Sorting out Yumbo, Inca and Cosanga wares at Palmitopamba, a tropical forest site in northwestern Ecuador

Ronald D. Lippi (University of Wisconsin—Marathon County)
and
Alejandra M. Gudiño (University of Missouri)

Abstract

The large tropical forest site of Palmitopamba in northwestern Ecuador provides an interesting case study for neutron activation analysis (NAA) of pottery given the presence of three distinctive wares in the late prehispanic period. Though it was a monumental site of a Yumbo chiefdom, there is Cosanga (aka "Panzaleo") pottery present in small quantities as well as Inca pottery and features from the late 15th century expansion into northern Ecuador. Analyses indicate that Yumbo potters probably were the makers of the provincial Inca wares, whereas the Cosanga vessels are exotic. The cultural and historical implications of this will be addressed.

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Overview of the Western Pichincha Project [Slide 1]

The Western Pichincha Project is a long-term archaeological exploration of the western slope of the Andes Mountains in northern Ecuador's Pichincha province **[Slide 2]**. The project began in 1984 with two years of a regional survey in accessible portions of approximately 6,000 km^2 of rugged tropical rainforest. Additional surveying was carried out sporadically in succeeding years as well as test excavations at the Nambillo site. The results of this research have been reported in various papers and articles and more fully in two monographs (Lippi 1998, 2004). Among many other goals, the research has focused on obtaining and interpreting the first archaeological evidence of the Yumbo chiefdoms in the high elevation cloud forest habitat of the western slope and on uncovering evidence of an Inca presence in the decades preceding the Spanish domination of the northern Andes beginning in 1534.

[Slide 3] Despite very rugged terrain, dense vegetation and difficulty of access in many parts of Western Pichincha, some three hundred sites were catalogued during several seasons of surveying. Among those sites were a handful of Formative Period sites related to what was apparently the earliest human occupation of the zone, which was by farmers and traders around 1500 B.C. Most of the sites from later periods are associated with the Yumbo occupation from about A.D. 800 to the time of Spanish contact. The Yumbos are

documented partly by the Spanish and partly archaeologically as having nearly died off by the early 1800s through epidemic disease, forced relocations, intermarriage, and rebellion against the Spanish. **[Slide 4]** The only plausible modern-day descendants of the Yumbos are the Tsáchilas, (also known as the "Colorados"), a tribe currently confined to eight small reserves immediately south of the Western Pichincha research region.

[Slide 5] Noteworthy kinds of Yumbo sites discovered include dozens of mound sites, mostly consisting of large rectangular, earthen mounds with a platform, but also including both large and small conical mounds for burial. The distribution of these mounds in part of Yumbo territory seems to mark ancient chiefdoms, some of which were mentioned by name by early Spanish chroniclers. The Yumbos are known from Spanish documents to have conducted extensive trade with various highland towns in the vicinity of Quito **[Slide 6]** and physical evidence of trade routes has been discovered in the form of deeply eroded trails through the rainforest. These trails, locally known as *culuncos*, mostly date to the Yumbo and historic periods, though some almost certainly were in use many centuries earlier by Formative peoples. **[Slide 7]** A third notable type of site consists of petroglyphs, figures pecked in river boulders in Yumbo territory. We are attempting to work together with the Tsáchilas in an attempt to interpret these symbols.

[Slide 8] Based principally on the distribution of Yumbo pottery, rectangular platform mounds, and vague historical information, Lippi has tentatively defined the boundaries of Yumbo territory prior to the Spanish conquest.

The Spaniards also described an Inca road that went into Yumbo territory and mention was made of an Inca general who claims to have taken control of the area as the Inca army advanced northwards towards Colombia in the late 1400s. Ethnohistorian Frank Salomon (1997: 23-25) found that the Yumbos occupied an anomalous position in the Inca Empire **[Slide 9]** since they appear not to have been administratively integrated. He also found accounts of Inca nobility taking refuge in Yumbo country following the Spanish conquest. More recently the Ecuadorian historian Tamara Estupiñán Viteri (2003) found a document alleging that Rumiñahui, the captain of the personal guard of Atahualpa, the Inca emperor captured and executed by the Spanish, fled to Yumbo country with some of Atahualpa's heirs and possibly even with Atahualpa's mortal remains, where Rumiñahui ordered the building of a fort from which a rebellion was to have been launched. After many years of surveying in Western Pichincha, Lippi has catalogued only four likely or possible Inca forts and the largest of these is at Palmitopamba, so this site may also be of historical significance in Ecuador, where Rumiñahui today is accorded the status of national hero.

Palmitopamba and the Three Ceramic Assemblages **[Slide 10]**

In order to augment sketchy information on the Inca presence in this tropical region, research shifted in 2002 to excavations at the site of Palmitopamba, which was discovered by Lippi in 1984 and recognized as a probable Inca fortress (*pucara* in the Quechua language of the Incas) near the northern boundary of Yumbo territory. While excavations over three seasons since 2002 have indeed confirmed that the site served around 1500 as an Inca military site with some familiar as well as enigmatic stone features **[Slide 11]**, it turns out that through most of its history the site was an important center of a Yumbo chiefdom. This can be seen mostly through the platform mound **[Slide 12]** built on top of the hill with at least three meters of fill carried up and deposited as well as in the several terraces on the north slope of the hill. **[Slide 13]** The presence of a horizontal volcanic tephra (volcanic ash, sand and pumice) layer visible in various excavation units and dating to about 900 years ago (a few centuries before the Incas marched north into Ecuador) demonstrates that the monumental earthmoving at the site was done by the Yumbos. Radiocarbon dates confirm that much of the Yumbo occupation preceded the Inca arrival by centuries.

No Inca pottery has yet been found on the tola at the site summit, though excavations there have been limited so far, but it is found elsewhere at the site in modest quantities. From the absence of Inca pottery only at this part of the site, we infer the Incas respected the sacred precinct at the site summit and mostly left it alone. The relative abundance of Inca pottery at historically-known Inca

forts in the adjacent highland region is notoriously low, typically representing less than 10% of all sherds recovered (Antonio Fresco, 1987, pers. comm.), and that appears to be the case for Palmitopamba, too. At Palmitopamba, the Inca pottery is within the upper 50 cm and is mixed with Yumbo pottery, which continues down to lower depths of a meter or more throughout the site.

