studies (Wells 1988: 10-11), all of these stone types, derivative of the Cretaceous coastal batholith, are generally available in all sectors of the Casma Valley.

There is no direct evidence for the means of manufacture of the stone vessels, but two possible methods are suggested based on the known physical properties of the stone material utilized. All of these stones are quite hard and were probably ground down to the desired shape either 1) through the use of grinding stones with a hardness equal to or greater than the hardness of the mortar stones, or 2) through the use of such grinding stones in combination with sand, especially sand containing quartz particles. By either method it would have taken a person many hours or days to complete the shaping of one of these stone vessels.

Raw material sources for stone bowls or mortars, consisting of either loose boulders or quarried outcrops, are accessible within a few hundred meters to about one kilometer from the sites where stone vessel fragments have been found. At Pampa de las Llamas-Moxeke, for example, the nearest potential sources are the foothills or mountains situated about one kilometer to the northeast of the site. For sites such as Las Haldas or Tortugas, suitable material is potentially available at a distance of only a few hundred meters from these settlements. Nevertheless, because each stone vessel was shaped from a boulder weighing close to 50 kg, a substantial effort was necessary to obtain suitable material.

The total effort involved in making a deep bowl from a hard stone emphasizes the importance of these vessels to the early societies of Casma. The lack of substantial use wear on any of the specimens is a further indication of the special status of these vessels; even ones which served as mortars were not worn enough to have been used frequently and were presumably utilized for special rare purposes or activities.

Stone vessels found outside the lower Casma Valley

In addition to the examples from Pampa de Las Llamas-Moxeke, Tello (1956: 36) also reports two stone mortar fragments of the "Chavín style" at Pallka in the upper Casma Valley (Figure 1). Again, no details are given. Although Pallka is known for its "Chavín style" ceramics, our assessment of architecture and ceramics at the site revealed that it was also occupied during the Initial Period (S. Pozorski and T. Pozorski 1987: 86-89). Thus, Tello's stone mortar fragments cannot be conclusively assigned to either occupation.

Many examples of stone bowls or mortars are known from outside of the Casma Valley. These data are summarized in Table 2. Zeidler (1988) has recently discussed evidence of stone bowls, mortars, and vessels in both Peru and Ecuador. Many of the examples cited, however, are distinct from the Casma collection. Some are relatively amorphous implements clearly used for everyday domestic grinding purposes whereas others are specialized feline-shaped mortars which Zeidler believes were used for processing hallucinogens (*ibid.*: 250-257, 261-264). Between these two extremes of form and function, there are numerous remains of stone bowls and mortars which closely resemble examples from the Casma Valley. They are known from the sites of Huaca Negra and the Temple of the Llamas in the Virú Valley, the Caballo Muerto Complex in the Moche Valley, Salinas de Chao in the Chao Valley, Punkurí in the Nepeña Valley, Huaca Suchimán in the Santa Valley, and Chavín de Huántar and La Pampa in the north-central highlands.

Additional sites yielded stone bowl or mortar fragments that are somewhat similar to the Casma Valley examples, but differ in rim form and/or vessel size. These sites include Kotosh, Huacaloma, and La Galgada in the north and central highlands, Barbacoa and Palenque in the Chicama Valley, Site 12.19 in the Jequetepeque Valley, and San Isidro in northern Ecuador.

In Virú, Strong and Evans (1952: 40-43) recovered 29 stone bowl fragments during their investigations at Huaca Negra and the Temple of the Llamas. As in the case of Pampa de las Llamas-Moxeke, most of these fragments were found on the surface of the site. Of the four excavated examples, two were found in test pits, one in a stratigraphic excavation, and one during clearing within the Temple of the Llamas. The descriptions and measurements of these fragments coincide almost exactly with those from the Casma Valley. Rim diameters are typically 20 to 21 cm, and the reconstructed vessel form is described as having a "flat base, slightly outward flaring wall, flat rim, and slightly flanged lip" (Strong and Evans 1952: 43). All of the examples from Virú are made of hard stone, granite or basalt, and most are smooth or polished. All were associated with the upper third of the midden, the Middle Guañape phase, which is generally regarded as dating to the Initial Period (Lanning 1967: 86-87).

In 1973, Thomas Pozorski (1976: 446) found two stone bowl rims at the Caballo Muerto Complex in the Moche Valley. Both have vertical sides and exterior flanges. One came from the surface adjacent to the wide road which connects Huaca de los Reyes and Huaca San Carlos. The second was found during the excavation of the Hall of the Niches next to Huaca Cortada. The dating of the associated sites is about 1500 to 1000 B.C. (S. Pozorski and T. Pozorski 1979a: 414, 420-421), within the range of occupation of Pampa de las Llamas-Moxeke and Huaca Negra.

At Salinas de Chao in the Chao Valley, Alva recovered two fragments of a vessel with a diameter of 34 cm (Alva 1986: 78), somewhat larger than those from Casma. One of these fragments also has a scratched abstract design on its interior (*ibid.*: figure 19D). Nevertheless, the form of this rim is

Table 2. Stone bowls or mortars outside the Casma Valley.

