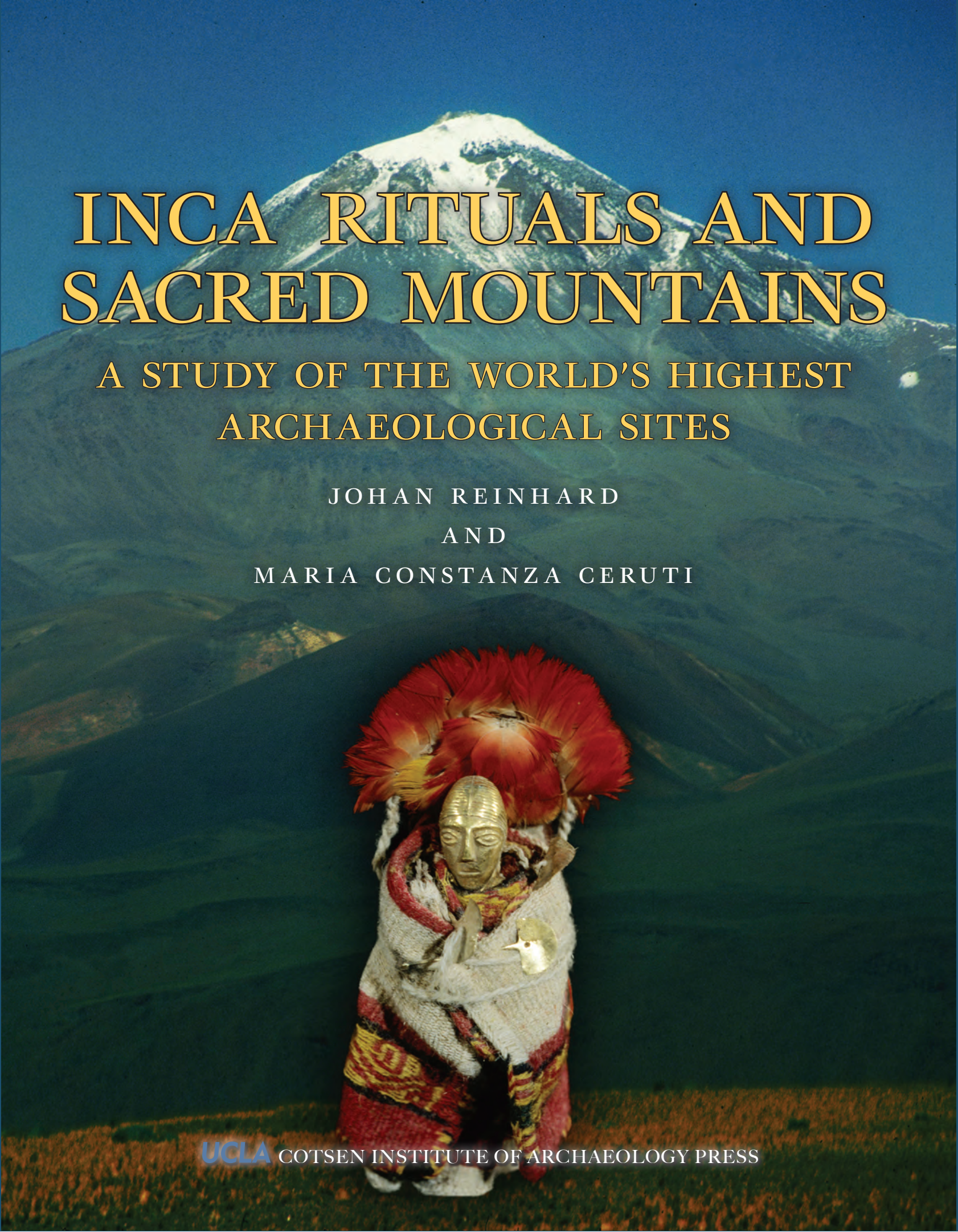

INCA RITUALS AND SACRED MOUNTAINS

A STUDY OF THE WORLD'S HIGHEST ARCHAEOLOGICAL SITES

JOHAN REINHARD
AND
MARIA CONSTANZA CERUTI

UCLA COTSEN INSTITUTE OF ARCHAEOLOGY PRESS

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Johan Reinhard and Maria Constanza Ceruti

Cotsen Institute of Archaeology
University of California, Los Angeles

THE COTSEN INSTITUTE OF ARCHAEOLOGY PRESS is the publishing unit of the Cotsen Institute of Archaeology at UCLA. The Cotsen Institute is a premier research organization dedicated to the creation, dissemination, and conservation of archaeological knowledge and heritage. It is home to both the Interdepartmental Archaeology Graduate Program and the UCLA/Getty Master's Program in the Conservation of Archaeological and Ethnographic Materials. The Cotsen Institute provides a forum for innovative faculty research, graduate education, and public programs at UCLA in an effort to positively impact the academic, local and global communities. Established in 1973, the Cotsen Institute is at the forefront of archaeological research, education, conservation and publication and is an active contributor to interdisciplinary research at UCLA.

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We dedicate this book to the pioneers of high-altitude archaeology,
Antonio Beorchia and Juan Schobinger
and to the memory of Craig Morris—
our friend and a scholar whose work has done so much
to advance our knowledge of Inca culture.

The production of this volume
was made possible through
the generous support of
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Contents

Preface

The Incas carried out some of the most dramatic ceremonies known to us from ancient times. Groups of people walked hundreds of miles across arid and mountainous terrain to perform them on mountains more than 20,000 ft (6,096 m) high. The most important offerings made during these pilgrimages involved human sacrifices (*capacochas*). Although Spanish chroniclers wrote about these offerings and the state-sponsored processions of which they were a part, their accounts were based on secondhand sources—and the only direct evidence we have of the *capacocha* 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 book, we describe the results of research undertaken on Mount Llullaillaco [6,739 m (22,109 ft)], which has the world's highest archaeological site—including three remarkably preserved mummies. The types of ruins and artifact assemblages recovered are described and analyzed, and the results of interdisciplinary studies on the mummies are discussed. By comparing the archaeological evidence with the chroniclers' accounts and with findings from other mountaintop sites, common patterns can be discerned. At the same time, previously little-known elements contribute to our understanding of key aspects of Inca religion. This book also ponders the importance of archaeological sites being placed within the broader context of physical and sacred features of the natural landscape.

Chapter 1 presents the historical background of high-altitude archaeology and summarizes the previous findings of Inca mummies on mountaintop sites in the Andes. Chapter 2 includes a description of the Inca sites on the slopes of Mount Llullaillaco and an interpretation of the logistics involved in the pre-Hispanic ascent of this major peak. The religious constructions on the heights of the volcano and the assemblages of mummies and offerings discovered at the summit platform are described in Chapter 3.

Chapters 4 and 5 summarize the reconstruction of ritual and logistical aspects of the Inca pilgrimage and the participants in the summit rituals. We have cross-checked the archaeological evidence with the chronicles in order to reconstruct aspects of the Inca ceremony, such as the procession from Cuzco to the mountain, the ceremonial use of the space, and the social actors involved in the ritual.

The ideological reasons for human sacrifice, as well as the techniques and steps involved in the sacrificial ceremonies, are analyzed in Chapter 6. In light of the ethnohistorical sources written during the time of the Spanish conquest, the sociopolitical and economic aspects of the Inca rituals on mountaintop shrines shed light on the many ways in which those ceremonies—like that performed on Mount Llullaillaco—could have been oriented to reinforce the domination of the Inca Empire over local Andean communities.

In Chapter 7, we have focused on the social meaning and symbolism attached to the Inca mountaintop offerings—which may include gold and silver figurines, precious textiles, fine pottery, and food items. The more than 100 offerings buried on the summit of Llullaillaco constitute one of the best preserved and documented collections of Inca artifacts recovered from an Inca shrine. The detailed description of each of the items has been provided in an appendix.

In Chapter 8, we discuss the importance of sacred landscape for understanding ancient cultures. In the case of Mount Llullaillaco, we explore its symbolic relation to the fertility concepts and the success of llama caravans—among other aspects that were (and still are) believed to be controlled by the mountain deities. We then examine evidence of mountain worship among important pre-Inca cultures of the Andes: Chavín, Nazca, and Tiahuanaco. For comparative purposes, we also refer to examples of mountain worship among the Aztecs—a culture contemporaneous with the Inca in Mexico—and to veneration of sacred mountains in the Himalayas.

Chapter 9 concludes the book with a discussion of the importance of sacred landscape in Andean beliefs and of the unique types of information high-altitude mummies and artifacts can provide. The appendices provide additional data with regard to the expedition and its finds. The appendices are followed by textual notes, a glossary of foreign terms, a bibliography, and an index.

Acknowledgments

Johan Reinhard is currently (2010) an Explorer-in-Residence of the National Geographic Society. He is also affiliated as a Senior Fellow of The Mountain Institute, as an Honorary Professor at Catholic University (Arequipa, Peru), and as a Visiting Professor at Catholic University (Salta, Argentina). He was a Research Associate at the Field Museum of Natural History (Chicago) at the time of the discoveries on Mount Llullaillaco in 1999. He owes a debt of gratitude to all of these institutions for their support.

Constanza Ceruti is currently (2010) a scientific investigator of the CONICET (the National Council of Scientific and Technical Investigations, Argentina), a Professor of Inca Archaeology at the Catholic University of Salta, and Director of the Institute of High Mountain Research at the same university. She has been recognized as an Emerging Explorer of the National Geographic Society and as a Distinguished Lecturer in Anthropology at the University of West Georgia, and she has received an award from Wings Worldquest. She would like to express her appreciation to these institutions for their support.

The authors would like to thank the Expeditions Council of the National Geographic Society for the grant provided Dr. Reinhard to undertake research in Peru and Argentina from 1998 to 2000. Dr. Reinhard owes a debt of gratitude to the National Endowment for the Humanities, which supported library research relating to some of the analysis that appears in the text. Bell Canada, Eagle Creek, Iridium, Mares, Marmot, North Face, Patagonia, and Tilley Endurables kindly made donations of clothing and equipment utilized on Mount Llullaillaco.

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Johan Reinhard is currently (2010) an Explorer-in-Residence at the National Geographic Society. He is also affiliated as a Senior Fellow of The Mountain Institute, as an Honorary Professor at Catholic University (Arequipa, Peru), and as a Visiting Professor at Catholic University (Salta, Argentina). Born in Illinois, he undertook undergraduate studies in anthropology at the University of Arizona before going on to receive his Ph.D. in anthropology (1974) from the University of Vienna, Austria.

Since 1980, he has conducted anthropological field research in the Andean countries of Peru, Bolivia, Chile, Argentina, and Ecuador. His investigations have focused on pre-Hispanic ritual sites on mountain summits and on the use of sacred landscape in the interpretations of ancient ceremonial centers, including Machu Picchu, Chavín de Hauntar, Tiahuanaco, and the Nazca lines (giant desert drawings). In the course of his research in the Andes, he directed teams that made more than 200 ascents above 16,000 feet and discovered more than 40 high-altitude Inca ritual sites—including the recovery of the Ice Maiden and two other Inca human sacrifices on Mount Ampato (20,700 feet) in 1995. His expeditions in the Andes from 1996 to 1999 led to the discovery of 14 more Inca human sacrifices on five mountains above 18,000 feet, including the excavations of three mummies at 22,100 feet on Llullaillaco—the world's highest archaeological site.

While living more than 10 years in the Nepal Himalayas, Dr. Reinhard's anthropological research focused on the role of sacred mountains in Tibetan Buddhism and Hinduism, on Himalayan shamanism, and on the ethnoarchaeology of one of the world's last nomadic hunter-gatherer tribes. During his years in Europe, Dr. Reinhard participated in underwater archaeological investigations of a Neolithic site in Austria, of Roman shipwrecks in the Mediterranean Sea, and of an Iron Age village in an Italian lake. In Mexico and Ecuador, he was a member of underwater archaeological investigations of sacred lakes of respectively the Aztecs and the Incas.

Dr. Reinhard has more than 70 publications, including six books, and is a member of several organizations—including the American Anthropological Association, the Chilean Society of Archaeology, the Institute of Andean Studies, the Royal Geographical Society, and the Society for American Archaeology. He is a recipient of the 1987 Rolex Award for Enterprise for his research in the Andes, and in 1992 he received the Golden Puma—Bolivia's highest award in the field of archaeology. In 2001, the Ford Motor Company chose him as one of 12 Heroes for the Planet—and in 2002 he was awarded the Explorers Medal of the Explorers Club of New York. Recent publications include *The Ice Maiden: Inca Mummies, Mountain Gods, and Sacred Sites in the Andes* and *Machu Picchu: Exploring an Ancient Sacred Center*. He lives in West Virginia.

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Constanza Ceruti is an Argentinean archaeologist, Scientific Investigator of the National Council for Scientific Research (CONICET) in Argentina, Professor of Inca Archaeology at the Catholic University of Salta, and Director of the Institute of High Mountain Research at the same university. She graduated as an anthropologist from the University of Buenos Aires, and earned her Ph.D. from the

University of Cuyo in western Argentina. In 2007, she was a Distinguished Lecturer in Anthropology at the University of West Georgia (USA).

Dr. Ceruti has climbed more than 100 mountains above 16,500 feet within the context of her archaeological research, and this has resulted in more than 60 publications—including six books. She has twice been to the summit of Aconcagua (22,834 feet)—the highest mountain in the Americas—and to the summit of Pissis (one of the highest volcanos in the world) as well as numerous other peaks in Ecuador, Bolivia, Peru, Chile, and Argentina.

She participated as project co-director during four of Dr. Reinhard's archaeological expeditions between 1999 and 2000, including on Mount Llullaillaco (22,100 feet)—where three of the world's best-preserved mummies were discovered, together with statues and sumptuary objects of typical Inca style.

Her academic achievements were recognized with the Gold Medal of the University of Buenos Aires, and her accomplishments in mountaineering were recognized with the Gold Condor—the most important award given by the National Army of Argentina. In 2005, she was distinguished as an Emerging Explorer of the National Geographic Society—and in 2006 she was among the few honorees at the Prince of Asturias Award Ceremony, when the Communication and Humanities Award was given to the National Geographic Society. In 2007, she received the Courage Award from Wings Worldquest.

She has been living in the Andes of Argentina for more than a decade, but her interest in sacred mountains and funerary rituals has led her to Australia, Canada, Costa Rica, Egypt, England, France, Greece, Greenland, India, Italy, Mexico, Nepal, Norway, Polynesia, Turkey, and the United States.

She is a member of numerous institutions, including the Society for American Archaeology, the Argentinean Society of Anthropology, and The Explorers Club. Her publications include the books *Cumbres Sagradas del Noroeste Argentino* (the University of Buenos Aires) and *Llullaillaco: sacrificios y ofrendas en un santuario inca de alta montaña* (the Catholic University of Salta).

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Part I

Description

Chapter One

Introduction: Historical and Geographical Background

"In this cordillera are many of these *huacas* [sacred objects] placed in volcanoes and snow mountains."

—Cristóbal de Albornoz, describing in 1583 *huacas* needing to be destroyed in the southern Andes

The Incas

The Inca Empire spread over much of western South America in less than a hundred years, its boundaries extending from northern Ecuador to central Chile (Figure 1.1).[1] When the Spaniards arrived in A.D. 1532, the Incas governed an area that was more than 2,500 miles in length—the largest state to arise in the pre-Columbian Americas. The Incas became renowned for their stonework, roads, agricultural production, and political organization (cf. D'Altroy 2002; Hemming 1970; Morris and Von Hagen 1993; Moseley 1992).[2] To this list must now be added their construction of structures on mountain summits, some reaching altitudes over 22,000 ft (6,706 m) high. It is this achievement that we will be focusing on in the present study, but before we begin our discussion of high-altitude sites and the finds associated with them, we will first present a brief summary of Inca culture.

For many, the most remarkable accomplishment of the Incas was their road system. It was one of the most extensive ever built in the ancient world—rivaling that of the Roman Empire. It has been estimated that the Incas built as much as 20,000 miles of roads, and this was done through one of the most rugged terrains on earth. They did not have the wheel, but their road system and llama caravans allowed for products to be transported throughout the empire.

Scholars believe that the Incas began to expand out of the region of Cuzco, capital of their empire, about A.D. 1438.[3] The emperor Pachacuti (ca. A.D. 1438–1463) undertook campaigns that soon brought a vast area of the central Andes under Inca control. The period of his reign is the first for which we have unambiguous historical and archaeological evidence. It marked the beginning of major building initiatives, including such well-known sites as Machu Picchu (Reinhard 2007a). Inca stonemasons became famous for fitting together stones weighing several tons without mortar—and so well that a knife blade could not be slid between them.

Pachacuti reputedly also began the conceptual organization of the empire (*Tawantinsuyu*) into four (*tawa*) parts (*suyus*), with Cuzco at its center. Pachacuti's son, Topa Inca (Tupac Yupanqui, ca. A.D. 1463–1493), conquered more lands—until the borders reached from modern-day Ecuador to central Chile (reaching beyond the modern-day city of Santiago and including parts of northwestern Argentina). The limits of the empire were reached with Topa Inca's son Huayna Capac (ca. A.D. 1493–1525). His death was followed by a conflict between his sons, Atahualpa and Huascar, over who would be his successor. The struggle resulted in a

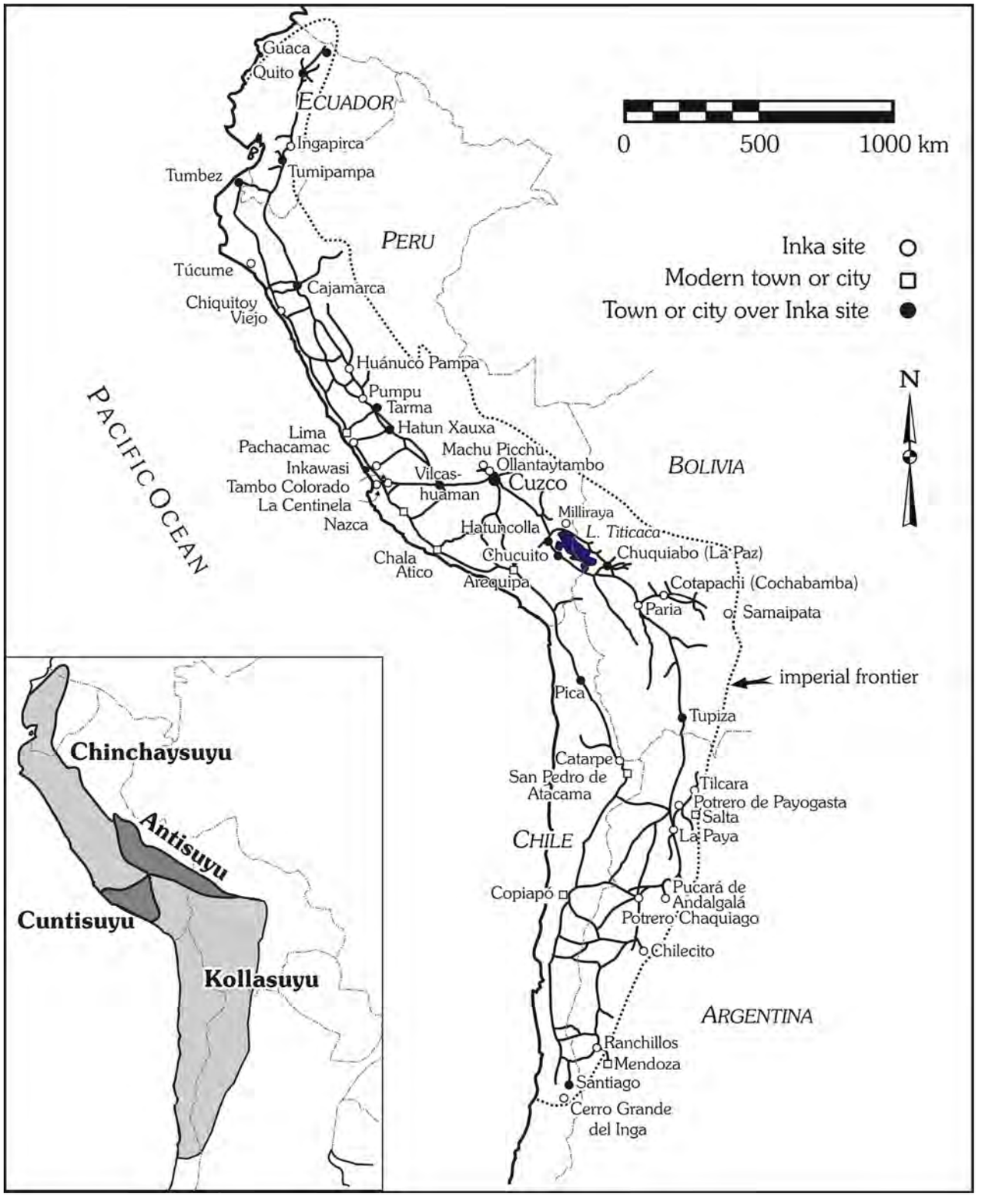


Fig. 1.1. Map of the Inca Empire with Inca roads indicated (*from D'Altroy 2002*).

weakened empire at the time the Spaniards arrived in Peru in 1532. Taking advantage of this division (along with their superior armor, the dissatisfaction of some tribes with Inca rule, and the after-effects of an epidemic), the Spaniards were able to conquer a state that rivaled any in Europe in size and riches.

The administration of such an extensive multiethnic state was itself a major feat, made possible by initiatives that incorporated conquered groups into a highly integrated economic, political, and religious system. The Incas helped ensure their control of the state through several means, including the establishment of a single language (Quechua) as the principal means of communication. They built a system of posts or way stations (*tambos*) to hold supplies and house travelers, and used runners (*chasquis*) for the rapid transmission of messages.

No documents predate the arrival of the Spaniards, because the Andean peoples lacked writing. However, they developed an elaborate system of record keeping by using variations of knots and colors on cords called *quipus*. The Incas' organizational and logistical ability set their empire apart from any that had come before.

In broad terms, two types of agriculture existed at the time of the Incas that continue to dominate to the present day. One is based on highland staple root crops, principally the potato—which can be grown at elevations of up to 5,000 m (16,404 ft) in some parts of the Andes. Other highland crops include grain foods, such as quinoa—the world's most nutritious cereal.

The second type of agriculture takes place in the lower elevations and has evolved around maize. The Incas became especially associated with the spread of irrigation and maize agriculture throughout their empire. In addition to its symbolic and ritual value, the grain can be stored for long periods—a major plus for feeding an army.

The Incas undertook major public works throughout their empire—such as terracing, irrigation, and storehouses—in order to offset any food shortages. They also promoted the expansion of herding into new areas and set up systems for the redistribution of products and services. To better control and develop the regions they conquered, the Incas moved entire communities (*mitimaes*)—thereby ensuring local support groups and promoting integration.

Inca religion shared many fundamental concepts held by other ethnic groups throughout the Andes. Deities were believed to control the success of crops and herds, of wars, of business transactions, of the curing of illnesses, and so on. Everything was intertwined. All ethnic groups worshiped their ancestors and features of the landscape, and this was clearly the case long before the Incas and well outside their empire.

The Incas worshiped a large number of supernatural beings, and especially important in their state religious pantheon were Inti (the Sun), Illapa (the weather god), and Viracocha (the Creator). Many legends exist about Viracocha, but a common one has him rising from Lake Titicaca and then beginning his creative acts. Several other deities of great regional significance—such as Pachacamac, Catequil, Pariacaca, and Coropuna—were also associated with creative acts.

The Inca emperor was not only a secular ruler but head of Inca state religion, which was imposed throughout the lands they conquered. The Inca nobility claimed to be directly descended from Inti. However, the evidence from history, ethnography, and archaeology supports the conclusion that sun worship was not of major importance throughout much of the Andes prior to the Inca conquest. The sun may have become of significance as an Inca state deity because it was visible to everyone, whereas deities associated with specific landscape features were by their nature localized. In any event, the Incas continued to allow the worship of local deities—as long as the people accepted the inclusion of sun worship in their religious activities. The Incas often supported local shrines, while keeping some of the main idols of the conquered peoples as virtual hostages in Cuzco.

Illapa, the Incas' weather deity, was of widespread importance because of his control of meteorological phenomena: lightning, thunder, snow, hail, storms, and rain (and thus the fertility of plants and animals). He was reportedly the most widely worshiped of the state deities, and was only slightly less important than the sun god Inti. It seems likely that the belief in a generalized weather god arose, at least in part, out of an attempt on the part of the Incas to bring numerous weather/mountain deities under one unified concept. As we will see, local weather deities and mountain gods were widely perceived as being the same—and thus it is a mistake to view Inca imperial religion as being representative of Andean religion in general (cf. D'Altroy 2002:143).

In addition to Inti, Illapa, and Viracocha, other deities in Inca religion played key roles with regard to fertility—such as Mamacocha (the ocean) and Pachamama (Earth Mother), who was widely worshiped and still is today. In addition to the sun and the moon (Inti's consort), there was reverence for a large number

of astronomical phenomena—including certain constellations and the Milky Way. Aside from mountains, other landscape features—such as lakes, rivers, springs, and unusual rock formations—were often worshiped for fertility not only by the Incas but by non-Inca groups throughout the Andes. As D'Altroy et al. (2007:111) noted, "One of the most striking features of Inka ideology is the reverence paid to the sacred landscape."

In recent years, it has become clear that one of the most unique achievements of the Inca culture was the construction of ceremonial sites on the summits of high-altitude mountains, many soaring above 5,200 m (17,060 ft). Most of these peaks would not be climbed again until the twentieth century (cf. Neate 1987).[4] In the short time of the empire's expansion from its center in Cuzco about 1438 until the beginning of the Spanish conquest in 1532, the Incas had built more than a hundred ceremonial centers on the summits (Figure 1.2) of many of the highest peaks in the Andes (cf. Beorchia 1985, 2001b).[5]

HUMAN SACRIFICES AND THE CAPACOCHA COMPLEX

The Incas performed ceremonies on selected mountains in the territories they conquered, and offerings might include human sacrifices together with textiles and ceramics of distinctive Inca style (cf. Figure 1.3). The extraordinary preservation of bodies, textiles, and other objects in the cold and dry environment of the high-altitude shrines provides excellent artifactual and bioanthropological material for the study of Inca offering assemblages. In addition, they are among the few relatively intact items of Inca religion to have survived the Spanish conquest and destruction by the Catholic extirpators of idolatries.

It was the Quechua term *capacocha* (also spelled *capaccocha* and *ccapac cocha* in some texts) used most often by chroniclers when describing the most important of Inca religious ceremonies: that involving a human sacrifice and its accompanying sumptuary offerings in what might be termed a "*capacocha* complex."

Some of the best known chroniclers used the term *capacocha* (*capaccocha*), including Betanzos (1996:46), Cieza (1959:151), Guaman Poma (1980:221), Hernández Principe (1923:63), Molina (1959:97), Murúa (1946:265), Noboa (in Duviols 1986:248), Santa Cruz (1968:292), and Sarmiento (1999:122). *Capacocha* also appears several times in the testimonies collected in the document *Justicia 413* (of the General Archives of the Indies in Seville, Spain), dated to A.D. 1558 to 1570 (Rostworowski 1988)—as well as in many of the accounts gathered by Spanish priests concerning idolatry that date to the early and mid 1600s (Duviols 1986).

The term *capacocha* combines two Quechua words: *capac* (meaning "royal") and *cocha* (meaning "lake" or "body of water") (González Holguín 1952:134, 559). When used together with *capac*, the word *cocha* appears to refer to water as the source of fertility. Thus, the term *capacocha* would seem to have been a way for the Incas to express the concept of a human sacrifice as being a royal offering associated with fertility.

Numerous chroniclers—such as Acosta (1962:248), Arriaga (1968:88), Cobo (1983:235), Herrera (1728:75), López de Gómara (1954:211), Matienzo (1967:128), Montesinos (1882:49, 87), Polo (1916:193), Prado (1918:188), Ramos Gavilán (1976:25), Santillán (1968:111), Toledo (in Levillier 1940:155), Ulloa (1965:330) and Xerez (1985:90)—noted the practice of human sacrifice among the Inca, although in the publications we reviewed they do not appear to have used a Quechua word for it (cf. Díaz 1966:127). In a couple of cases, the human sacrifices described were not what would be termed *capacochas* but rather sacrifices performed in other contexts—such as the immolation of wives to accompany a recently deceased emperor (cf. Matienzo 1967:128).[6]

In the writings of some chroniclers we could find no mention of human sacrifice (e.g., Oliva 1998; San Pedro 1992), and of those chroniclers who lived in Peru only Garcilaso de la Vega (1966:87) and Blas Valera (Anónimo 1968)—both mestizos—appear to have specifically denied this practice as having taken place among the Incas. Garcilaso's book became well known and is still today often quoted in publications about Inca customs. However, he borrowed heavily from the Jesuit priest Blas Valera and had left Peru by the age of 20 to live in Spain. His account was written many years after reaching Spain, and he was well aware of Spanish attitudes toward the practice of human sacrifice. Neither of the accounts by Garcilaso and Blas Valera is considered by scholars to be accurate with regard to this aspect of Inca religion (cf. MacCormack 1991:371). Most importantly, as we shall see, the striking conformity of archaeological finds with historical accounts and the results of forensic studies confirm that the practice occurred.

Fig. 1.2. Map of the central Andes with selected Inca high-altitude archaeological sites marked (*from Reinhard 2005, courtesy of the National Geographic Society*).

Fig. 1.3. A drawing (ca. A.D. 1623) depicting offerings, including a child and guinea pig, being made to Mount Coropuna in Peru (*from Guaman Poma 1980*).

A few chroniclers [e.g., Avila (in Salomon and Urioste 1991:112) and Santa Cruz (1968:292)] used the term *capac hucha* (albeit Santa Cruz also used *capacocha*) to describe human sacrifice. Salomon and Urioste (1991:112 ftn. 557) glossed *capac hucha* as "opulent prestation." Based on one of the meanings of *hucha* being "sin," Zuidema (1989:149) interpreted this as the ritual procedure to prevent misfortune that could affect the Inca ruler and his empire. The term *hucha* also refers to "business" or "dispute" (González Holguín 1952:199), and this fits well the use of the term in the historical sources (cf. MacCormack 2000:122 ftn. 56). For example, Avila's sole use of the term is in the context of annual offerings of children being made to the great coastal deity Pachacamac (Salomon and Urioste 1991:112).

The basic concept behind *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) to cause them. 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 1982:426–427). It may be that the term *capac hucha* was employed as a synonym for *capacocha*, or more specifically when referring to human sacrifices performed with this concept in mind.

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 1982:428). However, given that *capacocha* was the term most widely utilized by the chroniclers—including some of the earliest and most knowledgeable of them—we have chosen to use it in this analysis. Although *capacocha* events took place at and near Cuzco, our interest here is in those that involved processions to high peaks well outside the heart of the Inca Empire.

HISTORICAL AND GEOGRAPHICAL BACKGROUND

The most important mountains in the Andean territories conquered by the Incas were selected as sacrificial scenarios and burial sites for the *capacocha* ceremonies. Extraordinarily preserved in the cold environment of the high Andes, the mummified remains of the sacrificial victims and their associated funerary items provide invaluable bioanthropological and artifactual evidence for the study of the ceremonial life of the Inca civilization. In addition, they are among the few pieces of material evidence of the Inca religion that have survived the impact of the Spanish conquistadors and the destruction by the extirpators of idolatries in the sixteenth and seventeenth centuries. Unfortunately, during the last 130 years many of the mountaintop shrines of the Incas were destroyed by looters. The scientific study of these sites started only in the last few decades, with the intervention of high-altitude archaeologists leading to the discovery of several sites and the rescue of numerous offerings and mummies.

Early Discoveries of Human Sacrificial Remains on Mountain Summits

The earliest discoveries of *capacocha* offerings at Inca shrines on mountain summits were made accidentally or took place due to the intervention of treasure hunters. Some of these sites were studied only after extensive damage had occurred. The relatively poor preservation of the mummies recovered and the lack of contexts for their associated offerings help explain why for more than half a century little attention was paid to them. In what follows, we present brief summaries of the finds made at the known sites. Aspects of some of this material will be dealt with in greater detail later in this volume.

CHACHANI

The earliest evidence of a human sacrifice having taken place on a high mountain summit was discovered in 1896 when looters were reported to have extracted a female skeleton and Inca artifacts (Figure 1.2) at 6,084 m (19,960 ft) on Chachani in southern Peru (Beorchia 1985:65–66). Unfortunately, details are lacking. Reinhard examined the site in 1981, noting extensive looting (Beorchia 1985:66). In 1995, climbers described finding fragments of skeletons of a human and a puma on the summit—items that had been uncovered by looters who had used dynamite (Reinhard 2005:4).

CHAÑI

In 1905, a mummy was extracted from the summit of Chañi, a 5,896-m (19,344-ft) peak in northern Argentina (Figure 1.2). Associated items included two tunics, two belts, one comb, one bag covered with feathers, and a pair of sandals (Ceruti 2001b; Millán de Palavecino 1966). The body has lost its anatomical integrity and is currently dehydrated. It is kept in storage at the Ethnographic Museum (Museo Etnográfico) in Buenos Aires. Constanza Ceruti conducted two survey expeditions to the Chañi massif during 1996 and 1997 (Ceruti 1997b, 1997c). In 2000, Reinhard and Ceruti directed excavations that resulted in the documentation of the burial place of the Chañi mummy and the recovery of fragmentary evidence of its funerary assemblage (Ceruti 2007a).

CHUSCHA

In 1922, treasure hunters removed the body of a young female from the mountain of Chuscha in northwestern Argentina (Figure 1.2). The mummy—wearing a feather adornment on her head—was found together with a tunic, a bag, a belt, and three combs (Schobinger 1995a). The burial site was later located at about 5,500 m (18,000 ft) during high-altitude surveys conducted by Ceruti (2004d). The mummy, which was presumably frozen while buried in her tomb, has over the years become dehydrated and is currently preserved at the Museum of High Mountain Archaeology (Museo de Arqueología de Alta Montaña) in Salta. Recently, interdisciplinary research has been carried out on the mummy and the results of a variety of studies (along with historical documents) have been assembled and presented in a single volume (Schobinger 2004).

WALLA WALLA

The Inca ceremonial site of Walla Walla is located 90 km east of Cuzco, heart of the Inca Empire. The ruins

are situated at approximately 4,800 m (15,748 ft) at a pass between snowcapped mountains. The site consists of five structures, all of which had been excavated by treasure hunters during or prior to 1937. Skull fragments of a child and an adult, along with some textiles, were found inside one of the smaller structures (Franco 1937:273). The context in which the bones were found, together with comparisons with similar sites, suggests that they were likely the remains of human sacrifices. In a larger rectangular structure, Inca ceramics, a gold llama figurine, and one gold and four silver statues were reportedly found by treasure hunters. Some of these items were recovered from the looters and can be seen today in the Inka Museum (Museo Inka) in Cuzco. Reinhard examined Walla Walla in 1995 and found that little remained of the site due to extensive looting.

Walla Walla is of special interest because it is typical of high-altitude Inca sites to be found on mountain summits in the distant southern part of the Inca Empire. It was long assumed that such sites had not been built near Cuzco, and this led some scholars to believe that the custom was taken from non-Inca peoples (cf. Beorchia 1973:34).[7] The structures at Walla Walla, along with similar sites found on or near other summits in the surrounding area, serve to establish this as an Inca practice. It is likely that they were not found at higher elevations near Cuzco only because of the lower snow line in the region and the technical climbing difficulties in reaching the summits of the highest peaks.

EL PLOMO

It was the discovery by treasure hunters in 1954 of the frozen body of an Inca boy at about 5,400 m (17,716 ft) on El Plomo in Chile that first drew the attention of the scientific community and the public (Figures 1.2 and 1.4). Although not recovered in context, a substantial part of the material found with the boy was in a remarkable state of preservation (Mostny 1957). Three expeditions to survey ruins on El Plomo were conducted by Johan Reinhard during the 1980s (Figure 1.5), and Angel Cabeza (1986) presented a thesis containing plans and interpretative material. The El Plomo mummy is currently being kept in a freezer at the National Museum of Natural History (Museo Nacional de Historia Natural) in Santiago.

ESMERALDA

A burial of two females was found by chance in 1976 on the summit of Esmeralda [900 m (2,953 ft)] while a road was being built near the city of Iquique in northern Chile (Figure 1.2). Although low in altitude, Esmeralda 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 (cf. Baker 2001; Besom 2000; Checura 1977, 1985). The mummies are currently being kept in the Regional Museum (Museo Regional) in Iquique.

Inca Human Sacrifices and High-altitude Archaeology

The intervention of professional archaeologists, first in rescue expeditions and later in full-scale projects, contributed to the evolution of the subfield that has come to be called high-altitude archaeology. For the first time, systematic research was undertaken at sites before they had been extensively disturbed. This led to the recovery and long-term conservation of several mummies and associated offerings and to a furthering of our understanding of Inca religion and expansion in the southern part of their empire.

EL TORO

In 1964, the frozen body of an adult male was accidentally found by mountain climbers inside a rectangular structure at approximately 6,000 m (19,685 ft) on Mount El Toro (6,160 m) in western Argentina (Figures 1.2 and 1.6). The archeologist Juan Schobinger was on the team that rescued the mummy, and he later directed studies that revealed that the man had apparently been killed by strangulation. Wearing only a breechcloth, the victim had been buried with a set of non-sumptuous objects—including a mantle, two tunics, two caps, two pairs of sandals, a sling, a headband (*llautu)*, and feathers (Schobinger 1966b). The El Toro mummy was later placed on display in a refrigerated chamber at the Museum and Institute of Archaeological Research (Instituto de Investigaciones Arqueologicas y Museo) near the city of San Juan.

Ritual objects and clothing normally associated with a *capacocha* ceremony were not found on Mount El Toro, and none of the artifacts were clearly of Inca origin (Schobinger 1966a, 1966b). The man was estimated to be 20 to 22 years old—far older than the age noted in historical sources for *capacocha* offerings. Although the man appears to have been sacrificed and buried in a sacred place, he nonetheless does not seem to have been part of a *capacocha* ceremony—at least not in terms of those ceremonies having been organized in accordance with Inca state religious practices. A recent

Fig. 1.4. The Inca *capacocha* offering of a boy recovered from the summit of El Plomo, Chile (*photo courtesy of the National Museum of Natural History, Santiago, Chile*).

Fig. 1.5. An Inca ceremonial platform beneath the summit of El Plomo in 1985.

Fig. 1.6. The mummy of a young man found in 1965 near the summit of El Toro, Argentina (photo 1988).

survey of the southern slopes and summit of El Toro by Constanza Ceruti did not reveal further traces of pre-Hispanic use of the mountain.

ACONCAGUA (MOUNT PIRAMIDE)

In 1985, the frozen body of a seven-year-old boy was found by mountain climbers inside a stone structure at about 5,300 m (17,388 ft) on the slopes of Mount Piramide, a subsidiary summit of the Aconcagua range in western Argentina (cf. Figures 1.2 and 1.7). The mummy and its associated offerings were recovered and later studied by a team of scholars led by Juan Schobinger, revealing that the boy had likely been killed by a blow to his head—although he also had ribs broken by compression during the process of bundling. He was dressed in two tunics, was adorned with a necklace of stones, and was wearing sandals. The bundle contained several cloth mantles, a mantle covered with feathers, a feathered headdress, woven belts, five tunics, three breechcloths, a pair of sandals, and two bags.

Inside the burial, three male figurines made of gold, silver, and spondylus shell were found together with two llama figurines made of spondylus shell and a silver figurine representing a vicuña (Schobinger 2001). Red pigment was identified on the skin of the boy, and in his vomit and feces (Bárcena 1989). The body of the boy (Aconcagua mummy, Figure 1.8) is currently being kept in a freezer at the Center of Regional Scientific Studies (CRICYT) in Mendoza, Argentina, having undergone a number of studies during the past 15 years (cf. Schobinger 2001).

PICHU PICHU

Pichu Pichu is a 5,600-m (18,372-ft) peak in southwest Peru not far from the city of Arequipa (Figure 1.2). There is a large complex of ruins forming a typical Inca way station (*tambo*) near the base of the mountain at about 4,600 m. An artificial platform is located on a saddle between the two highest points of the summit (Figure 1.9). 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 (Figure 1.5)—including statues and pottery (Linares 1966). In the early 1980s, Johan Reinhard surveyed ruins on the summit during two expeditions (cf. Beorchia 1985:163; Reinhard 2005). Between 1989 and 1997, Reinhard and José Antonio Chávez led four expeditions to Pichu Pichu—recovering the remaining parts of the female's skeleton (Figure 1.10) and associated artifacts (Reinhard 1992c, 2005; Reinhard and Chávez 1998).

In 1996, two additional burials—containing, respectively, the skeletons of a female and a male—were excavated inside the platform (Reinhard 1998b, 2005; Reinhard and Chávez 1998). The female skeleton had intentional cranial deformation and had been buried together with female figurines made of gold, silver, and spondylus shell. A male anthropomorphic statue and camelid figurines had been placed close to the male sacrificial victim. A large, silver male statue and a textile cloth with numerous attached silver disk*s* were also recovered near the female mummy bundle. The remains of the two individuals are currently being kept in freezers at the Museum of Andean Sanctuaries of Catholic University (Museo Santuarios Andinos de la Universidad Católica de Santa María) in Arequipa.

AMPATO

Reinhard and Chávez undertook field research on Ampato (Figure 1.2), a 6,312-m (20,708-ft) mountain in southwest Peru, between 1995 and 1997 (Reinhard 1996, 1997a, 1998a, 2005; Reinhard and Chávez 1996, 1998). A girl was sacrificed on the summit of Ampato (Figure 1.11) and accompanied by female figurines, as

Fig. 1.7. Climbers ascending in 1981 the final section leading to the summit of Aconcagua, on whose slopes the mummy of an Inca boy was found in 1985.

Fig. 1.8. The *capacocha* offering of a boy recovered from the slopes of Aconcagua, Argentina (photo 1988).

Fig. 1.9. The summit of Pichu Pichu, Peru in 1989. The ceremonial platform where three Inca mummies were found is visible in the lower center.

Fig. 1.10. Excavating the burial of a female *capacocha* offering on Pichu Pichu in 1989.

Fig. 1.11. Climbers approaching the summit of Ampato, Peru in 1995. The older female mummy (Ice Maiden) bundle fell from the highest point into the crater.

Fig. 1.12. The mummy of the Ice Maiden found on the summit of Ampato (photo 1995).

well as food items and pottery. The mummy bundle was found lying on the ice inside the crater of the volcano about 60 m below the summit, with most of the other objects scattered nearby—due to collapse of the summit platform in which they had been buried. This mummy (Figure 1.12) has come to be referred to as the Ampato Ice Maiden (popularly nicknamed Juanita). The girl had been buried together with female figurines (of gold, silver, and spondylus shell), as well as food items, woven bags, and pottery.

Another funerary site was studied at about 5,850 m (19,193 ft) on the west side of the mountain, and it contained the burials of three children: two girls and a boy. The soft tissue of their bodies was severely damaged by lightning after they had been interred, but the textiles on the females and other artifacts remained largely undamaged. One of the females and the male were recovered from tombs marked by circles of stones, but no architectural evidence indicated the location of the other girl. In the case of the first female burial, a large assemblage of pottery—including storage jars (*aribalos*), pedestal pots, and shallow plates—was found together with textile bags. The girl was wearing a feathered headdress, but no statues were found directly associated with her body. There were no markers on the surface to indicate the second female's burial, which held fewer pottery elements. However, the mummy did have a female spondylus statue next to it. The male's burial had male anthropomorphic and camelid figurines, sandals, a few pottery items, and two wooden drinking cups (*keros*) (Reinhard 2005; Reinhard and Chávez 1998). The mummies are currently being kept in freezers at the Museum of Andean Sanctuaries of Catholic University (Museo Santuarios Andinos de la Universidad Católica de Santa María) in Arequipa.

SARA SARA

Sara Sara is a 5,505-m (18,061-ft) volcano in southern Peru. Reinhard surveyed an important complex of platforms on the summit (Figures 1.2 and 1.13) in 1983 (Beorchia 1985:206–207). In 1996, an expedition was led by Reinhard and Chávez that found the body of a 15-year-old girl in a secondary terraced platform on the summit's eastern side (Chávez 2001). The girl was later determined to have been sacrificed by a blow to her head. Female and male statues and llama figurines were also recovered from a niche on another part of the summit (Reinhard 1998b, 2005; Reinhard and Chávez 1998). The mummy (Figure 1.14) is currently being kept in a freezer at the Museum of Andean Sanctuaries of Catholic University (Museo Santuarios Andinos de la Universidad Católica de Santa María) in Arequipa (Chávez 1999).

MISTI

Misti is a 5,822-m (19,101-ft) active volcano with an Inca site inside the crater rim (cf. Figures 1.2 and 1.15). The mountain overlooks the city of Arequipa in southern Peru and still remains active (Chávez 1993). In 1998, Reinhard and Chávez directed excavations in which Constanza Ceruti also participated (Figure 1.16). Six human sacrifices and 47 statues—one of the largest collections ever uncovered—indicated the importance of this site to the Incas (Reinhard 2005; Reinhard and Chávez 2001b). For the first time, infants were found 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 frequent high temperatures in the crater.

The six individuals were distributed near the summit of Misti in two funerary structures, which were delimited on the surface by circular rows of stones. In each circular structure, one individual was buried above the two others—which were found at a depth of about 3 m. This was a unique pattern of superimposed burials, never documented before in high-altitude sites. The lower burials included infants or babies, together with older individuals of undetermined age (Reinhard 2005; Reinhard and Chávez 2001b). The skeletons are currently being kept in freezers at the Museum of Andean Sanctuaries of Catholic University (Museo Santuarios Andinos de la Universidad Católica de Santa María) in Arequipa.

Although the sex of the skeletons could not be confirmed, the funerary structures showed the presence of artifacts that appeared clearly related to gender. Only female statues and an abundance of pottery items were found in one of the circular structures, and male and llama figurines were absent. Inside the other burial, male and llama figurines were abundant—whereas pottery was scarcer and no female statue was found. An association of male anthropomorphic and camelid figurines (aligned in a row as if representing a caravan) was also documented.

QUEHUAR

Quehuar, a 6,130-m (20,111-ft) volcano in northwestern Argentina, has an impressive Inca mountaintop shrine (cf. Figures 1.2 and 1.17). The summit complex includes an artificial raised platform (*ushnu*) more than 6 m long and 1.7 m high, with a frontal ramp and a circular

Fig. 1.13. Excavating the female mummy on the summit of Sara Sara, Peru in 1996.

Fig. 1.14. The Inca female mummy found on Sara Sara (photo 1996).

Fig. 1.15. The Incas built a burial site on the interior rim (lower center) of Misti, Peru (photo 1998).

Fig. 1.16. Excavating one of the Inca *capacocha* burials on Misti in 1998.

Fig. 1.17. Inca ruins near the summit of Quehuar, Argentina in 1999.

Fig. 1.18. The remains of the Inca female mummy bundle found on Quehuar in 1999.

structure with walls more than 2.2 m high and 1.2 m thick (cf. Beorchia 1975a, 1985; Ceruti 1998, 1999a). In 1981, Beorchia and Reinhard found fragments of body tissue that had been dynamited by looters—indicating that the site had originally contained a frozen mummy (Beorchia 1985; Reinhard 2005). During this expedition, a small group of ruins (which may have been used as a way station, or *tambo*) was surveyed at 5,000 m on the southern base of Quehuar.

In 1999, Reinhard, Chávez, and Ceruti directed the excavation of the summit ruins on Mount Quehuar. The *ushnu* is one of the few to escape destruction by the Spanish, as well as one of the few known from the southern part of the Inca Empire (cf. Hyslop 1990:91–95; Meddins 1997:6; Raffino 1997:37). Adjacent to it was a circular structure, inside of which a human offering had been buried (Beorchia 1985; Ceruti 1999b; Reinhard 2005). However, looters had damaged both buildings—and the frozen remains of the individual (Figure 1.18) were partly destroyed by the use of dynamite. Scattered pieces of the looted offerings included textiles, fragmented pottery, maize kernels, meat, and bones from a sacrificed camelid (Reinhard and Ceruti 2005).

A female figurine made of spondylus shell was recovered from the *ushnu* platform (Ceruti 2001a). A male tunic was reportedly recovered from the same structure (Beorchia 1985:188–200). However, DNA analysis revealed that the individual buried on top of Quehuar was a female (Castañeda 2000). The mummy is currently being kept in a freezer at the Museum of High Mountain Archaeology (Museo de Arqueología de Alta Montaña) in Salta.

A bundle of offerings wrapped in a light brown, woolen textile was found adjacent to the mummy bundle. It was unwrapped in the laboratory at the Catholic University of Salta, and the offerings were found to include two pairs of sandals, two small textile bags, a 1-ft pot, one small jar, a pair of ceramic plates, one wooden plate, a spoon, a comb, and food items such as maize and chili (Ceruti 2004a).

Summary: Andean Summit Mummies

The mummies discovered on Andean summits present regrettable stories of having been destroyed by looters or of having been initially recovered frozen but later deteriorating after having been kept in museums or private collections. Once professional archaeologists became involved in excavations on mountain summits, there arose a true high-altitude archaeology—and this in turn resulted in the development of procedures for guaranteeing the preservation of frozen mummies and associated offerings. It is within this historical context that we will now provide background information about the volcano Llullaillaco and its environs.

LLULLAILLACO: GEOGRAPHICAL AND HISTORICAL SUMMARY

The high isolated volcano of Llullaillaco lies on the border of Argentina and Chile (Figures 1.2 and 1.19 through 1.21). At an altitude of 6,739 m (22,109 ft), it is the seventh highest mountain in the Americas—and the Inca ruins found on its summit constitute the world's highest archaeological site (Reinhard 1990b:29). More importantly, the system of ruins distributed at different levels on the volcano forms one of the most complex and best-preserved high-altitude [(more than 5,200 m (17,060 ft)] ceremonial complexes in the Andes.

Llullaillaco is located on the western range of the Andes—a mountain system that extends continuously through the countries of Peru, Bolivia, Chile, and Argentina. It has more than a dozen summits reaching a height of greater than 6,500 m (21,325 ft). The mountain range divides into two branches that surround the Atacama Desert. Many of the volcanoes (e.g., Licancabur, Miscanti, Chiliques, Juriques, and Socompa) that make up the eastern chain are about 6,000 m (19,685 ft) high, and some (such as Lejía) remain active (González 1958:20–21). Inca high-altitude sites (cf. Figure 1.2) have been documented on most of these volcanoes' summits (Beorchia 1985; Ceruti 1999a, 2005c, 2006a, 2008; Le Paige 1966, 1977, 1978; Reinhard 1983, 1985a; Reinhard, Barón, and Serracino 1980; Reinhard and Serracino 1980).

Llullaillaco has the shape of a broken cone, with abrupt ridges of reddish granite extruding from volcanic rock and ash-covered slopes (cf. Figure 1.21).[8] Its geomorphology dates to the Pleistocene, with manifestations of volcanic activity continuing into recent times (Silva and Francis 1991:110). According to Lopes (2005:11), "Llullaillaco has the honor of being the world's tallest historically active volcano." The summit consists of gray granite about 200 m (655 ft) in extension that runs in a north-south direction. On the eastern side of the crest, there are three hollows belonging to extinct craters of the volcano. These are separated by a flat edge that expands about 30 m (98 ft) to the northeast and then continues some 30 m to

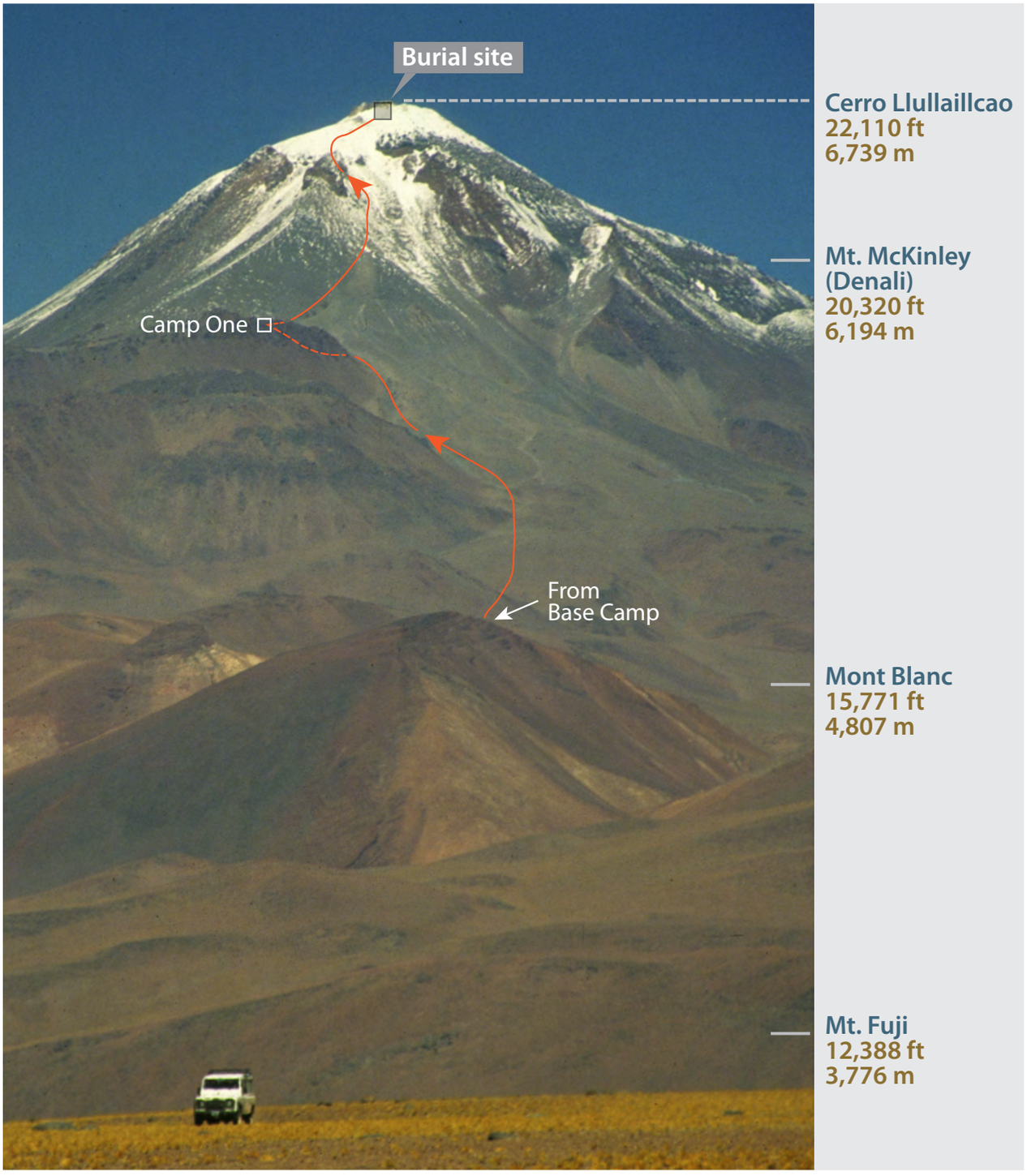


Fig. 1.19. The 1999 expedition's route to the summit of Llullaillaco is indicated on the photo, along with the altitudes of a few well-known mountains to provide a sense of scale. The Inca pilgrimages to the summit followed the same route. Llullaillaco is viewed from the northeast (*plan adapted from Reinhard 2005; photo by Gordon Wiltsie courtesy of National Geographic Society*).

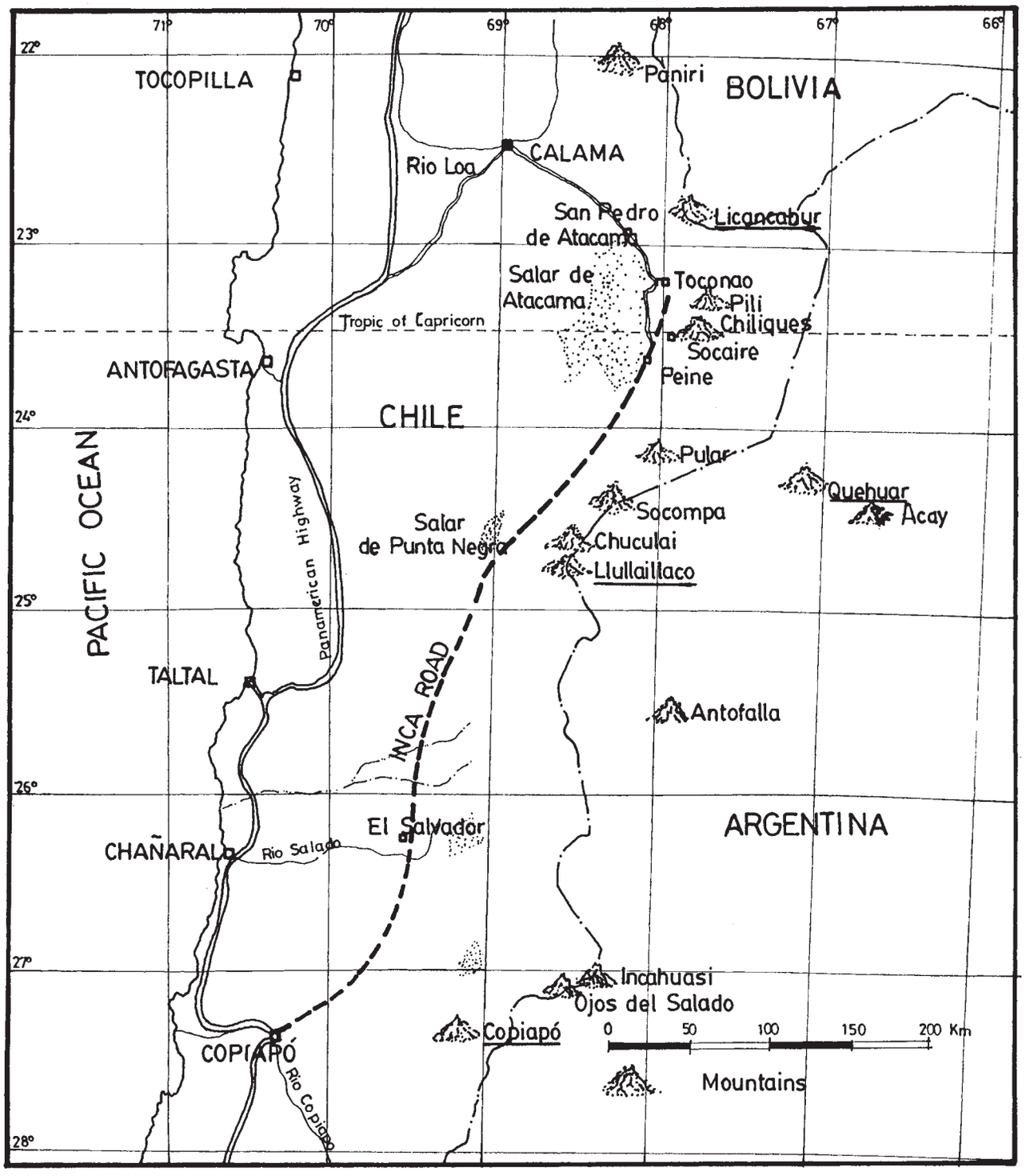


Fig. 1.20. Map of the region in which Llullaillaco is located, with the principal mountains and towns and the north-south Inca road closest to the mountain noted (*from Reinhard 1993*).

the northwest. This edge was chosen as the location of an Inca high-altitude sanctuary. The summit does not offer permanent glaciers, but snow can accumulate in hollows for long periods.

Mountains of the western and eastern ranges of the southern Andes are visible from Llullaillaco's summit in a radius of more than 300 km, including several volcanoes (e.g., Licancabur, Juriques, and Miñiques) in northern Chile, the neighboring volcanoes (Socompa, Salín, Arizaro, Aracar, and Antofalla) that surround the salt plain of Arizaro, and even the distant Cachi-Palermo range. The high Andean tableland (*puna*) surrounding Llullaillaco ranges up to approximately 4,600 m (15,092 ft). The salt lakes of the Salar de Punta Negra and the Salar de Llullaillaco are included in this ecosystem (Figure 1.20). Water is very scarce and derives mainly from occasional rainfall.

