

A compositional analysis of pottery vessels associated with the Inca ritual of *capacocha*

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Abstract

One of the most momentous of Inca state ceremonies was known as the *capacocha*. Through the sacrifice of both precious objects and select children, the *capacocha* served to link the capital of Cuzco to its far-flung hinterlands and the empire itself to the deities that sanctioned it. While ethnohistoric sources offer some insight into the *capacocha* ritual, the information is sketchy. The present study furthers our understanding of the *capacocha* ritual through the use of archaeological data. The compositional analysis of a sample of ceramic vessels recovered from several different *capacocha* burial sites around the Inca empire was conducted using instrumental neutron activation. These data are compared to results of paste analysis performed on Inca pottery from Cuzco and other parts of the empire. The results of this comparative study offer insights into the origins, movement, and connections of the children who were sacrificed in this key state ceremony. These data, in turn, help us more clearly understand the role of this important state ritual as it figured in strategies of imperial Inca statecraft.

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The spectacularly preserved mountaintop burials that have been sporadically discovered on Andean summits since the early 1900s constitute the physical remains of a specific type of imperial Inca ritual practice known as *capacocha* that involved the immolation of children (Fig. 1). Many of these sacrificial sites are found on peaks in excess of 6000 m above sea level. Due to their relative inaccessibility, a good number have lain undisturbed for centuries only occasionally coming to the attention of the more extreme alpine enthusiasts and looters. Thanks to the efforts of a particularly dedicated bunch of researchers specializing in the archaeology of

high altitude Andean sites, an unprecedented number of carefully recorded and well-documented *capacocha* sites have come to light in recent years (Ceruti, 1997a, 1999, 2003; Chávez, 2001; Reinhard, 1992, 1993, 1996; Reinhard and Ceruti, 2000; Schobinger, 1995, 2001).

The present study focuses on the ceramic component of the funerary assemblages that accompanied these child sacrifices with the aim of elucidating certain pragmatic as well as less frequently articulated aspects of this important state ritual (Fig. 2). Through an analysis of the paste composition of a sample of vessels from five *capacocha* sites using the technique of instrumental neutron activation analysis (INAA), we offer a preliminary assessment of the source of these materials and their significance with respect to the function and motives of the *capacocha* ceremony. These new data

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Fig. 1. The frozen remains of a 15-year-old female sacrificed in an Inca *capacocha* ceremony on the summit of Mt. Llullaillaco, Argentina, recovered by a team of archaeologists in 1999 (Tomb 2). Photograph courtesy of Johan Reinhard.

provide insights into the significance of the ritual movement of peoples and goods around the Inca empire, known to its subjects as Tawantinsuyu, or the Kingdom of the Four Quarters.

Capacocha ceremony

By all accounts, the *capacocha* was an especially important state event that involved the sacrifice of select objects, animals, and sometimes (though not always) children. As part of the *capacocha*, offerings were made to all religious entities and shrines (*huacas*) encompassed within the Inca domain. The more powerful the *huaca*, the greater the offerings bestowed upon it by state religious personnel. Based on information gleaned from sixteenth century sources, it seems likely that the *capacocha* ceremony contained multiple layers of meaning that also encompassed political and economic interests as well as religious ones.

Many of the early Spanish chroniclers reported that the *capacocha* was undertaken to mark momentous state occasions such as the coronation or death of an emperor, the birth of a royal son, or a great victory in battle (Betanzos, 1996, p. 46, 132; Molina, 1989 [1573], pp. 120–127; Sarmiento de Gamboa, 1965 [1572]). Others, however, spoke of the *capacocha* as a periodic or cyclical

event that took place on an annual or biennial basis (Cieza, 1986 [1554], pp. 87–89; Cobo, 1979 [1653], pp. 235–237; Justicia 413, 1988 [1558–1567]). What might initially appear to be conflicting information suggests the likelihood that the *capacocha* ceremony carried multiple meanings and could be enacted for a variety of different reasons (Duviols, 1976).

Generally speaking, human sacrifice was not a characteristic feature of Inca rule in the same way that it was among the Aztec, nor does it appear to have been undertaken without considerable solemnity. When a *capacocha* ceremony was to be held, the Inca issued a levy upon all the provinces of the empire to tribute boys and girls between the ages of 4 and 10, as well as objects of gold, silver, and shell; fine cloth (*cumbi*); feathers; and camelids (Betanzos, 1996, p. 46; Cobo, 1990 [1653], p. 154; Molina, 1989 [1573], p. 121). The females, by most accounts, were selected from the ranks of the *acllakuna*, or chosen women, while little is known of how the boys were picked other than that some were required to be children of local lords (Betanzos, 1996, p. 132). All of the youths selected, according to the chroniclers, had to be physically perfect, unblemished, and virginal (Cobo, 1979 [1653], pp. 235–237; Hernández Príncipe, 1923, p. 60). Betanzos (1996, p. 132) indicates that the chosen boys and girls were paired as couples and interred as such.



Fig. 2. Excavation of a *capacocha* burial on the summit of Mt. Ampato near Arequipa, Perú (Tomb 3, Mummy 4). Photograph courtesy of Johan Reinhard.

Once the tribute from the four quarters had been assembled in Cuzco, elaborate ceremonies were conducted in the central plaza during which the presentation of the offerings was highlighted. The Inca and his royal court received the visiting dignitaries and *capacocha* offerings from the provinces and all engaged in ritual feasting, singing, performance, and prayers for several days. In conference with his priests, the Inca determined what sacrifices would be made to the *huacas* in and around Cuzco as well as how the

remainder of the tribute would be distributed among the different deities and sacred locales around the empire. Though all the deities would receive some type of offering, the quantity and value of the sacrifices to be made varied according to the *huacas'* status and the accuracy of their prior prophesies (Cieza, 1986 [1554], p. 89; Cobo, 1990 [1653], p. 155; Molina, 1989 [1573], pp. 122–123). Only the principal *huaca* of each region or ethnic territory received human sacrifices (Molina, 1989 [1573], p. 122).

After completion of the religious observances and oblations in the imperial capital, the priests, sacrifices, and attendants departed Cuzco in highly formalized fashion following a prescribed route. Piecing together information from various sources, it seems likely that the holy retinue would have comprised Inca priests, record-keepers (*quipucamayoc*), and nobility (perhaps including the Sapa Inca himself in some instances (see Molina, 1989 [1573], p. 127)); religious personnel from the provinces; the sacrificial victims and their families; and men from the territories across which the procession passed.¹ One of the focal points of the *capacocha* processions were the containers filled with llama blood mixed with crushed shell known as *mullo* that were carried from the capital of Cuzco to the edges of the empire (replenished along the way with fresh camelid sacrifices). The sanctified blood was dispersed among the local inhabitants of the different territories, fed to their *huacas*, and sprinkled upon the land itself, constituting what MacCormack (2000) describes as an act of communion between the Inca ruler and his dominion.

Beyond the offerings of blood and *mullo*, the various *huacas* might also receive burnt offerings of coca leaf, fine textiles and cloth, camelids, and objects of gold, silver, or shell (Betanzos, 1996, p. 46, 132; Cieza, 1986 [1554], pp. 87–89; Cobo, 1990 [1653], p. 155; Gentile, 1996; Molina, 1989 [1573], pp. 120–127). For the principal *huacas*, a boy and a girl would be sacrificed and buried at the site as if they were a married couple. Each was reportedly interred with vessels comprising a set of tablewares, such as one would find in an Inca household, and figurines of gold and silver representing persons and camelids (Betanzos, 1996, p. 132; Hernández Príncipe, 1923, p. 60; Molina, 1989 [1573], p. 122).

A variety of interpretations of the ultimate significance of the *capacocha* ceremony have been put forward by contemporary scholars. Both Zuidema (1973) and Duviols (1976), for instance, suggest that the ritual journey of the *capacocha* victims and entourage from Cuzco through the four quarters of the empire to the outermost edges of imperial control served to symbolically integrate and delineate the territory and subjects of the Inca state (see also MacCormack, 2000; McEwan and van de

Guchte, 1992). McEwan and Silva (1989) argue that the interment of state subjects at the perimeters of imperial control as well as at important religious shrines around the empire served to define the sacred geography of Tawantinsuyu. It has also been suggested that the *capacocha* may have, in some cases, served as a foundational act in the creation of new sacred sites (Gentile, 1996, pp. 52–53). Ritual appeasement to the mountain deities (*apus*) motivated by natural disasters such as volcanic eruptions or drought has also been posited (Murúa, 1946, pp. 397–398; Reinhard, 1985; Reinhard and Ceruti, 2005).