Specimen/ Reference	Type of fragment	Inner dia. (cm)	Material type	Date
Huaca Negra & Temple of the Llamas (Strong & Evans 1952)	29 fragments (rims, bases and bodies)	20-21	granite or basalt	Initial Period
Caballo Muerto Complex (T. Pozorski 1976)	2 rims	-	-	Initial Period
Salinas de Chao (Alva 1986)	2 fragments (1 rim)	34	granite	Initial Period
Punkuri (Tello 1943; Larco 1941)	1 whole vessel	-	diorite	Initial Period
Huaca Suchimán (Tello 1943)	1 whole vessel	-	-	?
Chavín de Huántar (Tello 1960)	1 rim	16.9	-	Early Horizon
	3 rims	-	-	Early Horizon
	1 base	-	-	Early Horizon
	2 bodies	-	-	Early Horizon
Chavín de Huántar (Burger 1984)	1 rim	13	-	Early Horizon
Chavín de Huántar (Lumbreras 1971)	1 whole vessel	-	-	Early Horizon
La Pampa (Terada 1979)	1 rim	19	gabbro	Initial Period
	1 whole vessel	5	dacite	Initial Period
	1 body	-	micro-diorite	Initial Period
	1 base	-	-	Initial Period
Site 12.19 Jequetepeque Valley (Ravines 1982)	1 base	7	anthracite	Early Horizon
Kotosh (Izumi & Sono 1963)	1 rim	-	-	Initial Period
Kotosh (Izumi & Terada 1972)	1 base	12	-	Initial Period
	2 rims	11,15	-	Early Horizon

Table 2, continued.

Specimen/ Reference	Type of fragment	Inner dia. (cm)	Material type	Date
Huacaloma (Terada & Onuki 1982)	2 bases	10-11	amphibolite	Early Horizon
La Galgada (Grieder et al 1988)	1 whole vessel	9	sandstone	Late Preceramic & Init. Period
	1 whole vessel	10	fine-grained	
	1 rim	12	fine-grained	
	1 base	12	fine-grained	
Barbacoa & Palenque (Larco Hoyle 1941)	1 whole vessel	17	-	?
	3 whole vessels	3.8-5.2	-	?
San Isidro, Ecuador (Zeidler 1988)	21 fragments	7-18	igneous rock	1700-1500 B.C.

quite similar to the Casma specimens. Salinas de Chao is generally assigned to the Cotton Preceramic Period (2500-1800 B.C.). Carbon 14 dates from the site, however, suggest instead that it is an aceramic site that dates to the middle of the Initial Period (1800-900 B.C.) (S. Pozorski and T. Pozorski 1990: 488).

Tello (1943: 137, figures 17a, b) illustrates two whole stone mortars, one, made of diorite, from Punkurí in the Nepeña Valley and one from Huaca Suchimán in the Santa Valley. Although no dimensions are given with the illustrated mortars, a photograph published by Larco Hoyle (1941: 16, figure 11) of the Nepeña mortar shown *in situ* with a female burial indicates that the general size and proportions of both the Nepeña and Santa mortars are comparable to the size and proportion ranges of the fragmentary stone vessels and mortars from Casma, Virú, and Moche. The Nepeña mortar was found with a diorite pestle, and Tello (1943: 137) calls this example a mortar. Both have incised designs on their exterior surfaces which, though not particularly similar to the decorated rim from Pampa de las Llamas-Moxeke, nevertheless appear to be within the artistic canons of the Initial Period and Early Horizon.

The site of Punkurí where the Nepeña mortar was found is usually considered to be an Early Horizon Chavín site, based mainly on the adobe feline sculpture that once adorned its central staircase (Kauffmann 1980: 272; Willey 1971: 123). It has recently been argued (T. Pozorski 1983: 31-37; T. Pozorski and S. Pozorski 1987: 43; Daggett 1987: 120), however, that Punkurí dates to the Initial Period (1800 to 900 B.C.) rather than the Early Horizon because of its similarities in adobe frieze iconography and the use of conical adobes to the dated Initial Period coastal sites of Huaca de los Reyes, Garagay, and Pampa de las Llamas-Moxeke. If such is the case, then the stone mortar found there is comparable in date to the other bowl and mortar fragments discussed in this paper. The Santa Valley specimen has no provenience data other than its reported site of origin, Huaca Suchimán; hence, there is no line of evidence suggesting its chronological placement independent of its general similarities to the rims and vessels already discussed.

In his publication about Chavín de Huántar, Tello (1960: 300-304) describes several stone mortar fragments and whole vessels reported to have come from the site. Two whole mortars, including the famous jaguar-shaped mortar at the University of Pennsylvania, belong to the class of jaguar-shaped mortars described by Zeidler (1988: 261-264) and bear little resemblance to the generally undecorated mortar and bowl fragments from the coast.

The same is true of the fragment found at Chavín de Huántar by Bennett, which is a very thick rim piece decorated on both the interior and exterior surfaces (Tello 1960: 300-301, figure 126). The remaining seven illustrated pieces (*ibid.*: 301-303, figures 129-132), five of which are decorated on the exterior, share some similarities in form with examples from the coast. Four have either a slightly flanged rim or an incised line running parallel with the top of the lip in approximately the same position as coastal examples. The diameter given for one piece (16.9 cm) indicates that at least this vessel, if not the others, falls within the size range of coastal examples. The most recent interpretation of the dating of Chavín de Huántar (Burger 1981: 592-602, 1984: 277-279, chart 24) places its main florescence in the Early Horizon, with most reliable radiocarbon dates falling between 800 and 200 B.C. The mortar fragments found by Tello and Bennett probably date to this time period.

In his excavations at Chavín de Huántar, Burger recovered one stone bowl rim with a rounded profile and an inner diameter of 13 cm (Burger 1984: 197-198, 391, figure 397). Lumbreras illustrates several stone mortars from Chavín de Huántar (Lumbreras 1971: figure 27A-F). Although no detailed information is provided for these objects, one example has a flanged rim similar to the Casma examples (*ibid.*: figure 27D). The flange itself is decorated, however, and this does not occur within the Casma sample. Also, like the specimen Burger recovered, this vessel has a smaller diameter than the Casma vessels.