The upper altitude of the *puna* ecosystem is about 4,700 m (15,420 ft). Above this is the *janca* ecosystem, in which are found the high hillsides and summits of the major mountains (such as Llullaillaco). This ecosystem shows the characteristics of the "high mountain" environment, with extremely low temperatures, strong winds, low atmospheric pressure, and snowfall. The low temperatures allow preservation of the snow, contributing to the formation of glaciers—making the water resource more abundant than in the *puna*, albeit much less accessible. There are neither animal nor vegetable species that permanently inhabit the environment of high mountains above 5,000 m (16,404 ft), with the exception of some mosses. Occasionally, some species of birds, insects, and rodents have been observed at altitudes of more than 4,600 m (15,092 ft).[9]

In the mountain environment above 5,000 m, rainfall turns into snow, winds can surpass 100 km, and the temperature can drop to –30° C (cf. Lazar 2006:55). Temperatures of –20° C are common even in summertime, and winds exceeding 60 km can bring the chill-factor temperature to –60° C. Under these conditions, any exposed part of the human body is under risk of freezing in less than 30 seconds.[10] External dangers also exist. Electric storms that hit the summits and the most exposed ridges, especially in summertime, can be unleashed in a few minutes and in unforeseeable ways. Any metallic piece of equipment can attract lightning. In winter, the risk of the so-called *viento blanco* ("white wind") is a threat. If a strong wind blows after a heavy snowfall, the visibility can diminish to a few meters—and blizzards remain an ever-present threat to man and animal alike (cf. Figure 1.22). The climatic constraints and their impacts on the human body determine that the high mountain environment is only suitable for human activity during brief periods, and even then the situation is not without risk.

The toponym *Llullaillaco* is composed of two words. The common word for *water* in the Quechua dialect spoken in the Peruvian highlands of Ayacucho and Huancavelica is *llaco* (*yaku*) (cf. Arguedas 1956:200). In a dictionary of 1608 (and still today), the meaning of *llulla* is "a deceptive thing" or "lie" (González Holguín 1952:216). The term *Llullaillaco* may have referred to a place where water could not be found, even though one would have expected it (Reinhard 1993:34). Llullaillaco is one of the few permanently snow-covered mountains in the region, and normally snow from such mountains melts to form streams. However, none flow year-round from Llullaillaco. One river in this region even came to be called Anchallullac [*el gran mentiroso*, or "the great (*ancha*) liar"] in the 1500s. This was because people noted that it would flow in the afternoon but not in the morning (Lizárraga 1999:121; cf. Vivar 1987:63). The sun caused the ice to melt at the river's origin, but the water would freeze during the night—resulting in a dry streambed in the morning (Reinhard 1993:34, 1997b:106).

Another possibility is that the Quechua word *llullu* gave origin to the name. It meant "a tender thing that is born or grows before it hardens" (González Holguín 1952:217). This could refer to Llullaillaco having been an active volcano, with lava flowing like water and then hardening (Reinhard 1993:34). It is not known if an eruption occurred during Inca times, although Austrian climber Mathias Rebitsch (1966:60) noted that the first Spaniards in the region saw smoke issuing from its summit. Unfortunately, he did not name his source. Evidence of past eruptions is easily visible on the volcano, however.[11]

Despite the barrenness of the terrain, the area near Llullaillaco (especially around the salt lake of the Salar de Punta Negra to the west) has been inhabited sporadically through time by small populations since about 8,000 B.C. (Lynch 1990:220). However, Inca presence in the region of Llullaillaco is fairly recent. Scholars generally believe it to have begun sometime after A.D. 1470, lasting until the Spanish conquest of 1532 (cf. Niemeyer 1986:173). A calibrated accelerator mass spectrometer (AMS) radiocarbon (carbon-14) date obtained from the hair of one of the Llullaillaco mummies indicated that she died between A.D. 1430 and 1520 (Wilson et al. 2007:16,457), which is in basic

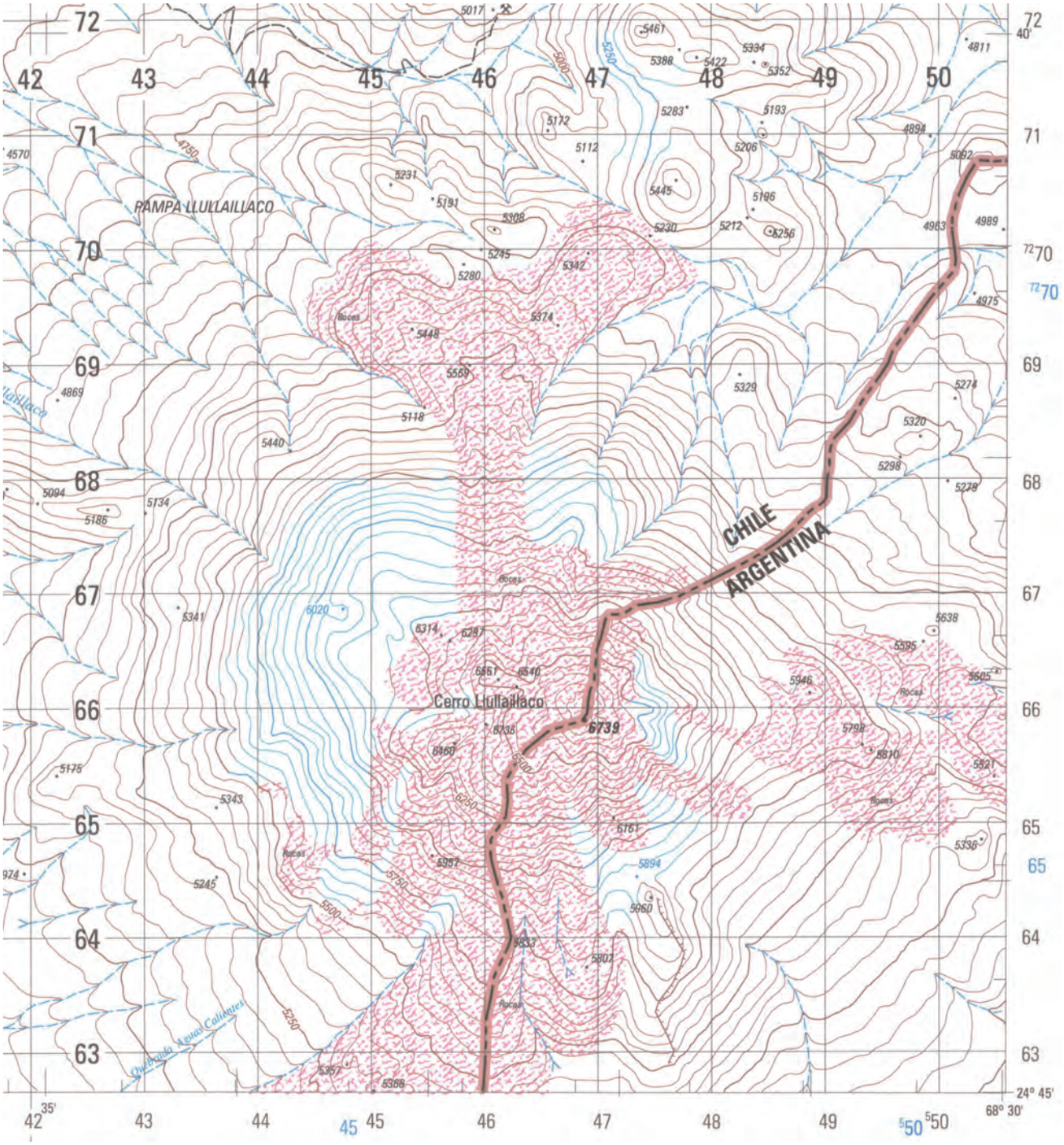


Fig. 1.21a. The location of the mountain Llullaillaco on the 1:50,000 map (sheet B-171) of the Military Geography Institute of Chile (*Instituto Geográfico Militar de Chile*).

Fig. 1.21b. A satellite view of Llullaillaco (adapted from Google Earth).

agreement with the A.D. 1470 to 1532 time frame generally accepted for the Inca presence in northwestern Argentina.[12] Several ethnic groups (Figure 1.23) inhabited the region at the time of the Inca conquest (D'Altroy 2002:43).

In 1981, an Inca road (Figure 1.20) was traced through the area west of Llullaillaco and east of the Salar de Punta Negra (Niemeyer and Rivera 1983). Small Inca outposts were situated along this road, including one on the edge of the Salar de Punta Negra. However, the closest major Inca administrative center appears to have been at Catarpe—near the present-day town of San Pedro de Atacama some 210 km to the north (Lynch 1978, 1993).

Remains of an Inca road have been found leading into the Quebrada de Pajonales, approaching the area of Llullaillaco from the west (Lynch 1990:221). This gorge eventually leads toward Llullaillaco, ending near the base of the mountain Chuculai (cf. Figure 1.24). Inca structures were located near its base, and the Inca road on the slopes of Llullaillaco also led in Chuculai's direction (Reinhard 1993:47).

The route of easiest access to the summit of Llullaillaco runs along the northeastern slope of the volcano, and this coincides with the one used by the Incas (Figure 1.19). It begins at about 4,900 m (16,076 ft) and continues up to 5,800 m (19,029 ft), where it turns into in a gully and ascends about 800 m up a steep slope—bordering a ridge that culminates in a promontory (secondary summit). From this saddle at 6,500 m (21,325 ft), the route traverses the less steep terrain that leads to the main summit.

Although ruins have been known for more than 40 years to exist on Llullaillaco's summit, no archaeologist had investigated the site until our investigations began there in 1983 (Reinhard 1993). This is not difficult to understand. Not only is it extremely demanding to work at such heights it is still to this day problematical to even reach the base of the mountain. Access from the Chilean side requires a long walk at an altitude of more

Fig. 1.22. Remains of cattle caught in a sudden storm at Socompa Pass, north of Llullaillaco (photo 1985).

than 4,600 m (15,092 ft) to the lower ruins after having negotiated a minefield by car. On the Argentinean side there are no roads to the base of the mountain, and a four-wheel-drive vehicle is necessary to reach the foot of the mountain at an altitude of more than 4,600 m.

Such problems have never stopped mountain climbers, however, and it is to them we owe the discovery of many of the ruins—and the alterations made in several of them. Fortunately, a few climbers had an interest in archaeology and left notes of their finds. The earliest report of ruins on Llullaillaco's summit occurred after the first modern-day ascent of the volcano in 1952 by the Chilean climbers Bion González and Juan Harseim (González 1978). A German mountaineer, Hans Rudel, climbed the volcano in 1953 and returned to climb it again in 1954. He was the first to provide a description, albeit brief, of the summit ruins (cf. Beorchia 1985:113–114; Rudel 1956). In 1958 and 1961, the Austrian mountaineer Mathias Rebitsch led teams that undertook excavations at the ruins located on the saddle at 6,500 m (Rebitsch 1966). Antonio Beorchia surveyed the cemetery at the base of Llullaillaco in 1974 and published a plan of the site (Beorchia 1975b, 1985). Millán de Palavecino (1966) and Rolandi de Perrot (1975) published descriptions and an analysis of the Llullaillaco textile materials obtained by Rebitsch.

In 1983, 1984, and 1985, Johan Reinhard led expeditions that resulted in the surveys of various groups of ruins on the mountain and of other sites extending some 20 km from its base (Reinhard 1993, 1997b, 2005).[13] He recognized the potential of the sites for systematic excavations and the urgency of excavating the site, given the looting that had taken place on other mountains in the region.[14] In 1998, he received the financial support of the National Geographic Society to undertake an expedition to Llullaillaco in 1999.[15] The expedition was co-directed by Constanza Ceruti, and team members included Peruvian and Argentinean archaeology students—as well as mountain climbers of both nationalities and indigenous members of the Quechua community.[16] It is to the results of archaeological research on Llullaillaco we now turn.

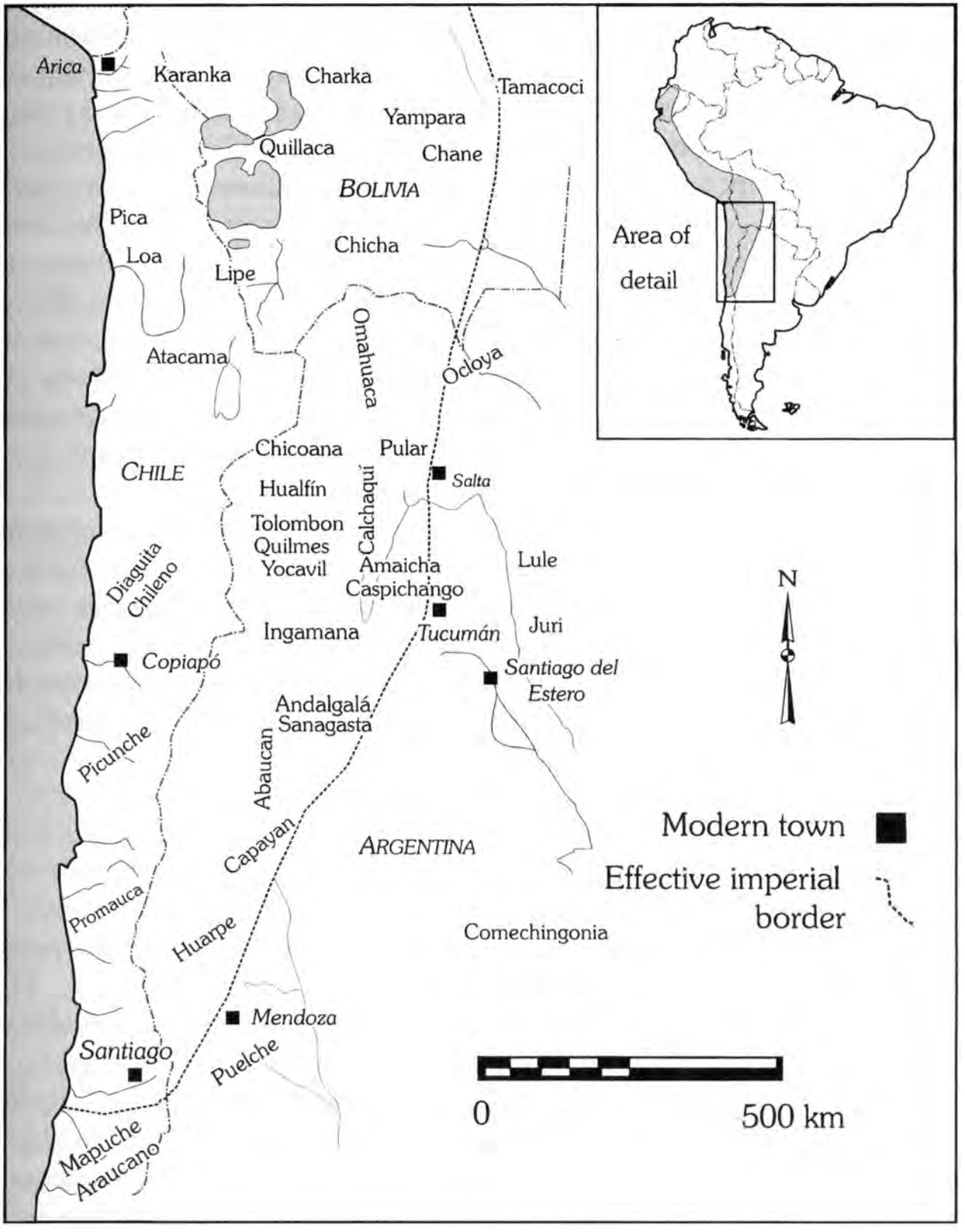


Fig. 1.23. Map showing ethnic groups reported to inhabit the region surrounding Llullaillaco at the time of the Inca conquest (*adapted from D'Altroy 2002*).

Fig. 1.24. View from the west toward a gorge that leads to Llullaillaco (photo 1983).

NOTES

1. We have used English translations of the Spanish whenever possible, as these are more accessible to English readers. However, in some cases original Spanish sources have been noted along with English versions. Although a number of scholars use the Quechua and Aymara orthographies established by the Third Inter-American Conference at La Paz in 1954 (and since revised), we have maintained use of the spelling most commonly found in the literature. Where spellings differed considerably, we have placed alternatives in parentheses. To use a few common examples, we write Inca (not Inka), Tiahuanaco (not Tiwanaku), *ceque* (not *zeq'e* or *seque*), and *huaca* (not *wak'a* or *waqa*)—except when quoting a source. To facilitate ease in understanding, we have used the English plural form (-s) in the text, although it is not employed in Quechua or Aymara.

With regard to Spanish names, people normally include their mother's maiden name after that of their father's. Because this can cause confusion in English, we have omitted the former—except in the rare case where a person is already well known by his full name.

2. Publications devoted exclusively to Inca culture include those of D'Altroy (2002), Davies (1995, Hemming (1970), and McEwan (2006). See Bauer (1992) for the development of the Inca state; Bauer and Stanish (2001) for the Inca pilgrimage tradition; Hyslop (1984, 1990) for Inca roads and settlement patterns; Agurto (1987), Gasparini and Margolies (1980), Lee (2000), MacLean (1986), Niles (1992 and 1999), and Protzen (1993) for Inca architecture; and Raffino (1981) for an overview of the Inca occupation in the southern part of their empire. Bauer (1998), Cobo (1990), and Zuidema (1964) describe the series of imaginary lines (the *ceque* system) that radiated out from Cuzco uniting a complex system of sacred places together with social groups and calendrical religious activities. For overviews of Inca culture placed within the context of Andean prehistory in general, see Davies (1997), Lumbreras (1974), Morris and von Hagen (1993), and Moseley (1992).

3. There has been some debate about the appropriateness of using the word *empire* to describe Inca rule. The *Encyclopedia Americana* (1984 vol. 10:312) provides a definition of *empire* that is in conformity with its general usage in the literature: "a form of political organization in which a central authority exercises sovereignty over a vast and diverse territory and often over a multitude of nationalities" (quoted in Hyslop 1990:331, ftn. 7). Along with many other scholars, we believe that—with this definition in mind—the term *empire* is applicable to the case of the Incas (cf. Hyslop 1990:308).

4. We have used the term *high-altitude* to refer to altitudes greater than 5,200 m (17,060 ft). This is an artificial division, made here to provide an indication of the great heights involved in the discussion to follow. In addition, it is in keeping with previous usage (cf. Schobinger 1966b:11). However, in a listing of high mountain ruins by the Centro de Investigaciones Arqueológicas de Alta Montaña (Beorchia 1985) sites much lower have been included—after all, ruins on a mountain only 2,000 m in altitude could still be considered "high" relative to people living more than 1,000 m below. Nonetheless, it is the high altitude of so many ruins that has captured attention—not least of all because of the great amount of energy, organization, and in some cases specialized techniques necessary for constructing and maintaining structures at such heights. Commonly, even people who have lived all their lives at about 4,000 m (the highest that permanent villages are normally found) have difficulty in reaching, let alone working at, altitudes greater than 5,200 m. Thus, to keep information manageable and to keep the focus on sites of special religious significance to Andean peoples the emphasis here is (with only a few exceptions) on archaeological sites found above 5,200 m.

5. The altitudes of several mountains still remain uncertain. Those we have listed are the ones most accepted in the literature (cf. Biggar 1996; Neate 1987; Reinhard 1990b). Altimeter readings can only be approximate, because they are affected by changes in the atmospheric pressure (which varies depending on the weather). The worse the weather the higher the reading. [For more information on the high-altitude sites being of Inca origin, see Beorchia (1985, 2001b), Ceruti (1998, 1999a, 2008), and Reinhard (1985a, 1992c, 2005).]

6. The Incas practiced other types of human sacrifice, such as those involved in *necropompa* [the burying of victims together with a recently deceased emperor (cf. Matienzo 1967:128)], the ritual killing of war captives and of adults for special offenses, and substitution deaths [where a person would take the place of someone who was ill in order to effect a cure) (cf. Aranibar 1969–1970; Besom 2000; and see Benson and Cook 2001 for human sacrifice in other Peruvian pre-Hispanic cultures)]. We are concerned solely with Inca *capacocha* sacrifices here.

7. Although what we have termed *high-altitude* sites have not been found in the northern part of the Inca Empire, this can be explained by practical difficulties (as noted in Chapter 4).

8. Silva and Francis (1991) provide a summary of the geology of Llullaillaco. Two major evolutionary stages have been recognized, with the oldest (Llullaillaco I) dating to the Pleistocene. This stage is now represented by two eroded cones and their associated lava flows, mainly visible to the west. The second stage (Llullaillaco II) dates to the postglacial period and has been reported as being active in historical times.

Paleoecological studies suggest that there was a more humid environment in this region above 3,500 m since the last cold maximum (Grosjean et al. 1991:99). Associated with Llullaillaco II are several Holocene lava domes and flows and a small well-preserved cone built upon Llullaillaco I. The two most conspicuous flows are found to the north and south of the volcano, and the former is the location of the trail and sites the Incas built on their way to the summit.

In 1938, a large cave was reportedly discovered at the foot of Mount Llullaillaco (Jurcich 1974:32–35). The cave's entrance was said to be small, but the cave's conical-shaped interior was estimated to be 560 m (1,837 ft) wide and to have a ceiling so high that it could not be seen with the beam of a powerful flashlight (Jurcich 1974:34). Only recent remains of mule and llama dung and pieces of modern-day pottery were found. Subsequent attempts to locate the cave have been unsuccessful, and there is some doubt as to its existence (Vitry 1997).

9. The dominant vegetation community is a mainly herbaceous steppe, with a small presence of bushes and a total absence of arboreal vegetation. Among the grasses, *Stipa ichu* (*ichu*, bunch grass) and *Stipu leptostachya* prevail. These species are associated, forming true *pajonales* (spaced patches that grow regularly up to 40 to 60 cm on the surface). Exceptionally, there are batches of *llareta* (*Azorella compacta*) that constitute the basic fuel resource of the ecosystem. Among the bushes, there is *tola* (*Parastrephia* sp.), *añagua* (*Adesmia Horida*) and *chachacoma* (*Proustia cuneifolia*). Animals include the wild camelids, the *vicuña* (*Lama vicugna*), and the *guanaco* (*Lama guanicoe*), the ostrich-like *suri* (*Ptarocnemia pennata*), the rabbit-looking rodent *vizcacha* (*Lagidium* sp.), the fox (*Pseudalopex* ps.), and the puma (*Puma*). Birds include the partridge (*Nothoprocta* sp.), the eagle (*Buteo* sp.), and the condor (*Vultur gryphus*).

The uniqueness of the high-altitude environment in this region has been demonstrated by the discovery of six

complex autotrophic communities on geothermal warm spots between 5,750 and 6,060 m near the summit of the volcano Socompa not far north of Llullaillaco. According to Halloy (1991:247), "These complex communities are unique in terms of their isolation, altitude, and biota." On the west side of Llullaillaco, Chile has established Llullaillaco National Park (Parque Nacional Llullaillaco). It is 268,670 hectares in size and intended to protect the vegetation found in the high plateau (altiplano) land of the salt lakes in the region of Chile's Domeyko Cordillera. Llullaillaco's unique situation led to the world's highest weather station being established on its summit in 2004 (Lazar et al. 2004).

10. At 5,500 m, the atmospheric pressure is half that of sea level. As a consequence, a person's physical performance has been estimated as being 50 percent of normal capacity. The brain suffers hypoxia to various degrees, and hallucinations and headaches can occur. The acclimatization process demands several weeks, the time required depending on the adaptability of each individual. If it remains incomplete, the person can suffer from insomnia, lack of appetite, lassitude, nausea, difficulty breathing, and alterations in behavior. In the most serious cases, cerebral and/or lung edemas can be fatal (cf. Houston 1987; Price 1981).

11. Llullaillaco was noted as being the highest volcano that has experienced eruptions in historic times, three being registered in the second half of the last century (in 1854, 1868, and 1877) (Silva and Francis 1991:110). According to Rudolph (1955:161), the latter "eruption" consisted of fumes emitted at the time of an earthquake that took place near the Chilean coastal city of Iquique.

12. The carbon-14 date was obtained from scalp hair of the Llullaillaco maiden and prepared according to standard protocols at the Oxford University radiocarbon accelerator unit (Wilson et al. 2007:16,460). This date is in accord with calibrated carbon-14 dates obtained from wood from other high-altitude sites, such as Aconcagua (Schobinger 2001b:174), Chuscha (Schobinger 2004b:205), and Penitentes (Bárcena 2001c:372).

However, recent carbon-14 dates for lower-lying sites in northern Argentina have been obtained from wood that has been dated decades earlier than A.D. 1470 (cf. D'Altroy et al. 2000:15–16, 2007:91). As D'Altroy et al. (2000:15) pointed out, "The apparent early Inca component could be attributed to several factors, among them reuse of old wood by the Inkas, laboratory errors, incorrect attribution of carbon material from an earlier stratum to the Inka era…" To this might also be added the effect active volcanoes may have had on the radiocarbon dating of organisms that grew near them. The expulsion of dead carbon is said to result in samples having less radiocarbon (and thus older ages when dated) than samples taken from areas not so affected (Erkan 2004). Nonetheless, D'Altroy et al. (2000:15–16) concluded that "The narrow range of PAC dates, coupled with their association with Inka ceramics and architecture and the parallel evidence elsewhere, suggests that an Inka presence in the first half of the 15th century must be considered within the realm of possibility."

The problem becomes more difficult with regard to the longer chronological framework proposed by D'Altroy et al. (2007:91). In this regard, Burger (2007:428) wrote, "…with two sigma ranges of some 300 years for many dates and sample contexts of varying quality, the available C-14 evidence suggests the importance of keeping an open mind."

The time span postulated by most archaeologists for the Inca expansion out of the Cuzco region (ca. 1438–1532) has also led some scholars to question if so vast an empire could have been built in such a relatively brief period. However, as Burger (2007:428) noted, extensive conquests of similarly short durations have occurred historically in the world. Examples that come easily to mind include those of Alexander the Great and Genghis Khan.

13. In January of 1985 Orlando Bravo described to Johan Reinhard that he had seen piles of stones (*montículos de piedras*) near a small lake of unfrozen water ("larger than a swimming pool") at 6,400 m on Mount Llullaillaco. He felt the *montículos* were similar to those at the cemetery at the foot of the mountain, and thus he believed that they might contain mummies. In the sketch Bravo drew for Reinhard, he again noted 6,400 m as the altitude of the *montículos*. However, he marked them along the northeast ridge at what proved to be a place that could only have been well below 6,400 m. This led Reinhard to assume that the altitude of 6,400 m was likely a mistake, and this conclusion has been supported by no lake (frozen or unfrozen) having been reported above 5,850 m. (Indeed, there is no record of an unfrozen lake at 6,400 m anywhere in the world.)

Presumably, Bravo was referring to one of the small lakes that can be found at an altitude of about 5,850 m (near the site of our Camp I) and then sporadically at other places lower on the mountain. However, in searches made for sites on Llullaillaco in 1983, 1984, 1985 and 1999 Reinhard and his teammates did not observe man-made *montículos* near any of the small lakes at any altitude. One possible explanation is that Bravo erred in assuming natural *montículos* were man-made. In any event, as far as we are aware the site—at least as described by Bravo—has not been located by anyone else to the present day.

14. The importance of conducting high-altitude archaeology in Salta Province was the topic of an article published online by Christian Vitry in 1998. As he noted, "…in recent

years…the [high-altitude] sites are being more frequented and are being systematically destroyed." After listing sites on Llullaillaco, Quehuar, Acay, and Chañi, he emphasized that "These and others that will be mentioned below, were, and are, the object of voluntary and involuntary acts that lead to the total or partial destruction of archaeological structures and finds" (Vitry 1998).

As a further example of how Salta's cultural patrimony is being threatened, Vitry noted an article titled "Treasure Hunters: 400 People from Salta Form an Original Association" that was published in the Salta newspaper *El Tribuno* 29 June 1998 (Vitry 1998). The article highlights the activities of people searching for artifacts buried in the ground, often using metal detectors. Several other newspaper reports describing the looting and the illegal traffic of antiquities in Salta Province have also appeared before and since Vitry's article (e.g., the Salta *El Tribuno* articles "Buscan frenar la depredación arqueológica en la provincial" of 15 September 2003, "Quedó descubierta una red de tráfico de arqueología" of 22 October 2004, and "Paraiso de 'Huaqueros'" of 20 April 2007). Clearly, there was (and still is) a considerable threat to archaeological sites that are not being permanently guarded—including those on mountain summits.

15. On 13 August 1998, Mario Lazarovich (Director of the Cultural Patrimony Office of the Ministry of Education, Salta) signed a letter certifying its support of the expedition to be directed by Johan Reinhard to undertake archaeological investigations on mountains in Salta Province during March and April of 1999. The same office issued the permit (#07-1999) on 3 February 1999 authorizing excavations on Llullaillaco, Quehuar, and Chañi.

16. See Appendix D for a chronology of the expedition and a list of its members. See Reinhard (2005) for a general discussion of the urgency and importance of excavating high-altitude ceremonial sites.

Chapter Two

Archaeological Sites Leading to Llullaillaco's Summit

"The principal [deities]…were, and still are, the high snow mountains."

—Juan de Ulloa Mogollón, describing religious beliefs
of Colca Valley (Peru) inhabitants in 1586

The Inca complex on Llullaillaco comprises several archaeological sites connected by a trail that ascends toward the summit along the northeastern ridge of the mountain within the border of Argentina (Figure 2.1). The way station (*tambo*) or base camp that presumably lodged the participants in the ceremonies was constructed at an altitude of 5,200 m (17,060 ft). Intermediate stations were erected at 5,600 m (18,372 ft) and 6,300 m (20,669 ft) in places where the slope of the mountain becomes steeper. Based on an analysis of the architectural evidence, we estimate that 10 to 15 people comprised the group of priests, assistants, and sacrificial victims that climbed to the summit of the volcano (Ceruti 2003a:95).

Given its isolation and that no clear evidence has been found indicating a pre-Inca presence on Llullaillaco, the archaeological complex provides us with a unique opportunity to examine the ways the Incas conceived of and interacted with a prominent feature of the sacred environment.

Sites Along the Inca Road System

Thanks to extensive studies of the Inca road system (cf. Hyslop 1984), we know that there were many subsidiary roads running east-west that linked the main north-south roads on both the western and eastern sides of the Andean range. Important Inca ritual sites have been found on mountains such as Quehuar and Acay, which lie east of Llullaillaco and thus close to the Inca road (cf. Figure 1.20) that ran north-south on that side of the Andes (cf. Beorchia 1985; Ceruti 1998). A subsidiary trail led to Llullaillaco from the north-south road located to the west, and apparently another led to the volcano from the east-west road that crossed the region north of Llullaillaco. The impression, therefore, is of secondary roads having been built that had as their sole purpose reaching the sacred mountain.

In the case of the Inca road reaching the area of Llullaillaco from the west, we noted previously that remains of a trail have been found leading into the Quebrada de Pajonales (Lynch 1990:221) and apparently ending near Llullaillaco—at the base of Mount Chuculai. Some outlying Inca ruins have been documented at the foot of Chuculai, as well as a small shrine on its summit (Reinhard 1993). It is interesting to note that the Inca road leading down from the *tambo* of Llullaillaco also led toward Chuculai. Inca ruins have been reported by Ibarra (1985) still farther to the northeast, and thus it is likely that at least one other road led to Llullaillaco.

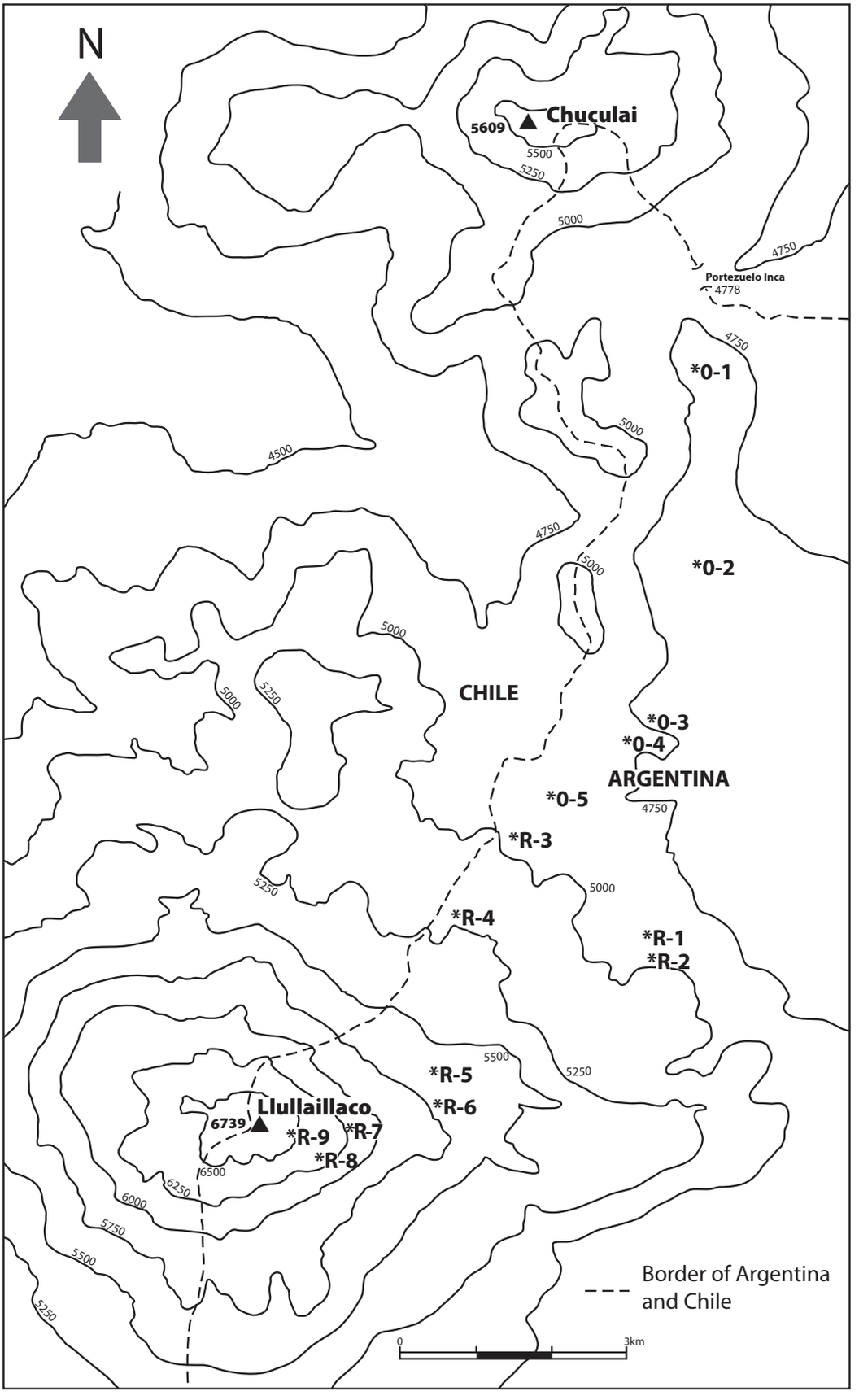


Fig. 2.1. Locations of ruins of probable Inca origin within 20 km to the north of Llullaillaco and up its northern slope (*from Reinhard 1993*). The altitude readings were taken in 1984 and 1985 and locations were estimated using the 1:50,000 map (sheet 2430-6820) of the Military Geography Institute of Chile (*Instituto Geográfico Militar de Chile*) and thus are only approximate.

The Outlying Ruins

In 1984, Louis Glauser and Johan Reinhard located a series of small sites at lower elevations that appear to have been constructed as places for people to rest and be sheltered from the wind. Because they were to the northeast—and thus between Llullaillaco and the Inca road passing by Chuculai—they presumably were part of this system of sites, although no road was actually seen connecting them (Figure 2.1).

One of the sites (O-5) was located at about 4,924 m (16,155 ft) on an open, barren hillside (Figure 2.1). Pieces of undecorated pottery, charcoal, and a few unidentified seeds were found amid half a dozen oval structures with generally low (approximately 60-cm-high) walls. The largest building was 5.7 by 6 m and had a 1.3-m-high wall. The structures were open to the east, presumably more due to the prevailing west wind than for religious reasons.

About 1 km distant and 115 m (377 ft) lower (about 4,769 m/15,646 ft) was a single well-built oval structure (site O-4) that was 4.6 by 2.9 m with a 1.2-m-high wall (Figure 2.2). An unusual feature of the structure was the entranceway, formed as a 2.5-m-long corridor.

Site O-3 (ca. 4,708 m/15,446 ft) was built 61 m (200 ft) lower against the side of a cliff, and thus was protected from the wind. It consists of five oval-shaped structures (approximately 3 by 4 m) with low (about 60-cm-high) walls. The site has been reused in recent times, but the Inca origin of at least a part of it can be assumed due to a combination of evidence: Inca shards were observed on the surface, the site is connected with Inca ruins (noted previously), and one of its structures is clearly of Inca origin.

Although no trail was visible leading out from the sites noted previously, an Inca road was identified near Chuculai (about 14 km distant) that likely connected them. The road continues over a pass at about 4,778 m (15,676 ft), which is called Portezuelo Inca ("Inca Pass") on a map of the region (Figure 2.1).[1] This road would meet with the gorge of the Quebrada Guanaqueros and presumably follow it until reaching the eastern edge of the Salar de Punta Negra. Inca ruins were located at the entrance of this gorge, and a road entered it in the direction of Chuculai (Lynch 1990:223).

Glauser and Reinhard climbed Chuculai [5,609 m (18,402 ft)] in 1984 and found on its eastern summit

Fig. 2.2. Ruins (1984) at the site O-4 were located at about 4,769 m (15,646 ft) in 1984.

Fig. 2.3. Ruins on the summit of Chuculai (1984) at 5,609 m (18,402 ft), with Llullaillaco in the background (photo 1984).

(Figure 2.3) a piece of wood and a mound of stones (Reinhard 1993). The mound had apparently been built using stones from a small structure, in that ashes and pieces of bones (probably of llamas) were found in a meter-wide area (Reinhard 1993). Climbers had noted seeing "structures" and pieces of wood on the summit in 1957, and a "knife-shaped" piece of copper (possibly a *tumi*) was reportedly found in 1888 (Beorchia 1985:74). The site was clearly a secondary one associated with the more important complex on Llullaillaco.

Just before reaching the base of Chuculai, there are two sets of ruins (cf. Figure 2.1): one (site O-1) at about 4,713 m (15,462 ft), and the other (site O-2) at about 4,680 m (15,354 ft). The former site consists of a simple structure 7.6 by 4.7 m with a wall about 30 cm high. No diagnostic material was found, but it likely was an Inca structure due to its proximity to the Inca road and to its similarity with Inca structures elsewhere in the area (Reinhard 1993).

The latter set of ruins (site O-2) consists of more than a dozen low-walled (about 30-cm-high) structures mainly semicircular in form and about 3 by 2 m in size (Figure 2.4). Again, no diagnostic material was observed. However, the Inca road passed between the structures (Reinhard 1993).

With the exception of the site on the summit of Chuculai, all outlying ruins appear to have been used as temporary habitational sites for people on their way to and from Llullaillaco. The next closest high-altitude Inca site is on the volcano Socompa, some 45 km to the north (cf. Beorchia 1985:208–211; Ceruti 1999a). Because Reinhard's search for ruins within proximity (about a 20-km radius) of Llullaillaco in the 1980s was undertaken with limited time and personnel, further sites will likely be found during more extensive surveys of the area surrounding the mountain.

Ruins at the Base of the Mountain

Llullaillaco is unusual in having a cemetery located on its lower slopes, in addition to a well-constructed *tambo* (way station, which served as a "base camp" for the Incas). However, these sites are not situated close to each other and are separated by a high ridge. The Inca road described previously does not lead to the cemetery but rather to the *tambo*, which is found northwest of the cemetery at 5,200 m (17,060 ft).

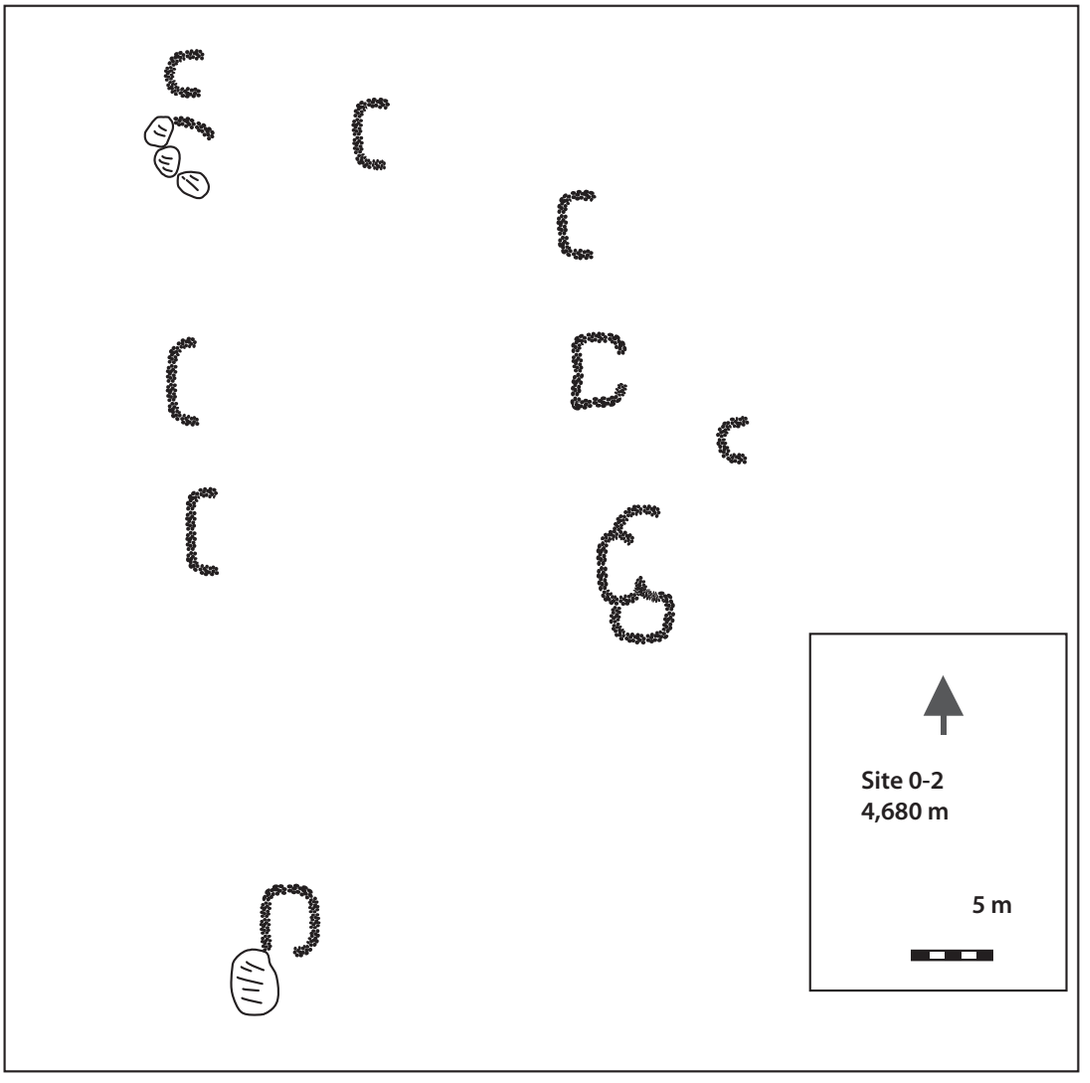


Fig. 2.4. (*a*) Site O-2 along the Inca trail (1984) between Chuculai and Llullaillaco at about 4,683 m (15,364 ft) (photo 1985). (*b*) Plan of the site O-2.

CEMETERY

The cemetery (site R-2) is located under lava outcrops at the base of the northeast ridge of Llullaillaco (Figure 2.5) at an altitude of 4,860 (15,945 ft) to 4,900 m (16,076 ft) (24º 41'56" S and 68º 29'22" W). A site was built near the cemetery, apparently to serve as a place for pilgrims to remain overnight when climbing the mountain from this direction.[2] These two sites (cf. Figures 2.6 and 2.7) were first described by Antonio Beorchia, who fortunately published plans of them—as the cemetery has since been largely destroyed by looters (Beorchia 1975b).

A habitational complex (site R-1, Group 1) is 55 m to the north of the cemetery and is only a few meters less in elevation in relation to the lowest section of the cemetery. It consists of two principal structures joined by a wall (Figure 2.8). One of the structures (Figure 2.9) is further divided into two rooms (cf. Beorchia 1975b:36). The walls of the structures in Group 1 are about 60 cm thick and have collapsed, although some parts are nearly 1 m high (cf. Figure 2.10). Pieces of brick-colored plain ware were scattered in the ruins.

The lower part of the cemetery (site R-2, Group 2) is surrounded by a line of stones forming what might be called a symbolic wall (cf. Figures 2.6 and 2.11). Within it were found six burial sites (Beorchia 1975b:36). The largest (Burial E) measured 1.2 by 3.5 m. According to Beorchia (1975b:36), two skeletons were found inside its wall under a large stone slab (Figure 2.12). They had been placed on top of each other and in different positions. A piece of wood a meter long was placed over the bodies.

In a nearby burial (unspecified) was found the only example of cultural head deformation from among the 16 skeletons in the site. On the chest area of this skeleton was a circular copper disk, and Beorchia also recovered shards, pieces of wood, beads, and a cactus (cf. Figure 2.13). The longer piece of wood may have been used to help carry loads, whereas the one measuring 40 cm is similar to those used in the region for digging (Beorchia 1975b:41). In addition to the bones, ashes were observed in Burials A, C, and D.[3]

During the expedition led by the authors in March of 1999, human bones (cf. Figure 2.14) were recovered from the surface of the burials—particularly those of the axial skeleton (mainly vertebrae, ribs, and bones

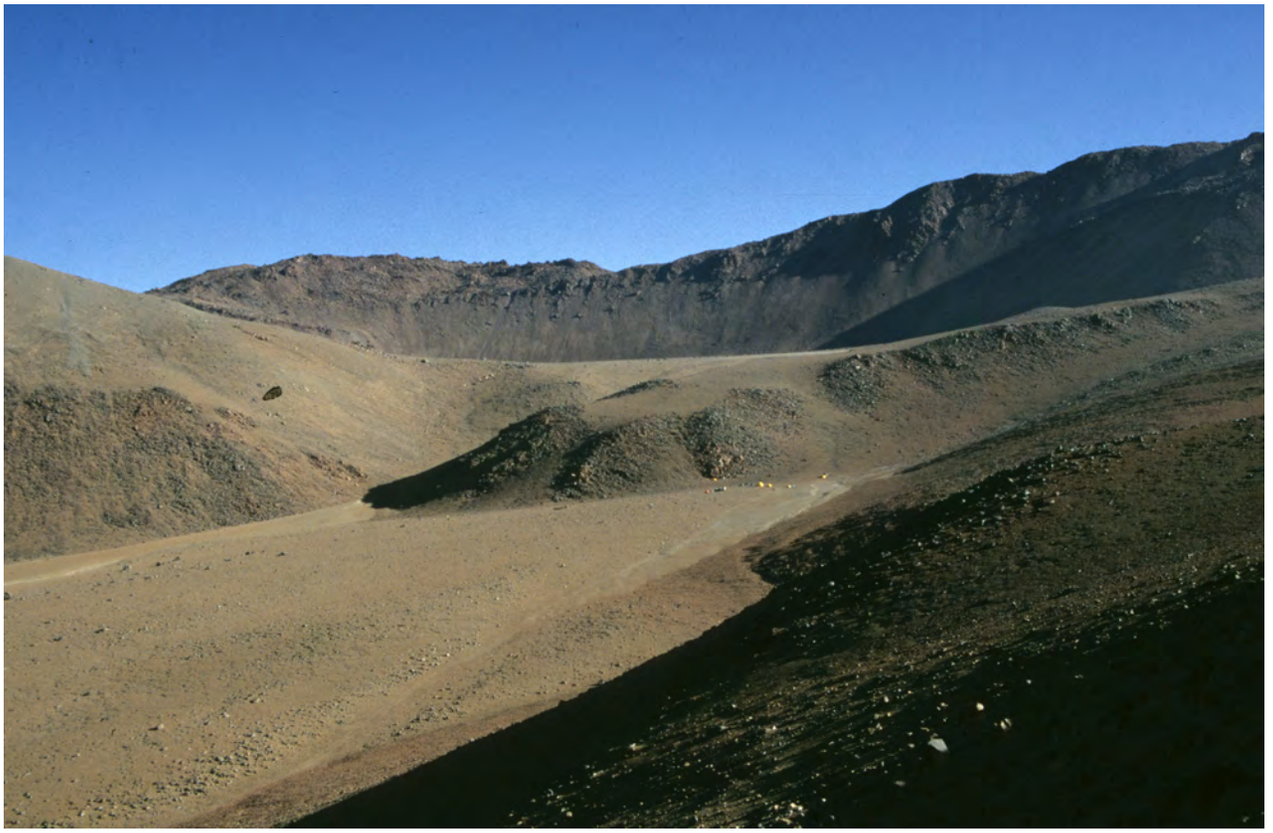


Fig. 2.5. A view toward the location of the cemetery (R-2) located between 4,860 and 4,900 m (15,945 and 16,076 ft) and the adjacent habitational complex (R-1) (photo 1999). Both R-1 and R-2 are located to the left of the tents visible in the center.

of the pelvic region) and of the apendicular skeleton (long bones such as femurs and small bones such as metacarpals and phalanges). The remains of skulls were virtually absent, with the exception of a few jaw fragments. This may be due to the practice of looters (*huaqueros*), who often remove the skulls and leave the remainder of the skeletons at burial sites.

Although no formal skeletal analysis has been undertaken, the skeletons were apparently those of 15 young men and 1 boy (Beorchia 1975b:41). It is assumed that there were no females among the skeletons, in that no items used by women were found.

The skeletons also do not appear to have been those of Incas. One cranium still had hair woven in a style

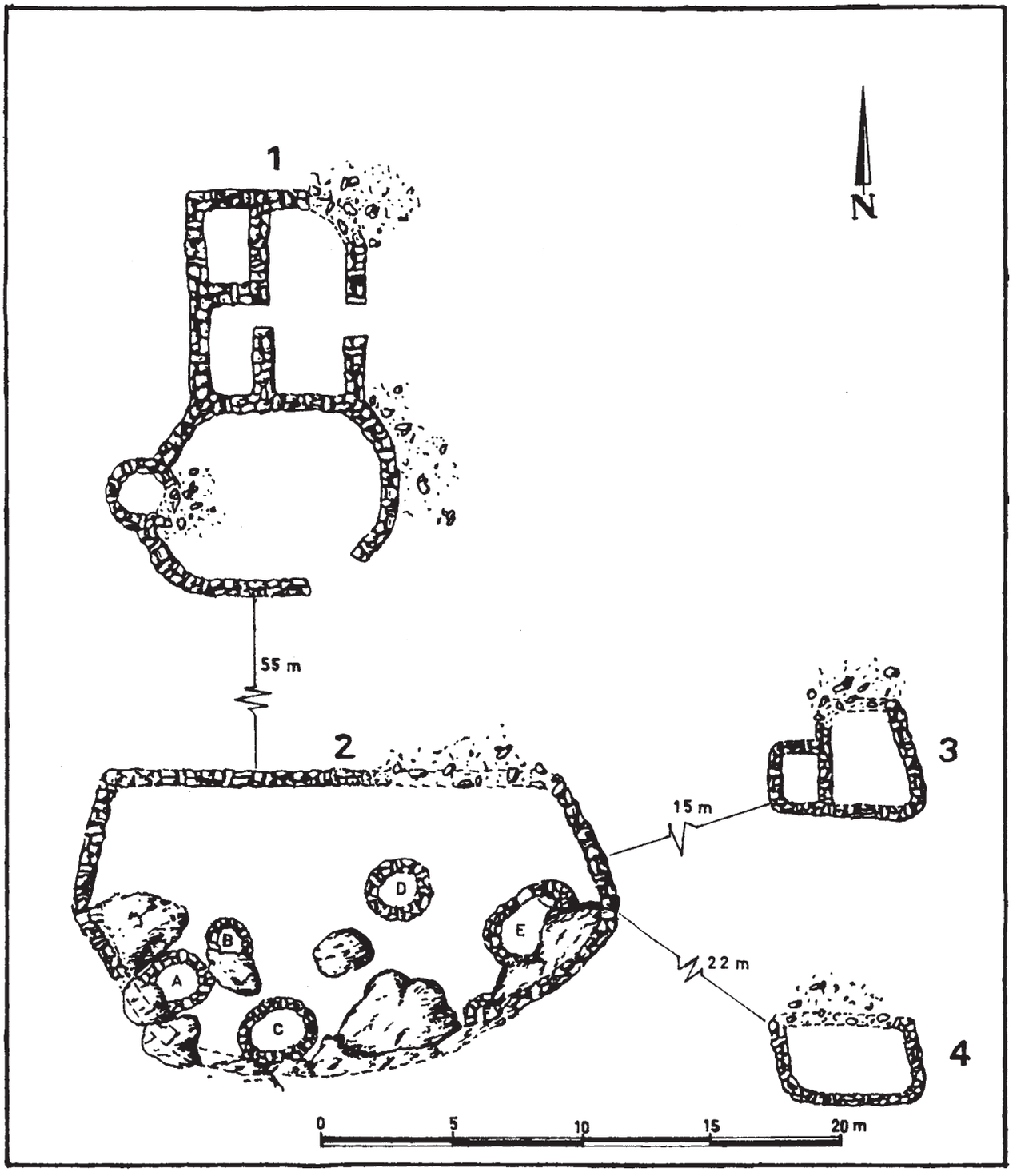


Fig. 2.6. A plan of the cemetery (R-2) and habitational complex at about 4,900 m (16,076 ft) on Llullaillaco (*from Beorchia 1975b*).

Fig. 2.7. View over the cemetery toward the habitational complex (R-1) in 1985.

similar to that noted for the Colla people, who inhabited the southern part of the Inca Empire (Beorchia 1975b:39). Textile fragments were of types common to the region (Rolandi 1975). Although the findings at the foot of Llullaillaco share similarities with those of Inca funerary sites in other areas, they seem to have characteristics also found locally—and they are not sufficient in themselves to identify the burials as of definite Inca origin (cf. Beorchia 1975b:37).

The question remains: Why were these people buried in such an isolated and inaccessible place? Based on the finds, they appear to have been contemporaneous with the Incas. There is no evidence of the mountain having been visited prior to the Incas, and an Inca site is located near the cemetery. Thus, the skeletons presumably are the remains of people who died while the Incas were using the high-altitude site. It is unlikely that the burials represent Inca human sacrifices, particularly in the absence of material possessions of high status. Given the evidence, it is likely that the people buried in the cemetery were from the region—and it seems reasonable to infer that they had been assisting in the construction of the sites. Weather conditions can change dramatically on the volcano, and a single storm could have accounted for a tragedy.

Fig. 2.8. The habitational complex (R-1) located to the north of the cemetery (photo 1985).

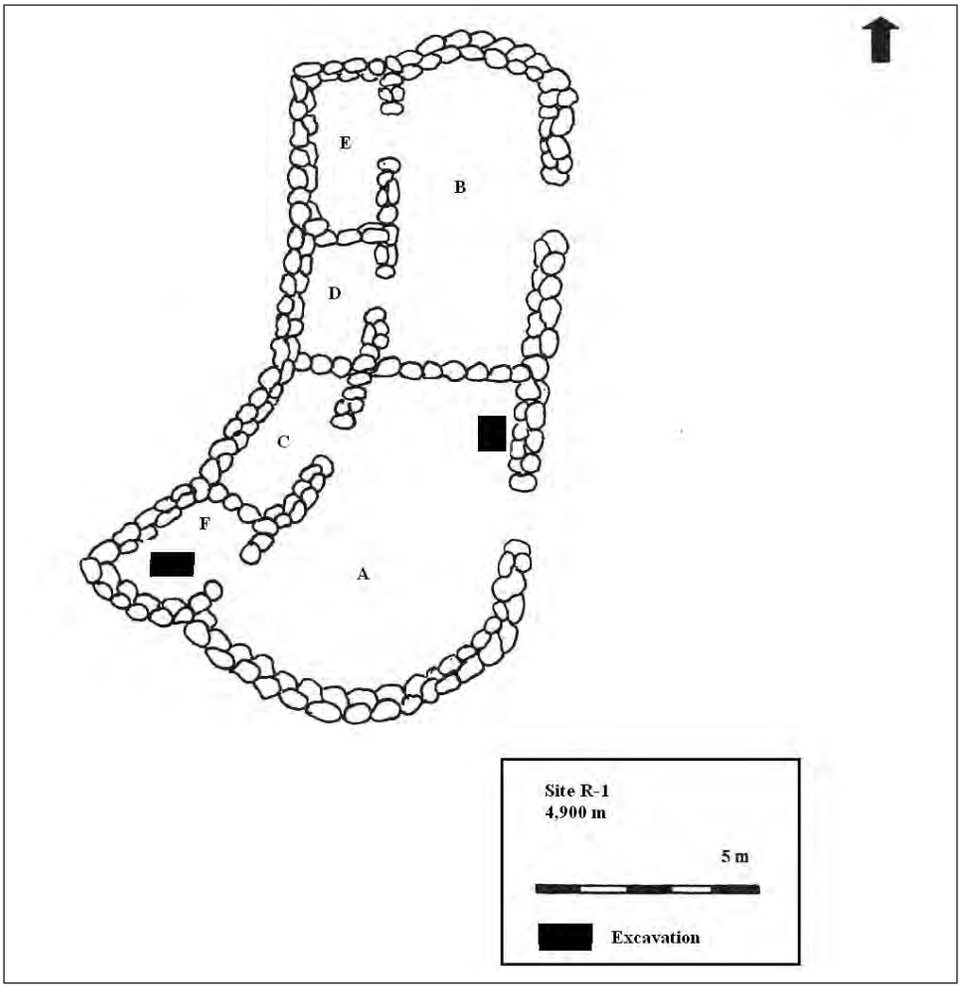


Fig. 2.9. Plan of the habitational complex (R-1) located to the north of the cemetery, showing the location of test excavations conducted in 1999.

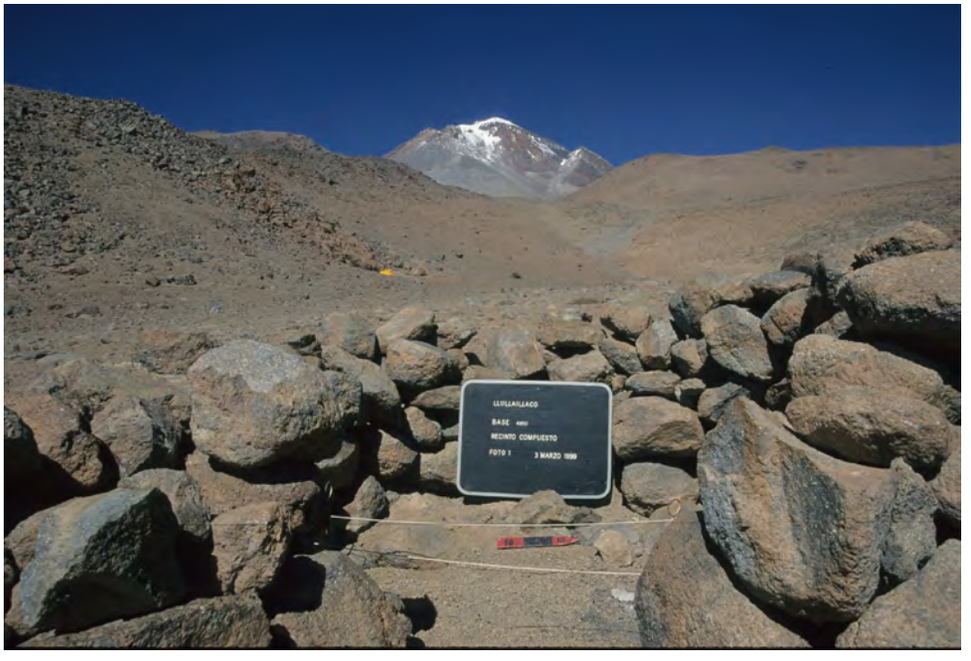


Fig. 2.10. Excavation in the habitational complex (R-1) in 1999.