MacCormack (1991, pp. 103–105) highlights the political dimensions of the *capacocha* ritual noting how the amount and value of the sacrificial offerings made to the different provincial *huacas* was calibrated to the veracity of the prophecies rendered the previous year and served to materially signal their new rankings vis-à-vis one another. The *capacocha* processions also apparently served to demarcate the territorial boundaries between the different ethnic groups subject to the state as evidenced in reports of local representatives accompanying the imperial entourage to the limits of their dominion, at which point the occupants of the next ethnic province would become the official escort (Justicia 413, 1988 [1558–1567]; MacCormack, 1991, 2000, pp. 152–154). Hints of the economic significance of the *capacocha* are seen as well in the famous case of the sacrifice of a local lord's daughter (Tanta Carhua) in exchange for the Inca's assistance with a canal construction project (Zuidema, 1973), and in a testimony recorded in Cuzco in 1571 in which a Spanish commission was told that *capacocha* sacrifices were offered "for health, or so that the gods give water and good seasons for the crops" (Levillier, 1940; see also Ulloa Mogollón, 1965 [1586]).

Of particular interest to us in the present study is the potential of the *capacocha* ritual to shed light on how the Inca conceptualized and undertook to manage their relations with the various provinces and ethnic groups comprising the imperial state. While the documentary evidence implies that the choreographed movement of the *capacocha* sacrifices about the empire figured prominently in Inca ideology and strategies of statecraft, references to such important details as how the victims were selected, from whence they came, and where they actually ended up are scant and equivocal in the documentary sources. Perhaps the only thing of which we can be fairly certain is that the movement of these individuals was not random (e.g., Duviols, 1976).

The question of where these children came from originally and where they were ultimately interred can provide important insights into the conceptual organization of the empire, the hierarchy of subject populations, the relations among provinces, and the ways in which these may have been manipulated by the state. In an

¹ According to Molina (1989 [1573], p. 127), the sacred entourage exited the capital in a "wing formation, somewhat spread out one from another" ("yban hechos un ala, alguna cosa apartada los unos de los otros"), purportedly following a straight path, veering for neither valley nor mountains, sweeping, as it were, across the landscape towards their destinations (see also a XVI century description of the *capacocha* procession in MacCormack, 2000, p. 113). Others have suggested that the royal entourage left Cuzco in single file lines that corresponded to the ceque system (e.g., Sallnow, 1987, p. 39; Zuidema, 1973) based, possibly, on a somewhat ambiguous statement found in Cobo (1990 [1653], p. 156).

early XVII century document containing some of the most specific information available on *capacocha* sacrifices, people from a region in the central highlands described the case of the young girl named Tanta Carhua who was buried alive in her home province upon return from ceremonies held in Cuzco (Duviols, 1986; Hernández Príncipe, 1923, p. 52, 60). In the same document, the author reports on another *capacocha* victim named Cauri Pacssa of a lineage originally from Recuay in the northern Peruvian highlands who was sacrificed at a site in Chile (Hernández Príncipe, 1923, p. 41). This same kin group also recalled having sent a number of other children to the Inca as *capacocha* who were subsequently sacrificed in Cuzco, Quito, Yahuarcocha (northern Ecuador), and Lake Titicaca (Hernández Príncipe, 1923, p. 41).

This report clearly suggests that there were different strategies being pursued by the state in terms of the movement and distribution of imperial subjects around the empire as well as with respect to the management of relations between the provinces. With the discovery of a number of well-preserved, high altitude burial sites in the past decade, there now exists a sufficient amount of archaeological data with contextual information to allow us to begin to delve further into the details and political significance of this exceptional state ritual.

Archaeological investigation of the *capacocha*

One way to approach the questions outlined above with respect to imperial strategies is through the analysis of genetic material and the study of the actual physical remains of the victims. Preliminary study of the DNA of the child sacrifices from Mt. Llullaillaco in Argentina (see Reinhard, 1999; Reinhard and Ceruti, 2000) indicates no genetic relationship among the victims at this site, though a genetic match was found between the oldest female sacrifice at Llullaillaco and a modern individual from the Colca valley in southern Perú (near Mt. Ampato—another *capacocha* site) approximately 650 miles to the north (Crews, 2000; cited in McKenney, 2001; Reinhard and Ceruti, 2005). Due to the expense and the relatively tiny comparative sample, such studies are proceeding slowly. Another approach, suggested by Reinhard and Ceruti (2005), concerns the fact that several of the *capacocha* victims exhibit distinctive types of cranial modification, which might also provide clues as to ethnic identity.

Another way to examine the origins and circulation of the *capacocha* victims is through the study of the associated artifactual evidence. The young boy found on the summit of Cerro El Plomo in central Chile, for instance, may be fairly securely linked to the Colla ethnic group of the Bolivian altiplano some 1500 miles to the north on the basis of his footwear and a distinctively shaped metal

pectoral ornament that he wore (Mostny, 1957, p. 37, 41, 55–56). The headgear and clothing in which the child sacrifices were attired may likewise provide clues as to their origins, though as some have recently noted (e.g., Abal, 2001; Schobinger, 2001), it may not always be possible to read these items directly. In the case of the *capacocha* victim found on Mt. Aconcagua near Mendoza, Argentina, for instance, a study of the child's clothing and associated wrappings clearly indicated an affiliation with the central coast of Perú (Abal, 2001, pp. 238–239), while the isotopic analysis of his remains (which provides information on diet) suggested that he was more likely raised in the highlands than on the coast (Fernández and Panarello, 2001; also Schobinger, 2001, pp. 415–417).

In the present study, we focus on the ceramic assemblages associated with Inca *capacocha* burial sites as another type of evidence that may provide insights into the origins and ethnic affiliation of the child sacrifices as well as specific political calculations of the imperial state. In addition to reviewing the style and morphology of the Inca vessels comprising the mortuary assemblage, we analyze the composition of the ceramic pastes of a sample of these pots using instrumental neutron activation analysis (INAA).² An important tool in the sourcing of archaeological ceramics, we use the technique of INAA to characterize the chemical composition of the raw materials used in the manufacture of the pottery vessels. The paste composition of these vessels is compared to that of Inca pottery from non-funerary contexts at the same sites as well as imperial Inca vessels from Cuzco and the Lake Titicaca regions, and local-style pottery from contemporary sites in the Mantaro region of central Perú and northern Chile. The compositional analysis offers a first approximation of where the pottery included in the *capacocha* burials examined may have been manufactured, thus providing further insights into the movement of the individuals and goods involved in this critical state ceremony.

Capacocha sites

To date, discoveries or reports of *capacocha* sites involving human immolation in the Andes number less

² Instrumental neutron activation analysis (INAA) is a technique that involves the irradiation of stable atomic nuclei to effect a transformation that produces radioactive isotopes. Analysis of the gamma rays emitted during the process of radioactive decay provides information on the elemental content of the sample material. INAA yields precise determinations for approximately 20 major, minor, and trace elements under routine conditions. The advantages of this technique are that it combines great analytical sensitivity with relatively small sample requirements (Bishop et al., 1988, p. 320).

than 20 (Beorchia, 1973–1974, 1985; Ceruti, 1999, 2004). As noted by Reinhard and Ceruti (2005), the earliest such find was made in 1896 by a miner on the summit of Mt. Chachani in southern Perú, who reported having found a female dating to the time of the Inca with various funerary offerings associated, including ceramic vessels, wooden cups, and wooden spoons (Beorchia, 1973–1974, p. 36). The first burial to receive the attention of the scientific community was that of the young boy recovered from Cerro El Plomo in Chile in 1954 (Mostny, 1957). Subsequent finds have proved to be clustered primarily in the southern half of the Inca empire in the imperial sector known as Collasuyu, comprising the southern portion of modern day Perú, the

Bolivian altiplano, the northern half of Chile, and north-west Argentina. The majority of *capacocha* sites are situated on the summits of impressive Andean peaks that range in elevation from 5300 to 6700 m above sea level, the highest documented find being that from Mt. Llullaillaco at 6739 m.a.s.l. (Reinhard, 1993; Reinhard and Ceruti, 2000) (Fig. 3).

