

Sacred Mountains, Ceremonial Sites, and Human Sacrifice Among the Incas

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Abstract

The most important offerings made at Inca ceremonial sites involved human sacrifices (*capacochas*). Although Spanish chroniclers wrote about them, their accounts were based on secondhand sources, and the only direct evidence we have of human sacrifices comes to us from archaeological excavations. Some of the most thoroughly documented of these were undertaken on high mountain summits, where the material evidence has been exceptionally well preserved. In this study we will refer to mountains in Peru, Chile, and Argentina where Inca *capacocha* offerings have been found, especially focusing on Mount Lullaillo (6,739 m), one of the best documented. The types of sites and artifact assemblages recovered will be examined. By comparing the archaeological evidence with the chroniclers' accounts, we will describe common patterns and previously little-known elements, which will contribute to an increased understanding of key aspects of Inca religion. This study also demonstrates the importance of archaeological sites being placed within the broader context of physical and sacred features of the landscape.

Resumen

Las ofrendas más importantes presentadas en sitios ceremoniales de época Inca comprendían sacrificios humanos (*capacochas*). Si bien los cronistas españoles escribieron sobre ellas, sus relatos estaban basados en fuentes de segunda mano, por lo que la única evidencia directa sobre sacrificios humanos llega a nosotros a través de las excavaciones arqueológicas. Algunas de las excavaciones mejor documentadas fueron emprendidas en cumbres de altas montañas, donde las evidencias materiales se han mantenido excepcionalmente bien preservadas. En este estudio nos referiremos a montañas de Perú, Chile, y Argentina donde se encontraron ofrendas Inca de *capacocha*, focalizando especialmente en el Monte Lullaillo (6,739 m), uno de los ejemplos estudiados en mayor profundidad. Se examinarán los tipos de sitio y los conjuntos de artefactos. Mediante la comparación de la evidencia arqueológica con los relatos de los cronistas, se ilustrarán patrones comunes y elementos poco conocidos anteriormente, que se contribuirán a una más clara comprensión de aspectos clave de la religión Inca. Este estudio demuestra también la importancia de que los sitios arqueológicos sean abordados desde el contexto más amplio de los rasgos físicos y aspectos sagrados del paisaje.

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Introduction

In less than a hundred years the Incas created the largest empire in the ancient Americas.¹ Originally based in the highlands of central Peru, the Incas gained control of a region extending more than 4,000 km from their heartland in Cuzco, Peru, to Colombia in the north and central Chile in the south. During the course of this expansion, the Incas undertook pilgrimages to several of the highest peaks in the Andes (Figure 1). Many of these mountains had not been previously climbed and would not be climbed again until five centuries later.

Between ca. A.D. 1470 and the Spanish conquest in A.D. 1532, more than a hundred ceremonial sites were built on summits above 5,200 m, and they have been found up to 6,739 m—the world’s highest archaeological remains. These high-altitude ceremonial sites were mainly concentrated in the southern region of the Inca Empire, i.e., in the southern Andes of Peru, Bolivia, Chile, and Argentina. Most of the sites can be dated after A.D. 1470, which means they were built following conquests carried out by the Inca emperors Pachacutec, Topa Inca Yupanqui, and Huayna Capac.

Archaeological evidence found on distant mountain summits has established that the burial of offerings was a common practice among the Incas and that human sacrifice took place at several of the sites. The excellent preservation of the bodies and other material in the cold and dry environment of the high Andes provides revealing details about the rituals that were performed at these ceremonial complexes. In addition, these sites are among the few to remain relatively intact from destruction by looters, and they thus allow for offerings to be studied in their original contexts.

The Incas spoke the Quechua language, and it was the term *capacocha* (also spelled *capaccocha* and *ccapac cocha* in some texts) that was used most often by chroniclers when describing the most important of Inca religious ceremonies: that involving a human sacrifice and its accompanying sumptuary offerings.² This combination of material offerings and human sacrifices might be termed a “*capacocha* complex.” The *capacocha* complex took place at and near Cuzco, but our interest here is in those that involved

pilgrimages to peaks well outside the heartland of the Inca Empire. The high-altitude ceremonial sites provide the best-preserved material evidence of *capacocha* rituals, and thus they enable us to have a better understanding of their role in Inca society.

Historical Summary of Mountain Sites with *Capacocha* Burials

The earliest reference to a human sacrifice having taken place on a high mountain summit was in 1896 when looters reportedly extracted a female skeleton and Inca artifacts at ca. 6,084 m on Chachani in southern Peru (Beorchia 1985:65–66). In 1905 a mummy of a child of indeterminate sex was found on the summit of Chañi (5,896 m) in northern Argentina (cf. Ceruti 1997b, 1997c, 2001; Fernández 1975), and in 1922 treasure hunters found a female adult mummy on one of the summits of the Chuscha Range (5,165 m) in northwest Argentina (Ceruti 1999a; Schobinger 1995, 2004). Unfortunately, the sites of these finds were damaged and the Chuscha and Chañi mummies were not well preserved. The authors conducted research to relocate the burials on the three peaks (cf. Beorchia 1985:66; Ceruti 1997b, 2001, 2004a, 2004b).

It was the discovery by treasure hunters in 1954 of the frozen body of an Inca boy on El Plomo (5,430 m) in Chile that most drew the attention of archaeologists. Although not recovered in context, a substantial part of the material found with the boy was in an excellent state of preservation, and this find will figure in some of the following analysis (cf. Cabeza 1986; Mostny 1957).

In 1964 mountain climbers found the frozen body of an adult male at ca. 6,000 m on El Toro (6,380 m) in west-central Argentina. The archaeologist Juan Schobinger undertook an excavation, and for the first time the assemblage of artifacts with a human sacrifice on a high mountain summit was well documented as it was being uncovered. No ritual objects and clothing normally associated with a *capacocha* ceremony were found (Schobinger 1966), and none of the artifacts were clearly of Inca origin. Although the man appears to have been ritually sacrificed and was buried in a sacred place, he nonetheless does not seem to have been part of a *capacocha* ceremony, at least



FIGURE 1. Map of the central Andes with some Inca high-altitude archaeological sites marked (courtesy of the National Geographic Society 1999).

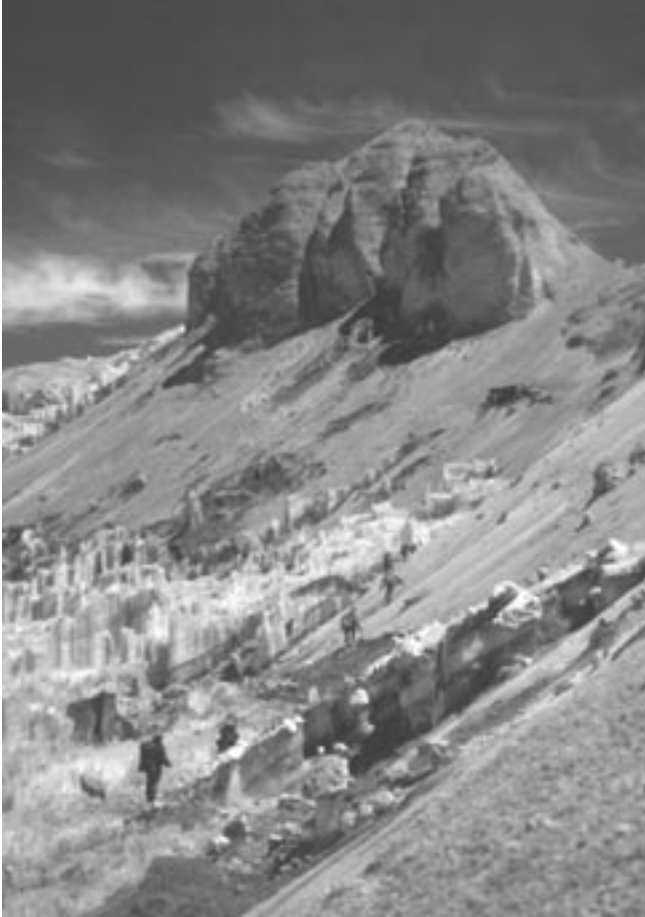


FIGURE 2. Climbers approach the summit of Mount Ampato (6,312 m). The Ice Maiden was swept down one of the gullies when a section of the summit ridge collapsed (photo by Johan Reinhard).

as described as having been organized in accordance with Inca state religious practices.³

A burial of two females was found in 1976 by accident on the summit of Esmeralda (900 m) while a road was being built near the coast of northern Chile. Although Esmeralda is low in altitude, it dominates the coast as seen from the ocean. The human remains found at the site had been preserved by desiccation, and many of the artifacts were recovered, albeit not in context. They demonstrated clear evidence of a *capacocha* ceremony (Besom 2000; Checura 1977) and provide comparative material for our discussion to follow.

In 1985 mountain climbers discovered the frozen body of a boy at 5,300 m on the slopes of Aconcagua

in west-central Argentina. Juan Schobinger directed an excavation of the site that provided the first study of a true *capacocha* burial while it was still in context at a high-altitude archaeological site (cf. Schobinger 1999, 2001). Some of the results of this research will be utilized in our analysis of Inca pilgrimage and the *capacocha* complex.

Johan Reinhard and José Antonio Chávez undertook four expeditions between 1989 and 1997 to Pichu Pichu, a 5,600-m peak in southwest Peru (Reinhard 2005). The ceremonial complex has a large complex of ruins forming a typical Inca way station (*tambo*) near the base of the mountain at ca. 4,600 m. An artificial platform was located on a saddle between the two highest parts of the summit. Excavations by mountain climbers in 1963 resulted in the recovery of the cranium of a female outside the eastern side of the platform, together with Inca artifacts, including statues and pottery (Linares 1966). During excavations in 1989, the remaining parts of the female's skeleton and more artifacts were recovered (Reinhard 1992c; Reinhard and Chávez 1998). In 1996 two additional burials were found inside the platform, which included skeletons of a female and a male (Reinhard 2005; Reinhard and Chávez 1998).

Reinhard and Chávez undertook field research on Ampato, a 6,312-m mountain in southwest Peru, between 1995 and 1997 (Reinhard 1996, 1997, 1998a, 2005; Reinhard and Chávez 1996, 1998). A girl was sacrificed on the summit of Ampato (Figures 2 and 3). She had been interred together with female figurines, as well as food items and pottery. The mummy bundle was found lying on the ice inside the crater of the volcano ca. 65 m below the summit with most of the other objects scattered nearby because of the collapse of the summit platform in which they had been buried. Another funerary site was studied on Ampato at ca. 5,850 m and contained the burials of three children, two girls and a boy (cf. Figures 4–6). Lightning severely damaged the soft tissue of their bodies after they had been interred, but the textiles on the females and other artifacts remained largely undamaged.

In 1996 Reinhard and Chávez organized an expedition to Sara Sara (5,505 m), a volcano in southern Peru (Reinhard 2005). The body of a 15-year-old



FIGURE 3. The Ampato Ice Maiden's face was exposed when a cloth was torn open during her fall from the summit (photo by Johan Reinhard).



FIGURE 4. Excavation of a female mummy bundle (#4) and adjacent pottery at 5,850 m on Ampato (photo by Johan Reinhard).



FIGURE 5. The upper layer of a burial on Ampato at 5,850 m. The headdress covering the female mummy's bundle (#2) is on the left (photo by Johan Reinhard).



FIGURE 6. A cross-sectional depiction of the Ampato younger female's (#2) burial on Ampato illustrates the way a flexed, textile-wrapped mummy was associated with an array of grave goods, including pottery. The Incas had bent down the headdress so that it would fit into the tomb (painting by Chris Klein, National Geographic Society 1996).

girl was found in a secondary terraced platform on its eastern side. Female and male statues and llama figurines were also recovered from a niche on another part of the summit (Reinhard 1998b; Reinhard and Chávez 1998).

Reinhard and Chávez directed an expedition in 1998 that included the coauthor of this article, Constanza Ceruti. Excavations were undertaken at an Inca ceremonial site inside the crater of Misti (5,822 m), an active volcano in southern Peru (Reinhard 2005). Six human sacrifices and 47 statues—one of the largest collections ever uncovered—demonstrated the importance of this site to the Incas (Reinhard and Chávez 2001). For the first time infants were among the sacrificial victims. Unfortunately, the preservation of the bodies and textile offerings on Misti was very poor due to the concentration of sulfur in the soil and the high temperatures of the crater.

In 1999 Reinhard, Chávez, and Ceruti directed the excavation of the summit complex on Quehuar (6,052 m), a volcano in northwest Argentina (Reinhard 2005; Reinhard and Ceruti 2006) (cf. Figure 7). The summit ruins included a raised, artificial platform (*ushnu*). This is one of the few to escape destruction by the Spaniards as well as one of the few known from the southern part of the Inca Empire (cf. Hyslop 1990:91–95; Meddens 1997:6; Raffino 1981, 1997:37). Adjacent to it was a circular structure inside of which a human offering had been buried (Beorchia 1985; Ceruti 1998, 1999b) (Figure 8). Both constructions had been previously looted, and the frozen remains of a sacrificial victim deposited in the circular building had been dynamited, causing the destruction of the cranium and upper part of the body. The female individual had been buried with textile, pottery, and food offerings.⁴

One of the best-preserved *capacocha* complexes was excavated on the summit of Lulllaillaco in 1999. Situated on the border of Argentina and Chile, Lulllaillaco has the world’s highest archaeological site, at 6,739 m (Figure 9). Reinhard (1993) directed surveys on this mountain in 1983, 1984, and 1985, including those of a *tambo* at ca. 5,200 m, intermediate stations along the road leading up the volcano, and a ceremonial complex built on the summit (Figure 10).



FIGURE 7. Map of the region in which Lulllaillaco is located, with the principal mountains, towns, and Inca road noted (from Reinhard 1993).

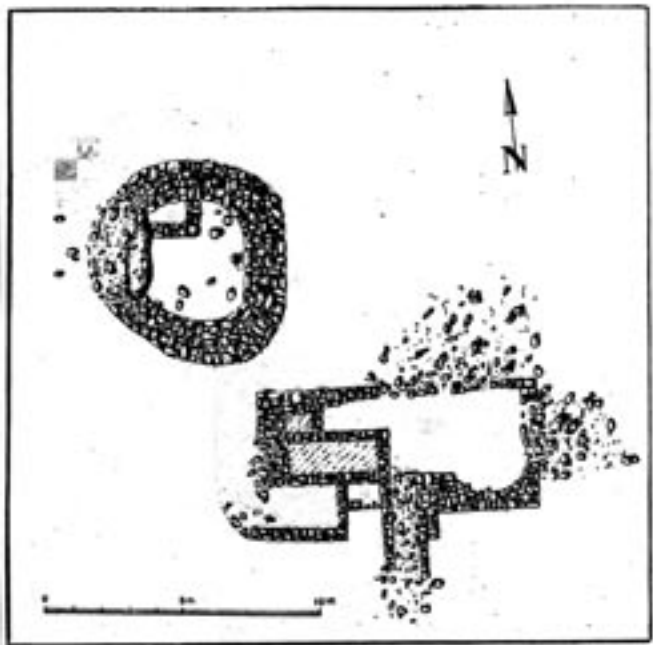


FIGURE 8. Plan of the summit ruins on Quehuar, including the rectangular-shaped *ushnu* platform (from Beorchia 1975a).



FIGURE 9. View to the northeast from the highest point of Lulluillaco's summit. The two-roomed "priests' house" is at the lower center and the ceremonial platform to the upper left (photo by Johan Reinhard).

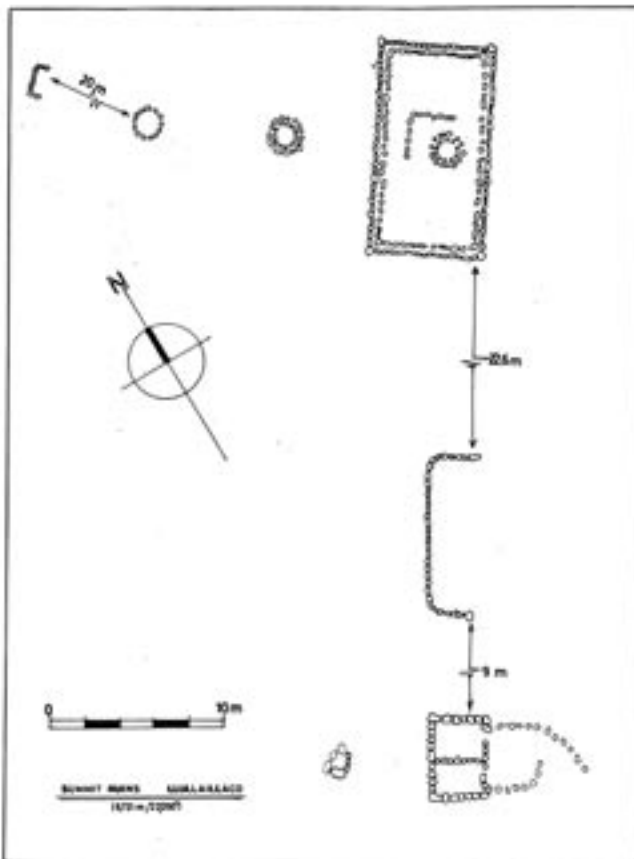


FIGURE 10. Plan of sites on the summit of Lulluillaco (from Reinhard 1993).