At La Pampa, the Japanese Scientific Expedition recovered four stone bowl specimens dating to the Yesopampa Period (second half of the Initial Period). One of these closely resembles the Casma specimens in rim shape and diameter (19 cm) (Terada 1979: plates 88b1, 125-6). A second, complete example has vertical sides and a slight incised line demarcating a narrow rim zone comparable to the flange area of the Casma examples (*ibid.*: plates 88b3, 125-4). This vessel, however, has an inner diameter of only 5 cm. Two additional vessel fragments, one a decorated body fragment (*ibid.*: plates 87c3, 125-7) and the other a base fragment (*ibid.*: plate 125-8) are too incomplete to compare feasibly with the Casma collection.

Apart from the sites discussed above, where stone vessels recovered more closely match the Casma examples, a few sites in north and central Peru and in northern Ecuador have yielded additional stone vessels and vessel fragments. These examples differ from the Casma specimens with respect to vessel diameter and/or rim form, but appear sufficiently well-made to indicate that they, too, perhaps served either as ceremonial mortars or containers.

In the Jequetepeque Valley at the Early Horizon site 12.19, Ravines recovered a basal fragment of a flat-bottomed "*recipiente*" that has an inner diameter of 7 cm (Ravines 1982: 186, figure 145-3). Aside from its small size, this vessel fragment is unusual because of its composition--anthracite rather than volcanic stone. Ravines also mentions "mortars and cups of worked volcanic rock" from Complex J24 and other sites in the Polvorín sector of the Jequetepeque Valley (Ravines 1985: 223-224). Without more information, however, it is difficult to assess these latter remains.

A number of sites on the North Coast and in the North and Central Highlands have yielded material that may be compared with the Casma bowls or mortars. At Kotosh, fragments dating to the Wairajirca, Kotosh, and Chavín Periods have been found. The Wairajirca example (Izumi and Terada 1972: plate 142-9), a portion of a flat bottom with an inner diameter of about 12 cm, is comparable to some of the Casma basal fragments with small diameters. The Kotosh Period specimen is a non-flanged rim with an unspecified diameter (Izumi and Sono 1963: plate 111C4, 175-11). This rim extends to the vessel base that angles downward much more sharply than any of the Casma examples. The Chavín Period examples consist of two rims that are not flanged (Izumi and Terada 1972: plates 58-3, 4 and 139-17, 18). One is beveled and has a diameter of 15 cm (*ibid.*: plate 139-17), rather small compared to most of the Casma examples. The other rim is more similar to the Casma examples, but has an inner diameter of only 11 cm (*ibid.*: plate 139-18).

At Huacaloma in the North Highlands, two stone vessel fragments were discovered by Terada and Onuki (1982: plates 64-4 and 126-3, 4). Both have flat bottoms and vertical or slightly flaring side walls. Their inner diameters, however, are only 10-11 cm. One of these (*ibid.*: 347, plate 126-4) dates to the Late Huacaloma Period (1000-500 B.C., during the late Initial Period and the first half of the Early Horizon), and the other (*ibid.*: 347, plate 126-3) comes from an Early Cajamarca (Early Intermediate Period) context. This Early Intermediate Period date appears rather late, suggesting that the piece may be a curated vessel that was originally made and used in the Early Horizon.

At La Galgada in the North-Central Highlands, Grieder and his associates recovered two whole and two fragmentary stone vessel or mortar specimens dating to the Late Preceramic and Initial Periods (Grieder *et al.* 1988: figure 89 c-d, g, j). All have small inner diameters, between 9 and 12 cm, and, in two cases (*ibid.*: figure 89 d, g), the rim form is rounded and non-flanged. One whole example, described as a cup, has a flat rim with an exterior groove or flange near the top of the lip (*ibid.*: figures 89 j, 92, 93).

Larco Hoyle illustrates several stone "*vasos*" and mortars said to have been excavated from the sites of Barbacoa and Palenque in the Chicama Valley (Larco Hoyle 1941: 84-85, figures 129, 132-134). Three of these are straight-sided, narrow, cylindrical vessels with no groove or flange on the lip exterior (*ibid.*: figures 132-134). Two others are shaped more like domestic mortars and also have no exterior flanged lip (*ibid.*: figure 129).

Finally, in northern Ecuador at the site of San Isidro, Zeidler recovered 21 examples of stone vessels that date to the Terminal Valdivia Period (1700-1500 B.C.) (Zeidler 1988: 262-268). Most of these examples have inner diameters of 8-12 cm, but at least one is 18 cm across. Rim forms vary from slightly rounded and tapered to vertical and flat. One specimen, though small, has a flanged rim form very similar to examples from Casma (*ibid.*: figure 12c).

Conclusions

Available data suggest that several categories of stone mortars or vessels were commonly made and utilized during the Initial Period and Early Horizon. These range from crudely hollowed-out stones clearly domestic in function to elaborate mortars in the shape of felines that were likely ritual paraphernalia for processing hallucinogens. The specific form from the lower Casma Valley sites, which is most abundant on the north coast, is one of the more distinct categories within this considerable range of variation. It is also apparent, however, that other size and shape categories existed within the area under consideration and sometimes even within the same site. Whether these differences reflect distinct functions or local variations of similarly-used vessels is, as yet, unclear.

This discussion focuses on the specific form of stone bowl or mortar that has a wide mouth, slightly outward-flaring wall, flat base, and a slightly flanged lip. The form also has a limited size range. Its characteristics are quite consistent over a substantial area of the coast and highlands where it was apparently an important element of the early ceramic cultures. The vessel type is most abundant in the north coast valleys of Casma and Virú, with more sporadic occurrences in intervening and nearby North Coast valleys where excavation data for early sites is much less complete. Coastal examples date primarily to the Initial Period; evidence for Early Horizon examples on the coast is inconclusive. Examples from the highlands date to both the Initial Period and the Early Horizon, and Early Horizon vessels tend to be decorated. Evidence to date suggests that the Casma Valley vessels, and probably other vessels of this type, were used ceremonially as mortars for processing red pigment and possibly other ritual materials and as deep bowls which may have been covered.