Only a handful of *capacocha* sites have been recorded at lower elevations and/or in the northern sector of Tawantinsuyu. These sites would presumably have been extremely sacred and powerful *huacas* to the local populations prior to the Inca conquest or possibly newly inaugurated sacred locales (e.g., Hernández Príncipe, 1923). Included among these is the site of Cerro

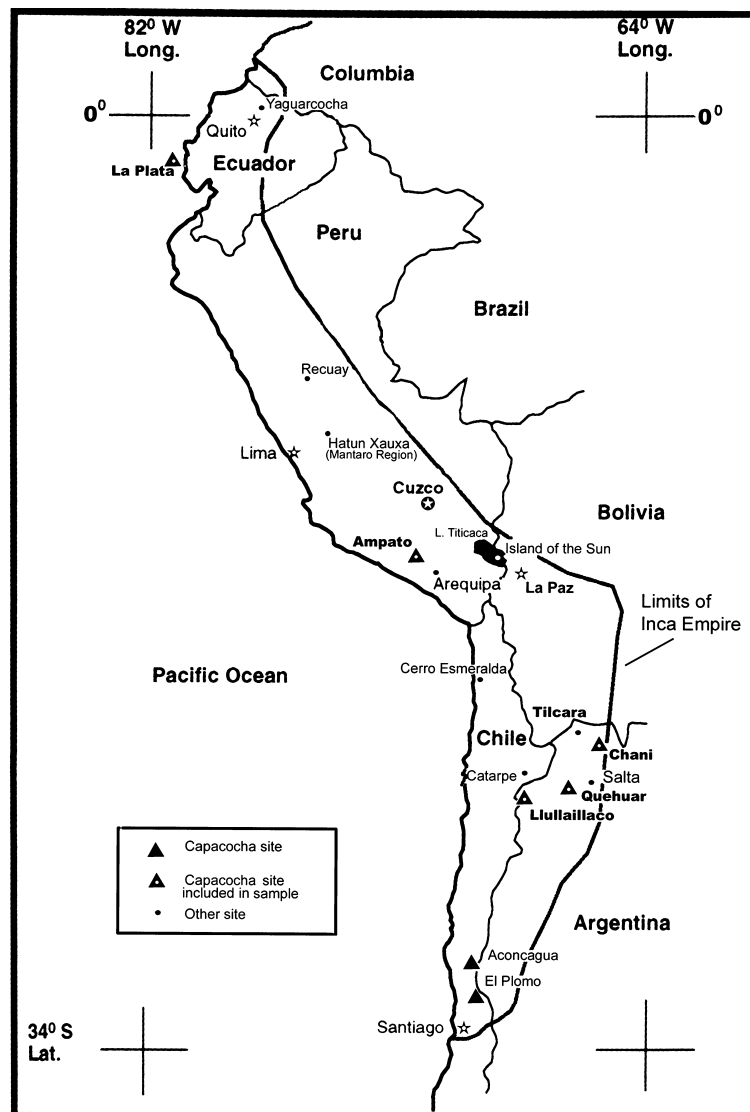


Fig. 3. Map of Inca empire indicating location of *capacocha* sites and other locations mentioned in text.

Esmeralda in Chile (Checura, 1977), the Island of the Sun in Lake Titicaca (Doering, 1952, Fig. 43), and La Plata island off the Ecuadorian coast (Dorsey, 1901; McEwan and Silva, 1989).

The *capacocha* sites from which we were able to obtain ceramic samples for the present study include (1) Mt. Llullaillaco, (2) Mt. Chañi, and (3) Mt. Quehuar, all located in northwest Argentina; (4) Mt. Ampato in southern Perú; and (5) La Plata island, located 35 km off the coast of Ecuador. The Llullaillaco site was identified and scientifically excavated by a team of archaeologists led by Johan Reinhard and María Constanza Ceruti in 1999. The first *capacocha* victim from Mt. Ampato was discovered by Reinhard and Miguel Zárate in 1995; three others were subsequently identified on the mountain and excavated by a team headed by Reinhard and José Antonio Chávez (Reinhard, 1996, 1997). Ruddy Pérez, a member of the Ampato archaeological team, has been responsible for the curation and documentation of the ceramics recovered from this site. The site on Quehuar had been previously dynamited sometime prior to its initial discovery by archaeologists in 1974; salvage excavations were later conducted at the site by Reinhard, Ceruti, and Chávez (Ceruti, 1999, pp. 102–107; Reinhard and Ceruti, 2005). The *capacocha* complex associated with Mt. Chañi was first recorded in 1901 (Ceruti, 1999, p. 107) and was subsequently investigated by Ceruti in the mid-1990s (Ceruti, 1999, pp. 108–111). The Inca site on La Plata island was excavated by George Dorsey in 1892 under the sponsorship of the Field Columbian Museum. An overview of each of these *capacocha* sites is presented below followed by a brief description of the funerary assemblages associated with each burial.

Llullaillaco

At 6739 m above sea level, the Inca burials discovered on the summit of Mt. Llullaillaco constitute the highest archaeological site in the world (Ceruti, 1999, pp. 163–166; Reinhard, 1993, 1999; Reinhard and Ceruti, 2000). This *capacocha* site has several components in addition to the summit platform and burials including a base camp (*tambo*) located 5200 m above sea level, a small cemetery situated 300 m below this camp, and several small groups of intermediary ruins located between the base camp and the peak. On the summit, three tombs, 1.5 to 2 m deep, were fashioned from natural niches in the bedrock for the child sacrifices, which were found to be almost perfectly preserved. The proximity and configuration of these burials implies their contemporaneity.

Tomb 1, located on the south side of the ceremonial platform, contained the body of a 7-year-old boy who was buried with two miniature figurines, spondylus shell,

one pottery vessel (an aríbola), slings, extra sandals, and several small woven bags (*chuspas*). Tomb 2 on the north side contained the body of a 15-year-old girl buried with seven ceramic vessels, two wooden cups (*keros*), a wooden comb and spoon, several *chuspas*, spondylus shell, and three miniature female figurines. The final burial was that of a 6-year-old female child situated on the east side of the platform. Her funerary assemblage included 11 ceramic vessels, two wooden *keros*, a comb, several *chuspas*, a sling, and five miniature female figurines (Previgliano et al., 2003; Reinhard and Ceruti, 2000, pp. 91–101).

In our study, we included the single vessel from the male burial, one vessel from the female's burial on the north side, and three vessels from the younger girl's burial on the east side. The vessels were selected both for representation across the formal categories and the funerary assemblages, with choices also conditioned by the desire to use vessels with pre-existing breaks for sampling purposes. Also from the summit we included one vessel from a separate offering located between the north and south burials. In addition, we sampled eight vessels recovered from the *tambo* below the summit platform, which had likely served as the staging area for the *capacocha* ritual. The *tambo* materials include both Inca and local vessel forms. Table 1 provides a list of the vessels included in the analysis together with provenience information, stylistic attribution, and morphological category.

Quehuar

The volcano Quehuar, reaching an altitude of 6100 m, is located in northwest Argentina. The *capacocha* complex associated with this mountain comprised a ceremonial platform near the summit and a single female burial (Reinhard and Ceruti, 2005). The site was dynamited by looters before it could be properly documented by archaeologists (Ceruti, 1999, pp. 102–107). Some salvage work was conducted at Quehuar in the 1990s, however, during which time one miniature female figurine of spondylus shell and a fairly well-preserved mummy bundle containing the headless remains of a young girl were recovered (Ceruti, 1999, p. 162), as well as a single Inca sherd pertaining to an aríbola (Ceruti, 1999, p. 106). This sherd is included in the present study.