Reinhard and Ceruti directed excavations at different sites on Lulluillaco during March 1999 (cf. Ceruti 2003a; Reinhard 2005; Reinhard and Ceruti 2000, n.d.). Special attention was paid to the study of the ceremonial platform on the summit, in which we found three burials and several sets of offerings (Figures 11 and 12). One young woman, one girl, and one boy were sacrificed and buried in the Lulluillaco platform, together with other offerings in a nearly perfect state of preservation. The analysis of the archaeological evidence in Lulluillaco in the light of the chroniclers' accounts will be the principal basis for our reconstruction of the *capacocha* ceremony.

Some scholars (cf. Schobinger 1999:15) think that high-altitude sites have not been found in the



FIGURE 11. Surveying on Llullaillaco's summit in 1999 (photo by Johan Reinhard).

northern part of the Inca Empire because mountain worship was of a lesser antiquity and importance in this region. However, chroniclers described many of the most important deities of the indigenous inhabitants in the northern part of the Inca Empire as being mountains (cf. Albornoz in Duviols 1984; Avila in Salomon and Urioste 1991; Guaman Poma 1980 [1613]; San Pedro 1992 [1560]).⁵ The Incas and local people made human sacrifices and other offerings to these mountains from more distant places (Albornoz in Duviols 1984). The mountains were not climbed to their summits because of the lower snow line as one approaches closer to the equator and the technical climbing difficulties presented by many of these northern peaks, which remain challenging to mountaineers even today. In addition, the offerings could have been made from disparate places on such mountains without ceremonial structures being built.

As Cobo (1990:155 [1653]; cf. Murúa 1946:398 [1590]) noted, “. . . if they could not reach certain hills that were shrines to make the offerings, due to rough terrain or because they were covered with snow, the attendants went as far up them as possible, and from there, with slings, they would throw the sacrifice to the top of the hills.” Remains of such offerings, being widely spread, isolated, and more open to destruction by the elements, would be difficult to locate, if they survived at all.

Capacocha: State Pilgrimages and Mountains

Human sacrifices were the most important offerings that the Incas made (cf. Cieza 1977:108 [1553]; Cobo 1990:111). Chroniclers describe *capacochas* as having been made for several reasons. Some were undertaken at times of key events in the life of the



FIGURE 12. Although not to scale, this plan provides a perspective of the mummies (and the artifacts adjacent to them) found buried in the summit platform of Lllullallaco (drawn by Bob Pratt).

Inca emperor, including his illness, his death, his going to war, the birth of a son, and his succession to the throne (cf. Cobo 1990:111–112 [1653]; Sarmiento 1999:122–123 [1572]). In more distant parts of the empire they were often made to stop natural calamities, such as droughts, epidemics, earthquakes, and volcanic eruptions (cf. Cobo 1990:54, 112, 150–153 [1653]; Levillier 1940:155; Murúa 1946:281 [1590]; Polo 1916:193 [1571]).

Chroniclers noted *capacochas* being performed annually during major festivals at some of the more

important ceremonial sites throughout the empire (cf. Avila in Salomon and Urioste 1991:112; Cieza 1959:151–152 [1553]; Cobo 1990:54–74 [1653]). Thus, it is likely that there were both cyclical *capacochas* and *capacochas* that occurred because of special circumstances and that both should be considered as part of the same kind of ceremony (Duviols 1976:12).

Some *capacocha* ceremonies may have taken place as a way of establishing boundaries on the edge of the empire as it expanded (cf. Farrington 1998:551; McEwan and Van de Guchte 1992:371; Schobinger 1999:18). However, many of these events took place close to each other (e.g., on the peaks of Chachani, Misti, Ampato, and Pichu Pichu near Arequipa, Peru), and this suggests that boundary marking would have been only one of several reasons why they may have taken place. This conclusion is supported by the accounts of chroniclers (e.g., Cobo 1990:111 [1653]; Hernández 1923 [1622]), which indicate that boundary marking was not a motive for the majority of the *capacocha* ceremonies.

Mountains were specifically mentioned in the ethnohistorical records to be the places for *capacocha* ceremonies (cf. Cieza 1959 [1553]; Guaman Poma 1980 [1613]; Hernández 1923 [1622]) (Figure 13). The Incas would have made annual offerings to major mountain deities (and the *capacochas* buried there), either on the mountain or from places within view of it (cf. Duviols 1986:170; Hernández 1923:62 [1622]; Salomon and Urioste 1991:99). Clearly, weather would have affected sites differently depending upon their locations, with ceremonies on summits taking place during the dry summer months in the southern part of the Inca Empire (central Chile and Argentina) and during the dry winter months in Peru. One could assume that an attempt would be made to have these be in agreement with the important Inca solstice festivals of June and December.

The archaeological, historical, and geological evidence available supports the hypothesis that in at least some cases human sacrifices on sacred summits were motivated by natural calamities. For example, on Ampato a layer of volcanic ash lay directly beneath an Inca structure, and it would have been impossible to build a structure on the summit without there having

been a severe drought or a melting of the permanent ice as the result of an eruption. On Misti the ceremonial site was constructed following an eruption that was even noted in the chronicles (Murúa 1946:397–398 [1590]). The burials at ca. 6,739 m on Llullaillaco probably took place during a drought, as the structures must have been built while the summit was free of snow. Although the evidence is not conclusive, it is reasonable to assume that economic pressures caused by natural catastrophes played important roles in many, if not all, of the *capacocha* offerings found on high mountain summits.

Capacochas, Archaeoastronomy, and Sacred Peaks

The influence of astronomical beliefs on Inca architecture has been discussed in a number of publications (cf. Aveni 1982; Aveni and Urton 1982; Bauer and Dearborn 1995; Dearborn and Schreiber 1986; Dearborn et al. 1987; Müller 1982; Urton 1981; Zuidema 1982b, 1999). The orientations and locations of some Inca structures have been found to be in accordance with the rising and setting locations of important celestial phenomena, especially the Sun (cf. Aveni 1981; Bauer 1998; Dearborn et al. 1987; Hyslop 1985, 1990; Moyano 2005; Zuidema 1982b). Not surprisingly, some of the structures at high-altitude archaeological ritual centers were also discovered to be correlated with the same astronomical events (cf. Astete and Reinhard 2003; Beorchia 2001:197–206; Bravo 1993; Reinhard 2002; Reinhard and Ceruti 2006). Our concern here, however, is not with the orientations of single structures but rather with the possible role that astronomical alignments might have played in the *locations* of ceremonial sites on sacred mountains and even in the selection of the locations of lower-lying Inca centers.

Horizon astronomy consists of indigenous people using distant features of the landscape as aids in making astronomical observations (Aveni 1981). This has been found throughout the Andes, as well as among the Incas. When celestial bodies become important because they are in association with sacred mountains on the horizon, we have what might be called a “sacred geographical astronomy” (Reinhard 1988:32). Some mountaintop ritual complexes were situated such that—as seen from lower-lying Inca sites—they

were in alignment with the rising and setting of the Sun, especially at the equinoxes and solstices. This has opened up the possibility that they were built there for these reasons (cf. Astete and Reinhard 2003; Bauer 1998; Reinhard 2002).

Although not what we would define as a mountaintop site per se, Machu Picchu clearly had important religious components. Of interest here is that being a royal estate, it reflects concepts fundamental to the Inca elite. Furthermore, it appears that Machu Picchu was constructed in a spectacular setting at least in part due to its location at the center of sacred mountains that aligned with the rising and setting of celestial bodies. The construction of ritual sites on nearby summits may have been, in turn, due to their lying along these special alignments (cf. Reinhard 2002). Thus, Machu Picchu can serve as a model with which to compare mountaintop ceremonial centers found throughout the Inca Empire.



FIGURE 13. A drawing of ca. A.D. 1613 depicts offerings, including a child and guinea pig, being made to Mount Coropuna (from Guaman Poma 1980 [1613]).

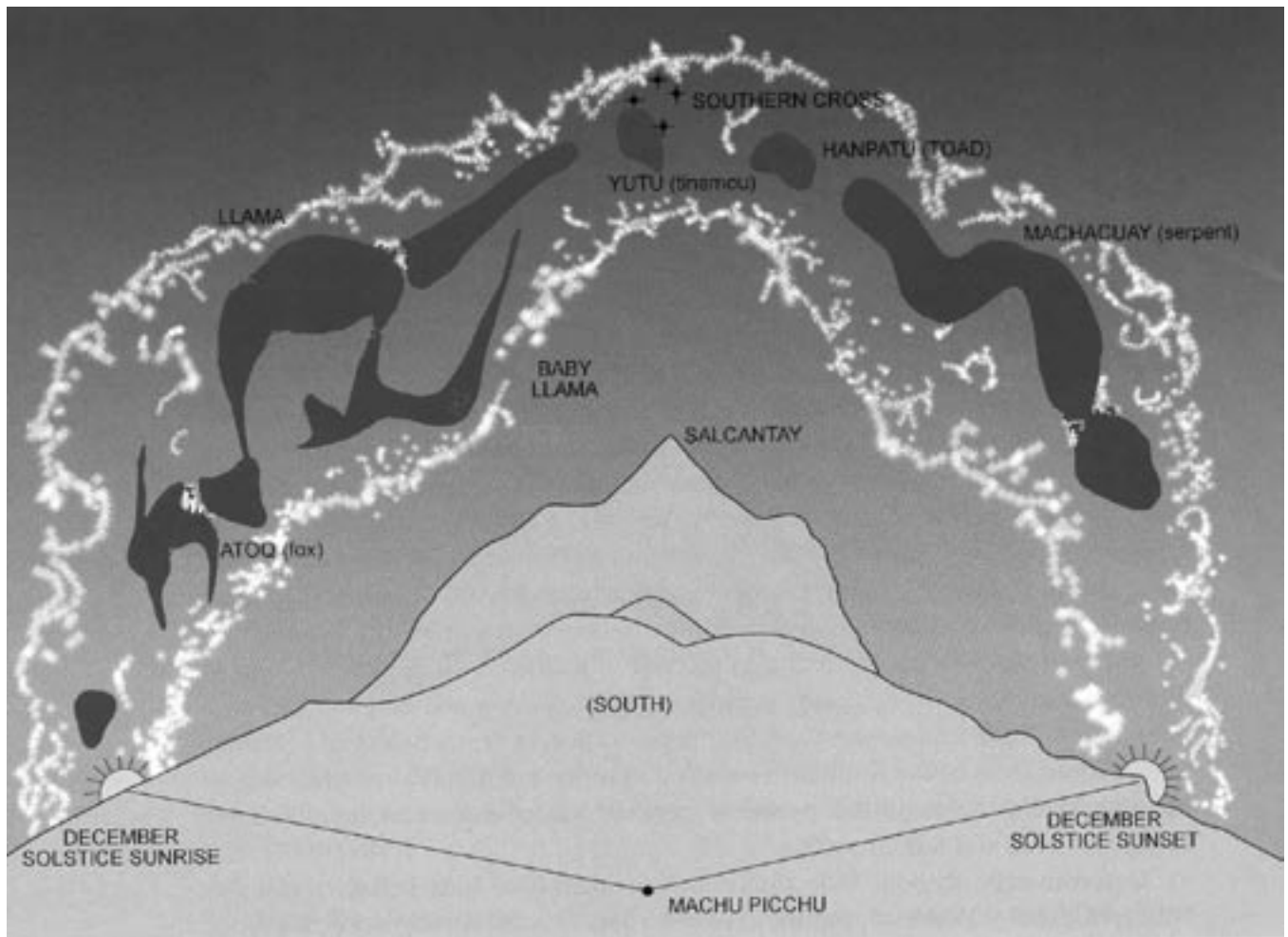


FIGURE 14. An illustration of how astronomical phenomena, a sacred mountain, and a ceremonial center (Machu Picchu) could be associated in Inca beliefs (drawing in Reinhard 2002 adapted from Urton 1981).

Directly to the south of Machu Picchu lies Salcantay—one of the most sacred mountains in the center of the Inca Empire. Machu Picchu lies at the end of a ridge that extends down from this mountain. The summit of Salcantay is visible from lower mountains bordering Machu Picchu: Huayna Picchu to the north and Machu Picchu Mountain to the south—both with Inca sites of ritual importance on their summits (Reinhard 2002:45–47). The Southern Cross is above Salcantay’s summit when at its highest point in the sky during the rainy season. The Southern Cross and constellations near it, including star groups and the black areas among the stars (called Dark Cloud constellations), are all linked with concepts of rain and fertility (Urton 1981) (cf. Figure 14). These celestial

phenomena would have formed a complete system with Salcantay, for we know from historical and ethnographic sources that it was one of the principal deities controlling weather and fertility in the region west of Cuzco (Reinhard 2002:19–27).

When we look to the west of Machu Picchu from the famous Intihuatana stone in its center, we see the sacred Pumasillo Range. Its highest summit coincides with the place of the setting Sun at the December solstice. This was a particularly important astronomical event for the Sun-worshipping Incas, who performed major ceremonies at that time for rain and the fertility of crops (cf. Bauer and Dearborn 1995).

Due west at the equinox setting point is the summit of the mountain called San Miguel, known as

Vizcachani today. In 1989 we excavated a ceremonial platform on its summit that had a rock set upright in its center (Astete 1990; Reinhard 2002:93–94).⁶ Stones have been found especially placed in the center of a number of artificial platforms on mountain summits, e.g., Alma Negra, Antofalla, Las Tortolas, Mercedario, and Tambillos (cf. Beorchia 1985; Ceruti 2003b).

The Sun rises from the east at the equinoxes, and here lies the highest summit of the Waqay Willka (Veronica) Range, also a highly sacred mountain in current-day beliefs. Due north is Huayna Picchu, the hill that dominates Machu Picchu and that has rock carvings indicating it, too, had religious importance.

At the June solstice the Sun rises from behind Cerro San Gabriel, a lower peak of the Waqay Willka Range. It sets behind a nondescript ridge, but when viewed from above Machu Picchu, it is seen to disappear behind the Punkuyoc Range. Here, high on a rugged summit, the Incas built a ceremonial complex, today called Incahuasi, which includes one of the finest known surviving examples of their architecture.

The Sun at the December solstice rises out of the Urubamba River valley (called the Vilcanota in the Cuzco highlands). As seen from Cuzco, it rises from behind the sacred mountain Ausangate (considered by many villagers to be the “brother” of Salcantay), which is the principal source of water for the Vilcanota River. In Andean beliefs a river takes on the sacred character and powers of the mountain where it originates.

Some of the ruins at Machu Picchu indicate that not only the site as a whole but some of the individual structures within it played a role in the worship of the mountains of the region (Reinhard 2002). What we appear to have at Machu Picchu is a unique setting that combines ceremonial sites, sacred mountains, and astronomical alignments.

Few mountains with high-altitude ceremonial sites have been examined from this perspective. As we have seen, El Plomo is one of the mountains on which a *capacocha* sacrifice was found in a ceremonial site on its summit. Although the volcano would certainly have been worshipped in its own right, there is the possibility that its location relative to the rising Sun as seen from Inca settlements added to its importance.

There were several Inca settlements in the Mapocho Valley of central Chile, including at the current location of Santiago. When viewed from Santiago, the Sun rises from behind El Plomo at the June solstice and from behind Mount Peladeros (3,910 m) at the December solstice. An Inca ritual site was also found on the summit of Peladeros, and its construction may have been influenced by the mountain’s association with a solstice and thus with the more imposing sacred mountain of El Plomo (Cabeza 1986:234–237).

In the case of Lullaillaco, we found it difficult to see how these could have been principal factors for its having a ceremonial site on its summit. The nearest Inca administrative center was located ca. 205 km to the north at Catarpe near San Pedro de Atacama (cf. Figure 7). Lullaillaco was not visible from Catarpe but is visible from a short distance away on an adjacent hill. The volcano is at an azimuth of about 200° to the south from Catarpe, and therefore it is not in an area of major celestial activity nor aligned with a cardinal direction or the Southern Cross. There is also no apparent reason to locate a ritual site on its summit, because from Lullaillaco other mountains could be observed in alignment with other peaks and the rising and setting of the Sun.

However, an example of how this might have influenced the establishment of a summit site in the center of the Inca Empire is Pachatusan (4,842 m). It is the highest mountain bordering the valley of Cuzco, and in the 1500s it was noted as being one of six mountains especially sacred to the Incas living in Cuzco (Sarmiento 1943:95 [1572]; cf. Santa Cruz 1968:299, 305 [1571]). Indeed, Pachatusan continues to be a powerful local mountain deity to the present day (cf. Allen 1988:44; Sallnow 1987:129–130).

The rising Sun at the equinox rises from behind Pachatusan, as seen from the Temple of the Sun in Cuzco. Ceremonial sites (artificial platforms and buildings with fine stonework built into cliff sides) are situated high on the mountain on its northern and eastern slopes (cf. Bauer 1998:94). However, the largest archaeological complex, called Paucarcancha today, is located at a point just below the ridge where the equinox line crosses it.

The site has the same pattern of structures that have been found built on high mountain summits through-

out the Inca Empire. Indeed, the main differences are only to be found in its relatively larger size and the better quality of workmanship of a few structures. Fine Inca stonework at the site was used to construct buildings where priests likely stayed in order to make offerings at a nearby raised platform. In 2002 we conducted excavations at various parts of the complex, including the platform (Astete and Reinhard 2003). Although the site had been heavily looted, we found various artifacts (shards, a few silver ornaments, small gold and silver pieces, etc.). Skeletal fragments at two places suggested that there were burials of two children—possible human sacrifices.