[Slide 14] It is important here to make brief mention of what constitutes Yumbo as opposed to Inca pottery. For the most part they are easily distinguishable to the naked eye. Yumbo pottery consists almost entirely of coarse but well-fired plain ware with sand and golden pyrite, biotite or mica temper and with or without red slip; most vessels at Palmitopamba were for cooking and food or drink preparation; in other words, this is plain domestic ware.

Inca pottery **[Slide 15]**, well known throughout the Inca Empire, consists of fine ware coming in quite distinct forms, including the arybalos, the pedestal bowl, plates with animal effigy appendages, and so forth. The two assemblages are markedly different in vessel form, temper, finishing and decoration.

One of the goals of the Palmitopamba project has been to study the Inca presence in the tropical forest habitat of Western Pichincha and in particular in relation to the resident Yumbo population. Research at this dual component site, which contains a long Yumbo occupation followed by a joint occupation by Yumbos and Incas, is slowly revealing details of that interaction.

[Slide 16] There is a third pottery assemblage at the site and it is known as Cosanga (also known inappropriately as Panzaleo) ware. This assemblage consists of large vessels with very thin walls (often about 3 mm), and mica tempering. Typically the surface is pinkish-orange or gray and the vessels often have a folded rim. There may occasionally be a simple red or white painted design or plastic decoration on the exterior. **[Slide 17]** The pottery is easy to spot as an exotic ware at sites throughout the northern Ecuadorian highlands. Porras (1975: 150-153) suggested the ware (he called it "Cosanga-Píllaro") originated on the eastern slope of the Andes in or around the Cosanga Valley by about 400 B.C. and a millennium later moved up into the northern Andes of Ecuador after hunter-gatherer groups drove the Cosanga farmers out of the eastern montaña region. However, that proposal is speculative and some of his dates are suspect.

Bray (1995) accepts the likely eastern montaña origin of the pottery but believes its presence in the highlands is due to long-term trading between the eastern lowlands and the highlands. As Bray points out, there are no pure Cosanga sites known in the highlands, only dozens of sites with a small percentage of Cosanga pottery. She agrees more or less with Porras (1975) that the Cosanga ware covers the better part of two millennia from perhaps 300 B.C. to the time of the Spanish conquest. Though there were stylistic changes over time, this was apparently an amazingly conservative artistic tradition.

Bray accepts Porras' hypothesis of an eastern lowland origin for Cosanga pottery based on mineralogical analyses carried out with materials that she collected. She had the Smithsonian Institution's Conservation Analytical Laboratory do an instrumental neutron activation analysis (INAA) of about a dozen highland Cosanga sherds and the same number from the eastern lowlands, and the compositional similarity between the two groups was very high. She also had X-ray diffraction analysis done to compare northern highland Caranqui pottery with northern highland Cosanga pottery, and found the two samples to be starkly different. Observations of thin sections from the two collections showed an abundance of metamorphic rock in the Cosanga pottery, which was most likely obtained in the foothills of the eastern range of the Andes and would not be readily available to the highland potters. The most likely conclusion from these three analyses is that the Cosanga wares in her northern highland sample originated in the eastern lowlands in or near the Cosanga Valley, which supports our use of the term "Cosanga" rather than "Panzaleo" (a historic highland ethnic group south of Quito). Three other researchers have also given the Cosanga pottery an eastern origin based on the presence of metamorphic inclusions.

Bray (op. cit.) has studied the Cosanga vessel types and their context at highland sites. Though Cosanga pottery is frequently found in domestic contexts, it is more common in mortuary contexts and consists of globular jars usually associated with *chicha* (maize or manioc beer) provisioning for the dead. She

goes on to hypothesize that manioc *chicha* was part of an Upper Amazon feasting complex that was adopted in the highlands.

[Slide 18] While Bray and several others had previously documented the widespread occurrence of Cosanga pottery in the northern highlands, Lippi's discovery of small quantities of the exotic ware at various sites throughout Western Pichincha, though mostly concentrated in the higher elevations nearer the sierra, further extended the distribution of this presumed trade network. Besides using this geographic data, we hope to be able to refine the somewhat inconsistent dating of Cosanga pottery by getting it out of good context at Palmitopamba. We continue to work on absolute dating of the strata.

INAA for Palmitopamba Ceramic and Clay Samples

[Slide 19] When we first applied in 2002 to submit Palmitopamba ceramic samples to the Archaeometry Laboratory of the Missouri University Research Reactor (MURR) for instrumental neutron activation analysis (INAA), we had the following objectives in mind:

- Regarding the Yumbo pottery,
    - Determine to what extent it is a homogeneous assemblage or may represent diverse assemblages by submitting a fairly large sample of what appear to be different Yumbo types.

- Find local clay sources for Yumbo pottery. This was attempted by collecting a few dozen clay samples from the area and submitting them along with many Palmitopamba sherds.
- Determine if Yumbo pottery, which is macroscopically similar but not identical to Caranqui pottery of the northern Ecuadorian highlands, may have been imported from the highlands. So far we have not obtained a broad collection of highland Caranqui pottery for comparison with the Yumbo pottery.

- Regarding the Inca pottery,
  - Determine whether the Inca pottery at the site was an exotic ware from the Ecuadorian highlands, perhaps even from some important Inca production center, or locally made pottery. To this end Inca sherds from both Palmitopamba and the northern highlands were submitted for comparative purposes.
  - Compare Inca pottery at other Western Pichincha sites to that of Palmitopamba and the highlands. Only two other Western Pichincha Inca sherds have been obtained so far for analysis and both were submitted for comparison.
  - Look for evidence of post-conquest Inca pottery that may include certain Spanish pottery characteristics. In terms of INAA, any compositional changes in stratigraphically late Inca pottery might be due to Spanish influence.

- With respect to the Cosanga pottery,

- Determine whether all Cosanga pottery at Palmitopamba is a homogeneous assemblage or if some might be a local imitation of the exotic ware.
- Determine to what extent Palmitopamba Cosanga pottery compares to Cosanga pottery from the highlands or eastern lowlands. Several highland sherds were obtained for comparative purposes but none so far from the eastern lowlands.

- **[Slide 20]** Try to find a composition match for one unique vessel that differs from all other ceramics at the site by comparison with the INAA database for the Andes.

[Slide 21] In pursuit of these several objectives, over the course of the three field seasons from 2002 to 2004, we submitted 94 sherds from Palmitopamba and elsewhere, including 28 Yumbo sherds, 36 Inca sherds, 29 Cosanga sherds, and 1 sherd from a unique vessel of unknown affiliation. We also submitted 40 raw clay samples collected near Palmitopamba. Results from MURR were prepared in three installments following sample submissions and analyses (Speakman and Glascock 2003; Descantes, Speakman and Glascock 2004 and 2005).