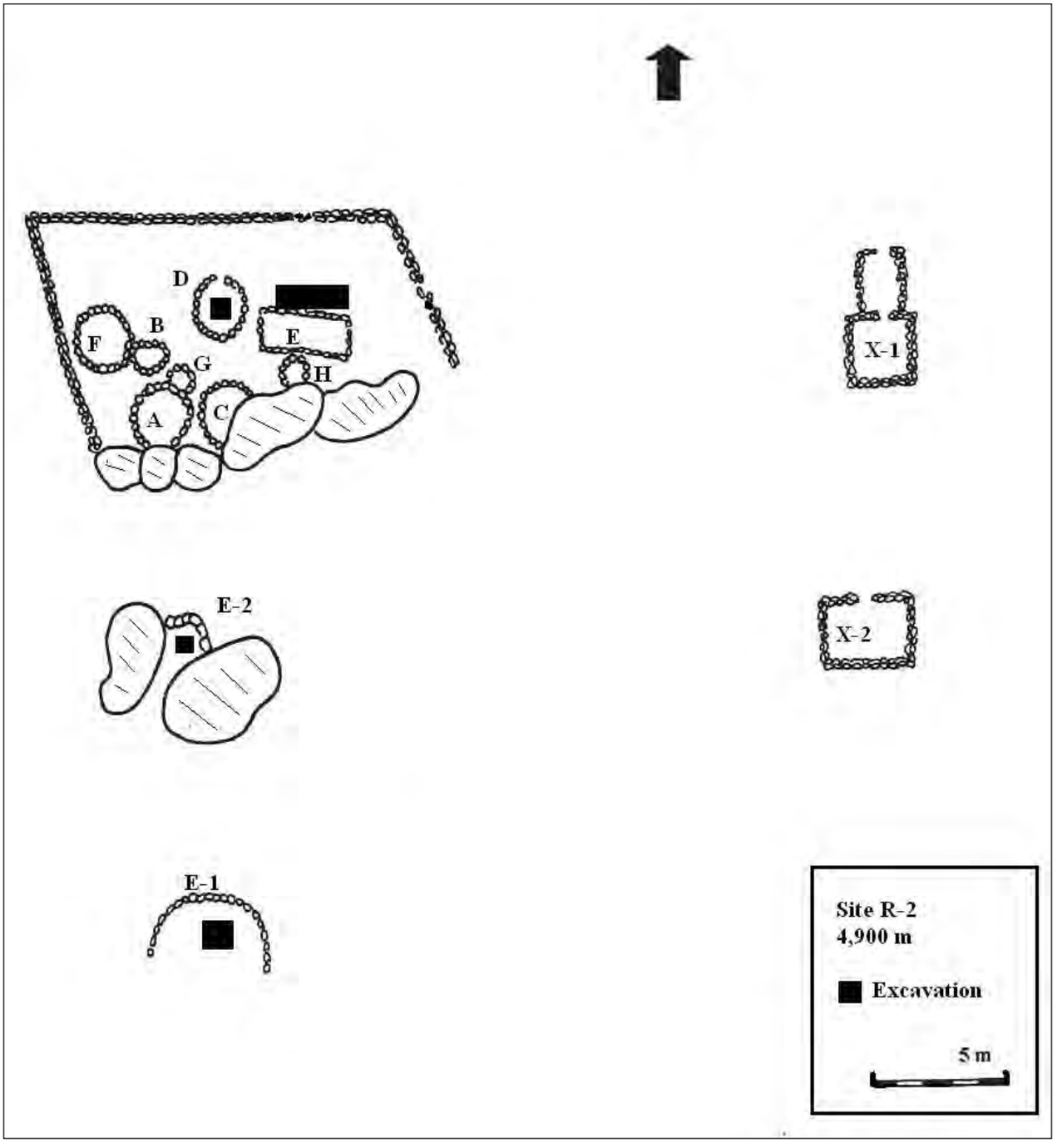


Fig. 2.11. A plan of the cemetery (R-2) showing the locations of test excavations in 1999.

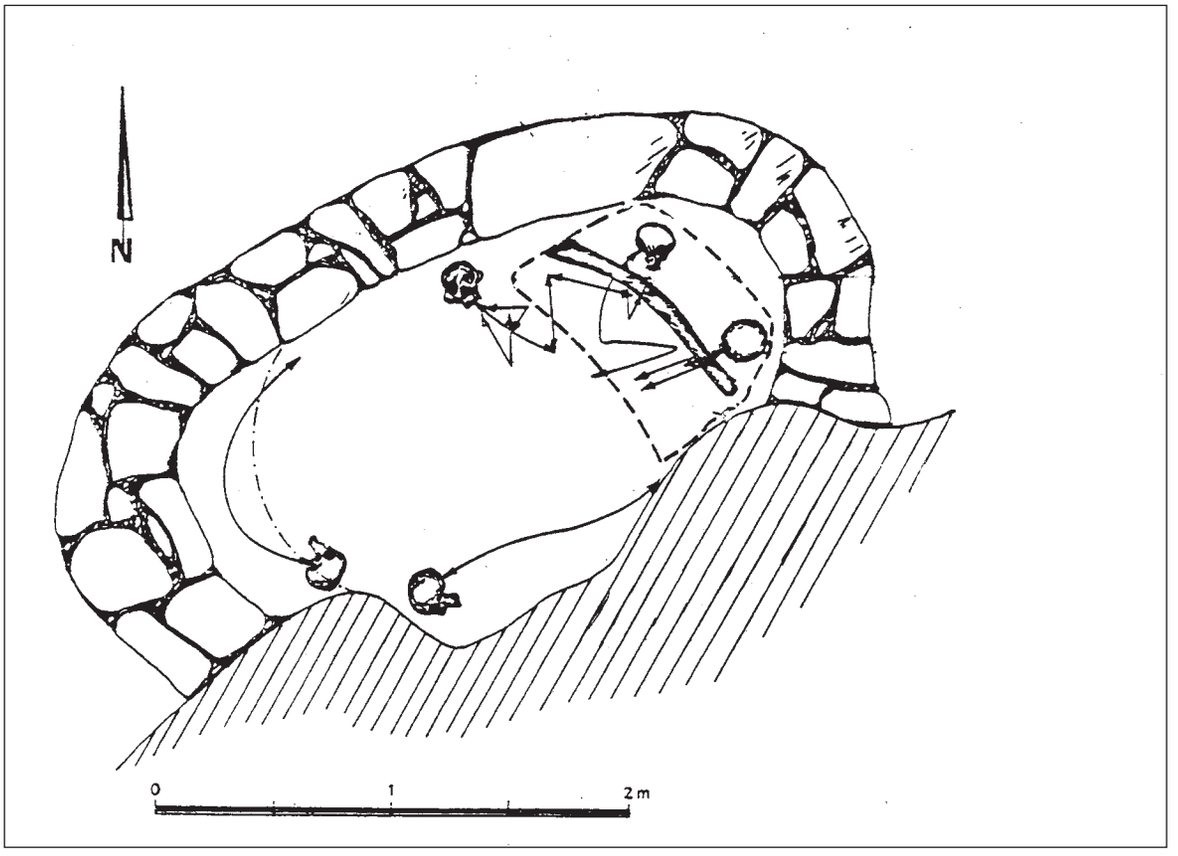


Fig. 2.12. A drawing of skeletons found at the cemetery (R-2) in 1974 (*from Beorchia 1985*).

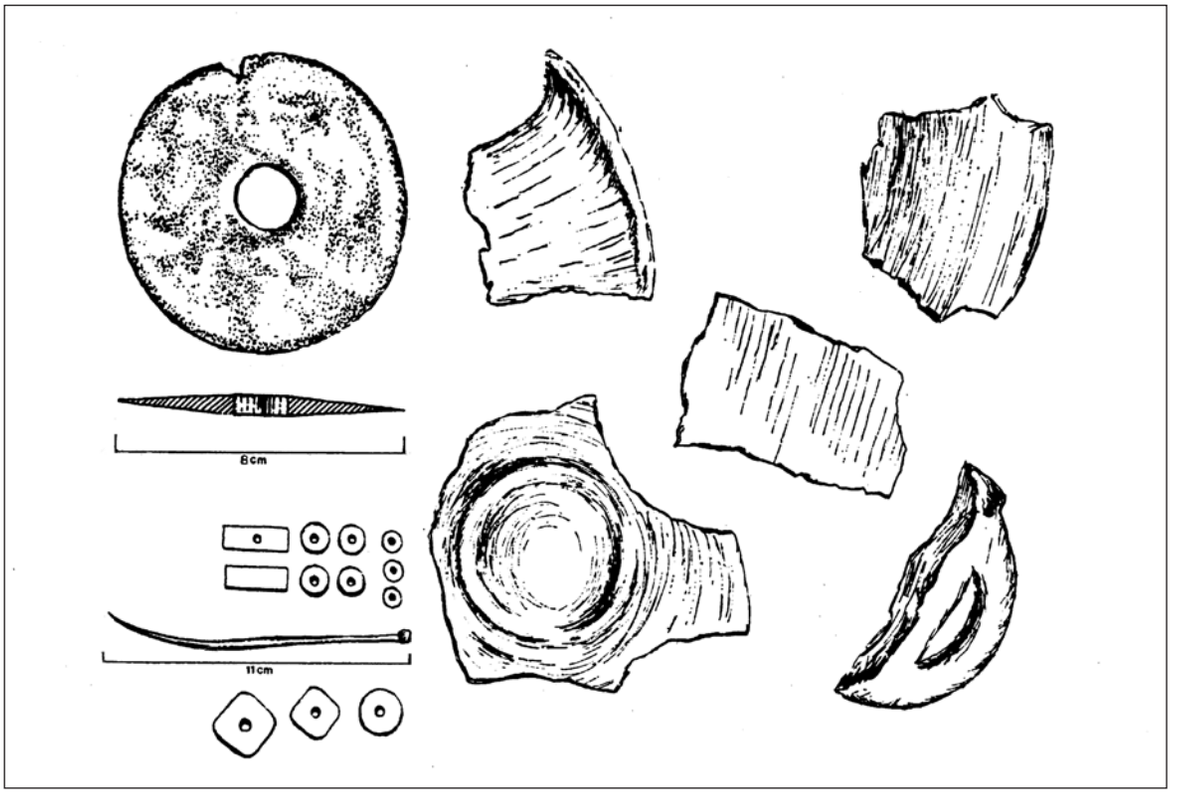


Fig. 2.13. Artifacts (shards, copper disk, beads, and a cactus spine) found in the cemetery (R-2) in 1974 (*from Beorchia 1985*).

Fig. 2.14. Section of the cemetery (R-2) showing the results of looting (photo 1999).

TAMBO

Tambo is the Quechua word for lodges (way stations) built beside Inca roads and used for rest and for the storage of items (cf. Hyslop 1990:333; Morris and Thompson 1985:109). A site (R-4) located at 5,200 m (17,060 ft) (24° 41'45" S and 68° 30'38" W), on the lower slopes of Mount Llullaillaco, fits the description (cf. Figures 2.15 and 2.16). A road leads in and out of it, and the complex provides a place from which to initiate ascents to the summit. In addition, the architecture of the principal structures at the *tambo* (Figure 2.17) is typically Inca (cf. Hyslop 1990).[4]

The main area of the *tambo* has a structural pattern that consists of a roofed enclosure followed by an open patio. These communicate with each other by trapezoidal door openings. There are five of these structures in the *tambo* area. All of the enclosures show a rectangular shape, built by means of double walls of stones selected to fit together and separated by a fill material of sand and gravel. Many of the buildings show evidence of having been originally roofed with wooden beams (cf. Figure 2.18). Doors with trapezoidal openings and lintels (about 1.45 to 2.10 m high and only 45 cm wide) communicate the roofed enclosures with the adjacent patios (cf. Figure 2.19). The lintels of structures C and E were intact. The best-preserved structure was E, which also opened onto a small plaza.[5]

The data obtained from a test excavation inside enclosure E1 indicates that the original floor level was 25 cm below the surface. Three flat stones—as well as vestiges of animal fiber and some ashes—were observed on a sedimentary layer darkened by organic content. Flagstones lay on the surface layer of sand, but they may have served as part of the roof. Fragmented pottery was found together with straw from the roof, charcoal, wood, and fruit of the *chañar* tree (*Geoffroea decorticans*).

A test excavation was also undertaken inside enclosure J2. It revealed a 4.5-cm-thick floor lying 20 cm beneath the surface (Figure 2.20). Cinder, charcoal, and burned rocks were homogeneously distributed with

Fig. 2.15. View to the north in 1985 over the Inca way station (*tambo*) (R-4) located at 5,200 m (17,060 ft).

Fig. 2.16. View to the south in 1999 over the *tambo* (R-4), with the summit of Llullaillaco in the background.

bone fragments of rodents and camelids—and some ceramic fragments were observed on a sedimentary layer darkened by the organic content. All of this evidence indicates that the enclosure was an activity area utilized for food preparation. We also collected some shards, charcoal, wood, fragments of animal bones, and lithic material.

There are two contiguous rectangular enclosures, which are not connected by an opening (cf. Figure 2.17). They are located to the east of the open plaza E2. Ceramic fragments and some cinder were obtained from the surface of both structures. A ceramic spindle whorl was found outside the western wall. The western enclosure F measures 8.4 by 4.1 m and is perfectly oriented to the east. Its walls are 1.65 m high, with an average width of 80 cm—having been built with nine rows of stones. An average of 14 stones was used in the construction of each square meter of the wall. The eastern enclosure G measures 4.8 by 3.4 m and is also oriented exactly to the east. Its walls reach a maximum height of 1.50 m, with an average width of 65 cm. The stones used in their construction average about 20 by 30 cm.

A test excavation in structure F revealed a layer of mixed sand and rocks from the collapsed walls—as well as a small semicircle of stones. A lower stratum formed the original floor of the enclosure. This was composed of a sandy sedimentary layer darkened by ashes, which contained pieces of pottery. An area covered with charcoal, about 16 cm thick and 70 cm long by 50 cm wide, was visible on the floor's surface. A large charred flat stone lay underneath the charcoal. A stratum of yellowish consolidated and loamy silt lay above bedrock.

To the west of the main complex were less well-made structures (L through P) with low walls abutting boulders. These appear to have been contemporaneous with the main complex, based on the similarity of the

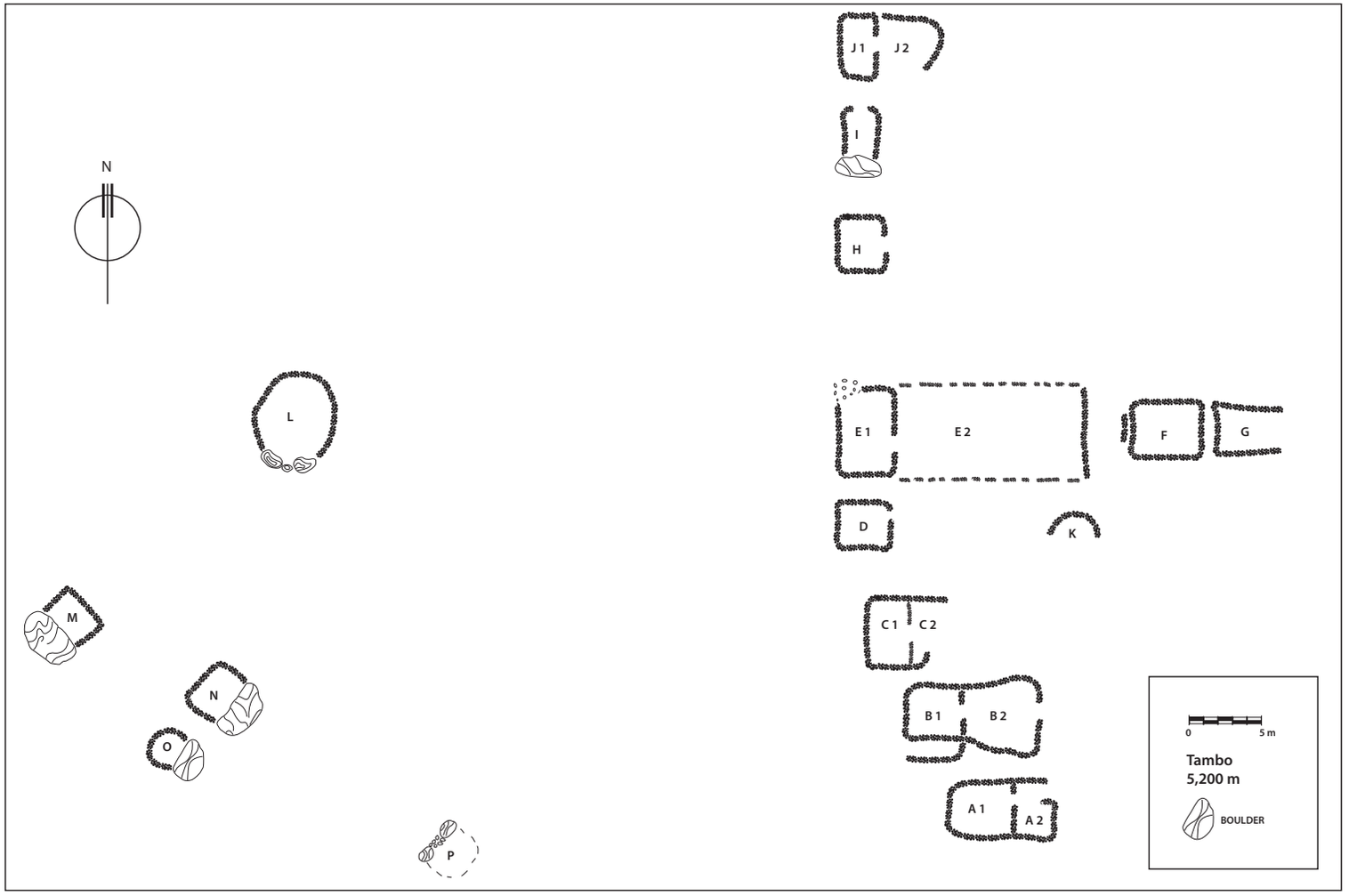


Fig. 2.17a. Preliminary plan of the Inca *tambo* and adjacent sites (R-4) surveyed in 1985.

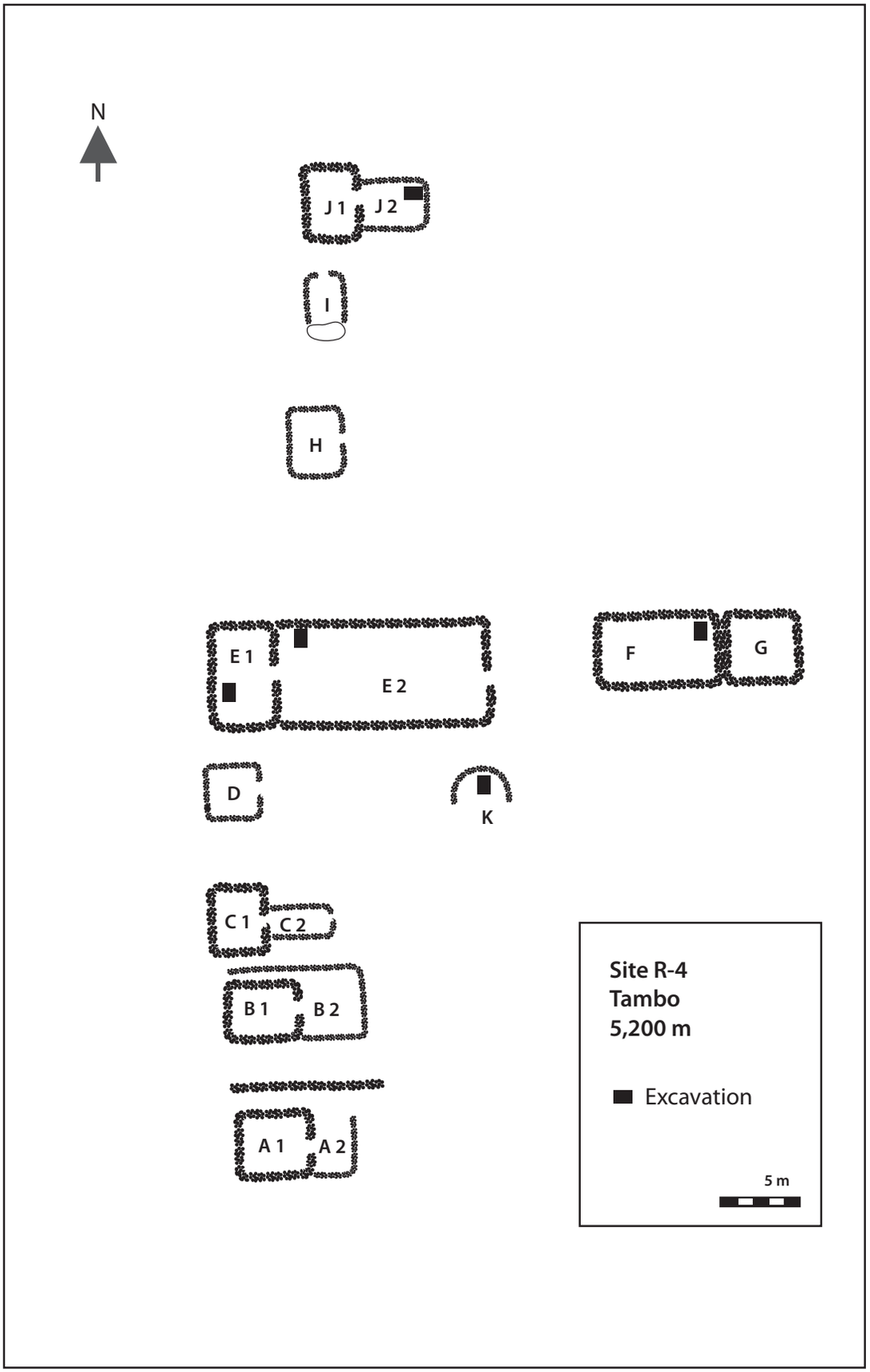


Fig. 2.17b. Plan of the main ruins of the Inca *tambo* (R-4) showing the location of test excavations conducted in 1999.

Fig. 2.18. Wooden beams in situ at the *tambo* (R-4) in 1999.

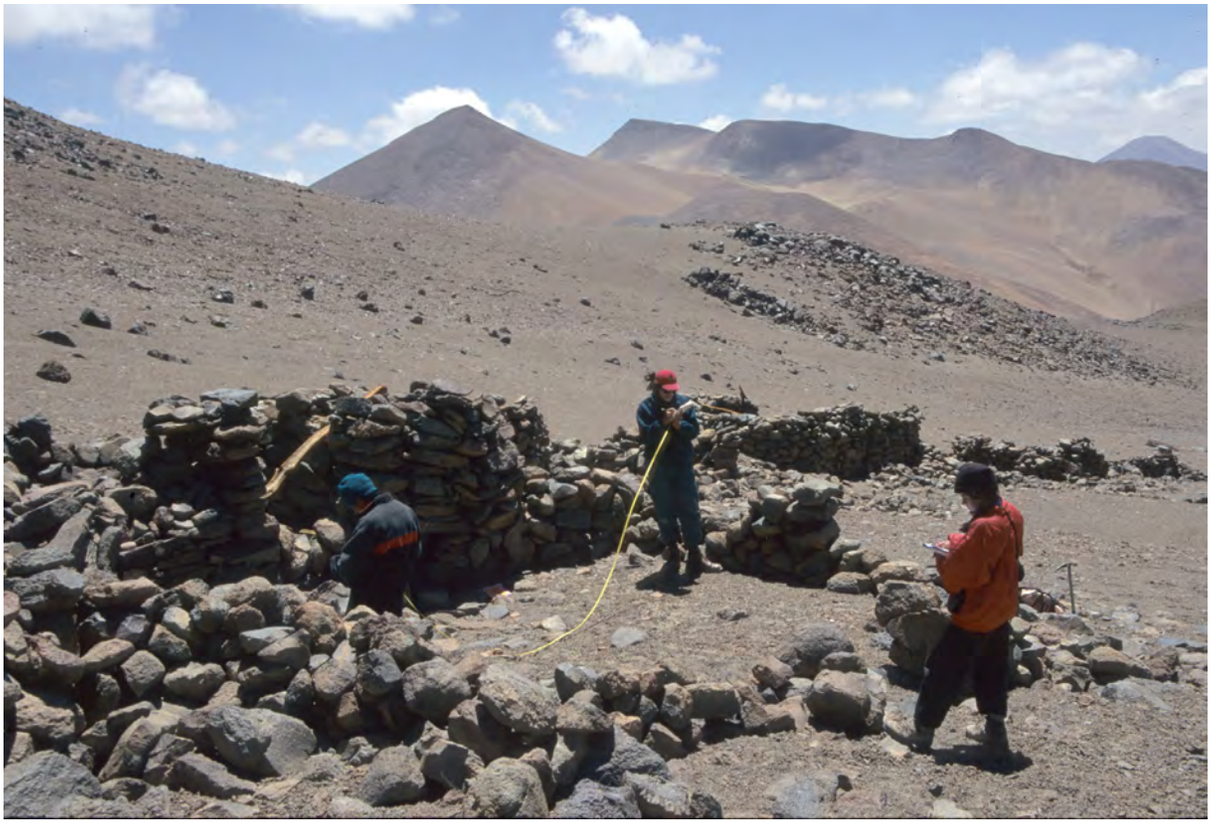


Fig. 2.19. One of the structures (E) within the *tambo* (R-4) opened onto a small plaza (photo 1999).

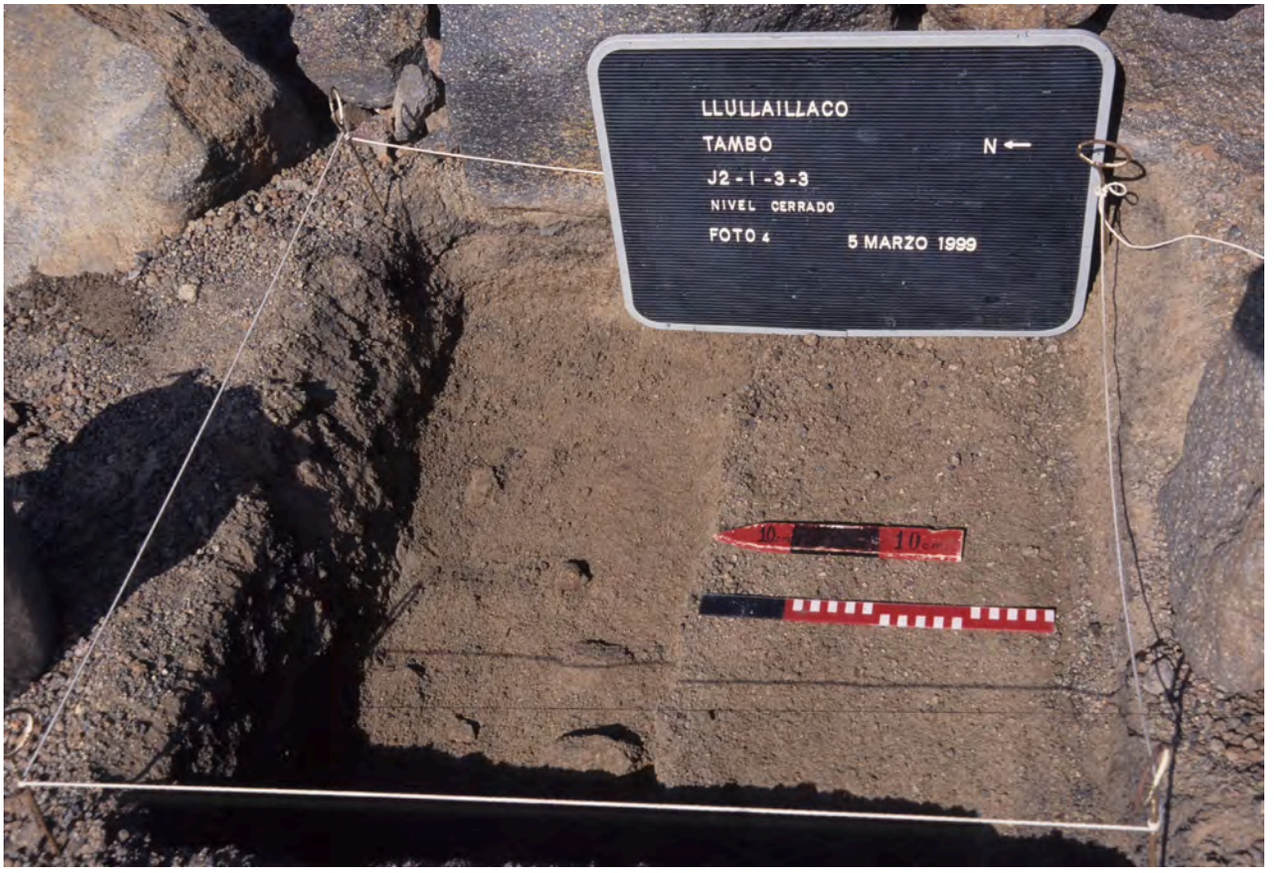


Fig. 2.20. An excavation inside one of the open enclosures (structure J-2) of the *tambo* (R-4) in 1999.

ceramics—and it seems reasonable to assume that people of lesser status used them.

No water exists near the site, and thus it is no surprise that numerous shards from storage vessels—at least some of which would have been for water—are scattered throughout the site. The inner diameter of the neck of one such vessel was 25 cm, indicating that the vessel had a large storage capacity (Figure 2.21). The main concentrations of shards were in structures B2, J2, L, M, N, and P. The shards were brick-colored plain ware common to the region, albeit also similar to those found at other Inca sites (cf. Bray et al. 2005).

Camelid bones (likely of llamas) found inside structure J2 suggest that items were carried to the site by llamas and that at least some of them may have been eaten there. A stone scraper was also found inside the structure, and it presumably had been used to remove the skin from camelids. A flat wooden spade had reportedly been found near structure J2, and it was similar to one discovered on the summit by climbers some years before (cf. Figure 2.22).[6] Taken together, the evidence supports the conclusion that the site was primarily used for temporary quarters of people and for the storage of goods associated with ritual activities that took place on the summit of Llullaillaco.

SITE BELOW THE TAMBO

A site (R-3) with structures lying between 4,960 (16,273 ft) and 5,000 m (16,404 ft) (24° 41' S and 68° 30' W) concludes our discussion of archaeological remains located at the base of the volcano. A trail leads down from the *tambo* in a roughly straight line to the northeast until it reaches a set of ruins. One building was constructed on a raised platform, which is partly surrounded by four stone windbreaks (Figure 2.23). The main structure measured 4 by 3.5 m and is similar to one (R-5) at about 5,600 m in having a platform built around one section of it. The other structures, located some 30 m north, were less well built. No artifacts were visible on the surface. A section of the Inca trail (Figure 2.24) continues to lead north in the direction of the outlying ruins described previously.

Fig. 2.21. The 25-cm-diameter neck of a pot suggests the large size of one of the storage vessels at the way station (*tambo*) (R-4) on Llullaillaco (photo 1985).

SITES ON THE ROUTE TO THE SUMMIT

From the *tambo*, the participants in the summit ceremonies would have ascended the northeastern slope of the volcano. Although pieces of wood indicate the route they took, the loose scree and steepness of the terrain has meant that little remains of a trail until about 5,578 m (18,300 ft). A few small sites exist on the slope, before a group of ruins is reached on the saddle located at 6,500 m.

Intermediary Ruins at 5,600 Meters

The first group of intermediate ruins (R-5) is located at about 5,600 m (18,372 ft) (24º 42' S and 68º 30' W) on the lower slopes of the volcano, above a scree slope that extends gradually upward between 5,000 m (16,404 ft) and 5,600 m (18,372 ft). The site was built close to where the northeastern slope begins to become noticeably steeper. There is a difference of about 15 m in elevation between the western and eastern ends of the site.

At this site, a rectangular structure measuring 4.5 by 3.5 m with a wall height of 1.5 m was built near a rock outcrop (cf. Figures 2.25 and 2.26). An entranceway was located on the south side, and some wood (including one piece 2.2 m long) was found inside. A narrow (about 80-cm-wide) platform along the north and east sides was level with the floor of the structure (cf. Figure 2.27).

Fig. 2.22. This wooden hand shovel or spade was found in the *tambo* (R-4) on Llullaillaco by climbers in the 1980s.

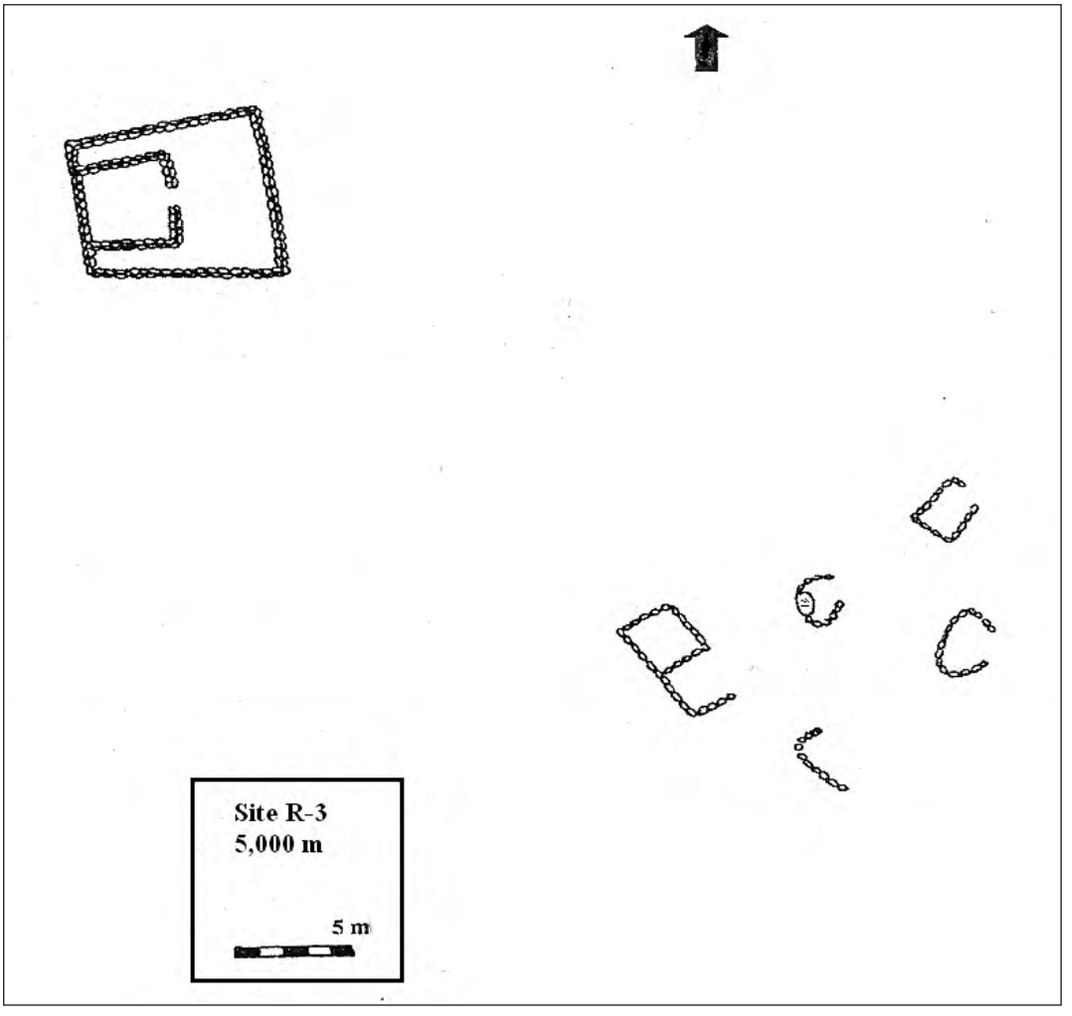


Fig. 2.23. (*a*) Ruins at the site R-3 located below the *tambo* and with structures lying between 4,960 and 5,000 m (16,273 and 16,404 ft) (photo 1999). (*b*) Plan of the site R-3 located below the *tambo*.

Fig. 2.24. Inca trail above the *tambo* as seen in 1985.

Fig. 2.25. Ruins at the site R-5 at about 5,600 m (18,372 ft) in 1985.

Fig. 2.26. A well-made rectangular structure in site R-5 (photo 1999).

A 3-m section of a retaining wall was built to the south, and a 2.5-m wall was located to the northeast. Slightly more to the north was a semicircular wall, 3.9 m across, which had a 3-m-long wall in front of it. A few plain brick-colored shards were found next to the semicircle. There is an oval structure (4 by 3.5 m) located to the southeast, and a rectangular structure (3.3 by 2.3 m) with rounded corners to the southwest.

This site was clearly used as an intermediate camp on the way to the summit. A trail leads down from it to the ruins of the *tambo* below. The rim of a large vessel (diameter of 15 cm) indicates that food supplies or water was carried here. The site may be the one Rebitsch (1966:69) mentioned as consisting of some structures and wood near a rock outcrop that served as the point of departure for the ancient route up the volcano. The slope does indeed begin to become steeper above the ruins (Figure 2.28). Rebitsch also noted a nearby pool of water. Although none was seen during our explorations, it is possible that one could have formed by melting ice formations close to the site.

Structures on the Higher Slopes

A stone circle (R-6) 3 m in diameter was found at about 5,711 m (18,737 ft). A piece of cactus wood was found inside it, and several large pieces of the cactus wood were under a nearby boulder.

An artificial platform (site R-7), measuring 3 by 5 m, at about 6,261 m (20,541 ft) is open on the side facing out from the mountain. The platform was formed by digging into the mountainside, and thus avoided the need for a retaining wall. The platform was unusual in having wooden poles protruding from it (Figure 2.29). It is possible that the poles were the remains of a collapsed roof or that they served to make a base for the platform, possibly as a flat place to pile wood and other supplies on the steep incline. Grass was found under the poles, presumably having been used as floor insulation.

Next to the platform is a roughly square structure 5 m in diameter, with a wall 1 m high. A few stones were piled on its opposite side, which may be the remains of a separate structure.

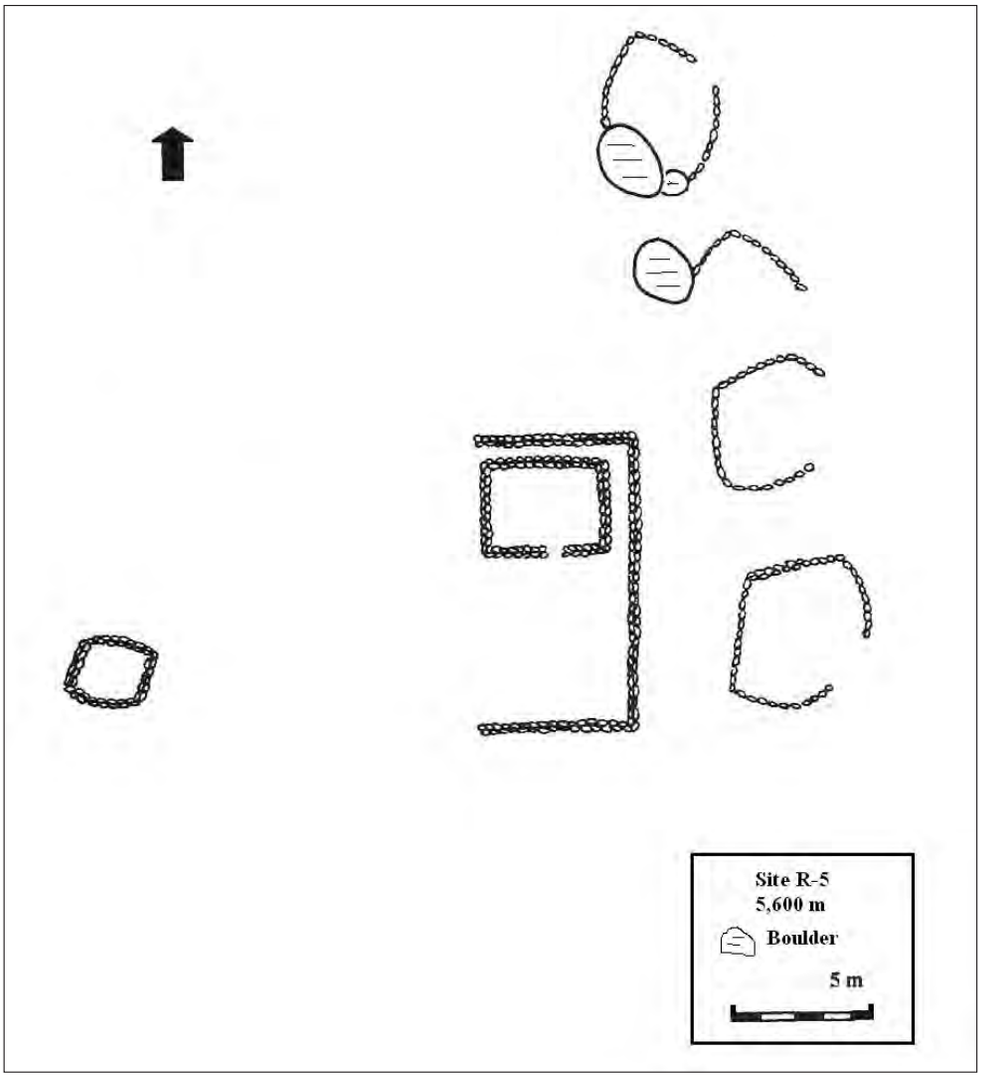


Fig. 2.27. A plan of site R-5.

Another site (R-8) lies at about 6,371 m (20,902 ft). It is an open rectangular structure 1.7 m wide by 3 m in length, with the long side facing the slope. It has a 1.2-m-high outer retaining wall forming a platform. Nothing was seen on the surface. The platform presumably served as a flat spot for persons to rest, and possibly for placing loads, during the ascent.

Saddle Ruins

Although only a few structures (R-9) exist on the saddle (24º 43' S and 68º 31' W) below the summit, they are nonetheless impressive for being at about 6,486 m (21,279 ft)—an altitude higher than Mount McKinley (Figure 2.30). This is the site excavated by Rebitsch (1966) in 1958 and 1961. Although he left no plan of this site (or of the one on the summit), it is possible to compare his findings with those made during our expeditions (Reinhard 1993) (Figure 2.31).

A two-roomed structure is the most important ruin at this site (Figure 2.32). Rebitsch (1966:68) noted the west wall as being 3 m high. A comparison of our photos with one taken by Rebitsch (1966:67) demonstrates that he is incorrect, and the wall is approximately 1.8 m high from the unexcavated floor level.

One of the rooms (A1) is open to the northern, downward-sloping, side—where a retaining wall has collapsed. On the south side of the room is an 80-cm-thick double wall that has a gravel and sand fill.

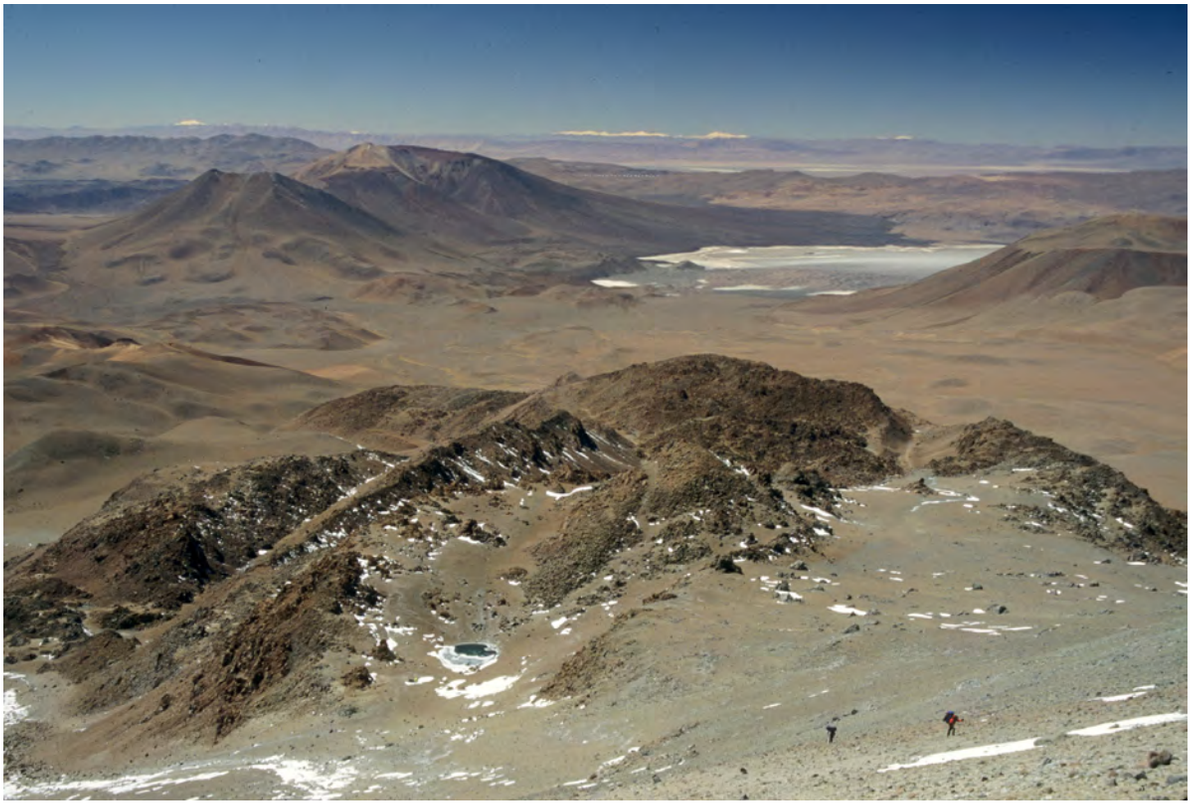


Fig. 2.28. View of the slope as it steepens above site R-5 (photo 1999).

Fig. 2.29. Measuring the site R-7 at about 6,260 m (20,538 ft). It included a platform with wooden poles protruding from it (photo 1999).

Rebitsch (1966:68) noted that the double wall also had grass in it. Long pieces of cactus wood have fallen in, which had likely been used to form a roof.

Based on the finds of flat stones and of a grass mat in the structure, Rebitsch (1966:68) believed that the roof had been covered by mats held down by the stones. It is possible, however, that cloths or hides were utilized to cover the roof and that mats were used on the floor. The slabs could have fallen from the walls or been used for flooring.

The room had been extensively excavated, and no trace was seen of a circle of stones in its center—as described by Rebitsch (1966:68). In this circle, he reported finding partly burned wood, cores of unidentified fruit, coarsely made shards, a corncob, a grass mat, a sandal made of twisted grass, and a poorly woven piece of dark brown cloth. The floor was covered with a layer of grass. Given these finds, Rebitsch reasonably concluded that the room had been used as a habitation.

Although Rebitsch did not so state, apparently part of a woven sack made of unidentified plant fibers, a piece of a net bag, and two pieces of cloth (one from clothing and one from a bag) were found in or near this structure. They reportedly came from the ruins at the saddle [see Millán de Palavecino (1966)], and Rebitsch did not note such items as coming from the other structures in the site.

The room opens to the east and is partly enclosed by a curved wall. Based on pieces of wood he found, Rebitsch (1966:68) interpreted this as a place built for storage. However, it is unlikely that the Incas would have built a walled room simply to store wood (such a structure has not been found at other sites)—and thus it probably also served as a habitational structure. Perhaps the wood represents the remains of a roof that fell in.

Adjoining room A1 to the south is another room (A2), in which Rebitsch (1966:69) found grass and wool ropes and camelid excrement. He thought the room had only been half roofed and that it served as a corral. However, camelid excrement might also have been used for fuel. Unfortunately, Rebitsch did not state the amount of excrement found nor whether it had been burned or was distributed evenly throughout the structure.

A circle of stones (structure B) lies 4.2 m to the east of the two-roomed structure. It had been excavated

Fig. 2.30. Approaching the ruins at site R-9 on the saddle at about 6,500 m (21,325 ft) in 1999.

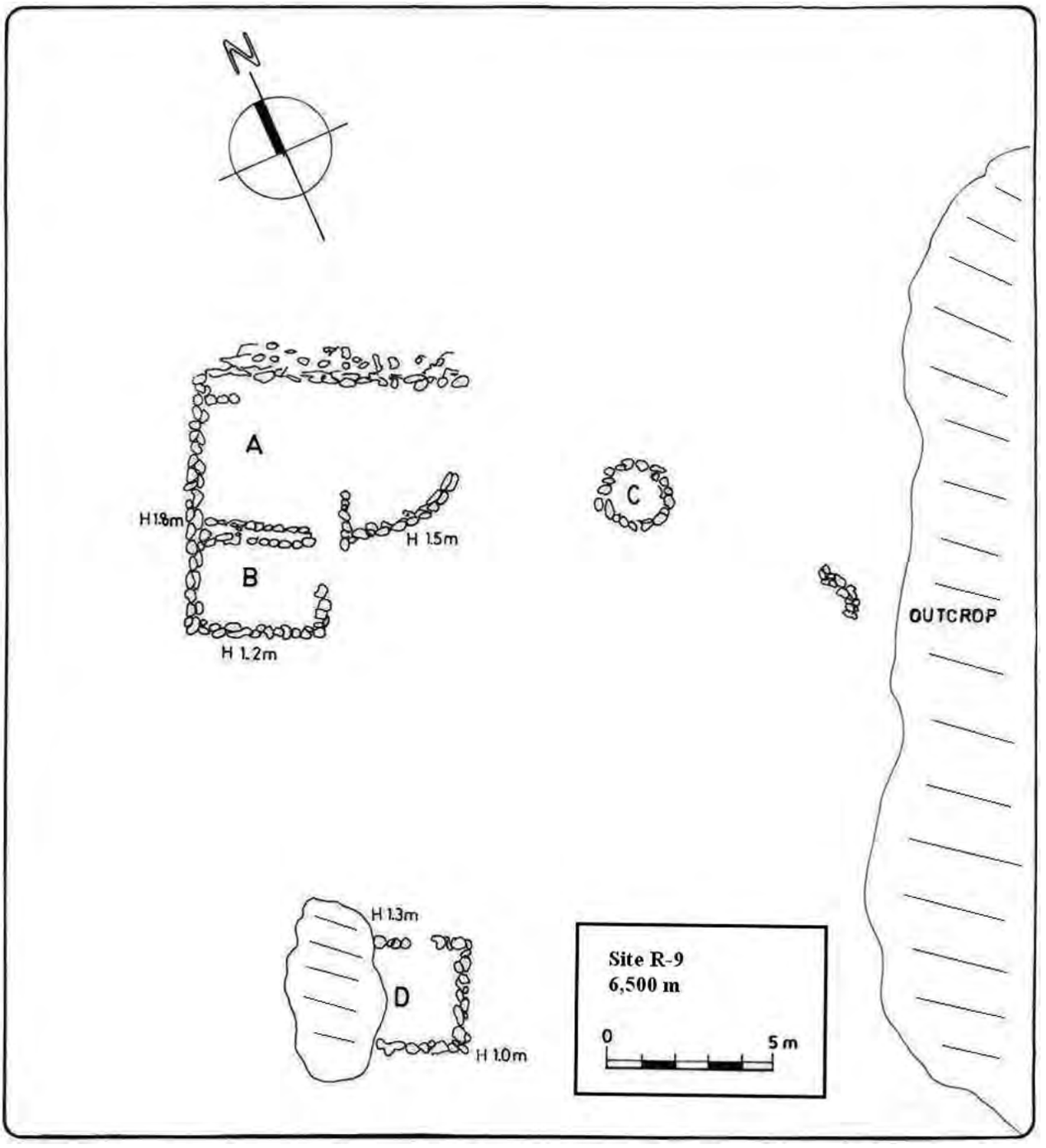


Fig. 2.31. Plan made in 1985 of the ruins at site R-9.

Fig. 2.32. A view west from the pass toward the summit, with the two-roomed structure of site R-9 in the foreground (photo 1985).

previously, presumably by Rebitsch. This may be the circle Rebitsch (1966:68) referred to as having remains of a roof, but no wood was observed by Glauser and Reinhard in 1984 (Reinhard 1993).

About 15 m to the south of the circle is a rectangular structure (D) built against a boulder. Its corners are rounded, and it may be the circle Rebitsch (1966:68) noted as being in the center of the saddle. He made no mention of a boulder that exists in the spot, nor did we see the flat stone slab he described. Rebitsch reported finding a clump of grass and some animal excrement under that stone.

The discovery of camelid excrement suggests that llamas were taken to these heights. Although high, this altitude is not beyond their capacity—as the route is relatively easy and even mules have been known to reach only 300 m lower (cf. Tierney 1989:69). The llamas could have been used to carry up supplies, and perhaps were eaten or sacrificed later. Another possibility is that the dried excrement was carried up to be used as fuel. This seems less likely, in that it would be difficult to burn at such heights and to date no excrement has been found burned at other high-altitude sites.

Based on the types of structures and the material evidence collected, it appears likely that the ruins on the saddle did not have a ceremonial function but instead had been used as a place to rest on the way to the summit (cf. Figure 2.33). No further archaeological remains were located until the summit itself was reached.

Fig. 2.33. Climbers leaving the high camp in 1999 to ascend to the summit platform (upper right).

NOTES

1. This volcano is also named, appropriately enough, Cerro Inca on the 1:50,000 map of Chile's Instituto Geográfico Militar.

2. We found at 5,242 m (17,200 ft) a continuation of the trail leading up from the cemetery, which then merged with a road from the *tambo* (5,200 m). This single road led on to an important site located higher on the volcano at 5,548 m.

3. A trail leads out from the lower part of the cemetery to two other burials and to a small site apparently used as a refuge, based on the remains of charcoal and ceramic fragments.

4. See Hyslop (1990) and Raffino (1981) for discussions of Inca *tambos* and other types of Inca sites in northwest Argentina.

5. An interesting feature of some of the structures (A, C, D, E) was their having rounded corners, which most Inca structures lack. Curiously, structure B2 had rounded corners and B1 did not.

6. The latter had been recovered by Roberto Vitry, who showed it to Reinhard in 1981.

Chapter Three

The Ceremonial Site on the Summit

"Finally, the bodies were buried with gold and silver
and other things and with special superstitions."

—Bernabé Cobo, 1653

The ceremonial site of Llullaillaco (Figures 3.1 through 3.3) is located at an elevation of 6,712 m (24° 43' 05" S and 68° 32' 10" W) on a ridge that projects to the northeast from the crest of the summit's highest point [6,739 m (22,109 ft)]. The area where the sanctuary was built is relatively flat, being 90 m long and 15 m wide and divided into two sections of approximately 30 m. The first section is oriented toward the northeast, and the second being veered toward the northwest. The former has structures such as a two-room building and a windbreak. A raised platform was constructed on the false summit at the point where the ridge veers sharply to the northwest. Along the remaining section of the ridge, we recorded four stone circles.[1] The last of these was located on another small promontory that marked the end of the ridge.[2]

Construction at the Sanctuary

A few structures, including the two-room building and the windbreak, had been built on the section of Llullaillaco's summit that offers natural protection from the wind. In contrast, the ceremonial structures (the platform and stone circles) were constructed on the most visible promontories on the ridge.

Two-room Building

The most noticeable structure is a two-room building protected from the prevailing west wind by the mass of rock forming the summit's high point (cf. Figures 3.3 through 3.5). The walls of the structure, made of unworked stones and without mortar, reach 1.5 m high and are 80 cm thick. Two rooms open out to a roughly formed "patio" area. Small doorways to these rooms are covered by stone lintels that are still intact. Wood was found in both enclosures, including pieces that served as beams—in that they are long enough to reach across the rooms. Several of these beams were found still in place, one of which measured 2.9 m in length.

Inside one of the rooms, on a permafrost surface partly covered with fresh snow, were wooden cactus and hardwood beams of algarrobo (*Proposis* sp.) in addition to straw tied together with fibers—apparently belonging to the original roof enclosure. During our excavations, a bundle made of two straw mats (each approximately 1.6 m in length by 1.2 m in width and 12 cm thick) was found at a depth of 20 cm in part of the fill deposited above the original floor level (Figure 3.6). Three extraordinarily well-preserved basketwork bags were excavated from a depth of 28 cm in the area adjoining the location of the straw mats (Figure 3.7).

The two-room structure probably served as a shelter for the people who conducted the ceremonies. The

Fig. 3.1. The highest point on Llullaillaco's summit as seen in 1983.

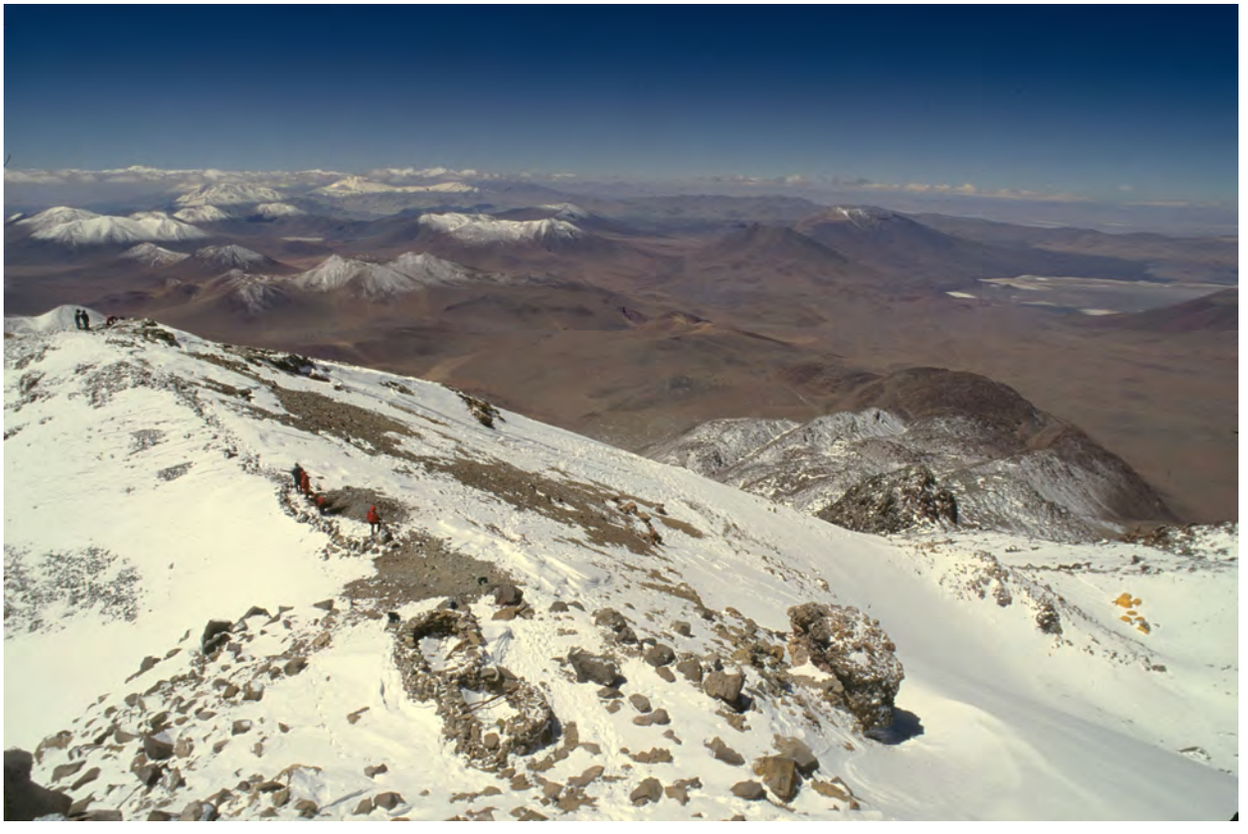


Fig. 3.2. An overview of the ceremonial site on Llullaillaco's summit promontory in 1999. People at center-left are in the "windbreak" and at the ceremonial platform at the upper left. The expedition's high camp is visible at the lower right.

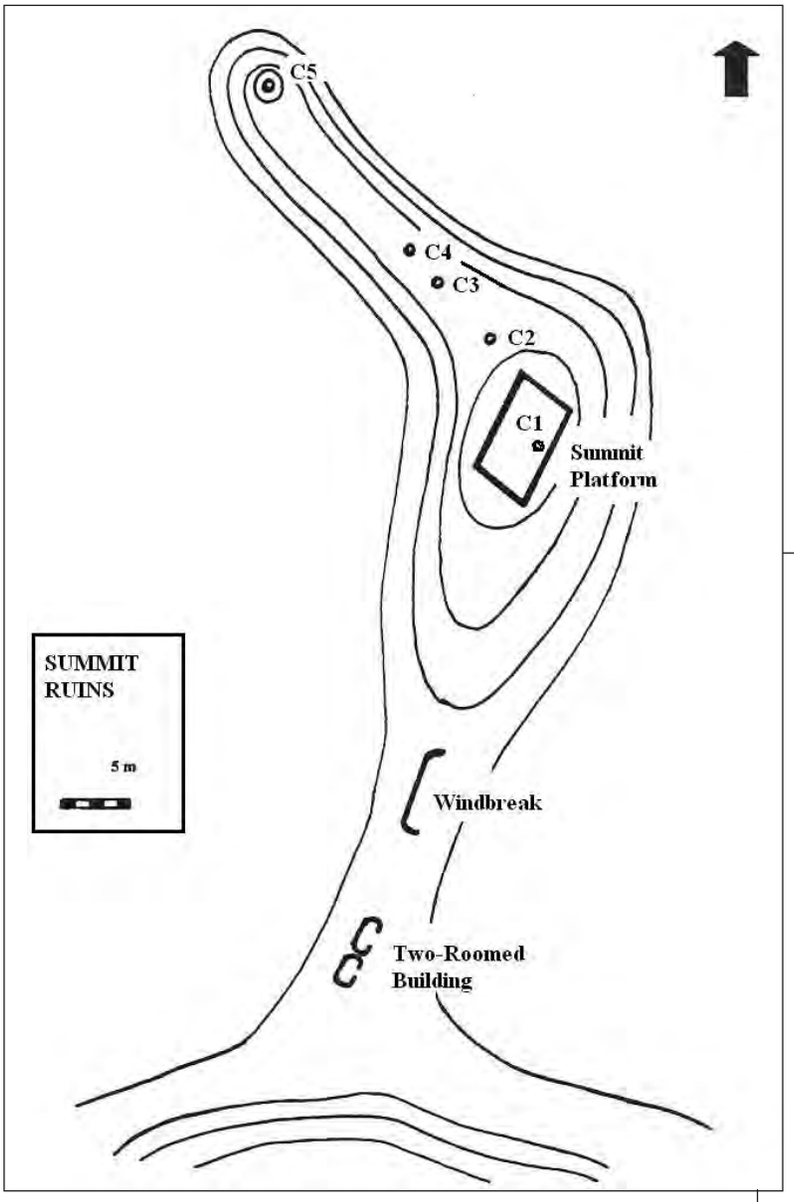


Fig. 3.3a. A plan of the summit promontory with all the structures that were surveyed .