In some cases the locations of mountaintop ritual sites might have been influenced by astronomical phenomena in juxtaposition with *other* sacred mountains. A site with a large *ushnu* and plaza was found on Mount Aconquija, which is one of the most important Inca sites in the southern part of the empire (Hyslop 1990:79). Yet, this complex was constructed at 4,200 m on a mountain in an isolated region of western Argentina and was relatively difficult to access.⁷ As with other peaks with high-altitude sites, the mountain might have been worshipped as a source of water and fertility (possibly an association with mineral extraction) (cf. Reinhard 1985). However, the site was not built at the highest point of the Aconquija massif (even though there was plenty of space there to do so), and there was no obvious reason for its location. So why did the Incas go to so much trouble to build such an impressive ritual complex at that place on the mountain?

Beorchia (2001:197–206) describes the *ushnu* in this site as situated such that from it the Sun can be seen to set behind Mount Las Cuevas (4,960 m) at the June solstice and behind Mount Huatal (5,340 m) at the December solstice. Furthermore, there exists an Inca ritual site on Las Cuevas's summit (Beorchia 1985:59; Ceruti 1999a:112–116), and the plaza in front of the platform is oriented such that it is in alignment with one of the highest peaks of the range, Tipillas (5,450 m). This peak also has an Inca ritual site on its summit (Ceruti 1999a:117–121). In short, the principal ceremonial site on Aconquija appears to have been situated where it is, at least in part, so that it is aligned with mountains when they were in

juxtaposition with other peaks and with the passage of the Sun at the solstices.

The cases just noted do not prove that mountaintop ceremonial sites were built *solely* as places from which to observe mountains more distant in alignment with important astronomical events. However, they do suggest that at least some of the sites (and structures within them) may have been influenced by such considerations. They also make it clear that the relationship of mountain ceremonial sites with astronomical alignments is one of the least investigated aspects of high-altitude archaeology and that much research remains to be done.

In the following pages we will analyze the Inca ceremony of the *capacocha*, contrasting the archaeological evidence recovered from high-altitude ceremonial sites with references in the historical sources regarding human sacrifice, Inca offerings, and ritual pilgrimage. Although the description will be centered in the material evidence from Llullaillaco, references will be made to *capacocha* contexts found on other Andean summits for comparison. The results will be presented following the stages or steps involved in the *capacocha* ceremony, with emphasis on the ritual and logistic aspects of the procession toward the mountain shrine, the characteristics of the ceremonial architecture on the sanctuaries, the profile of the individuals chosen as human offerings, the variability of the sumptuary items and their religious importance, and the details involved in the sacrifice of the victims and subsequent burial of the offerings.

Processions

Reaching distant sacred mountains could require months of travel and range over a thousand miles (cf. Hernández 1923:41 [1622]). A general idea can be gained from the chroniclers as to what would have been involved in a *capacocha* ceremonial procession to sacred places such as mountaintop shrines. According to the historical sources, a pilgrimage to a sacred mountain would have included priests, their assistants, and inhabitants of the region through which the pilgrimage passed. If there were to be a *capacocha* ceremony, the child to be sacrificed—and possibly the child's parents—would be included in the procession (cf. Cobo 1990:156–157 [1653]; Molina 1959:95–97

[1575]; Murúa 1946:265–267 [1590]). The child would walk if old enough but could otherwise be carried (Cobo 1990:156 [1653]). The procession would stop at sacred places along the way to make offerings, and the people would play musical instruments and dance (cf. Molina 1959:97 [1575]). They would also stop to change laborers when entering and leaving provinces (Rostworowski 1988:192).

Among the Incas and, indeed, throughout the Andes, the mountains have been perceived as alive, and often as being related through kinship ties (as siblings, spouses, etc.) or through other kinds of social relations patterned on those of the natives (cf. Avila in Salomon and Urioste 1991). The mountain gods were (and still are) frequently seen as the ancestors of the peoples living near them (cf. Bastien 1978; Ulloa 1965 [1586]). Thus, when a *capacocha* pilgrimage passed through an area, there was an ongoing interaction between the participants and the ever-changing features of the sacred landscape.

During the *capacocha* procession, people of each region would be included as assistants to help with carrying the offerings and supplies. The Inca custom was to have a regional group assist the Inca priests only as far as its territorial boundary. A new group would then take over, and the process would continue until the mountain was reached. This resulted in clear delineations of land claims. Indeed, based on this practice, land claims were being filed with the Spaniards long after the fall of the Inca Empire (Rostworowski 1988).

Given this type of exchange, one would expect to find only artifacts of the Incas and of the closest regional group at sites located near the mountain. This was the case in some of the larger sites we investigated at the bases of mountains. For example, the volcano Licancabur (5,921 m) in northern Chile has a way station (*tambo*) at its base (ca. 4,600 m) consisting of more than a hundred structures (Reinhard 1985a). In addition to classical Inca pottery, we observed many local pottery styles on the surface at the *tambo* (Barón and Reinhard 1981). An exception is the reported presence of Inca Pacajes pottery in the *tambo* of Chañi, being a typical style from the distant Titicaca region. It has been interpreted as a sign of the incorporation of Pacajes people as colonists (*mitimaes*) brought by

the Incas to populate a number of places in northwest Argentina (D'Altroy et al. 2000:21). They appear to have been participants in the *capacocha* pilgrimage and ceremonies (at least as far as the *tambo*) at Chañi (Fernández 1975).

Ritual Specialists

Religious specialists based in Cuzco, known as *vilca camayos*, were in charge of paying homage to the provincial sacred places (*huacas*) and deities (Molina 1959:96 [1575]). They were responsible for establishing the quality and amount of offerings that corresponded to each mountain, according to their religious importance (cf. Ceruti 2005a:292–293). Local ritual experts, known as *huacas camayocs*, would receive the sacrificial victims and offerings brought by the *capacocha* party, and they would be involved in the actual performance of the sacrifices and the burial of the offerings (cf. Molina 1959:96 [1575]).

Inca priests who were part of the *capacocha* committee probably would have undertaken the long pilgrimage to the mountains as part of their sacred duties, assisted by ritual specialists specific to each mountain once they arrived there. Even in the 1600s, traditional ritual specialists were undertaking pilgrimages of more than 165 km to worship at indigenous shrines (Arriaga 1968:15 [1621]).

Roads and Way Stations

Inca roads and way stations leading to the mountains support the historical documents that processions involving several people went to the shrines. Roads leading specifically toward the base of the mountain have been surveyed in the case of Lullillaco (Reinhard 1993), where four groups of ruins have been identified along the trail that leads to the northern base of the mountain within approximately 20 km at an altitude of 4,600 m to 4,900 m. Inca pottery observed on the surface and their association with the trail that leads only to the mountain suggest that the sites could have been *corpahuasis*, defined by some chroniclers as the particular kind of lodging for the pilgrims on their way to the shrines (cf. Ramos 1976:66 [1621]). Other mountain ceremonial centers such as Chañi (cf. Ceruti 1997a, 1997b) are located near main sections of the Inca trail, from where they can be easily accessed.

Scholars have previously noted that *tambos* at the foot of the sacred mountains likely housed pilgrims (cf. Hyslop 1990:303). Archaeological fieldwork established that domestic and subsistence activities were indeed carried out in the *tambos*. These *tambos* were also used as staging points for the ceremonies to take place on the summits. In the case of Llullaillaco this conclusion was supported by the large proportion of domestic wares, including storage vessels, and numerous cooking places identified during the surveying and excavations performed at the *tambo*, located at ca. 5,200 m at the foot of the northeastern ridge of the mountain. The presence of llama bones and feces suggests that the livestock had been used for transporting supplies to the *tambos*. The same kind of evidence of domestic activities has been found in the *tambos* at the lower slopes of several other mountains, such as Sara Sara, Pichu Pichu, and Chañi.

Excavations at the *tambos* demonstrated a lack of long-term occupation, something that would have been impossible in many cases on a year-round basis because of the extreme conditions during much of the year and their isolation. Stratigraphy showed that in the case of Llullaillaco, only one occupational layer could actually be distinguished, whereas no refuse areas were identified to support the idea of a continuous occupation. The surface pottery was preserved with low fragmentation and little erosion, suggesting that the site was not reoccupied after long-term abandonment (Ceruti 2003a:63).

Roads built on the slopes of the mountains and leading toward the summits have been documented on Llullaillaco, Chañi, Ampato, and Pichu Pichu, but they cannot be clearly seen today on Quehuar or Misti. In selecting the slope for climbing to the top of the mountains, as well as in the planning of the distribution of the intermediate stations along the route, it becomes evident that the Incas achieved a very high level of mountaineering and logistic skills.

The much smaller complexes of structures farther up the mountains support the idea of only priests and their assistants participating in the summit rituals. This becomes particularly evident in the case of the intermediate stations located at ca. 5,640 m, 6,450 m, and 6,500 m on the northeastern slopes of Llullaillaco. Several other mountains, e.g., Chañi, Chiliques, and Licancabur, also show an interesting set of intermedi-

ate stations built along the way to the summits, which would have been able to house a restricted number of people, presumably priests and the children to be sacrificed (cf. Beorchia 1985; Ceruti 1999a; Fernández 1975; Reinhard 1985a).

Summit Ceremonial Sites

Early descriptions of the sanctuaries built by the Incas on Andean mountains are scarce, because the chroniclers rarely climbed to the summits of the higher peaks (above 5,500 m). Most of the informants who described the ceremonies to the chroniclers had not witnessed those performed on top of the mountains, although some had seen the offerings made at the Temple of the Sun in Cuzco. The account of Hernández (1923 [1622]), which refers to the sacrifice of a young girl on top of a mountain in central Peru, devotes some lines to the description of the tomb where the girl had been buried but does not describe the general appearance of the mountaintop sanctuary.

Different strategies of adapting to, and using, the topography of the summits for ceremonies can be inferred from the architectural evidence in high-altitude sites. The highest point in the mountain was generally preferred for the setting of the sanctuary—as on mountains such as Chañi and Ampato—or the closest location available when the topography was too difficult and abrupt. This was probably the case on Llullaillaco, where a narrow ridge ca. 20 m below the highest part of the rocky outcrop of the summit was selected for the sanctuary. On Pichu Pichu, the extremely abrupt pinnacle that rises to the north of the massif was climbed and used for building a trail to a retaining wall, but the funerary platform was built on the saddle below, where more room was available for the construction. Adaptation to the steep slopes of summit ridges is also demonstrated by the construction of terraced platforms, like those on Sara Sara and Chañi. Sometimes, the funerary area on a mountain not only is concentrated on the main summit but also extends to lower summits or balconies on the slopes. That is the case at Ampato, where burials were found at the summit platform at 6,340 m and excavated into a level surface at ca. 5,850 m. On Misti the ceremonial site was intentionally placed on the interior rim of the crater, not on the summit, presumably because the

purpose of the offerings was to placate the deity believed to reside in the active fumaroles just below.

There are differences in the types and visibility of the structures built on the high-altitude sites. Artificial platforms were found at important sites, with the *ushnu* platform on Quehuar being the most complex example discovered to date. However, several platforms consisted of simply built walls with fill inside and might be barely visible, such as the one on the summit of Lullaillaco. Simple circles and rectangles formed by lines of stones were common, e.g., on Lullaillaco's summit and at the site at 5,850 m on Ampato.⁸ This latter site also demonstrated that burials could be found with nothing on the surface to mark their location. On Misti the two structures containing the burials were signaled only by one row of stones forming two circles, and the symmetry in the architectonic pattern was marked by the presence of two large rectangles placed close to the outer part of each circle. In the case of Lullaillaco the low height of the walls of the platform was counterbalanced by the positioning of the funerary structure at the spot of highest visibility on the summit ridge.

On the other hand, the lower part of the Lullaillaco summit ridge—also naturally protected from wind—was used to build the double-roomed structure that served as a shelter (cf. Figures 9 and 10). In this case the structure could have been part of a strategy to allow spending the night high on the mountain and consequently being there on time to perform the ceremony at dawn. Ritual offerings were often made prior to sunrise (cf. Cobo 1990:136, 174 [1653]), just as they are today (cf. Aranguren 1975:114; Bastien 1978:145; Szeminski and Ansion 1982:199).

In general terms the ceremonial architecture on the mountain summits is unimpressive compared to the exquisite offerings buried inside. This is in accordance with the general statements of the chroniclers regarding the shrines that are not enclosed temples, which were described as natural places in the landscape where sometimes only the huts of the priests were discernible (cf. Cobo 1990:48 [1653]).

Cemeteries

We should briefly note that, although rare, bodies of people who have died natural deaths have been found

buried high on mountains. However, in such cases it was clear that they were not part of *capacocha* ritual sacrifices and burials. On Lullaillaco 16 individuals, all apparently young males, were buried with ordinary clothing at 4,900 m. This site was described in the early 1970s before the site was heavily looted (Beorchia 1975b:40–41). We know that they were not meant to be part of the ceremony because they were buried low on the mountain without Inca state ritual objects, were not sacrificed, and were otherwise not specially treated, e.g., by being placed in special burials. They apparently died in the course of work on the mountain, although chroniclers also describe requests that people who died of normal causes be buried on a sacred mountain because of their desire to be closer to their mythical place of origin (and principal deity) (cf. Avila in Salomon and Urioste 1991:73).

Sacrificial Victims

According to the chroniclers, children were selected to be sacrificed because their purity made them more acceptable to be with the gods. The general belief was that after being sacrificed, these children became messengers or representatives of the people to the gods and could intervene on behalf of their people (cf. Cobo 1983:237 [1653]; Gutierrez 1963:233 [ca. 1603]; Hernández 1923:62 [1622]). The children became, in effect, deified and worshipped together with the deities with whom they were believed to reside (cf. Cieza 1959:150 [1553]; Hernández 1923 [1622]). They would be honored for all time, unlike the common people, who received offerings only for periods of up to two generations (Cobo 1990:42–43 [1653]).

It was considered an honor for the parents of the children selected, and some parents were known to have offered their children willingly (cf. Cobo 1983:237 [1653], 1990:112 [1653]; Hernández 1923:62 [1622]; Ramos 1976:81 [1621]). The parents were not supposed to show sadness, and it was even said to have been a major offense to do so (cf. Cobo 1983:237 [1653], 1990:8 [1653]). Not all parents felt this to be worth the price, however, and thus they were not opposed to their daughters losing their virginity and in this way avoiding being taken away from the home (Cobo 1983:238 [1653]). As for the victims themselves, some

may have gone to their deaths satisfied that they were to be with the gods, as some chroniclers have noted (cf. Cieza 1959:150 [1553]; Hernández 1923 [1622]). However, many would surely have been frightened, as indicated by their being given *chicha* (maize beer) to drink to “dull their senses” (Ramos 1976:81 [1621]; cf. Cobo 1990:112 [1653]).

Regional and Social Origins

The *capacocha* ceremony involved the redistribution of human victims that were sent from Cuzco to different parts of the Inca Empire to be sacrificed. Hernández (1923 [1622]) noted that brothers born in the central highlands of Peru were sent to separate places as distant as Lake Titicaca and Chile. It has not been established with certainty that all the *capacocha* victims had to go first to Cuzco and only then to the place they were sacrificed, but this is the impression left by the chroniclers, and the victims certainly all had to have been provided with offerings supplied by the Inca state.

Although still very preliminary, the results of the DNA of the Ampato Ice Maiden showed her to have no relationship with 19 people from the village of Cabanaconde in the Colca Canyon close to Ampato. However, there is a relationship on the maternal side between one of those people and the oldest of the female mummies on Lullaillaco. The closest relationship found for the Lullaillaco boy is with the Mapuche, natives of southern Chile and Argentina. The Lullaillaco boy was found to have no relationship with the two females buried near him, and there was no relationship on the maternal side between the females (Crews 2000; McKenney 1999).

Stylistic patterns in the artifacts and in the clothing worn by boys and girls buried on the mountains have also been used to identify the region from which they are believed to have originated. There has been little found to indicate a possible local origin for any of the *capacocha* burials thus far known. The low mountain of Esmeralda is a possible exception in that some provincial pottery was reportedly found with the mummies (Besom 2000:398). The El Plomo boy has been tentatively identified, based partly on a metallic ornament (Mostny 1957:37), as coming from the altiplano region of Bolivia, whereas a mantle found

with the Aconcagua boy had designs indicating that it came from the central coast of Peru (Schobinger 2001).

Taken together, the DNA and archaeological evidence indicate that the *capacocha* victims appear to have rarely originated from the regions in which they were sacrificed, and they were normally not related. This agrees with the descriptions made by the chroniclers of the victims’ having been sent from distant lands as part of an Inca distribution strategy. In many cases the evidence suggests that the children sacrificed were sent from areas far distant, just as described in the chronicles.

Age and Sex

Boys and young girls destined to be ritually sacrificed were said to have been provided as tribute to the state by the local communities on a yearly basis (Cobo 1983:235 [1653]). If true, this would likely have been more the case for *capacocha* ceremonies undertaken at Cuzco, albeit annual ceremonial offerings were likely made at the places where *capacocha* offerings had been made (cf. Duviols 1986:170). Some of the children offered were intentionally sent to the Inca by their noble parents to reinforce an alliance with the emperor and to be reconfirmed in their political positions (Hernández 1923 [1622]).

Apart from the tribute system that provided young children of both sexes for the *capacocha* ceremony, the Inca Empire created and sustained a complex system of selection, reclusion, and redistribution of chosen women (*acllas*) who were taken from their homes at a young age and kept in enclosed houses (*acllahuasis*) (Ceruti 2005b:271). Being supervised by consecrated women (*mamacuna*), the girls were taught to weave and to prepare special *chicha* for religious and political purposes (Murúa 1946:333 [1590]). After the age of around 14, some of the young women were taken out of the *acllahuasis* and given as secondary wives to nobles or sent to be sacrificed during state ceremonies (Acosta 1962:241 [1590]).