Admittedly, the data are incomplete and preliminary, however, the known distribution of the Casma stone vessel form suggests that the main center for its manufacture and use was the Peruvian North Coast. Scattered appearances of this vessel type at contemporary highland sites document coastal-highland interaction. Finally, the tendency for Early Horizon examples to be decorated may indicate an elaboration of the probable ritual function of these containers. The direct application of iconographic representations to later vessel exteriors supports the interpretation of earlier, simpler versions as having ritual or ceremonial functions.

Specialized, nonutilitarian stone vessels first became popular and widespread during the Initial Period, concurrently with the first widespread use of ceramics. This is reflected by bowls and/or mortars that are somewhat less similar to the Casma examples, but are nevertheless finely-made. Examples dating to both the Initial Period and Early Horizon have been found on the coast and in the highlands. At least one site, La Galgada, yielded examples dating to the Late Preceramic Period. This indicates that the idea of ceremonial vessels or mortars, if not the specific form, predates the introduction of ceramics. Finally, related stone mortar or vessel forms have recently been reported from northern Ecuador in a dated context equivalent in time to the first half of the Initial Period.

In light of the available data, it is evident that 1) the earliest known occurrence of this general vessel type is in northern Peru and 2) by Initial Period times on the north coast, a variant of this bowl/mortar form had become both very standardized and abundant. This suggests that the concept of finely-made, ceremonial grinding implements or containers, as well as specific associated rituals, may have originated in this general area. The existence of different forms and the distribution of both Casma-like and non-Casma forms are also significant. This information minimally suggests that there was widespread communication, on at least a ceremonial level, throughout much of northern Peru and

Ecuador during early ceramic times. Perhaps with the definition of more distinct vessel types, such as the one described in this paper, it will become possible to assess smaller, more regional spheres of influence and discuss this network of ideas in more detail.

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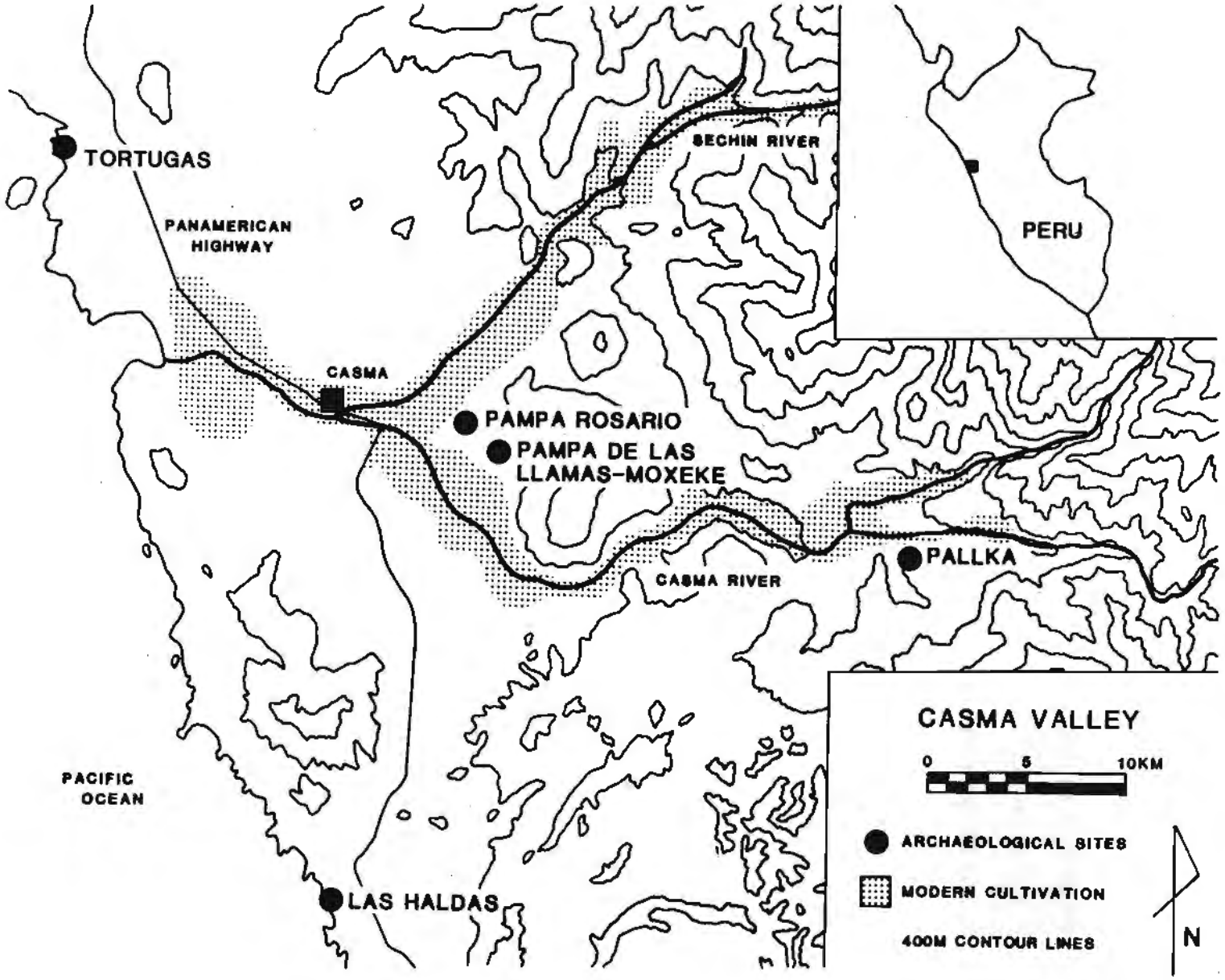

Figure 1: Map of the Casma Valley showing the locations of sites where stone bowl or mortar fragments have been found.