Chañi

The archaeological complex associated with Chañi (5896 m), also found in northwest Argentina, is quite extensive. Salvage excavations were conducted at the site by Reinhard and Ceruti in 2000. Architectural remains include a series of platforms and terraces beginning at

Table 1

List of vessels included in neutron activation analysis performed at the University of Michigan's Ford Nuclear Reactor

LabID	Orig. Cat#	Site	Context	VessType	VessStyle	Clay Grp
A-01	—	Llullaillaco	Base camp	Aríbalo	Inca-local	Catarpe
A-02	—	Llullaillaco	Base camp	Aríbalo	Inca-local	Cuzco
A-03	—	Llullaillaco	Base camp	Plate	Inca	Cuzco
A-04	—	Llullaillaco	Base camp	Aríbalo?	Inca-local	Catarpe
A-05	—	Llullaillaco	Base camp	Bowl	Local	Cuzco
A-06	—	Llullaillaco	Base camp	Bowl	Local	Cuzco
A-07	E-6/	Llullaillaco	Tomb 1 (east)	Plate	Inca	Titicaca
A-08	E-1	Llullaillaco	Tomb 1 (east)	Pedestal pot	Inca	Cuzco
A-09	S-24	Llullaillaco	Tomb 3 (south)	Aríbalo	Inca	Titicaca
A-10	E-8	Llullaillaco	Tomb 1 (east)	Aríbalo	Inca	Titicaca
A-11	N-16	Llullaillaco	Tomb 2 (north)	Aríbalo	Inca	Catarpe
A-12	—	Llullaillaco	Base camp	Jar	Local	Catarpe
A-13	—	Llullaillaco	Base camp	Jar	Inca-local	Catarpe
A-14	—	Quehar	Summit platform	Aríbalo	Inca	Outlier
A-15	—	Chañi	Summit platform	Aríbalo	Inca	Titicaca
A-16	—	Llullaillaco	Summit platform, offering between tombs	Jar	Local	Catarpe
A-17	—	Puc. Tilcara	West slope, surface	Plate	Inca-local	Local
P-01	B2-T1-2/1	Ampato	Tomb 1 (vessel smash)	Short-neck, flat bottom jar	Inca-local	Cuzco
P-02	B2-T1-9/1	Ampato	Tomb 1 (vessel smash)	Pedestal pot	Inca	Cuzco
P-03	B2-T1-19/1	Ampato	Tomb 1 (vessel smash)	Aríbalo	Inca-local	Cuzco
P-04	1B2-S/2	Ampato	Camp	Aríbalo	Inca	Unclassed
P-05	1B2-S/13	Ampato	Camp	Plate	Inca	Cuzco Outlier
P-06	1B2-S/12	Ampato	Camp	Plate	Inca	Cuzco
P-07	4b-2E-9/2	Ampato	Tomb 3	Pedestal pot	Inca	Cuzco
P-08	B2-T1-41	Ampato	Tomb 1	Aríbalo	Inca	Titicaca
P-09	B2-T1-40	Ampato	Tomb 1	Aríbalo	Inca	Cuzco
F-01	2622	Cuzco	—	Wide-mouth jar	Inca	Cuzco
F-02	2642	Cuzco	—	Face-neck jar	Inca	Outlier
F-03	2675	Cuzco	—	Aríbalo	Inca-Chimu	Cuzco Outlier
F-04	2704	Cuzco	—	Aríbalo	Inca	Titicaca Outlier
F-05	2715	Cuzco	—	Deepdish, two-handled	Inca	Titicaca Outlier
F-06	2942	Cuzco	—	Pedestal pot	Inca	Cuzco
F-07	3112	Cuzco	—	Cup	Inca	Outlier
F-08	3123	Cuzco	—	Wide-mouth jar	Inca-Pacajes	Titicaca
F-09	3139	Cuzco	—	Short-neck, flat bottom jar	Inca	Cuzco
F-10	3198	Cuzco	—	Plate	Inca	Titicaca
F-11	3316	Cuzco	—	Aríbalo	Inca	Cuzco
F-12	4368	La Plata	Burial	Plate	Inca	Local
F-13	44457	La Plata	Burial	Aríbalo	Inca	Cuzco
F-14	4459	La Plata	Burial	Aríbalo	Inca	Cuzco outlier
F-15	4460	La Plata	Burial	Pedestal pot	Inca	Cuzco
F-16	241813-1	Cuzco, Saqsaywaman	Surface	Aríbalo	Inca	Cuzco
F-17	241814-1	Cuzco, Qoripata	Surface	Aríbalo	Inca	Cuzco
F-18	241813-2	Cuzco, Saqsaywaman	Surface	Plate	Inca	Cuzco
F-19	241813-3	Cuzco, Saqsaywaman	Surface	Plate	Inca	Cuzco
F-20	241814-2	Cuzco, Qoripata	Surface	Aríbalo	Inca	Cuzco
F-21	241813-4	Cuzco, Saqsaywaman	Surface	Deepdish, two-handled	Inca	Cuzco

around 5800 m elevation and extending to the summit (Ceruti, 1999, 2001, pp. 107–111). Surface materials found at the site, which include ceramics, bone, and wood fragments, are relatively dense, suggesting that significant numbers of people participated in the rituals

performed here. A single burial, that of a 5-year-old child, was recovered from the summit of Chañi in 1905 (Ceruti, 1999, p. 108). One aríbala sherd from surface collections made at the site by Ceruti in 1997 is included in the present study.

Ampato

The *capacocha* remains associated with Mt. Ampato (6312 m) in southern Perú consisted of a substantial base camp at 4800 m above sea level, a funerary complex at 5852 m, and a partially collapsed summit platform (Chávez, 1999; Reinhard, 1996; Reinhard and Ceruti, 2005). A total of four *capacocha* victims were recovered from the site (Chávez, 1999). The first individual, a girl of approximately 12–15 years of age, was discovered out of situ and in disarray some 70 m below the remnants of the summit platform. The scattered contents of her funerary assemblage included several *chuspas* and a female figurine of spondylus shell. The three individuals who had been buried in the complex below the summit included two girls and a boy, all between the ages of 8 and 12. These mummies had all been damaged to some degree by lightening strikes. The condition of the remains as well as the proximity and configuration of the burials suggests that they represent a single ritual event.

The first girl (Tomb 1) was buried with at least 10 ceramic vessels, a wooden kero, a spoon, weaving implements, several figurines, and an extra pair of sandals (Reinhard, 1996, p. 75, 79). Her burial was unusual insofar as it was capped by a “vessel smash” involving six pots that had been deliberately broken on top of her grave. In Tomb 2, the male child had been interred with one medium-sized aríbola that evidenced lightening damage, a pair of small ceramic plates with bird-head handles, a pair of small wooden *keros*, and a single male figurine (Reinhard, 1997, pp. 42–43). The funerary assemblage associated with the second girl (Tomb 3) consisted of seven ceramic vessels and one female figurine of spondylus (Reinhard, 1996, 1997). Six ceramic vessels from the Ampato burial contexts were analyzed in our study including three from the vessel smash associated with Tomb 1, two aríbolas from the interior of Tomb 1, and one pedestal-based pot from Tomb 3. Also included are three Inca vessels from the high altitude encampment associated with these burials.

La Plata island

The only *capacocha* materials from a non-summit sacrifice included in our study are those from La Plata island off the coast of Ecuador. Based on the archaeological evidence, it is clear that this island had long been a sacred locale for the aboriginal inhabitants of coastal Ecuador ((Marcos and Norton, 1981). The site was excavated by Dorsey in 1892 (Dorsey, 1901). His efforts focused on an Inca burial discovered near the bay at the east end of the island. The grave reportedly contained the poorly preserved remains of two individuals; neither their age nor sex was apparently discernible. The mate-

rials recovered from this grave, however, which included six female figurines, six tupu pins, 12 ceramic vessels, and a gold cup, clearly indicate that the burial represents a *capacocha* sacrifice (see McEwan and Silva, 1989) and that the victims were female. Four vessels from La Plata were included in our sample (two aríbolas, one shallow plate, and one pedestal-based pot).

Instrumental neutron activation analysis

In this study, 29 ceramic vessels from five *capacocha* sites were analyzed for elemental composition at the University of Michigan's Ford Nuclear Reactor (FNR) (Table 2). The specimens include select samples from the *capacocha* burials described above, as well as comparative pieces from the associated base camps that likely served as staging grounds for the final ritual. Although the sample is small, it represents a significant advance in our efforts to trace the movement of people and goods involved in the *capacocha* ritual around the empire. It is a result of the collaborative nature of our study that we have been fortunate enough to gain access to the materials that we did from five different countries.