Some chroniclers describe the boys chosen for *capacocha* ceremonies as being between 4 and 10 years old (Cobo 1983:235 [1653]; Murúa 1946:342 [1590]; Polo 1916:37 [1571]). Bioarchaeological evidence is consistent with this, because it has been established



FIGURE 15. The boy on Llullaillaco wore a red tunic, leather moccasins, and a headdress of white feathers held in place by a sling wrapped around his head (photo by Johan Reinhard).

that the Aconcagua, Llullaillaco, and El Plomo boys are in this age range. This could be a reason why the El Toro man, being an adult, should not be considered a classic *capacocha* offering, an interpretation supported by the absence of statues and other sumptuary objects in his burial.

Cobo (1990:112 [1653]) and Guaman Poma (1980:245 [1613]) noted that babies could also be sacrificed, but this has been documented only at one of the high mountain sites, Misti, where the skeletons of two infants were found (Reinhard and Chávez 2001). Children of a “tender age” (Arriaga 1968:88 [1621]) and infants that were too young to walk would be carried during *capacocha* processions (Cobo 1990:156 [1653]; Molina 1959:95–97 [1575]).

The Ampato Ice Maiden, the older female from Llullaillaco, and the girl found on the summit of Sara Sara are all about 14–16 years old, which is the age suggested by some chroniclers as the appropriate one for *acllas* to be chosen for sacrifice (cf. Cobo 1990:112 [1653]; Ramos 1976:56 [1621]). Older females have also been found on Esmeralda, Pichu Pichu, and Chuscha. Overall, girls found on the mountaintop burials tended to be older than boys, just as the chroniclers noted. This could be due to their having been kept as *acllas*, hence pure, until being sacrificed, whereas there was no equivalent institution for the boys (cf. Cobo 1983:236 [1653], 1990:112 [1653]).

Aside from virginity, a requisite for the sacrificial victims was the absence of blemishes. One chronicler



FIGURE 16. A drawing of ca. A.D. 1613 illustrates the clothing of an Inca noblewoman. A dress (*acsu*) was wrapped around the body and fastened with a belt (*chumpi*) around the waist and by two pins (*tupus*) at the shoulders. She wore a shawl (*lliclla*) on her shoulders held in place by a metal pin (*tupu*), sandals (*ushutas*), and a head cloth (*ñañaca*). The woman is holding a bag in her right hand (from Guaman Poma 1980 [1613]).

noted a girl not being accepted to be sacrificed on the Island of the Sun when the priests noticed that she had a mole on her breast (Ramos 1976:56 [1621]). Our data support this in terms of general health, i.e., studies indicate that the victims were well nourished without major defects (Reinhard and Ceruti 2000, n.d.). However, the Lulluillaco boy has a wart on a finger of his left hand (Gerardo Vides, personal communication 2000). This suggests that slight “blemishes” could occasionally be tolerated.

Clothing

The males sacrificed on mountaintops and the male figurines buried with them provide a substantial archaeological database to describe typical masculine clothing in Inca times. Some chroniclers noted that the standard male clothing consisted of a breechcloth (*huara*), a sleeveless tunic (*uncu*), a mantle (*yacolla*), and sandals (*ushutas*) (cf. Cobo 1990:185–187 [1653]). A headband (*llautu*) was often wrapped around the head, although it could be replaced by a sling (*huaraca*).

Men have been frequently depicted wearing metal plaques (*canipus*) (cf. Guaman Poma 1980 [1613]; Rowe 1997:29), which are similar to the ones found in miniature on the heads of statues (cf. Reinhard 1999a:38). The adornments on the head functioned as signs of ethnic and regional origin and were controlled by the state, intentional misuse said to have been sanctioned with the death penalty (Betanzos 1996:106 [1551–1557]).

The boy on Lulluillaco had a headdress of white feathers held in place by a sling wrapped around his head (Figure 15). We know that such headdresses (called *pilcocata*) were worn on special occasions, such as at major ceremonies (Cobo 1990:151, 187 [1653]). The sling looked like, and could function similarly to, a *llautu*. It was common for slings to be tied around a person’s head (Arriaga 1968:35 [1621]), and even an Inca emperor is reported as having worn one in this way (Levillier 1940:152).

The Lulluillaco boy wore a red tunic and sat on a black folded tunic. A red and brown mantle or cloak covered the boy’s head and upper body, forming the exterior part of the mummy bundle. He wore leather moccasins and anklets of white fur, similar to those represented in drawings of Guaman Poma (1980:148, 150 [1613]). He carried a bag (*chuspa*) covered in feathers and was adorned with a silver bracelet on his right arm. Such a bracelet (*chipana*) was worn by Inca nobles and was among the items given by the emperor as diplomatic gifts (cf. Cobo 1990:187 [1653]; Rowe 1997:30).

Just like the boy on Lulluillaco, the El Plomo boy wore a tunic and a mantle and had moccasins on his feet. He was also carrying a bag covered in feathers, and his arm was adorned with a silver bracelet. Instead



FIGURE 17. The older female found on Lulllaillaco wore typical Inca clothing, with ornaments visible on her right shoulder (photo by Johan Reinhard).

of a sling, he wore a *llautu* and a headdress of feathers. The boy sacrificed on Aconcagua was dressed in two tunics, wore sandals and a necklace of stones, and had a feather headdress (cf. Abal 2001a). The boy on Ampato did not have a feather headdress but did have a circular headpiece made of vegetable fibers whose appearance is reminiscent of the ones depicted in drawings of the early 1600s by Guaman Poma (1980:230, 295, 301 [1613]). Differences in the headdresses of the Ampato, Lulllaillaco, Aconcagua, and El Plomo boys presumably can be attributed to the state-controlled use of such adornments in Inca times.

Chroniclers noted that the standard female clothing consisted of a dress (*acsu*) wrapped around the body and fastened with a belt (*chumpi*) around the waist and two pins (*tupus*) at the shoulders (cf. Abal 2001b). The

females wore a shawl (*lliclla*) on their shoulders that was held in place by a metal pin (*tupu*), sandals (*ushutas*), and a head cloth (*ñañaca*) (cf. Figure 16).

The two females on Lulllaillaco wore *acsus* fastened with belts and *llicllas* held by *tupus* (cf. Figure 17). The same pattern was observed with the Ampato Ice Maiden (Figure 18) and with the female mummy from Sara Sara. The Ampato Ice Maiden's clothes appear to have been the ones of best quality. Pieces of clothing could not be analyzed on the other two females from Ampato because their clothing has still not been removed. The two females from Lulllaillaco wore leather moccasins instead of sandals.

The cloths covering the heads of the female mummies appear to be *ñañacas*, which seem to have been worn only by women of high status (cf. Figure 16). If



FIGURE 18. The reconstruction on the left illustrates how the clothing of the Ampato Ice Maiden would have looked without the shawl. She is depicted on the right wearing her shawl and a headdress (actually found on one of the other Ampato female mummies) (painting by Chris Klein, National Geographic Society 1996).

so, the head cloths found on the Ampato maiden and both female individuals from Lulllaillaco would be among the few known from the archaeological record (Rowe 1997:24).

The young girl from Lulllaillaco was wearing a metal plaque on her forehead, the exact shape of which is distinctive and rarely noted in the literature as being associated with women (Figure 19). We are aware of only one case where a similar shape occurs with a *capacocha*. It was part of a gold diadem found nearly 100 years ago with a male child sacrificed at an unidentified place near Salinas Grandes, about 250



FIGURE 19. The younger female on Lulllaillaco was found wearing a silver plaque. The upper part of her body and her head cloth had been damaged by lightning that struck the tomb (photo by Johan Reinhard).

km northeast of Lulllaillaco (Fernández 1997:171). Some of the metal ornaments that the Lulllaillaco maiden was wearing on her right shoulder look like bells, and they may be what Cobo (1990:188 [1653]) was referring to in his description of such attachments on *tupus*.

Three feather headdresses were recovered in association with female sacrifices at high-altitude sites. The Lulllaillaco maiden had a headdress covered in white feathers that had been placed on top of her bundle (Figure 20), and the same kind of headdress was documented with one of the females found at



FIGURE 20. Headdress found placed on top of the older female's mummy bundle on Lullailaco. It closely resembles the miniature ones often found on female statues offered by the Incas (photo by Johan Reinhard).

5,850 m on Ampato. A similar feather headdress was also found with the elder female on Cerro Esmeralda (Checura 1977:136, 1985:56). These headdresses resemble the miniature ones worn by most of the female statues offered by the Incas (cf. Figure 21). It is likely that the feather headdresses had a particular ritual importance and were related to the status of the *acllas*, since they have been found in association with young women and not with children.

Sacrifice and Burial

The climax of the *capacocha* ceremony involved the sacrifice of children and their burial together with high-status offerings, such as statues and fine pottery. After the long processions to the sacred summits, these children would start another longer pilgrimage as messengers to the world of the ancestors and deities.

Forms of Worship

There are several historical accounts of the ways the Incas worshipped their deities. Fasting was a common practice during the preparation for an important ceremony. Priests were expected to abstain from salt, peppers, and spicy food, as well as meat, fish, and any kind of sexual activities (cf. Arriaga 1968:47 [1621]; Betanzos 1996:46 [1551–1557]). Reportedly, they were allowed to eat only raw maize and to drink *chicha* (Betanzos 1996:46 [1551–1557]). Herrera (1728:93 [ca. 1615]) described the children as fasting, not eating salt, chili peppers, meat, or fish. Their meals would be of maize and vegetables. Mothers were allowed to breast-feed children who were too young to eat (Cobo 1990:112 [1653]).

Common offerings included such items as incense, foodstuffs, textiles, and maize beer. There would likely have been music and dancing (also specific to



FIGURE 21. Female silver statue from Lullail-laco with gold and green feather headdress (photo by Johan Reinhard).

the deity and ceremony) and ritually sanctioned drinking, which ideally should go on throughout the night without sleeping (cf. Arriaga 1968:19, 47 [1621]; Cobo 1990:121 [1653]). Participants may also have made confessions to priests at the sites, which was reported to have often been done during religious ceremonies (cf. Arriaga 1968:47–49 [1621]; Cobo 1990:122–123 [1653]; Guaman Poma 1980:160 [1613]) and on the mountains themselves (cf. San Pedro 1992:36 [1560]).

Some of the mountain deities were said to have communicated directly with priests, who thus served as oracles at the time of the ceremonies (cf. Cieza 1959:152 [1553]; Guaman Poma 1980:253 [1613]). It is likely that this was the case at some of the mountain shrines on which *capacocha* offerings have been found. Indeed, there are cases of the sacrificed children (and mummies of important persons) themselves

speaking through oracles long after their deaths (cf. Duviols 1986:142–143; Hernández 1923 [1622]; Salomon 1995:323).

Archaeological evidence for many of the activities noted previously is difficult, if not impossible, to obtain. For example, there would be no material evidence to demonstrate that oracles or confessions were involved, and dancing would leave little, if any, trace. However, remains of ritual drinking vessels have been found at sites at the foot of the mountains and have been buried in the summit sites. We have interpreted the presence of human hair in the fill of the platform at the summit of Lullaillaco as a possible result of intentional deposition while worshipping. Hair was also documented in the fill of a platform at 6,052 m during excavations on the summit of Copiapo in central Chile (Reinhard 1992a). We suspect that they were primarily made as simple offerings (as were

eyelashes) during the work process, such as Garcilaso (1967 1:82 [1609]) noted being made at *apachetas* (mounds of stones used in rituals, usually found at high places and associated with mountain gods) (cf. Arriaga 1968:121 [1621]; Ramos 1976:68 [1621]).

Sacrificial Techniques

During *capacocha* ceremonies, children were sacrificed primarily by four methods: by strangulation (Cieza 1959:150 [1553]), by a blow to the head (Cobo 1983:235 [1653]), through suffocation (Murúa 1946:263 [1590]; Ramos 1976:26 [1621]), or by being buried alive while unconscious (cf. Betanzos 1996:46 [1551–1557]; Cobo 1983:235 [1653]). Ramos (1976:81 [1621]) wrote of a thin piece of flint being used to make a cut and the blood used to paint their faces and places of worship. There has been no evidence of such cuts in the *capacocha* victims noted to date. A few chroniclers even recorded that the Incas would remove the victim's heart (e.g., Cobo 1990:112 [1653]; Molina 1959:93 [1575]). However, this has not thus far been established in the archaeological record. It appears more likely to have been a case of Spaniards extrapolating from the Aztec practice and applying it to the Incas or of them confusing this with a custom among the Incas of cutting the throats of llamas (Cobo 1990:114 [1653]) or extracting their hearts to eat or for divination purposes (cf. Arriaga 1968:42 [1621]; Guaman Poma 1980:826 [1613])—something that has continued to the present day.

The practice of burying children alive or previously suffocating them is compatible with the physical evidence of the three Lulluailaco children (Previgliano et al. 2003) and the El Plomo boy (Quevedo and Durán 1992). Apparently, the reason for the choice of these sacrificial techniques was rooted in the belief that nothing “incomplete” should be offered to a major deity (cf. Murúa 1946:263–264 [1590]). CT scans of the skulls of the three individuals from Lulluailaco showed no evidence of blows to the head, nor was this apparent in the cases of the other skulls examined to date, i.e., the other three sacrifices on Ampato and the two recovered in 1996 on Pichu Pichu. Until evidence proves otherwise, we assume that these sacrifices involved the children being buried alive.

A special maize beer was made for use in religious ceremonies, and several chroniclers describe it having been drunk until the participants were intoxicated (Betanzos 1996:132 [1551–1557]; Cieza 1959:150–151 [1553]; Cobo 1990:112 [1653]; Murúa 1946:266 [1590]). Some chroniclers stated that children were forced to drink maize beer in order to deaden their senses and decrease pain at the moment of death (Cobo 1983:236 [1653]; Ramos 1976:81 [1621]).

Clear evidence of a different kind of ritual drinking appears to have been established in the case of Aconcagua, where red liquid made from the seeds of a plant (*Bixa orellana*) had been vomited by the boy who was sacrificed (Bárcena 1989). Vomiting per se does not necessarily indicate the child had been drunk, since it could have been due to nausea caused by fear, as a reaction to the high altitude, or as an automatic reflex at the moment of death (Mims 1999:120). However, it does demonstrate that the Aconcagua boy had drunk a beverage that was not part of his usual diet.

It should not be forgotten that at high altitudes anyone unaccustomed to the heights would be physically affected. Nausea may have made it difficult for some children to drink or eat and perhaps led to more direct methods, such as strangulation and blows to the head, to bring about death. On the other hand, death could have come quickly for children already extremely tired, disoriented, and suffering from altitude sickness, especially pulmonary and cerebral edema (cf. Houston 1987:122–133).

The Incas also used strangulation as a sacrificial technique (Cieza 1959:150 [1553]; Cobo 1983:235 [1653]). The Inca women sacrificed at Pachacamac were all reported to have been strangled with a cloth ligature. However, unless victims were strangled by hand and/or the bodies were well preserved, it is difficult to establish with skeletons if strangulation has occurred when ligatures were utilized (Verano 2001:168). Strangulation has tentatively been provided as the cause of death in the case of the two female mummies on Cerro Esmeralda (Checura 1985:14–17), as well as for the man from El Toro (Beorchia 1985:236). Future research may indicate that it was more common than the current archaeological record demonstrates.

A blow to the head was also described as a means of causing human sacrifice (Cobo 1983:235 [1653]; Gutierrez 1963:233 [ca. 1603]; Ramos 1976:25 [1621]). Radiological studies have suggested that cranial trauma was the cause of death in the case of the Ampato maiden (Reinhard 1997) and in the case of the female mummy found on Sara Sara (Reinhard 1998b). This may also have been the sacrificial technique used to kill (or at least render unconscious) the boy on Aconcagua (Schobinger 1999:8), the young woman sacrificed on Pichu Pichu (Linares 1966:44), and the El Plomo boy (Quevedo and Durán 1992:196).

We are aware that the use of such blows seems to go against the concept that only a child without a blemish should be offered (cf. MacCormack 2000:130–131). However, blows to the head, including those resulting in fractures, do not necessarily cause noticeable exterior damage and bleeding. Ramos (1976:25 [1621]) noted a flat stone placed by the side of the head before the blow was delivered, and this suggests that there may have been a deliberate attempt to avoid serious exterior damage. There is also the possibility that at this late stage of the ritual, a blow to the head was not considered a disfigurement for the child entering the afterlife. No Spaniard ever witnessed a *capacocha* sacrifice, and all of the historical accounts are necessarily secondhand at best. Thus, it is precisely the archaeological evidence that is needed to compare with the historical documents, and in some cases this evidence is in accord with blows to the head having sometimes been employed.

Burials

The *capacocha* burials involved a considerable amount of effort at high altitudes and further serve to emphasize the importance of the offerings. They also provide insights about Inca religious beliefs and practices. The objects buried with the children were important parts of the sacred pilgrimage to the mountains. In the religious sphere, the items embodied the essence of Andean beliefs, whereas in the political sphere they were active emblems of the power of the Incas.

The Incas solved the problem of burying items on rocky and frozen terrain by building stone walls up

from the ground and then adding a stone and sandy fill to create artificial raised platforms in which they buried the offerings. However, in some cases the terrain allowed for excavations to be undertaken. Wooden shovels have been found at sites such as Llullaillaco and Licancabur. Despite the fragility of the wooden implements in such rocky soil, burials were excavated up to a depth of nearly 2 m, as demonstrated in the three burials of Llullaillaco, and exceptionally up to about 3 m, as in the case of the superimposed burials on Misti (which had loose soil caused by the heat of the active volcano). Although they might not seem to have a religious use, wood instruments were employed to excavate burials and holes for offerings, according to Cobo (1990:112 [1653]), because the use of metallic instruments was prohibited in ceremonial contexts.