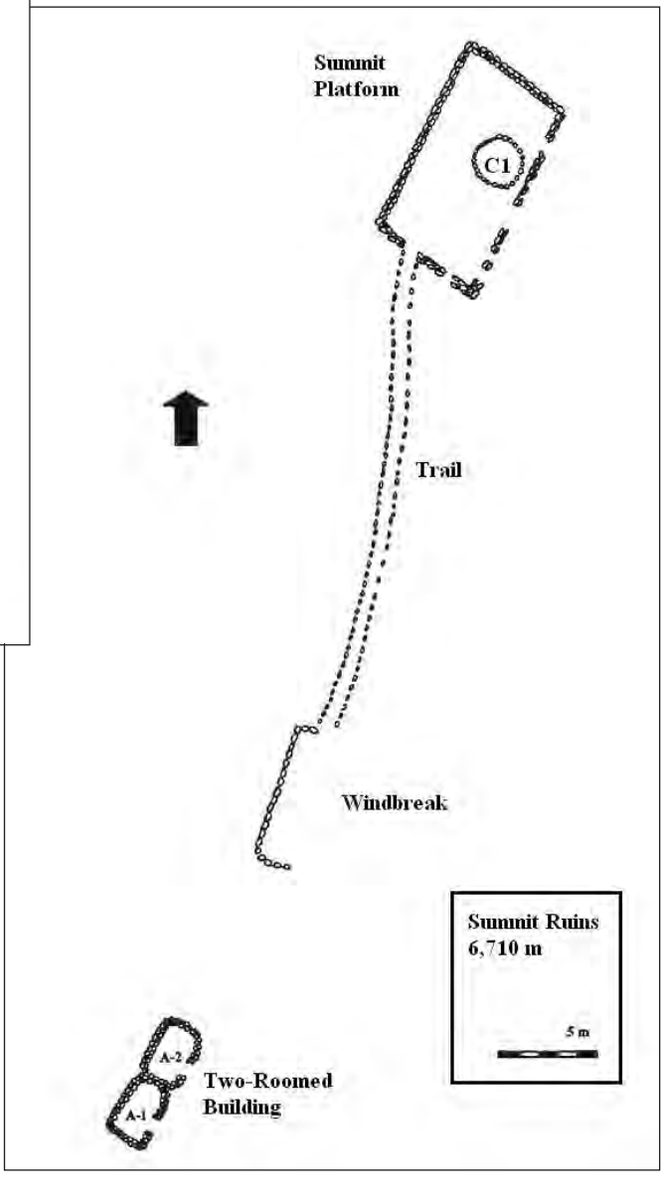


Fig. 3.3b. A plan of the summit platform and nearby structures.

Fig. 3.4. View south to the two-roomed building ("priests' house") in 1999. The outcrop behind it provides protection from the prevailing wind. The highest point of Llullaillaco's summit is at the upper right.

Fig. 3.5. The two-roomed building on Llullaillaco's summit in 1999. Climbers at the upper left are standing on the ceremonial platform.

Fig. 3.6. Examining straw matting found in the two-roomed building in 1999. Pieces of wood from the collapsed roof are to the right.

Fig. 3.7. Basketwork bag found in the two-roomed building in 1999.

building would have been used for a short period, perhaps only a single night, while the participants remained on the summit. Such individuals were likely specifically designated for the shrine, which was common practice for the Incas (cf. Cobo 1990:159). According to the historical accounts written by the Spanish chroniclers, ritual offerings were often made—just as they are today—on mountains prior to sunrise (cf. Aranguren 1975:114; Bastien 1978:145).

The patio was formed by a simple row of stones. Just outside the structure, we found a small section of grass rope and a couple of fragments of undecorated cloth. A local mountaineer (Roberto Vitry, 1981 personal communication to Johan Reinhard) noted that a piece of grass rope, a lump of sulfur, and a wooden hand spade (typically Inca) had been found in the vicinity of the two-room structure some years before. Five meters west of the two-room structure is a small (1-m-diameter) circle formed by large stones (joined in one place by a small wall 60 cm high), which was likely used for storage.

Windbreak

A rustic structure is located 9 m to the north of the two-room building. It is semirectangular in shape, with rounded ends and a wall 80 cm high. The prevailing wind blows from the west, and the structure probably served as a shelter for people and perhaps for llamas. A 24-m-long trail, defined by aligned stones, starts from this structure—leading to the promontory, where the ceremonial platform was built (Figure 3.3).

Stone Circles

To the west of the platform is a circle formed by two rows of stones. An undecorated shard was found on the surface of the circle, but nothing else appeared to a depth of 50 cm. Farther west, yet another simple circle of stones exists. Small pieces of charcoal were found a few centimeters beneath the surface.

The last of the stone circles is located more than 30 m away from the platform, on a small highly visible promontory that stands out from the northwestern end of the ridge (Figure 3.8). It has a maximum diameter of 1.7 m and is made up of a simple line of stones. The inside fill of the structure was 15 cm thick, and contained pieces of charcoal, cinder, and burned firewood. These were visible despite the snow that had accumulated there. Vestiges of charcoal were also recorded in the stratigraphy of the second excavation level, to a depth of 78 cm.

Ceremonial Platform

Although it is barely visible, one of the most important ruins on the mountain is the platform located about 6 m higher on a prominent rise at the northern end of the summit area (cf. Figures 3.2 and 3.3). The platform is 10.5 m long and 6 m wide, and was in part built with retaining walls—inside of which a fine gravel/sand fill was placed to create a level surface. The northern and eastern sides of the retaining wall are more intact than the western and southern, and in some places they reach nearly 50 cm high (cf. Figure 3.9). The long side of the structure is oriented to 30 degrees magnetic north, which is the direction of the volcanoes Socompa and Pular—on which Inca ruins have also been found (cf. Beorchia 1985; Le Paige 1978).

Rebitsch (1966:71–72) noted a circle (or "rounded square") of stones inside the platform (cf. Figures 3.10 and 3.11). He saw three dark red stones on the surface of the circle, which he thought might represent "cult symbols" (Rebitsch 1961:42). Given our later discovery of three mummies in the platform, the Incas may have intended these stones to mark their burials. A similar pattern was observed on Mount Copiapo (Reinhard 1992a), as well as during a surface survey in the Famatina range in northwestern Argentina (Ceruti 2001e and 2007b).

An excavation was carried out in 1961 by Rebitsch (1966:71–72) in the center of the artificial platform. He dug to an unspecified depth beneath stone slabs within the circle, and described finding only burned grass, an undecorated brick-colored shard, and a piece of multicolored wool cloth (Millán de Palavecino 1966:95).[3]

During our expedition in March of 1999, the excavations at the ceremonial platform revealed three separate burials and several offering assemblages (Figures 3.11 through 3.13). One young woman, one girl, and one boy were found together with numerous offerings made of metal, shell, pottery, feathers, and textiles in a remarkable state of preservation.

MUMMIES AND ASSOCIATED OFFERINGS

Excavations inside the funerary platform revealed three burials containing the frozen bodies of the sacrificial victims, as well as several pits containing offerings (Figures 3.11 and 3.14). The burials had been constructed by enlarging natural niches in the bedrock, and the mummies and objects were buried between 1.2 and

Fig. 3.8. Surveying the furthermost of the summit circles in 1999.

Fig. 3.9. This view of the platform in 1983 looks south toward the highest point of the summit in the background and shows its northern and eastern retaining walls.

Fig. 3.10. (*a*) A view of the summit platform looking north in 1983. (*b*) A view of the summit platform looking north prior to excavation in 1999.

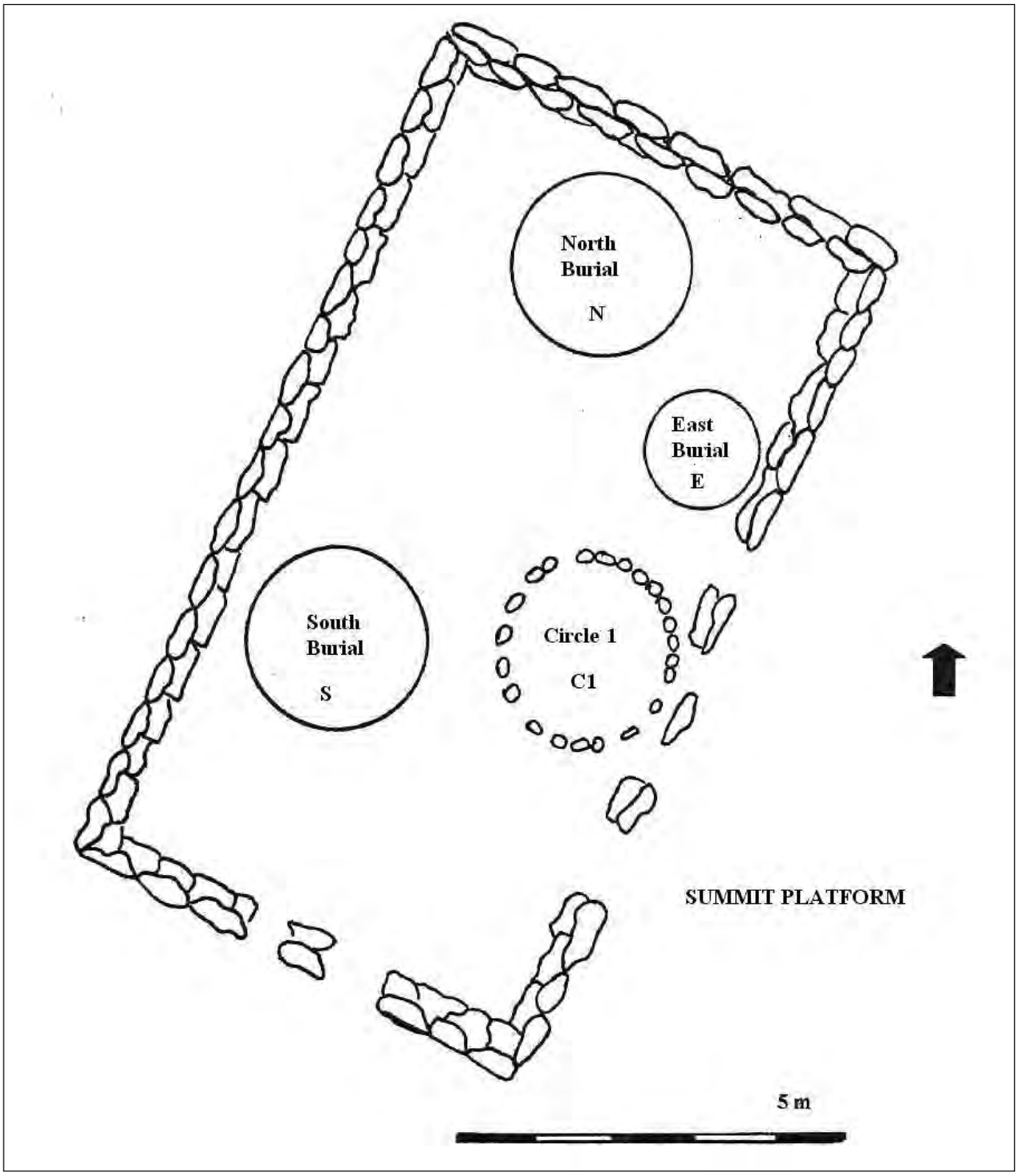


Fig. 3.11. A plan of the summit platform showing the location of the stone circle observed on the surface in 1983 and the burials excavated in 1999.

Fig. 3.12. Beginning of the excavation in the summit platform in 1999.

Fig. 3.13. Excavation of the boy's burial in 1999.

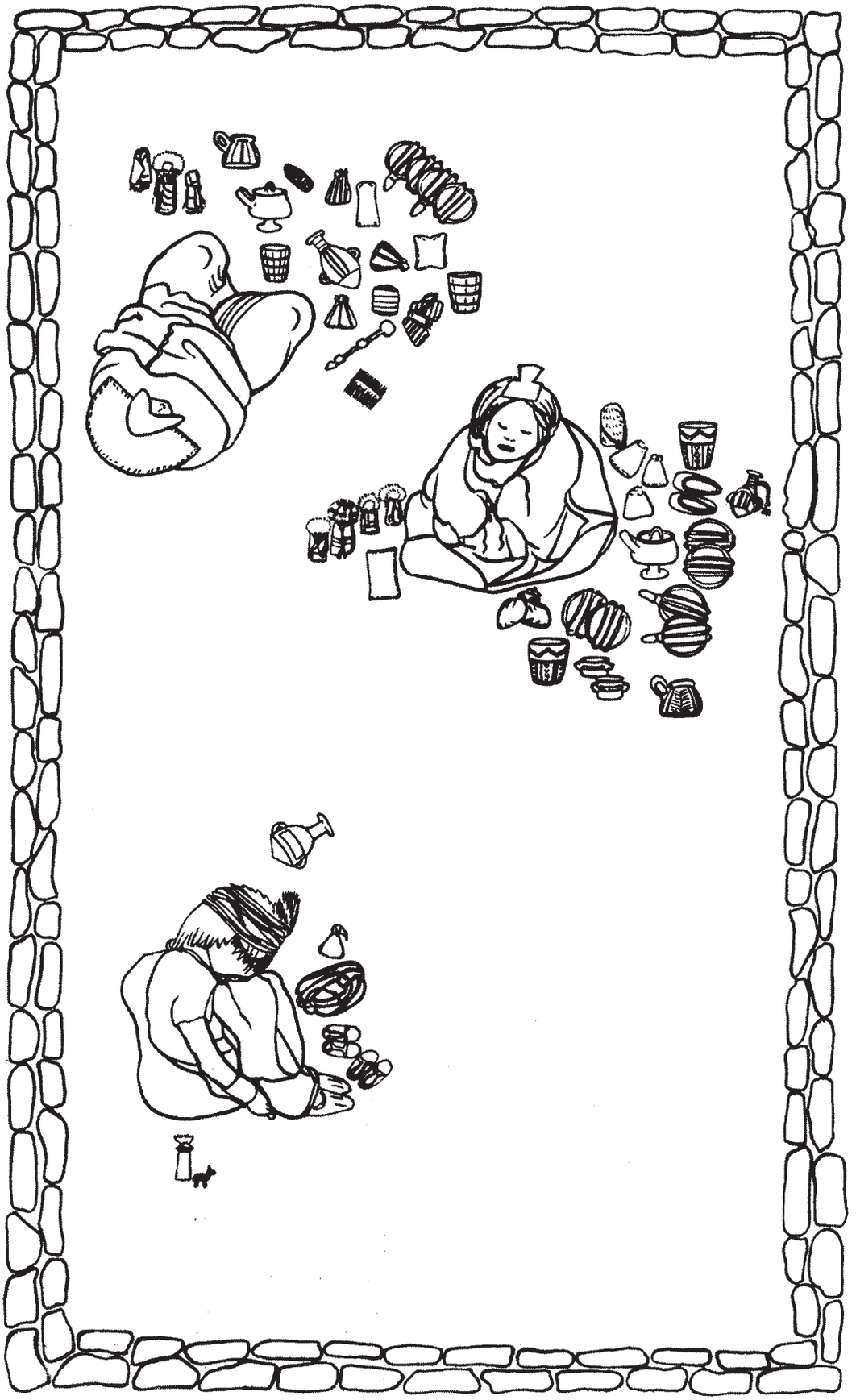


Fig. 3.14. This plan (not to scale) provides a perspective of the mummies (and the artifacts adjacent to them) found buried in the summit platform of Llullaillaco (*drawing by Bob Pratt*).

2.2 m deep and covered with the artificial fill (gravel) also used in leveling the platform (Reinhard and Ceruti 2000:46–54).

In spite of the environmental obstacles, the conditions for excavating in the soil were unusually good (cf. Figures 3.12 and 3.13). The extremely high location of the site had prevented the melting of the snow, and consequently prevented the formation of a thick layer of permafrost. The fill in the platform where the mummies had been buried was not frozen, except for the surface strata.

Southern Burial

A burial chamber was located on the southwestern side of the platform (cf. Figures 3.11 and 3.14). It was 1 m wide and about 1.7 m deep, with stone walls. A body of a boy, about seven years old, had been placed in a flexed position facing east (Figure 3.15). He was covered in a red outer mantle, and wore a red tunic and leather moccasins (cf. Figures 3.15 and 3.16). The boy was seated on a folded black tunic (S-42), with his knees bound tight against his chest by a rope. He was carrying a textile bag (S-33) covered with white feathers and containing coca leaves and a set of two skin bags (S-32) containing hair. Extra items of clothing (cf. Figures 3.17 and 3.18) included two pairs of leather sandals (S-28 and S-29) and two slings (S-31a and S-31b). He was later found to have a sling wrapped around his head that served to maintain a headdress of white feathers against his forehead.

Two figurines made of spondylus shell, one representing a man (S-25) and the other a llama (S-26), were placed on the ground close to his body. An *aribalo* (S-24) was found in the fill of the burial, as well as an unworked spondylus shell.

Eastern Burial

The burial of a young female, about six years old, was located on the eastern sector of the platform (cf. Figures 3.11 and 3.14). The burial was only about 0.8 m wide

Fig. 3.15. The boy's mummy bundle as it was found in situ on the summit of Llullaillaco. Sandals had been placed next to the mummy bundle on the right, and a male statue and a llama figurine were set in the small stone enclosure to the lower left of the boy.

Fig. 3.16. The boy's mummy bundle immediately after it had been brought to the surface in 1999.

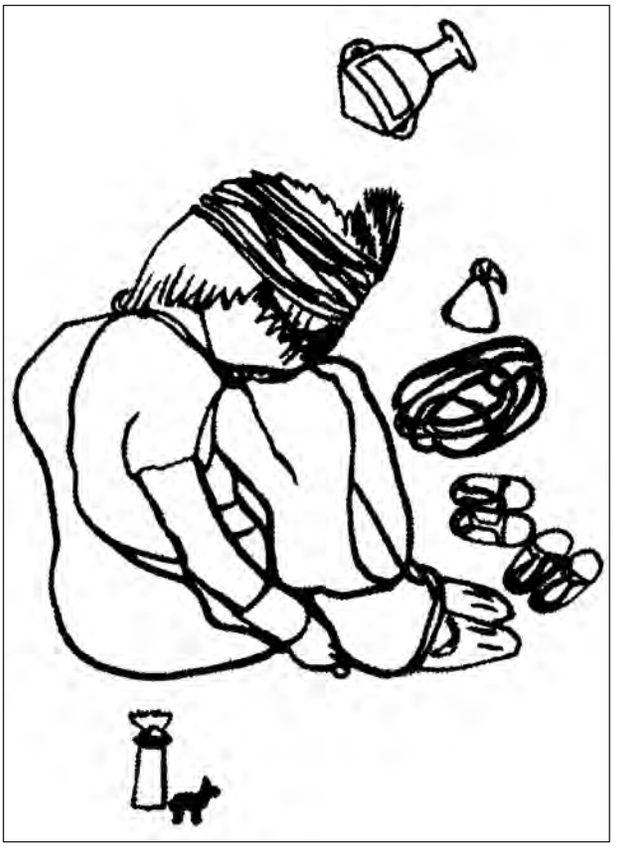


Fig. 3.17a. A horizontal perspective of the boy's burial and associated artifacts (not to scale).

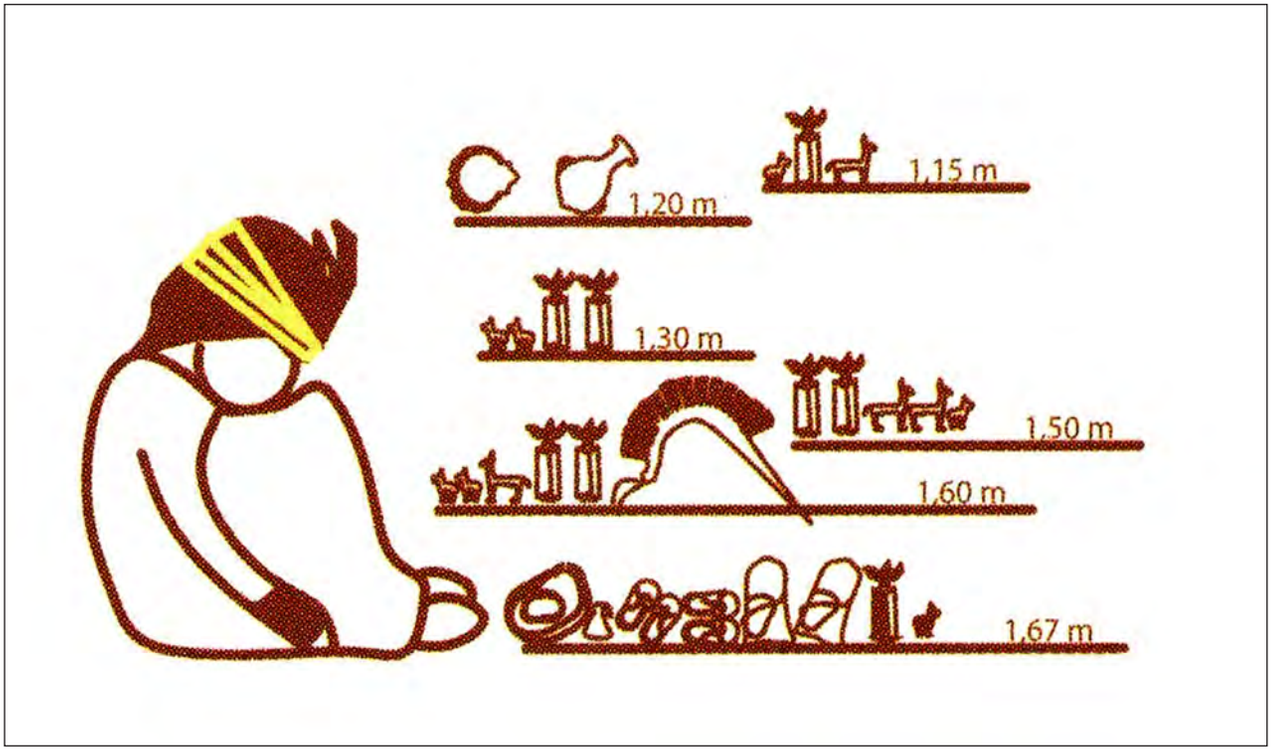


Fig. 3.17b. A vertical perspective of the boy's burial and associated artifacts (not to scale). Adapted from Museo de Arqueología de Alta Montaña 2007.

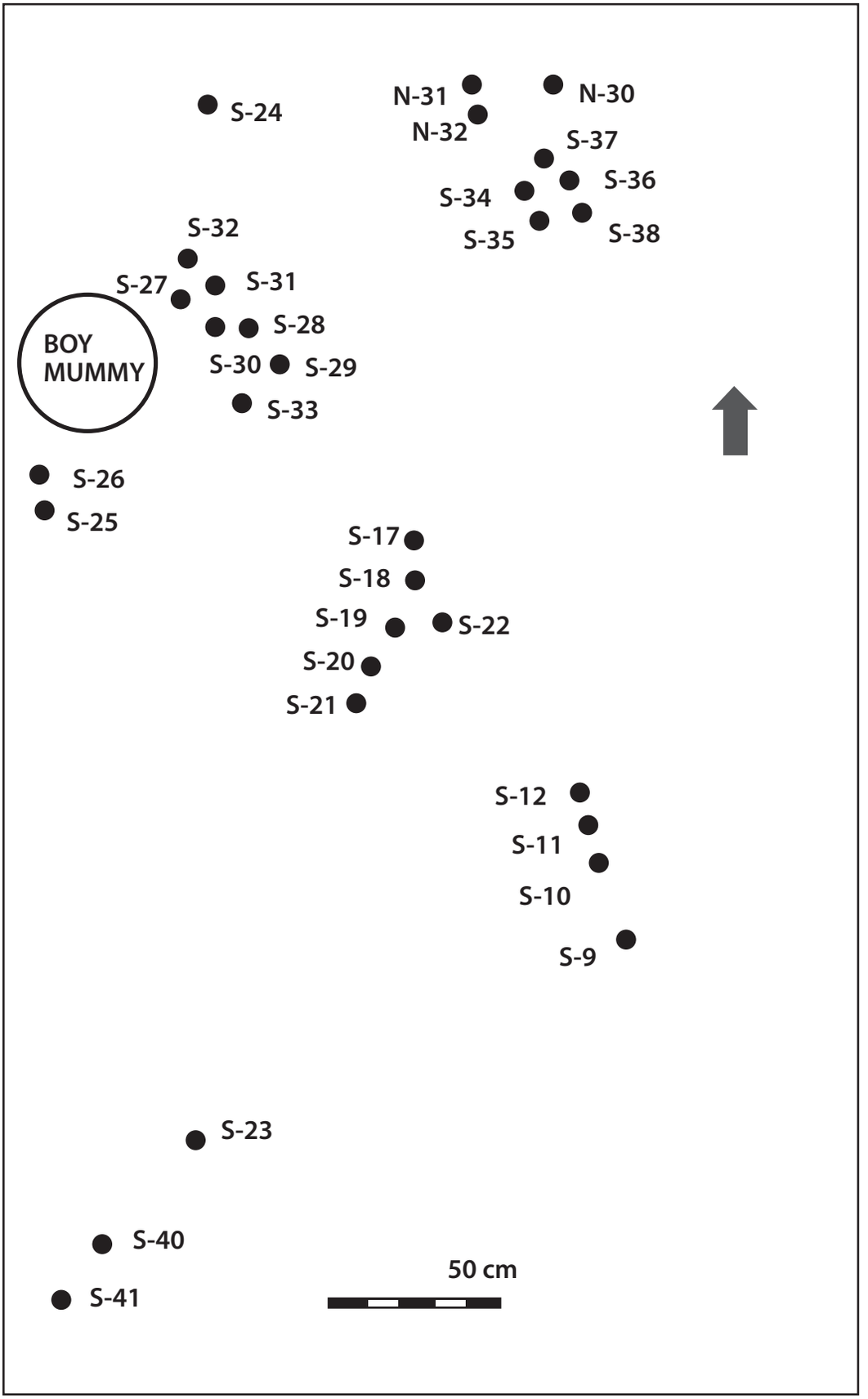


Fig. 3.18. A plan of the boy's burial (not to scale). For descriptions and measurements of artifacts, see Appendices A and B.

Fig. 3.19a. A horizontal perspective of the younger girl's burial and associated artifacts (not to scale).

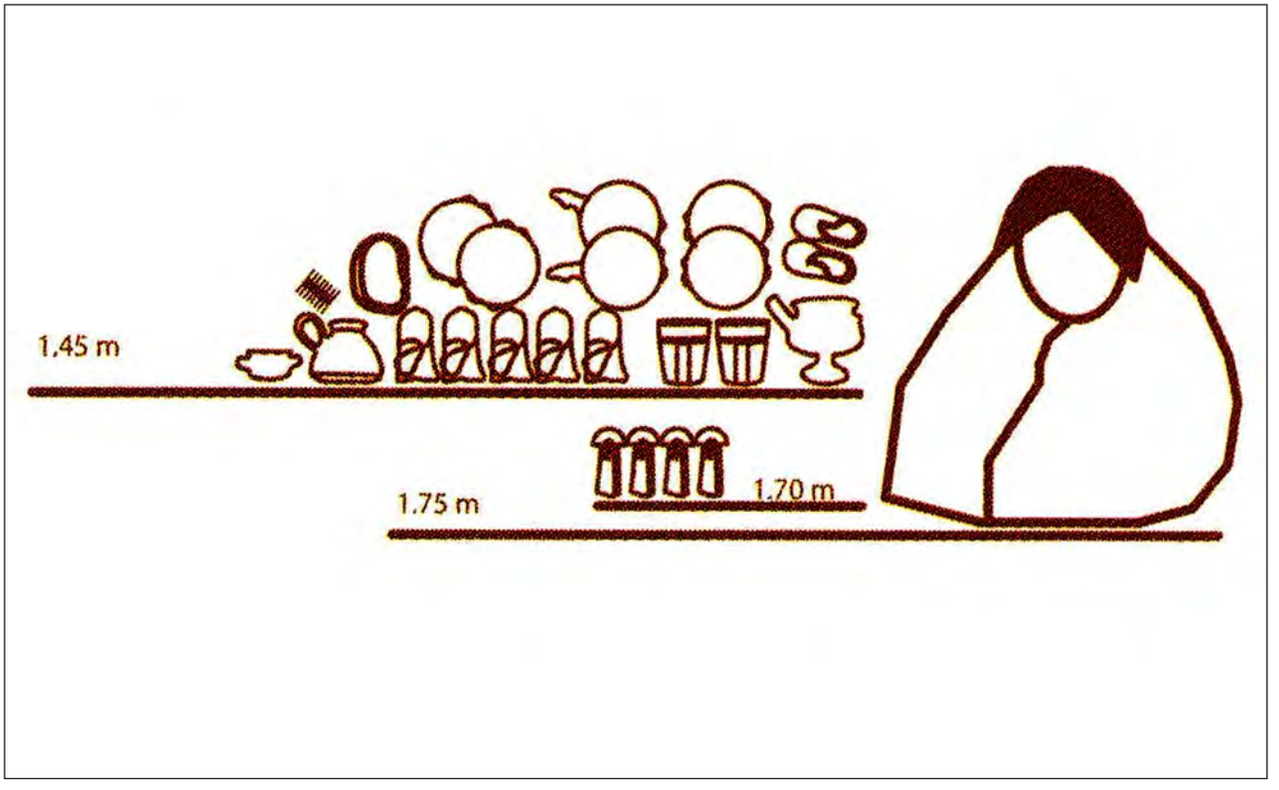


Fig. 3.19b. A vertical perspective of the younger girl's burial and associated artifacts (not to scale). Adapted from Museo de Arqueología de Alta Montaña 2007.

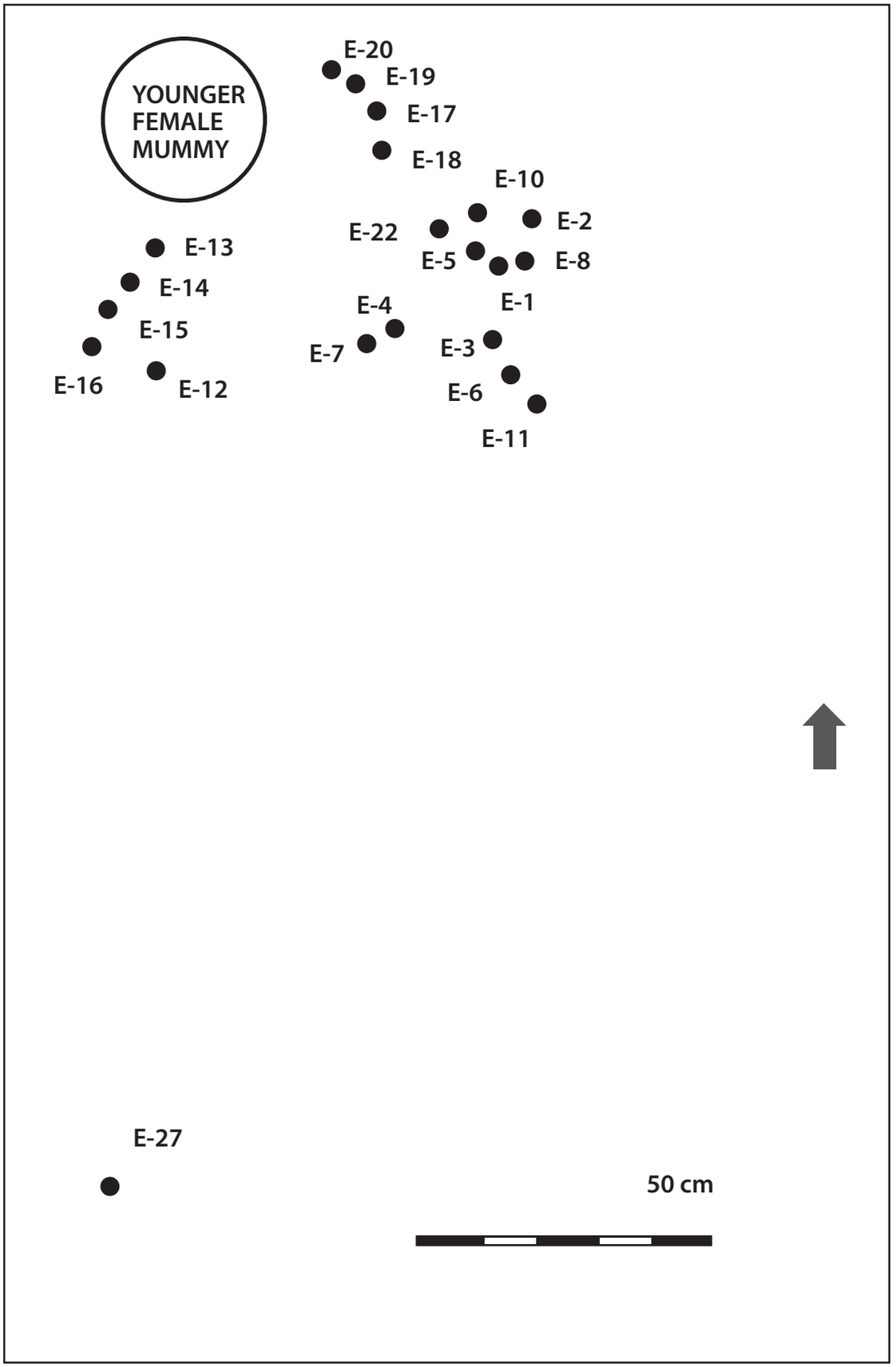


Fig. 3.20. A plan of the younger girl's burial (not to scale). For descriptions and measurements of artifacts, see Appendices A and B.

Fig. 3.21. The younger girl's mummy bundle immediately after it had been brought to the surface in 1999 shows the effects of a lightning strike on the upper part of her body.

Fig. 3.22. The younger girl's head cloth was damaged by lightning and opened to reveal her face and a silver plaque on her forehead in 1999.

and 1.75 m deep, built in a narrow niche of the bedrock. The body was placed in a flexed position facing west (cf. Figures 3.19 and 3.20). The girl had been hit by lightning after she had been buried (Figure 3.21). This damaged the skin of her neck and left shoulder and resulted in a cavity in her chest, and partially burned a textile that had covered her face.

The girl was wearing a sleeveless dress and a shawl, both kept in place with metal pins; moccasins on her feet; and a metal plaque on her forehead (cf. Figure 3.22). Textile and ceramic items were placed around her body on the bottom of the burial: several pots of typical Inca style, such as one *aribalo* (E-8); three pairs of plates (E-3a and E-3b, E-4a and E-4b, and E-6a and E-6b); a pedestal pot (E-1); two bowls (E-5 and E-21); a jar (E-11); a pair of wooden vessels (E- 7 and E-10); four woolen bags containing food (E-17, E-18, E-19, and E12); one bag covered with feathers (E-20); an extra pair of leather moccasins (E-2); a pair of sandals (E-9); and a set of two skin bags (E-22) containing hair (Figures 3.19 and 3.20 and Appendices A and B). Four female figurines made of gold (E-15), silver (E-14), and spondylus shell (E-16 and E-13) were found all aligned at the left side of her body (Figure 3.23).

Northern Burial

The burial chamber located on the northern sector of the platform was 1 m wide and about 2.2 m deep. The body of a young woman, about 15 years old, was placed in a flexed position facing northeast (cf. Figures 3.11, 3.14, 3.24, and 3.25). The female individual was covered with two brown outer mantles. A white feathered headdress (N-26) was placed on her head, and a tunic (N-33) laid over her shoulder—both pieces having been deposited outside the funerary bundle (cf. Figures 3.24, 3.26, and 3.27).

The mummy of the young woman, who came to be known as "the Maiden," was later found to be wearing a sleeveless brown dress and a shawl—both kept in place with pins of gold alloy—and leather moccasins on her

Fig. 3.23. (*a*) Uncovering the tops of the headdress of the four female statues found in a row next to the younger girl on Llullaillaco. (*b*) The four female statues found in a row next to the younger girl on Llullaillaco.

Fig. 3.24. The older female (the maiden) as she was found in her burial in 1999, with some ceramics visible.

Fig. 3.25a. A horizontal perspective of the maiden's burial and associated artifacts (not to scale).

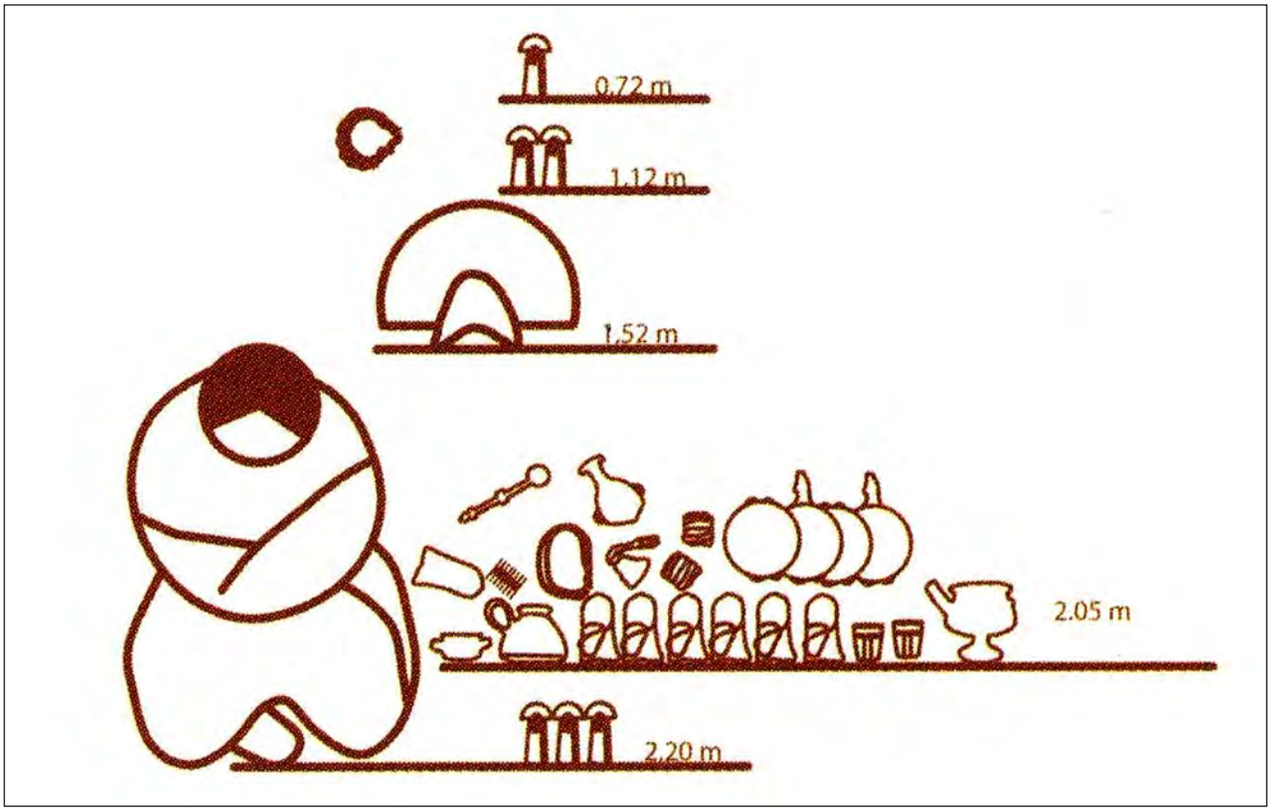


Fig. 3.25b. A vertical perspective of the maiden's burial and associated artifacts (not to scale). Adapted from Museo de Arqueología de Alta Montaña 2007.

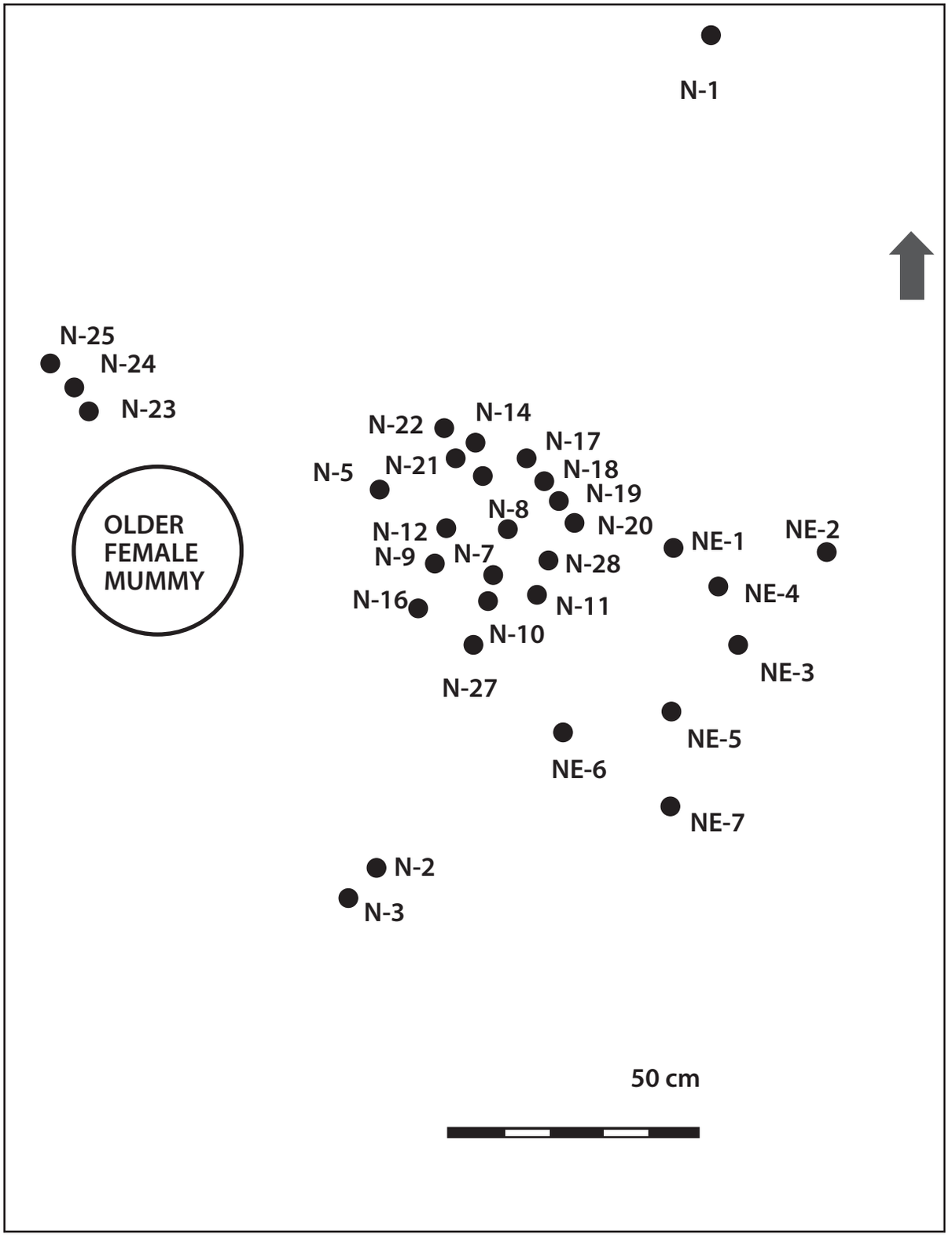


Fig. 3.26. A plan of the maiden's burial (not to scale). For descriptions and measurements of artifacts, see Appendices A and B.

Fig. 3.27. The maiden's mummy bundle immediately after it had been brought to the surface in 1999, but with the headdress removed.

feet. She had bone and metal adornments attached to a textile on her right shoulder, and she had red pigment on her face. Her hair had been intricately braided.

Several textile and ceramic items were placed around her body on the bottom of the burial (cf. Figures 3.25 and 3.26). These included pots of typical Inca style, such as an *aribalo* (N-16); one pair of duck-headed plates (E-18 and E-20); one pair of plates with knobbed ends (N-17 and N-19); a small jar (N-22); and a pedestal pot (N-21). In addition, there were two wooden vessels (*keros*) (N-11 and N-12), a wooden spoon (N-6), and a comb (N-7). Six woven bags (N-9, N-10a, N-10b, N-13, N-27, and N-28) containing food were also placed in the burial, as well as a small textile band (N-14), a set of woolen belts rolled up together (N-8), and a set of two small bags (N-15) containing hair. Three female figurines made of gold (N-23), silver (N-24), and spondylus shell (N-25) were found along the left side of her body (Figures 3.25 and 3.26 and Appendices A and B).

OFFERING ASSEMBLAGES

In addition to the items included in the burials, the excavations revealed several sets of offerings containing metal and shell figurines. Some of the assemblages surrounding the burial of the boy included two male statues at the head of a row of statues representing llamas.

Offering Assemblage S-I

This offering assemblage consisted of two male statues [S-10 (made of gold) and S-11 (made of spondylus shell)] and two llama figurines (S-9 and S-12) made of spondylus shell. These offerings were found inside a 58-cm-wide pit located in the southwestern area of the platform at a depth of 1.2 to 1.45 m.

Offering Assemblage S-II

This assemblage contained five statues, carefully aligned in a northeasterly direction (45 degrees). They had been arranged 3 to 15 cm from each other. A male gold statue (S-17) headed the line, followed by a male spondylus shell figurine (S-18). Three llama statues were aligned behind them, one made of silver (S-19) and the other two (S-20 and S-21) made of spondylus shell. A spondylus shell necklace (S-22) was arranged partly surrounding the group of statues to the east (Figures 3.28 and 3.29 and Appendices A and B).

Offering Assemblage S-III

This group of offerings was found inside a small niche, 1.15 m deep, situated near the southern burial. It consisted of two male statues, one made of gold (S-34) and one of spondylus shell (S-35). In addition to these, there were three camelid statues (Figure 3.30 and Appendices A and B): one made of gold (S-34), one of silver (S-37), and one of spondylus shell (S-38).

Offering Assemblage S-IV

This assemblage was recovered from a pit in the southwestern corner of the platform at a depth of 1.15 m. It consisted of spondylus statues of a male (S-40) and a llama (S-42). A silver camelid figurine (S-23) was found later, during the enlargement of the excavation area (see Appendices A and B).

Offering N-I

A gold llama statue (N-1) was found in the northern section of the platform. It had been placed between two stones forming a small niche in the bedrock at a depth

Fig. 3.28. The offering assemblage S-II found in situ near the boy includes a spondylus shell necklace (S-22), two male (gold and spondylus), and three camelid (one silver and two spondylus) statues (see Appendix B).

Fig. 3.29. The male figurines [S-18 and S-17 (far right)] occur together in a row with the llama statues [S-21 (far left), S-20, and S-19] forming what appears to be a symbolic caravan near the boy.

Fig. 3.30. The offering assemblage S-III in situ near the boy consists of three llama statues (those in gold and silver are visible in the photo) and two male figurines (one of gold and one of spondylus shell) beside them (see Appendix B).

of 1.45 m. A barely visible circle of stones on the surface of the platform may have served to mark the location of this offering.

Offering Assemblage N-II

Two female statues, one of gold (N-2) and one of spondylus shell (N-3), were recovered from a pit 40 cm wide and 1.12 m deep in the northern section of the platform.

Offering N-III

A female silver statue (N-30) was found at a depth of 72 cm in the central area of the platform.

Offering Assemblage N-IV

Six statues were recovered from the fill in the northeastern area of the platform at depths of 1.1 to 1.9 m. The assemblage (see Appendices A and B) consisted of a female (NE-1) and a male (NE-6) figure made of spondylus shell, a male gold statue (NE-7), and three llama statues [two of spondylus shell (NE-3 and NE-4) and one of silver (NE-2)]—as well as a miniature metal bracelet (NE-5).

SUMMARY OF THE ARCHAEOLOGY OF MOUNT LLULLAILLACO

The Inca ceremonial complex on volcano Llullaillaco consists of different sites located along an ancient trail that ascends the northeastern ridge of the mountain—the easiest route to the summit. A group of ruins was built at 5,000 m (16,404 ft), and a larger group was built to serve as a base camp at an altitude of 5,200 m (17,600 ft). The architecture—which reveals typical Inca features, such as trapezoidal entrances—is extremely well preserved, with walls 2 m high and parts of the roofs and lintels in situ. The roofed buildings could have lodged about 100 persons, and the stratigraphy reveals only one major occupation event. The site must have been a *tambo*, a place to lodge the pilgrims—including

priests and others who would participate in the ceremonies on the summit. The archaeological evidence of pottery and hearths suggests that the main economic activities at the Inca base camp were related to the storage, preparation, and consumption of food.

Intermediate stations were erected at 5,600 m (18,372 ft) and at 6,300 m (20,669 ft), in places where the slopes of the mountain become steeper. At 6,500 m (21,325 ft), three relatively large structures were built in a protected spot not far from the summit. Given the altitude and steepness of the terrain, it likely would have taken a full day for a group to reach this site. The group would presumably have stayed here the night before proceeding to the summit.

The summit sanctuary of Llullaillaco is located on a long flat ridge, east of the rocky outcrop that rises to the maximum height of the mountain. A promontory was selected as the setting for the ceremonial platform, whereas the area closer to the outcrop—and more protected from the wind—was used as the site for the construction of two rooms that form a roofed structure. This building must have been intended to shelter the Inca priests and the sacrificial victims before the ceremony. Excavations in the rooms uncovered the remains of bags made of vegetal fibers that were presumably used to carry offerings to the summit.

Leaving the two-room building, a trail marked by stones leads to the platform on the promontory. The platform is approximately 10 m long and 6 m wide, and rises to about 30 cm above the natural level of the terrain. During the excavation of the platform, three burials containing the frozen bodies of the sacrificial victims and several pits containing offerings were discovered. The conditions allowed for a 15-year-old woman, a 6-year-old girl, and a 7-year-old boy to be found together with numerous offerings made of metal, spondylus shell, pottery, feathers, and textiles in a remarkable state of preservation.

NOTES

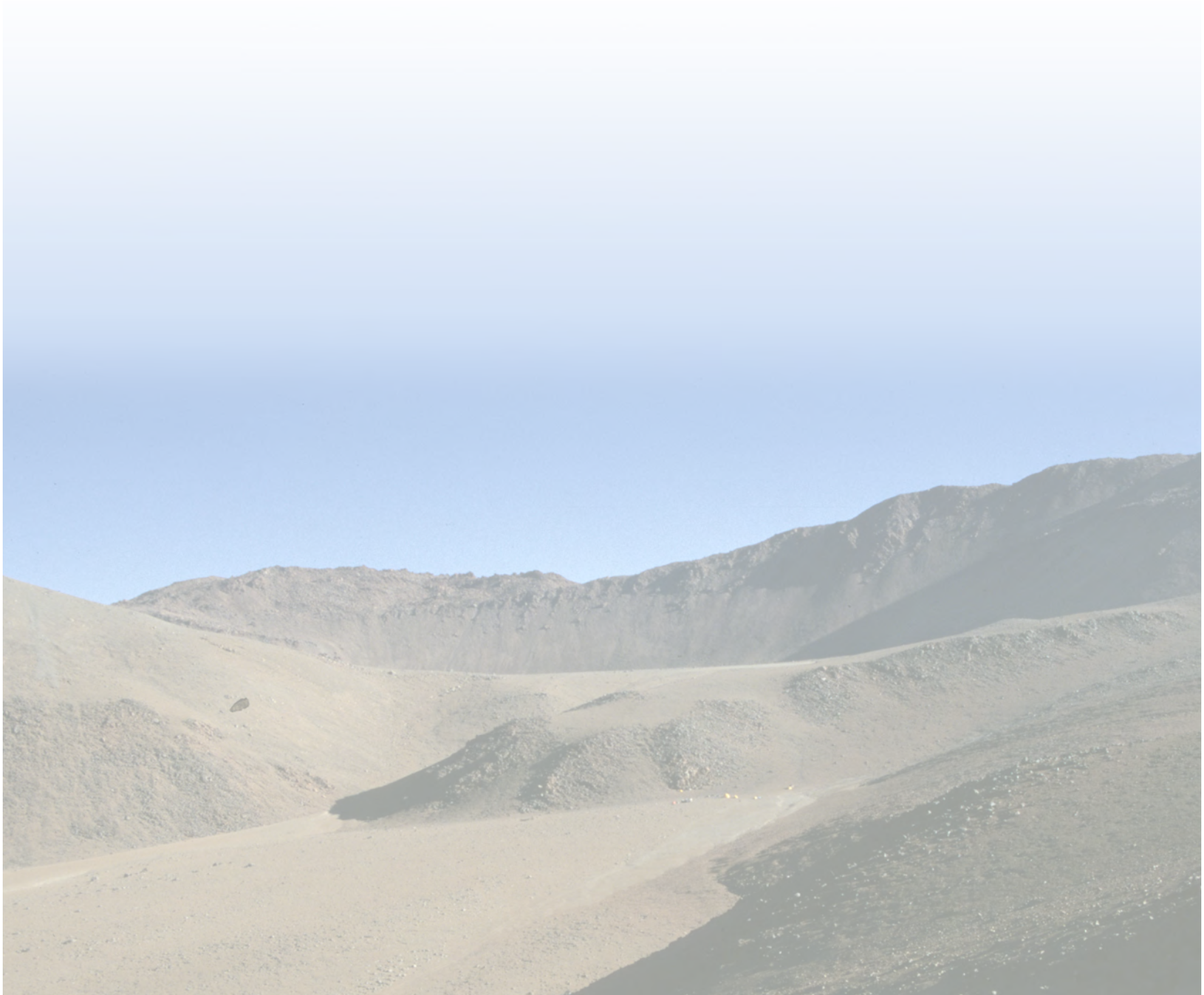
1. For a description of the types of structures found at high-altitude sites, see Beorchia (1985), Ceruti (1999a), Raffino (1981), and Reinhard (1985a, 2002a). Heffernan (1991) describes sites on high places near Cuzco, some of which are similar to the high-altitude sites with *capacocha* offerings. Tom Besom (2000:180–181, 188) drew our attention to the detailed plan of a mountaintop ceremonial platform excavated on Mount Tantalluc in northern Peru (Martínez 1991:9–11). Drawn in 1765, this must be the earliest description of such a site—and the plan even shows the various stratigraphic layers. Several figurines of gold and copper (presumably Inca) were recovered in the lowest layer, which was about 5.5 m deep (cf. Besom 2000:189).

2. The borderline dividing Chile and Argentina is shown as extending directly north from the highest point of the summit of Llullaillaco, including on the 1:50,000 map of the Instituto Geográfico Militar de Chile (Sheet 2430-6820). All of the artifacts recovered during our expedition were from structures located inside the border of Argentina.

3. From its description, the cloth is likely the one noted by Millán de Palavecino (1966:90–91) as being of Inca origin—made of fine wool and colored red and light brown with blue stripes. Both the shard and the cloth contrast with the coarser shards and textiles found within habitational sites lower on the mountain and inside the double-roomed structure.

Part II

Analysis



Chapter 4

Llullaillaco and Inca State Pilgrimage

"These children [to be sacrificed] would be collected from all over the land and would be carried in litters together and by pairs to be buried."

—Juan de Betanzos, 1551

While controlling an empire extending 4,000 km (2,480 miles), the Incas undertook some of the longest pilgrimages known in the Americas—including to several of the highest peaks in the Andes. They managed to build more than a hundred ceremonial sites on summits above 5,200 m (17,060 ft). These high-altitude sites were mainly concentrated in the southern region (cf. Figure 1.2) of the Inca Empire (i.e., in the southern Andes of Peru, Bolivia, Chile, and Argentina).

Several of the summits in the territories conquered by the Incas were not only transformed into sanctuaries but selected as sites for the burial of sacrificial victims, together with other important Inca offerings. Some of these sites are among the few places of worship to escape the destruction caused by Spanish extirpators of idolatries and by looters, and they therefore allow for the offerings to be studied in their original contexts. Their extraordinary preservation in the cold and dry environment of the high Andes also allows for details to be revealed about the rituals that would be impossible to obtain otherwise.

The Procession

Llullaillaco can be better understood when placed within the context of what we know about Inca *capacocha* pilgrimages in general. Historical documents provide valuable information as to what was involved in *capacocha* processions to sacred places, including ritual sites on mountain summits.[1]

Reaching distant sacred mountains could require months of travel at distances of more than a thousand kilometers (cf. Hernández Principe 1923:41). According to historical sources, such pilgrimages would have included priests, their assistants, and inhabitants of the region through which the retinue passed. The child to be sacrificed—and possibly the child's parents (cf. Figure 1.3)—would be included (cf. Cobo 1990:156–157; Molina 1959:95–97; Murúa 1946:265–267). The child would walk if old enough, but could otherwise be carried (Cobo 1990:156). The procession would stop at sacred places along the way to make offerings (cf. Figure 4.1), and the people would play musical instruments and dance (Molina 1959:97). They would also stop to change laborers when entering and leaving provinces (Rostworowski 1988:192).

While passing through the mountains, people reportedly kept as silent as possible in order to avoid angering the gods (Molina 1968:76; Murúa 1946:271). The priests leading the procession were said to look only straight ahead, with their heads lowered (Murúa 1946:271). The processions would stop wherever night

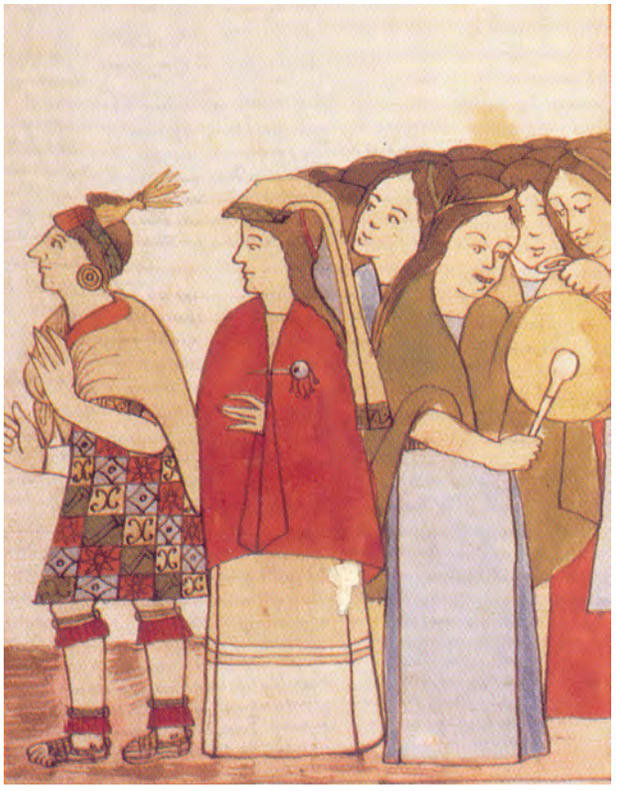


Fig. 4.1. A drawing (probably by Guaman Poma in the late 1500s, but found with the manuscript of Murúa) depicts an Inca religious procession (*in Ossio 2000*).

caught them, and there they would also make offerings (Murúa 1946:271).

At times there would be prayers for good crops and for the health of the Inca, he being considered a son of the deity Inti (the Sun) (Rostworowski 1988:173, 188). Important local sacred places would also receive offerings sent by the Inca. According to some accounts, blood of sacrificed llamas would be carried in pots or gourds to be offered at certain *huacas* (sacred places or objects) (Murúa 1946:271–272). If anyone caused the pot to break, he reportedly was immediately put to death (Rostworowski 1988:187, 192).

The *capacocha* procession was held in such high esteem that when it passed through communities the local people were not to look at it. Instead, they prostrated themselves on the ground until the procession had walked by (Molina 1959:97). If people happened to be in their houses, they were expected to remain inside while the procession was in progress.

During the *capacocha* procession, people of each region through which it passed 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 the regional group's territorial boundary. A new group would then take over, and the process would continue until the mountain was reached—thereby laying the basis for delineations of land claims. Indeed, based on this practice land claims were being filed with the Spanish long after the fall of the Inca Empire (Rostworowski 1988).

The changing of regional groups, while the core pilgrimage party continued to the ultimate place of sacrifice, presents a highly unusual type of pilgrimage. Some groups, especially in the case of those extending for hundreds of kilometers, could have assisted a *capacocha* pilgrimage without having direct knowledge of the deities and sacred places to which the core party was to reach. This represents what might be called a "core-serial pilgrimage," in that the core would have stayed the same (at least the *capacocha* victim and likely some priests and assistants) as serial or sequential groups traded off responsibilities in assisting them while they passed through different socially bounded territories.