[Slide 22] Four compositional groups of ceramics were identified, one consisting of the Yumbo and Inca sherds from Palmitopamba, another consisting of Cosanga sherds from Palmitopamba as well as from a few highland sites, and

two groups of Sierra Inca sherds from four different Inca sites in the greater Quito area. Two Inca sites collected by Lippi during Western Pichincha surveys many years ago from two small sites west of Palmitopamba were also submitted. One of them belongs to the Sierra Inca 1 group and the other is unassigned, making both of them different from the Palmitopamba Inca sherds.

It should also be mentioned that one of the fourteen Cosanga sherds from Palmitopamba falls into the Palmitopamba composition group rather than the Cosanga group, which suggests the sherd may have been misidentified or possibly was a local imitation of Cosanga. All the highland Cosanga sherds, which were from nine different sites from the southern part of Quito to the Machachi Valley to the south, fell into the same compositional group and were indistinguishable from the previously tested Cosanga sherds from Palmitopamba (with the one exception noted).

There were a few outlier sherds, including the one from the unidentified vessel. When MURR archaeologists used a larger sample base and did a Euclidean distance measurement for this sherd, they found the ten closest matches coming from northern Peru, though the matches are far from conclusive of a shared composition group and the Andean database is extremely incomplete.

[Slide 23] The discreteness of the four composition groups is compromised somewhat when the unassigned sherds are added to the plot. There seems to

be less difference between Palmitopamba and Sierra Inca 1 and slightly less between Sierra Inca 1 and Sierra Inca 2. How this is to be interpreted is not clear.

[Slide 25] We also collected and submitted to MURR 40 raw clay samples from sources within several miles of Palmitopamba. The clay samples varied quite a bit in terms of mineral composition. A very few of them were somewhat similar to the Palmitopamba ceramic group and several of them were similar to the Sierra Inca 1 group. Most of the clay samples appear not to represent raw material sources for the four ceramic groups. Of the clay samples that are most similar to the Palmitopamba ceramics, one comes from a deposit that is about 2 km northwest of Palmitopamba and two others from deposits that are some 3 km east of Palmitopamba. In both cases, that is the straight-line distance; the actual walking distance may be at least twice that far. There are a very few known clay sources closer to the site which were not close matches with the ceramics.

MURR archaeologists combed their limited database for Ecuadorian ceramics to look for comparative data. Unfortunately, the Ecuadorian database is very small so far and comparisons attempted between Palmitopamba and south coastal sites in Ecuador are probably not meaningful. There is no reason, based on what Lippi has determined with regard to the origins and trade relations of the Yumbos, to believe that they were linked in any direct way with those sites. There might have been some very indirect link through obsidian trade, but that

would not explain any vague similarities in ceramic composition, which we will assume to be coincidental pending additional evidence.

Conclusions

[Slide 26] All the Yumbo pottery from Palmitopamba submitted so far falls into a well defined composition group, suggesting a very homogeneous assemblage. This in and of itself is useful information since Yumbo studies are still in their infancy. It will be very interesting in coming years to add Yumbo pottery from many other Western Pichincha sites to see if it becomes possible to identify production centers or perhaps even polities within Yumbo country.

So far the clay deposits for the Palmitopamba ceramics have not been identified. None of the Palmitopamba sherds analyzed appears to be a match for any of the many clay samples, even when minerals associated with ceramic temper are accounted for and deleted from the comparison. This may indicate simply that we have not yet located the correct source (there are undoubtedly many clay sources in the area we haven't discovered). It is also possible that potters typically mixed clays from different sources, though this seems less likely.

Determining mineralogical similarity between Yumbo pottery and similar Caranqui pottery from the northern highlands, which could help to confirm or disconfirm the matter of Yumbo origins among Caranqui peoples, is now considered a low priority since it seems very unlikely that pottery was imported

given that the Yumbos were well established in their own region for several centuries. Only if we could confidently isolate very early Yumbo pottery would it be useful to compare it to contemporary Caranqui ware. So far we are not confident we have reached the earliest Yumbo levels at Palmitopamba or elsewhere.

The fact that Yumbo and Inca pottery at the site of Palmitopamba appear to have been made from the same raw material is significant. From what is known about Inca imperial administration, the most reasonable interpretation is that the Inca troops that occupied Palmitopamba had the local Yumbo potters make Inca pottery to imperial standards in terms of vessel form, decoration, temper and shape. We have inquired about this with a few Inca scholars from the Central Andes and have been told it is not at all surprising that local potters were making provincial Inca pottery. To what extent that has merely been the supposition suggested by early chronicles or other documents and to what extent it has been confirmed by mineralogical analysis is not known, but the Palmitopamba data do provide mineralogical support for the assertion. A remaining mystery about this similarity in the element analysis of the two wares is the obvious macroscopic difference;. i.e. Yumbo pottery often contains a generous amount of sparkling pyrite or mica in the paste while such is not found in the Inca ware. It is possible this "glitter" was added during the Inca period to emphasize the difference between the two wares, though that is pure speculation.

It is very interesting that the two Inca sherds found west of Palmitopamba did not match the Palmitopamba Inca pottery. One sherd fell within the Sierra Inca 1 group, suggesting it may have been part of a vessel transported from the highlands. It is interesting to note that an Inca specialist in northern Ecuador, Antonio Fresco, expressed his opinion (pers. comm.) that the sherd was "imperial Inca" rather than "provincial Inca." By "imperial Inca" he meant to suggest the vessel may have been transported northward from the core Inca area around Cuzco. It would appear he was wrong about that, but he was correct in inferring that the sherd was different from other Inca pottery from the montaña region. The other Inca sherd from the western montaña did not match any of the other Inca pottery and its provenience is yet to be determined. Perhaps it was locally made by another Yumbo polity farther west.

No Inca pottery from Palmitopamba appears to reflect any Spanish influence, though macroscopic attributes may be more useful than mineralogical ones in solving this important issue.

The Cosanga pottery, with one possible exception, all forms a tightly defined compositional group and differs markedly from all other ceramics from Palmitopamba. This was to be expected given the widespread belief that Cosanga is a trade ware from the Upper Amazon, a hypothesis not falsified with the Palmitopamba and highland data presented here.

The one sherd from many that represent the vessel of unknown cultural affiliation at Palmitopamba remains unknown until somebody actually recognizes the pot upon close inspection or a much larger INAA database becomes available for the Andes.