Individual burials were excavated at the funerary site at ca. 5,850 m on Ampato, two of which contained the remains of females and the third one, the remains of a boy. Single individuals were buried on the funerary structures on the summits of Chañi, Quehuar, and Ampato. Funerary structures such as platforms (on Llullaillaco and Pichu Pichu) or large circles (on Misti) were built to contain more than one burial. The platform on Llullaillaco contained two female burials and one of a young boy. Each of the two funerary circles on Misti contained three burials, two of them associated at a lower level and a third one superimposed. The platform on Pichu Pichu contained one female and one male burial, whereas the elder female was found outside the wall of the structure.

Betanzos (1996:77 [1551–1557]) referred to the sacrifice and burial of one boy and one girl representing a symbolic marriage. This pattern could not be clearly established in the archaeological record, aside from the tentative evidence on the platform of Pichu Pichu, and the alternative of nonsimultaneous burials in some of the other cases presented. Two children were found buried together on Cerro Esmeralda, but in that case the individuals were both females.

The sacrificial victims were buried as if sitting in the “seat-flexed” position with the knees drawn up toward the chest and often with the arms and legs crossed (cf. Doyle 1988:206; Reinhard 1997:38, 42; Rowe 1995:28). This was also commonly done for



FIGURE 22. Llamas (two of spondylus shell and one of silver) and two male statues (of spondylus and of a gold/silver alloy) were found in a row, as if forming a symbolic caravan on Lulluillaco (photo by Johan Reinhard).

people who died natural deaths among some pre-Hispanic cultures and thus was not specific for *capacocha* burials (cf. Rowe 1995:28).

Assemblages of offerings were buried with the sacrificial victims in accordance to their sex and age. There is an association between gender-specific offerings, such as male and female figurines, which are generally associated with sacrificial victims of the same sex as that represented by the statues. Pottery offerings are more widely represented in female burials, although certain types, such as *aribalos* and plates, can also be found in male burials. In general, the assemblage of offerings is more numerous and more varied for female victims than for males.

In female burials, statues made of gold, silver, and spondylus (spiny oyster) shell have been found to represent only women. Often figurines are placed close to the body. Statues may be aligned forming a row and are

usually placed on the opposite side of the body where the pottery and textile bags are located (cf. Reinhard and Ceruti 2000:147–149). Three female figurines made of gold, silver, and spondylus were aligned on the left side of the older female's body on Lulluillaco. Another set of three female figurines was found near her burial. Four female figurines (one gold, one silver, and two spondylus) were placed in a row inside the burial of the younger girl of Lulluillaco. Three statues made of the three different materials were found scattered on the slopes of the crater below the summit of Ampato, and it is presumed that they were buried together with the Ice Maiden inside the summit platform before it collapsed. Several female figurines were found associated with the three burials in only one of the funerary structures on Misti. Finally, female figurines made of gold, silver, and spondylus shell were documented in one of the female burials on Pichu Pichu.



FIGURE 23. This necklace made of carved spondylus shells on a cord of woven human hair was found on Llullaillaco (photo by Johan Reinhard).

In male burials, statues made of gold, silver, and spondylus have been found to represent men and camelids (llamas and alpacas and, sometimes, possibly vicunas). Two spondylus figurines, one representing a man and the other in the form of a llama, were placed inside the Llullaillaco boy's burial on the right side of his body, and spare clothing was placed on his left (cf. Reinhard and Ceruti 2000:147). Three male figurines made of gold, silver, and seashells were found together with two spondylus llama figurines and a silver camelid inside the burial of the Aconcagua boy (Schobinger 2001). Several llama figurines and some male figurines were found in the fill of the funerary structure on Misti—the one that contained no female statues—as well as in closer association with the individuals buried there. The Ampato boy had one silver figurine representing a man included in his burial, whereas the boy from Pichu Pichu had a spondylus

figurine in close association with his body and other male and llama figurines near his burial.

An interesting pattern of association between male and llama figurines was first documented inside one of the burials on Pichu Pichu and later observed in several offering assemblages distributed around the burials of males on Misti and Llullaillaco. These assemblages of statues have been formed by one or more male figurines and two or three zoomorphic figurines representing camelids. They have been found placed in a row, the male figurines ahead and the llama figurines “following” them, apparently representing a caravan (Figure 22). The chroniclers describe the association of statues representing llamas and their “shepherds” being displayed in the gardens of Coricancha, the Temple of the Sun in Cuzco (Cieza 1959:147 [1553]).

At Llullaillaco, one of the llama caravan assemblages was encircled by a spondylus necklace

(Figure 23). The Aconcagua boy wore a necklace made primarily of spondylus shell, along with some semiprecious stones (Bárcena 2001b). Cobo (1990:151 [1653]) described men involved in important ceremonies as wearing necklaces made from strings of shells.

When burials are contained inside larger funerary structures, apparently independent offering assemblages and isolated pieces of offerings are frequently uncovered that are difficult to identify as being part of the burials. That is the case of a group of offerings recovered from the northeastern part of the Lullailaco platform, which combined female, male, and camelid statues with a miniature bracelet. Textile pieces and llama spondylus figurines were found scattered in different parts of the fill that covered the male funerary structure on Misti. A cloth with silver disks, probably a tunic, was found buried between two human sacrifices on Pichu Pichu. Underneath it were several llama figurines and a large silver male statue. Female and male statues were recovered from a niche close to the female burial on Sara Sara.

Offerings were also found separate from the burials, e.g., a single blue tunic was found at ca. 5,850 m on Ampato. Wrapped inside was a set of red and white woven cords with a spondylus statue attached to the tunic at its apex.⁹ Textiles have also been found buried separately at other high-altitude sites, e.g., at Tambillos (Beorchia 1985:220), and some chroniclers refer to textiles having been left at shrines as clothing for the deities themselves. This apparently was especially the case with *huacas* associated with *pacarinas* (places of origin) of communities (cf. Albornoz in Duviols 1984:199). Thus, the possibility exists that this explains why some of the textiles were found intact (and apart from the human sacrifices), because most textile offerings were burned (Cobo 1990:188 [1653]).

Murúa (1946:319 [1590]) refers to the custom of including bags, spare sandals, and extra tunics inside the mummy bundles. The Aconcagua boy had with him several tunics, mantles, breechcloths, a pair of sandals, and two bags, as well as a feathered headdress and woven belts. The Lullailaco boy had one extra tunic in his bundle, in addition to two pairs of sandals and two slings placed in the burial close to

his body. The young girl from Lullailaco also had spare moccasins and sandals in her burial.

Feathers were also given special consideration among the Incas. Feathers were used on textile bags containing coca and for headdresses and have been found at several high-altitude ceremonial sites, e.g., on Lullailaco, Ampato, and El Plomo (cf. Beorchia 1985), a practice also noted by chroniclers (e.g. Cobo 1983:245 [1653]). Feather-woven textiles and feather headdresses were described as being restricted for use by noble people and in ceremonial contexts (cf. Betanzos 1996:195 [1551–1557]; Rowe 1997:10).

In Inca times it was a common practice for a person's own hair and nails to be kept to be buried with the body at death, as they were seen as important for accompanying the soul in the afterlife (cf. Garcilaso 1966:84–85 [1609]). The three individuals from Lullailaco were accompanied by little bags—apparently made of the skin from the testicles of a llama—containing hair that presumably would have belonged to them (Reinhard and Ceruti 2000, n.d.). Similar objects have been found together with the El Plomo boy (cf. Mostny 1957:44) and with the Ampato maiden.

Chroniclers refer to the placing of statues on flat stones (Arriaga 1968:82 [1621]), and parallels are occasionally found in the archaeological record, such as a statue placed on a flat stone on Taapaca in northern Chile. One of the female mummies on Ampato was also found placed on a flat stone.

The Inca sent fine tunics as presents to local leaders (*curacas*), which were buried with them (cf. Arriaga 1968:16 [1621]). *Curacas* often had important roles in the *capacochas*, even offering their own children (Hernández 1923 [1622]). This could explain why fine male tunics were buried with female sacrifices on Ampato and Lullailaco. At Ampato, the tunic was red with red fringes. We know from Betanzos (1996:87 [1551–1557]) that the Inca ordered red-fringed tunics to be worn by defeated *curacas* in the region where this mountain is located. On the other hand, Cobo (1990:151 [1653]) noted male participants wearing red tunics with red fringes during important ceremonies.¹⁰ The checkerboard tunic found with the older girl on Lullailaco is of the type described by John Rowe as having been a gift of the

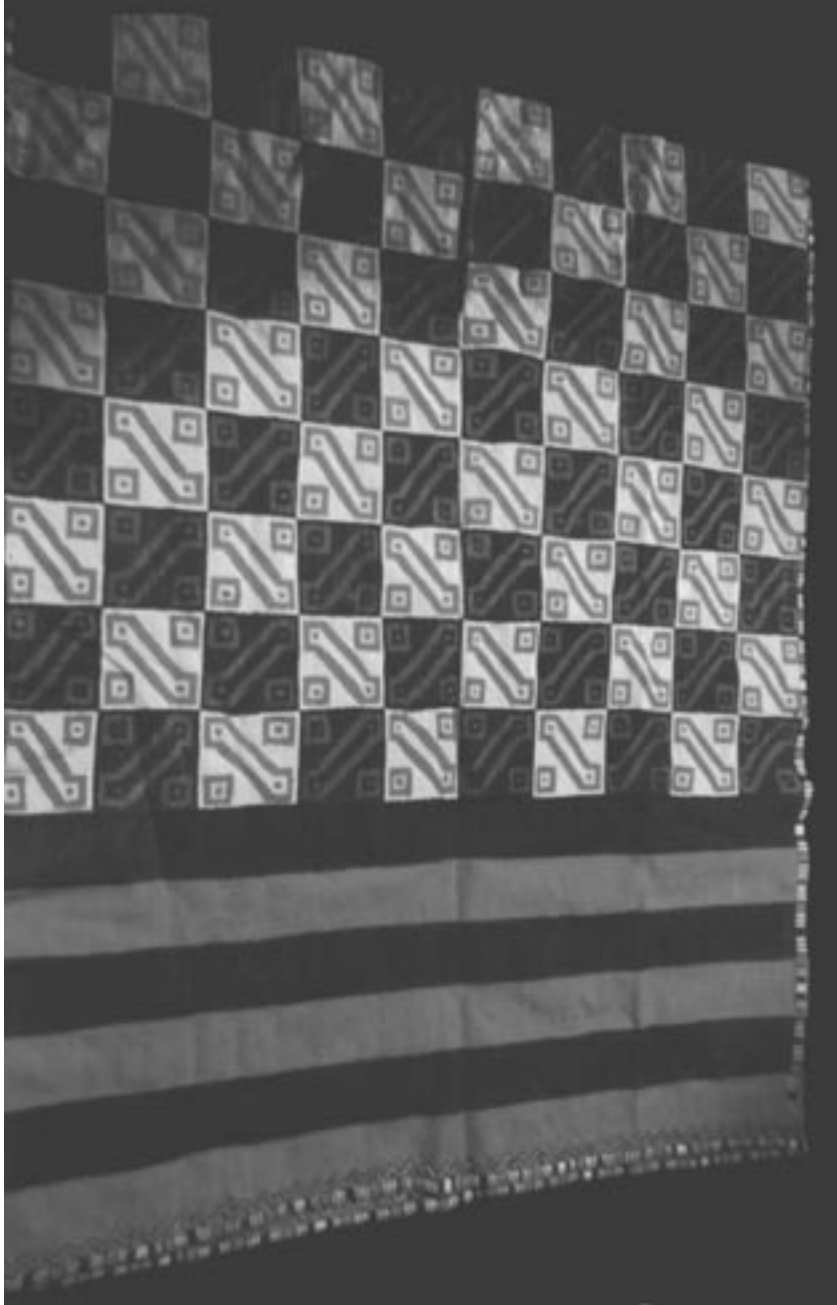


FIGURE 24. A male tunic with the “Inca key” pattern was found draped over the older girl’s shoulder on Lulllaillaco (photo by Johan Reinhard).

Inca to local rulers (Figure 24). There are about 10 of these identical tunics, originating in different parts of the Inca Empire (Rowe 1979:240–250), in museum collections.¹¹

The Inca also provided gifts to *curacas* of diadems (Arriaga 1968:16 [1621]) with which they could be buried. The possibility exists, therefore, that the diadems found on the heads of human sacrifices at such sites as Lulllaillaco and El Plomo may not have

been those given the children, but rather their fathers. Arriaga (1968:69 [1621]) noted tunics overlaid with silver among the “ornaments of the *huacas*.” This special kind of textile cloth overlaid with metals has been found on Pichu Pichu (Reinhard and Chávez 1998).

Some pigments, especially red, have been found in mortuary contexts in the Andes dating to pre-Inca times. In the 1500s Augustinian friars (San Pedro

1992:33 [1560]) described the use of yellow and red pigments on the faces of worshippers when they addressed their invocations to the Sun god. Murúa (1946:265 [1590]) also noted faces being painted red in ritual contexts. These accounts indicate that the use of pigments among the Inca occurred in ceremonial contexts rather than solely for purposes of beautification or ethnic identification.

The use of pigments by sacrificial victims has been documented in the El Plomo boy, who had red and yellow colors on his face (Quevedo and Durán 1992:198), as well as on the Aconcagua boy, whose body was extensively covered with red coloring made from the seeds of a plant (*Bixa orellana*), which he had also imbibed (Bárcena 1989). According to Checura (1985:49; cf. Besom 2000:400–401), powdered cinnabar, a red ore of mercury, was sprinkled over some of the artifacts found with the Esmeralda mummies.

We observed a reddish pigment (as yet unidentified) on the face of the elder female individual in Lullaillaco, but lightning had burned the skin of the younger girl, and the boy's face was hidden because it was pressed against a textile that covered his knees. Red earth (containing ferrous oxide) was brought from several hundred yards away to be used in the burial of one of the females at 5,850 m on Ampato. The use of red is not unusual in funerary contexts, e.g., red coloring has been found on mummies dating back thousands of years and among a variety of cultures in the Andes (cf. Donnan 1995:123; Rivera 1995:55; Rowe 1995:31).

Other Offerings

Aside from the human sacrifice, statues were considered among the most important offerings that could be made. The vast majority of Inca miniature statues buried on the high-altitude sanctuaries were made of three of the substances considered most valuable to the Incas: gold, silver, and spondylus shell (cf. Figures 21, 22, and 25).¹² As well as the gold and silver in the miniature statues found on the mountain sites, we found a few small pieces of unworked silver and gold in the ceremonial structures of Misti and Lullaillaco. Such items were noted as having been presented as offerings in themselves (cf. Arriaga 1968:45 [1621]; Cobo 1990:116 [1653]; Murúa 1946:294 [1590]).



FIGURE 25. The gold male statue from Lullaillaco wears a yellow-feathered headdress. His left cheek shows a bulge, indicating his chewing of coca leaves. His elongated ears and the blue cord wrapped around his head, surmounted by a silver plaque, all support his representing either a member of the Inca nobility or a deity (photo by Johan Reinhard).

Spondylus was carved to make figurines, and the natural shell was also provided as an offering on its own (Cobo 1990:117 [1653]), something verified at a number of high-altitude sites (cf. Beorchia 1985; Reinhard and Ceruti 2000). Chroniclers have also reported it being offered in a powder form (Cobo 1990:117 [1653]). Necklaces made of spondylus shells were important enough to be listed in two documents after the Spanish conquest (Dean 1999:126).

Pottery was another kind of offering that figured in many of the *capacocha* burials. Inca pottery is highly standardized in its forms of decoration (cf. Bray 2003). Typical Inca pottery usually found in the female *capacocha* burials includes *aribalos*, short-



FIGURE 26. A pair of Inca plates was found in the boy's burial at 5,850 m on Ampato. The pairing of some items was common in Inca culture and meant to indicate reciprocity in relationships between humans and between humans and the gods (photo by Johan Reinhard).



FIGURE 27. A pedestal pot with lid from Lullail-laco (photo by Johan Reinhard).



FIGURE 28. An *aribalo* with carrying rope found on Lullaillaco (photo by Johan Reinhard).

necked bottles, pots, shallow plates, and bowls (cf. Figures 26–28). *Aribalos* and jars are functionally related to the transportation, storage, and distribution of *chicha*, whereas pots are devoted to cooking and plates and bowls, to the consumption of food. However, the high quality, lack of use, and fine decorations of many of the ceramics indicate the importance of their role in the setting of *capacocha* burials. Sometimes the pottery pieces are miniatures whose primary function is clearly symbolic rather than utilitarian. No large forms, such as pots for storage or processing food or liquids, have been reported from mountaintop sanctuaries, although fragments of some have been found at *tambos* at their bases, e.g., at Lullaillaco.

There is some variation in the style of decoration of the pieces, and most pottery assemblages from female high-altitude burials include an *aribalo*, a bottle, a pot, and pairs of plates (cf. Ceruti 2003a:237–247). This has been documented in the two female burials on Lullaillaco (Reinhard and Ceruti 2000, n.d.) and the two female burials at 5,850 m on Ampato (Reinhard and Chávez 1996, 1998), the female burials on Misti (Reinhard and Chávez 2001), the elder female's burial on Pichu Pichu (Reinhard and Chávez 1998), and the paired burial on Cerro Esmeralda (Besom 2000; Checura 1977, 1985). Betanzos (1996:77 [1551–1557]) noted that the pottery assemblages buried with the sacrificed girls were meant to represent the typical set of utensils of a housewife. This appears to have been an ideal that was often attained, at least in the symbolic sense of having a selection of common pottery items buried with the victim.