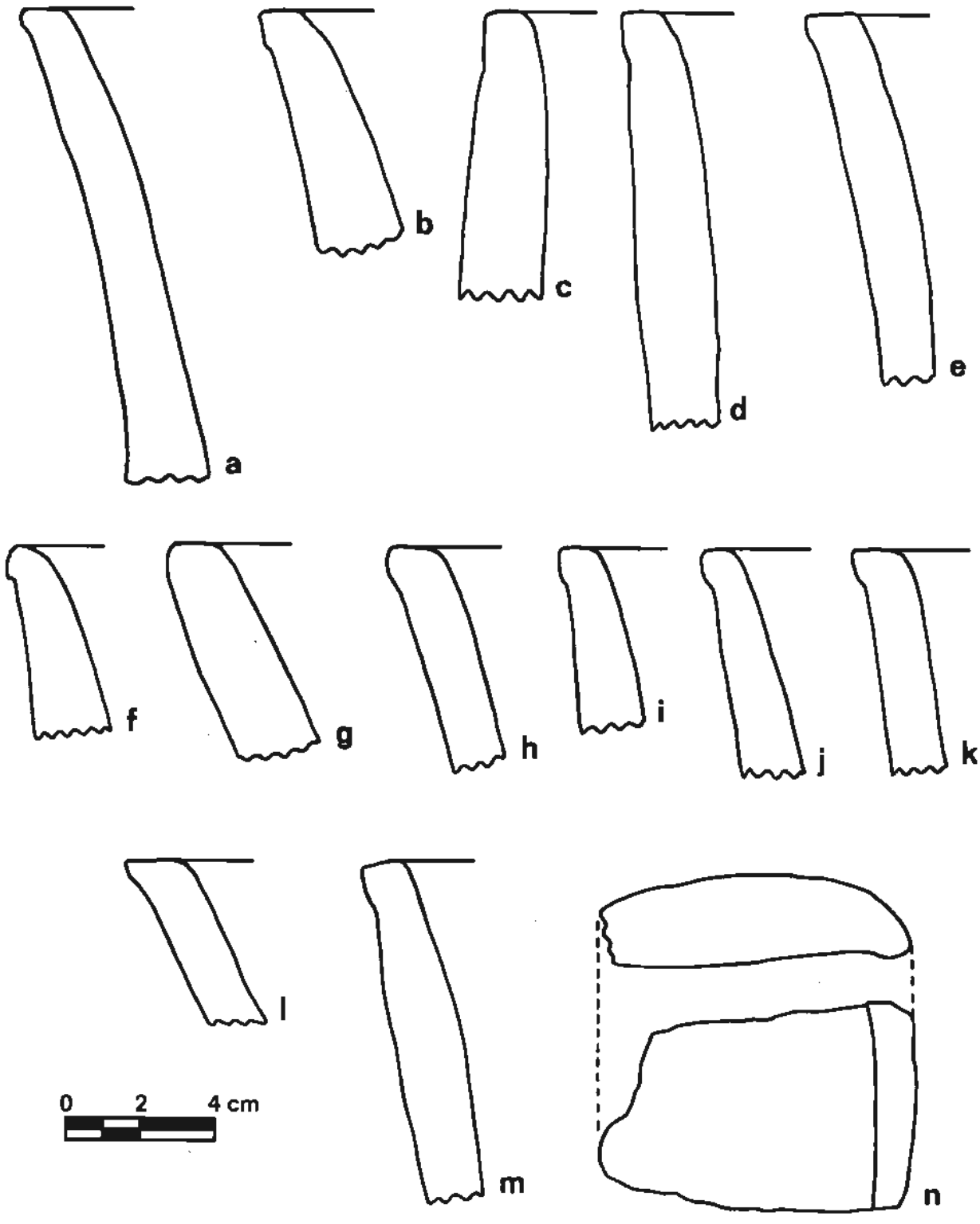

Figure 2: Profiles of stone bowl or mortar fragments: a-j, rims found on the surface at Pampa de las Moxeke; k, rim excavated from a structure at Pampa de las Llamas-Moxeke; l, rim found on the surface at Tortugas; m, rim found on the surface at Pampa Rosario; n, lid found on the surface at Pampa de las Llamas-Moxeke.