Given this exchange of personnel during *capacocha* pilgrimages, one would expect to find only artifacts of the Incas and of the closest regional group at sites located near the mountains that were their destinations. This was the case not only at Llullaillaco's way station but at some of the larger sites that have been investigated at the bases of other mountains. For example, the volcano Licancabur [5,921 m (19,426 ft)] in northern Chile has an impressive *tambo* at 4,600 m (15,092 ft) (Reinhard 1985a).

In addition to classical Inca pottery, many different local pottery styles were observed on the surface at the site (Barón and Reinhard 1981). An exception to local pottery would be the reported presence of Inca Pacajes pottery in the *tambo* of Chañi—a style typically found in a distant region near Lake Titicaca. The discovery of this pottery may be interpreted as evidence of Pacajes people having been brought as colonists (*mitimaes*) by the Incas to serve the ceremonial center at Chañi (cf. Ceruti 1997b, 1997c; D'Altroy et al. 2000:21–22; Fernández 1975).

Contrary to the concept of "communitas" (community fellowship) (cf. Turner 1974, 1979), in which pilgrimages are seen as serving to promote the integration of peoples, recent studies of pilgrimages around the world have found them to reinforce social divisions (cf. Coleman and Elsner 1995:201; Eade and Sallnow 1991:137; Huber 1999:34). The Inca *capacocha* pilgrimage makes explicit both of these aspects. The variegated landscape provides multiple features, such as mountains and lakes, which social groups use to define

themselves. This in turn served to generate an incipient opposition among groups (cf. Sallnow 1991:301).

According to Coleman and Elsner (1995:100), "Pilgrimage is as concerned with taking back some of the charisma of a holy place as it is about actually going to the place." This aspect of Inca pilgrimage has been little examined in the anthropological literature, probably due to the fact that there are few details concerning it in the chronicles. In addition, the Incas themselves left the impression that the focus of the pilgrimage was on reaching a sacred place and making offerings. We know that the parents of the sacrificed child were held in high regard, and based on what we know of the prestigious position of the *capacocha* ceremony it can be assumed that all those who participated would have attained a higher status among their communities after their return (cf. Bauer and Stanish 2001:232).

The pilgrims likely would have brought back from the mountains some items believed sacred, such as plants believed to have curing powers and stones (*illas*) with distinctive shapes believed to increase the fertility of herds. This has long been a custom in the Andes, and many stones—especially with the shapes of camelids—have been reported both in the ethnographic and historical record (cf. Flores 1976; Reinhard 1985a). It is reasonable to assume that similar objects would have been taken from pilgrimage sites in Inca times.

Inca Trails

Despite the constraints of the rugged topography of the Andes, the Incas constructed well-built trails to many isolated mountains throughout their empire. One chronicler described the procession from Cuzco along one of these trails as continuing in as straight a line as possible. Molina (1959:95–96; cf. Zuidema 1982:441–444) noted that the important annual pilgrimage to the temple of Vilcanota followed a straight route by the *capacocha* group (the Inca emperor and llamas would go by a different, royal, road). The return road was not straight and followed the sacred Vilcamayu River, with stops made at ritual sites along the way. A similar practice (using a straight line to the pilgrimage center and returning via an irregular route, making stops at places of worship) occurs elsewhere in the Andes today (cf. Ceruti n.d.b, n.d.d; Reinhard 1988:57–61; Riviere 1982). Such a system created what was in effect a bidirectional pilgrimage, in that different places would be worshiped while going to and returning from the center.

There has been some discussion in recent years that *capacocha* pilgrimages would have occurred along truly straight lines, forming long-distance *ceques* (conceptualized lines) similar to those in Cuzco (Duviols 1976; Zuidema 1982). However, the majority of *ceques* at Cuzco (Figure 4.2) have been found not to be straight (Bauer 1998). If they were perceived to be so, this must have been primarily in a symbolic sense. The same situation holds with regard to Inca roads leading to mountain sanctuaries. They may be straight in open flat terrain, but they curve to avoid obstacles in the landscape. Without more precise data, we believe it is premature to relate the roads leading to the mountains with the *ceque* lines.

The Inca processions would have passed by mounds of stones called *apachetas* (*apachitas*) that were (and still are) found throughout much of the central Andes (Figure 4.3). The cairns are usually situated at high places, especially passes and mountain summits [we have seen them at altitudes of more than 6,000 m (19,685 ft)]. They may also be found along roads at places such as crossroads. *Apachetas* were formed by people placing one or more stones as offerings, thereby eventually forming a mound or cairn of them. Through time, the *apachetas* could reach several meters in height. Often other types of offerings were made at them. Because these were places of indigenous worship, Catholic priests often placed crosses on top of them following the Spanish conquest.

Apachetas are well documented from the Inca period and were defined in the same way for both Ayamara and Quechua speakers (i.e., as mounds of stones on roads where people worshiped) (cf. Bertonio 1984 v.2:23; González Holguín 1952:30; Polo 1916:189–190). The most common reason provided for the *apachetas* was that people placed stones at them in order to get rid of their weariness (cf. Arriaga 1968:59; Garcilaso 1966:78).

Offerings consisted of coca leaves (or chewed coca), chewed corn, eyebrow hair, feathers, slingshots, ropes, straw, old footwear, or simply a stone (if a person had nothing else to give) (cf. Arriaga 1968:59; Ramos 1976:68). The offerings were made to the deities believed to oversee the places where the *apachetas* had been built. Chroniclers noted that these were made so that the people would obtain help in their journeys (including providing energy to continue on) and so that the purposes of the journeys would be fulfilled (cf. Calancha 1974:844; Ramos 1976:68; Romero 1918:183). We know that mountains were commonly invoked for these same reasons and continue to be so

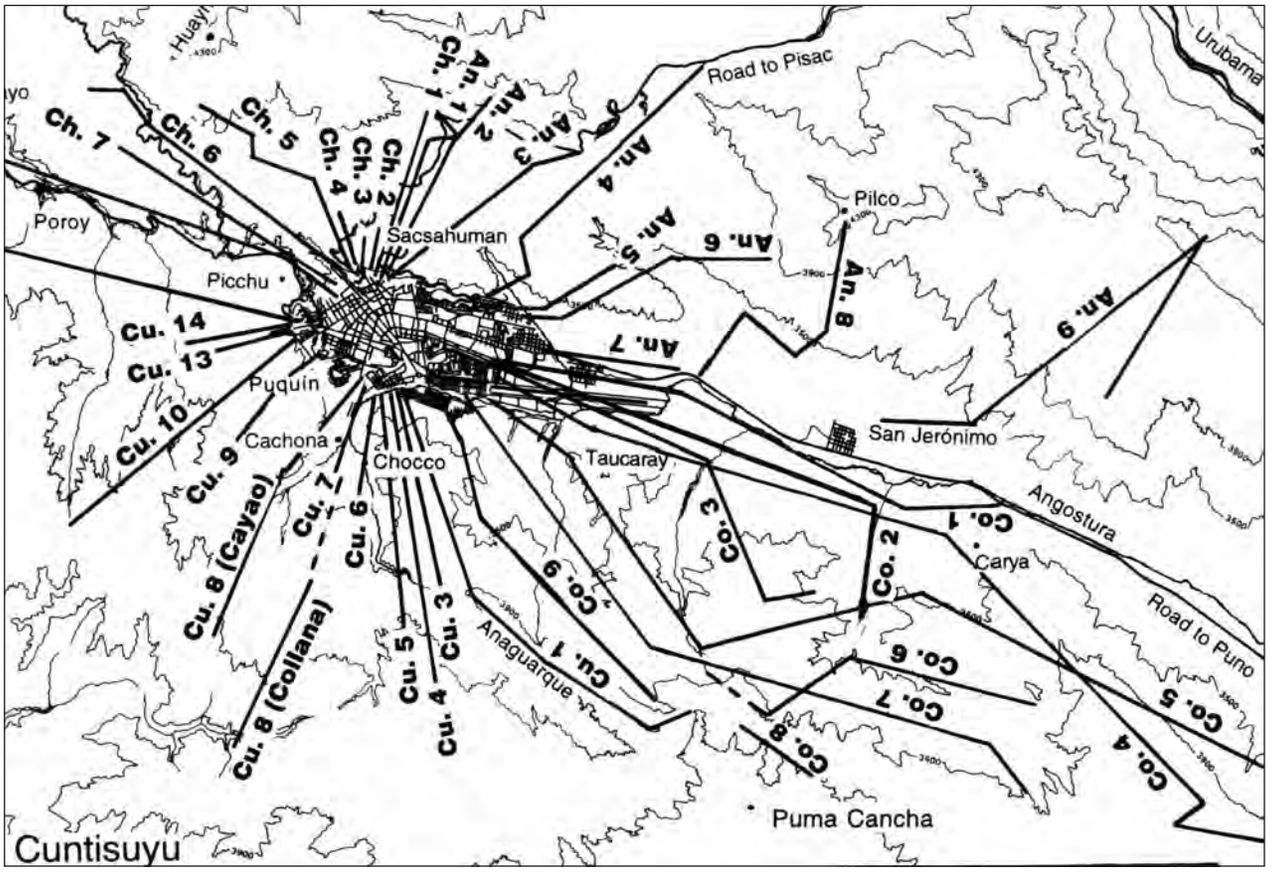


Fig. 4.2. A plan of the Inca *ceque* system in Cuzco, Peru (*from Bauer 1998*).

Fig. 4.3. An *apacheta* (traditional stone cairn) in northern Chile.

at *apachetas* being built to the present day (cf. Girault 1988:412).[2]

Inca roads and way stations leading to the mountains support historical documents noting that processions involved several people. As we have seen, a road that leads specifically toward the base of the mountain was observed in the case of Llullaillaco (Reinhard 1993, 1997b). Four groups of ruins (Figure 2.1) have been identified along the trail that leads to the northern base of the mountain within approximately 20 km (12 miles) at an altitude of 4,600 to 4,900 m (15,000 to 16,000 ft). Inca pottery observed on the surface, and their association with a trail that leads only to the mountain, suggests that the sites could have been *corpahuasis*—a *corpahuasi* defined by some chroniclers as a particular type of lodging pilgrims used on their way to shrines (Ramos 1976:66). Other mountain ceremonial centers (such as Chañi) are located near main sections of the Inca trail, from which they can be easily accessed (cf. Ceruti 1997a, 1997b).

Tambos and Corpahuasis

Accessibility to the various sacred mountains varied according to the natural environment and the distance from other Inca sites or local villages. These factors would have had an obvious impact on the number of pilgrims able to reach the *tambos*. In the case of Llullaillaco, the lack of water and permanent settlements in the desert landscape suggest that only small groups of people could succeed in reaching the base of the mountain. The closest known Inca administrative center (Figure 1.20) was to the north, at Catarpe (near the present-day town of San Pedro de Atacama)—a distance of more than 200 km (120 miles).

The Spaniards who originally entered the region noted the constraints presented by the arid Atacama Desert and the necessity of crossing it with groups of fewer than 40 people (Vivar 1987:62). Consequently, only a limited number of people would have constituted the *capacocha* group arriving at the *tambo* of Llullaillaco—a hypothesis supported by the number of people that could have been housed there. We estimate that perhaps only a couple dozen people would have been able to take shelter in the buildings at the base of Quehuar, and about 50 to 100 individuals in the *tambo* at Llullaillaco.

On the other hand, the location of mountains such as Chañi and Licancabur (situated near permanent settlements and close to Inca main roads) would have made it possible for large numbers of pilgrims to access their *tambos* (Ceruti 1999a). Several hundred pilgrims could have been housed at the *tambo* of Licancabur (Barón and Reinhard 1981), whereas about 150 persons could have stayed at Chañi (Fernández 1975). In addition, the *tambo* of Licancabur contains a huge plaza—more than 70 m long (Barón and Reinhard 1981)—in which public ritual activities could have taken place, allowing the direct participation of hundreds of pilgrims. Although not used solely for ceremonies, such specially prepared public spaces suggest their importance in the maintenance of legitimacy and power (Moore 1996:798).

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*, which would have been used as staging points for the ceremonies scheduled to take place on the summits. In the case of Llullaillaco, this conclusion is supported by the large proportion of domestic wares—including storage vessels—and by numerous cooking places identified during the surveying and excavations performed at the *tambo*. The presence of llama bones and feces suggests that livestock was used for transporting supplies to the *tambo*. The same type of evidence of domestic activities has been found in the *tambos* at the lower slopes of several other mountains, including Aconcagua (Bárcena 2001c), Ampato (Reinhard and Chávez n.d.a.), Chañi (Ceruti 2001b), Pichu Pichu (Linares 1966), and Sara Sara (Reinhard and Chávez n.d.d).

Excavations at these types of *tambos* suggested a lack of long-term occupation, something that would in any event have been impossible in many cases on a year-round basis due to the *tambos*' isolation and to the extreme conditions found at them during much of the year. Stratigraphy showed that in the case of Llullaillaco only one occupational layer existed, whereas no refuse areas were identified to support a hypothesis 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:90).

A few structures at some *tambos* were found isolated from the majority. These are better constructed and contain high-status ceramics. This suggests that there was probably a division between priests and the participants of lesser status (cf. Ceruti 2003a). Such architectural differences are clearly visible in the *tambo* of Licancabur (Barón and Reinhard 1981), as well as in the *tambo* on the lower slopes of Chañi (Ceruti 1997a;

Fernández 1975) and that of Pichu Pichu (Reinhard and Chávez 1998). In the case of Llullaillaco, the principal sector of the *tambo*—with its alignment of roofed rooms associated with patios—can be easily distinguished from a sector of low-walled one-room stone structures scattered on the slopes nearby (cf. Reinhard and Ceruti 2000). A similar pattern of architectural segregation can be seen at the way stations farther up the slopes of the volcano (cf. Ceruti 2003a:91).

Cemeteries

On Llullaillaco, 16 individuals—apparently young males with ordinary clothing—were buried (Figure 2.11) at 4,900 m (16,076 ft). This site was described in the early 1970s, before it became heavily looted during subsequent years (Beorchia 1975b:40–41). It seems likely that the individuals were not meant to be part of the *capacocha* ceremony, in that they were buried low on the mountain and without Inca state ritual objects, were otherwise not specially treated (e.g., by being placed in special burials), and above all did not appear to have been sacrificed. They apparently were people who died in the course of work on the mountain, although chroniclers describe some people requesting that the bodies of those who died of normal causes also to be buried on a sacred mountain. This was reportedly due to a desire to be closer to their mythical place of origin (and principal deity) [cf. Avila in Salomon and Urioste (1991:73)]. Remains of people who have died natural deaths have been found buried high on mountains [cf. Reinhard and Chávez (n.d.d.) for Sara Sara]. However, these are rare—and in such cases it was clear that they were not part of *capacocha* ritual sacrifices and burials.

THE ASCENT

In the selection of 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 logistical skills. Inca trails built on the slopes of the mountains and leading toward the summits have been documented on mountains such as Llullaillaco, Chañi, Ampato, and Pichu Pichu—whereas they are difficult to observe on some peaks, such as Quehuar and Sara Sara.

Construction and Logistical Support

The building of different logistical facilities for a sanctuary on the summit of a mountain had to be started long before an actual ceremony took place. In the case of Llullaillaco, the construction of the sanctuary could have been possible only after the construction of the intermediate facilities and the setting up of the *tambo*—with its supply of water and foodstuffs. The environment at Llullaillaco restricts access to the summit to about five months a year (i.e., the summer period of November to March). Moreover, even in this period bad weather can hinder for weeks the possibility of an ascent.

All of the structures on Llullaillaco, except for the stone circles and the windbreaks, were rectangular shaped and had been set up using double walls of stone. These are two typical features of Inca architecture considered diagnostic for constructions erected under their influence in northwestern Argentina. The presence of a trapezoidal opening in the doors of the roofed enclosures was recorded at the *tambo* and at the double hut on the summit of Llullaillaco. Although the trapezoidal opening is a characteristic of Inca architecture (cf. Raffino 1981), trapezoidal niches, windows, and doors are not common in Inca settlements in Argentina and Chile (Hyslop 1984:285).

Standardization can be observed in the measurements of the roofed rooms. The longest walls are about 4.5 m long, as found in many of the compound enclosures built in the *tambo*. This is also the case for several of the enclosures built over raised platforms in other groups of ruins on the northeastern slope of the mountain. The width of the walls is also standardized to an average of 80 cm in the logistical structures. The height of the walls of the roofed enclosures varies in relation to their state of preservation, some of them having partly collapsed as a result of postdepositional processes. In those enclosures of the *tambo* that conserve the lintels in their original locations, the walls reach a height of 1.7 to 2.1 m. In the case of the double-roomed building on the summit, the height of the walls does not reach higher than 1.3 m—and the dimensions of the interior space of the enclosures are comparatively smaller. This may be partly due to the smaller numbers of people involved and/or can be interpreted as a strategy for heat conservation, which would have been necessary in the harsh environment that surrounds the highest rooms ever built (Ceruti 2003a:93).[3]

The construction techniques of the buildings varied. Natural stone blocks have been used, giving the walls a rough appearance. Selected stones and a finer technique were used in structures of ceremonial importance, such as the ceremonial platform on the summit. Due to work constraints at extreme altitudes, there are no examples of high-quality Inca stonework in the architecture of Llullaillaco.

Processions to the Summit

The ceremonial ascent to the summit of Llullaillaco would likely have required three to four days, in that under the best circumstances the summit can be reached in two days when atmospheric conditions allow it. The ascent of priests, victims, and auxiliary ritual specialists may have lasted for about a week—in that they are likely to have taken advantage of the intermediary stations for overnight stays. It is also probable that the party had already spent some time in the *tambo* to allow people to acclimatize and/or to wait for the weather to improve.

Analysis of the architectural and archaeological evidence on Llullaillaco allows us to estimate that 10 to 15 persons must have constituted the religious group of priests, assistants, and sacrificial victims that climbed to the summit of Llullaillaco. This group size is estimated in relation to the need of helping the children to the mountaintop shrine while transporting numerous objects to be buried as offerings. The number of people is also compatible with the potential of the buildings at the intermediate stations for lodging the priests and victims during the climb (Ceruti 2003a:102).

The smaller complexes of structures farther up the mountain support the hypothesis that only priests and their assistants participated in the summit rituals. This becomes particularly evident in the case of the intermediate stations located at about 5,640 m (18,504 ft), about 6,300 m (20,669 ft), and about 6,500 m (21,325 ft) on the northeastern slopes of Llullaillaco. Several other mountains (e.g., Chañi, Chiliques, and Licancabur) also show an interesting set of intermediate stations built on the way to their summits. These would have been able to house only a restricted number of people, presumably priests and the children to be sacrificed (cf. Beorchia 1985; Ceruti 1999a; Fernández 1975; Reinhard 1985a).

Almost all of the logistical facilities on the slopes of Llullaillaco reproduce the pattern of structural differentiation between a main area and an area of scattered shelters from the wind (Ceruti 2003a:90–91). The group of ruins at the base of the volcano at about 5,000 m (16,404 ft) displays an enclosure built over a platform and an area of scattered windbreaks—these two formations separated by a distance of 30 m. The *tambo* has a main area containing a dozen simple and compound enclosures. This area is differentiated from that of the scattered windbreaks, which are also distributed at a distance of some 30 m. In the intermediate station at about 5,600 m (18,372 ft), an enclosure over a platform structure partially embedded can also be distinguished from a group of windbreaks. These are closely grouped due to the lack of a wider flat surface. On the saddle at 6,500 m (21,325 ft), advantage was taken of the scarce available space for the construction of the architectural group—composed of enclosures above platforms, separated from an isolated structure built beside an outcrop.

The differences in certain architectural characteristics can be attributed to topographical constraints. However, the underlying pattern is the same in all settings [i.e., one or more roofed enclosures (associated with platforms) where the slope is steep, and open patios where the terrain is flat]. This pattern (formed by a roofed enclosure and platform or patio) constitutes the main area of each architectural group and is always segregated from an area of windbreaks.

The dual spatial segregation found among logistical installations suggests social status differences among the users of the two sectors. Assuming that members of the party used the spaces simultaneously, we can imagine that the roofed structures of the main area would have offered housing to priests and members of the ceremonial group—whereas the windbreaks would have been used for lower-status participants. There appears to be a diminishing presence of windbreaks as the sites increase in altitude. The windbreaks coincide with the logistical facilities from the complex of the base at 5,000 m (16,404 ft) up to the first intermediate station at 5,600 m (18,372 ft) (on the lower slope of the volcano). Therefore, it can be inferred that the bulk of pilgrims would have ascended only up to where the topography and the ritual prescriptions allowed (Ceruti 2003a:91). The most abrupt and difficult stage in the ascent appears to have been meant only for the ceremonial retinue.

Worship of Mountains from Afar

Some scholars feel that high-altitude sites have not been found in certain regions, such as the northern part of the Inca Empire, because mountain worship was of a nearer antiquity and of a lesser importance in this

region (cf. Schobinger 1999:15). 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]. Apparently, the Incas and local inhabitants made offerings to these mountains from more distant places [Albornoz in Duviols (1984)].

The higher mountains in northern Peru and Ecuador were not climbed to their summits due to the lower snowline caused by an increase in precipitation as one approaches closer to the equator, as well as due to the technical climbing difficulties presented by many of these peaks—which remain challenging to mountaineers even today. Furthermore, Spanish priests systematically destroyed many religious sites on the lower mountains during the "extirpation of idolatries" (Duviols 1967; Hernández Principe 1923). Still others may have been ravaged by treasure hunters, who were quite active throughout Peru (cf. Reinhard 1985a, 2005; Schobinger 1966b:16).

On the highest and most inaccessible mountains, Inca offerings could have been presented at disparate places—without ceremonial structures being built. As Cobo 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. [Cobo 1990:155; cf. Murúa 1946:398]

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.

THE SUMMIT SHRINE

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 [above 5,500 m (18,044 ft)] peaks. 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 sacrifices and offerings made at the Temple of the Sun in Cuzco. The early 1600s account of Hernández Principe (1923), 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 girl's burial site but does not describe the general appearance of the mountaintop sanctuary.

Archaeological surveys show that the mountaintop sites generally consist of symbolic structures (rows of stones or low walls forming circular or rectangular outlines), artificial platforms, and structures that served as protection from the elements (cf. Ceruti 1999a; Reinhard 1985a). These sites are often referred to as "high-altitude sanctuaries," and they are usually located 5,000 m (16,404 ft) or more above sea level (cf. Beorchia 2001b; Ceruti 1997a; Reinhard 1985a; Schobinger 1986). Great amounts of energy, organization, and in some cases specialized techniques were necessary for constructing and maintaining structures at such heights. Commonly, even people who have lived all their lives at about 4,000 m (13,123 ft) (the highest altitude at which permanent villages are normally found) have difficulty in reaching (let alone working at) altitudes greater than 5,200 m (about 17,000 ft).

Ceremonial Architecture

Different strategies of adapting to and using the topography of the summits for ceremonies can be inferred from the architectural evidence at high-altitude sites (Ceruti 1999a). 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 about 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 at the north of the massif was climbed and used for building a trail to a retaining wall. However, the main funerary platform was built on the saddle below, where more room was available for its construction (Reinhard 2005:166, 170). Adaptation to the steep slopes of summit ridges is also demonstrated by the construction of terraced platforms, such as those on Chañi and Sara Sara (Ceruti 1997b, 1997c; Reinhard and Chávez 1998).

Sometimes, the funerary area is not only concentrated on the main summit but extends to lower summits or shoulders on the mountains. This is the case for Ampato, where—apart from the summit platform at 6,312 m (20,249 ft)—burials were also found at about 5,800 m (19,029 ft). On Misti, the ceremonial site was intentionally placed on the interior rim of the crater and not on the summit—presumably because the purpose of

the offerings was to placate the deity believed to reside in the fumaroles just below (cf. Reinhard 2005:247–252; Reinhard and Chávez n.d.c.).

There are also differences in the types and visibility of the structures built on the high-altitude sites (Ceruti 1997a). Artificial platforms were found at important sites, with the *ushnu* platform on Quehuar being the best constructed of those discovered to date (Reinhard and Ceruti 2005). However, several platforms consisted of simply built walls with fill inside—the walls being so small that sometimes they are barely visible, such as the one on the summit of Llullaillaco. Simple circles and rectangles formed by lines of stones are common [e.g., on Llullaillaco's summit and at the site at 5,800 m (19,029 ft) on Ampato].

This latter site, however, 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 only signaled 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 Llullaillaco, 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 Llullaillaco summit ridge—also naturally protected from wind—was used to build the double-roomed structure. In this case, the structure could have been used as part of a strategy of spending the night high on the mountain in order to perform the *capacocha* ceremony at dawn on the summit. According to the chroniclers, ritual offerings were often made just prior to sunrise (cf. Cobo 1990:136, 174)—as they are today (cf. Aranguren 1975:114; Bastien 1978:145; Szeminski and Ansion 1982:199).

In general terms, the ceremonial architecture on the high mountain summits is unimpressive compared to the exquisite offerings buried inside. This is in accordance with general statements made by chroniclers regarding the shrines that were not enclosed temples—often described as natural places in the landscape where sometimes only the huts of the priests could be discernible (Cobo 1990:48).

Lookouts and Signal Stations

The deliberate locating of small high-altitude sites within view of the *tambos* suggests that there could have been coordination between the elite group on the summit and the people remaining below. This may have been the case for the sites described as "lookouts" on Chañi and on Licancabur, whereas on other mountains—such as Llullaillaco—the site at which the summit platform was placed could easily be seen from the *tambo*. If this was the case, some of the firewood located near these sites might have been used for signaling (i.e., to notify those below of the progress of rituals). It is less likely that a serious signal system was established for more distant communications, as some climbers have proposed.

Considerable amounts of wood have been preserved on the slopes and summits of Llullaillaco and Chañi, as well as in most of the Inca mountaintop shrines. The wood found on the mountain sites primarily served for making fires (for domestic and ritual purposes) and for constructing roof beams. The Incas commonly burned their offerings (cf. Rowe 1946:306)—and, of course, wood was used for making fires to keep people warm and for cooking.

The possibility that the site on Llullaillaco's summit was used for sending signals was proposed by Rebitsch (1966:61, 72–73), although he noted the difficulties such a signal station would have confronted: the daytime winds, adverse climate, and the extreme difficulty of maintaining men at (or even sending them to) such an altitude. It might be added that the climate and snow conditions could make the sending of signals extremely difficult during much of the year. The Incas were reported as having sent fire and smoke signals (Garcilaso 1967 v.2:130), but these were only used in exceptional circumstances—such as an uprising in one of the provinces.

The chronicler Garcilaso does not state that these signals were sent from mountains, but this presumably would have been the case—albeit likely from lower and more accessible peaks. Even if signals had been sent from Llullaillaco, they obviously would not have constituted more than a secondary reason for the construction of the complex system of structures there. In any event, the ceremonial aspects of the site are obvious—and the Incas maintained a reliable system of runners (*chasquis*) for normal communication.

Colonists Serving Shrines

The *mitima* system was one of the social institutions involved in mountain worship. The Incas had the practice of transferring colonies of people (*mitimaes*) throughout their empire as a means of pacifying and unifying it. These colonies also helped to expand

pastoralism, irrigation, and maize-producing areas (cf. Lorandi 1983; Murra 1975).

The instructions issued about 1583 by the extirpator of idolatries Cristóbal de Albornoz to destroy the *huacas* in Peru described how some colonists would place on mountains sacred objects associated with the places or things (*pacariscas*) from which their ancestors were believed to have originated (Duviols 1967:20). In 1622, Hernández Principe (1923:34) noted colonists worshiping a mountain because it was the deity of the original inhabitants. According to Cristóbal de Albornoz, many *huacas* were placed on volcanoes and high mountains south into Chile—and he specifically names five mountains in southwestern Peru (Duviols 1967:20–21). Ruins have been found on the summits of two of these: Sara Sara (which Cristóbal de Albornoz noted as having 2,000 *mitimaes* dedicated to its service) and Putina (Misti) (cf. Reinhard 1998b, 2005).

It appears likely that at least some of the high mountain sites were constructed by *mitimaes*, although this does not mean that the mountains were chosen with no attention paid to local beliefs (Reinhard 1985a). It is clear that mountains were already important in the economic-religious concepts of local inhabitants, and *mitimaes* would hardly have ignored them. The *mitimaes* may well have worshiped their *pacariscas* there, but the local mountain deities would surely have figured significantly in any major rituals performed on their ascribed summits.

The construction of a high-altitude ceremonial complex would have offered the opportunity to implement two simultaneous strategies of ideological coercion. On the one hand, a mountain could have been the place of destination for the rebuilding of the "*pacarina*" of a *mitimae* population transferred into the region (Ceruti 1999a; Reinhard 1985a). On the other hand, the construction of the sanctuary on the summit—by means of placing architecture and sacred objects characteristic of Inca dominance there—could have functioned as an instance of "Incanization" of a local *huaca* (Ceruti 2003a:173; Reinhard 1985a).

Both strategies would have allowed the imperial government to legitimate its power by providing an ideological justification for territorial domination. In the religious sphere, the offerings presented to the mountains would have represented a gesture of the sovereign's "generosity" (Ceruti 2003a:173). The Incas would have assisted the *mitimaes* by granting them a new sacred scenario for the worship of their *huacas*, at the same time honoring the local inhabitants by granting them people and livestock to serve their sacred mountain. As La Lone and La Lone (1987) noted, the ability of the Incas to extract from the economy at the same time they proclaimed their generosity was a significant strategy in legitimizing their power.

Under Inca dominance, the maintenance duties of the mountain sanctuaries were in some cases carried out by *mitimaes*. As mentioned previously, Albornoz noted that the Inca emperor had assigned 2,000 *mitimaes* to the service of the sanctuary on the volcano Sara Sara (Duviols 1967:21). The hypothesis that people specifically assigned to the maintenance of ceremonial complexes (such as Llullaillaco) were *mitimaes* is consistent with the historical sources and with the results of recent research (cf. Pärssinen 1992). Other historical sources suggest that the service to the temples would have been offered by local *mitayo* workers or by *yanacona* servants (Betanzos 1996:46).

In the case of Llullaillaco, although there was no population settled in the immediate vicinity of the mountain it is possible that the workers could have come from more distant regions as part of their *mita* obligations (in the Inca Empire, tribute was often paid in labor). However, workers and servants at the base of Llullaillaco likely were stationed there only temporarily—due to the environmental constraints noted previously. Indeed, this would not have been usual in the majority of cases involving *mitimae* colonists.

CONCLUSIONS

As we have seen, several 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 finally sacrificed and buried, thus providing a vivid manifestation of state religion as well as being powerful offerings to the local deities. As Cobo (1990:5) noted, in 1653 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."

In some cases, local mountains took on the names of the sacred places of origin (*pacariscas*) of the colonists sent by the Incas—colonists known to reconstruct such sacred places in the newly occupied territories

[cf. Albornoz in Duviols (1984:198); Reinhard 1983:44 ftn. 8]. The structures built by the state on mountain summits assisted in co-opting ideological legitimacy from the local elite, and thus the *capacocha* pilgrimages were a way of "imperializing" sacred places that were important prior to the Incas (cf. Bauer and Stanish 2001:19l; Ceruti 1999a; MacCormack 2000:112; Reinhard 1985a:315).

The fact that the mountains were already sacred to local inhabitants allowed the Incas to frame the ceremonies performed on the summits within a broader context of political strategies to legitimize 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; Sallnow 1987:40). In addition to sacrifices and offerings, the long walks toward the bases of sacred mountains and the climbs to their summits could also play roles in these strategies. Inca ritual specialists with their offerings were moving across recently conquered landscapes, and the routes toward and places of worship they selected along the way contributed to the consolidation of Inca domination.

Imperial control of the sanctuaries would also have served to link the Inca elite to the local religious and political leaders who had earlier performed the rituals to the mountain deities. During this process, the Incas also may have attempted to co-opt important local descent groups by subsidizing their ancestors' cults (Salomon 1995:344; cf. Silverblatt 1987:100).

The fact that the *capacocha* pilgrimages promoted domination by the Incas does not mean that such travels were undertaken with only this purpose in mind. Neither a unilinear causality nor a strict functionalism took place here, but rather multi-causality in which religious ideology was one of several factors (cf. Conrad and Demarest 1984:197). The sanctification of natural features of the landscape was in keeping with pre-Inca and non-Inca cultures, as well as with the original conceptions of the Incas themselves before they began to expand their empire.

We can assume that the actual pilgrimages and ceremonies had a variety of personal and political meanings for the participants (cf. Bauer and Stanish 2001:248). Just by having completed such a pilgrimage, the social status of the pilgrim surely would have increased. We know that some local leaders offered their children for *capacocha* rituals and received special treatment by the Inca emperor for this, often being placed in higher positions of authority (cf. Hernández Principe1923:62–63). This particularly made sense considering that the *capacocha* victims would become guardians and protectors of the provinces in which they were sacrificed (cf. Hernández Principe 1923).

NOTES

1. See Reinhard and Ceruti (n.d.) for a discussion of the *capacocha* processions within the greater context of pilgrimage studies.

2. Writing in the late sixteenth century, Molina (1968:76) noted that people would walk by the *apachetas* quietly in fear of angering "the wind" with their voices. Although not stated by Molina, we know from other sources that the winds were often believed to be controlled by the mountain deities. The main reason for the construction of *apachetas* in pre-Hispanic times was likely the worship of the deities believed to inhabit the areas where the mounds were built—usually the mountains. According to Middendorf (1974 v.3:71–72) and Squier (1877:399, 542), in the late 1800s the spirits worshiped at *apachetas* in the Peruvian Andes were those of the mountains. This was also the case in recent times in the Bolivian Andes (Girault 1958:44), although Pachamama (Earth Mother) might also be invoked (Girault 1988:423). The offerings still being made today are often the same as those made in Inca times (stones, masticated coca leaves, old footwear) or were similar in being items of no great expense that were meant as token offerings, such as pieces of old animal harnesses, flowers, coins of small denominations, cigarettes, broken bottles, and so on (cf. Girault 1988:421–430).

3. The noted tendency toward standardization of certain measurements (such as the length, width, and height of walls) may be interpreted as evidence of the use of an Inca system of measurement based on anthropometrical observations, as proposed by Inca architectural specialists (cf. Agurto 1987:258).

Chapter Five

Ritual Specialists and Victims

"At every town and *guaca* [sacred object] attendants were assigned for each sacrifice, and it was stipulated when each sacrifice was to be made, the form and manner in which it was to be carried out, as well as the different types of things for it…"

—Bernabé Cobo, 1653

The participation of specific social actors in ancient religious ceremonies is usually difficult to establish in the archaeological record. In the case of the three sacrificial victims on Llullaillaco, their frozen bodies constitute extraordinary examples of the social actors' visibility—in that the children have remained perfectly preserved from the moment of their deaths. The normal processes of body decomposition at death have been unable to take place (cf. Chamberlain 1994; Iserson 1994; Mays 1998; Pearson 1999). This makes it possible to contrast bioanthropological evidence with information provided by historical sources regarding the victims (Ceruti 2005a; Reinhard 1997a, 2005).

Historical sources also help clarify the hierarchy and functions of the priests and other agents in charge of the selection and indoctrination of the children chosen for sacrifice (Ceruti 2005b). In this chapter, we examine information that sheds light on the people who participated in *capacocha* processions and on the conditions surrounding the children's selection and their appearance at the time of the ceremonies undertaken on mountain summits.

Ritual Specialists, Acllas and Mamacunas

Ritual Specialists

The *vilcoma* (*villac umu*) was the highest member in the hierarchy of Inca priests. His duties were centered on service to the solar deity in the Coricancha (Temple of the Sun) in Cuzco. The chronicler Blas Valera (Anónimo1968:161–162) characterized him as a teacher of ceremonies, as a supreme referee in faith matters and ritual practices, and as the authority who chose the vicars of each county and restricted or enlarged their jurisdiction. He also presided over the priests sent by the Inca to administer the cult in the provincial capitals (cf. Brundage 1985:157–158; Murúa 1946:314). Thus, he presumably would have played some role in overseeing the general conditions in which ceremonies were to be conducted at mountain shrines. However, other religious specialists would have more directly participated in the *capacocha* ceremonies undertaken far distant from Cuzco.

Religious specialists known as *vilca camayos* were in charge of paying homage to provincial sacred places and deities (Molina 1959:96). They were responsible for

establishing the quality and number of offerings made to sacred mountains, according to their importance.

It is likely that priests in Cuzco determined the number and quality of offerings to be made at many of the shrines, even those as far removed from the Inca capital as those on mountains such as Llullaillaco (Ceruti 2003a:161). Inca priests who were part of the *capacocha* procession 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 reported undertaking pilgrimages of more than 30 leagues (about 165 km) to worship at indigenous shrines (Arriaga 1968:15).

Huaca camayocs were ritual specialists associated with particular shrines. They would receive the sacrificial victims and offerings brought by the *capacocha* party, and would be involved in the actual performance of the sacrifices and the burial of the offerings at local shrines (cf. Molina 1959:96). In his discussion of Inca religion, Cobo (1990:159) noted that "There was an excessively large number of priests because there was not a shrine, large or small, whether it be a stream, a spring, a hill, or any other place of veneration, for which attendants and caretakers were not designated."

The local priests were unlikely to have been completely assimilated into state structures. Indeed, had this been the case there would not have been the need for the Incas to have had such strict conditions with regard to how pilgrimages were conducted and as to how and when offerings were made (cf. Cobo 1990:110; Patterson 1991:104–105).[1]

Acllas and Mamacunas

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 compounds (*acllahuasis*). According to Ramos Gavilán (1976:62), the girls' entrance to the *acllahuasi* depended on the work of the *apu-panaca* officials. They were noted as being sent by the Inca to visit the local communities every five years and were in charge of recruiting the most beautiful and intelligent girls in the empire. They had the prerogative to choose the girls they wanted and to assign them to *acllahuasis*.

Once the girls were confined to the *acllahuasis*, consecrated women (*mamacunas*) were in charge of taking care of and training them.[2] According to historical sources:

> The *mamaconas* were in charge of making the drink for the Inca and for the Sun, and of weaving high quality clothes, and no one was allowed to covet of having one of them as woman. [Mercado de Peñaloza 1885:338]

Herrera noted that "the virgin *mamaconas* who served in the temple, were entrusted to teach virtue to the maidens" (Herrera 1728:100). Cobo (1996:236) and Murúa (1946:333) provide further details about how they taught girls to spin, to knit wool and cotton, to make maize beer (*chicha*), and to perform other typical female activities for religious and political purposes. According to the chroniclers, at the age of 14 the chosen women would meet their destiny—either given by the Inca as wives to local nobles or consecrated as priestesses. Some of them, however, would become sacrificial victims during state *capacocha* ceremonies (Acosta 1962:241).

SACRIFICIAL VICTIMS

Chroniclers noted that children were selected for sacrifice because their purity made them more acceptable to be with the gods (cf. Figure 1.3). 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 with them (cf. Cobo 1983:237; Gutierrez 1963:233; Hernández Principe 1923:62). The children were deified and were worshiped together with the gods with whom they were believed to reside (cf. Cieza 1959:150; Hernández Principe 1923). They would be honored for all time, unlike the common people—who only received offerings for periods of up to two generations (Cobo 1990:42–43).

Accordingly, the sacrifice 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, 1990:112; Hernández Principe 1923:62; Ramos 1976:81). 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, 1990:8). 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).

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; Hernández Principe 1923). However, many

would surely have been frightened—and this was one of the reasons some of them were reportedly given *chicha* (maize beer) to drink (i.e., to "dull their senses") (cf. Cobo 1990:112; Ramos 1976:81).

Ethnic Origin and Cultural Background

The *capacocha* ceremony involved the redistribution of human victims to different parts of the Inca Empire to be sacrificed. Hernández Principe (1923) 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 *capacocha* victims had to go to Cuzco before being taken to the place they were sacrificed. However, this is the impression left by some chroniclers—and the victims certainly all had to have been provided with offerings supplied by the Inca state.

The chroniclers noted that the children often came from outside the regions where they were sacrificed, and this has been supported by the archaeological evidence and the DNA of some of the *capacocha* victims. Unfortunately, the DNA of only a few of the mummies has been collected—and there is currently insufficient DNA data from Andean populations to allow for comparisons to be made that would enable archaeologists to determine the exact places they originated. Nonetheless, the available evidence is suggestive of *general* regions of origin for some of the mummies and points to areas for future research.

Obtaining DNA from mummies is difficult, due to its deterioration over time and problems of contamination—but the best conditions for its preservation are found in those mummies which have been frozen (Jones 2001:71; Williams 2005:135–136). Most DNA is in the nucleus, but additional DNA is found outside it in the cell's mitochondria. Mitochondrial DNA (mtDNA) is more commonly used in ancient DNA studies because there are many more copies of it than nuclear DNA in a cell, it is relatively durable, and it rarely mutates (cf. Williams 2005). Because mtDNA is inherited only from one's mother, it is passed down unchanged through generations except for random mutations.

The mitochondrial genome is relatively small, having just 37 genes and 16,000 or so base pairs. Compare this to 30,000 *genes* in the nuclear genome, which is 100,000 times larger. Of those, one sequence of mtDNA of 1,122 (sometimes given as 1,123) base pairs is used to search for mutations—and thus relationships. Two regions within this sequence, called hypervariables (HV1 and HV2), are especially examined due to their variability—and thus any mutations that have occurred allow relationships to be narrowed down between individuals (Jones 2001:52–53). Large groupings of populations, called haplogroups, are defined by genetic markers that link members through common (albeit distant) ancestors (Wells 2006:40–41). Five haplogroups have been identified for Native American populations, of which four (A, B, C, and D) are prominent (Wilson 2005:138).

In the case of the three Llullaillaco mummies, DNA from their hypervariable regions was analyzed using hair samples (Raghavan and Gilbert 2009). A search in the Sorenson Molecular Genealogy Foundation (SMGF) database found 15 "one-off" matches for the Llullaillaco boy (haplogroup C). The majority (13) were found in Peru and Chile (8 and 5, respectively) (Woodward et al. 2009). Dr. Claudio Bravi (2009, personal communication to Reinhard) of the Multidisciplinary Institute of Cellular Biology, National University of La Plata, Argentina, found a match with a person in Bolivia among the unpublished DNA samples he has collected.

A search in the SMGF database resulted in seven matches being made for the youngest Llullaillaco girl (haplogroup D), of which the majority (6) were found in Bolivia and Peru (4 and 2, respectively). Dr. Bravi found two near matches in Bolivia and northern Argentina. The SMGF database showed 352 matches for the Llullaillaco maiden (haplogroup D), the majority being in Peru and Chile. The closest match in the SMGF database for the Quehuar (Quewar) female mummy (haplogroup D), found on a mountain not far from Llullaillaco, proved to be in central Peru.

The Ampato maiden (haplogroup A) had a match with a person in northern Peru in the SMGF database. Dr. Bravi found four perfect matches with people living in northwestern Argentina. The Ampato maiden's DNA showed her to have no relationship with 19 people from the village of Cabanaconde in the Colca Canyon (i.e., close to Ampato). On the other hand, there is a near match between one of those villagers and the oldest female mummy found on Llullaillaco—nearly a thousand miles away (Crews 2000).

Although still preliminary, the DNA data thus suggest that a significant proportion of the *capacocha* victims will prove to have come from places far distant from where they were sacrificed, thus supporting the information reported by the chroniclers.[3] There are other types of evidence that can be used to help determine the origins of the mummies, and it is to these we now turn.

Stylistic patterns in the clothing worn by the *capacocha* victims and the artifacts found with them can also

be used to help identify the regions from which they may have originated. To date there has been little that indicates a *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, although this could also be explained as being a local offering added to the *capacocha* burial (cf. Besom 2000:398).

The El Plomo boy has been tentatively identified as coming from the Altiplano region of Bolivia based partly on a metallic ornament (Mostny 1957:37), whereas a mantle found with the Aconcagua boy had designs that suggest he may have come from the central coast of Peru (Schobinger 1995a: 21). These items could be explained in other ways, but given their having been recovered in the context of ceremonies, clothing, and artifacts of clearly Inca origin, they provide additional evidence indicating that some of the children had been sent from areas far distant.

Some pre-Hispanic Andean cultures had the custom of deliberately shaping the heads of young children by using hard objects, such as wooden boards, to exert pressure during cranial development (cf. Blom 2005; Murúa 1946:289). Because styles varied geographically and ethnically, such cranial deformations have been used as aids in establishing the origins of mummies—including those of children chosen for sacrifice. For example, Cobo (1990:200–201; cf. Murúa 1946:289; Polo 1916:206) referred to the Colla people as shaping their heads to be long and pointed. One chronicler noted that the shapes of the deformed heads were related to the shapes of the mountains from which the people believed they were descended, some being pointed and some flat (Ulloa 1965:327).

Although the majority of the *capacocha* children thus far known do not show signs of cranial deformation, the Llullaillaco boy (cf. Figures 5.1 and 5.2) and younger girl do (Previgliano et al. 2003). Cranial deformation was also noted in the case of the younger female found sacrificed on Pichu Pichu (Reinhard 2005). In the case of the children found on Llullaillaco, differences in cranial deformation and the absence of deformation in the older female—combined with the results of DNA analyses—suggest that the three children may not have shared the same ethnic background (Ceruti 2005a:269).

As regards social origin, some chroniclers noted that the children chosen for sacrifice were often the sons and daughters of nobles or local rulers (Betanzos 1996:78; Hernández Principe 1923). In some cases, the children of local chiefs were intentionally sent to the Inca by their parents to be part of the *capacocha* ceremony. This was seen as a way of reinforcing an alliance with the emperor and of confirming political positions.

Although not definitive, in some cases there is physical evidence to support a high-status origin of the victims. From the bioanthropological perspective, the excellent state of nutrition of some of the children can be seen in the thick layer of fatty tissue as determined by computerized tomography (CT) scans (cf. Figure 5.3). This is supported by X-rays showing that lines (called Harris lines, which indicate that the person had experienced periods of nutritional stress or childhood illness) had not developed in the bones of the three Llullaillaco individuals (Previgliano et al. 2001). These findings could indicate a high social origin of the victims (Ceruti 2005a:267). The boys sacrificed on Aconcagua and El Plomo were also found to have been well nourished (Quevedo and Duran 1992; Sanhueza et al. 2005; Schobinger 2001).

Elite items that appear in the burials—such as specific tunics given by the emperor to local rulers as a token of good will (Rowe 1979)—also suggest the high-class status of the chosen children, particularly if we can assume that the items had been given to the infants by their own parents (Reinhard and Ceruti 2000:78). A blue tunic similar to one found near *capacocha* burials on Ampato is shown in a portrait of the late 1500s to be worn even by an Inca emperor (Phipps et al. 2008:128; cf. Reinhard and Chávez 1998).

Boys and young girls destined to be sacrificed were reportedly provided as tribute to the state by the local communities on a yearly basis (Cobo 1996:235). If true, this would probably have been more the case for *capacocha* rituals undertaken at Cuzco—although annual offerings were likely made at the places where *capacocha* ceremonies had been previously conducted (cf. Duviols 1986:170).

Some chroniclers describe the boys chosen for *capacocha* ceremonies as being between 4 and 10 years old (Cobo 1996:235; cf. Murúa 1946:342; Polo 1916:37). Bioarchaeological evidence is consistent with this, in that it has been established that the boys found sacrificed on Aconcagua, Llullaillaco, and El Plomo are in this age range.

The case of the young man from Mount El Toro is more difficult to interpret because he does not fit into the usual age profile of male *capacocha* victims (Figure 1.6). In addition, he was almost completely undressed and his funerary assemblage did not contain figurines or other artifacts indicating high status. This suggests

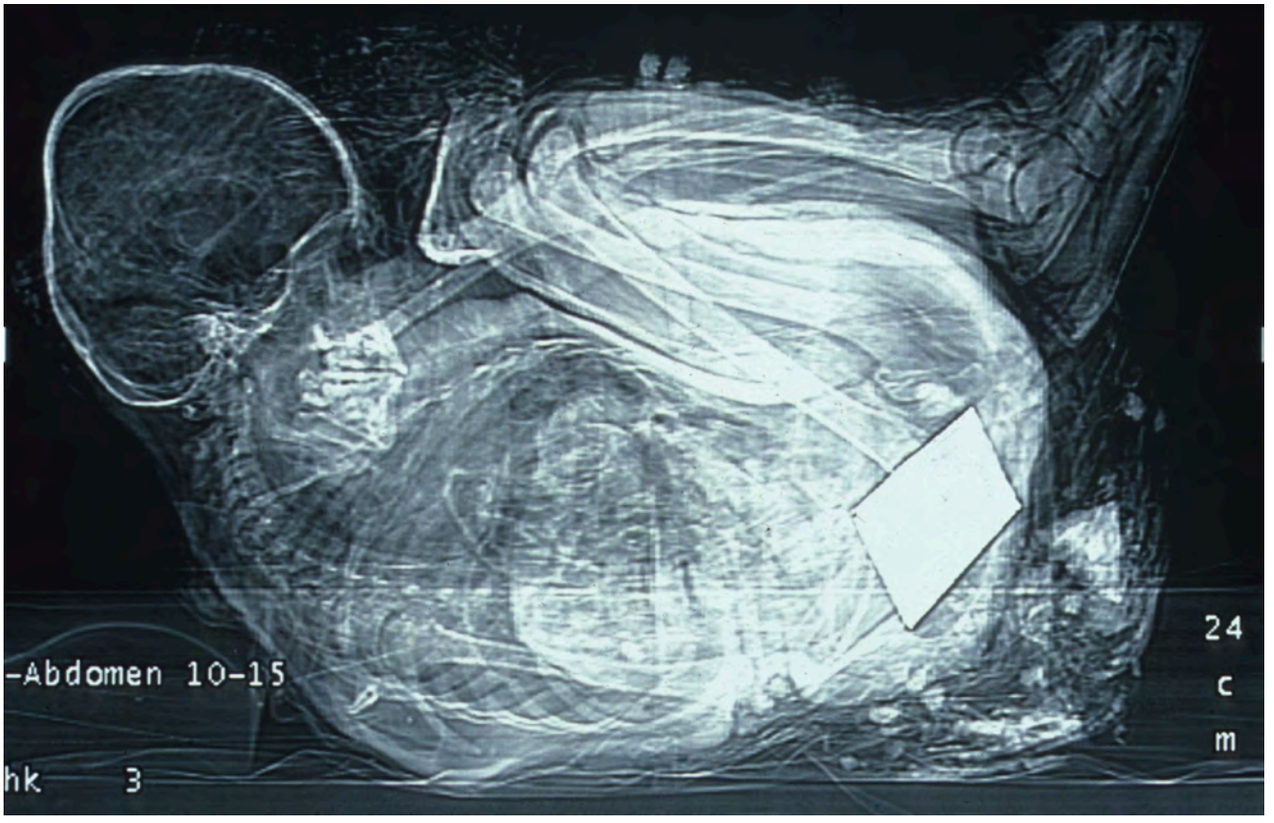


Fig. 5.1. A CT scan of the Llullaillaco boy taken at the Hospital of San Bernardo (Salta). Note the head deformation and seated-flexed position (*courtesy of Tomografía Computada Sociedad del Estado, Salta*).

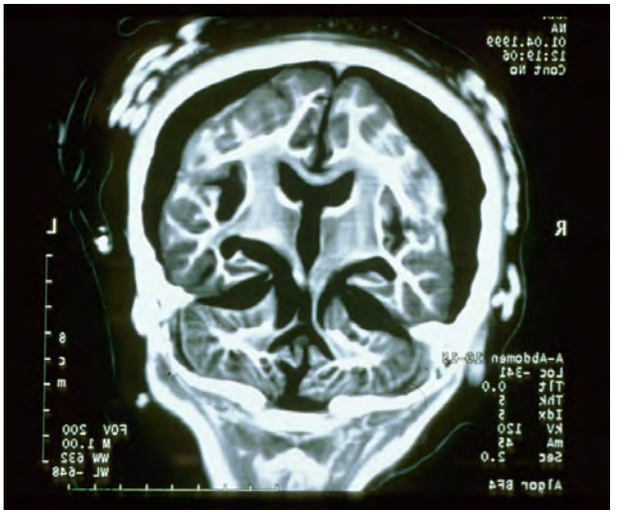


Fig. 5.2. A CT scan of the Llullaillaco boy's head taken at the Hospital of San Bernardo (Salta) shows his brain still intact (*courtesy of Tomografía Computada Sociedad del Estado, Salta*).

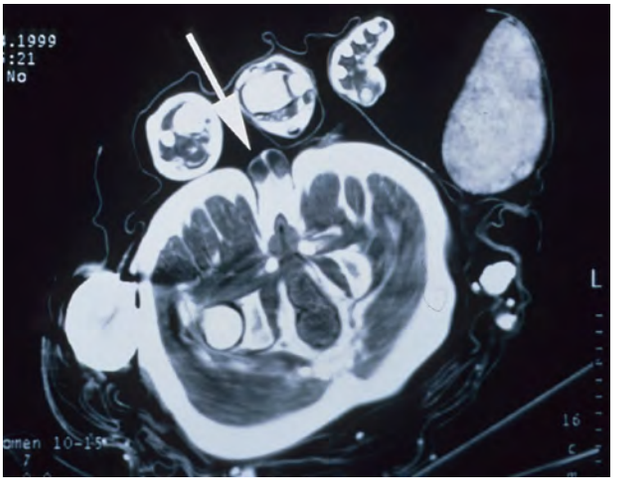


Fig. 5.3. The Llullaillaco boy's well-preserved muscle tissue is visible in this CT scan (arrow points toward his testicles) (*courtesy of Tomografía Computada Sociedad del Estado, Salta*).

that his sacrifice was made for reasons other than those attributed to *capacocha* ceremonies. Alternative explanations include his sacrifice possibly having been conceived of as a punishment for ritual misbehavior (Ian Farrington, 2002 personal communication to Ceruti) or perhaps due to his having been a prisoner of war (cf. Reinhard in Beorchia 1985:236).[4]

The older female from Llullaillaco, the Ampato Ice Maiden, and the girl found on the summit of Sara Sara were all 14 to 16 years old (Reinhard 2005)—which is

the age suggested by some chroniclers as the appropriate one for *acllas* to be chosen for sacrifice (cf. Cobo 1990:112; Ramos 1976:56). However, older females have been found on Esmeralda and Pichu Pichu. Overall, girls found on the mountaintop burials tended to be older than boys—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; 1990:112).

Cobo (1990:112) and Guaman Poma (1980:245) noted that infants might also be sacrificed. Arriaga (1968:88) wrote that children of a "tender age" and infants that were too young to walk were carried by their own mothers during *capacocha* processions (cf. Cobo 1990:156; Molina 1959:95–97). However, such sacrifices have only been documented at one of the high mountain sites (Misti)—where the skeletons of two infants were found (Reinhard and Chávez 2001b).

Aside from age and virginity, another requisite for the sacrificial victims was the absence of blemishes. One chronicler 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). Our data from Llullaillaco supports this in terms of general health in that the three children were well nourished and were without major defects (Reinhard and Ceruti 2000). However, in the case of the Llullaillaco boy a wart exists on a finger of his left hand (Vides Almonacid, 2003 personal communication to Ceruti)—and the El Plomo boy had some marks on his body (Quevedo and Duran 1992:198, 201). This suggests that slight "blemishes" on the skin could occasionally be tolerated. This is a separate issue from lesions and sores that developed on the children during the course of their pilgrimages to the mountains. For example, lesions were reported on the El Plomo boy (Horne 1996:155)—and a sore was found on the Llullaillaco maiden, possibly caused by leishmaniasis (Angelique Corthals, 2009 personal communication to Reinhard)

Clothing and Other Distinguishing Features

The boys sacrificed on mountaintops and the figurines buried with them provide a substantial archaeological database for describing male clothing in Inca times. Some chroniclers noted that the standard male clothing (Figure 5.4) consisted of a breechcloth (*huara*), a sleeveless tunic (*uncu)*, a mantle (*yacolla)*, and sandals (*ushutas*) (cf. Cobo 1990:185–187). A headband (*llautu)* was often wrapped around the head, although it could be replaced by a sling (*huaraca*) (cf. Arriaga 1968:35).

Compared to the textiles worn by some of the female *capacocha* victims, the clothing worn by males was less elaborate. It was not of obvious classic Inca origin, often appearing to have been locally woven. This may have been due in part to the Inca practice of cloistering chosen women, who also wove fine textiles for the Inca nobility (cf. Rowe 1997:34).

Men have been frequently depicted wearing metal plaques (*canipus*) (Figure 5.4) (Guaman Poma 1980; Rowe 1997:29), which are similar to the those found in miniature on the heads of statues (Figure 5.5) (cf. Reinhard 1999a:38). Adornments for the head functioned as signs of ethnic and regional origin and were controlled by the state. Intentional misuse is said to have been sanctioned with the death penalty (Betanzos 1996:106).

Fig. 5.4. A drawing of about 1613 depicts the Inca emperor Pachacuti wearing typical male clothing consisting of a tunic, mantle, and sandals. In addition, his nobility is shown by his having a metal plaque and feathers on his forehead (*from Guaman Poma 1980*).

Fig. 5.5. A gold male statue (S-17) found near the boy on Llullaillaco wears a striking 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.

The boy on Llullaillaco had a headdress of white feathers held in place by a sling wrapped around his head (Figure 5.6). We know that such headdresses (*pilcocatas*) were worn on special occasions, such as at major ceremonies (Cobo 1990:151, 187). When wrapped around the head, the sling looked and could function similar to a *llautu*. Indeed, it was common for slings to be tied around a person's head (Arriaga 1968:35)—and in some cases they were used to help distinguish the ethnic group to which a person belonged (Montesinos

Fig. 5.6. (*a*) The boy on Llullaillaco wore a red tunic and a white feathered headdress held in place by a sling wrapped around his head. (*b*) Close-up of the boy on Llullaillaco with a white feathered headdress held in place by a sling wrapped around his head.

Fig. 5.7. Examining the black tunic (S-42) found under the boy.

Fig. 5.8. The Llullaillaco boy's mantle (S-43).

Fig. 5.9. The Llullaillaco boy wore leather moccasins and anklets of white fur.

1882:42). Even an Inca emperor is reported as having worn one in this way (Levillier 1940:152; cf. Montesinos 1882:5).

The Llullaillaco boy was found in the burial wearing a red tunic and sitting on a folded black tunic (cf. Figures 5.6 and 5.7). A red and brown mantle or cloak covered the boy's head and upper body, forming the exterior part of the mummy bundle (cf. Figures 3.16 and 5.8). He wore leather moccasins and anklets of white fur (Figure 5.9) similar to those represented in drawings (Figure 5.10) of Guaman Poma (1980). He carried a bag (*chuspa)* covered in feathers, and he was adorned with a silver bracelet on his right arm (Figure 5.9). 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; Rowe 1997:30).

Just like the boy on Llullaillaco, 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 of a sling wrapped around his head, he wore a *llautu* and a headdress of feathers (Quevedo and Duran 1992:198). The boy sacrificed on Aconcagua was dressed in two tunics, wore sandals, bore a necklace of stones, and had a headdress made with feathers of tropical birds (Bo 2001:250; Schobinger 2001a). He was also buried with an unusual tunic made of feathers sewn on a cotton cloth (Abal 2001a:216).

The boy on Ampato did not have a feather headdress, but did have a circular headpiece made of vegetal fibers—the appearance of which is reminiscent of headpieces depicted in drawings by Guaman Poma (1980:230, 295, 301). Differences in the headdresses of the Ampato, Llullaillaco, Aconcagua, and El Plomo boys presumably can be attributed to the state-controlled use of such adornments as distinguishing ethnicity in Inca times.

Chroniclers, such as Guaman Poma (1980) and Cobo (1990), 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. A shawl (*lliclla*) was worn on the shoulders and held in place by a metal pin (*tupu*). Sandals (*ushutas*) and a head cloth (*nañaca*) were

Fig. 5.10. In this drawing (ca. 1623), an Inca man is wearing moccasins and anklets similar to those worn by the Llullaillaco boy. The scene depicts him making a drink offering with two vessels (*from Guaman Poma 1980*).

Fig. 5.11. This drawing (ca. 1623) illustrates the clothing of an Inca noble woman (*from Guaman Poma 1980*). A dress was fastened with a waist belt and held up by two pins at the shoulders. A shawl, head cloth, and sandals were also worn. The woman is holding a bag in her left hand.

also worn (Figures 5.11 and 5.12). The Llullaillaco and Ampato females wore leather moccasins instead of sandals.