Chroniclers frequently referred to drinking vessels (*keros*) being used by Inca nobility and in major ceremonies at Cuzco. All of the *keros* found to date with high-altitude human sacrifices were made of wood incised with geometric designs (images were painted on them only following the Spanish conquest; cf. Rowe 1982).

Certain objects, such as plates, bowls, and *keros*, have often been found in pairs. The pairing of the plates and *keros* was related to the Andean etiquette of ritually sharing the food and drink, as described in the chronicles (cf. Betanzos 1996:67 [1551–1557]) and also can be seen represented in several of Guaman Poma's (1980 [1613]) drawings.

Several other kinds of artifacts have been found in *capacocha* contexts on mountain summits, such as weaving implements and combs. We found a small workbasket of weaving materials on Ampato similar to that found in other Inca burials (cf. Stothert 1979:9, 13). Such objects may have been personal possessions of the victims, but in any event they were clearly intended to be used by them in the afterlife (cf. Beorchia 1985; Reinhard and Ceruti 2000).

Llamas were commonly sacrificed at major Inca ceremonies (cf. Arriaga 1968:42 [1621]; Cobo 1990:113 [1653]). Llama bones have been recovered in archaeological contexts at several of the mountain summit sites (cf. Beorchia 1985; Reinhard and Ceruti 2000), albeit not in the quantities that might have been expected if they had been common offerings.

Guinea pigs were also often sacrificed during rituals (cf. Arriaga 1968:42–43 [1621]; Cobo 1990:113 [1653]; Guaman Poma 1980:246 [1613]). Nonetheless, we are unaware of any having been found at high mountain sites. The remains of mice have been uncovered, however. In most cases they appear to have reached the sites independent of human intervention in order to scavenge for food and to have died natural deaths (we have even seen them alive at more than 5,800 m). In a few cases they were found within burials and may have been perceived as offerings, perhaps in lieu of guinea pigs (cf. Beorchia 1985:186, 240).

Entire birds were said to have been offered (Cobo 1990:113 [1653]), but we are only aware of their feathers having been found at *capacocha* burials (cf. Reinhard and Ceruti 2000, n.d.). Dogs were reportedly sacrificed on some occasions (Arriaga 1968:64 [1621]; Guaman Poma 1980:271 [1613]), and a dog was found buried in an Inca site on the summit of Las Tortolas (ca. 6,213 m) in Chile (Gonzalo Ampuero, personal communication 1983).

We know from the chroniclers that the Incas offered various foodstuffs, including flour, maize, beans, peanuts, jerky, and llama fat, and “fruits” of various kinds (cf. Arriaga 1968:43–45 [1621]; Cobo 1990:116 [1653]). Beer made of maize was a common offering (Arriaga 1968:41 [1621]). Remains of most of these offerings have been found in the context of *capacocha* burials (cf. Beorchia 1985; Reinhard 1992a; Reinhard and Ceruti 2000).¹³

The coca leaf was a common offering in Inca times (Arriaga 1968:43 [1621]; Murúa 1946:242, 276–277 [1590]) and still is in many areas of the Andes (Berg 1985:95; Girault 1988:149). Coca leaves have been found at several of sites, most notably in special bags found with the human sacrificial offerings (cf. Beorchia 1985; Reinhard and Ceruti 2000). The chewing of coca leaves was said to have been especially important for rituals during the Inca period (cf. Cobo 1990:116 [1653]; Levillier 1940:131). Chroniclers noted coca leaves having been placed in the mouths of sacrificial victims just prior to their deaths (Ramos 1976:26 [1621]; cf. Guaman Poma 1980:267 [1613]), and Salomon and Urioste (1991:161) described coca being placed in the mouths of mummies. We found pieces of coca leaves beneath the nose and on the lips of the older girl from Llullaillaco (Reinhard and Ceruti 2000:72), and fragments of coca leaves were reportedly observed in the mouth of one of the Esmeralda mummies as well (Besom 2000:374).

The recovery of these items in situ has allowed for comparisons to be made with information provided by the chroniclers. They substantiate many of the descriptions, while at the same time point to different ways in which some items figured in the *capacocha* ritual, such as the offering of male tunics with female sacrifices. Unlike some of the chroniclers' descriptions, only vases and certain types of pottery were found frequently in pairs in Inca *capacocha* burials. In addition, some elements appeared that were rarely noted (if at all) by chroniclers, such as coastal (non-Inca) textiles, elaborate headdresses, and textiles with silver disks. Personal items of the children were often included, in addition to the special clothing and artifacts that were part of the state offerings. The quality of the sumptuary offerings varied, sometimes even within the same ceremonial complex, suggesting either that some of them were considered of secondary importance or that there were limitations on the availability of state-supplied offerings.

Conclusion

Chroniclers described a movement of sacrificial victims and material offerings from the local communities in the provinces to the capital of the Inca Empire in Cuzco. The children were either sacrificed

in Cuzco or sent on state-sponsored pilgrimages to sacred places over the entire empire. There they would be sacrificed and buried, thus providing a vivid manifestation of state religion as well as being powerful offerings to the local deities. As Cobo noted in the 1600s, the Incas “took on many new rites and ceremonies. . . . They were prompted to make such changes because they realized that in this way they improved their control over the kingdom and kept it more subservient” (1990:5 [1653]).

The fact that the mountains were already sacred to the local people allowed the Incas to frame the ceremonies performed on the summits within a broader context of political strategies to legitimate their power. They even held a degree of power over the deities themselves by being in control of the offerings they would be given and by reevaluating the ranking of the deities based on their performance (cf. Guaman Poma 1980:235–236 [1613]; Sallnow 1987:40). In addition to the sacrifices and offerings, the long walks (the Incas had no wheeled vehicles or animals that could be ridden) toward the base of the sacred mountains and the climbs to their summits were part of state-controlled pilgrimages during which Inca ritual specialists and offerings were moving across the recently conquered landscape.

There has been an increased realization among archaeologists that “all societies in the past would have recognized, as do all societies in the present, some features of their landscapes . . . as sacred” (Ucko 1994:xix). Several studies, mainly in Europe, have demonstrated that archaeological sites need to be placed within the broader context of physical and sacred features of the landscape—particularly one dominated by mountains (cf. Ashmore and Knapp 1999; Bender 1993; Carmichael et al. 1994; Edmonds 1999; Hirsch and O’Hanlon 1995; Thomas 2001; Tilley 1994; Ucko and Layton 1999).¹⁴

Archaeologists have begun applying this approach in their investigations of pre-Hispanic sites located in the dramatic landscape of the Andes. Research undertaken in recent years has shown that the meanings of Inca and pre-Inca ceremonial sites can be better understood when they are examined using the perspective of sacred landscape (cf. Bauer 1998; Bauer and Stanish 2001; Bourget 1994; D’Altroy 2002;

Guchte 1990; Hyslop 1990; Kolata and Ponce 1992; MacLean 1986; Niles 1992; Reindel 1999; Reinhard 1985b, 1988, 1990, 1992b, 1995, 1998c, 1999b, 2002, 2005; Zapata 1998).

As we have seen, the Incas present an especially fruitful area of research using an approach focused on sacred landscape. They demonstrated that they had a precise knowledge of the topography by their ability to make models of the areas they conquered even at the extremes of their empire (Sarmiento 1999:120 [1572]). Landscape continues to be full of meaning for traditional peoples of the Andes. For example, Allen described how for Quechua people living near Cuzco, “Every aspect of the topography distinctive enough to be called a landmark in our terms has a specific and individual name and selfhood for the Runakuna [indigenous people]” (1988:41; cf. Martínez 1983).

The Incas worshipped celestial bodies, especially the Sun, from which they believed themselves descended. Astronomical alignments played roles in the orientations and locations of at least some Inca structures. Some mountaintop ceremonial sites may have been built as places from which to observe sacred mountains more distant when they were in alignment with important astronomical events. Although not definitive, evidence has been presented that suggests that the locations of at least some Inca sites, both on mountains and within view of them, could have been influenced for this reason.

More than a decade ago Sallnow wrote:

The Andean landscape is imbued with sacredness. Human destinies are in part determined by chthonian powers, localized in the spirits of mountains . . . the cult of these telluric deities meshes with the cult of the dead and has as its principal goal the channeling of the variegated powers inscribed in the landscape, preeminently the power of fertility, towards the satisfaction of human interests [1991:141–142].

The Incas demonstrated the importance of sacred landscape features through the establishment of a *capacocha* complex and state-sponsored pilgrimages. In the end this resulted in one of the ancient humans’ most awesome achievements—the construction

of ceremonial sites on the summits of some of the world’s highest mountains.

Acknowledgments

Johan Reinhard would like to thank the Expeditions Council and the Committee of Research and Exploration of the National Geographic Society for grants to undertake research on mountains in Peru, Chile, and Argentina. A fellowship of the National Endowment for the Humanities made possible much of Reinhard’s library research. Other organizations, which have supplied the principal financing for his Andean research since 1980, include Rolex Montres, the Organization of American States, the Social Science Research Council, the American Museum of Natural History, the Goldsbury Foundation, the G. L. Bruno Foundation, and the Kellner Foundation.

Constanza Ceruti would like to thank the National Council for Scientific and Technical Investigations of Argentina (CONICET) for grants for research since 1998 and the Kellner Foundation for making possible her participation in the Dumbarton Oaks symposium and for supporting library research.

It would be impossible to name all the individuals who in one way or another contributed to Reinhard’s and Ceruti’s research in the Andes over a period of many years. However, special recognition must be given to team members who participated in expeditions and without whom they could not have been successful: Rob Blatherwick, Jimmy Bouroncle, Walter Diaz, Louis Glauser, Orlando Jaen, Arcadio Mamani, Edgar Mamani, Ignacio Mamani, Antonio Mercado, Ruddy Perea, Eduardo Saljero, Jim Underwood, José Antonio Zamalla, Carlos Zárate, and Miguel Zárate.

The following people were especially helpful to the authors with regard to the topic of this article: Antonio Beorchia, Tom Besom, John Carlson, Keith McKenney, Craig Morris, John Rowe, Juan Schobinger, Charles Stanish, and Tom Zuidema. The article also benefited from the comments of Brian Bauer, John Carlson, and John Verano.

The following individuals provided financial support for Reinhard’s Andean research during the course of the past 25 years: Darlene Anderson, Dan Bennett, Larry and Cathy Bogolub, Mary Ann Bruni, Ben and Kim Chang, Kit and Angie Goldsbury, Will and

Nancy Harte, George and Bicky Kellner, Bruce and Susan Levin, Terry Meehan, Bob and Nancy Merritt, Joseph and Sharon Richardson, Tom and Jean Rutherford, Steve and Marcy Sands, Doug and Laura Tipple, Moses and Angela Tsang, and Rob and Susan White. Bell Canada, Eagle Creek, Iridium, Mares, Marmot, North Face, Patagonia, and Tilley Endurables kindly made donations of clothing and equipment.

Reinhard owes special thanks to José Antonio Chávez, who was his co-director on several expeditions referred to in this article and responsible for overseeing much of the archaeological work relating to the excavations of *capacocha* sites they investigated, including the description and conservation of the artifacts. Of course, none of the people acknowledged are responsible for any of the factual errors and interpretations presented in this article.

Notes

1. We have used English translations of the Spanish documents whenever possible, as these are more accessible to English readers. In the case of Quechua terms, we have maintained use of the spelling most commonly found in the literature.

2. The term *capacocha* consists of two Quechua words: *capac*, meaning “royal,” and *cocha*, meaning “lake” or “body of water” (González Holguín 1952:134, 559 [1608]). When combined with *capac*, the word *cocha* appears to refer to water as the source of fertility. Thus, the term *capacocha* would make for a powerful image of a human sacrifice as being a royal offering to ensure fertility.

Some of the best-known chroniclers used the term *capacocha*, including Betanzos (1996:46 [1551–1557]), Cieza (1959:151 [1553]), Hernández (1923:63 [1622]), Molina (1959:97 [1575]), Murúa (1946:265 [1590]), Noboa (in Duviols 1986:248), Santa Cruz (1968:292 [1571]), and Sarmiento (1999:122 [1572]). Of those chroniclers who lived in Peru, only Garcilaso (1966:87 [1609]) and Blas Valera (Anónimo 1968 [1590]), both mestizos, appear to have specifically denied the practice of human sacrifice having taken place among the Incas. Garcilaso borrowed heavily from Blas Valera, and neither is considered by scholars to be accurate in his portrayal of this aspect of Inca religion.

A few chroniclers, e.g., Avila (in Salomon and Urioste 1991:112) and Santa Cruz (1968:292 [1571]), used the term *capac hucha* (albeit Santa Cruz also used *capacocha*) to describe human sacrifice. Salomon and Urioste (1991:112n557) glossed *capac hucha* as “opulent prestation.” Zuidema (1982a:426–429) interpreted this, based on one of the meanings of *hucha*, “sin,” as the ritual procedure to prevent mis-

fortune that could affect the Inca ruler and his empire.

The term *hucha* also refers to “business” or “dispute” (González Holguín 1952:199 [1608]), and this fits well the use of the term in the historical sources (cf. MacCormack 2000:122n56). The basic concept of *capac hucha* appears to be that major disasters of any type, ranging from the illness of an emperor to a drought, were brought about by acts that provoked a deity (or deities). Thus, only a major offering could serve to reestablish stable conditions (be they environmental, political, or religious) in the empire (cf. MacCormack 2000:124; Zuidema 1982a:426–427). Some scholars have preferred to use the term *capac hucha* instead of *capacocha* (cf. Duviols 1976:40–41; Farrington 1998:55; McEwan and Van de Guchte 1992:359; Sallnow 1987:39; Schobinger 1999:17; Zuidema 1982a:428). However, given that *capacocha* was the term most widely utilized by the chroniclers, including some of the earliest and most knowledgeable, we have chosen to use it in this analysis.

The Incas practiced other types of human sacrifice, such as those involved in *necropampa* (the burying of victims together with a recently deceased emperor), the ritual killing of war captives and of adults for special offenses, and substitution deaths (in which a person would take the place of someone who was ill in order to effect a cure) (cf. Aranibar 1969–1970; Besom 2000). However, we are concerned only with *capacocha* sacrifices in this article.

3. Unlike the sacrifices of boys in *capacocha* offerings, the El Toro man was buried wearing only a loincloth, and beneath him were several items of normal clothing (tunics, sandals, etc.). This is another indication that he was not considered a normal *capacocha* offering. That he was not an Inca noble is confirmed by his not having perforated earlobes. In addition, he was estimated to be 20–22 years old—far older than the age noted in historical sources for *capacocha* offerings. For a synthesis of the information about Inca clothing, see Rowe (1997).

4. A tunic was reported to have been extracted previously from the same structure (Beorchia 1985:188–200), which led to the belief that a male had been sacrificed. However, later analysis revealed that the mummy lacked the Y chromosome and thus was a female (Castañeda 2000:35).

5. The vast majority of the traditional deities of the numerous ethnic groups noted at the time of the Spanish conquest (cf. Albornoz in Duviols 1984; Guaman Poma 1980 [1613]) were specific to particular features of the landscape. This is in accord with what we would logically expect, given the differing customs, languages, ecological surroundings, etc., of the groups.

6. Garcilaso (1967 1:120 [1609]) was apparently the only chronicler to note directly the importance of the equinoxes, but some scholars have doubted his reliability on this point. However, Zuidema (1988:154–156) has demonstrated that there is indirect evidence provided by other chroniclers of the importance of the equinoxes, especially with regard to the

September equinox. The importance of the cardinal directions of east and west has long been known in Inca studies (Rowe 1946:300). These have an obvious linkage with the rising and setting points of the Sun at the times of the equinoxes, something of no small significance to a people among whom Sun worship figured so prominently. East in particular has been, and still is, one of the most important directions for Andean peoples due to it being the direction of the rising Sun (cf. Tschopik 1951:253), which in turn is associated with fertility (cf. Riviere 1982:191).

7. Although this altitude may not seem high compared to those of other mountains discussed in this article, it is high relative to the surrounding terrain in the region.

8. For a description of the kinds of structures found at high-altitude sites, see Beorchia 1985; Ceruti 1999a; Raffino 1981:137–145; Reinhard 1985a). Heffernan (1991:278) describes sites on high places near Cuzco, some of which are similar to the high-altitude sites with *capacocha* offerings.

9. Bertonio (1984:2:123 [1612]) noted in 1612 that the Incas wore a tunic that reached to the knees and then changed to a reddish color. The blue tunic from Ampato has a reddish decorative band with *tucapus* (abstract signs) about two-thirds of the way down but then changes back to blue. Zuidema (1991:152) noted that only the Incas had the privilege of using *tucapu* designs on tunics.

Wrapped inside the Ampato tunic was a set of red and white cords tied to a center that looks similar to a *quipu* (knotted string used for recording information). However, it does not have knots and likely had a different function. The colored drawing published in the late 1500s by Murúa (Ossio 2001:47, Figure 2; cf. Guaman Poma 1980:98 [1613]) depicts a similar-looking object held above the head of one of the Inca queens and may have been used to keep away flies, since this was reported in 1534 as being done even for royal mummies (cf. Isbell 1997:40).