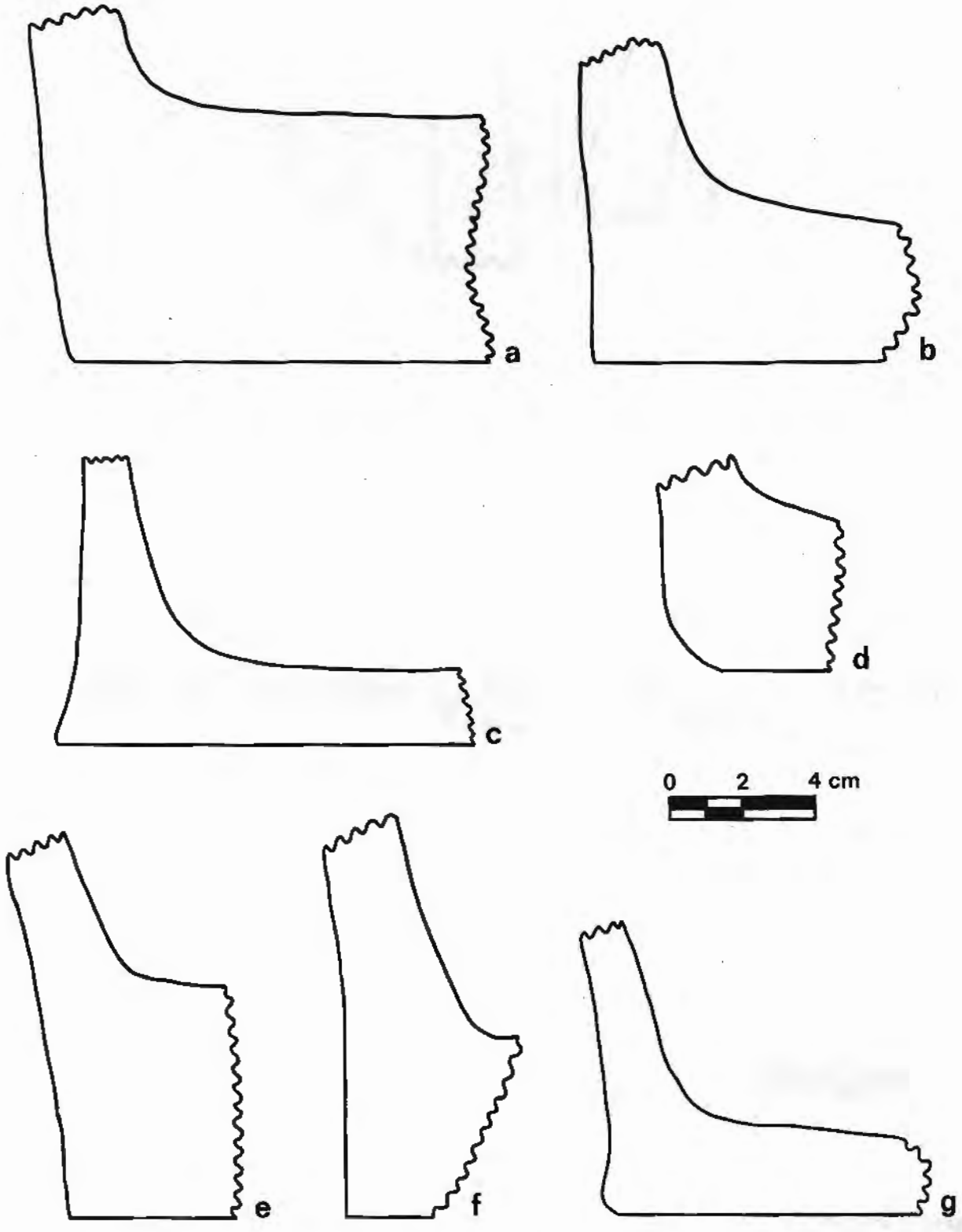

Figure 3: Profiles of stone bowl or mortar base fragments: a-f, found on the surface at Pampa de las Llamas-Moxeke; g, found on the surface at Las Haldas.

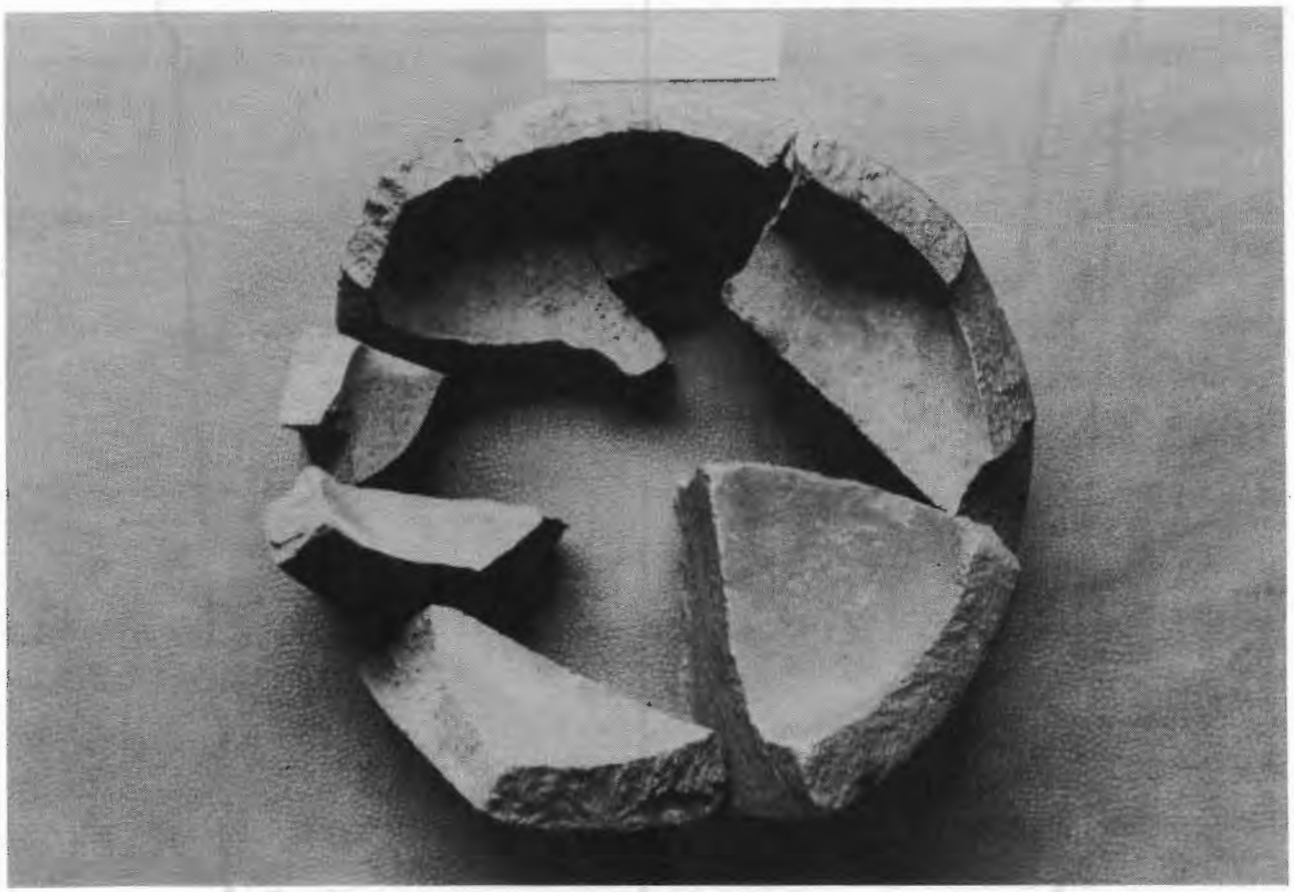

Figure 4: Group photograph of base fragments of six different stone bowls arranged to impressionistically depict the basal portion of an entire stone vessel. Approximate diameter of arrangement is 26 cm.