[Slide 27] The similarity in composition between several Palmitopamba-area clay samples and the Sierra Inca 1 group of pottery might be coincidental since it is hard to imagine a circumstance under which Inca administrators would ignore local clay deposits and send off to the western flank of the Andes for deposits to be carried on foot to the Andean highlands over very long and difficult rainforest trails. However, to what extent highland and western montaña clay deposits are mineralogically similar is not clear due to an absence of studies. The parent material of nearly all these clays is primarily volcanic conglomerate from the same western range volcanoes.

The difference between Sierra Inca 1 and Sierra Inca 2 ceramic groups might be attributed to the existence of two different Inca pottery centers, though if such was the case, it appears that which pottery ended up at which site was not simply a matter of proximity. In fact, two of the four highland Inca sites have pottery from both composition groups. It could be that some pottery moved with imperial troops on the march and ended up at sites more distant from the production center.

What is perhaps more disconcerting is that when unassigned sherds are added to the bivariate plots, the Palmitopamba and Sierra Inca 1 groups, as previously noted, are not so discrete. The same may be said to a lesser degree between Sierra Inca 1 and 2 groups.

Given the usefulness of much of this data from the INAA, it is unfortunate that the database for the Northern Andes is so small. Whatever steps can be taken to remedy this situation are welcome, especially given the modest cost available at MURR through the NSF grant*.

* National Science Foundation grant no. SBR—0102325 to the MURR Archaeometry Laboratory, for which we are all greatly indebted.

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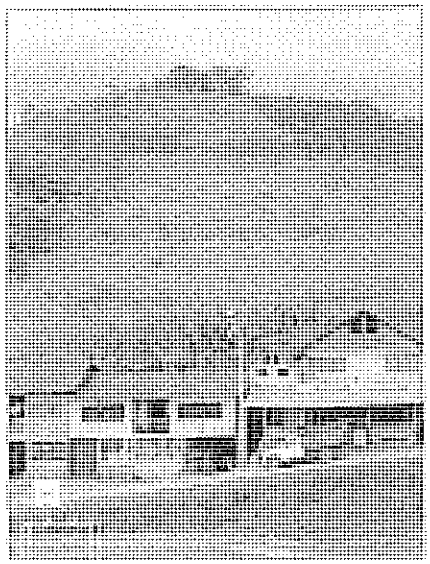
#1

Sorting out Yumbo, Inca and Cosanga wares at Palmitopamba, a tropical forest site in northwestern Ecuador

Ronald D. Lippi, U. of Wisconsin—Marathon County

Alejandra M. Gudiño, U. of Missouri



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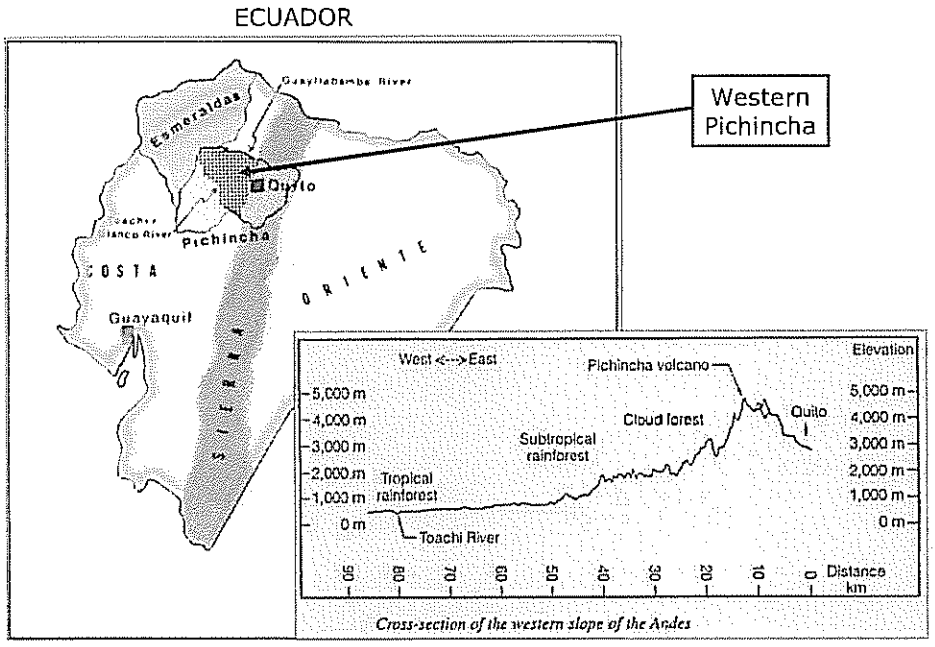
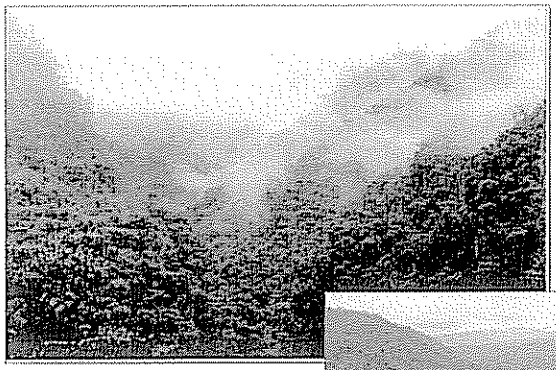
April, 2006—San Juan, Puerto Rico
Symposium: Craft Production, Exchange, and Provenance Analysis of Andean Ceramics