10. Interestingly, Cobo (1990:133 [1653]) noted that the four important Incas who were assigned to beat the drums at the Capac Raymi festival wore red tunics with red and white fringes.

11. According to Guaman Poma (1980:162 [1613]), the Incas prohibited burial inside the homes of people who died normal deaths, a custom followed by some of the peoples the Incas conquered. Many of the common Inca “burials” did not necessarily involve extensive covering of the bodies. Often the corpses were simply placed under overhangs and boulders or put in caves and niches.

12. For a description of typical statues found with *capacocha* burials, see Beorchia (1985); Ceruti (2003a); Dransart (1995); Michieli (1990); Millán de Palavecino (1966); Palma (1991); Rowe (1997); and Schobinger (2001). See Bárcena (2001a) and Valencia (1981) for a description of how the metal statues were constructed.

The majority of the known Inca statues do not have their contexts well documented (cf. Manzo and Raviña 1996:22–

29; see Sagárnaga 1997:88 with regard to Bolivia). However, Farrington (1998:57) noted that there are approximately 200 statues with known archaeological contexts in the region of Cuzco. Our own research adds to this number (e.g., we found a total of 47 statues on Misti and 22 anthropomorphic, clothed statues on Llullaillaco).

13. Other items offered include minerals and mineral powders, *ichu* grass, human hair, needles, wood boxes, and ropes (cf. Arriaga 1968:59 [1621]). Club heads have been found in *capacocha* burials (cf. Pardo 1941:110), and Reinhard and Chávez (2001) found one on the summit of Huarancante in southern Peru. We have found river stones and flat stones left as offerings, e.g., on the summit of Huarancante. Since some were buried inside artificial platforms, they may have an Inca origin, something also noted in the chronicles (cf. Estrada 1923:661, 663 [1613]).

We also found what appears to have been the deliberate breaking of pottery in one of the female burials on Ampato (Reinhard and Chávez 1996). The ritual breaking of pottery has been noted at other pre-Hispanic sites (cf. Menzel 1977:54), and it has been noted in ethnographic contexts (cf. Dillehay 1995:293; Girault 1988:55).

14. The study of Inca ritual sites and offerings on sacred mountains allows it to be placed within an ever-widening body of archaeological studies of sacred landscape. Since research about a cultural landscape always involves an element of interpretation, it is in accord with recent theoretical approaches, especially those that fall under the label “post-processual” or “interpretative” (cf. Hodder 1999:5; Johnson 1999:98–107; Shanks and Hodder 1998). One thing that characterizes “interpretative” archaeology when compared to other archaeological approaches is “much more importance being placed upon symbolism and other cognitive factors” (Dark 1995:10). Thus, a processual interpretation of landscape stresses the concept of it being useful as set of resources and, therefore, more as something that fulfills a function and serves as a commodity to be exploited (cf. Johnson 1999:103). The interpretative approach would take this into account (cf. Arnold 1991:224) but could also examine the ways that the landscape had been perceived and the kinds of interaction that had taken place between it and the culture in which it was embedded. As Isbell noted, “In Andean culture . . . power was created in sacred landscapes, their integration into myth-histories, and resonance of landscape and myth-history with the rituals and social organization of resident groups” (1997:97–98).

References

- Abal de Russo, Clara
2001a Cerro Aconcagua: Descripción y estudio del material textil. In *El santuario incaico del Cerro Aconcagua*, edited by Juan Schobinger, pp. 191–244. Universidad Nacional de Cuyo, Mendoza.

- 2001b Informe acerca del relevamiento y estudio de los textiles del Volcán Lullllaillaco (Provincia de Salta, Argentina). Manuscript on file, Universidad Nacional de Cuyo, Mendoza.
- Acosta, José de
1962 [1590] *Historia natural y moral de las Indias*. 2nd ed. Fondo de Cultura Económica, Mexico D.F.
- Allen, Catherine
1988 *The Hold Life Has: Coca and Cultural Identity in an Andean Community*. Smithsonian Institution Press, Washington, D.C.
- Anónimo
1968 [1590] Relación de las costumbres antiguas de los naturales del Pirú. In *Crónicas peruanas de interés indígena*, edited by Francisco Esteve, pp. 151–189. Biblioteca de autores españoles, Vol. 209. Ediciones Atlas, Madrid.
- Aranguren, Angélica
1975 Las creencias y ritos mágicos religiosos de los pastores puneños. *Allpanchis* 8:103–132.
- Aranibar, Carlos
1969–1970 Notas sobre la necropampa entre los Incas. *Revista del Museo Nacional* 36:108–142.
- Arnold, Philip
1991 Eating Landscape: Human Sacrifice and Sustenance in Aztec Mexico. In *Aztec Ceremonial Landscapes*, edited by David Carrasco. University Press of Colorado, Niwot. **{Au: Please add page numbers. Reinhard will provide, please leave space.}**
- Arriaga, José de
1968 [1621] *The Extirpation of Idolatry in Peru*. University of Kentucky Press, Lexington.
- Ashmore, Wendy, and Bernard Knapp (editors)
1999 *Archaeologies of Landscape*. Blackwell, Oxford.
- Astete, Fernando
1990 Informe de los trabajos de excavación arqueológica del proyecto de investigación “Viscacha” Machu Picchu. Manuscript on file, Instituto Nacional de Cultura (National Institute of Culture), Cuzco.
- Astete, Fernando, and Johan Reinhard
2003 Investigaciones arqueológicas Paukarchancha-Pachatusan (San Salvador, Calca). Manuscript on file, Instituto Nacional de Cultura (National Institute of Culture), Cuzco.
- Aveni, Anthony
1981 Horizon Astronomy in Incaic Cuzco. In *Archaeoastronomy in the Americas*, edited by Ray Williamson, pp. 305–318. Ballena Press, Los Altos, California.
- Aveni, Anthony (editor)
1982 *Archaeoastronomy in the New World*. Cambridge University Press, London.
- Aveni, Anthony, and Gary Urton (editors)
1982 *Ethnoastronomy and Archaeoastronomy in the American Tropics*. Annals of the New York Academy of Sciences 385, New York.
- Bárcena, Roberto
1989 Pigmentos en el ritual funerario de la momia del Cerro Aconcagua. *Xama* 2:61–116.
- 2001a Los objetos metálicos de la ofrenda ritual del Cerro Aconcagua. In *El santuario incaico del Cerro Aconcagua*, edited by Juan Schobinger, pp. 281–301. Universidad Nacional de Cuyo, Mendoza.
- 2001b El collar de la momia del Cerro Aconcagua. In *El santuario incaico del Cerro Aconcagua*, edited by Juan Schobinger, pp. 302–331. Universidad Nacional de Cuyo, Mendoza.
- Barón, Ana María, and Johan Reinhard
1981 Expedición arqueológica al Volcán Licancabur. *Revista de la Corporación para el Desarrollo de la Ciencia* 1(4):31–38.
- Bastien, Joseph
1978 *Mountain of the Condor: Metaphor and Ritual in an Andean Ayllu*. West Publishing Company, New York.
- Bauer, Brian
1998 *The Sacred Landscape of the Inca: The Cusco Ceque System*. University of Texas Press, Austin.
- Bauer, Brian, and David Dearborn
1995 *Astronomy and Empire in the Ancient Andes: The Cultural Origins of Inca Sky Watching*. University of Texas Press, Austin.
- Bauer, Brian, and Charles Stanish
2001 *Ritual and Pilgrimage in the Ancient Andes: The Islands of the Sun and the Moon*. University of Texas Press, Austin.
- Bender, Barbara (editor)
1993 *Landscape: Politics and Perspectives*. Berg, Oxford.
- Beorchia, Antonio
1975a El Nevado Quehuar. *Revista del Centro de Investigaciones Arqueológicas de Alta Montaña* 2:29–35.
- 1975b El cementerio indígena del Volcán Lullllaillaco. *Revista del Centro de Investigaciones Arqueológicas de Alta Montaña* 2:36–42.
- 2001 Astronomía indiana. *Revista del Centro de Investigaciones Arqueológicas de Alta Montaña* 6:195–212.
- Beorchia, Antonio (compiler)
1985 El enigma de los santuarios indígenas de alta montaña. *Revista del Centro de Investigaciones Arqueológicas de Alta Montaña*, Vol. 5. San Juan, Argentina.
- Berg, Hans van den
1985 *Diccionario religioso Aymara*. CETA, Iquitos.
- Bertonio, Ludovico
1984 [1612] *Vocabulario de la lengua Aymara*. CERES, Cochabamba.
- Besom, Thomas
2000 Mummies, Mountains, and Immolations: Strategies

- for Unifying the Inka Empire's Southern Quarters. Unpublished Ph.D. dissertation, Department of Anthropology, Binghamton University, Binghamton, New York.
- Betanzos, Juan de
1996 [1551–1557] *Narratives of the Incas*. University of Texas Press, Austin.
- Bourget, Steve
1994 Los sacerdotes a la sombra del Cerro Blanco y del Arco Bicéfalo. *Revista del Museo de Arqueología, Antropología e Historia* 5:81–123.
- Bravo, Orlando
1993 El enigma de la ciudadita: Arqueoastronomía de los Nevados del Aconquija, Provincia de Tucuman. *Ciencias Exactas y Tecnología* 3:5–14.
- Bray, Tamara
2003 Inca Pottery as Culinary Equipment: Food, Feasting, and Gender in Imperial State Design. *Latin American Antiquity* 14(1):3–28.
- Cabeza, Angel
1986 El santuario del altura Inca Cerro El Plomo. Unpublished bachelor's thesis, Universidad de Chile, Santiago.
- Carmichael, David, Jane Hubert, Brian Reeves, and Audhild Schanche (editors)
1994 *Sacred Sites, Sacred Places*. Routledge, London.
- Castañeda, Juana María
2000 Molecular Genetic Analysis of Ancient Human Remains. Unpublished master's thesis, George Washington University, Washington, D.C.
- Ceruti, María Constanza
1997a *Arqueología de alta montaña*. Editorial Milor, Salta.
1997b *La sagrada cumbre del Chañi: Los Incas y el culto en las alturas vistos desde la arqueología*. Serie Monografías. University of Buenos Aires.
1997c Sitios rituales de altura y estrategias sociales de dominación: Caso de estudio en el Nevado de Chañi (5.896 m., límite provincial Jujuy-Salta, Argentina). *Revista de Estudios Sociales del N.O.A.* 1:127–154.
1998 Prospecciones en sitios de alta montaña en el noroeste andino argentino: Informe preliminar. *Tawantinsuyu* 5:37–43.
1999a *Cumbres sagradas del noroeste argentino. Avances en arqueología de alta montaña y etnoarqueología de santuarios andinos*. EUDEBA, Salta.
1999b El complejo ceremonial de altura del Nevado de Quehwar (6.130 m.s.n.m.; Depto. Los Andes; Pcia. de Salta): Un ejemplo de la dinámica incaica de interacción centro-periferia en el plano cültico de la capacocha. *Actas del XII Congreso Nacional de Arqueología Argentina* 1:186–193.
2001 La capacocha del Nevado de Chañi: Una aproximación preliminar desde la arqueología. *Chungara* 33(2):279–282.
- 2003a *Llullaillaco: Sacrificios y ofrendas en un santuario inca de alta montaña*. Publicación del Instituto de Investigaciones de Alta Montaña, Ediciones Universidad Católica de Salta, Salta.
- 2003b Mercedario y Alma Negra: Arqueología de alta montaña en el Departamento Calingasta (Provincia de San Juan). *Anales de Arqueología y Etnología* 54/55:47–80.
- 2004a Human Bodies as Objects of Dedication at Inca Mountain Shrines (Northwestern Argentina). *World Archaeology* 36(1):103–122.
- 2004b Revisión de los resultados de las prospecciones arqueológicas de alta montaña en el Cerro Pabellón, el Nevado de Chusca y el Cerro Bayo. In *El santuario incaico del Nevado de Chuscha*, edited by Juan Schobinger, pp. 57–69. Fundación CEPPA, Buenos Aires.
- 2005a [2002–2005] Actores, ritos y destinatarios de las ceremonias incaicas de Capacocha: Una visión desde la arqueología y la etnohistoria. *Xama* 15–18:287–299.
- 2005b [2003] Elegidos de los dioses: Identidad y status en las víctimas sacrificiales de volcán Llullaillaco. *Boletín de Arqueología PUCP (Pontificia Universidad Católica de Perú)* 7:263–275.
- Checura, Jorge
1977 Funebria incaica en el Cerro Esmeralda (Iquique, I Region). *Estudios Atacameños* 5:125–141.
1985 *Museo Regional de Iquique: Hallazgo arqueológico en el Cerro Esmeralda 1976*. Corporación Municipal de Desarrollo Social, Iquique.
- Cieza de León, Pedro
1959 [1553] *The Incas of Pedro Cieza de León*. Edited by Victor Wolfgang Von Hagen. University of Oklahoma Press, Norman.
1977 [1553] *El Señorío de los Incas*. 2nd ed. Editorial Universo, Lima.
- Cobo, Bernabé
1983 [1653] *History of the Inca Empire*. Translated and edited by Ronald Hamilton. University of Texas Press, Austin.
1990 [1653] *Inca Religion and Customs*. Translated and edited by Ronald Hamilton. University of Texas Press, Austin.
- Crews, John
2000 Phylogenetic and Molecular Analysis of 401 Human Mitochondrial DNA Control Region Sequences. Unpublished master's thesis, George Washington University, Washington, D.C.
- D'Altroy, Terence
2002 *The Incas*. Blackwell, Oxford.
- D'Altroy, Terence, Ana María Lorandi, Verónica Williams, Milena Calderari, Christine Hastorf, Elizabeth

- DeMarrais, and Melissa Hagstrum
2000 Inka Rule in the Northern Calchaquí Valley, Argentina. *Journal of Field Archaeology* 27:1–26.
- Dark, Ken
1995 *Theoretical Archaeology*. Cornell University Press, Ithaca, New York.
- Dean, Carolyn
1999 *Inca Bodies and the Body of Christ*. Duke University Press, Durham, North Carolina.
- Dearborn, David, and Katharina Schreiber
1986 Here Comes the Sun: The Cuzco–Machu Picchu Connection. *Archaeoastronomy* 9(1–4):15–37.
- Dearborn, David, Katharina Schreiber, and Raymond White
1987 Intimacy, a December Solstice Observatory. *American Antiquity* 52:346–352.
- Dillehay, Tom
1995 Mounds of Social Death: Araucanian Funerary Rites and Political Succession. In *Tombs for the Living: Andean Mortuary Practices*, edited by Tom Dillehay, pp. 281–313. Dumbarton Oaks, Washington, D.C.
- Donnan, Christopher
1995 Moche Funerary Practice. In *Tombs for the Living: Andean Mortuary Practices*, edited by Tom Dillehay, pp. 111–159. Dumbarton Oaks, Washington, D.C.
- Doyle, Mary
1988 The Ancestor Cult and Burial Ritual in Seventeenth and Eighteenth Century Central Peru. Unpublished Ph.D. dissertation, University of California, Berkeley.
- Dransart, Penny
1995 *Elemental Meanings: Symbolic Expression in Inka Miniature Figurines*. Research Papers 40. Institute of Latin American Studies, University of London.
- Duviols, Pierre
1976 La capacocha. Mecanismo y función del sacrificio humano, su proyección geométrica, su papel en la política integracionista y en la economía redistributiva del Tawantinsuyu. *Allpanchis* 9:11–57.
- 1984 Albornoz y el espacio ritual andino prehispanico: Instrucción para descubrir todas las guacos del Piru y sus camayos y haciendas. *Revista Andina* 2(1):169–222.
- 1986 *Cultura andina y represión*. Centro de Estudios Rurales Andinos, Cuzco.
- Edmonds, Mark
1999 *Ancient Geographies of the Neolithic: Landscape, Monuments and Memory*. Routledge, London.
- Estrada Beltrán, Francisco de
1923 [1613] Idolatrías de los Indios Wankas. *Inca* 1(3):651–667.
- Farrington, Ian
1998 The Concept of Cusco. *Tawantinsuyu* 5:53–59.
- Fernández, Alicia
1997 Momias y toponimia en las Salinas Grandes (Norroeste de la República de Argentina). *Revista de Estudios Regionales* 18:157–171.
- Fernández, Jorge
1975 Arqueología del Nevado Chañi. *Revista del CI-ADAM* 2:8–13.
- Garcilaso de la Vega, Inca
1966 [1609] *The Royal Commentaries of the Inca and General History of Peru*. Pt. 1. University of Texas Press, Austin.
- 1967 [1609] *Comentarios reales de los Incas*. Editorial Universo, Lima.
- Girault, Luis
1988 *Rituales en las regiones andinas de Bolivia y Peru*. Ediciones Ceres, La Paz.
- González Holguín, Diego
1952 [1608] *Vocabulario de la lengua general de todo el Peru llamada lengua Quichua del Inca*. Universidad Nacional de San Marcos, Lima.
- Guaman Poma de Ayala, Felipe
1980 [1613] *El primer nueva coronica y buen gobierno*. Siglo Veintiuno Editores, Mexico D.F.
- Guchte, Maarten van de
1990 “Carving the World”: Inca Monumental Sculpture and Landscape. Unpublished Ph.D. dissertation, Department of Anthropology, University of Illinois, Urbana-Champaign.
- Gutierrez de Santa Clara, Pedro
1963 [ca. 1603] *Quinquenarios o historia de las guerras civiles del Perú*. Biblioteca de Autores Españoles, Vol. 166. Ediciones Atlas, Madrid.
- Heffernan, Ken
1991 Inca Sites in High Places near Cuzco. *Comechingonia* 2:269–291.
- Hernández Principe, Rodrigo
1923 [1622] Mitología andina. *Inca* 1(1):25–78.
- Herrera Tordesillas, Antonio de
1728 [ca. 1615] *Historia general de los hechos de los castellanos en las isla, y tierra-firme de el Mar Oceano*. Vol. 3. Francisco Martínez Abad, Madrid.
- Hirsch, Eric, and Michael O’Hanlon
1995 *The Anthropology of Landscape: Perspectives on Place and Space*. Clarendon Press, Oxford.
- Hodder, Ian
1999 *The Archaeological Process*. Blackwell, Oxford.
- Houston, Charles
1987 *Going Higher: Oxygen, Man and Mountains*. The Mountaineers, Seattle, Washington.
- Hyslop, John
1985 *Inkawasi, the New Cuzco*. British Archaeological Reports, Oxford.
- 1990 *Inka Settlement Planning*. University of Texas Press, Austin.