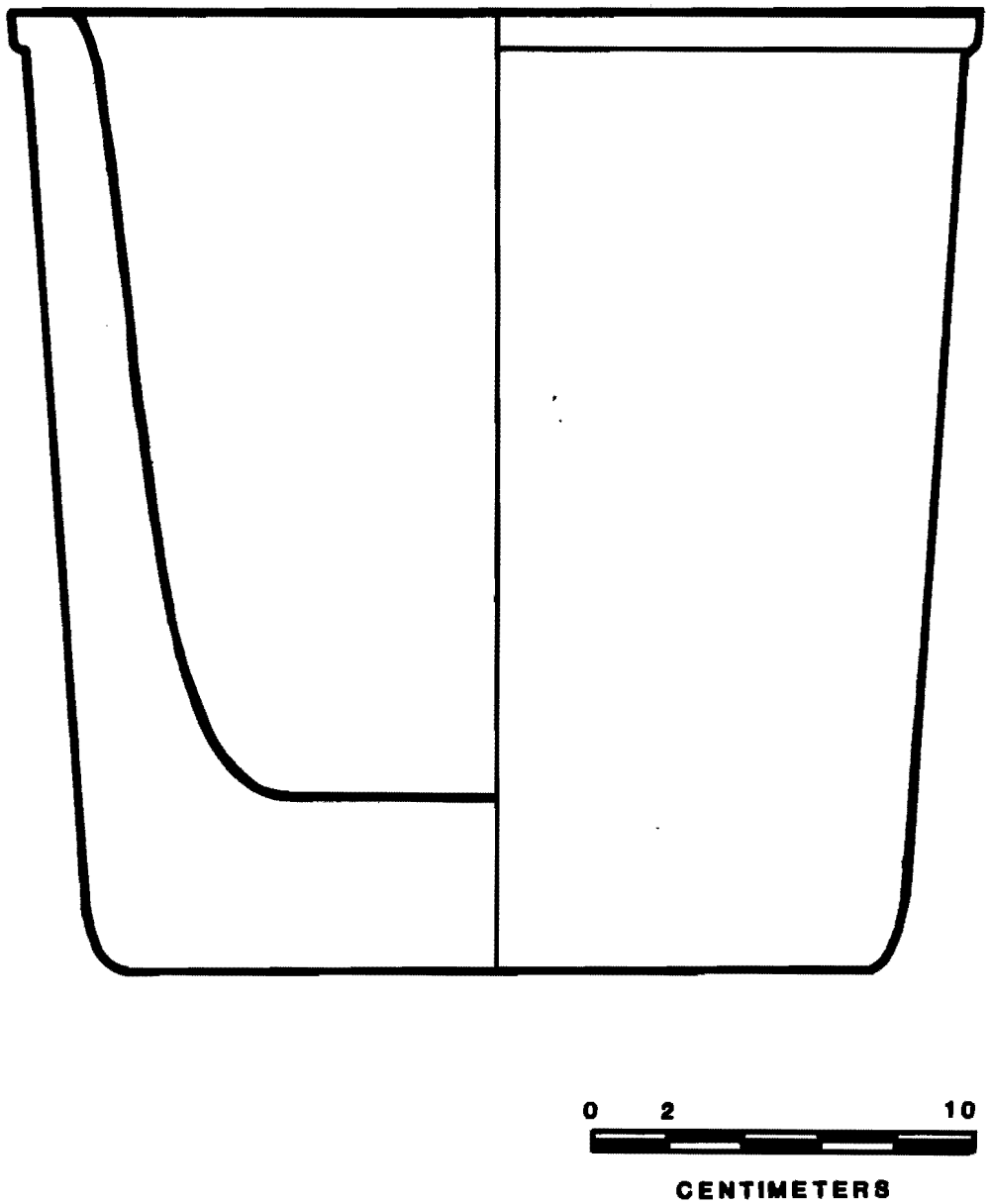

Figure 5: Composite profile of stone vessel reconstructed on the basis of examples from the Casma Valley.