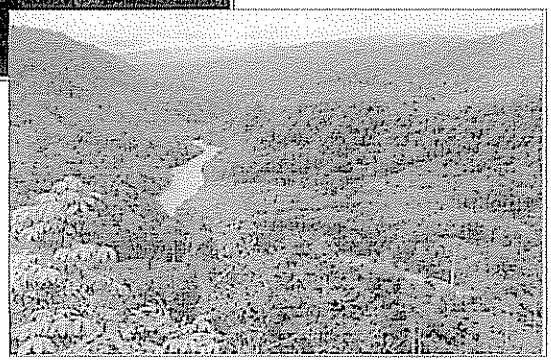
#2



Cross-section of the western slope of the Andes

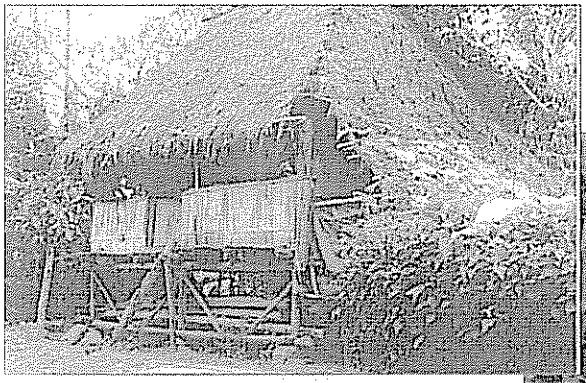
#3





Western Pichincha landscapes

#4



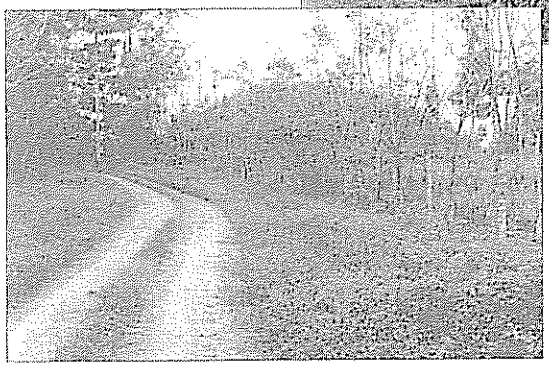
Barbacoa-type house

Tsáchilas: last of the Yumbos

#5

Rectangular platform mounds

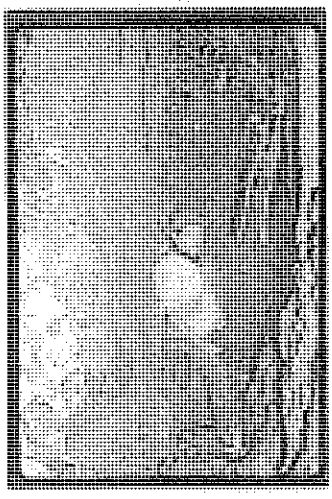
Tolas

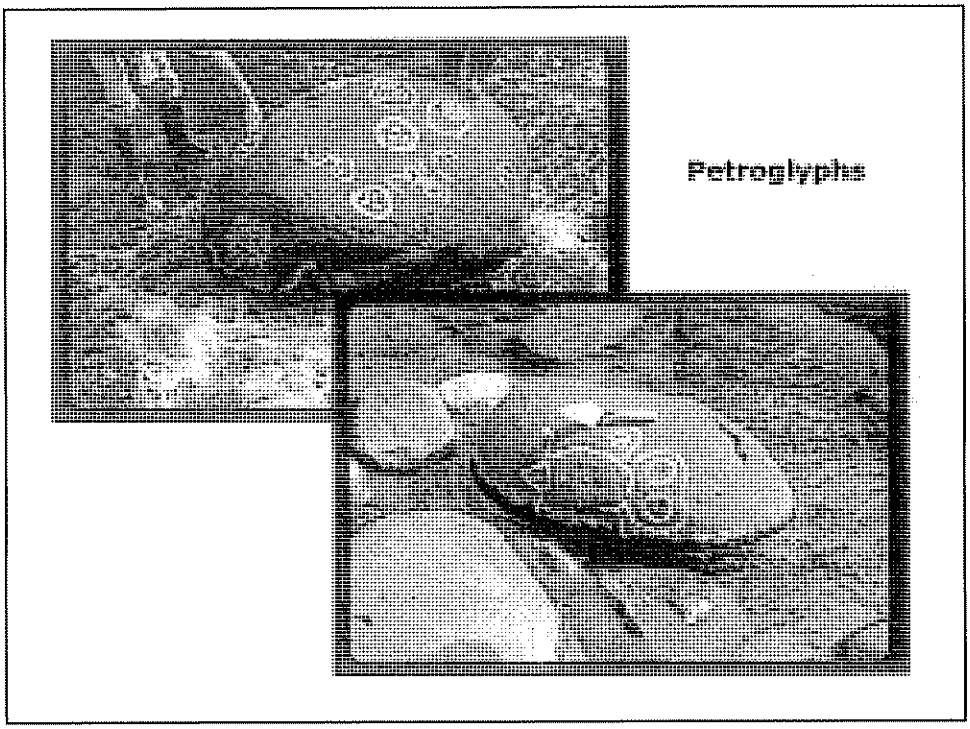


Round burial mounds

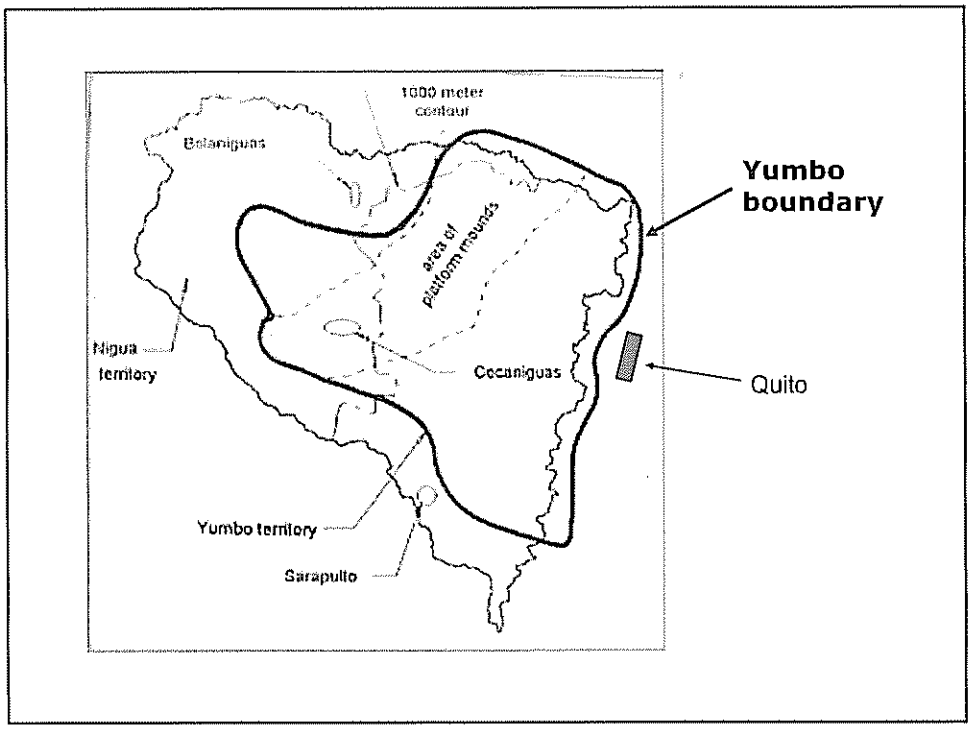
#6

Culuncos: ancient eroded trails




Petroglyphs

#7


1600 meter contour
Bolaniguas
area of platform mounds
Yumbo boundary
Nigua territory
Cocaniguas
Quito
Yumbo territory
Sarapullo