To help establish the provenance of the *capacocha* ceramics, we also included a range of comparative materials in the study from both the imperial heartland and several provincial Inca sites and centers. Being so geologically diverse, much of the Andean area is poorly understood with respect to clay geochemistry. Inca pottery from Cuzco and the southern Titicaca basin, however, both important centers of high quality imperial wares, have been characterized with respect to clay composition.

Seventeen Inca vessels from Cuzco belonging to the Field Museum of Natural History (FMNH) were analyzed in the present study. The sample includes 11 vessels from the Montez collection, purchased by the Museum in 1893 and representing one of its earliest accessions, and six sherds from the Saqsaywaman and Qoripata sectors of Cuzco surface collected by Donald Collier in 1954. The specimens selected for analysis represent a cross-section of the standard Inca vessel forms (see Bray, 2003a), and again were chosen in part on the basis of where pre-existing breaks or blemishes in the pots could be exploited for purposes of obtaining the necessary paste specimen. In addition to sampling the range of forms, a few distinctive stylistic variants were also selected, including an Inca-Chimu aríbola and an Inca-Pacajes wide-mouthed jar. Data on an additional 12 Inca vessels from Cuzco previously analyzed by D'Altroy and Bishop (1990) at the Brookhaven National Lab significantly increased our sample of imperial wares from the capital.

Imperial-style Inca pottery from the Titicaca basin are represented in the present study by 18 vessels from

Table 2
Composite ceramic sample included in this study

Region	Site	Context	Sample
<i>Capacocha-related ceramics</i>			
Southern Andes (Argentina)	Llullaillaco	Encampment/staging ground	8
		Summit platform ^a	1
		<i>Capacocha</i> burial	5
	Chañi	<i>Capacocha</i> burial	1
		Quechuar	<i>Capacocha</i> burial
Central Andes (Perú)	Ampato	Encampment/staging ground	3
		<i>Capacocha</i> burial	6
Northern Andes (Ecuador)	La Plata	<i>Capacocha</i> burial	4
<i>Capacocha</i> sub-total			29
<i>Comparative ceramic material</i>			
Central Andes			
Cuzco Basin	Cuzco	Imperial capital	40
Upper Mantaro	Hatun Xauxa, Marca	Residential	135
Southern Andes			
Bolivia	Island of Sun	Residential	18
Chile	Catarpe, Turi	Residential	157
Argentina	Tilcara	Residential	1

^a Possibly a later offering, not directly associated with *capacocha* burial.

the Island of the Sun, also previously analyzed by D'Altroy and Bishop (1990).³ Being able to incorporate this material proved of great help in refining our interpretations and we are grateful to these authors for making their data available to us. The Island of the Sun vessels are part of the Banelier Collection housed in the American Museum of Natural History. They were recovered from a residential complex excavated by Banelier on a promontory at the northern end of the island called Llaq'alli. The Island of the Sun was one of the most sacred sites in the Inca empire and the Titicaca basin in general has produced some of the finest examples of imperial Inca pottery outside of Cuzco.

The imperial Inca assemblage comprises a limited number of distinctive and highly standardized vessel forms (Meyers, 1975). Among these, the most common, by far, are the tall-necked jar form known as the *aribola*, the pedestal-based cooking pot, the shallow plate, and the small, flat-bottomed jar with a single handle (Bray, 2003a). The *aribola* is generally associated with the storage, transport, and serving of *chicha*, the ubiquitous corn beer of the Andes. The pedestal-based pot was clearly used for the purpose of heating or cooking food, the shallow plate for the serving of solid or semi-solid

foods, and the small jar for the drinking or pouring of liquids (Bray, 2003b). Other vessel forms in the imperial state assemblage include the two-handed deep dish; the flat-bottomed, modelled face-neck jar; the large, wide-mouthed jar with two vertical strap handles; and the wide-mouthed jar with a single handle. At least one of each of these shape categories was included in the present study. The only ceramic vessels found to date in *capacocha* contexts are the *aribola*, the pedestal-based pot, the shallow plate, the small, flat-bottomed jar, and the two-handed deep dish. The first three forms are the more common ceramic elements of these assemblages, the latter two being found only in a few instances.

In addition to the *capacocha* vessels and the Inca pottery from the two imperial centers, we also examined contemporary local materials from several provincial Inca sites in the study. The first set comprises 135 pieces of local manufacture recovered from Inca period sites in the Upper Mantaro valley (D'Altroy and Bishop, 1990).⁴ The second set includes 157 sherds from the Inca administrative site of Catarpe and other nearby sites in northern Chile that were submitted to the Ford Nuclear Reactor at the University of Michigan for irradiation by

³ The data for 18 specimens from the Island of the Sun were provided to us for comparative purposes; our count does not precisely match that reported on in D'Altroy and Bishop (1990).

⁴ The data for 135 specimens from the Upper Mantaro valley were provided to us for comparative purposes by D'Altroy and Bishop; we note again that our count does not match that given in their published study (1990, p. 128).

John Alden. Again, these pieces are of local rather than Inca manufacture. Given the geographic proximity of Catarpe to Mt. Llullaillaco, which lies approximately 120 km due south, this material potentially provides a regional signature for local ceramics recovered from the *capacocha* site on the summit of Llullaillaco. The final specimen included here was a single vessel from Pucara Tilcara located to the NE of Llullaillaco, which provides an indication of the local ceramics pastes from that region. The composite sample included in the present study is summarized in Table 2.

Analytical procedures

Sample preparation

The preparation of the samples involved the removal of surface contamination on a sherd or vessel by abrading the exposed and weathered area from a small section of the piece using a solid tungsten carbide burr. For museum specimens, this procedure was undertaken either at a point of breakage on the vessel or on an inconspicuous section of the base or vessel interior (in the case of restricted forms). A small amount of ceramic paste was subsequently removed from the “cleaned” area through further light abrasion or scouring, the dust thus produced being collected on filter paper and then stored in sterile vials. With the sherds, a small portion of the cleaned area was snipped off, rinsed with de-ionized water, dried, and later ground to a powder with a mortar and pestle. Following this, approximately 200 mg of the powdered material was encapsulated in high-purity quartz for irradiation.

Determination of element concentrations

At the Ford Nuclear Reactor (FNR), concentrations for elements were determined with intermediate and long half-life isotopes (including As, Ba, La, Lu, K, Na, Sm, U, Yb, Ce, Co, Cr, Cs, Eu, Fe, Hf, Nd, Rb, Sc, Sr, Ta, Tb, Th, Zn, and Zr). These data result from a 20 H core-face irradiation with an average thermal neutron flux of 4.2×10^{12} n/cm²/s. Following irradiation, two separate counts of gamma activity were done: a 5000-s count (live time) of each sample after a 1-week decay period, and a 10,000-s count (live time) after a period of 5 weeks decay.

Element concentrations were determined through direct comparison with three replicates of the standard reference material NIST1633A (coal fly ash). All data reductions were based on current consensus element libraries utilized by the Missouri University Research Reactor for archaeological materials (Glasco, 1992, p. 15, Table 2.2). Samples of New Ohio Red Clay and NIST1633B (coal fly ash) were included as check stan-

dards. Interlab calibrations between the Brookhaven National Lab (BNL) and the FNR were based on accumulated values for New Ohio Red Clay check-standards. Inter-lab analyses utilized the set of more precise elements determined by both the BNL and the FNR, including Ba, La, Lu, Sm, Yb, Ce, Cs, Cr, Co, Eu, Hf, Fe, Sc, Ta, and Th.

Statistical methods

The analysis proceeded through three phases: (1) preliminary group formation utilizing a combination of bivariate and multivariate techniques (including scatter plots and principal components analysis) to gain initial insight into possible groups within the data set; (2) group refinement to create statistically homogeneous core groups distinct from other such groups based on the multivariate probability of group membership (usually calculated from the Mahalanobis D^2 statistic); and (3) classification of non-core members into their most likely compositional group based on discriminant function analysis or other statistical measures of group membership (Glasco, 1992). The result is the identification of robust “compositional groups,” reflecting distinct clay sources or production loci.