The two female individuals on Llullaillaco wore mantles that covered dresses fastened with belts and shawls held by *tupus* (Figure 5.13). Belts (Figure 5.14) were also important, as they were sometimes the only garments with elaborate design motifs recovered from normal burials (Dransart 1995:15). The Ampato Ice Maiden and the female mummy from Sara Sara were dressed in the same fashion as the Llullaillaco mummies, and all wore elaborate belts.

The Ampato Ice Maiden's clothes appear to have been of the best quality among the female *capacocha* victims thus far known.[5] It is unclear why clothing quality varied. One possibility is that there was a difference in status, perhaps based on age—as the mummies on Ampato and Llullaillaco suggest. The textiles could reflect different stages in a hierarchy of *acllas* (cf. Dransart 1995:15). Another possibility is that some of the clothing and accompanying woven items, such as bags, may have varied in quality due to differences in the tribute local weavers paid to the Inca (cf. Rowe 1997:36). Tribute was collected and kept in storehouses to be later distributed, and this could presumably include items provided to *capacocha* victims.

The cloths covering the heads of the female *capacocha* mummies were likely *nañacas*, which seem to have been worn only by women of high status (cf. Michieli 1990:57; Rowe 1997:24; Uhle 1991:89). If so, the head cloths found on both female individuals from Llullaillaco (Figure 5.15) and on the Ampato Ice Maiden would be among the few known in situ from the archaeological record. Only a decade ago, Rowe

Fig. 5.12. This reconstruction of the clothing of the frozen female mummy found on Ampato illustrates the high quality of the textiles worn by Inca noble women. The dress is shown uncovered on the left. In ceremonial contexts, feather headdresses could be worn (*painting by Christopher Klein, courtesy of the National Geographic Society*).

(1997:24) noted that "…neither Uhle nor anyone else has so far been able to identify an actual Inca head cloth." The samples we have collected as far apart from each other as Llullaillaco in Argentina and Ampato in Peru seem to indicate that the *nañacas* may have had a standardized simple two-color (light and dark brown) design with well-constructed warp and weft selvages (cf. Conklin 1997:107–108).

The young girl from Llullaillaco 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 (Figures 5.16 and 5.17).[6] Some of the metal ornaments the Llullaillaco maiden was wearing on her right shoulder look like bells (Figure 5.14). They may be what Cobo (1990:188) was referring to in his description of "bells" being attached to *tupus*.[7]

The Inca provided the local chiefs (*curacas*) with gifts of diadems (Arriaga 1968:16), with which they could be buried. The possibility exists, therefore, that the diadems found on the heads of human sacrifices at such sites as Llullaillaco and El Plomo may not have been those given to the children but to local chiefs—who in turn presented them as offerings. Occasionally, these could have been the victims' own fathers—as has been suggested by some chroniclers.

Three feather headdresses were recovered in association with female sacrifices at high-altitude sites. The Llullaillaco maiden had a headdress covered in white feathers that had been placed on top of her bundle (Figures 3.24, 5.12, and 5.18), and the same type of headdress was documented with one of the females found at about 5,850 m (19, 193 ft) on Ampato (Reinhard 2005). A similar feather headdress was also found (partially preserved) with the elder female on Cerro Esmeralda (Checura 1977:136, 1985:56).

These headdresses resemble the miniature ones worn by many of the female statues offered by the Incas (Figure 5.19). However, the figurines' headdresses have textile panels (usually covered in feathers) attached to them—which extend from the headdresses down the backs of the statues (cf. Dransart 1995:6; Palma 1991; Rowe 1997:24). Such back panels (also called back flaps or dorsal pieces) have not been found in *capacocha* burials, with the possible exception of a feathered textile recovered with the older girl on Esmeralda.[8] The feather headdresses clearly had special ritual importance and were likely related to the status of the *acllas*, in that they have been found in association with young women and not with children (cf. Besom 2000:392).

Inca noblewomen were reported to wear their hair either loose or braided (Cobo 1990:188; Valencia 1981:55), whereas males had short hair (Betanzos 1996:40, 68; Cobo 1990:185).[9] By comparison, the hair of the older female from Llullaillaco had been made up with numerous small braids (Figure 5.20)—whereas the younger girl has combed loose hair and two braids that frame her face. The Llullaillaco boy has short loose hair, with a sling wrapped around his head—whereas the boy sacrificed on the summit of Mount El Plomo has his hair done up into multiple fine braids (cf. Mostny 1957:33; Quevedo and Durán 1992:197).

Hairstyle may eventually serve as an indicator of ethnic and geographical origin. The Incas reportedly ordered that the peoples they conquered retain their traditional hairstyles and headdresses, and the latter in particular were used to identify ethnic groups (cf.

Fig. 5.13. The Llullaillaco maiden wearing her dress and shawl, as seen after her head cloth and outer mantle had been removed.

Cobo 1990:68, 196; Montesinos 1882:42). Thus, we find Cieza de León (1984:333) in 1553 describing the native people of Andabailas (Andahuaylas): "All of them have long, braided hair." A hairstyle of numerous braids—identical to that of the Llullaillaco maiden—is a characteristic of the Uro-Chipaya groups that inhabit the Bolivian highlands. This same style is present in the boy sacrificed on the summit of Mount El Plomo, leading some scholars to believe that this was his region of origin (cf. Mostny 1957:33; Quevedo and Durán 1992:197).

Unfortunately, there is still no database that delineates the distribution of various types of hairstyles in the Andes during pre-Hispanic times. This limits the degree to which the hairstyles of the *capacocha* children can be used to establish their ethnic origins. For example, the multiple fine braiding of hair has been noted among groups throughout much of the north and central Andes—albeit only among females in some areas and among both sexes in others (cf. Mostny 1957:33). On the other hand, the *lack* of hairstyles similar to those of the *capacocha* children in the regions where they were buried does suggest that they originated from elsewhere. Such findings should, therefore, be considered—together with other types of evidence—in determining their ethnic origins.

The use of pigments presented another possible aid in identifying the origins of *capacocha* children. Pigments have been documented on sacrificial victims, including the El Plomo boy—who had red and yellow colors on his face (Quevedo and Durán 1992:198)—and the Aconcagua boy, whose body was extensively covered with red coloring made from the seeds of a plant (*Bixa orellana)* (Bárcena 1989; Schobinger 1995a:22–23). 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 Llullaillaco (cf. Figure 5.20), but lightning had burned the skin of the younger girl—and the boy's face was hidden due to being pressed against a textile

Fig. 5.14. (*a*) Frontal view of the Llullaillaco maiden showing ornaments, the shawl, and woven *cumbi* belt. (*b*) The finely woven *cumbi* belt found with the Ampato Ice Maiden (Peru).

Fig. 5.15. Textile specialist Clara Abal de Russo and archaeologist Juan Schobinger examine the head cloth (N-34) found on the Llullaillaco maiden.

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 5,800 m (19,029 ft) on Ampato.

In the late 1500s, Augustinian friars described the use of yellow and red pigments on the faces of worshipers when they addressed their invocations to the Sun god (San Pedro 1992:33). Murúa (1946:265) also noted faces being painted red in ritual contexts. 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).

Although we may never know the precise meanings the colors had in all of these contexts, it is probably no coincidence that red is commonly associated with fertility concepts in the Andes and that both yellow and red have been used in modern-day rituals devoted to mountain deities (cf. Girault 1988:142). Based on the evidence to date, the use of pigments among the Incas apparently occurred in ceremonial contexts rather than solely for purposes of beautification or ethnic identification.

CONCLUSIONS

The study of the Inca findings on Llullaillaco offers opportunities to compare historical information with the archaeological evidence relating to children chosen for sacrifice. Historical sources also allow us to extend the interpretive process to those ceremonial aspects not directly recoverable from the high-altitude archaeological record but important to understanding other cultural phenomena, such as the hierarchy and functions of ritual specialists.

The chronicles provide valuable information about social actors indirectly involved in the dynamics of *capacocha* ceremonies, such as the one performed on Llullaillaco: *vilca camayocs* in charge of planning the

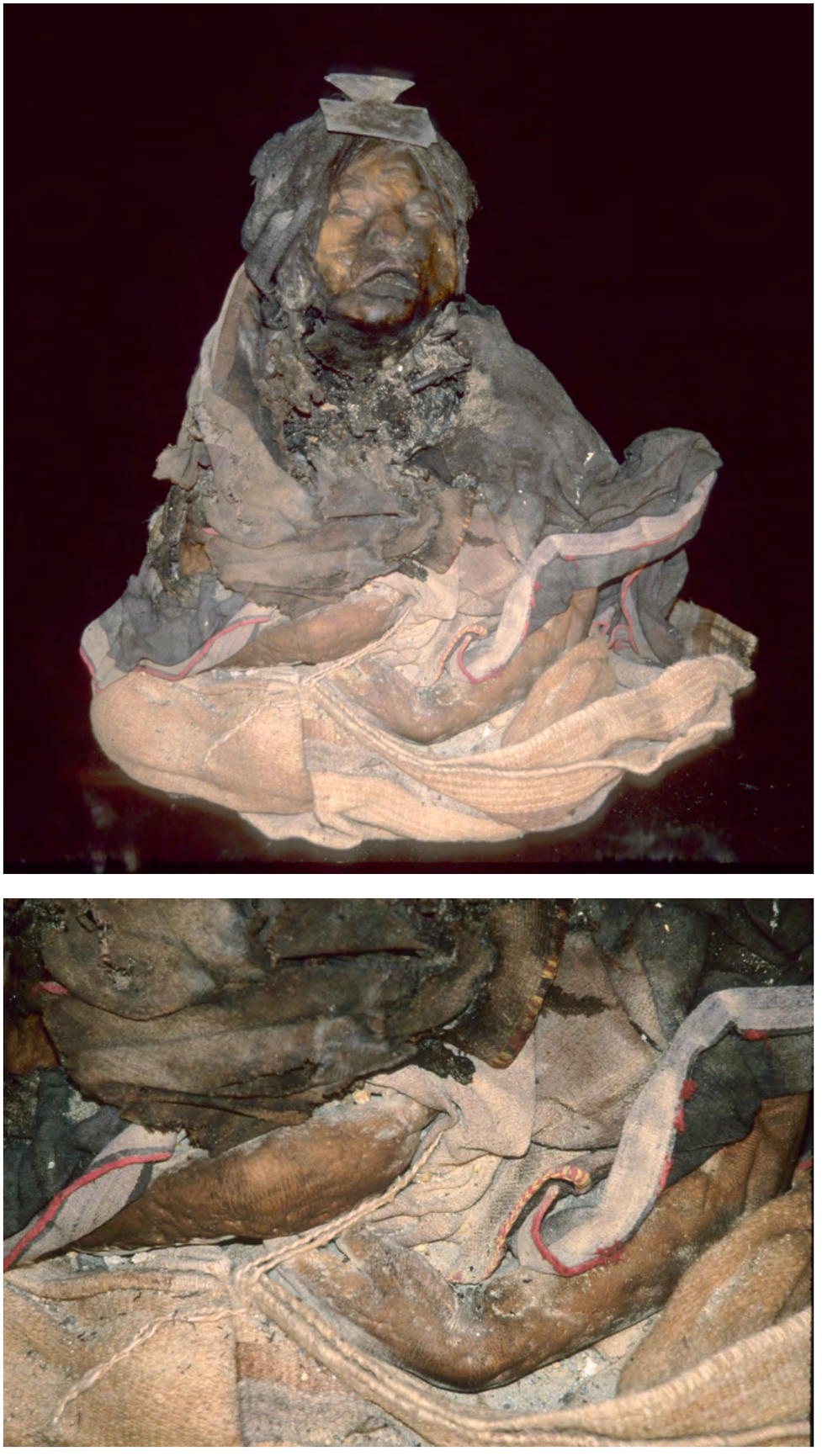


Fig. 5.16. (*a*) The young girl from Llullaillaco was found wearing a metal plaque on her forehead. (*b*) The crossed hands of the young girl from Llullaillaco.

Fig. 5.17. The metal plaque worn by the Llullaillaco younger girl.

Fig. 5.19. The Llullaillaco maiden's headdress closely resembles miniature ones often found on female statues offered by the Incas, and is especially similar to one on a statue (N-24) found next to her.

offering assemblage, *huaca camayocs* who assisted in the ceremonies, and the *apu-panacas*, *mamaconas*, and *pongo-camayocs* who selected, indoctrinated, and guarded the elected women in the *acllahuasis*.

The bioanthropological and archaeological evidence points to the fact that the sacrificial children's deaths had taken place in the context of a *capacocha* ceremony regulated solely by the Inca state. The age and gender profiles and the physical features of the mummies are in accord with the chroniclers' descriptions with regard to characteristics of the victims selected for this special type of Inca ceremony.

According to the historical sources, children younger than 10 years old were annually given as tribute by the local communities to the Inca authorities (Cobo 1996:235). In some cases, the sons and daughters of the local chiefs were given to the emperor to be sacrificed in order to help establish an alliance [Hernández Principe in Duviols (1986:473)]. The Inca Empire also institutionalized the "chosen women" (*acllas*), who were kept in seclusion during puberty and later given as secondary wives to nobles or sent to be sacrificed on distant mountains during *capacocha* ceremonies.

The Llullaillaco maiden, being 14 to 15 years old, was likely an *aclla*—as was probably the case with the female individuals from Quehuar, Sara Sara, and Ampato. The two younger children from Llullaillaco, the Aconcagua and the El Plomo boys, and the infant from Chañi might have been presented to the Inca by their noble parents or offered as tribute by their home communities.

NOTES

1. Likely some information about the deities was kept secret by local ritual specialists, just as is the case in some areas of the Andes today (cf. Urbano 1976:128). This presumably would also have been the case in reverse, with Inca priests having kept secret some of their ritual practices and invocations—especially those related to their major deities, such as Inti (the Sun) (cf. Cobo 1990:110, 158–159).

2. *Pongo-camayocs* were employed as porters and caretakers of the *acllahuasis*. According to Murúa (1946:248–250), they were "very old Indians, devoid of suspicion, castrated for this purpose." They could also be castrated men with their noses and arms cut so that they would not be coveted by the chosen women (López de Gómara 1954:211).

Fig. 5.18. (*a*) The Llullaillaco maiden had a headdress (N-26) covered in white feathers that had been placed on top of her covered head. (*b*) Side view of the Llullaillaco maiden's headdress.

Fig. 5.20. The Llullaillaco maiden had her hair intricately woven into numerous small braids—a hairstyle that may have helped identify her ethnicity.

3. Attempts to extract DNA from bone fragments of the Mount Chuscha girl were unsuccessful (Corach and Sala 2004:130), and no DNA could be obtained from the hair of the Sara Sara girl (Tom Gilbert, 2009 personal communication to Reinhard). It might be added that due to being in a different haplogroup the Llullaillaco boy has no kinship relationship with the two females buried near him (cf. Wilson et al. 2007:16458). For further information on the mtDNA of the Llullaillaco mummies, see Wilson et al. (2007) and *www.pnas.org/cgi/content/full/0704276104/DC1*. For the Ampato maiden, see McKenney et al. (2007) and *http://www.ncbi.nlm.nih.gov/Genbank/* (accession numbers EF660742 and EF660743). The mtDNA of the El Plomo mummy is discussed by Castro et al. (2005), and that of the Aconcagua boy by Vullo and Boroskey (2001).

Nuclear DNA is inherited half from the mother and half from the father, and thus it allows scientists to trace both descent lines. However, it is difficult to use in the tracing of relationships over long periods because it is scrambled each generation—something scientists refer to as recombination (Wells 2003:28–29). To complicate matters for those interested in ancient DNA, it is also quickly destroyed at death.

Thus, scientists were especially interested in 1999 when nuclear DNA was obtained from intramuscular needle biopsies of the three Llullaillaco mummies—found to be in an excellent state of preservation (McKenney et al. 2001). This was confirmed after needle biopsies of the mummies were taken again in late 2008 and analyzed by Angelique Corthals (2009, personal communication to Reinhard). Aside from nuclear and mtDNA, Y-chromosome DNA is becoming more frequently used in population studies because it is passed in the paternal line from fathers to sons essentially unaltered through the generations (Wells 2006:37–38). More extensive databases utilizing nuclear and Y-chromosome DNA data will enable a further refinement in identifying the closest living relatives of the mummies and in locating the places of their origins (cf. Jones 2001:203).

4. According to one textile specialist (Renard 1999:87), the El Toro man's utilitarian clothing suggests that he may have been a *chasqui* (messenger on Inca roads). However,

even if this proved to be true it would not explain *why* the man was sacrificed.

5. Photos of precise replicas made by traditional Quechua weavers of the Ampato Ice Maiden's shawl and dress can be seen in Callañaupa (2007:105).

6. We are aware of only one case in which a similarly shaped head ornament occurs with a *capacocha*. This was as part of a gold diadem found nearly a 100 years ago with a male child sacrificed at an unidentified place near Salinas Grandes, about 250 km northeast of Llullaillaco (Fernández 1997:171).

7. Similar-looking items have been found at Machu Picchu. Salazar and Burger (2004:186) noted that these "bells" have distinctive shapes formally reminiscent of the *cantu* flower, which is commonly depicted in Inca iconography. Although missing a clapper, they suggested that the bells could have made a ringing sound when making contact (e.g., if worn on ankles while dancing).

8. It is still unclear if this back panel had been attached in some way to the headdress or was worn separately from it. Checura (1977:136, 138–139; 1985:56, 63) thought that it had not been attached to the headdress, but rather originally had been sewn on the "royal mantle" such that it extended down from the neck area to the thighs. Baker (2001:107–108, 247) found no sign of sewing on the hem, but noted there was evidence suggesting that a cord or stitching may have once been present. Given its recovery together with the headdress, it seems a reasonable hypothesis that it was part of the headdress ensemble (cf. Baker 2001:107). If so, as far as we are aware this would be the first known (adult) example of its type found among the Incas. Interestingly, although some differences exist (Dransart 1995:17) a similar style is well known from Chimu examples found in northern coastal Peru. The Chimu were conquered by the Incas, and some scholars believe that the Incas may have copied the headdress ensembles they observed among them (cf. Conklin 1997:107). However, Rowe (1984:175–183) considers this style to date to a period following the Inca conquest. Thus, the possibility also exists that the Chimu may have borrowed it from the Incas—rather than the reverse.

9. Interestingly, in the case of Inca feminine statues recovered from mountain shrines they usually have two braids represented that fall down their backs.

Chapter Six

The Sacrifice: Ritual and Meaning

"The Indians believed that the virgins killed in the sacrifices made in honor of the gods…would be favored by having their souls rest in great peace."

—Bernabé Cobo, 1653

Capacocha and Its Ceremonial Context

As we have seen, a *capacocha* event often required a centripetal movement involving the transportation of sacrificial victims and material objects from communities in the provinces to the capital city of Cuzco, where they were presented to the Inca emperor. He was believed to be in control of the most valuable offerings to the gods and of the religious specialists who made them (cf. Guaman Poma 1980:253).

Human sacrifices were considered the most important of all offerings (cf. Cieza 1977:108; Cobo 1990:111), and as such they could not be conducted without the emperor's consent (cf. Ulloa 1965:330). After being ritually and materially transformed into Inca-style offerings, the *capacocha* items and children were often redistributed to sacred places throughout the empire. There, they would be finally offered as a state dedication to Inca deities (such as the sun god Inti) and as an imperial homage to the local sacred places and deified forces of nature.

Purpose and Periodicity

Chroniclers describe *capacocha* events as having been conducted for several reasons. Some were undertaken at times of key events in the life of the Inca emperor, including his illness, his death, when he went to war, the birth of a son, and his succession to the throne (cf. Cobo 1990:111–112; Sarmiento 1999:122–123). These reasons would have been especially significant in Cuzco, due to its being the center of the imperial court and of the Inca state religion.

The Incas also dedicated human offerings to the principal state deities, such as the Sun god Inti, the Weather (Thunder) deity Illapa, and the Creator Viracocha—as well as to local deities. The chronicler Cobo wrote:

> They made sacrifices to the Sun so that he would make the plants grow, to the Thunder, so that he would make it rain and not hail or freeze, and to the rest of the special gods and second causes. First they would speak with Viracocha and afterwards they would speak with the special gods. And in their sacrifices to all the universal huacas they would plead for the health of the Inca. [Cobo 1990:111]

Capacocha ceremonies were 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; Cobo 1990:54–74]. Writing in the late 1500s, Molina (1959:91–92) also noted that *capacochas* involved children (along with other sumptuary offerings) sent to Cuzco from the four parts of the Inca Empire. After the completion of ceremonies in the main plaza, the emperor would call together ritual specialists from the four regions and tell them, "Each of you select your share of the offerings and take them to be sacrificed for your principal deity." {In the original, this is "…*vosotros tomad cada uno su parte de estas ofrendas y sacrificios* [referring to *capacococha* offerings], *y llevadla a la principal huaca vuestra*, *y allí las sacrificad*…".} Thus, there were the *capacochas* that occurred at regular cyclical events associated with state ceremonies, those that took place due to special circumstances associated with the emperor, and those offered to the main deities located in each of the four parts of Tawantinsuyu. These should all be considered part of the same type of *capacocha* ceremony (Duviols 1976:12).

Historical documents also refer to *capacocha* events often having been conducted—especially in more distant parts of the empire—to stop natural calamities, such as droughts, epidemics, earthquakes, and volcanic eruptions (cf. Cobo 1990:54, 112, 150–153; Levillier 1940:155; Murúa 1946:281; Polo 1916:193). Archaeological, historical, and geological evidence supports the hypothesis that in some cases human sacrifices on sacred summits were motivated by natural calamities. For example, in the case of Ampato we found that a layer of volcanic ash lay directly beneath an Inca ceremonial platform at 5,800 m (19,029 ft). In addition, it would have been impossible to build a structure on its 6,310-m (20,702-ft) summit without there having been a severe drought or a melting of the permanent ice due to an eruption.

Our excavations of the Inca ceremonial site on the crater rim of Misti [5,812 m (19,068 ft)] demonstrated that it had been constructed following an eruption (Reinhard 2005:238–239; Reinhard and Chávez n.d.c.). The Incas told the Spanish that Misti had erupted in the fifteenth century, wiping out the entire population. The Inca emperor Pachacuti (believed to have founded the Inca Empire and to have built such sites as Machu Picchu) is said to have personally come to the region to make offerings to it to placate the volcano's ire (Murúa 2001:523–524).

In a different context, a document of 1571 noted a group of Inca men telling a Spanish commission of enquiry that *capacocha* offerings had been made due to the need for good weather and water for crops (Levillier 1940:155). Therefore, although not conclusive it is reasonable to assume that economic pressures caused by natural catastrophes played important roles in many (if not most) of the *capacocha* offerings found on high mountain summits outside the region of Cuzco.

Some scholars have suggested that *capacocha* ceremonies took place as ways 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; cf. Figure 1.2), which suggests that boundary marking would have been only one of several reasons they may have taken place. This conclusion is supported by the accounts of chroniclers (e.g., Cobo 1990:111; Hernández Principe 1923), which note reasons other than boundary marking as motives for the majority of the *capacocha* ceremonies.

Of particular interest is the seventeenth-century document of Hernández Principe referring to an event that happened prior to 1532. The sacrifice of Tanta Carhua, the daughter of a *curaca* (local ruler), was reportedly made after the ruler finished building a new irrigation system for the Inca (Hernández Principe 1923:61–62). The child was sent to the Inca to be sacrificed to the Sun god, but her relationship with the new system is obvious—as she was returned and buried on the summit of a mountain overlooking the irrigation canal (Zuidema 1978). This is perhaps the only detailed case published in the chronicles of a human sacrifice on a mountain summit during the time of the Incas. It is important not only because the mountain was sufficiently prominent to be viewed and worshiped from other distant mountains but because it makes clear the complex reasons (economic, social, political, and religious) that came into play in at least one *capacocha* ceremony.

Many of the most important deities of the numerous ethnic groups noted at the time of the Spanish conquest were mountains [cf. Albornoz in Duviols (1984); Guaman Poma 1980]. Although specific reference to human sacrifices taking place on high mountain summits is rare, it is known that such sacrifices had been made *to* mountain deities—especially because of their control of weather. For example, Ulloa (1965:330)

wrote in 1586 that the Indians of the province of Collaguas (Colca Valley near Arequipa) worshiped snowcapped mountains and made human sacrifices to them because they provided the water that irrigated their fields. Ethnography and local traditions support the historical accounts of human sacrifices having been made to (and on) mountains.[1]

THE SACRIFICE

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

Preparations

Fasting was a common practice during the preparation for an important ceremony. Priests were expected to abstain from salt, peppers, meat, fish, and spicy food—as well as from any type of sexual activity (cf. Arriaga 1968:47; Betanzos 1996:46). Only raw maize was reportedly allowed to be eaten, and *chicha* (maize beer) to be drunk (Betanzos 1996:46). Herrera (1728:93) described the children as "fasting" (i.e., not eating salt, chili peppers, meat, or fish). Their meals would be primarily of maize and vegetables. Children who were too young to eat were allowed to breast feed (Cobo 1990:112).

The ritual consumption of food by the victims began during celebrations that preceded the sacrificial ceremony. Hernández Principe (1923:61–62) noted *capacocha* victims first being honored in Cuzco and later at the place where they were to be sacrificed. He was told that Tanta Carhua—the girl selected for the sacrifice—said, "Finish with me now because the feasts they held for me in Cuzco were enough." The chroniclers also refer to the fact that the consumption of food continued immediately preceding the sacrifice because it was meant for the victims to go happy and without hunger into the afterlife (Cobo 1990:112; Molina 1959:93).

Computerized tomography (CT) scans of the Llullaillaco mummies showed a thick layer of fatty tissue under the skin, which indicates that the children had been properly nourished during weeks previous to their immolation (cf. Figure 5.3). On the other hand, the presence of feces in the children's intestines suggests that they had been fed a few hours before their deaths (Previgliano et al. 2003). The evidence thus supports the hypothesis that the victims were being well fed for several weeks before the ceremony and that this continued until a few hours before their sacrifice (Ceruti 2003a:121–122). It might be added that other sacrificial victims from mountaintop sanctuaries, such as the El Plomo boy, appear to have been well fed (Quevedo and Durán 1992:197; Sanhueza et al. 2005:190). In the case of the Ampato Ice Maiden, a study indicated that she had eaten a meal of vegetables 6 to 8 hours prior to being sacrificed (Reinhard 1997a).

Ritual drinking was a widespread custom in the Andes at the time of the Spanish conquest. A special maize beer (*chicha*) was made for use in religious ceremonies, and several chroniclers describe it having been drunk until the participants were intoxicated (Betanzos 1996:132; Cieza 1959:150–151; Cobo 1990:112; Murúa 1946:266). Some chroniclers stated that children were forced to drink maize beer in order to deaden their senses and to decrease consciousness at the moment of death (Cobo 1996:236; Ramos 1976:81). In a recent study (Brown et al. n.d.; Wilson et al. n.d.) of the Llullaillaco maiden, a metabolite was found that is formed from the concurrent use of coca and ethanol. This suggests that at least in this case alcohol and coca use increased, and furthermore that this correlated with a change in diet three months before the maiden's death.

Evidence of a different type of ritual drinking appears to have been established in the case of Aconcagua, where red liquid made from the seeds of the *achiote* plant (the annato seed, *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, in that 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).[2] However, it does demonstrate that the Aconcagua boy had drunk a beverage that was not part of his usual diet.

Present-day Andean beliefs consider the body to be a channel through which nutritious foods, drinks, tobacco, and coca leaves are transferred from a human being to spiritual beings invoked by him or her in the ritual. Andean celebrations are conceived as occasions in which food, drink, and coca leaves supplies should be plentiful. This can be observed today in the large beverage amounts offered during carnivals or when food offerings are presented to the souls of the dead.

It is also expected that the participants not stop eating or drinking even though they may no longer have any desire to continue.

Among the Peruvian Quechua people, overfeeding in ritual contexts is a distinctive form of communication with the spirits of the ancestors and with the sacred places in the landscape (Allen 1982:192). It is possible that Andean beliefs about imposed feeding as a symbolic procedure of "eating for the gods" could have underlain the meals the Llullaillaco children participated in during the days and weeks preceding their deaths (Ceruti 2003a:122).

Gestures of Worship

The ceremonies on the summits themselves would have been accompanied by a ritualized set of gestures of worship (Figure 6.1). According to some chroniclers, the participants in the *capacocha* ceremony would lower their bodies and stretch their arms out with their hands open and palms facing out in the direction of the gods they invoked (cf. Cobo 1990:118). They then made a special ritual called *mocha*, which involved making a kissing sound and a kissing gesture with the hands (cf. Arriaga 1968:47; Cobo 1990:118; Polo 1916:6; Ramos 1976:68). As Cobo (1990:119) noted, "These prayers differed according to the god to whom the sacrifice was directed, the offering which was made to the god, and the purpose for which the sacrifice was being made."

Fig. 6.1. A reenactment of a *capacocha* ceremony.

There would likely have been music and dancing (also specific to the deity and ceremony) and ritually sanctioned drinking, which ideally should go on throughout the night without sleeping (cf. Arriaga 1968:19, 47; Cobo 1990:121). The child to be sacrificed may have been led around the shrine two or three times (cf. Cobo 1990:112) to the accompaniment of solemn songs and the playing of flutes and drums (cf. Cieza 1959:150; Guaman Poma 1980). Participants may also have made confessions to priests at the sites, in that this was reportedly often done during religious ceremonies (cf. Arriaga 1968:47–49; Cobo 1990:122–123; Guaman Poma 1980:160) and during rituals on the mountains themselves (cf. San Pedro 1992:36).

Some of the mountain deities were believed to communicate directly with priests, who thus served as oracles at the time of the ceremonies (cf. Cieza 1959:152; Guaman Poma 1980:253). It is likely that this was the case at some of the mountain shrines at which *capacocha* offerings took place. Indeed, there are cases mentioned in the chronicles of the sacrificed children (and mummies of important persons) themselves speaking through oracles long after their deaths (cf. Duviols 1986:142–143; Hernández Principe 1923; Salomon 1995:323).[3]

Archaeological evidence for many of the activities noted previously is difficult, if not impossible, to come by. 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 buried at the summit sites.

The presence of human hair strands in the fill of the summit platform on Llullaillaco may have been the result of intentional deposition while worshiping. Hair strands were also documented in the fill of a platform at 6,052 m (19,855 ft) 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 v.1:82) noted being made at *apachetas* (mounds of stones used in rituals, usually found at high

places and associated with mountain gods) (Arriaga 1968:121; cf. Ramos 1976:68).[4]

Sacrificial Techniques

During *capacocha* ceremonies, children were reported as having been sacrificed mainly by using one of the following methods: strangulation (Cieza 1959:150), a blow to the head (Cobo 1996:235), and suffocation (Molina 1959:92; Murúa 1946:263; Ramos 1976:26). Suffocation in some cases could have involved the victims being buried alive (Betanzos 1996:46; Cobo 1996:235).

Ramos (1976:81) 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 stated that the Incas would remove the victim's heart (e.g. Cobo 1990:112; Molina 1959:93). However, this has not been established in the archaeological record—and their accounts appear more likely to have been a case of the Spaniards extrapolating from the Aztec practice and applying it to the Incas. Another possibility is that they confused this with the Inca custom of cutting the throats of llamas (Cobo 1990:114) or extracting their hearts to eat or for divination purposes (cf. Arriaga 1968:42; Guaman Poma 1980:826)—a practice that continues to the present day.[5]

The procedure of burying children alive or previously suffocating them is compatible with the physical evidence of the El Plomo boy (Quevedo and Duran 1992; Sanhueza et al. 2005) and the three Llullaillaco children, who still have air trapped in their lungs (Previgliano et al. 2003). According to chronicler Martin de Murúa, the reason for the choice of these sacrificial techniques was rooted in the belief that nothing "incomplete" should be offered to a major deity (Murúa 1946:263–264; cf. Ceruti 2003a:146).

Strangulation was a sacrificial technique frequently used by the Incas (Cieza 1959:150; Cobo 1996:235). The Inca women sacrificed at the coastal temple of Pachacamac were all reportedly strangled using a cloth ligature. The two female mummies on Cerro Esmeralda appear to have been strangled (Checura 1985:14–17). This also seems to have been the case for the man from El Toro (Schobinger 1966b). Strangulation is especially difficult to establish where only skeletal remains exist (Verano 2001:168), and future research may establish that it was more common than the archaeological record now suggests.

A victim might be killed by a blow to the head (Cobo 1996:235; Gutierrez 1963:233; Ramos 1976:25).

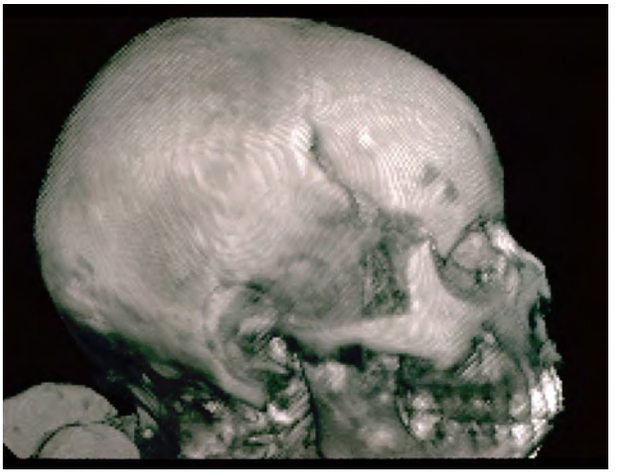


Fig. 6.2. A CT scan of the Ampato maiden's head taken at Johns Hopkins University Hospital showed a fracture that was the probable cause of death (*photo courtesy of Johns Hopkins University Hospital*).

Radiological studies have suggested that cranial trauma was the cause of death in the case of the Ampato maiden (Reinhard 1997a) (Figure 6.2), 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 (Cicco et al. 2001:85; Schobinger 1999:8) and the young woman sacrificed on Pichu Pichu (Linares 1966:44). CT scans of the skulls of the three individuals from Llullaillaco showed no evidence of blows to the head (Previgliano et al. 2003).[6] Until evidence proves otherwise, we assume that these sacrifices involved the children being buried alive—although presumably in a deep state of unconsciousness.

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. Indeed, a person can die from what is called *commotio cerebri*—which acts like an electric short circuit in the brain (cf. Roberts and Manchester 1995:73). In such as case, even a skilled medical examiner might not observe the injury. 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. Ramos (1976:25) noted that a flat stone might be 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.

On the other hand, death could have come quickly for children already extremely tired, disoriented,

and possibly suffering from high-altitude sickness—including pulmonary and cerebral edema (cf. Houston 1987:122–133). The El Plomo boy was found to have vomit containing blood on his lips and on his clothing, suggesting that he may have suffered from pulmonary edema (Quevedo and Durán 1992:198). Analysis of a stain on the cloth pressed against the Llullaillaco boy's mouth found it to contain blood and saliva, and this might have been the result of pulmonary edema (Corthals 2009). Ceruti (2003a:101) has suggested the possibility that intolerance to altitude might have caused the Llullaillaco boy to die during the climb, and be the reason his legs were tied tightly to his body. Certainly, the extreme altitudes some of the *capacocha* children had to endure could have resulted in fatalities before they reached the summits. Presumably, the Incas would have had little alternative to burying them after they had died. Because no Spaniard ever reported witnessing a *capacocha* sacrifice, all of the historical accounts are necessarily secondhand at best—and the bioarchaeological evidence is crucial to compare with the historical documents when it comes to reconstructing the causes of the children's deaths and the sacrificial techniques used by the Incas.

Fig. 6.3. A drawing (ca. 1623) of a mummy (seated with eyes closed) being worshiped in front of a funerary tower (*from Guaman Poma 1980*).

BURIAL

When a person died, it was a normal practice for the Incas (and many other peoples of the Andean highlands) to leave the body in a cave or overhang—often placing stones in front of the entrance. In the cases of people of high status (Figure 6.3), their bodies might be placed in funerary towers (*chullpas*)—with offerings deposited in front of them on special occasions (cf. Hyslop 1990; Isbell 1997). This custom predates the arrival of the Incas in the region not far to the north of Llullaillaco, where a majority of the *chullpa's* entrances were found to be oriented toward the nearby mountains (cf. Aldunate and Castro 1981). The Inca emperors and some of their wives were artificially mummified, thereby enabling them to be venerated as if they were alive and to participate in major ceremonies.

In the Andean highlands, the actual burial of corpses in the ground was less frequent—in part because this made it difficult for the dead to be physically present for rituals and because of the belief that they would not be able to "breathe" (cf. Doyle 1988:205; Duviols 1986:72). The active role mummies played in ancestor worship was a principal reason Spanish priests went to such lengths to destroy them (cf. Isbell 1997:29–31; Salomon 1995). It also helps explain why priests had a problem with villagers digging up corpses from church cemeteries and taking them to places where they would not be covered over (Polo 1916:194). However, this raises the question of why the *capacocha* victims were usually buried.

We know that when precious objects were buried they were believed to go directly to the realm of the gods. This could in part explain the burial of *capacocha* victims (i.e., they were perceived as actually entering into places where the deities resided in order to live with them). In addition, the *capacocha* children sacrificed in Cuzco usually came from villages well outside the Cuzco Valley—and when the Incas sent children to other places to be sacrificed these were often located far distant from their lands of origin. Thus, the direct descendents of the *capacocha* victims would not have been able to visit the mummies of their ancestors as easily as they might have otherwise. In one case, where we know that the sacrificed child actually was from the same region as the mountain on which she was buried, a girl's body was placed in a deep shaft tomb. This allowed for limited access, and as the years passed even the bodies of ritual specialists devoted to her cult were placed beside her mummy (Hernández Principe 1923).

The Incas solved the problem of burying mummies and other offerings in the rocky, frozen terrain of high mountain summits by building stone walls up from the ground. They would place the items and then add a fill of stones and sand on top of them, thus creating artificial raised platforms. However, in some cases the terrain allowed for excavations to be undertaken in the ground and the bodies could be buried—such as on Misti and at the site at 5,800 m (19,029 ft) Ampato (cf. Reinhard 2005).

Rarely have the tools been found that were used to excavate burials. This could have been because they may not have been necessary, such as when walls were built and stones and sand used as fill. However, they must have been employed in those cases where burials were made in the soil—and presumably the tools were taken back with the Incas, due to not being part of the ritual items left as offerings.

However, some wooden "shovels" (Figure 2.22) have been found at sites such as Llullaillaco and Licancabur (Reinhard 1985a, 1997b). 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 due to the heat of the active volcano). Although they might not seem to have a religious use, it should be noted that Cobo (1990:112) referred to wooden instruments being employed to excavate burials and holes for offerings because the use of metallic instruments was prohibited in ceremonial contexts.[7]

The chronicler Betanzos (1996:77) referred to the sacrifice and burial of one boy and one girl as 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—nor could the alternative of nonsimultaneous burials in some of the other cases presented. Two individuals were found buried together on Cerro Esmeralda, but in that case they were both females.

Funerary Bundles

The standard practice of burial on mountaintop shrines has thus far involved a flexed, seated, clothed corpse associated with an array of grave goods—including textiles, food items, and often metal items and pottery (Figure 6.4). The body might be buried in a funerary pit—as at the sites on Misti and at about 5,850 m (19,193 ft) on Ampato—or placed inside a structure

Fig. 6.4. A cross-sectional depiction of a burial on Ampato illustrates the way a flexed and seated female mummy was associated with an array of grave goods, including textiles, food items, and often metal and pottery objects.

of retaining walls, which was then filled in with gravel to form a platform (such as occurred in the cases of Aconcagua, Pichu Pichu, Quehuar, and Sara Sara). The three burials on Llullaillaco combined attributes of both.[8]

The sacrificial victims were buried with the clothing they were wearing at the moment of death, with the addition of outer textile mantles used to wrap them as bundles. This has been clearly documented in all cases where the textiles have been preserved, including the individuals from Aconcagua, Ampato, Chañi, El Plomo, Esmeralda, Llullaillaco, Pichu Pichu, and Sara Sara (cf. Figure 6.5). An exception would be the young man from El Toro, who was buried almost naked—wearing only a breechcloth (*huara*). However, various aspects of his burial suggest that he was not considered a typical *capacocha* offering.[9]

The chronicler Murúa (1946:319) refers to the custom of including bags, spare sandals, and extra tunics in the bundles. In the case of the Llullaillaco boy, one extra tunic was included—in addition to two pairs of sandals and two slings placed close to his body. The young girl from Llullaillaco had spare moccasins

Fig. 6.5. Drawings depicting the unwrapping of the Inca mummy bundle found on Aconcagua in 1985 (*from Abal 2001a*).

and sandals. The Quehuar mummy had her associated offerings of food, pottery, and sandals wrapped in a textile forming a separate bundle (Reinhard and Ceruti 2005). The Aconcagua boy had several pieces of spare clothing—such as tunics, breechcloths, sandals, bags, and mantles—inside his funerary bundle (Schobinger 2001).

Chroniclers also describe pieces of coca leaves that were placed in the mouths of sacrificial victims prior to their deaths (Ramos Gavilán 1976:26). Archaeological evidence supports this, in that the younger Llullaillaco girl had coca in her mouth. The Llullaillaco maiden was found to have had small fragments of coca leaves around her mouth, on her lips, and in her hands (Figure 5.20). One of the Esmeralda mummies is said to have been found with coca in her mouth (Besom 2000:374).

In Inca times it was a common practice for a person's own hair and nails to be kept to be buried with his body at death, as they were seen as important for accompanying the soul in the afterlife (cf. Garcilaso 1966:84–85). The three individuals from Llullaillaco were accompanied by small bags—apparently made of the skin from the testicles of a llama—containing hair. Recent DNA analysis has proved that the haircuts in the bags actually belonged to the Llullaillaco children (Wilson et al. 2007). Similar objects have been found together with the El Plomo boy (cf. Mostny 1957:44) and with the Ampato maiden.

Offering Assemblages

The sacrificial victims were buried with assemblages of offerings in accordance with their sex and age. There is an association between gender-specific offerings such as male and female figurines, which are generally placed 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 assemblages of offerings are more numerous and more varied in the case of female victims than in the case of male victims.

In female burials, only female statues made of gold, silver, and spondylus shell have been found. Statues may be aligned forming a row, and are usually placed on the side of the body opposite that at which the pottery and textile bags are located (cf. Reinhard and Ceruti 2000:147–149). Three female figurines made of gold, silver, and spondylus shell were aligned on the left side of the older female's body on Llullaillaco. Another set of three female figurines was found near her burial. Four female figurines (one gold, one silver, and two of spondylus shell) were placed in a row inside the burial of the younger girl of Llullaillaco (cf. Figures 3.19 and 3.20).

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.

In male burials, statues made of gold, silver, and spondylus shell have been found to represent men and camelids (llamas, alpacas, and possibly vicuñas). 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—whereas spare clothing was placed on his left (cf. Figures 3.15, 3.17, and 3.18). Three male figurines made of gold, silver, and spondylus shell were found together with two spondylus llama figurines and a silver camelid inside the burial of the Aconcagua boy (Schobinger 1995a). 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 (cf. Figure 3.29).

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 (cf. Cieza 1959:147). Based on their clothing and physical characteristics, the male figurines found on Misti and Llullaillaco seem to represent Inca nobility. The possibility exists, therefore, that the "caravans" may symbolically represent the special herds dedicated to Inca deities or possibly ritual processions to the volcanoes (cf. Moore 2005:168).

When burials are contained within larger funerary structures, it is not uncommon to undercover apparently independent offering assemblages and isolated pieces of offerings—which 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 Llullaillaco platform, which combined female, male, and camelid statues with a miniature bracelet. Textile pieces and spondylus llama figurines were found scattered in different parts of the fill that covered the male funerary structure on Misti. A cloth with silver disks, possibly a tunic, was found buried between two of the human sacrifices on Pichu Pichu (Figure 6.6). Beneath 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 well apart from the burials, as was the case on Ampato—where a blue tunic was found at 5,800 m (19,029 ft) wrapped around a set of red and white woven cords (cf. Figures 6.7 and 6.8).[10]

Fig. 6.6. A textile, presumably a tunic, with silver disks was found buried near the female mummy inside the platform on Pichu Pichu, Peru in 1996.

Fig. 6.7. This blue tunic was found buried independently of three nearby mummies at about 5,800 m (19,029 ft) on Ampato in 1996.

Fig. 6.8. A set of red and white woven cords with a spondylus statue attached at its apex was found wrapped inside the blue tunic on Ampato in 1996.

CONCLUSIONS

In the Inca period, sacrifices were made for various reasons—such as the important events in the life of the Inca emperor, including his illness and death and the succession of a new emperor to the throne. In regional contexts, they appear to have often been made to stop natural calamities—such as droughts, epidemics, and volcanic eruptions. *Capacocha* events would also have taken place at periodic intervals, as a ritual procedure to preventively appease the mountain deities in control of weather and fertility.

Chroniclers reported that during *capacocha* ceremonies children were sacrificed by strangulation, a blow to the head, asphyxia, or live burial. Strangulation has been suggested in the case of the victim from El Toro, whereas evidence of cranial trauma has been documented in the mummies of Aconcagua, Sara Sara, and Ampato. The victims of Llullaillaco presumably were buried alive, with their deaths perhaps aided by exposure or induced inebriation (cf. Stark 2001).

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. This was also a common burial position among various pre-Hispanic Andean cultures, and thus was not specific to *capacocha* burials. The mummies were dressed with the clothing they were wearing at the moment of death, and covered by textile mantles to form enclosed bundles.

The offering assemblages appear to have been buried in accordance with the sex and age of the sacrificial victims. The male and female figurines were generally associated with sacrificial victims of the same sex as that portrayed in the statues. Often one figurine made of each precious metal (gold and silver) and one of valuable spondylus shell were placed close to the body. Statues were often aligned forming a row, and were usually positioned on the opposite side of the body from where the pottery and textile bags had been placed (Ceruti 2003a:99). Llama figurines were only present in the burials of boys, as found in the shrines on Llullaillaco and Aconcagua.

The archaeological findings on the summits of high Andean peaks show remarkable agreement with the historical descriptions of the Inca ceremonies regarding the sex and age profile of the victims chosen, the sacrificial techniques, the scenery selected for the rituals, and the types of sumptuous objects used in the offering assemblages. The children and the sumptuous objects buried on the summit shrines were an important part of the state cult dedicated to the sun god Inti and to the sacred mountains. In the religious sphere, they embodied the essence of Andean beliefs—whereas in the political context they were active icons of the imperial power of the Incas.

NOTES

1. For example, in southern Peru it is believed that children still used to be sacrificed in the nineteenth century to the mountain Hualca Hualca to ensure a stable water supply (Reinhard 2005:184–185)—and children were reportedly sacrificed annually to the mountain Tata Jachura in northern Chile for rain (Reinhard and Sanhueza 1982). Accounts of human sacrifices having been made to mountains in modern times have been noted for Peru, Bolivia, and Chile (cf. Favre 1967:131; Gose 1994:241; Tierney 1989).

2. It might be added 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 this led to more direct methods—such as strangulation and blows to the head—to bring about death.

3. In some areas of northern Argentina, people still visit remote cemeteries to worship the naturally mummified bodies of infants who have died of natural causes. These mummies, which are visible in glass coffins, are presented with prayers and offerings in the belief that the extraordinary preservation of their bodies will account for their capacity to mediate with the deities (Ceruti n.d.c.).

4. As we have seen, usually the offerings at *apachetas* were made to get rid of weariness, obtain strength, have a successful journey, and be protected from mishap.

5. A few chroniclers noted that the Incas cut the throats of some human sacrifices (cf. Acosta 2002:292) and/or used human blood in offerings (cf. Cobo 1990:89, 111; Murúa 2001:416). Most Andean scholars, ourselves included, had thought that these chroniclers had confused blood sacrifices of llamas with that of humans. For example, Molina (2008:118)—while describing human sacrifices—noted hearts being taken out and blood from them smeared across the faces of idols. The context and his use of the term *pirac* make it clear that he was referring to hearts of llamas and not those of children (Molina 2008:118 ftn. 388). Another possibility is that some chroniclers may have mistakenly attributed Aztec sacrificial practices to the Incas. Recently, however, scientists examined an Inca human sacrifice found on Mount Chuscha in northwest Argentina and concluded that the girl's death had been caused by a wound made by a pointed object—probably a lance (Mazziotti and Vargas 2004:83–87). Thus,

the possibility exists that this sacrificial method (and perhaps similar methods that would have caused bleeding) might have been utilized on rare occasions.

6. This was also not apparent in the cases of the other skulls we have examined to date [i.e., of those from three of the sacrifices on Ampato (the fourth, the Ice Maiden, being the exception) and the two recovered in 1996 on Pichu Pichu].

7. The Incas prohibited the burial inside their homes of people who died normal deaths (Guaman Poma 1980:162). This had been a custom of some of the peoples they conquered. As for many of the common Inca "burials," they 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. In some areas, the bodies of higher-ranking individuals were placed in funerary towers (*chullpas*) and not actually "buried" at all. One of the problems the Spanish priests had to contend with was the removal of corpses from Christian graveyards (Polo 1916:194). According to some sources, this was because the indigenous peoples feared that the dead would be angered by being buried and unable to "breathe" (cf. Doyle 1988:205; Duviols 1986:72).

The burials on mountain summits demanded a considerable labor investment, and this would have involved more than just a desire to have the special offerings be difficult to extricate by looters. Few, if any, people climbed to high summits at the time of the Incas—and it would have been much easier to simply cover bodies with stones or place them under boulders. The burials appear, therefore, to have been one further indication of the importance of the *capacocha* offering.

8. There has been some speculation as to whether or not the Incas deliberately buried the *capacocha* victims on mountain summits because they were places that would be hit by lightning (cf. Conklin 1997:105). This idea fits well with our knowledge of the importance of Illapa, the Inca weather god and controller of lightning and thunder. It is understandable that of all the major Inca deities he was the one most often associated with mountains (cf. Fuenzalida 1980). Mountains do affect the weather, and Illapa was likely a way the Incas tried to incorporate local mountain gods into the Inca religious hierarchy under one generalized state deity. Some of the *capacocha* offerings had indeed been hit by lightning after having been buried (cf. Reinhard 1996:42; Reinhard and Ceruti 2000:61). Certainly the Incas would have been aware that the mummies could be hit by lightning at such high points, but the evidence suggests that that was not a primary factor in the selection of the places they were buried. Several of the *capacocha* victims were buried below the highest point of the summit (e.g., on Misti, Pichu Pichu, and Sara Sara), thus making it unlikely that they would be hit by lightning.

9. The El Toro man also had clothing of relatively poor quality (cf. Michieli 1990:13, 41). Both his age and his wearing of a loincloth point to his having been considered an adult. His lack of perforated earlobes also indicates that he was not an Inca noble. These facts indicate that he was not a normal *capacocha* offering. For the possibility that the El Toro man might have represented a variant of the *capacocha* sacrifice not described in the chronicles, see Reinhard and Ceruti (2006:35 ftn. 3). For a synthesis of the information about Inca clothing, see Rowe (1997).

10. The set of cords also had a female *Spondylus* statue attached to its apex. The cords lacked knots, and thus the item was not a *quipu* (a knotted string device used for recording data) and its meaning is unclear. One possible use was suggested by a colored drawing published in the late 1500s by Murúa (see Ossio 2000:47 fig. 2; cf. Guaman Poma 1980:98). A similar-looking red-and-white–banded object is held above the head of one of the Inca queens and may have been used to keep away flies, in that this was reported in 1534 as being done even for royal mummies (cf. Isbell 1997:40).

Chapter Seven

Offerings and Their Symbolism

"And it will be known that the things that the dead wore were as follows: The women wore jewels and carried small jars full of *chicha* [maize beer], bags with coca, and pots full of roasted and cooked maize as well as plates, bowls, jars, and tumblers of service."

—Juan de Betanzos, 1551

The most important Inca offering assemblage appears to have consisted of a human body, finely dressed with a feathered headdress and a necklace or a bracelet—associated with figurines in gold, silver, and spondylus shell. Other findings may include ceramics (often in pairs and in miniature), objects of metal (e.g., shawl pins and laminas), bone artifacts (e.g., tubes or adornments), wooden items (e.g., vases and spoons), vegetable food items (e.g., maize and peanuts), and sometimes the bones of sacrificed animals, usually camelids. The chronicler Murúa (1946:267) listed the following: "Bundles [figurines] of gold and silver, wool and feather clothes that fit the idols, bags of coca, valves from the sea, and sheep-like bundles made of gold and silver."

An assemblage recovered from an intact high-altitude shrine is likely to reflect the broad spectrum of Inca imperial offerings, due to the extraordinary preservation of the organic and inorganic materials. The religious purpose and dedicatory character of such an array of objects, as was found on Llullaillaco, can be inferred from the remote and almost inaccessible mountaintop contexts.

Textiles

In addition to the textiles worn by sacrificial victims as clothing, associated offerings presented by the Incas during *capacocha* ceremonies included tunics, slings, sandals, and moccasins.

Tunics

Fine tunics were sent as presents by the Inca to local leaders (*curacas*) and buried with them (cf. Arriaga 1968:16). *Curacas* often had important roles in the *capacochas*, particularly when offering their own children to be sacrificed—as noted in the chronicles (cf. Hernández Principe 1923). This could explain why fine male tunics were buried together with female sacrifices on Llullaillaco and Ampato. On Ampato, a blue tunic was also found buried separately—and a similar one is shown worn by an Inca emperor in a portrait of the late 1500s (Phipps et al. 2008:128). The Aconcagua boy was buried with a tunic made of brightly colored feathers affixed to a cotton cloth backing (Abal 2001a:216). Such a tunic would most likely only have been worn by Inca royalty (cf. Rowe 1995:10).

The tunic found laid over the shoulder of the older girl on Llullaillaco is of the type (the so-called "Inca

Fig. 7.1. A male tunic (N-33) found together with the older girl on Llullaillaco in 1999.

key") described by John Rowe (1979) as having been a gift of the Inca to local rulers (Figure 7.1). There are about 10 virtually identical tunics in museum collections originating in different parts of the Inca Empire (Rowe 1979:240–250). A black and white checkered tunic was found draped over the girl on Chuscha, albeit its original position may have been altered after its discovery by looters in 1922 (Abal 2004:152–153, 174–179). In the case of Ampato, a red tunic with red fringes was also found with one of the females (Figure 7.2). We know from Betanzos (1996:87) 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) noted male participants wearing red tunics with red fringes during important ceremonies.

Tunics overlaid with silver were noted by Arriaga (1968:69) as being among the "ornaments of the *huacas*" (sacred places or objects). We did not find this type of offering on Llullaillaco. However, a textile cloth overlaid with silver disks (Figure 6.4) was found on Pichu Pichu (Reinhard and Chávez 1998). McEwan (2004:5) reported recovering a similar item from a *capaccocha* context at Chokepukio, close to Cuzco. A tunic with silver disks was also reportedly found buried together with a human sacrifice and statues in a ceremonial platform at the mountain site of Walla Walla east of Cuzco (Franco 1937). Such textiles were clearly considered of high status [e.g., shirts with silver "sheets" were described by Colque Guarache in 1575 as special gifts made by the Inca emperor to local rulers (cf. Parssinen 1992:75)]. Arriaga (1968:69) noted shirts overlaid with silver as being offered to the *huacas* or worn by priests when making offerings.[1]

Slings

Slings (*huaracas*) had a particular symbolic significance related to the mountains (cf. Ceruti 2003a:110) (Figure 7.3). During the ceremony of Inca youths' initiation, known as *huarachicuy*, the young noble *orejones* received slings at the summit of the sacred mountain Huanacauri. These were believed to be granted by the mountain itself to increase their courage and to protect them from danger (Molina 1959:68). According to other versions of this ritual, the candidates were whipped with their slings by old men (Cabello Balboa 1951:350).

The slings also fulfilled a ritual function linked to the propitiation of fertility, in that they were used to throw stones toward the waters of the lagoons at the beginning of the rainy season—just as they are used today in certain Andean rituals to call the rain (cf. Rösing 1996). They could also be associated with livestock, in that one end of the sling was believed to represent the head of a llama and the opposite one the tail (cf. Polia 1999:158).

Footwear

Sandals were the typical Inca footwear for both sexes. They had leather or vegetable fiber soles, and wool or cotton cords served for adjusting them to the foot (Morris and Van Hagen 1993:187) (Figure 7.4). The untanned leather was obtained from the necks of llamas (Rowe 1995:31).

The sandals had a symbolic meaning related to their ritual role during the wedding ceremony: the groom was expected to place a sandal on his bride's foot {"A wool one if she was maiden, a grass [*esparto*] one if she was not" (Herrera 1728:83)}. According to Santa Cruz Pachacuti (1968:288), moccasins (*llanquis*) were worn by maidens during the *quicuchicuy* (the puberty initiation rite). On the other hand, the placing of sandals was part of the ceremony during the Inca Emperor's coronation. Cabello de Balboa (1951:333) wrote of Topa Inca Yupanqui's coronation that "The sandals were put on his feet (those which they call *oxotas*) and with such an adornment he was adored by the people." Guaman Poma (1980:317) noted that certain administrative officials, who were in charge of administering justice, were supposed to carry emblematic "sandals of the Inca" on a stick as a banner.

Fig. 7.2. A red-colored male tunic found buried together with the older of the Ampato females at about 5,800 m (19,029 ft) in 1995.

Fig. 7.3. A sling (S-31) found with the boy on Llullaillaco in 1999.

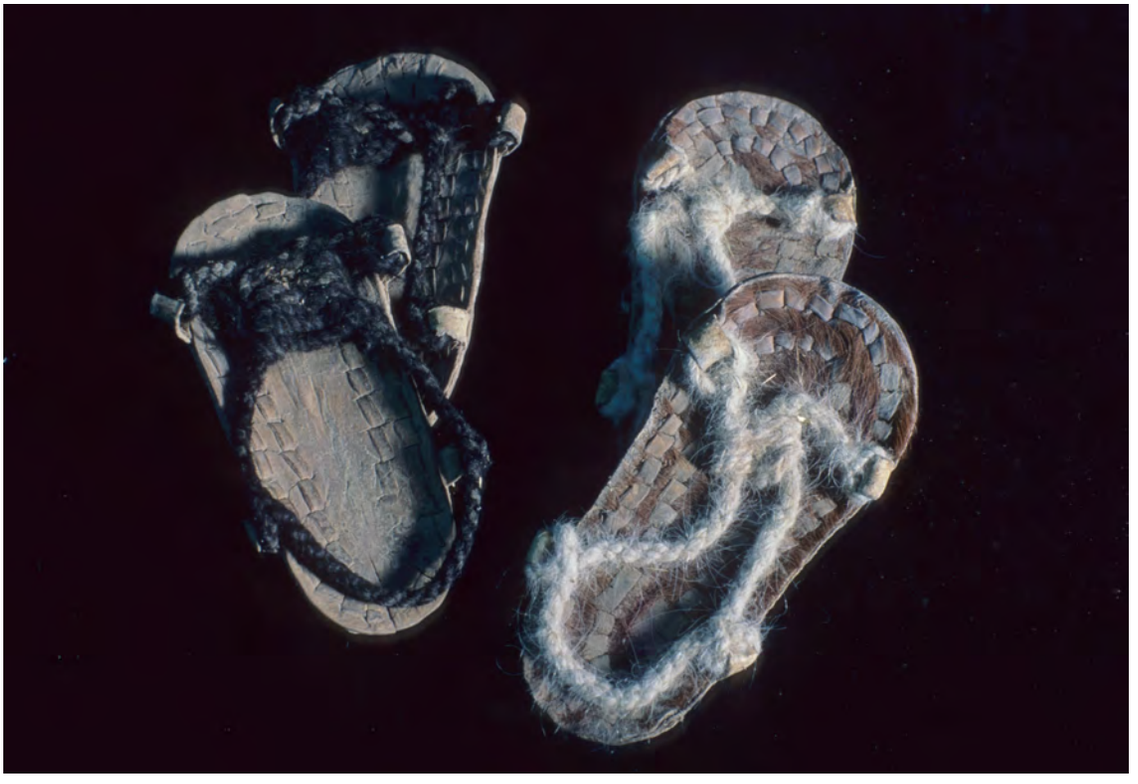


Fig. 7.4. Sandals (S-28 and S-29) found with the boy on Llullaillaco. Sandals were the typical Inca footwear for both sexes. They had leather or vegetable fiber soles, and wool or cotton cords served for adjusting them to the foot.

Fig. 7.5. Moccasins (E-2) found with the younger girl on Llullaillaco (*photo by Constanza Ceruti*).

Moccasins were the typical footwear in the region of Lake Titicaca and in the highlands of Arequipa (Rowe 1995:34). The three Llullaillaco children and the Ampato Ice Maiden were wearing moccasins (Figure 7.5). The moccasins may have had further importance as providing distinguishing characteristics of ethnic origin (Ceruti 2003a:115).