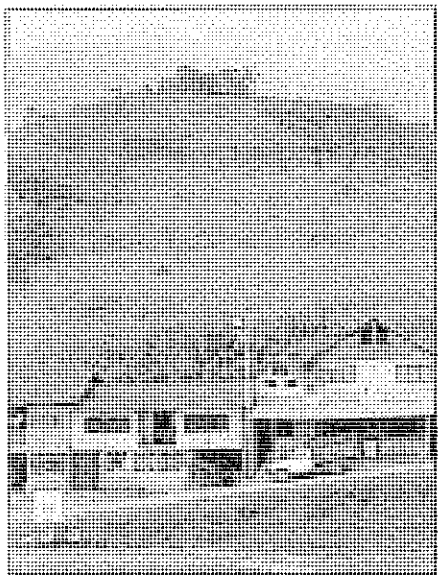
#8

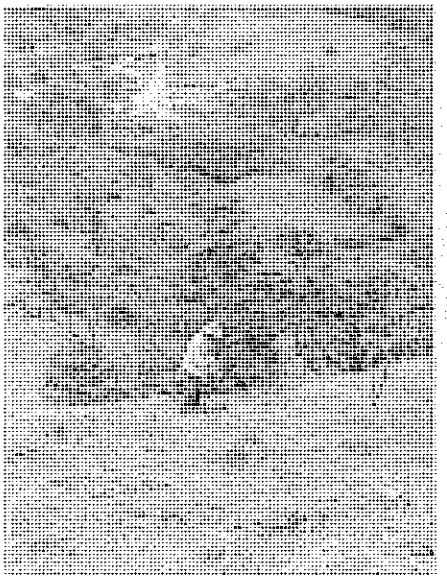
#9

Inca control in northern Andes

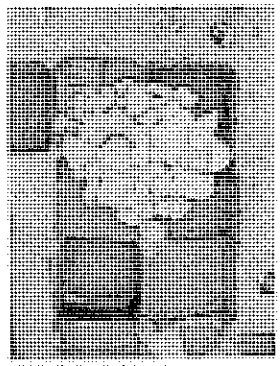
(control of coastal lowland areas was nominal)

#10

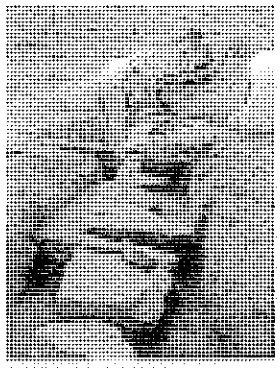


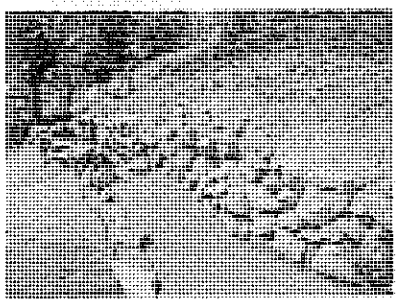


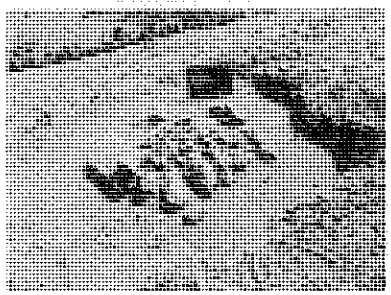
Palmitopamba site and village



4 Inca stone features at Palmitopamba







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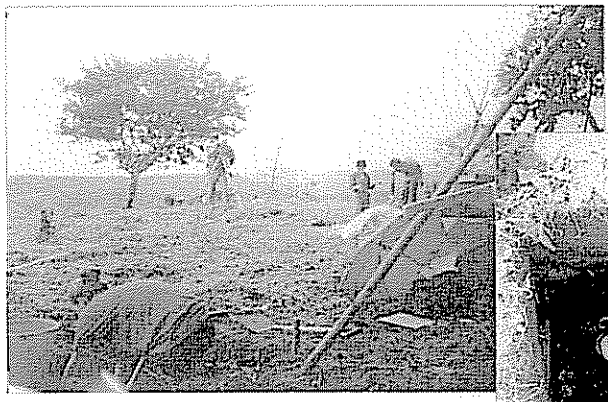


Yumbo platform mound at site summit

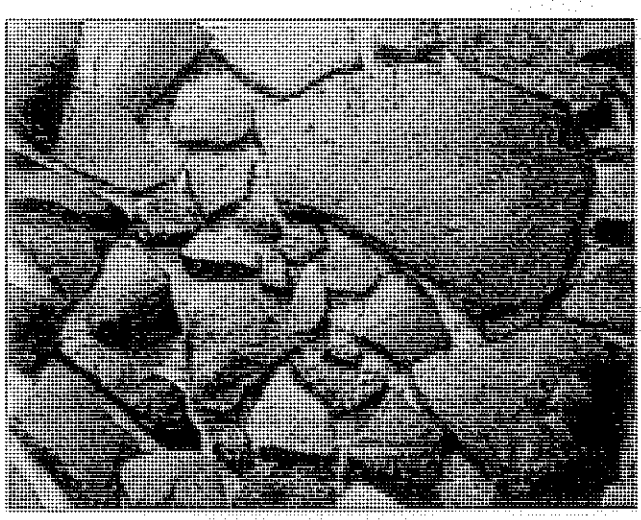
#12

#13

Survey of terrace

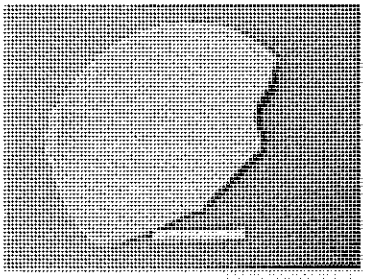
Horizontal tephra on
steeply sloping hillside