Classification of sherds to one of the defined compositional groups reflects the statistical certainty of group membership. *Core members* are samples with high multivariate probability of group membership, which had consistent (or reasonable) site provenience, and were of a similar type or stylistic class. That is, only “Inca-style” samples recovered from Cuzco were eligible for core-group status in the Cuzco composition group, but not all Cuzco samples demonstrated sufficient compositional similarity to merit inclusion in the core group. *Non-core members* are those samples revealing a significant multivariate probability of group membership, irrespective of their style or site provenience. Cases with a low probability of membership in any group could still be assigned to the nearest group based on discriminant function scores, or considered an extreme *outlier* relative to all known reference groups.

Definition of reference groups

An initial principal components analysis based on the suite of elements available from both labs identified several major dimensions of geochemical variability within the Inca ceramic sample, with the first four components accounting for nearly 84% of inter-element correlations (Table 3). Total structure coefficients indicate that the first principal component primarily reflects positive correlations among the light rare earth elements (REE), as well as hafnium and thorium. In contrast, the second principal component represents variation among the

Table 3
Principal components analysis of trace-element variation in Inca pottery

Principal components:	1	2	3	4
Eigen value	7.2	2.4	1.9	1.1
Percent variance	48.0	15.9	12.6	7.4
Cumulative percent	48.0	63.9	76.5	83.8
<i>Total structure coefficients</i>				
La	0.977	0.068	0.089	-0.022
Ce	0.965	0.101	0.142	-0.013
Ba	0.914	-0.058	-0.111	0.126
Eu	0.895	0.239	-0.186	-0.056
Sm	0.875	0.292	0.052	-0.115
Hf	0.791	0.235	0.136	-0.155
Cr	0.746	0.156	0.229	0.094
Th	0.711	0.208	0.461	0.141
Sc	0.046	0.739	-0.436	0.258
Co	-0.292	0.656	-0.036	0.487
Fe	<i>-0.549</i>	0.552	-0.197	0.319
Yb	-0.475	0.619	0.239	-0.482
Lu	-0.421	0.649	0.079	-0.557
Rb	-0.156	0.128	0.892	0.219
Cs	<i>-0.638</i>	-0.029	0.660	0.158

Numbers in bold highlight strong positive correlations between principal components and element concentrations, while italicized numbers emphasize strong negative correlations.

heavy REE elements lutetium and ytterbium, plus the transition metals scandium, cobalt, and iron. Taken together, the first and second components suggest that the degree of fractionation among the REE may provide an important means for differentiating regional clay sources in this largely volcanic landscape. The third component covaries positively with the alkaloids cesium and rubidium, while the fourth principal component represents residual variation among the REE.

Based on these primary dimensions, a number of preliminary or potential composition groups, along with several smaller groups and extreme outliers, were identified. Iterative refinement of these groups using the jack-knifed Mahalanobis distance statistic based on the first four PC scores resulted in five reference groups with potential relevance for the *capacocha* sample (Fig. 4).

Cuzco groups. The ceramic samples from Cuzco presented a greater than expected range of variation for materials presumably produced under fairly standardized conditions in the imperial core. A prior petrographical analysis (Iyer and Lunt, 1991) reported that Inca ceramic pastes from Cuzco form a coherent and standardized group, characterized by very clean clays to which a unilithic temper (consisting of ground or crushed basalt and andesite) had been added. The basalt-andesite temper appears local in origin, with very

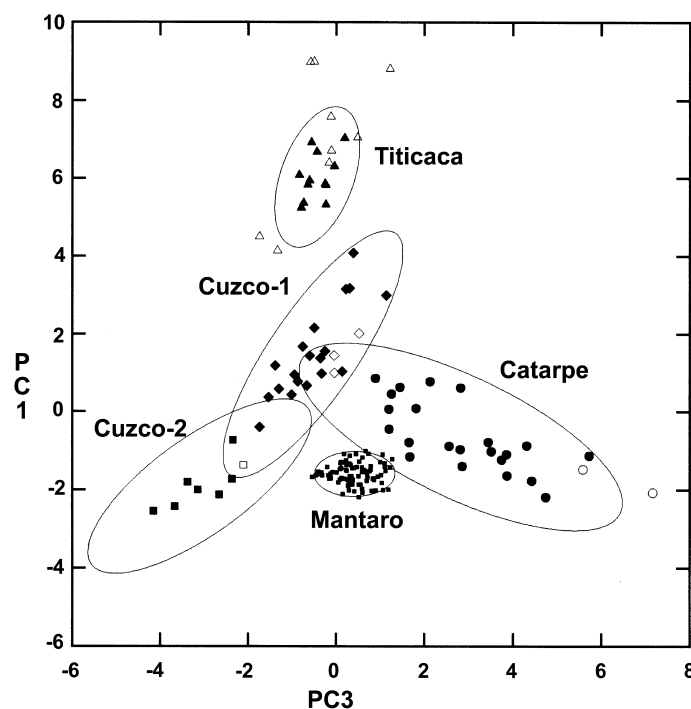


Fig. 4. Separation of regional ceramic groups on the first and third principal components axes; ellipses represent 95% confidence interval for core group members. (solid symbols = core members; open symbols = non-core members).

strong petrographical similarities to the andesite and basalt lavas that outcrop in the Cuzco valley. However, these outcrops range in composition from hypersthene-bearing andesites to biotite-bearing basalts and dolerites, suggesting significant variation in mafic mineral content. The observed geochemical variation in the Cuzco samples, involving both the transition metals and light:heavy REE ratios, is consistent with a basaltic-andesitic temper continuum.

Two closely related groups were identified for the Cuzco area, potentially representing end points along this temper gradient. Group refinement suggests a primary group with higher metals content (the “basalt-temper” group), comprising 19 core cases to which an additional four samples from other sites were added as non-core members. A smaller, secondary reference group is suggested by 13 samples with lower metals content (the “andesite-temper” group). Overall, the Cuzco sources have lower concentrations of the alkali elements, but higher concentrations of several transition metals such as scandium.⁵

Titicaca group. The vessels from the Island of the Sun in Lake Titicaca comprise a small, but highly distinctive set. The final reference group includes a core group of 12 vessels from the Bandelier Collection, while an additional seven samples from other sites were classed as non-core members based on multivariate probabilities of group membership. Overall, the Titicaca samples have elevated values for the light rare earth elements, and higher scores on the first principal component overall. Non-core members assigned to this group tend to have more extreme rare earth element values. The compositional character of this group may reflect the predominance of Cretaceous and Tertiary sedimentary strata in the vicinity of Lake Titicaca as a source for local clays, which contrasts markedly with the igneous lithology that predominates over much of central Perú.

Mantaro group. The Mantaro group consists of the bulk of samples previously analyzed by D’Altroy and Bishop (1990) from the sites of Hatun Xauxa, Hatun-

marca, and Marca, from which a core group of 87 cases was identified. Although the group appears highly consistent internally based on principal component scores, bivariate plots of element concentrations (such as chromium and thorium) indicate two closely spaced subgroups. Identification of these subgroups was not pursued further given that none of the *capacocha* ceramics appear related to the Mantaro composition group.

Catarpe group. Only a small subset of the Catarpe ceramics appeared compositionally similar to the *capacocha* ceramics. This group is characterized by higher thorium:chromium ratios, and high concentrations of cesium and rubidium. Sherds from this group are very similar to an equally distinctive group from the Lullailaco *tambo*, suggesting that the Catarpe subset provides a chemical signature for local ceramics from this area of central Chile and northwest Argentina.

Of the 29 *capacocha*-related specimens included in the present study, 18 (62%) could be securely assigned to one of these reference groups as non-core members based on significant multivariate probabilities of group membership (Fig. 5), while two additional samples were assigned as outliers, based on posterior classification and cluster analyses. Many of the remaining nine samples appear as fairly extreme outliers on one or more dimensions and are not affiliated with any of these groups. These may well represent ceramics produced with local clays from widely distant parts of the empire.