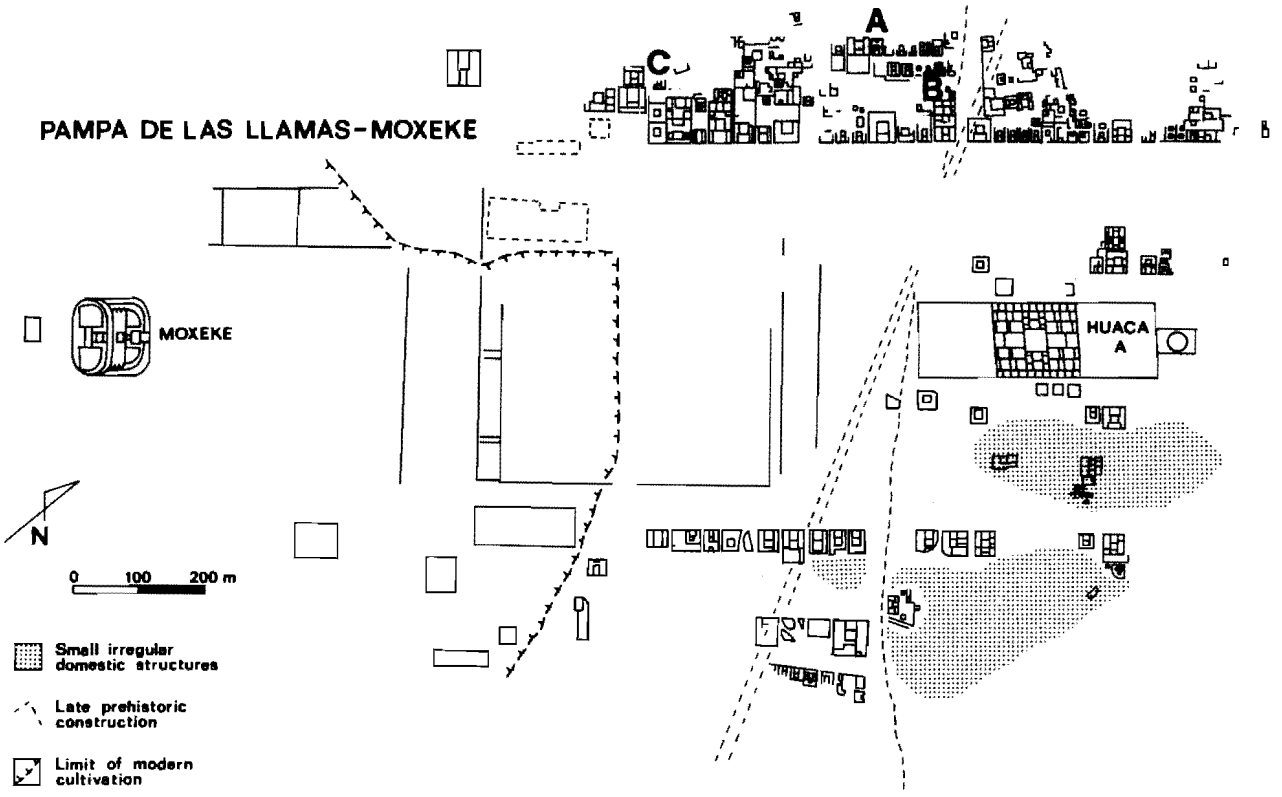

Figure 6: Plan of Pampa de las Llamas-Moxeke showing the contexts of excavated stone bowl and mortar fragments and the incised rim: A, location of an excavated body fragment within a small, two-room structure; B, location of an excavated rim fragment (Figure 2k) within a small circular structure; C, location of the incised rim fragment (Figures 7 and 8). The remaining stone bowl fragments were surface finds within 200 m of location C.

Figure 7: Decorated exterior of a stone bowl rim depicting a profile head. It was found on the surface at Pampa de las Llamas-Moxeke. The rim is 11 cm tall.

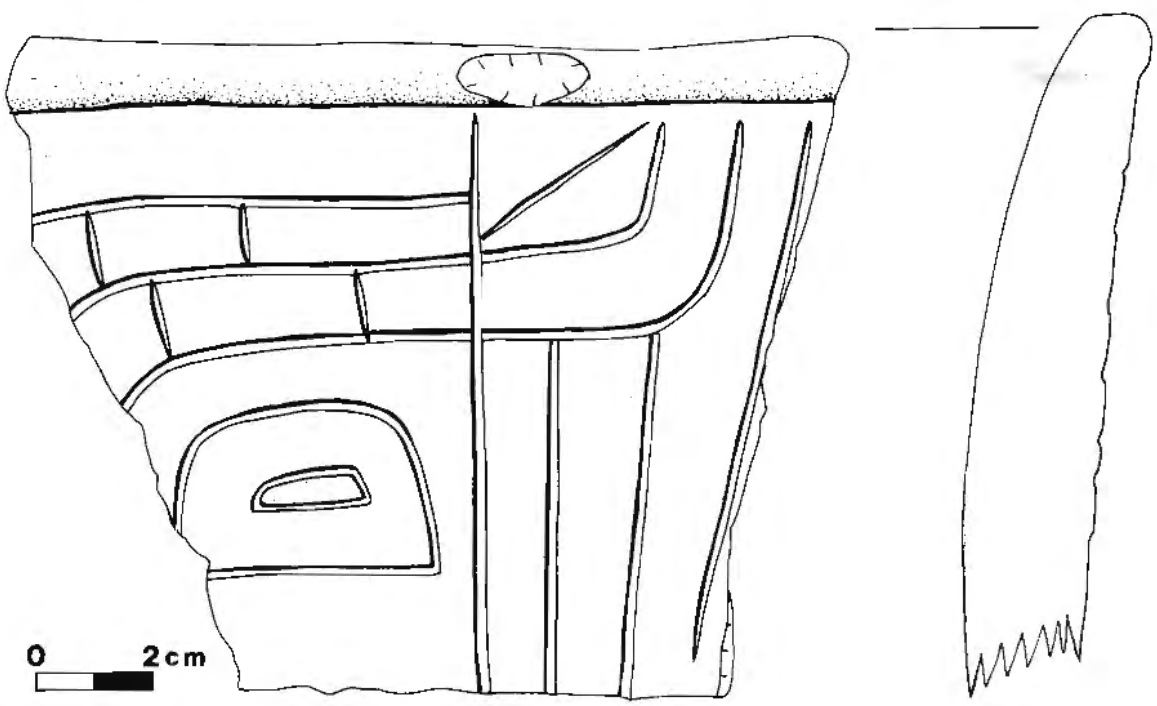

Figure 8: Drawing of the decorated stone bowl rim illustrated in Figure 7. Viewed in an upright position, the design represents a leftward-looking profile head. Viewed upside down, the design becomes a rightward-looking profile head.