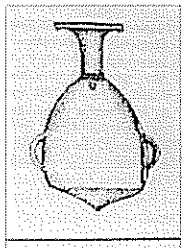
#14

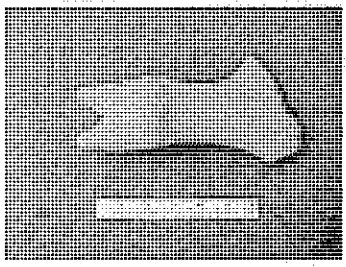


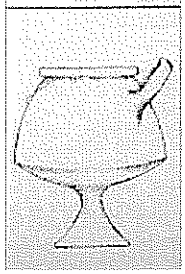
typical Yumbo sherds

#15



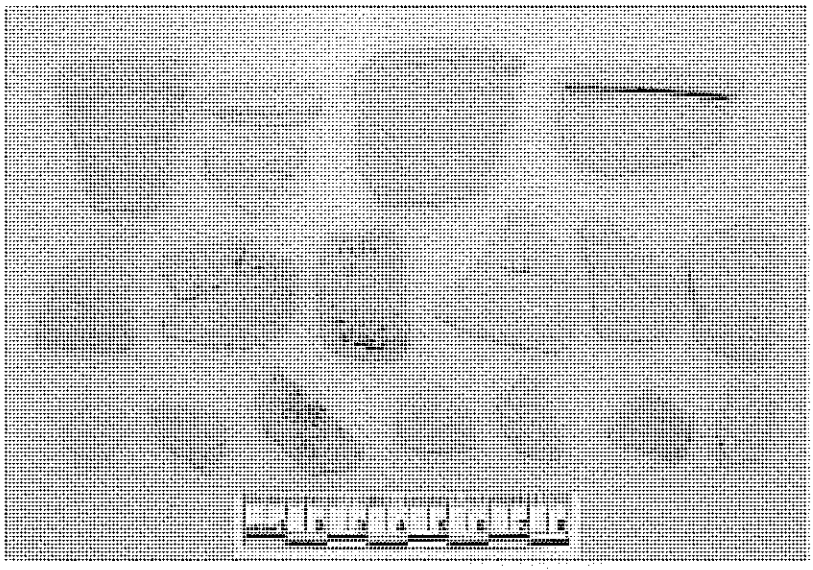






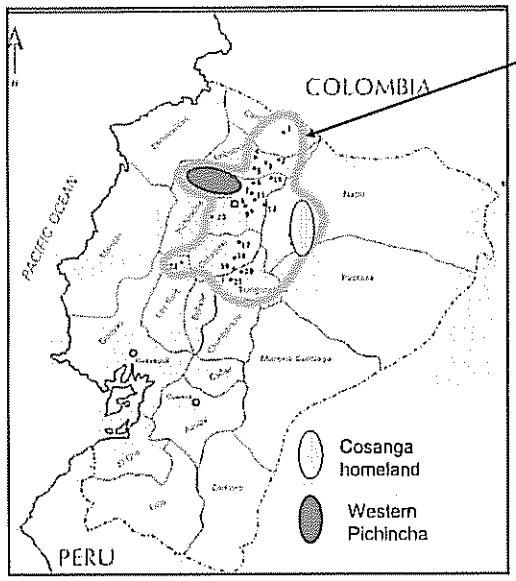
Inca pottery at Palmitopamba

#16



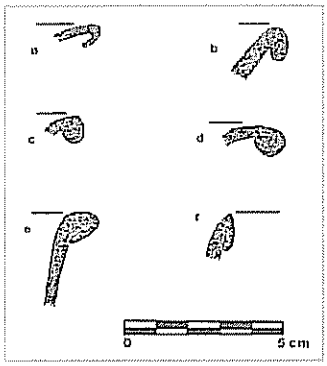
Cosanga ("Panzaleo") **pottery**

#17



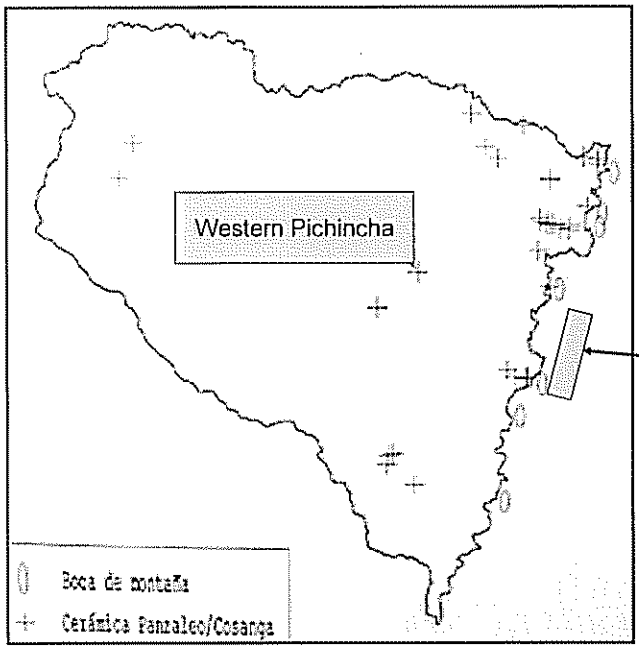
Documented Cosanga pottery distribution

[Map modified from Tamara Bray, 1995]



Some typical Cosanga rims

#18

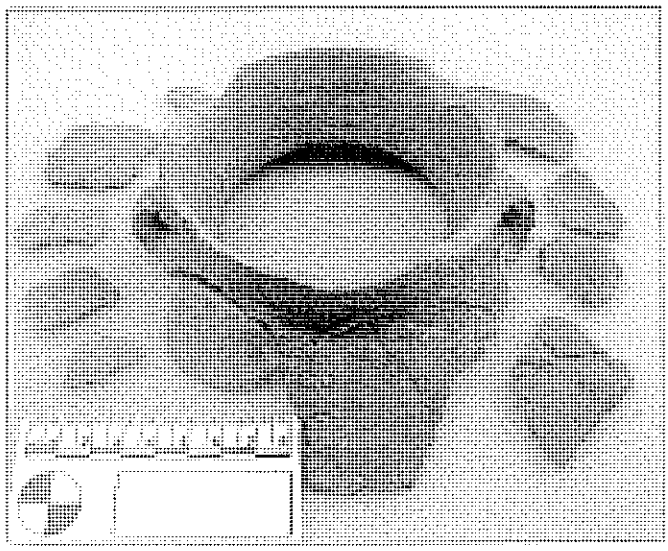


INAA Objectives

#19

- Yumbo pottery
  - Is it a homogeneous or heterogeneous assemblage?
  - Where were the clay sources?
  - Was earliest Yumbo pottery from highlands?
- Inca pottery
  - Was Inca ware at Palmitopamba imperial, provincial or local?
  - Is other Western Pichincha pottery similar to Palmitopamba's?
  - Is there Spanish influence to suggest post-conquest occupation?
- Cosanga pottery
  - Is Cosanga at Palmitopamba homogeneous "exotic" or local imitation?
  - Is it identical to highland or eastern lowland Cosanga?
- Unique vessel
  - Can a match be found with another Andean ware?