With respect to the subset of ceramic vessels ($N = 17$) that specifically comprised part of the funerary assemblage of the sacrificial victims, seven were most likely manufactured in Cuzco, while five others are clearly associated with the clay sources near Lake Titicaca (Table 4). Thus, nearly three-quarters of the vessels in our sample that were directly interred with the *capacocha* victims appear to have originated in one or the other of the two most sacred centers in the empire. None of the vessels included in the funerary assemblages can be securely tied to local production in the surrounding region. The vessels of unknown provenance may represent items that originated in the homeland of the victims or other local, as yet unidentified, production centers.

Among the pieces from the encampments and non-burial contexts associated with the *capacocha* sites ($N = 12$), vessels from the imperial capital are still well represented but local ceramics are also common (Table 5). At Lullailaco, where we have the largest sample from an encampment ($N = 8$), the ceramics are evenly divided between imperial (Cuzco) and local sources. One additional specimen (A-16) from the summit of Lullailaco, which appears to have been a later offering, is clearly associated with the Catarpe clay group. The remainder of the vessels from non-mortuary contexts constitute outliers with respect to the clay reference groups defined here. Interestingly, no vessels from the Lake Titicaca area were identified in this subset.

⁵ The results of the compositional analysis of two vessels from the Montez collection bear comment, though the observations are not directly relevant to the topic at hand but rather to the subject of Inca pottery more generally. First, one of the vessels included in the analysis was an Inca-Chimu aríbola (#F-03), Chimu pottery being a highly distinctive blackware traditionally manufactured on the north coast of Peru. This vessel was classified as an outlier with respect to the Cuzco clay groups. A fancy Inca cup with a handle modelled in the shape of a puma (#F-07) was also included in the present study. While these cups do not constitute one of the standard state vessel forms, they are nonetheless known from several important Inca sites around the empire. Interesting, this cup, like the Inca-Chimu vessel, was apparently not manufactured in the imperial heartland.

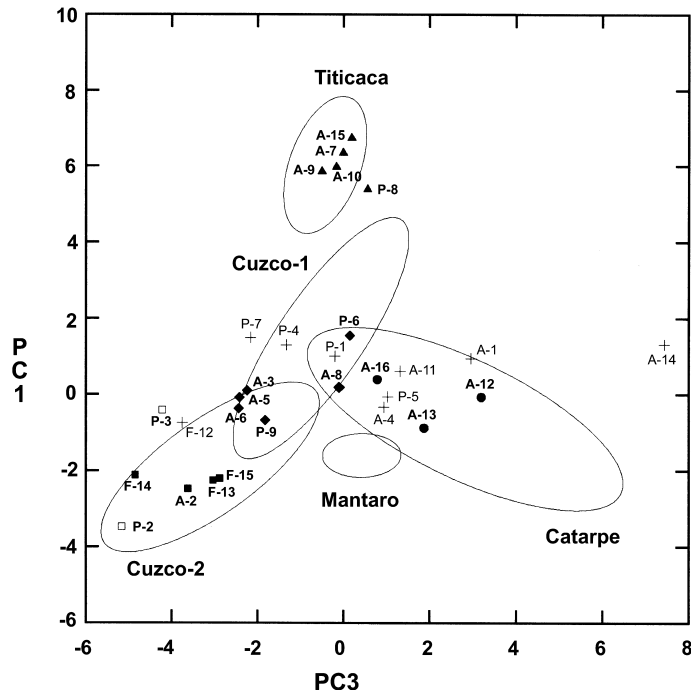


Fig. 5. Distribution of *capacocha*-related ceramics relative to regional ceramic groups on first and third principal components. Final classification was based on multivariate probabilities of group membership calculated on the first four principal components.

Table 4
Clay group assignments for vessels from *capacocha* burial contexts

Site	Cuzco	Titicaca	Other/Unclassed
Ampato	P-02 P-03 P-09	P-08	P-01 P-07
Lluillaillaco	A-08	A-07 A-09 A-10 A-15	A-11
Chani			A-14
Quehwar			F-12
La Plata	F-13 F-14 F-15		

Table 5
Clay group assignments for vessels from non-burial contexts at *capacocha* sites

Site	Cuzco	Lake Titicaca	Catarpe	Other/unclassed
Ampato	P-06			P-04 P-05
Lluillaillaco	A-02 A-03 A-05 A-06		A-12 A-13 [A-16—summit]	A-01 A-04

Discussion

While our sample is relatively small, our findings suggest that pottery from both the imperial capital of Cuzco and Lake Titicaca were important elements of the *capacocha* ritual. Both the funerary assemblages of the victims as well as the encampments of those charged with carrying out the sacrifices contained pottery from these two paramount Inca centers, as well as vessels of local manufacture likely produced within the territory associated with each of the *capacocha* sites. The presence of these geographically disparate pieces could conceivably relate to the origins of the individuals involved in these ceremonies or to the symbolic value of the items themselves.

The two *capacocha* sites for which we have the best representation in this study are Lluillaillaco and Ampato, separated from one another by a distance of approximately 1100 km. Both sites yielded three intact burials associated with a ceremonial summit platform, Ampato containing, in addition, the remains of a slightly older girl who had tumbled from her grave originally located some distance away from the others (and possibly representing a separate temporal event). At both sites, the interments associated with the summit platform consisted of two female children and one male child. Both sites also had fairly substantial high altitude encampments nearby, these constituting the staging areas for

the *capacocha* rituals carried out on the summit. All of the pottery found in the mortuary assemblages of the victims was finely made and classed as imperial Inca stylistically, though a number of pieces from the Ampato burials exhibited some unusual design variants. Vessel fragments recovered from the encampments comprised a mix of items classified as Inca, Inca-local hybrid forms and styles, and non-Inca (presumably local) pottery.

With respect to the funerary assemblages, the boys at both sites were provisioned with significantly less in the way of material goods. At Llullaillaco, the boy's grave contained only a single ceramic vessel (an aríbola), while at Ampato the male child was interred with one aríbola and two shallow plates. In comparison, each of the four female children's tombs contained seven or more vessels. At both sites, one of the girl's burials was more richly furnished than the other. At Llullaillaco, it was the younger girl's tomb (on the east side of the platform) that contained the greatest number and variety of artifacts. At Ampato, the female in Tomb 1, upon which at least six vessels had been smashed after her interment, was the richest. Interestingly, there is a rough equivalence in terms of the degree of difference in the triad of burials at both sites with respect to the number and type of artifacts associated with each. This equivalence is echoed in the results of the compositional analysis of the vessels associated with these burials. At both sites, the pattern suggested is that the boy and one of the girls were interred with Inca vessels produced in the imperial centers (e.g., Cuzco and Titicaca), while the other female was provisioned with locally produced pottery, albeit within the Inca canon, and with less in the way of material goods.

At Llullaillaco, the richest burial in terms of the number of items included was that of the young girl interred at the east edge of the summit platform. Of the 11 ceramic vessels buried with her, all of which appear to be of the finest imperial Inca style, three were included in our study. One of these, a shallow plate (A-07) with a bird's head handle, was one of a matched set. Many of the Inca *capacocha* ceramics, shallow plates in particular, are produced in pairs (see McEwan and Silva, 1989). Given the identical nature of this pair, we are confident in asserting that they were manufactured in the same locale by the same potter. Hence we feel it is legitimate to ascribe the mate to the same clay group as the irradiated sample. Both the pair of plates and the aríbola from this burial (A-10) are securely linked to the Titicaca area, while the pedestal-based pot (A-08) from the burial belongs to the Cuzco clay group. The single aríbola associated with the boy's burial (A-09) is also clearly associated with the Titicaca region. In contrast, the aríbola from the other female child's burial (A-11), which contains fewer funerary offerings than her counterpart, is affiliated with the Catarpe composition group indicating that it was of local manufacture even though visually it appears to be of the finest imperial Inca style.

From the Ampato mortuary assemblages, we were able to sample one vessel from Tomb 3, the less elaborate of the female burials, and two vessels from Tomb 1, the most richly furnished interment on the summit platform. Unfortunately, none of the three vessels from the boy's burial was included in the study. A similar pattern to that of Llullaillaco can be preliminarily suggested on the basis of the materials analyzed. From Tomb 1, we sampled two aríbolas. One of these (P-09), which had a very unusual design pattern on the front panel, comprised one of an identical matched pair. The irradiated vessel was strongly affiliated with the Cuzco clay group, and we are confident that its mate belongs to this group as well. The other aríbola analyzed from this burial (P-08) is assigned to the Titicaca group. The specimen from Tomb 3, a pedestal-based cooking pot (P-07), is something of an outlier although posterior classification assigns it to the Cuzco group.