FIGURINES

Aside from a human sacrifice, statues were considered among the most important offerings that could be made. The vast majority of miniature statues buried on high-altitude sanctuaries were made of one of three materials considered most valuable to the Incas: gold, silver, and spondylus shell. They have been found on the summits of mountains through much of the empire, yet it is not definitely known what they represented.[2]

Possible explanations for the symbolic meaning of statues include their being considered as representing a deity, as items depicting what the people wanted to be increased, and as substitute offerings for the living beings represented (Ceruti 2003a; cf. Reinhard 1985a). It could be that some of these purposes were conceptually combined or that they varied depending on the figure. For example, the llama figures might have been offered to increase fertility—whereas human figures represented the deity or deities.

Anthropomorphic Statues

In their discussions of male and female figurines, chroniclers have provided a few explanations as to their meanings. The male and female statues could have represented deities (cf. Betanzos 1996:110; Cobo 1990:46; Murúa 1946:257), the deities' servants (Arriaga 1968:86), or the Inca royal elite [cf. Albornoz in Duviols

Fig. 7.6. This female gold statue (N-2) found with the older girl on Llullaillaco has miniature clothing typical of female figurines offered by the Incas.

(1984:194); Betanzos 1996:48; Polo 1916:194]. It would seem unlikely that the majority of male and female statues on the mountaintops were meant as substitution offerings, in that many occur with human sacrifices. In addition, this is not reported as a principal explanation when statues are noted in the chronicles (cf. Reinhard 1985a).

Although female gold and spondylus figurines are not uncommon, the majority of female statues found at high-altitude sites were made of silver (cf. Beorchia 1985). This is not surprising because silver was especially associated with the female sex (cf. Girault 1988:140), although some male statues were also made in silver (cf. Schobinger 2001).

The female statues (Figures 7.6 through 7.8)—whether made of gold, silver, or spondylus shell—are nearly the same in style (cf. Dransart 1995). It is known that the Incas presented similar-appearing statues to different deities (cf. Cobo 1964:167). Some scholars have suggested that they were substitutes of female human sacrifices (cf. Schobinger 1999:21) or symbolic representations of the *acllas* (chosen women) (Farrington 1998:56). Other authors believe that these figurines represented the moon goddess (cf. Beorchia 1985:393), whereas others think they may have represented the

Fig. 7.7. A silver female statue found on Mount Copiapo in Chile in 1987 was later unclothed and demonstrates the typical Inca style of female representation (*photo courtesy of the Museo Chileno de Arte Precolombino, Santiago*).

Fig. 7.8. A spondylus female statue (E-16) found with the younger girl on Llullaillaco (*photo by Constanza Ceruti*).

Earth Mother, Pachamama (Rebitsch 1957:202). It is also possible that the statues were believed to represent female deities thought to reside in the mountains themselves (cf. Arriaga 1968:11). Mountains could be of either sex, and indeed could have both sexes present in a single mountain (cf. Martínez 1976:324).

Male gold figurines have clear representations of some attributes of Inca nobility, such as elongated pierced ears (Figure 7.9). Chroniclers have also noted that some male statues were meant to represent members of the Inca elite [Albornoz in Duviols (1984:194); Betanzos 1996:48; Polo 1916:194]. Gold and silver male statues have been found with bulges depicted in their cheeks, including on Llullaillaco. These bulges serve to indicate the chewing of coca (cf. Dransart 1995:5; Salazar and Burger 2004:198). Interestingly, to date no female statues have been found with this feature (cf. Dransart 2000:79).

Male statues made of spondylus shell could possibly have had a different symbolic meaning (Figures 7.10 and 7.11). Because spondylus shell is associated with rituals for rain and mountain deities are invariably

Fig. 7.9. This male gold figurine (S-17) found near the boy on Llullaillaco is typical in showing characteristics associated with Inca nobility. His left cheek has a bulge, indicating his chewing of coca leaves—and 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.

Fig. 7.10. (*a*) A male figurine (S-35) carved from spondylus shell found near the boy on Llullaillaco. (*b*) A male figurine (S-18) carved from spondylus shell found near the boy on Llullaillaco.

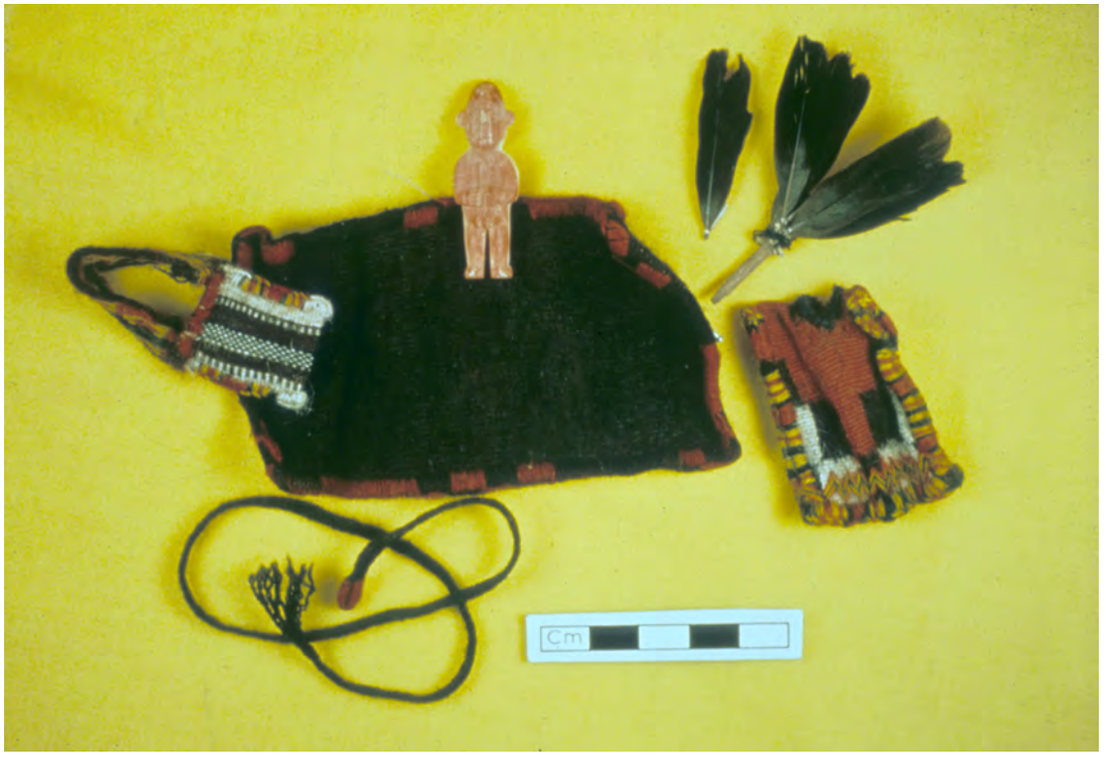


Fig. 7.11. A spondylus shell statue found on Mount Copiapo in 1987 was later unclothed and demonstrates the typical Inca style of male representation, including a miniature coca bag (*photo courtesy of the Museo Chileno de Arte Precolombino, Santiago*).

associated with weather control (Reinhard 1985a), it is possible that the male spondylus figurines represent deities believed to have resided in the mountain.

It appears clear now that the vast majority (if not all) of Inca anthropomorphic statues made of gold, silver, and spondylus shell had originally been clothed. No statues of wood have been found, although they were reported as having been offered by the Incas near Cuzco (Polo 1916:21). The majority of the known Inca statues do not have their contexts well documented [cf. Manzo and Raviña 1996:22–29; and 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 significantly to this number (e.g., we found a total of 47 statues on Misti and 22 anthropomorphic clothed statues on Llullaillaco).

Mountain deities have been described as looking like humans, either the same size or smaller (Isbell 1978:59; Martínez 1976:324)—and it was common in Inca times to make miniature human-like statues of gods. Although emphasis has been placed here primarily on small statues, large stones in humanoid form representing mountain deities were also found on mountain summits in Peru (cf. Agustinos 1918).

Most of the statues on Llullaillaco were probably not meant to represent substitution offerings, in that many occur together with human sacrifices. It seems more likely that in the majority of cases the statues of males and females represented the deities associated with Llullaillaco (and other mountains of the region) along with some of the principal deities of Inca cosmology, such as the gods of the sun (Inti) and weather (Illapa).

Camelid Figurines

Some ethnographic studies in the Andes point to animal statues being used as a means of increasing the abundance of the images represented (Arguedas 1956:204; Roel 1966:26–27; Tschopik 1951:247). Isbell (1978:151) noted small figures representing livestock being offered to the mountain gods because they are viewed as owners of these animals. This also appears to have been the case among the Incas (Arriaga 1968).

Stones in the shape of llamas and alpacas (called "*illas*" in Quechua) are frequently used in present-day worship (Reinhard 1985a:313), symbolically representing the fertility of the llamas and their power of procreation (cf. Manzo and Raviña 1996:9). Their existence in Inca times has been documented in the archaeological record, and chroniclers refer to their being related to the augmentation of the livestock (cf. Arriaga 1968:29, 43; Duviols 1986:285; Mills 1997:94). Therefore, it is likely that the llama figurines would have represented the "vital essence" of the herds and that they would have been offered to promote the augmentation of the livestock (Figures 7.12 through 7.14). At times they may have been substitution offerings for the living things they represented (cf. Anónimo 1968:156; Farrington 1998:56; Schobinger 1999:21). If so, however, this surely would have been tied to the concept of a power-laden figurine representing more than just a single camelid.

SUMPTUOUS MATERIALS

Sumptuous materials included in the Inca offerings comprised precious metals, such as gold and silver, spondylus seashells, and colorful feathers. All of them were endowed with symbolic importance reaffirmed while they were manipulated in a ritual context (Ceruti 2003a:122).

Precious Metals

The chronicler Zárate (1944:46) noted that the Incas "Showed high appreciation for gold, because the most important vessels for the king's service and jewels of his attire were made of it, and because they would offer it at the temples." Gold (*qori*) and silver (*collqi*) were the most valuable metals for the Incas, who also used copper, lead, and tin. However, for the production of the metal statues only gold, silver, and alloys of both metals were used—sometimes together with copper (Valencia 1981:8). According to Dransart (1995:3), when gold was used for statues it has always proven to be as an alloy.

Artisans in the Inca Empire were experts in metalwork techniques, such as laminating, hollow and solid casting, and the refinishing technique of chiseling (Valencia 1981:29). The great majority of the statues from Llullaillaco are hollow and laminated (Ceruti 2003a:124), a finding in accord with those recovered from other Inca sites (Dransart 1995:5). This technique allows the artisan better use of the metal in order to obtain statues of larger size using a minimum amount of the material. Only three figurines from Llullaillaco are solid: two feminine statues made of silver (N-14 and N-30) and a masculine statuette made of gold (NE-7). These figurines are smaller than those made by the laminate technique.

Fig. 7.12. A gold camelid figurine (S-36) found near the boy on Llullaillaco (*photo by Constanza Ceruti*).

Fig. 7.13. A silver camelid figurine (S-19) found near the boy on Llullaillaco.

Fig. 7.14. A camelid figurine (S-22) carved from spondylus shell found near the boy on Llullaillaco.

Fig. 7.15. Gold bracelet (NE-5) (*photo by Constanza Ceruti*).

Apart from the use of 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—as well as a miniature gold bracelet on Llullaillaco (Figure 7.15). Such items were noted as having been presented as offerings in themselves (cf. Arriaga 1968:45; Cobo 1990:116; Murúa 1946:294). Other materials of lesser value were also used—such as metal alloys or copper—to make statues representing characters with physical defects (Valencia 1981:60). No examples of the latter were included in the assemblages from Llullaillaco.

Metals were appreciated for their symbolic significance to such an extent that they could become objects of worship. Murúa (1946:278) noted that the Incas "…adore metals; they kiss the stones that they call *conopa* honoring them with different ceremonies, and to the pieces of gold and silver, and to the *huayras* where they melt the silver."

The importance of metals such as gold and silver reportedly resided, at least in part, from their ability to shine—something believed to reaffirm the divinity of the Inca as a descendant of the Sun god. Myths describe the first Inca, Manco Capac, being dressed with silver sheets covering his torso and a silver diadem on his forehead as he approached the valley of Cuzco. While standing on a hill, his radiant appearance under the sunlight is said to have convinced the inhabitants of the valley of his divine affiliation (cf. Cobo 1983:103). In another version of the same story, when the people saw Manco Capac and his people bearing gold utensils

they believed that they were truly "children of the Sun" (Betanzos 1996:16).

Spondylus Shell

Water from the ocean played (and still plays) a significant role in many rituals for rain throughout the Andes (cf. Martínez 1976:301–302; Reinhard 1988:21; Rösing 1996; Soldi 1980:25). Seashells were also important offerings to water sources for rain (Rowe 1946:307). The spiral-shaped strombus shell was widely used as a trumpet (*pututu*) to call the mountain gods (Roel 1966:30) or to cause clouds to form (Carrion 1955:80). However, the most important shell was the spondylus—considered indispensable for rain (cf. Murúa 1975:257). The offering of these shells on summits such as Llullaillaco further points to the symbolic connection between mountains and Mamacocha, mother of all water (Cobo 1964:161).

According to some chroniclers, the Incas considered the value of spondylus shell (*mullu)* to be greater than that of gold (Sarmiento 1999:167). It can be found only in the warm waters off Ecuador and farther north (i.e., outside the Humboldt Current), and was believed by the Incas to be the "daughter" of the ocean—the ultimate origin of water (cf. Cobo 1990:117; Murúa 1975:257)—and thus linked with rainfall in the mountains. The shell may have represented the "blood of the sea" due to its red coloring (Marcos 1978:100).

The use of spondylus shell for the carving of some statues suggests the association of the things being represented (llamas, male and female humans) with fertility (cf. Figures 7.10 and 7.14). In addition to the use of spondylus to make carved figurines, the natural shell was also provided as an offering on its own (Cobo 1990:117)—something verified at a number of high-altitude sites (cf. Beorchia 1985), including Llullaillaco (Figure 7.16). Chroniclers have also reported it being offered in a powder form (Cobo 1990:117).

The use of spondylus in the form of necklaces is documented in the archaeological evidence from high-altitude sites. On Llullaillaco, we found a spondylus necklace surrounding a row of llama figurines and two male statues (cf. Figures 3.28 and 7.17). The Aconcagua boy wore a necklace made of spondylus shell, along with some semiprecious stones (Bárcena 2001b). Necklaces of seashells were noted in the chronicles as being worn during important ceremonies (cf. Cobo 1990:151).

Fig. 7.16. A spondylus shell (E-29) found in its natural state near the younger girl on Llullaillacoo (*photo by Constanza Ceruti*).

Feathers

Feather work was another way in which the Incas processed exotic materials. The feathers—which came from Amazonian or high-Andean birds—were used on knitted bags, headdresses, and miniatures of cephalic adornments for statues. The technique of feather setting was noted in the chronicles (cf. Cobo 1983:245). There are examples of such work in the Llullaillaco artifacts, including that of the maiden's white feather headdress (N-26)—which is the best preserved among the three Inca women's headdresses currently known (cf. Figures 5.18 and 7.18).

According to the historical sources, feathered garments were used in ceremonial context and worn by nobles (cf. Rowe 1995:10). Their use was forbidden for those who did not receive them from the Inca (Betanzos 1996:195). During Inca festivals, some participants wore clothing adorned with feathers—and they were part of the adornment of the ritual specialists (cf. Betanzos 1996:66). In many areas of the Andes, dancers still dance in feathered costumes during religious festivals—as in the case of the "*suri*" (Andean ostrich) dances we have witnessed in the remote villages in northern Argentina and near Lake Titicaca.

With regard to the ritual importance of feathers, the chronicler Polo de Ondegardo (1916:39) noted that the Incas "…sacrificed feathers of different colors, red and yellow, called *paucar*, and especially, *pillco parihuana*"

Fig. 7.17. A spondylus necklace (S-22) found near the boy on Llullaillaco.

Fig. 7.18. The Llullaillaco maiden's headdress (N-26).

Fig. 7.19. A feminine statue (E-15) with a feather headdress of various colors found near the younger girl on Llullaillaco.

(Figure 7.19). Arriaga (1968:45) described feathers used as offerings, distinguishing the red and yellow ones of *guacamayas* (parrots) from the white ones taken from the *huachua*—a bird found in highland lakes—and from the pink ones obtained from flamingos (*parinas*). We found a few isolated feathers buried in the ceremonial platform on Llullaillaco.

POTTERY ASSEMBLAGES

Pottery was another type of offering that figured in many of the *capacocha* burials. Inca pottery is highly standardized in its forms of decoration (Costin and Hagstrum 1995:627). Typical Inca pottery usually found in *capacocha* burials (Figure 7.20) include *aribalos*, bottles, pots, shallow plates, and bowls (cf. Bray 2003).

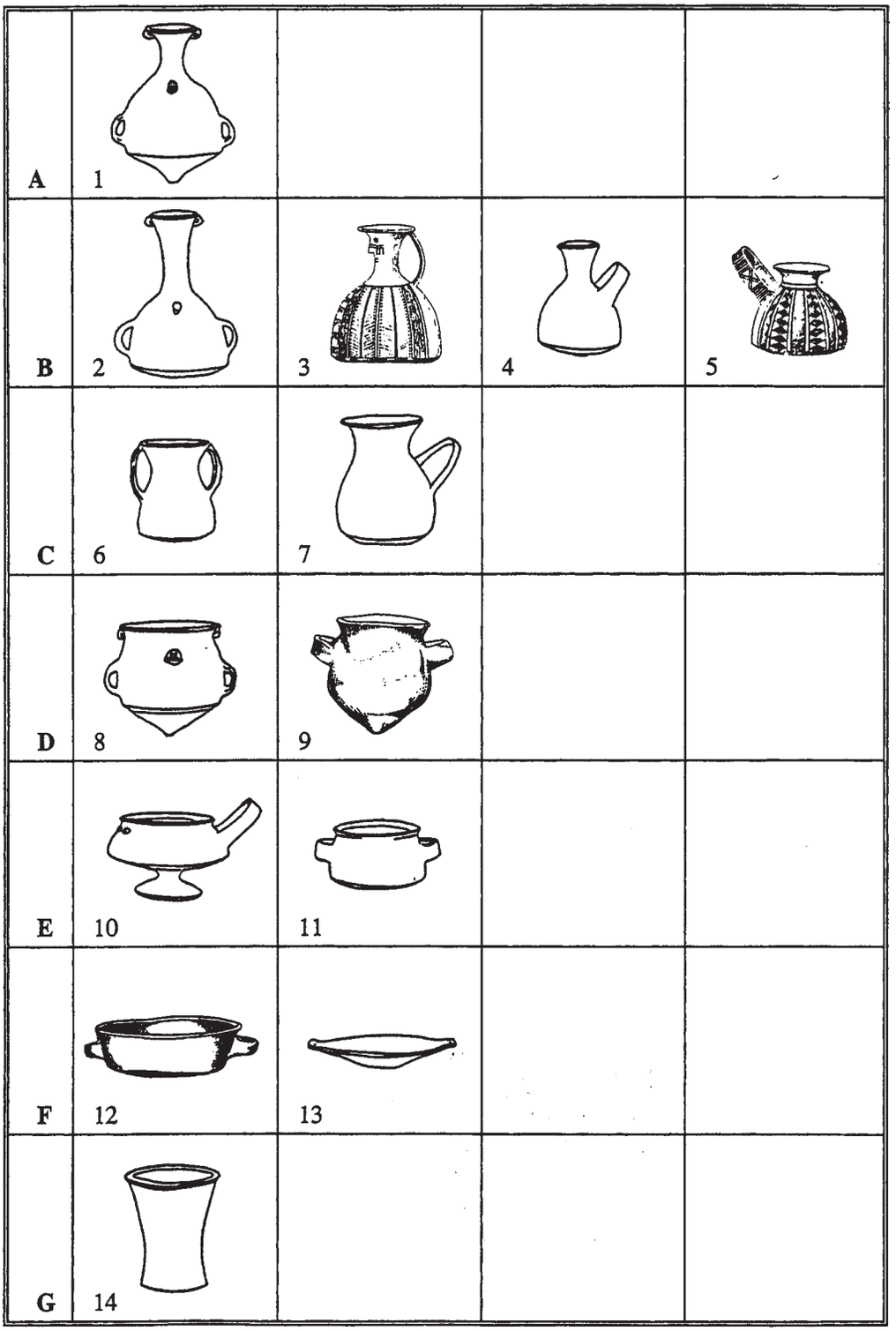


Fig. 7.20. A drawing of typical Inca vessel form categories, most of which have been found in female *capacocha* burials: (1) Inca jar (*aribalo*), (2) long-necked vase, (3) face-neck jar, (4) long-necked bottle, (5) short-necked bottle, (6) two-handled vessel, (7) one-handled vessel, (8) conical-based pot (*olla*), (9) round-based pot, (10) one-footed pot, (11) two-handled bowl, (12) two-handled plate, (13) shallow plate, and (14) cup/vase (*kero*) (*from Bray 2003*).

In female high-altitude burials, most pottery assemblages include an *aribalo*, a short-necked bottle, a pedestal pot, and pairs of plates—although there is some variation in the style of decoration of the pieces (cf. Figures 7.21 through 7.25).[3] This is the case of the two female burials on Llullaillaco, the two female burials at 5,850 m (19,193 ft) on Ampato (Reinhard and Chávez 1996 and 1998), the female burials on Misti (Reinhard and Chávez 2001b), 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) 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.[4]

Bray (2003:19–20) noted that the Inca pottery assemblage consisted of a core of three vessel types: the tall narrow-necked jar (*aribalo*), the pedestal pot, and the shallow plate (Figure 7.20). Together with the two-handled bowl (rarely found in provincial pottery assemblages outside Cuzco and its vicinity) these four vessel forms made up 92 percent of the pots she tabulated from 20 sites (Bray 2003:19). *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 (Bray 2003; Julien 2004).

Sometimes at high-altitude sites the pieces are miniatures, whose primary function is symbolic rather than utilitarian. No large Inca ceramics, such as pots for storage or for processing food or liquids, have been reported from mountaintop sanctuaries (Ceruti 2003a:118)—although they have been found at the bases of mountains (Figure 2.21), including at the *tambo* of Llullaillaco (Reinhard 1993:42). They are prominent at Inca state facilities in the region, and their scarcity on mountain summits is likely due to the lack of time spent at the sites and the difficulty in transporting and preparing meals at such elevations.

Ceramic assemblages found at high-altitude ceremonial sites in the southern Andes consist largely, if not entirely, of imperial Inca pottery. This contrasts with pottery found even within lower-lying Inca state facilities, where regional styles made up more than half the ceramic assemblages (D'Altroy 2000:21). Although representing commonly used pottery, the quality of many of the ceramics found with the *capacocha* victims surpasses that utilized by the average Inca villager.

These ceramics were of the type found in high-status burials, such as the pottery recovered from the important Inca sites of Maukallaqta (Bauer 1992:91–108) and Sacsahuaman (Julien 2004). For example, Bray (2003:19) noted that the short-necked bottle was rare. Indeed, its presence was primarily from only a few prestigious sites (e.g., Machu Picchu and Pachacamac). In this regard, one was found with a female sacrifice on Ampato and two were from each of the two females recovered from Llullaillaco—once again underlining the significance of high-altitude sites within the Inca state.

Samples of Llullaillaco pottery shards were sent for neutron activation analysis using the University of Michigan's Ford Nuclear Reactor (Bray et al. 2005). It was found that the boy had an *aribalo* from the Lake Titicaca region and the lightning girl had two plates and a pedestal pot from there, in addition to fine Inca Cuzqueño pottery. The older Llullaillaco girl had imperial Inca pottery, but none of the samples were from Lake Titicaca. (However, not all of the ceramic pieces found with her could be tested.) The analysis established that classic Inca pottery was sent not just from Cuzco but from Lake Titicaca—and that to a high-altitude site about 1,000 km away.[5]

FOOD AND DRINK

We know from the chroniclers that the Incas offered various foodstuffs, including flour, maize, beans, peanuts, jerky, llama fat, and various "fruits" (cf. Arriaga 1968:43–45; Cobo 1990:116). Beer (*chicha*) made of maize was a common offering (Arriaga 1968:41). Remains of most of these offerings have been found in the context of *capacocha* burials (cf. Beorchia 1985; Reinhard 1992a; Reinhard and Ceruti 2000, 2006; Roig 2001).

Rebitsch (1966:94–95) reported finding remains of the nuts of fruits (unidentified) at the site at 6,500 m (21,325 ft) on Llullaillaco, in a context suggesting that the fruits had been used as food and not intended as offerings. Offerings of nuts of the *chañar* (*Groffroea decorticans*) tree were found buried in the artificial platforms on the summits of Copiapo [6,052 m (19,855 ft)] and Jotabeche [5,862 m (19,232 ft)] in central Chile (cf. Reinhard 1992a:160).

Fig. 7.21. (*a*) An *aribalo* with carrying rope (E-8) found near the younger girl on Llullaillaco. (*b*) An *aribalo* (N-16) found near the older girl on Llullaillaco.

Fig. 7.22. (*a*) A stirrup pot (N-22) with a lid made of vegetal material found near the older girl on Llullaillaco. (*b*) A stirrup pot (E-11) found near the younger girl on Llullaillaco.

Fig. 7.23. A pedestal pot with lid (N-21) found near the older girl on Llullaillaco.

Fig. 7.24. A two-handled bowl (E-21) found near the younger girl on Llullaillaco (*photo by Constanza Ceruti*).

Fig. 7.25. (*a*) A plate (N-18) found near the older girl on Llullaillaco. (*b*) A plate (E-4) found near the younger girl on Llullaillaco (*photo by Constanza Ceruti*).

The knitted bags (*chuspas*) that had been buried together with the females on Llullaillaco contained food items such as peanuts (N-10), beans (E-17), and grains of corn (N-18) along with dried meat (*charqui*) (Figures 7.26 through 7.29). On the other hand, the boy did not have solid food as part of his accompanying assemblage. It is not clear whether the provisions were dedicated to feed the girls in the afterlife or if they were meant to symbolically feed the deities to whom the sacrifice was dedicated (Ceruti 2003a:121).

The burial of the Llullaillaco boy included an *aribalo*, which appeared to contain the dehydrated remains of Andean beer. The chronicler Betanzos (1996:47) noted that the sun was fed with maize burned in fire and with *chicha* libations during rituals.[6] *Chicha* had a particular religious connotation due to its ingredients and the way it was prepared. Polia reported:

> In *chicha*, the sacredness of the earth is united with that of the water and fire used to boil it. In its preparation, the human being […] in order to accelerate the fermentation, adds to it something of his own essence: saliva, which is loaded with the power of the word and of the quality of the spirit. [Polia 1999:110]

Wooden Vases

Chroniclers frequently referred to metal vases (*aquillas*) being used by Inca nobility and in major ceremonies at Cuzco. This led some authors to believe that wooden vases appeared only after the Spanish conquest (cf. Randall 1993:108). However, all of the vases found to date with high-altitude human sacrifices were made of wood—and they clearly occurred in a pre-Hispanic depositional context, in which they were perceived as items of high status. The wood vases (*keros* or *queros*)

Fig. 7.26. Two bags (*chuspas*) (N-10) containing peanuts were found connected to a comb near the Llullaillaco maiden.

Fig. 7.27. A cloth bag containing maize (E-18) and pieces of *charqui* found near the younger girl on Llullaillaco.

Fig. 7.28. A bag (N-27) found near the older girl on Llullaillaco.

Fig. 7.29. A bag (S-30) found near the boy on Llullaillaco.

were incised with geometric designs (cf. Rowe 1964) (Figure 7.30), and images were only painted on this type of vase following the Spanish conquest (Cummins 2004:23).

Although many artifacts—including eating utensils such as wooden spoons (Figure 7.31)—appear singly in the burials, certain objects (such as plates, bowls, and wooden vases) have often been found in pairs. The pairing of plates and *keros* was presumably related to the Andean etiquette of ritually sharing food and drink, as described in the chronicles (cf. Betanzos 1996:67) and depicted in several of Guaman Poma's (1980) drawings (cf. Figure 5.10).

Coca Leaves

The coca leaf was a common offering in Inca times (Arriaga 1968:43; Murúa 1946:242, 276–277), as it is in many areas of the Andes today (Berg 1985:95; Girault 1988:149). Coca leaves have been found at several mountaintop sites (cf. Beorchia 1985), most notably in special bags found with human sacrificial offerings—as in the case of the younger children from

Fig. 7.30. A wooden vase (*kero*) (E-10) found near the younger girl on Llullaillaco (*photo by Constanza Ceruti*).

Fig. 7.31. A wooden spoon (N-6) found near the older girl on Llullaillaco (*photo by Constanza Ceruti*).

Llullaillaco (Figure 7.32). Remains of coca leaves have even been discovered in the tiny cloth bags of miniature statues found with the Aconcagua mummy (Giberti 2001:259).

The chewing of coca leaves was said to have been especially important for rituals during the Inca period (cf. Cobo 1990:116; Levillier 1940:131). Chroniclers noted coca leaves having been placed in the mouths of sacrificial victims just prior to their deaths (cf. Guaman Poma 1980:267), and Salomon (1987:161) described coca being placed in the mouths of mummies. Ramos (1976:26) wrote in 1621, "When the hour of sacrifice came, they placed in the [child's] mouth a fistful of crushed coca leaves with which they smothered [the child]." We found pieces of coca leaves beneath the nose and on the lips of the older girl from

Fig. 7.32. A feathered bag (E-20) containing coca leaves found near the younger girl on Llullaillaco.

Llullaillaco, and fragments of coca leaves were reportedly observed in the mouth of one of the Esmeralda mummies (Besom 2000:374).

Tests can be undertaken to determine if minute traces of benzoylecgonine, a metabolic residue of cocaine, exist in ancient hair. (Of course, this is distinct from the modern-day cocaine drug obtained by isolating the cocaine alkaloid found in the coca leaf—something not achieved by scientists until the mid 1800s.) These tests revealed that coca had been ingested by one of the females from Cerro Esmeralda (Besom 2000:373–374, 517–518) and by the boy found on El Plomo (Castro et al. 2005:60). By comparison, in the cases of the Chuscha and Aconcagua mummies no cocaine was detected (i.e., in the five and nine months growth of hair, respectively) (Cartmell 2001, 2004).

However, in the case of Llullaillaco all of the three mummies' hair tested positive for cocaine (Cartmell 2001; Wilson et al. 2007:16,458). Interestingly, the amount ingested by the oldest girl from Llullaillaco proved to be three times as much as Cartmell had found in 350 samples from Andean mummies (Cartmell 2001; cf. Wilson et al. 2007:16,458).[7] It appeared that the maiden had been especially singled out, perhaps due to her older age or to her higher status—as other evidence suggested (see discussion of hair isotope analysis following).

Because it takes about 10 days for cocaine from ingested coca leaves to appear in hair shafts, it is not possible to establish through this method if coca was ingested immediately prior to death. However, given Inca customs and the discovery of Inca leaves together with several of the mummies it is likely that coca would have been chewed by the children prior to and during the pilgrimage—as well as during rites of sacrifice on the mountain. Dental X-rays (cf. Arias et al. 2002) have shown that the younger girl from Llullaillaco has a small amount of chewed coca leaves between her cheek and her teeth (an *acullico*, the typical Andean way to chew coca leaves), which indicates that the consumption of coca leaves was ongoing at the moment of sacrifice.

OTHER OFFERINGS

Other items offered by the Incas on high-altitude shrines include minerals and mineral powders, *ichu* grass, human hair, needles, wooden boxes, and ropes (cf. Arriaga 1968:59).[8] Club heads have been found in *capacocha* burials (cf. Pardo 1941:110), and one was found on the summit of Huarancante in southern Peru (Reinhard and Chávez 2001b). Horns of the Andean deer (*taruca*) have been found at summit shrines on mountains, such as in the Famatina massif of western Argentina—where mining activities took place (Ceruti 2001e).

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).

River stones and flat stones left as offerings have been found on the summits of volcanoes in Peru, such as Huarancante and Misti (Reinhard and Chávez 2001b), as well as on the peaks of Mercedario and Alma Negra in western Argentina (Ceruti 2003d). Some were deposited inside artificial platforms, which suggests their probable Inca origin—something also noted in the chronicles (cf. Estrada 1923:661, 663).

Animals

Llamas were commonly sacrificed at major Inca ceremonies (cf. Arriaga 1968:42; Cobo 1990:113). Llama bones have been recovered in archaeological contexts at several of the mountain summit sites (cf. Beorchia 1985; Ceruti 1999a), albeit not in the quantities which might have been expected if they had been common offerings. Perhaps the difficulty of getting llamas up to great heights and of maintaining fires at high altitudes resulted in relatively fewer animals being sacrificed at the mountaintop sites.

In southern Peru, Reinhard found a folded puma skin containing coca seeds under a boulder at about 5,800 m (19,193 ft) on Hualca Hualca (cf. Beorchia 1985:96). Looters dynamited a human burial that had the bones of a puma in association with it on the summit of Chachani (Carlos Zárate, 1995 personal communication to Johan Reinhard). We know from chroniclers that the bodies of pumas might be worshiped and that puma skins were worn in important ceremonies [cf. Cobo 1990:67, 133; Avila in Salomon and Urioste (1991:48)].

Guinea pigs were also often sacrificed during rituals (cf. Arriaga 1968:42–43; Cobo 1990:113; Guaman Poma 1980:246). Nonetheless, we are unaware of any having been found at high mountain sites. The remains of mice have been uncovered, however. In some cases, they appear to have been there originally in order to scavenge and to die natural deaths (we have even seen them alive at more than 5,800 m (19,029 ft). 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 reportedly offered (Cobo 1990:113), but we are only aware of their feathers having been found at *capacocha* burials (cf. Reinhard and Ceruti 2000). Horns of the Andean deer have been observed on the surface of mountaintop sites on the Famatina massif (Schobinger 1966c) in western Argentina (cf. Ceruti 2004b, 2007b, 2007c). Dogs were sacrificed on some occasions (Arriaga 1968:64; Guaman Poma 1980:271), and one case of this has apparently been found at an Inca site on the summit of Mount Las Tortolas [6,160 m (20,210 ft)] in central Chile (Gonzalo Ampuero, 1983 personal communication to Johan Reinhard).[9]

Hair

Hair was a common offering in Inca times (Polo 1916:40). Human hairs were found in the soil used to fill the platform on the summit of Llullaillaco, and in other platforms that have been scientifically excavated on mountain summits (e.g., on Copiapo in Chile) (Reinhard 1992a). It seems reasonable to suspect that they were deposited as simple offerings, which accompanied the effort of constructing the high-altitude platforms. The ritual practice of *mocha* could include the use of eyelashes and hair that had been pulled out. Murúa (1946:283) referred to it in relation to the *apachetas* (stones piled up for ritual purposes) built on high points along the Inca road system.

A frequent practice in pre-Hispanic times was to keep a person's hair and fingernails after they had been cut (Cieza de León 1984:271). They were held to be buried with the person's body after death, in that they were supposed to accompany the deceased's soul into the afterlife (Garcilaso 1966:84–85). Cobo (1983:177) wrote that they were sometimes used in the making of small statues in honor of the deceased.

In some traditional Peruvian Andean communities, the loss of a single hair is still perceived as a sin (*hucha*). For this reason, some Quechua people still keep or burn hairs that have fallen out—believing that by doing so the soul will not have to lose time looking for them after death (Allen 1988:62). One function of braids is to prevent hair from falling (Valencia 1981:57). Concern over the loss of hair is probably rooted in ancient beliefs associated with witchcraft (cf. Ceruti 2003a:113). Polo (1916:194) wrote that the Incas used to "…remove the teeth of the deceased or cut their hair and fingernails to perform different sorcery."

As noted previously, the conservation of hair and fingernails next to mummified bodies was an Inca custom well documented by chroniclers (cf. Davies 1995:190). On the other hand, the Incas were also known to use human hair as an accessory in the elaboration of cords (Michieli 1990:29). This was also verified in the case of the braided cord of the valve necklace (S-22) recovered in offering assemblage S-II on Llullaillaco (Abal 2003:167) and in the case of the cord around the head of the El Plomo mummy (Quevedo and Durán 1992:198).

The Llullaillaco children were each buried with small bags (Figure 7.33) made of animal skin (tentatively identified as being of llama scrotums). Similar bags have been found with other *capacocha* mummies, such as with the El Plomo boy (Quevedo and Durán 1992:198). Isotopic and DNA results were obtained from samples of hair found in the Llullaillaco bags and compared with those obtained from hair samples of the three Llullaillaco mummies, establishing that the hair in the bags definitely belonged respectively to each of the children (Wilson et al. 2007). Based on the reports of chroniclers, we assumed that the hair in the bags had been accumulated over the course of the children's lives—including from the time of their first hair cuttings (cf. Arriaga 1968:154).

The results from the isotopic analysis went beyond this, however, by shedding new light on what happened to the children in the months preceding their sacrifice. On average, scalp hair grows 1 cm a month—and once formed does not undergo further biogenic alteration (Wilson et al. 2007:16,457). Carbon isotopes can distinguish between marine and land-based protein and plants, whereas nitrogen isotopes can distinguish plant from animal protein (cf. Lambert 1997:214–228).

In the case of the Llullaillaco maiden, the hair sample was long enough to observe changes over a 2.5-year period. Isotope analysis showed that 12 months before she met her death her diet changed to one rich in animal protein (likely meat) and plants, such as maize (Wilson et al. 2007:16,457–16,458). The increase in meat consumption continued until about 2.5 months prior to her death, and then began to drop—whereas the intake of maize continued. It is possible that the drop in animal protein could be attributable to the maiden having been on her pilgrimage to Llullaillaco, and thus with less access to meat. On the other hand, maize was kept stored in the *tambos* located along

Fig. 7.33. Two bags (N-15) made of animal skin (tentatively identified as being of llama scrotums) found with the Llullaillaco maiden.

the Inca road and was considered a prestigious food item. It appears that we have independent evidence not only of the food ingested by the older girl during her pilgrimage but of how long her procession might have taken.

Interestingly, the other two children had no such change in diet (Wilson et al. 2007:16,457–16,458). The boy's hair represented about 13 months of growth, and the younger girl's of about 18 months. It seems reasonable to infer that a shift to a meat-enriched diet one year before death meant that the older girl was elevated to a higher social status. The differences between her diet and the other children's suggest that she had the highest status of the three, perhaps related to her older age and her longer confinement in an *acllahuasi* (house for chosen women).

The diet characteristics of the hair from the bags of the other two children turned out to closely parallel each of their diets, as shown by hair from their heads. Like the older girl, their hair had been cut about six months before they had been sacrificed. Because all of the hair was not tested, we do not know for certain if hair cut earlier (or later) was also in the bags. The first time hair was cut reportedly took place when children were four to six years old (cf. Arriaga 1968:154). Thus, the possibility exists that the hair in the bags with the two younger Llullaillaco children (aged about six and seven) is the result of a first hair-cutting ceremony (*rutuchicuy*).

Whatever the case, the results obtained in collaboration with Wilson and his team point to all of the children having undergone a hair cutting at a special event that occurred at a set time—and the Incas had deliberately kept this hair to be buried with them. The findings also support historical accounts of the *capacocha* children receiving special treatment that began several months prior to their being sacrificed.

By comparison, an analysis of the hair of the Aconcagua mummy showed that maize had been ingested in a cyclical manner—rising to one of its peaks just prior to death. In the case of the Chuscha mummy, an increase in the ingestion of maize began 14 months earlier and continued until her death (Panarello 2004:142–143). It was suggested that this difference might have been due to the boy of Aconcagua living near the mountain. Thus, the cyclical nature of his diet could have been a reflection of the seasonal availability of maize.

On the other hand, the Chuscha girl was thought to have lived a considerable distance from the mountain—her diet beginning to change as soon as she left for her pilgrimage (Panarello 2004:143). In summary, the study of isotopes in hair has provided valuable data with which to compare information obtained from the human victims and their artifact assemblages—revealing particularities about the *capacocha* ceremonies that framed their sacrifice.

CONCLUSIONS

The *capacocha* burials involved a considerable amount of effort at high altitudes, further underlining the importance of the offerings. The textiles, metal and shell figurines, ceramic assemblages, and food items provide us with new insights into Inca religious beliefs, social customs, and ritual practices.

The recovery in situ of the items listed previously, as in the case of the offerings from Llullaillaco, has allowed for comparisons to be made with information provided by the chroniclers. They substantiate many of the ethnohistorical descriptions, while at the same time pointing to different ways in which some objects figured in the *capacocha* ritual—such as the offering of male tunics with female sacrificial victims. Unlike some of the chroniclers' descriptions, only vases and certain types of pottery were found frequently in pairs in Inca *capacocha* burials.

Some elements have appeared in the archaeological record that had rarely been 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 state offerings. The quality of the sumptuary offerings varied, sometimes even within the same ceremonial complex—suggesting that either some of the children were considered of lesser importance or that there were limitations on the availability of state-supplied offerings.

The chroniclers provide a few explanations for the meanings of the metal and seashell figurines placed as grave goods or that formed separate offering assemblages. They may have been substitute offerings for the living things they represented (Anónimo 1968:156). The male and female statues may have represented deities (Betanzos 1996:110; Cobo 1990:46; Murúa 1946:257) or members of the Inca royal elite [Albornoz in Duviols (1984:194); Betanzos 1996:48; Polo 1916:194]. The camelid figurines could have been intended to increase the fertility of herds (Arriaga 1968:29).

Pottery offerings are more widely represented in female burials, although certain types (such as *aribalos* and plates) can also be found in male burials. Sets of pottery items were recorded inside the burials of the two females from Llullaillaco, as well as in the bundle of offerings buried close to the Quehuar maiden. Although some variation can be documented in the style of decoration of the pieces, almost every pottery assemblage from female high-altitude burials includes one *aribalo*, one bottle, and one pot—and pairs of plates and sometimes bowls. According to the chronicler Betanzos (1996), miniature pots in the burials of female sacrificial victims symbolically represented the housewares of married women.

Food items contained in textile bags and placed in the burials of Llullaillaco included corn, peanuts, beans, and dried meat (*charqui*). Corn is also present in the bundle of offerings found on Quehuar. Food might have been meant to feed the children in the afterlife, or it could have been meant as food to be offered to the spirits of the mountains and ancestors (Cobo 1990:115).

NOTES

1. Silver disks similar to those discovered on Pichu Pichu have been found at Machu Picchu (Reinhard 2005:178). Salazar and Burger (2004:185) thought they might have originally been attached to headbands or other types of textiles. A tunic covered in square gold plates was found in an Inca tomb on the north coast of Peru (Longhena and Alva 2007:131). Long before the Incas, the Moche of the north coast covered textiles with metal disks (cf. Longhena and Alva 2007:33).

2. For descriptions of typical statues found with *capacocha* burials, see Beorchia (1985), Ceruti (2003a), Dransart (1995), Michieli (1990), Millán de Palavecino (1966), Palma (1991), Rowe (1997), Schobinger (2001a), and Schobinger et al. (1985). Although some statues have been found with inlays, which may be an Inca innovation (Dransart 2000:80), as far as we are aware only one statue with inlays (a silver male from Pichu Pichu) has been found at a high-altitude site (Reinhard 1998b). See Bárcena (2001a) for a description of how the metal statues were constructed.

3. Interestingly, some scholars have noted that the pairs of plates are always slightly different in size (cf. Salazar and Burger 2004:141). Julien (2004:28) noted that the pairs found in tombs at Sacsahuaman had been unevenly used.

4. It might be added that we found what appears to have been the deliberate breaking of pottery at some high-altitude sites (e.g., in one of the female burials on Ampato) (Reinhard and Chávez 1996). Although the ritual breaking of pottery has been noted at other pre-Hispanic sites (cf. Menzel 1977:54) and in ethnographic contexts (cf. Dillehay 1995:293; Girault 1988:55), this did not appear to have been the case at Llullaillaco.

5. Using neutron activation analysis, some exotic fragments found at the Inca site of Potrero de Payogasta (in the Calchaquí Valley south of the city of Salta) were also identified as having originated from the Lake Titicaca region (D'Altroy et al. 2000:21) .

6. The high-altitude grain *cañahua* (*Chenopodium pallidicaule*) was noted by Guaman Poma (1980:245) as also being occasionally used to make *chicha*, and Cobo (1983:28) noted that it could be made with "other seeds and fruits" (instead of maize).

7. Cartmell (2001) found a very low level of nicotine in the older girl, but such a low level indicated that the source of the drug was not tobacco. He noted that a number of vegetables in the pre-Hispanic Andean diet contain nicotine, including tomatoes, peppers, and potatoes. Thus, the low level found in the older girls was consistent with a dietary source of the nicotine rather than tobacco.

8. Borax was found together with a female gold statue on the summit of Pichu Pichu. This was likely an offering, given the availability of borax in the salt flats of Laguna Salinas to the north of the mountain (Reinhard 2005:176). Arriaga (1968:46) noted in the early 1600s that people made offerings of mineral "yellow powders," which presumably refers to sulfur. Sulfur has also had a practical use, being used medicinally for humans and llamas (cf. Girault 1988:237–238). Thus, in order to know its probable function it is necessary to examine it within the context of which it was a part. In the case of the summit site of Llullaillaco, sulfur was found on the surface near the two-roomed structure—leaving it unclear if it had been carried there to be used for practical or ritual reasons.

9. Dogs in the Andes have been noted in the ethnographic literature as being sacrificed to accompany the dead. They are believed to serve as guides for the souls in the afterlife (Platt 1986:247; Valderrama and Escalante 1980:258; Wagner 1978:192). Because no mummy was found on Las Tortolas, the dog was presumably an offering in its own right. However, the possibility exists that a mummy could have been removed by looters or simply not found when the site was partially excavated by the climbers working under the direction of archaeologists (cf. Ampuero 1960; Krahl and González 1966).

Chapter Eight

Sacred Landscape

"The replication of the mountain metaphor across the Andean chain provides insight into the cultures of all Andeans; it lets the Andeans understand themselves and lets us understand them."

—Joseph Bastien, from *Mountain of the Condor*

Archaeologists have recently begun to place greater emphasis on investigating the ways people have interacted with the landscapes they perceived as sacred (cf. Ashmore and Knapp 1999; Bender 1993; Hirsch and O'Hanlon 1995; Renfrew and Bahn 2000; Ucko and Layton 1999). As Ucko (1994:xix) noted, "…all societies in the past would have recognized, as do all societies in the present, some features of their landscapes… as sacred." This has especially been the case in the Andes. The Inca culture in particular presents an especially fruitful field for research utilizing an approach focused on sacred landscape. Among other things, the Incas demonstrated its importance through the establishment of *capacocha* ceremonies and state-sponsored pilgrimages to high isolated mountains—of which Llullaillaco is one of many examples.

We know from present-day studies that the Quechua people are very conscious of a landscape that for them is full of meaning. Allen (1988:41) wrote about the Quechuas living near Cuzco that "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]." The snowcapped peaks are especially sacred, and were so at the time of the Incas [cf. Albornoz in Duviols (1984)]. But beyond this, it is clear that the Incas had a precise knowledge of topography—being able to make models of the areas they conquered (cf. Garcilaso 1967 v.1:127).

We have seen that mountains were important in Inca religion, both in the region of Cuzco and in the distant regions conquered by the Incas (cf. Cieza 1977; Cobo 1983; Guaman Poma 1980; Reinhard 1995, 1999b, 2007a). A few examples illustrate just how significant some of them were believed to be. In 1553, the snowcapped mountain Coropuna in southwestern Peru (cf. Figures 1.3 and 8.1) was listed as the fifth most important *huaca* in the Inca Empire by the renowned chronicler Cieza de León (1977:107) (cf. Reinhard 1999b, 2001). Catequil, a deity worshiped on a mountain in northern Peru, dominated a vast area—and some chroniclers claimed it to be one of the most powerful deities in Tawantinsuyu [Agustinos 1918:18–24; Albornoz in Duviols (1984)]. Mount Pariacaca (Figure 8.2) was highly venerated by the Incas in western Peru, and was especially renowned for being personally associated with an Inca emperor and for the impressive Inca road that passed by it [Avila in Salomon and Urioste (1991); Reinhard 1987a].

Fig. 8.1. A man stands on an Inca *ushnu* (ceremonial platform) in the ruins of Achaymarca, with the mountain Coropuna (Peru) in the background (photo 1989).

Fig. 8.2. A view over a lake towards the sacred mountain Pariacaca (Peru) as seen from the Inca road.

Closer to Cuzco, several snowcapped mountains can be observed after only a short walk above the city. To the north, Sahuasiray [5,720 m (18,766 ft)] and Pitusiray [about 5,056 m (about 16,588 ft)] were among the most sacred places of Antisuyu (Figure 8.3)—one of the four quarters of the Inca Empire (Guaman Poma 1980:243, 248). The snowcapped peak of Ausangate [6,372 m (20,905 ft)] is the highest mountain visible from Cuzco. In the early 1600s, Guaman Poma (1980:248, 253) noted that it was one of the most important *huacas* of all of Collasuyu—another of the four quarters of the Tawantinsuyu. It is still today the most powerful of the traditional deities (cf. Ceruti n.d.d.; Reinhard n.d.a.; Sallnow 1987) (Figure 8.4).

To the west and northwest of Cuzco lie several peaks, including Salcantay—which dominates the famous site of Machu Picchu (Figures 8.5 and 8.6) and was noted in the 1500s as being highly venerated by the Incas [Albornoz in Duviols (1984); Reinhard 2007a]. Machu Picchu has been found to be situated in the center of sacred mountains that are linked with astronomically significant events relating to the sun's passage (Figure 8.7). Both Machu Picchu and Cuzco can be interpreted

Fig. 8.3. The sacred mountains of Pitusiray and Sahuasiray (Peru) as depicted about 1623 (*from Guaman Poma 1980*).

Fig. 8.4. Men ascended a glacier east of Cuzco (Peru) in 1985 during the festival of Qoyllur Riti and offered worship to the mountain Ausangate in the distant background.

Fig. 8.5. The Inca site of Machu Picchu (Peru).

Fig. 8.6. View to southeast toward Machu Picchu from the Inca site on the summit of the mountain San Miguel.

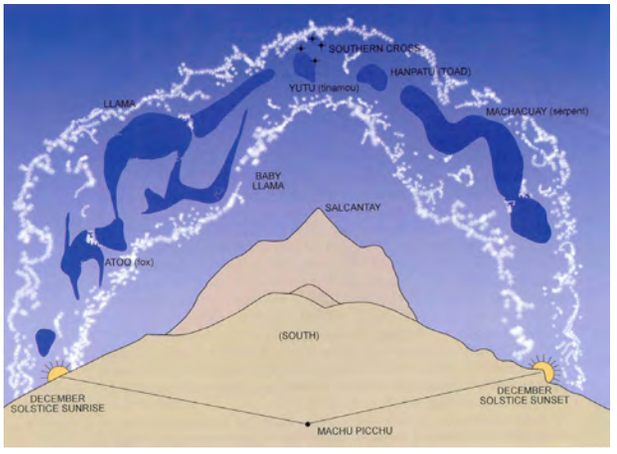


Fig. 8.7. Inca cosmology in relation to the sacred mountain Salcantay near Machu Picchu (*in Reinhard 2007, adapted from Urton 1982*).

as forming cosmological, hydrological, and sacred geographical centers for vast regions (Reinhard 2007a).

Even relatively low mountains close to Cuzco were ranked among places especially sacred to the Incas. For example, 38 km to the southeast and just beyond the end of the Cuzco Valley lies Viracochan—a high hill overlooking the sacred lake of Urcos (Figure 8.8). It rises about 500 m above the sacred Vilcanota River, and one of the most important temples for the Inca creator deity Viracocha was built on its summit (Betanzos 1987:14–15; Molina 1959:56–57; Reinhard n.d.b.).

The low mountains immediately surrounding Cuzco were also considered sacred (cf. Sarmiento 1943:95). Here we will briefly examine only two examples to illustrate the key role mountains played in Inca religion in Cuzco itself. They include the Incas' construction of structures similar to those found on high mountain summits at the periphery of their empire.

The temple on the summit of the mountain Huanacauri was described in the mid 1500s by Cieza de León (1977:105) as being only second to the Temple of the Sun in importance. Situated 700 m (2,297 ft) higher than Cuzco, the mountain is visible from the city and can be easily reached in a few hours' walk (Figure 8.9). The main reason so little attention is paid to Huanacauri today is because the summit site was largely destroyed by the Spanish (Figure 8.10). However, it is still widely invoked in present-day rituals for the fertility of crops (cf. Nuñez del Prado 1969/1970:149–150; Reinhard n.d.c.).

Theories to explain why Huanacauri came to play such a dominant role have all been based on myths referring to the origin of the Incas (cf. Cobo 1983:104). That is, the mountain is thought to have

Fig. 8.8. The mountain of Virachochan overlooks the sacred lake of Urcos (Peru).

Fig. 8.9. View to the southeast toward the central plaza of Cuzco, with the sacred mountain Huanacauri (Peru) in the background.

Fig. 8.10. Inca ruins likely used to house priests who performed rituals on the summit of Huanacauri in the background (photo 1983).

attained significance because of its association with mythological events involving the original ancestors of the Incas when they came to occupy the Cuzco Valley. Important offerings were made at the temple on its summit, including human sacrifices. The people killed were believed to serve Huanacauri and were regarded by the Incas "like the saints of the Christians" (Cieza 1977:105–106). Reinhard (n.d.c.) has hypothesized that the mountain was incorporated into Inca origin myths because it had already been worshiped before the rise of the Incas. It is the source of water for an important section of the Cuzco Valley, which has been occupied for more than two millennia.

The highest mountain bordering the valley of Cuzco is Pachatusan [4,842 m (15,886 ft)]. A number of legends point to its importance in Inca cosmology, and they include references to human sacrifices having taken place on its summit (Santa Cruz 1968:305). It was one of the six sacred mountains noted by Sarmiento (who called it Pachatopan) in the 1500s (Sarmiento 1943:95). Pachatusan continues to be a powerful local mountain god to the present day (Allen 1988:44; Sallnow 1987:129–130).

Ceremonial sites (artificial platforms and buildings with fine Inca stonework) are situated high on the mountain on its northern and eastern slopes. There is an important ritual site near the summit that is a larger version of similar sites found on mountain summits in the southern part of the Inca Empire (Figure 8.11). In 2004, Fernando Astete and Johan Reinhard conducted excavations at this latter site—finding human skeletal material suggesting that human sacrifices had taken place there (Astete and Reinhard 2003). In short, the Incas worshiped mountains in the immediate center of their empire before (or at the time) they began their expansion to regions far distant. In the southern and western provinces of Tawantinsuyu, thanks to summits of many of the volcanoes being relatively accessible the Incas were able to build ceremonial sites at altitudes never reached before.

We have discussed in general terms the reasons the Incas made offerings on mountain summits, but here we will begin by examining possible factors that might have contributed to one mountain being considered especially sacred—Llullaillaco. Unfortunately, there is little information about religious beliefs in Collasuyu at

Fig. 8.11. A large ceremonial platform (lower left) and other ruins near the summit of Pachatusan, Peru in 2002 (archaeologists' campsite at lower right).

the time of the Spanish conquest—and none at all about Llullaillaco. Thus, any interpretation of the reasons a ceremonial center was built on this volcano must be based on our knowledge of Inca beliefs and practices from other parts of the Andes, on the archaeological finds, and on an analysis of the legends and ethnographic data available from the region.

THE SACRED GEOGRAPHY OF LLULLAILLACO

It is likely that Llullaillaco was worshiped long before the Incas arrived in the region, in that at the time of the Spanish conquest worship of mountains was noted as predating the Incas (cf. Duviols 1984)—and this extended well beyond the limits of the Inca Empire, not to mention being common throughout the Americas. Why, then, have no pre-Inca artifacts been found on Llullaillaco?

It appears that, as in most other pre-Inca cultures, indigenous people in the region were content to worship high mountains from afar. This was probably due to a number of factors, such as the natural difficulties involved in scaling them and a fear of volcanoes being inhabited by a deity (or deities). In addition, the construction of sites leading to and up Llullaillaco involved a significant investment of time and labor—not to mention considerable logistical and mountaineering ability attainable only by a well-organized and determined social group. As we have seen, by placing ritual sites on mountain summits the Incas gained what was in effect a greater control (political, economic, and religious) over the people and land they conquered.

The question remains why the Incas selected Mount Llullaillaco to build a road and structures up to an altitude not even reached by Europeans until some 400 years later.

It is not likely that the mountain was selected only because it is a high peak. For example, an Inca road passed not far from Ojos del Salado—the world's highest volcano with active fumaroles—yet no sign of an Inca presence on the volcano has been found. No evidence of Inca ritual activities was documented on the main summit of Pissis [6,882 m (22,578 ft)]—the second highest mountain in the Americas (cf. Biggar 1996; Ceruti 2004b; Reinhard 1990b)—despite its being located near an area intensively used for Inca ritual purposes (Ceruti 2003c). On the other hand, the Incas did build structures at 6,610 m (21,686 ft) on Mount Incahuasi close to Ojos del Salado and north of Pissis. Difficulty in the ascent presumably played no role, as Ojos del Salado and Pissis are not much more difficult to climb than Incahuasi (cf. Reinhard 1990b).

We know that the Incas paid special homage to active volcanoes (cf. Murúa 1946:398), and Llullaillaco presumably could have been active—or at least had fumaroles—during the period the Incas entered the region (cf. Rebitsch 1966:60). However, using Ojos del Salado again as an example no sites have been found anywhere on its slopes—in spite of Ojos del Salado likely having had fumaroles during the same time period. In any event, unless a volcano experienced an eruption that directly affected the survival of local inhabitants the presence of active fumaroles would not seem a sufficient reason for the elaborate system of sites and roads as was constructed on Llullaillaco.

The locations and orientations of some Inca structures have been found to be in accordance with the rising and setting points of important celestial phenomena, especially of the sun (cf. Aveni 1981; Bauer 1998; Dearborn and Schreiber 1986; Hyslop 1990). Not surprisingly, some of the structures at high-altitude archaeological ritual centers were also discovered to be correlated with the same astronomical events (Astete and Reinhard 2003; Beorchia 2001a:197–206; Reinhard 2005, 2007a; Reinhard and Ceruti 2006). Our concern here, however, is not with the orientations of single structures but with the possible role astronomical alignments might have played in the placing of a ceremonial site on the summit of Llullaillaco.

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 are important due at least in part to their 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), as it has been especially documented at Machu Picchu—one of the most famous Inca sites (Reinhard 2007a).

In the case of Llullaillaco, we found it difficult to see how these factors could have played a principal role in its having a ceremonial site on its summit. The nearest

Inca administrative center was located about 200 km to the north—at Catarpe, near San Pedro de Atacama. Llullaillaco was not directly visible from it, but it is from a short distance away on an adjacent hill. The volcano is at an azimuth of about 200 degrees to the south from Catarpe, and therefore it is not in an area of major celestial activity nor aligned with a cardinal direction or with the constellation the Southern Cross—which figured prominently in Inca cosmology (cf. Urton 1981).[1]

One hypothesis to explain ceremonial complexes on mountaintops peripheral to the Incas' political center is that they could have been constructed as a way of establishing boundaries along the edge of their empire (cf. MacCormack 1991:152; McEwan and Van de Guchte 1992:371; Schobinger 1999:18). However, this appears less likely—given that the Incas built other sites and made offerings on mountains relatively close to Llullaillaco (e.g., on Quehuar, Acay, and Socompa), including a human sacrifice on Quehuar (cf. Beorchia 1985:188–200; Ceruti 2001a). If boundary marking played any role in Llullaillaco's selection, it would seem to have been only a secondary factor.

An alternative (or perhaps complementary) explanation is that the sites were built and offerings made to help establish alliances between the Incas and the indigenous people of the region. This hypothesis would be made stronger if one or more of the children sacrificed on mountaintop shrines had come from the local group (cf. Ceruti 2003a:166–167; Gentile 1996:82–84; Reinhard 1985a; Schobinger 1999). Even if this general hypothesis does not fully explain why Llullaillaco was specifically chosen, the desire for strengthening an alliance may well have been combined with the volcano's regional importance.

From a religious standpoint, an explanation for ritual sites on high mountain summits—including the one on Llullaillaco—has been that the Incas wanted to be closer to the sun to worship it (cf. Rebitsch 1966:72; Schobinger 1999). Because the Incas created the majority (if not all) of such sites and because sun worship figured prominently in their religion, this is an understandable conclusion. However, we know that the Incas did not worship solely the sun at principal sites—including even at the Temple of the Sun in Cuzco—and indeed they generally included worship of the local deities of the regions they conquered (cf. Cobo 1964 v.2:146).