#20



Palmitopamba unique pot

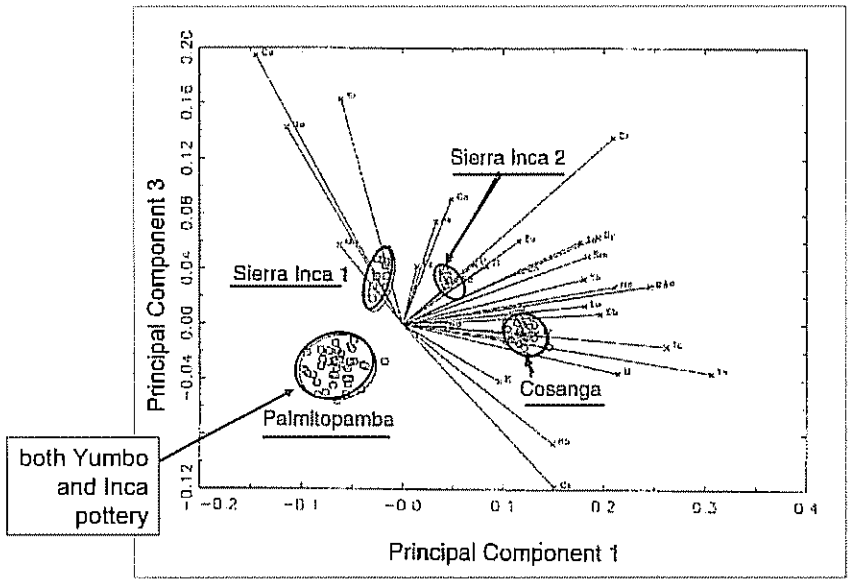
21

Sherds and Clays Submitted to MURR

(in 3 separate batches from 2002 to 2004)

- From Palmitopamba
  - 28 Yumbo, 21 Inca, 20 Cosanga, 1 unique and unidentified
- From other sites in Western Pichincha
  - 2 Inca
- From several highland sites in region of Quito
  - 13 Inca, 9 Cosanga
- Clay samples from vicinity of Palmitopamba
  - 40 clay samples
- Total: 94 potsherds, 40 raw clay samples

22



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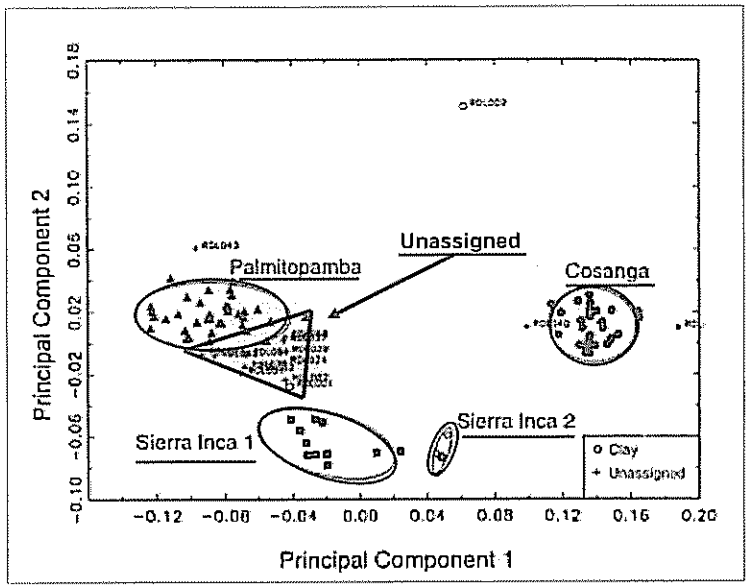
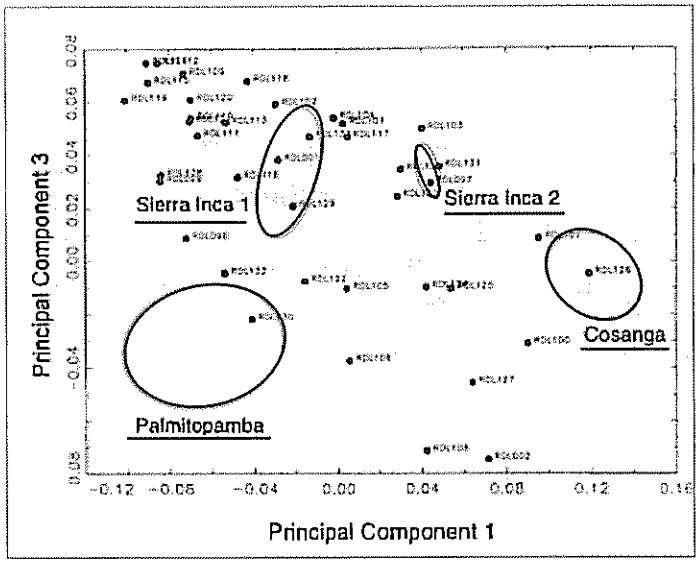


#24

Raw clay samples and ceramic composition groups



Conclusions—Part 1

#25

- Yumbo pottery
  - Assemblage appears homogeneous
  - Clay sources not yet identified with confidence
  - Unable so far confidently to identify very early Yumbo pottery
- Inca pottery
  - Palmitopamba Inca ware was locally made, presumably by Yumbos
  - Two Western Pichincha Inca sherds differed from Palmitopamba Inca
  - So far no clear evidence of post-conquest Inca vessels
- Cosanga pottery
  - Cosanga at Palmitopamba is homogeneous and "exotic"
  - Palmitopamba Cosanga is same as highland Cosanga
  - No comparison yet with eastern lowland Cosanga
- Unique vessel
  - Inconclusive match with northern Peruvian pottery

Conclusions—Part 2

#26

- More on the Inca pottery
  - Possible match between Palmitopamba clays and Sierra Inca 1 pottery might be coincidental
  - Difference between Sierra Inca 1 and Sierra Inca 2 is mystifying; no clear geographic distinction
  - Unassigned sherds between Palmitopamba and Sierra Inca 1 groups are problematic