In addition to the pottery included with the burials, we analyzed three of the six vessels that had been ritually broken on top of Tomb 1. These were initially classed as Inca-local hybrids on the basis of vessel shape, proportions, and decorative treatment. The compositional analysis indicates that two of the vessels (P-02 and P-03) show a significant probability of membership in the secondary Cuzco reference group. The possibility remains, however, that these items could represent locally manufactured vessels that share a chemical signature with the Cuzco materials due to geographic proximity. The third vessel (P-01) shows no compositional similarity to any of the imperial ceramic reference groups, and is, thus, likely to be of local origin.

We offer the following as a preliminary interpretation of the significance of the *capacocha* burials at Ampato and Llullaillaco based on the results of the compositional analysis of the associated pottery. First it appears that the status of the two female sacrifices was distinguished not only on the basis of the number of artifacts associated with each but also by the source of these artifacts. At both sites, the richer female burial contained vessels that had been produced in the Cuzco and Titicaca regions. Of the vessels analyzed or assigned from these two burials, none were of local manufacture. In the case of the lesser status female at the two sites, both of whom were buried with seven ceramic vessels, the single aríbola analyzed from each was apparently of local manufacture, or at least does not appear to have been produced in either Cuzco or the Titicaca basin based on the information presently available.

These data might tentatively be interpreted as relating to ethnicity, suggestive of the possibility that the latter two victims were of local stock while the former two were foreigners vis-à-vis the *huaca* being honored. But the minimal DNA evidence so far available with respect to the Llullaillaco sacrifices indicates that the female with the fewer number of goods may in fact have been

non-local in origin. An alternative interpretation is that the artifacts themselves were involved in the construction of status or role differences among the sacrificial victims. Such signifying power, in this case, went beyond simple visual cues to the very essence of the objects—the substances from which they were composed, pointing to the importance of a more esoteric kind of knowledge in the execution of these rituals.

Second, there may have been an intended relationship between the higher status female and the male child signaled by the fact that both were provisioned with service wares from the sacred centers of the empire. While this is demonstrated in the case of Llullaillaco, it remains hypothetical for the Ampato immolations given that we were not able to analyze any ceramics associated with the boy from this site. This observation nonetheless recalls Betanzos's (1996, p. 132) suggestion that the chosen boys and girls were paired as couples and interred as such. It may be that the child couples were required to come from another district of the empire than that in which they were to be sacrificed, arriving with the imprimatur of the Sapa Inca and the added cachet of being foreign or exotic subjects. Or again, it might be the case that the material accoutrements of the victims were used to delineate the social relationships and ideological constructs that underpinned this momentous state ritual.

The other *capacocha* sites included in the present study do not appear to have had the triadic burial configuration discussed above. Nonetheless, two of the three sites had Inca vessels in the funerary assemblages produced in the vicinity of either Cuzco or Lake Titicaca. At La Plata, four of the 12 vessels recovered from the double burial on the island were analyzed. One of these was a shallow plate (F-12) and a member of an identical pair, which effectively increased our sample size to five, or 40 percent of this particular *capacocha* ceramic assemblage. Both of the aríbolas (F-13 and F-14) and the pedestal-based pot (F-15) are clearly affiliated with the Cuzco clay group, while the plate (F-12) and its mate are definite outliers exhibiting high Cr enrichment and likely to be of local manufacture.

The single ceramic vessel from Chañi (A-15) that we were able to sample, a probable aríbola, is securely linked to the Titicaca region. Interestingly, several Inca-Pacajes sherds, a style associated with the southern Titicaca basin, were also recovered from the Inca structures just below the Chañi summit burial (Ceruti, 1997b, p. 143).⁶

⁶ Among the 17 Cuzco vessels included in the study from the Field Museum collections, two were securely linked to the Titicaca clay group. One of these (F-08), a two-handled, wide-mouthed jar bore the black painted "llamita" designs characteristic of the Inca-Pacajes style. Worth noting is the fact that, the Inca-Pacajes plate included in D'Altroy and Bishop's study (1990, p. 125) is not compositionally similar to the Field Museum specimen nor does it fall within the Titicaca clay group.

The single specimen from the site of Quehuar (A-14), also an aríbola sherd, cannot be assigned to either the Cuzco or Titicaca compositional groups. Given the highly disturbed state of the site (which had been previously dynamited), however, we cannot be sure that this vessel was actually part of the funerary assemblage or from some other context at the site.

With respect to the materials recovered from the non-mortuary contexts at the *capacocha* sites in our study, we can make the following observations that offer some insight into the potential affiliations of the ritual participants and entourage. From the base camp associated with the Llullaillaco burials, we analyzed eight vessels stylistically classified as local, Inca, or Inca-local hybrid pieces. Of these, the one shallow plate initially classed as imperial Inca (A-03) was securely linked to the Cuzco compositional group. Of the four vessels identified stylistically as Inca-local, all of which were aríbola/jar forms, only one (A-02) was clearly a member of the Cuzco group, while the remaining three (A-01, A-04, and A-13) were affiliated with the Catarpe or other local sources. One of the remaining three vessels identified as local (A-12, a jar), as well as one vessel recovered from a separate offering context on the summit and originally identified as a local form (A-16), were also securely linked to the Catarpe group. The two bowls from the encampment (A-05 and A-06) were apparently both manufactured in Cuzco. Such bowl forms do not constitute one of the standard, imperial Inca vessel classes, nor did these specimens display any type of standard imperial design pattern.

At Ampato, three vessels from the encampment associated with the summit burials, all of which were initially classed as Inca, were analyzed. One of these, a shallow plate (P-06), was strongly affiliated with the Cuzco group. The other plate (P-05) displays a weak affiliation to the Cuzco materials but is likely of local manufacture, while the aríbola (P-04) is of unknown provenance. Overall, the materials from the non-mortuary contexts at these two sites suggest that both the inhabitants of the territory presided over by the *huacas* in question as well as representatives from Cuzco, perhaps both members of the state elite and other residents of the heartland, participated in these important ritual events. This concurs well with the documentary descriptions of the movement of peoples and objects associated with the *capacocha*. It is interesting to note that none of the vessels from the non-funerary contexts at these sites fell within the Titicaca group, perhaps suggesting the more highly valued or sacred nature of materials from this source.

Conclusions

The relations between central powers and subordinate territories are a key issue in the study of early

empires. Though not well understood, the *capacocha* ritual is known to have been an important strategy of integration and control within the imperial Inca state. Analyzing the ceramics associated with several *capacocha* sites has provided new insights into the participants involved in this significant state ritual, the role of state vs. locally produced goods in these events, and the nature of the relationships symbolically expressed between the sacrificed children in the cases of multiple interments.

Our findings with respect to the origins and differential deployment of the clays used in the manufacture of this pottery resonate with the results of other technological studies of precolumbian artifacts. Detailed analyses of Andean metalwork and textiles, for instance, have revealed similar concerns with the composition and essence of these categories of material culture as well (e.g., Conklin, 1997; Lechtman, 1984). The convergence of findings from such disparate material realms hints at the possibility of an underlying cultural ideal that gave equal or greater weight to aspects of interior essence, structure, and fabrication as to surface appearance. Such studies point to new ways of enhancing our understanding and interpretations of the material culture of ancient Andean societies.

The compositional analysis of the imperial Inca pottery presented here also highlights the fact that things may not always be what they seem from the standpoint of style. Though the sample is relatively small, our initial findings suggest that it may be necessary to rethink traditional classification schemes of Inca ceramics so prevalent in the literature that utilize categories like imperial, provincial, and local, or permutations thereof, based on simple and subjective observations about style. For the Inca, the representation of quality, value, and status may have been as much about substance as appearance. We hope that this study may serve as a comparative baseline for the on-going refinement of our understanding of the nature of the imperial Inca ceramic assemblage as well as further investigations of the singular state practice of *capacocha*.

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