- Isbell, William
1997 *Mummies and Mortuary Monuments: A Postprocessual Prehistory of Central Andean Social Organization*. University of Texas Press, Austin.
- Johnson, Matthew
1999 *Archaeological Theory*. Blackwell, Oxford.
- Kolata, Alan, and Carlos Ponce
1992 Tiwanaku: The City at the Center. In *The Ancient Americas: Art from Sacred Landscapes*, edited by Richard Townsend, pp. 317–333. The Art Institute of Chicago, Chicago.
- Levillier, Roberto
1940 *Don Francisco de Toledo, supremo organizador del Perú. Su vida, su obra (1515–1582). Tomo II, Libro I: Sus informaciones sobre los Incas (1570–1572)*. Espasa Calpe, Buenos Aires.
- Linares, Eloy
1966 Restos arqueológicos en el Nevado de Pichu Pichu (Arequipa, Peru). *Anales de Arqueología y Etnología* 21:7–47.
- MacCormack, Sabine
2000 Processions for the Inca: Andean and Christian Ideas of Human Sacrifice, Communion and Embodiment in Early Colonial Peru. *Archive für Religionsgeschichte* 2(1):110–140.
- McEwan, Colin, and Maarten Van de Guchte
1992 Ancestral Time and Sacred Space in Inca State Ritual. In *The Ancient Americas: Art from Sacred Landscapes*, edited by Richard Townsend, pp. 359–371. The Art Institute of Chicago, Chicago.
- McKenney, Keith
1999 Summary of Initial DNA Analysis of the Mount Llullaillaco Mummies. Manuscript on file, George Mason University, Manassas, Virginia.
- MacLean, Margaret
1986 Sacred Land, Sacred Water: Inca Landscape Planning in the Cuzco Area. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Berkeley.
- Manzo, Alberto, and María Raviña
1996 Agustukuy: Rito de multiplicación de los rebaños. Ceremonias rurales y su articulación con el registro arqueológico. *Publicaciones Arqueología* 48:1–53.
- Martínez, Gabriel
1983 Topónimos de Chuani. *Antropológica* 1(1):51–84.
- Meddens, Frank
1997 Function and Meaning of the Usnu in Late Horizon Peru. *Tawantinsuyu* 3:5–14.
- Menzel, Dorothy
1977 *The Archaeology of Ancient Peru and the Work of Max Uhle*. R. H. Lowie Museum of Anthropology, Berkeley.
- Michieli, Catalina Teresa
1990 *Textilería incaica en la provincia de San Juan. Los ajuares de los Cerros Mercedario, Toro y Tambillas*. Instituto de Investigaciones Arqueológicas y Museo, Universidad Nacional de San Juan, San Juan.
- Millán de Palavecino, María Delia
1966 Descripción de material arqueológico proveniente de yacimientos de alta montaña en el área de la Puna. *Anales de Arqueología y Etnología* 21:81–99.
- Mims, Cedric
1999 *When We Die: The Science, Culture, and Rituals of Death*. St. Martin's Press, New York.
- Molina, Cristóbal de
1959 [1575] *Ritos y fábulas de los Incas*. Editorial Futuro, Buenos Aires.
- Mostny, Grete (editor)
1957 *La Momia del Cerro El Plomo*. Special volume: *Boletín del Museo Nacional de Historia Natural* 27(1), Santiago.
- Moyano, Ricardo
2005 Arqueoastronomía en el Valle de Copiapó: Una aproximación desde el paisaje cultural. Unpublished bachelor's thesis, Universidad de Chile, Santiago.
- Müller, Rolf
1982 *Sonne, Mond und Sterne über den Reich der Inka*. Springer Verlag, Berlin.
- Murúa, Martín de
1946 [1590] *Historia del origen y genealogía real de los reyes incas del Perú*. Vol. 2. Biblioteca Missionaria Hispanica, Madrid.
- Niles, Susan
1992 Inca Architecture and the Sacred Landscape. In *The Ancient Americas: Art from Sacred Landscapes*, edited by Richard Townsend, pp. 347–357. The Art Institute of Chicago, Chicago.
- Ossio, Juan
2001 Guaman Poma y Murúa: Ante la tradición oral andina. *Íconos* 4:44–57.
- Palma, Julie
1991 Documentación de dos miniaturas antropomorfas encontradas en el Volcan Copiapo. *Revista Contribución Arqueológica* 3:57–88.
- Pardo, Luis
1941 Un hallazgo en la zona arqueológica del Ausangati (Cuzco). *Revista del Museo Nacional* 10(1):110–112.
- Polo de Ondegardo, Juan
1916 [1571] *Informaciones acerca de la religión y gobierno de los Incas*. Sanmarti y Ca., Lima.
- Previgliano, Carlos, Constanza Ceruti, Johan Reinhard, Facundo Arias, and Josefina Gonzalez
2003 Radiologic Evaluation of the Llullaillaco Mummies. *American Journal of Roentgenology* 181:1473–1479.
- Quevedo, Silvia, and Eliana Duran
1992 Ofrendas a los dioses en las montañas: Santuarios de

- altura en la cultura Inka. *Boletín del Museo Nacional de Historia Natural de Chile* 43:193–206.
- Raffino, Rodolfo
1981 *Los Incas del Kollasuyu*. Editorial Ramos Americana, La Plata.
- 1997 El ushnu de El Shincal de Quimivil. *Tawantinsuyu* 3:22–39.
- Ramos Gavilan, Alonso
1976 [1621] *Historia de Nuestra Señora de Copacabana*. Empresa Editorial “Universo,” La Paz.
- Reindel, Markus
1999 Montañas en el desierto: La arquitectura monumental de la costa norte del Perú como reflejo de cambios sociales de las civilizaciones prehispánicas. *Schweizerische Amerikanisten-Gesellschaft Bulletin* 63:137–148.
- Reinhard, Johan
1985a Sacred Mountains: An Ethno-archaeological Study of High Andean Ruins. *Mountain Research and Development* 5(4):299–317.
- 1985b Chavin and Tiahuanaco: A New Look at Two Andean Ceremonial Centers. *National Geographic Research* 1(3):395–422.
- 1988 *The Nazca Lines: A New Perspective on their Origin and Meaning*. 4th rev. ed. Los Pinos, Lima.
- 1990 Tiahuanaco, Sacred Center of the Andes. In *An Insider's Guide to Bolivia*, edited by Peter McFarren et al., pp. 151–181. Fundación Cultural Quipus, La Paz.
- 1992a An Archaeological Investigation of Inca Ceremonial Platforms on the Volcano Copiapo, Central Chile. In *Pre-Colombian Art and Archaeology*, edited by Nicholas Saunders, pp. 45–172. Oxbow Books, Oxford.
- 1992b Underwater Archaeological Research in Lake Titicaca, Bolivia. In *Contributions to New World Archaeology*, edited by Nicholas Saunders, pp. 117–143. Oxbow Books, Oxford.
- 1992c Sacred Peaks of the Andes. *National Geographic* 181(3):84–111.
- 1993 Llullaillaco: An Investigation of the World's Highest Archaeological Site. *Latin American Indian Literatures Journal* 9(1):31–54.
- 1995 House of the Sun: The Inca Temple of Vilcanota. *Latin American Antiquity* 6(4):340–349.
- 1996 Peru's Ice Maidens. *National Geographic* 189(6):62–81.
- 1997 Sharp Eyes of Science Probe the Mummies of Peru. *National Geographic Magazine* 191(1):36–43.
- 1998a *Discovering the Inca Ice Maiden*. National Geographic Society, Washington, D.C.
- 1998b New Inca Mummies. *National Geographic* 194(1):128–135.
- 1998c The Temple of Blindness: An Investigation of the Inca Shrine of Ancocagua. *Andean Past* 5:89–108.
- 1999a Frozen in Time. *National Geographic* 196(5):36–55.
- 1999b Coropuna: Lost Mountain Temple of the Incas. *South American Explorers Journal* 58:5, 26–30.
- 2002 *Machu Picchu: The Sacred Center*. 2nd ed. Instituto Machu Picchu, Lima.
- 2005 *The Ice Maiden: Inca Mummies, Mountain Gods, and Sacred Sites in the Andes*. National Geographic Society, Washington, D.C.
- Reinhard, Johan, and Constanza Ceruti
2000 *Investigaciones arqueológicas en el Volcán Llullaillaco*. Ediciones Universidad Católica de Salta, Salta.
- 2006 Rescue Archaeology of the Inca Mummy on Mount Quehuar, Argentina. In *Proceedings of the Fifth World Mummy Congress*, edited by Emma Massa, University of Torino, Torino, Italy, in press.
- n.d. *The Inca Ceremonial Center on Mount Llullaillaco: A Study of the World's Highest Archaeological Site*. The Cotsen Institute, UCLA, Los Angeles, in press.
- Reinhard, Johan, and José Antonio Chávez
1996 Proyecto de investigación arqueológica “Santuarios de Altura del Sur Andino”: Informe Temporada 1995. Manuscript on file, Instituto Nacional de Cultura, Lima.
- 1998 Proyecto de investigación arqueológica “Santuarios de Altura del Sur Andino”: Informe Temporada 1996. Manuscript on file, Instituto Nacional de Cultura, Lima.
- 2001 Proyecto de investigación arqueológica “Santuarios de Altura del Sur Andino”: Informe Temporada 1997–1998. Manuscript on file, Instituto Nacional de Cultura, Lima.
- Rivera, Mario
1995 The Preceramic Chinchorro Mummy Complex of Northern Chile: Context, Style, and Purpose. In *Tombs for the Living: Andean Mortuary Practices*, edited by Tom Dillehay, pp. 43–77. *Dumbarton Oaks*, Washington, D.C.
- Riviere, Gilles
1982 Sabaya: Structures socio-economiques et representations symboliques dans le Carangas-Bolivie. Unpublished Ph.D. dissertation, Ecole des Hautes Etudes, Paris.
- Rostworowski, María
1988 *Conflicts over Coca Fields in 16th Century Peru*. *Memoirs of the Museum of Anthropology*, No. 21. University of Michigan, Ann Arbor.
- Rowe, Ann
1997 Inca Weaving and Costume. *The Textile Museum Journal* 1995–1996 34–35:5–54.
- Rowe, John Howland
1946 Inca Culture at the Time of the Spanish Conquest.

- In *Handbook of South American Indians* 2:183–330, Smithsonian Institution, Washington, D.C.
- 1979 Standardization in Inca Tapestry Tunics. *The Junius Bird Pre-Columbian Textile Conference*, edited by Anne Rowe and Elizabeth Benson, pp. 239–264. The Textile Museum, Washington, D.C.
- 1982 La cronología de los vasos de Madera Inca. *Arqueología del Cuzco*. **{Please leave space to add page numbers, publisher, and place of publication.}**
- 1995 Behaviour and Belief in Ancient Peruvian Mortuary Practice. In *Tombs for the Living: Andean Mortuary Practices*, edited by Tom Dillehay, pp. 27–41. Dumbarton Oaks, Washington, D.C.
- Sagárnaga, Jédu
1997 Figuras inka en el contexto altiplánico. *Tawantinsuyu* 3:86–94.
- Sallnow, Michael
1987 *Pilgrims of the Andes: Regional Cults in Cusco*. Smithsonian Institution Press, Washington, D.C.
1991 Pilgrimage and Culture Fracture in the Andes. In *Contesting the Sacred: The Anthropology of Christian Pilgrimage*, edited by John Eade and Michael Sallnow, pp. 137–153. Routledge, London.
- Salomon, Frank
1995 “The Beautiful Grandparents”: Andean Ancestor Shrines and Mortuary Ritual as Seen Through Colonial Records. In *Tombs for the Living: Andean Mortuary Practices*, edited by Tom Dillehay, pp. 315–353. Dumbarton Oaks, Washington, D.C.
- Salomon, Frank, and Jorge Urioste
1991 *The Huarochiri Manuscript*. University of Texas Press, Austin.
- San Pedro, Juan de
1992 [1560] *Relación de la religión y ritos del Perú hecha por los padres agustinos*. Pontificia Universidad Católica del Perú, Lima.
- Santa Cruz Pachacuti, Juan de
1968 [1571] *Relación de antigüedades deste reyno del Perú*. Biblioteca de Autores Españoles. Ediciones Atlas, Madrid.
- Sarmiento de Gamboa, Pedro
1943 [1572] *Historia de los Incas*. Emece Editores, Buenos Aires.
1999 [1572] *History of the Incas*. Dover Publications, Mineola, New York.
- Schobinger, Juan
1995 Informe sobre la relocalización de un hallazgo de alta montaña del noroeste Argentino. *Comechingonia* 8:47–65.
1999 Los santuarios de altura incaicos y el Aconcagua: Aspectos generales e interpretativos. *Relaciones de la Sociedad Argentina de Antropología* 24:7–27.
- Schobinger, Juan (editor)
1966 *La “momia” del Cerro El Toro: Investigaciones arqueológicas en la cordillera de la Provincia de San Juan*. Universidad Nacional de Cuyo, Mendoza.
- 2001 *El santuario incaico del Cerro Aconcagua*. Universidad Nacional de Cuyo, Mendoza.
- 2004 *El santuario incaico del Nevado de Chuscha*. Fundación CEPPA, Buenos Aires.
- Shanks, Michael, and Ian Hodder
1998 Processual, Postprocessual and Interpretative Archaeologies. In *Reader in Archaeological Theory: Post-processual and Cognitive Approaches*, edited by David Whitley, pp. 69–95. Routledge, London.
- Stothert, Karen
1979 Unwrapping an Inca Mummy Bundle. *Archaeology* 32(4):8–17.
- Szeminski, Jan, and Juan Ansion
1982 Dioses y hombres de Huamanga. *Allpanchis* 16:187–233.
- Thomas, Julian
2001 Archaeologies of Place and Landscape. In *Archaeological Theory Today*, edited by Ian Hodder, pp. 165–186. Polity Press, Cambridge.
- Tilley, Christopher
1994 *A Phenomenology of Landscape*. Berg, Oxford.
- Tschopik, Harry
1951 *The Aymara of Chucuito, Peru: I. Magic*. Anthropological Papers, Vol. 44, Pt. 2. American Museum of Natural History, New York.
- Ucko, Peter
1994 Foreword. In *Sacred Sites, Sacred Places*, edited by David Carmichael, Jane Hubert, Brian Reeves, and Audhild Schanche, pp. xiii–xxiii. Routledge, London.
- Ucko, Peter, and Robert Layton (editors)
1999 *The Archaeology and Anthropology of Landscape*. Routledge, London.
- Ulloa Mogollón, Juan de
1965 [1586] Relación de la provincia de los Collaguas. In *Relaciones geográficas de Indias-Perú*, edited by Marcos Jimenez de la Espada, Vol. 1, pp. 326–333. Ediciones Atlas, Madrid.
- Urton, Gary
1981 *At the Crossroads of the Earth and the Sky: An Andean Cosmology*. University of Texas Press, Austin.
- Valencia, Abraham
1981 *Metalurgia inka: Los idolos antropomorphos y su simbología*. Editorial La Amistad, Cuzco.
- Verano, John
2001 The Physical Evidence of Human Sacrifice in Ancient Peru. In *Ritual Sacrifice in Ancient Peru*, edited by Elizabeth Benson and Anita Cook, pp. 165–184. University of Texas Press, Austin.
- Zapata, Julinho
1998 Los cerros sagrados: Panorama del periodo forma-

- tivo en la cuenca del Vilcanota, Cuzco. *Boletín de Arqueología PUCP* 2:307–336.
- Zuidema, Tom
- 1982a Bureaucracy and Systematic Knowledge in Andean Civilization. In *The Inca and Aztec States, 1400–1800: Anthropology and History*, edited by George Collier, Renato Rosaldo, and John Wirth, pp. 419–458. Academic Press, New York.
- 1982b Catachillay—the Role of the Pleiades and of the Southern Cross and Alpha and Beta Centauri in the Calendar of the Incas. In *Ethnoastronomy and Archaeoastronomy in the American Tropics*, edited by Anthony Aveni and Gary Urton, pp. 203–229.
- Annals of the New York Academy of Sciences 385, New York.
- 1988 The Pillar of Cuzco: Which Two Dates of Sunset Did They Define? In *New Directions in American Archaeoastronomy*, edited by Anthony Aveni, pp. 143–169. BAR International Series, Oxford.
- 1991 Guaman Poma and the Art of Empire: Toward an Iconography of Inca Royal Dress. In *Transatlantic Encounters*, edited by Kenneth Andrien and Rolena Adorno, pp. 151–202. University of California Press, Berkeley.
- 1998 *Inca Civilization in Cuzco*. University of Texas Press, Austin.