Although the sun was probably invoked during ceremonies on Llullaillaco's summit, the reasons for the selection of *this* mountain and construction of a ceremonial site on it certainly had to involve worship of the local deities and (especially) of the mountain itself. As we have noted, not only were mountains worshiped in the Andes prior to the Inca conquest but mountains in the conquered regions were invariably worshiped by the Incas themselves—who considered many to be among the most important deities in their empire [cf. Albornoz in Duviols (1984); Cieza 1977; Duviols 1984; Guaman Poma 1980].[2]

A common belief throughout this area—and indeed throughout the Andes—associates mountains with water and the control of weather and fertility (cf. Casaverde 1970:141; Martínez 1976:278; Reinhard 1985a:311). Several volcanoes in the region of Llullaillaco (Figures 1.2 and 1.20) have Inca ceremonial sites on their summits (Beorchia 1985). The closest high-altitude site of significance to the south is on Antofalla some 115 km distant. About 185 km to the east is the complex on the summit of Quehuar. However, a number of important sites lie closer to the north—beginning with Socompa, only 45 km away (Ceruti 1999a). Not much further distant are the Inca archaeological remains on the summits of Pular, Pili, Chiliques, and Licancabur—not to mention several sites of lesser importance (Barón and Reinhard 1981; Beorchia 1985; Ceruti 2001c, 2005c; Reinhard et al. 1980).

These sites share several of the features of Llullaillaco, such as artificial platforms, structures made of simple alignments of stones, ceramics of Inca origin, Inca architecture, and *tambos* at the bases of the mountains. All figure in traditional religion as the abodes of deities believed to control the weather and thus the fertility of crops and animals, in a region where pastoralism has been playing an important role for centuries (cf. Barthel 1959; Reinhard 1985a).

Llullaillaco is the only volcano in the region to have snow prominently visible throughout the year, and this certainly would have contributed to the belief that it was a provider of water—just as it is perceived today (cf. Barthel 1959). This would have offered an additional reason to consider Llullaillaco a deity in control of weather and the fertility of livestock in the Atacama highlands.

We are unaware of any study having been made of the potential for pastoralism in the area around Llullaillaco. There are a few small freshwater sources (Figure 1.20) near the Salar de Llullaillaco to the east (Fadel 1977:124) and along the Inca road that passes by the Salar de Punta Negra to the west (Niemeyer and Rivera 1983:155). The ecological situation does not

seem to have changed much since the time of the Incas, who had to use the road across the Atacama Desert in small groups of less than 40 men in order to not surpass the amount of available water (Vivar 1987:62).

No remains of large corrals or settlements exist in the surrounding region, and thus it is unlikely that pastoralism was particularly important near the volcano. This does not mean that Llullaillaco was unimportant in the religious concepts of pastoralists living in a broader area, however. In the village of Socaire in northern Chile (Figure 1.20), the volcano is still invoked in rituals for the fertility of llamas because of its perceived ability to send rain (Barthel 1959:33; Reinhard 1985a:304). The association of the volcano with llamas could have been further enhanced due to another factor—that of trade.

Legends sometimes provide clues about the reasons for ceremonial sites. As with many other Andean peaks, there is a story that the Incas hid gold on Llullaillaco's summit in order to prevent it from falling into the hands of the Spaniards (Rebitsch 1966:61). The Incas were said to have cut the throats of the llamas used to carry the treasure up the volcano (Jurcich 1974:38). In one variation of this legend, the Incas were said to have left a *cogote* ("nape" or "back of the neck") of gold (Echeverría 1988:35). This latter myth may be linked to yet another legend in which a small gold llama was believed to have been worshiped on the mountain in ancient times (Fadel 1977:103). According to this version, a gold statute of a camelid on its summit was believed to represent the goddess of camelids Coquena—who was worshiped by the Atacama people of the region (cf. Barón and Reinhard 1981:36; Ruben 1952:158). These legends may well be based on facts, in that we did indeed find gold camelid figurines among the Inca offerings buried on the summit of Llullaillaco (N-1 and NE-2; see Appendix A).

It might be added that a white *carnero* (literally "sheep," but used in the chronicles to refer to a llama)—due to belief in its bringing fertility to livestock—was said to have been a significant deity worshiped by the Colla people in the southern part of the Inca Empire (Garcilaso 1967 v.1:114). As we have seen, there is archaeological and ethnohistorical evidence that colonists were sent by the Incas from the Lake Titicaca region (hence Colla) to northwestern Argentina—and they could have brought this belief with them (cf. Reinhard 1985a:310). It is interesting to note that a similar belief is reportedly held by Atacama people to this day. Indeed, the Incas themselves worshiped a white llama they held as their "principal sign of lordship" (Sarmiento 1943:52–53)—a deity that even played a role in initiation ceremonies on Huanacauri, a sacred mountain near Cuzco. Thus, the legend could conceivably relate in some way to this Inca ceremony.

Although only legends and votive figurines exist to associate Llullaillaco with llamas, there is further evidence that supports the idea that this mountain may have been considered important to the Incas—at least in part—because of its association with llama caravans. The volcano is situated almost midway between the oasis of San Pedro de Atacama and the relatively fertile valleys of Copiapo to the south. Only as the road reaches near the southern valleys does it pass by a higher mountain. Llullaillaco is also located between the western coast and fertile eastern valleys.

Its central location would likely have contributed to Llullaillaco's symbolic significance to the Incas, who were known to emphasize duality and attribute sacredness to a centrality of position—particularly when conquering a region (cf. Reinhard 2007a). For example, Cuzco was perceived as being at the center of the empire and as the center for an elaborate series of imaginary lines (*ceques*) projected onto the immediate landscape. More than 300 sacred sites, mostly associated with natural features of the landscape, were linked by the lines that largely originated from in (or near) the Temple of the Sun and extended out in a radiating pattern—thereby creating what became known as the *ceque* system (Figure 4.2).

Based on Barthel's description of mountains worshiped at the town of Socaire to the north of Llullaillaco, it has been suggested that a system of radial lines similar to the Cuzco *ceque* system existed there (cf. Mariscotti 1978:79–82; Sherbondy 1986:41, 66). One of the lines is shown to extend to Llullaillaco (Figure 8.12). However, sight lines alone would not constitute a *ceque* system because it is difficult to find traditional mountain villages anywhere in the world that did not consider some of the peaks around them to be sacred—and the drawing of lines toward them would create only a superficial appearance of a *ceque* system.

In Cuzco, the system was far more complex—with the number of lines and the sites along them being utilized in the organization of social groups, the order of making offerings, and the distribution of water rights. Some of the lines have been demonstrated to also have served calendrical purposes (Zuidema 1964). Finally, even if a simplified version of such a system existed at

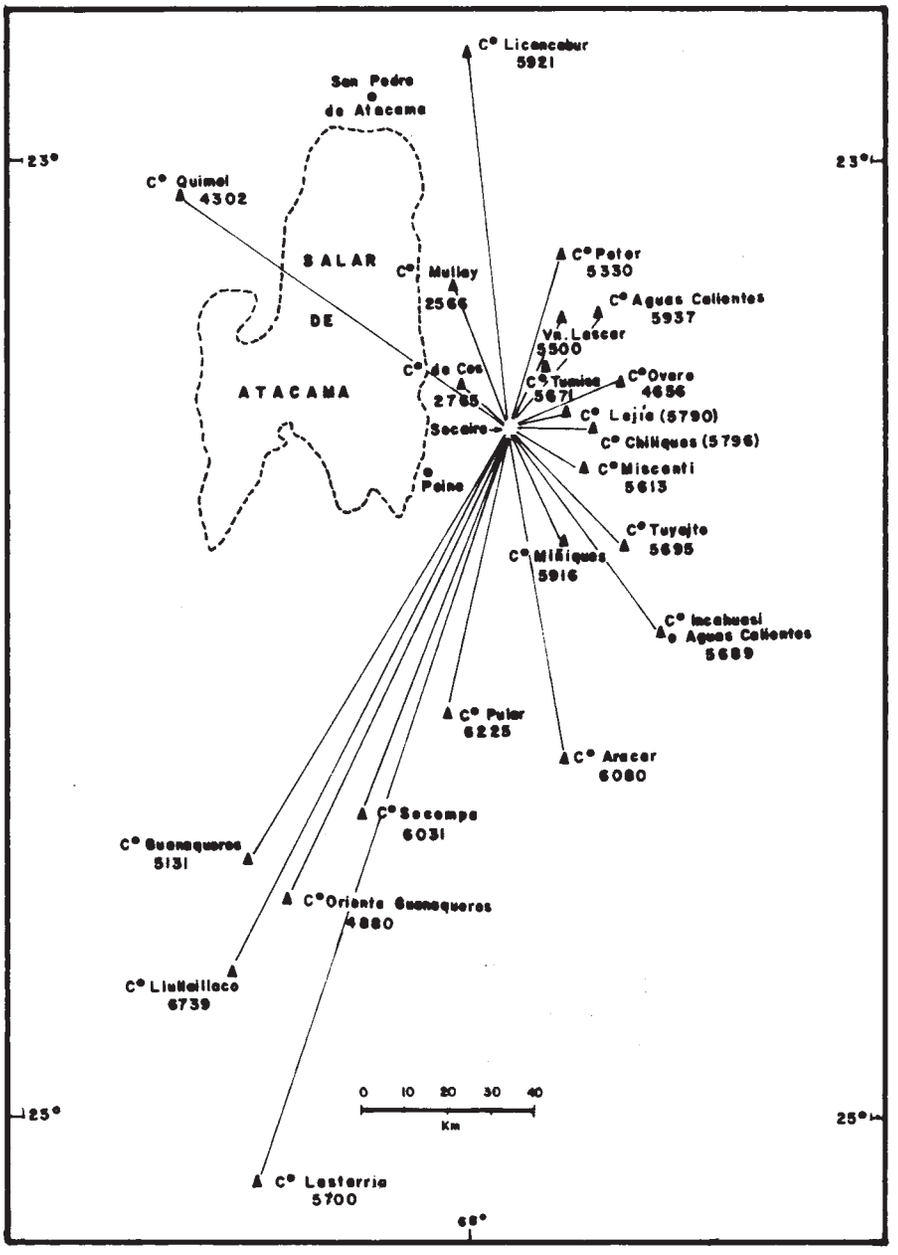


Fig. 8.12. A map of sightlines from the village of Socaire (Chile) to sacred mountains, including Llullaillaco, that are still being invoked in rituals for fertility (*from Sherbondy 1986*).

Socaire it is unlikely that it would have been a reason for Llullaillaco's importance.

On the other hand, worship of Llullaillaco would likely have related at least in part to its central location relative to the caravans that passed close to its slopes along the north-south road not far distant west of the mountain (Figure 1.20). Mountains were worshiped as owners and protectors of livestock (Duviols 1974–1976:282). They still are believed to be responsible for their fertility over a wide area of the Andes today (cf. Casaverde 1970:141; Martínez 1976:278; Reinhard 1985a:311).

Reinhard was told in the villages of Camar and Socaire not far to the north of Llullaillaco that mountains in the region were worshiped for the protection of the herds, especially when they passed near the peaks. We know that mountains were generally worshiped by men leading caravans as they came within

their vicinity—in the Inca period (cf. Duviols 1974–1976:282) and in recent times (cf. Lecoq 1987:14; Nachtigall 1966:279). Llullaillaco would have been no exception, being the highest mountain located along hundreds of kilometers of desert caravan routes.

One of the economic reasons for the Inca penetration of the region has been thought to be the exploitation of minerals (Llagostera 1976:215; cf. Raffino 1981:234). The north-south Inca road to the west of Llullaillaco may have been built for this reason, especially with regard to the transportation of turquoise and copper from the south (Niemeyer and Rivera 1983:155; cf. Vivar 1987:75). Although no evidence has been found that the Incas had mines on Llullaillaco, gold, copper, and turquoise appear to have been mined in the Salar de Punta Negra region during the Inca period (Lynch 1990:224). Mountain deities were perceived as the owners of minerals in the times of the Incas (Cobo 1964 v.2:166), as they are still perceived in many parts of the Andes today (cf. Casaverde 1970:142)—including in areas not far distant from Llullaillaco (Nardi 1967:251). Llullaillaco's dominating position in the region could have led to its being conceived as the ultimate owner of the minerals, in that in the Andean worldview lower peaks are usually believed to be under the domain of the high snow mountains (cf. Ceruti 2008; Reinhard 1985a, 1985b).

In summary, there are a number of reasons the Incas and local inhabitants could have perceived Llullaillaco as an especially significant part of the sacred landscape. Not least of these would have been its association with the control of weather and water, and thus the fertility of crops and animals. It also held a dominating position relative to the main north-south road and thus with trade. Its association with mineral activity would likely have played a role, as would its having been an active volcano. Given the evidence from other mountains, where more information is available, Llullaillaco may well have been perceived as a protector deity and as a place of origin of indigenous peoples.

Llullaillaco's great altitude would have reinforced the perception of it as an axis mundi uniting the underworld, the earth, and the sky—wherein the celestial phenomena were themselves seen as deities. By building a ritual site on the summit and making powerful offerings, the Incas would have essentially gained economic, political, and religious control over a vast region in the southern part of their empire.

SACRED LANDSCAPE AND PRE-INCA CULTURES OF THE ANDES

Llullaillaco has provided information that helps increase our understanding of beliefs and practices that were found throughout the Andes at the time of the Spanish conquest. However, the Inca Empire was itself the result of cultural developments that had taken place for more than two millennia previously. During the pre-Inca period, among the cultures that especially stand out are the Chavín, Nazca, and Tiahuanaco (Tiwanaku). This is primarily due to archaeological remains that have survived to the present day, including massive stonework requiring superior engineering skills and complex social organizations.

All three cultures have religious sites that have been considered among the great mysteries of South American archaeology. Fundamental questions remain as to why they built ceremonial structures where they did and what they meant. Research undertaken in recent years has shown that the main centers of these cultures can be better understood when examined using the perspective of sacred landscape (cf. Aveni 2000; Burger 1992a; Kolata and Ponce 1992; Reinhard 1985b, 1987a, 1988, 1990a, 1991, 2002b), and it is to this topic we now turn.[3]

Chavín

In a remote area of the central Peruvian Andes, a religious center was built three millennia ago that was to become one of the most important archaeological sites in South America. The ruins of Chavín de Huantar especially caught the attention of the Spanish because they clearly predated the Inca, and yet they were well built and extremely complex—involving an elaborate system of tunnels within a man-made pyramid. Later this center gave its name to a culture and style of iconography that came to be found over a vast area of the central Andes. The Chavín culture lasted about 1,000 years—longer than the Roman Empire.

Chavín de Huantar was one of the most important centers in the Andes at the beginning of the first millennium B.C., and its iconography eventually spread over much of north-central Peru. The site is located on the east side of the Cordillera Blanca at 3,135 m (10,285 ft) amid rugged mountain terrain (Figure 8.13). It has been well documented and is visited yearly by thousands of tourists. However, it is still unclear what the site meant or even why it was built where it was.

Fig. 8.13. A view over Chavin de Huantar (bottom center), Peru, with the mountain Huanstan in the background.

At the time of the Spanish conquest, mountain worship played a prominent role in the religious beliefs of people living near Chavín de Huantar. In the 1500s, the most important deity of the people who lived on the west side of the Cordillera Blanca was Huascaran, Peru's highest mountain [Albornoz in Duviols (1967:30)]. An important reason for Chavín de Huantar's location must have been due to its lying at the foot of one of the highest mountains of the Cordillera Blanca, Huantsan [6,395 m (20,981 ft)].

This mountain is near the origin of the Mosna and Santa Rivers that flow by it on the east and west, respectively—one to reach the Pacific Ocean and the other to eventually enter the Amazon and thus to the Atlantic Ocean—making it and Chavín de Huantar a geographic and symbolic center with regard to water circulation (Reinhard 1985b, 1987a). Indeed, villagers still make offerings to Huantsan to provide them with water for crops and for the fertility of livestock.

Although the Spanish chroniclers wrote little about religious beliefs and customs in the region of Chavín de Huantar, it is highly likely that Huantsan was the most important mountain worshiped by the people living near it. Huantsan is the highest mountain and dominates the eastern side of the Cordillera Blanca even more than it does the western, where it was the sacred mountain of the indigenous people during the early 1500s (Hernández Principe 1923:34). Offerings are still being made to Huantsan and other mountains near Chavín de Huantar to increase the number of livestock and the fertility of crops. These deities are perceived to continue to have an active role at the Chavín site.[4]

When viewed in economic terms, the location of Chavín de Huantar may have been selected due to its lying between the coast and tropical forest regions and thus serving as an apt place for being part of a trade system—as some scholars have noted (cf. Burger 1992a:277; Lumbreras et al. 1976). It is situated at one end of the easiest pass through the Cordillera Blanca. Of course, economic functions do not rule out religious ones. Mountain deities were (and still are) widely believed to be responsible for success in trade.

Chavín de Huantar is also on the fertile eastern side of the Cordillera Blanca, and its location is especially favorable for rainfall agriculture (Burger 1992b:128–129). Thus, the area supplies a reasonable subsistence base while at the same time being at the foot of the highest mountain that is nearest to the origins of the Mosna and Santa Rivers. Elaborate channels were built through the ceremonial complex of Chavín de Huantar so that water originating from the melting snows of Huantsan could be used for ritual purposes (Lumbreras et al. 1976:9–10). Rivers whose source is in a powerful mountain are still widely seen to partake of the mountain's powers, and river confluences (such as found at Chavín de Huantar) are sacred places in their own right (Burger 1992a:275).

The association of mountains, water, and fertility and the persistence of this belief throughout the Andes suggests that a Chavín religious cult spread due to its conforming with religious concepts already held throughout the Andes (Reinhard 1985b, 1987a). This would explain the rapid spread of Chavín iconography, along with a reason it persisted over such a vast area of the Andes for a millennium—as well as why it influenced, even if only indirectly, two other great cultures that followed it: the Nazca and the Tiahuanaco (Tiwanaku).

Nazca

One of the best-known archaeological sites in South America consists of large figures and lines called geoglyphs, drawn on the desert surface near the town of Nazca in southern Peru. The geoglyphs are situated for the most part on the barren plateau between the Ingenio and Nazca River valleys near the foothills of the Andes (Figure 8.14). Some of the figures measure more than 100 m in length, and the larger of them can only be seen without distortion from the air.

Geoglyphs have been found in widely dispersed arid coastal valleys and plains elsewhere in Peru, as well as in northern Chile. These were not made by a single culture or in the same time span. Although at times impressive, none of the concentrations of geoglyphs can rival that found on the desert plain near Nazca in the quantity, variety, size, and elaboration of their forms.

Archaeologists have in broad terms answered the questions as to who made the geoglyphs at Nazca and when (Aveni 2000; Silverman and Proulx 2002). Aside from the dating of potsherds found on the geoglyphs, the approximate ages of some geoglyphs can be established based on similarities between them and designs on Nazca pottery with well-established dates. When all the evidence is examined, it is clear that people living in the region of Nazca constructed the geoglyphs sometime between 300 B.C. and about A.D. 700—with some lines possibly being constructed until the Inca conquest of circa A.D. 1475 (Clarkson 1990). However, for years a satisfactory explanation was lacking as to *why* they were made.

Fig. 8.14. Giant earth drawing (geoglyph) of a triangle on a plateau near Nazca (Peru).

The actual construction of the geoglyphs was not much of a mystery, as they were formed when stones with oxidized surfaces were removed and the light soil beneath them was exposed. The lack of rain has been a primary reason they have been able to survive until the present day. Although the plain is crossed by the dry courses of many streams, the placement of the geoglyphs indicates that they were built after the streambeds had formed and that no major climatic changes have occurred.

There is little direct evidence as to the beliefs held by the Nazca people, but archaeological remains, accounts in Colonial times as to traditional worship, present-day beliefs rooted in the past, a study of Nazca iconography, and an examination of the essentially unchanged ecological situation all help in interpreting what these ancient beliefs might have been and how they could have related the geoglyphs to the natural environment and to water and fertility. The mountains near Nazca are not the high snow peaks of the Central Andes. Nonetheless, the basic beliefs as to deities controlling meteorological phenomena appear to have been very similar. Many of these beliefs were held by people living in Nazca in recent times and figure in their legends (Reinhard 1988:14–21).

The earliest information we have describing the *huacas* (sacred places or objects) of the Nazca people at the time of the Spanish conquest comes from the Spanish priests Albornoz and Acosta writing in the late 1500s, as well as from Severino's account of 1623. Albornoz (in Duviols 1984:213) only mentioned one *huaca* for the Nazca people—a mountain. Acosta (1962:224) was told that the principal *huaca* of the ancient Nazcans was a mountain of sand that stood out amid the stone mountains near Nazca. This could only have been Cerro Blanco. Because Acosta was speaking of *ancient* Nazcans when he was there in the late 1500s, we can assume that this mountain was worshiped at least a few centuries earlier—probably the oldest direct evidence of religious beliefs at Nazca that exists.

In 1623, the priest Vicente Severino wrote down the testimonies of people at Nazca concerning their traditional religious practices. One man stated that there was no shrine in the village because the people went to worship on a mountain of sand called Moich, on the mountain Uracancana, and at springs (Reinhard 1988:18).

The only mountain of sand near Nazca is Cerro Blanco, whereas Uracancana (Uracangana or Huaricangana on some maps) is today used as the name of

one of the summits next to Cerro Tunga—part of the same massif. It would seem to be no coincidence that mountains and springs were listed together and that they were the most important places of worship to the Nazca people.

Remains of Inca structures that clearly served a ceremonial purpose have been found on the summit of Illakata (source of the Nazca River), whereas several pre-Hispanic ritual structures exist on and near the summit of Tunga. Seashells, common offerings for water, were scattered amid some of the ruins. Potsherds were identified as belonging to the Late Intermediate period (about 1000 to 1475 A.D.; Reinhard 1988:18), the time at which many of the lines were constructed and used (Clarkson 1990).

There is further evidence to support the Nazca lines as having played a role in mountain, water, and fertility beliefs. Ethnographic information concerning the use of straight lines in other areas of the Andes demonstrates that they were often related to mountain worship, primarily to obtain water (Reinhard 1988:22, 57–61). Of course, these cases do not constitute proof that straight lines were utilized in the same ways centuries earlier at Nazca. However, they at least are in accord with our understanding of Andean beliefs and customs—and they are among the few examples known to date of the traditional use of straight lines. They therefore provide valuable supporting data for any interpretation of the Nazca lines.

The combination of the association of line centers with water and the orientations of geometric figures with the water flow led Aveni to the conclusion that the Nazca lines as a whole were probably intended to be walked over as part of rituals related to the bringing of water to the Nazca Valley (Aveni 1990:112). Taken together, the evidence suggests that the vast majority of figures and lines found at Nazca can be interpreted in terms of a water or fertility cult (Reinhard 1988, 1992d).

Of course, the geoglyphs can be interpreted in many other ways. However, a substantial body of material exists that enables a theory to be developed relating mountain and fertility beliefs with geoglyphs. This theory allows diverse data to be explained in a logically consistent manner and is in accord with traditional Andean beliefs and practices. One thing at least appears to be clear: Any interpretation of the geoglyphs must take into consideration the ecological situation and the sacred landscape of the region.

Sufficient rainfall in the mountains to the east was critical to agriculture, the mainstay of the Nazcan economy. This rainfall would have produced surface water and fed the underground water table, which the ancient Nazca people utilized extensively. Ceremonies relating to the worship of deities that controlled weather must have been of prime importance to an agricultural people living in one of the world's most arid regions.

One of the reasons these giant desert geoglyphs have captured so much attention is precisely because there is no simple answer to why they were built. They could have served functions for which we are totally unaware, and they may well have served multiple ends. This does not mean, however, that we cannot come closer to a solution—as long as we utilize a theory that takes into consideration the economic and ecological realities the people faced and remains in accord with what we know of traditional Andean beliefs and customs.

Tiahuanaco

The monumental complex of structures at Tiahuanaco (Tiwanaku), Bolivia, constitutes one of the most impressive archaeological sites in South America (Figure 8.15). It is situated at 3,845 m (12,615 ft) about 20 km to the southeast of Lake Titicaca. Amid an urban center, large monoliths were used in making religious structures nearly 2,000 years ago. This urban ceremonial complex served as the center for a civilization that lasted nearly a thousand years.

An increase in agricultural production allowed for a surplus that enabled the people to devote time to the construction of the famous temples of Kalasasaya, Akapana, and Pumapunku. Although sites of Tiahuanaco origin are mainly clustered around the eastern half of Lake Titicaca, its influence extended over a considerable distance—including as far west as the Peruvian coast, as far south as the valleys of northern Chile, and beyond Cochabamba in Bolivia to the east.

Tiahuanaco has been extensively documented and has become a major tourist destination. However, it remains a mystery as to why it was built at such a high and barren location and what the structures mean. Beliefs relating to sacred landscape and mountain and fertility cults appear to hold the key to better understanding Tiahuanaco's location, function, and iconography (Reinhard 1985b, 1990a, 1991).

The Tiahuanaco region was no exception to the emphasis on mountain worship, and this continues to be the case to the present day. On the southwestern shore of Lake Titicaca, the most powerful deities of the

Fig. 8.15. Ruins at Tiahuanaco (Tiwanaku) in Bolivia, with the Sunken Temple (right) and walls of the Kalasasaya temple complex behind.

region are the high mountains—which are also believed to control meteorological phenomena. Worship is still performed today to these mountains for the fertility of crops and animals. Similar beliefs are found on the eastern shore of Lake Titicaca not far from Tiahuanaco. Mountains are believed to protect the fields, and ritual specialists chosen by the mountain gods are responsible for preventing hail and for producing rain (Buechler and Buechler 1971:93–96).

Offerings are still being made to mountain deities on the Island of the Sun in Lake Titicaca (Reinhard 1991, 1992b). This island was one of the most sacred places in the Inca Empire. Indeed, it was associated with the origin of the Inca in several myths. Today, two mountains are of special importance to the local inhabitants: Illampu and Illimani (cf. Girault 1988:23). These two are considered eternal gods and owners of the Earth. At the time of the Spanish conquest, people from the ancient provinces of Lupaqa and Pacajes—which bordered Titicaca to the south and east—believed themselves to be descendants of the marriage between Illampu and Lake Titicaca. Another mountain invoked along with Illampu and Illimani in rites for rain on the Island of the Sun is Sajama, a high snowcapped peak to the south.

People living near Tiahuanaco still make offerings for rain from the summits of the nearby hills to the surrounding mountains, especially the snowcapped peaks such as Illimani. The popular climbing peak of Huayna Potosi [6,094 m (19,993 ft)] also figures prominently in local beliefs. It is the mountain named Cacaaca in an account of 1638 (Calancha 1974:1960) and was widely worshiped in the region of Tiahuanaco—especially to the north, where the Tiahuanaco ruins of Lucarmata and Pajchiri are located. In La Paz, Huayna Potosi is considered third in the hierarchy of mountain deities (*achachilas*)—behind Illimani and Illampu. It is counted among the five most important mountain deities worshiped in Tiahuanaco today (Girault 1988:23, 333), and is particularly believed to be a controller of hail (Carter and Mamani 1982:100, 289).

Weather has been a primary concern of people of this region, in that hailstorms have destroyed crops of entire communities, frosts have killed livestock and crops, and violent electrical storms have killed people. Hardly a rainy season passes without lightning causing deaths of people and livestock in the region. In villages

east and southeast of Tiahuanaco, people who survived being struck by lightning were viewed as having been selected by a mountain deity to become ritual specialists (*yatiris*) (Reinhard 1990a:157–158).

It is likely that the ceremonial center at Tiahuanaco was primarily concerned with the fertility of plants and animals, especially involving rituals to control meteorological phenomena. But why was it built where it was? Among difficulties such as high altitude and climate was the need to haul huge stone blocks from several miles away. The answer may be especially due to its relation to four geographical features: the mountains Sajama, Illampu, and Illimani, and Lake Titicaca.

Illimani has had such a dominant role in traditional religious beliefs that it is found associated with mountains as distant as Tata Sabaya, some 300 km to the south. It was the sacred mountain referred to in 1586 as being one of the most widely worshiped deities in this area (Cabeza de Vaca 1965:346; cf. Calancha 1974:1960). This should come as no surprise, for at 6,462 m (21,200 ft) it is the highest mountain between the ocean to the west and the Amazon basin to the east.

Although not a mountain, Lake Titicaca is a sacred geographical feature that has played (and still plays) an important role in Andean cosmology. In addition to the aquatic resources it supplied, extensive reclamation of land during the Tiahuanaco period from the marshy areas near Lake Titicaca allowed for intensive agricultural production that provided for a population of some 40,000 people (Kolata 1987:38). This land was in turn only available as long as rain, controlled by the weather gods, did not cause the level of Lake Titicaca to rise significantly or the rivers to flood the agricultural land. Indeed, cycles of droughts and flooding of this land may have been a factor in the as-yet-unexplained decline of Tiahuanaco as a ceremonial center at the end of the first millennium.

During the Inca period, Lake Titicaca was perceived to be an inland sea connected to the ocean—mother of all waters (Earls and Silverblatt 1978:304). From its depths emerged the Inca creator deity Viracocha. People still believe that Lake Titicaca (Figure 8.16) is involved in bringing rain and that it distributes the water sent by the mountain deities (Reinhard 1992b; cf. Tschopik 1951:197).

The lake clearly was of religious importance to the people of Tiahuanaco, as is shown by the majority of their temples having been built near it. Tiahuanaco

Fig. 8.16. Lake Titicaca and the village of Challapampa on the Island of the Sun (Bolivia), with Illampu and Ancohuma in the background.

ritual items have also been found on the Island of the Sun and the Island of the Moon (Bauer and Stanish 2001), and Tiahuanaco offerings were found on an underwater ridge near the Island of the Sun (Reinhard 1992b). There can be little doubt that Lake Titicaca played a dominant role in Tiahuanaco economic-religious concepts.

Tiahuanaco is built on the only location near a river in a valley connected with Lake Titicaca (from which the summit of Illimani is visible) that maintains a rough north-south line with the important sacred mountains of Illampu and Sajama. If the site had been built more to the west, this would have placed it in land susceptible to flooding—and if built farther to the east the view to Illimani would have been blocked by lower hills. This location might also explain the orientation of the famous Akapana and Pumapunku pyramidal structures toward Illimani.

Tiahuanaco was situated amid the most powerful traditional deities of a vast region, all of which still play important roles with regard to water, weather, and the fertility of crops and animals. Tiahuanaco was not considered by traditional peoples to be at the "middle of the world" at the time of the Spanish conquest for nothing. It was located in broad terms at a geographical and symbolic center between the ocean and the Amazonian lowlands. Its specific situation was associated with Lake Titicaca, the largest body of water in the Andes and believed to be connected to the ocean—the origin of all water. It was situated in the center of the highest peaks in the region. These elements taken together make it clear that the site was chosen with care and that is was based on beliefs fundamental to Andean culture (Reinhard 1985b, 1990a, 1991).

Summary: Andean Mountains and Deities

The belief that deities controlling meteorological phenomena resided in mountains has proven to be an ancient concept in the Andes, long predating the rise of the Incas. In addition being noted in the earliest written records, the belief is based on ecological facts that would have been clear to anyone living in the Andean region. As we have seen, mountains do control meteorological phenomena. Rainfall, snow, clouds, lightning, and thunder often originate in the mountains—and they are the sources of the rivers so vital to the local economies.

Of course, mountains are also physically dominating elements in the natural environment of Andean peoples and form obvious points of contact between earth and sky. Their connection with the underworld—through craters, caves, lakes, and water running beneath the surface—would also not have gone unnoticed. The symbolic significance of a mountain as uniting the three levels of the world—the underground, the earth, and the sky—is not just confined to the Andes but is common in many other regions of the world, as we shall see.

In the Andes, the mountain came to be one of the most significant elements in the conceptual system relating to the circulation of water through the subterranean, terrestrial, and celestial spheres. Whatever the initial source of water, mountain deities were usually the main controllers of it. They thus were the ones who directly affected the crops, animals, and—in the end—people. The mountains thus required that traditional Andean peoples worship them. The rise of well-organized and complex cultures—such as those of Chavín, Nazca, and Tiahuanaco—led to the construction of ceremonial centers associated with sacred landscape, which included some of the most impressive sites of the ancient Andes.

BEYOND THE ANDES

The focus of our study has been on the role of mountains in Andean cultures. However, the Andean peaks are not alone in being important to indigenous peoples—in that this is generally the case throughout the world wherever mountains dominate the landscape.[5] To help illustrate this point, we present a brief summary of beliefs and rituals found in the Mesoamerican and Himalaya regions—the latter containing the world's highest mountains and located on the opposite side of the globe. This will also serve to place the Andean material within a broader context and underscore the accomplishments of the Incas in having constructed ceremonial sites at such great heights.

Ancient Mesoamerica

Many parallels can be found between the beliefs and practices of the Incas and the great cultures of Mesoamerica, especially the Aztecs (cf. Broda 2001:305–311). Here we will only briefly deal with aspects of Aztec religion.[6] Despite similarities that exist and the fact that they were contemporaneous with the Incas, no evidence has been found of direct contacts between these two cultures—and marked differences existed.

Fig. 8.17. The Aztec sacred mountain Toluca (Mexico) and the lakes of the Moon (left) and the Sun.

The Aztecs were one among a number of groups that settled in the central valley of Mexico surrounded by the volcanoes of Popocatepetl, Iztaccihuatl, and Toluca. They founded the capital city of Tenochtitlan on an island in a lake and gradually subdued the local inhabitants, rapidly developing a highly organized empire. Like the Incas, the Aztecs had rain/weather gods (especially Tlaloc) as their principal deities and worshiped them on the highest mountains (Townsend 1992:132–154).

Human sacrifice was a vital part of the religious life in ancient Mesoamerica, and this was particularly the case under the rule of the Aztecs (cf. Graulich 2003). Although the Aztecs made offerings for good weather, rain, and the fertility of crops, human sacrifices occurred on a much larger scale than was the case for the Incas—and unlike the Incas these sacrifices involved the removal of the hearts of the victims atop pyramids, themselves symbolically representing mountains (cf. Boone 1991:145; Sandstrom 2005:55; Townsend 1982:61). Sacrificial techniques were perfected to such an extent that hearts could be extracted while still beating. The dramatic quality of these sacrificial events, visible to the public, helped reinforce the power of the Aztecs in the minds of their allies—and their potential rivals (González 2003:43).

Less known, however, is that the Aztecs performed sacrifices of children on high volcanoes to call rain at the end of the dry season (cf. Broda 2001:299). Sacrificial techniques applied to the victims included the slitting of their throats, as described by the chronicler Diego Durán (1971:159), and the excision of the child's heart (Sahagún 1985:77).

The summit of Mount Tlaloc (named after Tlaloc, the Aztec deity of rain and agriculture) became a monumental shrine at which sacrifices of children were presented by the Aztec emperor and allied rulers to invoke rain (Durán 1971:155–160). At 4,125 m (13,533 ft), Mount Tlaloc is the highest peak in the northernmost section of the Sierra Nevada—which divides the valleys of Mexico and Puebla (Townsend 1991:26). Ethnohistorical references about the temple atop Mount Tlaloc include the detailed description provided by Fray Diego Durán (1971:155–160), who characterized the sacred precinct as a huge square courtyard surrounded by a wall and containing an

inner roofed structure that sheltered a statue of Tlaloc (cf. Iwanisewski 1994:160). This deity was surrounded by smaller statues representing other mountains in the region (Durán 1971:156). The importance of Mount Tlaloc was vividly demonstrated by the fact that "…all the great men of Mexico—knights, lords, and nobles—came to the great celebration on the mountain" (Durán 1971:156). The Aztec lords were directly involved in the presentation of sumptuary offerings at the summit site.

Evidence of sacrificial ceremonies dating to the period of the Aztecs has been found high on the slopes of the great volcanoes surrounding the heart of the Aztec Empire: Popocatepetl [5,465 m (17,930 ft)], Iztaccihuatl [5,230 m (17,159 ft)], and Toluca [4,691 m (15,390 ft)]—the second, third, and fourth highest mountains in Mexico (Montero 2004). Invited by local archaeologists Arturo Montero and Victor Arribalzaga (Ceruti n.d.a.), in 2005 Constanza Ceruti visited the summits of Iztaccihuatl, Toluca, and Tlaloc.

In 2007, a team of archaeologists that included Johan Reinhard recovered Aztec offerings to Tlaloc from the sacred lakes of the Sun and the Moon (Figure 8.17) high on Toluca (Montero and Junco 2008). However, to date no human remains from Aztec sacrificial ceremonies have been found on or near the summits (cf. Iwaniszewski 1986; Montero 1992, 2004). This absence of bioarchaeological remains may limit the potential of interdisciplinary research for Mesoamerican high-altitude archaeology, but it does not diminish the primary importance mountains played in Aztec religion and cosmology.

The Sacred Himalayas

Close to a billion people believe the Himalayas to be sacred, and these include followers of two of the world's major religions: Buddhism and Hinduism. Members of the Jain, Sikh, and Bon religions also worship them. Nowhere in the world does a mountain range figure so prominently in the religious beliefs of such a large and diverse population. For these people, the mountains are the dwelling places of deities and saints—and for many they are the very embodiments of the gods themselves (Reinhard 1987b).

Such beliefs date back thousands of years, being noted in the oldest legends and epics. The Mahabharata was reportedly composed more than 2,500 years ago, and it makes clear the sacredness of the Himalayas. Furthermore, mountain worship must predate the development of the currently established religions—in that mountains have always been worshiped by the traditional indigenous peoples living near them. We know that tribes throughout Asia believed mountains to be inhabited by spirits. For example, the Lepchas (original inhabitants of Sikkim) were widely known to have worshiped the mountains prior to the influence of Buddhism—and they continue to do so (Foning 1987:28, 301; Gorer 1967:238).

Throughout the Himalayas, we find a common ground for such worship. The mountains influence weather and are the sources of rivers. Due to their dominating positions, they unite the earth and sky and are perceived as the guardians of the land, the people, and the animals within their domains.

According to Tibetan Buddhist beliefs, mountains were the most important of the pre-Buddhist deities (cf. Blondeau 1998; Blondeau and Steinkellner 1996; MacDonald 1997). As Huber (1999:21) noted, "Mountains have, without a doubt, been the most venerated and culturally significant feature of the Tibetan landscape throughout space and time." They were the warrior-protector gods, and the original kings of Tibet were closely associated with them (Dowman 1997:11; Samuel 1993:177–182; Stein 1972:42).

When Padmasambhava established Buddhism in Tibet during the eighth century, he is believed to have defeated these deities and turned them into protectors of the Buddhist doctrine—an obvious means of syncretizing the new and old religions (cf. Karmay 1996:69; Pommaret 1996:53; Samuel 1993:169–170; Tucci 1980:164). Thus, several of the main protector deities of Tibet—such as Nyanchenthangla, Amne Machen (Machenpomra), and Tshering Mchedlnga (the "Five Long-Life Sisters," who sherpas associate with Mt. Everest)—reside in mountains (cf. Funke 1969; Nebesky-Wojkowitz 1993). Rituals are still being performed to persuade Padmasambhava to continue using his powers to divert the anger of the mountain gods (cf. Nebesky-Wojkowitz 1993:177–230).

Mountain deities in the Himalayas are believed to protect people against malevolent spirits, and shamans may call them when illnesses and other misfortunes occur (cf. Samuel 1993:195). Among many Tibetan Buddhists, these local deities (not the high gods of Tibetan Buddhism) are the ones called (cf. Tucci 1980:167). They provide spiritual empowerment during trances, and even Tibet's famous state oracles became possessed by mountain gods (Samuel 1993:194–195).

Whereas Buddhists tend to view the mountains as being individual gods in their own right, Hindus more

often claim them as associated in some way with major deities of the Hindu pantheon (e.g., as being places where they reside). In a survey of pilgrimage sites in India, Bhardwaj (1973:88) found that 83 percent of them are associated with hilltops or water. Virtually every major Hindu deity and saint has been associated in some way with the Himalayas. Thus, Mount Kailash is Shiva's principal home—and he lives there with his consort Devi (meaning goddess), who in a gentler form is Parvati (one "from the mountains") (cf. Bhardwaj 1973; Sax 1991). The mountain Nanda Devi is a manifestation of Parvati, and still receives considerable veneration in the region (Sax 1991).

Numerous of the most sacred shrines and pilgrimage sites of Hinduism (e.g., Badrinath, Kedarnath, and Amarnath) are located amid the Himalayas. For example, one of the most sacred shrines of the great god Vishnu is found at Badrinath—and the principal deified Hindu saints (*nathas*) are guardian spirits of mountains (cf. Bernbaum 1990; Bhardwaj 1973; Jha 1995; Reinhard 1987b; Sax 1991).

Due to its central importance in both Hindu and Buddhist beliefs, Mount Kailash is the most sacred peak in the Himalayas (Figure 8.18). Although only 6,715 m (22,031 ft) high, Kailash stands alone at a high point of the Tibetan plateau from which four major rivers of South and Central Asia originate: the Indus, Brahmaputra, Sutlej, and Karnali (Johnson and Moran 1989:12; Snelling 1990:49). Its religious importance is obviously linked to its being a major geographical center of South Asia. For Buddhists, Kailash is also the abode of the important protector deities Demchog and Dorje Phangmo and is associated with the great saints Padmasambhava and Milarepa—not to mention numerous other saints and deities (cf. Allen 1982; Johnson and Moran 1989; Snelling 1990).

Kailash came to be perceived as the physical manifestation of the cosmic mountain Meru (Johnson and Moran 1989:9), and this symbolized for many the axis of the spiritual universe and center of the universal *mandala* (cf. Huber 1999:28). The forms of Hindu temples and Buddhist *stupas* are believed to be based on the concept of this cosmic mountain (cf. Dowman 1997:223; Snodgrass 1985:266).[7]

The simplest physical manifestations of mountain worship can be seen in the mounds of stones decorated

Fig. 8.18. A Buddhist monastery near Mount Kailash (Tibet), one of the world's most sacred mountains.

with prayer flags. Such cairns are commonly found throughout the Himalayas on passes and on some mountain summits (cf. Snelling 1990). These are usually in honor of mountain deities in the Buddhist region (Mumford 1989:119; Stein 1972:206; Tucci 1980:210).

Animal sacrifice to mountain deities is still reported from areas of Hindu influence (Sax 1991:154), and even from some areas in which Buddhism has penetrated (cf. Nebesky-Wojkowitz 1993:214; Pommaret 1996:48). However, this is considered outside traditional Buddhist beliefs and practices (Mumford 1989:81–89). Needless to say (and in contrast to the Aztecs and Incas), human sacrifice has no place in such rites and does not appear to have played a role in rituals even before Buddhism spread throughout the Himalayan region over a millennium ago.

Although Buddhist cairns have been seen as high as 5,800 m (about 18,000 ft) in the Himalayas (cf. Johnson and Moran 1989; Snellgrove 1961; Snelling 1990), we are unaware of any major effort having been made to build ceremonial centers and bury important offerings at the high altitudes reached by the Incas. This may in part be due to the difficulty of finding technically easy routes up high Himalayan peaks. However, the Incas were also unable to reach some summits—yet they built sites at the highest points physically accessible on the mountains.

In the Himalayas, the summits themselves were (and, by many, still are) considered too sacred to be defiled by man's presence on them (Dowman 1997:148). This would have prevented ascents even where they may have been possible. In addition, reverence could be shown in other ways—such as by the tradition, particularly in Buddhism, of circumambulating a mountain (Snelling 1990). In any event, it is clear that (unlike the Incas) Hindus and Buddhists did not focus their attention on reaching high mountain summits in order make their offerings to the gods.

Despite the differences that exist between the peoples of the Himalayas, they all share a respect for the sacred mountains. These peaks are the homes of deities and saints believed to directly affect the well-being of hundreds of millions of people. They can be associated with crop and livestock fertility, environmental catastrophes, illnesses, climbing accidents, pilgrimage places, architecture, gods of major religions, protection of religious doctrines, and wildlife. Although now largely assimilated into Hinduism and Buddhism, the mountains still maintain their powers for the peoples of the Himalayas.

Summary: Mesoamerica and the Himalayas

Mountain worship in both the Himalayas and Mesoamerica is founded, just as in the Andes, on the ecologically sound concept that the mountains control weather and are the sources of the life-giving water. This explains why similar beliefs and practices can be found in so many mountainous areas of the world—far distant from the Andes and the Himalayas—including such diverse areas as North America, the Alps, the Near East, Africa, Southeast Asia, and Oceania (cf. Bernbaum 1990). It has existed for as long as the historical record exists, and it likely was important in prehistoric times dating to the Neolithic in Europe (Reinhard n.d.d.).

It should therefore be no surprise that mountains are invoked in rites for many economic activities, both among pastoralists and agriculturalists. The principal concerns of most traditional peoples relate to economic productivity, and in each of the three regions discussed here there exist complex belief systems that integrate the use of various features of the physical environment with deities believed to control them.

In the Andes, Mesoamerica, and the Himalayas a syncretism between local traditions and major religious systems has taken place—without, however, drastically changing earlier perceptions of the sacred landscape. The comparative study of sacred landscapes is only just beginning, but the results of such work will not only assist in a better understanding of the interaction of peoples within their specific geographical surroundings but deepen our appreciation of man's place in the global environment shared by us all.

NOTES

1. The correlation of Inca ceremonial sites with astronomical phenomena has been examined in several publications (cf. Bauer 1998; Bauer and Dearborn 1995; Beorchia 2001a; Hyslop 1990; Moyano 2005; Reinhard 2007a; Reinhard and Ceruti 2006; Urton 1981), and further research may result in findings that alter this conclusion.

2. Human sacrifices reportedly took place in Cuzco when especially important events occurred in the life of an Inca emperor, such as his coronation or his death (cf. Cobo 1990:111–112). However, there are no written documents suggesting that this might have been a reason for the human sacrifices that took place on the summit of Llullaillaco.

3. For other pre-Inca cultures that have been examined drawing on the sacred landscape perspective, see Benson (1972), Bourget (1994), Glowacki and Malpass (2003), Reindel

(1999), Reinhard (1985b, 1987a, 1998c, 2005), Sakai (1998), and Zapata (1998). Research about pre-Hispanic cultural landscapes will always involve an element of interpretation. In recent years, archaeologists have become more explicit in the theoretical approaches they have applied to the study of archaeological sites and assemblages and there has been an increase in the number of those considered "interpretive" (cf. Dark 1995:10; Hodder 1999:5; Johnson 1999:98–107). However, archaeologists agree that whatever approach is utilized there remains the same need for scientific rigor in the collection of data and the recognition that any theory about ancient cultures needs to be compared with others and judged based on its comparative strengths and weaknesses (cf. Hodder 1991:21–22; Johnson 1999:172; Jones 2002:21–22).

4. For example, in 1945 a lake formed by the melting snow of the Huantsan peaks broke its earth barrier and swept down the Wachektsa River to flood the Chavín ruins and cover them in mud (Lumbreras 1970:57–58). Many inhabitants believed that Huantsan caused the flood to stop archaeologists from taking away a famous stone image, the Lanzon.

5. For an overview of beliefs about mountains throughout the world, see Bernbaum (1990).

6. For studies of mountain worship in central Mexico—especially among the Aztecs—see Albores and Broda (1997); Broda, Iwaniszewski, and Montero (2001); Carrasco (1990 and 1991); Glockner 1996; and Montero (2004). The interested reader can find information about the importance of mountain worship, weather gods, and human sacrifice among the Maya in Boone (1984), Brady and Prufer (2005), Coe (1980), and Friedel, Schele, and Parker (1993).

7. Mountain symbolism can also play a role in less obvious ways. For example, one yogic exercise is to imagine the spinal column to be one with Mount Meru—thereby gaining one a strengthening of earth consciousness (cf. Snodgrass 1985:179).

Chapter Nine

Conclusions

"The bodies of Inca child sacrifices preserved by the elements on high Andean mountains are among the most important—as well as the most informative—human remains that have come to us from the past."

—Paul Bahn, from *Written in Bones: How Human Remains Unlock the Secrets of the Dead*

The increase in archaeological research over the past few decades in northwestern Argentina (and adjacent areas of Chile and Bolivia) has demonstrated that the Incas were far more active in the region than had been previously known. Indeed, there was a comparatively greater intensity of state installations built there than on Peru's north coast and in southern Ecuador. The Incas constructed provincial centers; expanded agriculture, mining, and herding; and settled colonists brought from Peru (Figure 9.1)—while establishing their presence in the southern part of their empire (D'Altroy et al. 2007:87, 120). As we have seen, a key part of this process included building ceremonial sites on landscape features (especially mountains) considered sacred by indigenous inhabitants.

The Inca archaeological complex on Llullaillaco was one of the most important high-altitude shrines in the southern Andes. Among the reasons for this would surely have been the fact that it is the only volcano in the region to have snow prominently visible the entire year. This feature would have contributed to the belief that the mountain was a provider of water—a strong reason to conceive Llullaillaco as a deity that controlled weather and the fertility of crops and animals in the area. Llullaillaco's great altitude and prominent visual presence would have reinforced the perception of it as an *axis mundi*, uniting the terrestrial world with that of the sky. Other factors would likely have added to this volcano becoming a particularly important part of the sacred landscape, such as its dominating position relative to the two main north-south roads and thus with caravans, mining, and trade.

The archaeology of Llullaillaco has proven to involve more than just a few groups of structures on its slopes. It is part of an articulated series of sites connected with the Inca road system that required considerable labor and planning for its construction. In their drive to reach the summits, the Incas demonstrated that they had solved many of the basic problems associated with high mountain ascents—such as the use of intermediate camps, the stockpiling of supplies, and the development of strategies to deal with high altitudes and severe climatic conditions. These solutions did not evolve in the Western world until some 400 years later.

The finds on Llullaillaco's summit included three naturally mummified children and more than a hundred artifacts. The frozen bodies and sumptuary offerings significantly increase our knowledge of the religious practices and beliefs of the Incas, thanks not only to

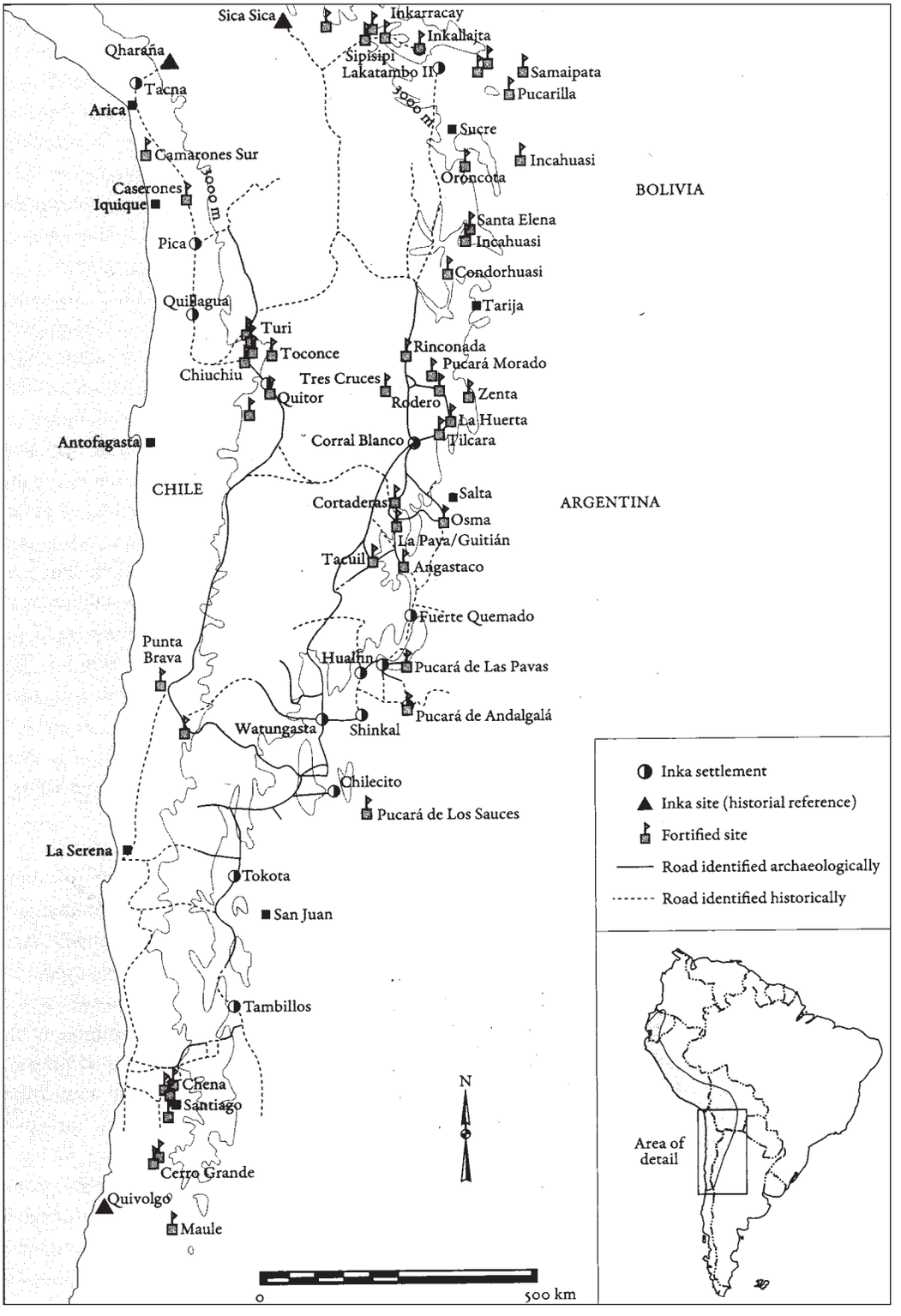


Fig. 9.1. Inca roads and sites in the southern part of their empire (*from D'Altroy et al. 2007*).

their excellent preservation but to their having been documented in their original contexts. Thus, they provide insights into the actions of the participants and the meanings of the items and structures involved in the ceremonial complex as a whole. These can be compared with historical documents to assist in interpreting the archaeological materials, even as they illuminate the historical accounts.

Ceremonial complexes on summits such as Llullaillaco have allowed for a better understanding of the Inca presence in the periphery of the empire, in that many artifacts of pure Inca origin have been found at these sites—whereas only few well-preserved Inca religious structures exist at lower altitudes, as a consequence of looting and depredations throughout the centuries. The study of the high-altitude sites helps scholars gain further insights into Andean beliefs and practices related to mountains—and above all leads to an examination of the key role played by sacred geographical features in Inca religion, economics, and politics.

Several chroniclers described the *capacocha* children from local communities going first to Cuzco, capital of the Inca Empire, and afterward either sacrificed in Cuzco or sent on to sacred sites in other parts of the empire. The delivery of the offerings from Cuzco was part of a redistribution strategy, which involved the collaboration of local rulers and the hierarchies of the sacred places in the region (cf. Andrien 2001:130). The movement of persons and items from the heart of the Inca world toward the provinces was framed in the context of a state-controlled pilgrimage that contributed to the integration of territory, the sacralization of the landscape, and the intensification of the economic, political, and religious links between the center and the periphery of the empire (cf. Bauer and Stanish 2001:22; Duviols 1976:29–33; MacCormack 2000:112; Reinhard and Ceruti n.d.; Sallnow 1987:39).

The climax of the *capacocha* ceremony often took place at mountaintop shrines, where the chosen children would be sacrificed and buried as messengers to the local deities and as tangible manifestations of the newly imposed state religion (Figure 9.2).[1] The Incas certainly would have worshiped on Llullaillaco's summit the main deities associated with the state, such as Inti (the Sun) and Illapa (the weather god), while simultaneously acknowledging the sacredness of the mountain. The sanctification of natural features of the landscape was in keeping with pre-Inca and with non-Inca

Fig. 9.2. An artist's depiction of a ceremony on the summit of Llullaillaco *(painting by Yeorgos Lampathakis, courtesy of the National Geographic Society)*

cultures, as well as with the original conceptions of the Incas themselves before they began to expand their empire outside the region of Cuzco.

The vast majority of the most important traditional deities of the ethnic groups inhabiting the Andes at the time of the Spanish conquest were associated with features of the landscape [cf. Albornoz in Duviols (1984); Guaman Poma 1980]. This is in accord with what we would logically expect, given the differing customs, languages, ecological surroundings, and so on of the groups. However, due to the Spaniards' focus being on Inca imperial religion the impression was mistakenly left that it *was* Andean religion (cf. D'Altroy 2002:143). This has obscured the overriding importance of landscape features among the ethnic groups living within the Inca state—and indeed led to underestimating their significance among the Incas themselves (cf. Reinhard 1985a, 2005, 2007a).

Ancestor worship also played an important role in indigenous religion, especially at the family and lineage level. Public worship of the great regional deities (such as mountains) was easier for the Spanish to destroy (or at least limit), but it proved more difficult to prevent individuals and families from making less-public offerings to them and from worshiping their ancestors. Long after the initial campaigns to exterminate Andean "idolatry" had ended, Spanish priests were writing reports about their having to confront ancestor worship—especially as manifested in the veneration of mummies (cf. Duviols 1986).

These accounts also tended to obscure the importance of sacred landscape, just as a focus on imperial religion had done immediately following the Spanish conquest. A closer look at historical documents and archaeological ritual sites has only recently begun to correct this imbalance in our understanding of Andean religion as a whole, and within Inca culture in particular.

Some scholars (e.g., Demarest 1981) have hypothesized that in the Andes there was originally a single generalized deity with multiple aspects. The evidence suggests, however, that the concept of a generalized deity only arose with the state and in the case of the Incas was used as a means of incorporating many diverse gods under more inclusive deity concepts—such as Inti (the Sun), Viracocha (the creator god), and Illapa (the weather god) (Reinhard 1985a:306).

Pilgrimage centers, such as those on Llullaillaco, were constructions ordered to be built by the Inca elites—and therefore they helped perpetuate class distinction, political authority, and ideological support of the existing social order (cf. Bauer and Stanish 2001:245–248). Thus, even without the Spanish conquest and their introduction of Christianity it is no surprise that the collapse of the Inca Empire meant the end of the *capacocha* pilgrimages.

The archaeological and bioanthropological materials recovered from Llullaillaco provide possibilities for research to be carried out by a variety of scientific specialties, including those as diverse as ornithology, pollen analysis, and parasitology (cf. Aufderheide 2003; Aufderheide and Rodriguez-Martin 1998; Ceruti et al. 2009; Cockburn et al. 1998). As of 2008, publications and reports have been produced in the fields of ancient DNA analysis (Castañeda 2000, McKenney 1999; Wilson et al. 2007; Woodward et al. 2009), microbiology (Arroyo 1999), paleopathology (Lynnerup et al. 2005; Previgliano et al. 2003), odontology (Arias et al. 2002), prehistoric diet (Brown et al. 2008; Cartmell 2002; Wilson et al. 2007), textile analysis (Abal 2001a, 2003), and pottery analysis (Bray et al. 2005). The results of these studies are to be compiled in a future volume. Because science and technology are continually evolving, the potential of new discoveries to be made from the Llullaillaco material—and especially from the frozen mummies—appears to be limitless.

Frozen mummies present unparalleled opportunities for science because of their uniqueness, complexity, and the variety of knowledge they provide (cf. Bahn 2003:6). They allow a view into the past that cannot be obtained through any other means, including the scientific study of the best-preserved mummies found in other climates—such as in the deserts of Egypt and coastal South America. Thanks to extraordinary cell preservation and advances in technology that have resulted in the reanimation of frozen cells, the frozen mummies may one day enable *living* information from the mummies' cells to be recovered. Because of the Incas' practice of making human sacrifices at sites on high mountains, the Andes region is the only one in the world with a good chance of finding frozen mummies—assuming systematic work is conducted before they are destroyed by looting and lost to humanity forever.

Although research on frozen mummies adds to scientific knowledge, at the same time it raises awareness about the importance and the urgency of protecting the cultural patrimony of Andean peoples (cf. Ceruti 2004c, 2006c, 2007d; Reinhard 1996, 2005, 2007b; Reinhard and Ceruti 2000, 2005, 2006). The study of high-altitude archaeological sites has contributed to

bring government and public attention to the needs of indigenous communities.

High-altitude archaeology has made significant contributions to our understanding of the sacredness of Andean landscape. The documentation of the mountaintop shrines and the finds made at them has combined with the development of interdisciplinary studies on frozen mummies to add insights into fundamental aspects of Inca ceremonial life. In the case of Llullaillaco, archaeological research at the world's highest site—along with the unique finds made there—have helped deepen our knowledge of Inca civilization while contributing to the preservation of an invaluable heritage for future generations.

NOTE

1. According to some chroniclers, human sacrifices could not be done without the consent of the Inca emperor (cf. Ulloa 1965:330). In the final analysis, he was believed to be in control of the most important offerings to the gods and of the religious specialists who made them (cf. Guaman Poma 1980:253).

Appendix A

Descriptions of Llullaillaco Summit Offerings

The preliminary description of the Llullaillaco offerings in this appendix, as well as some of the interpretations about their social use and symbolic meaning presented in the text, were elaborated by Constanza Ceruti as part of her doctoral dissertation (2001) and originally published in Spanish in 2003 (cf. Ceruti 2003a). The artifacts are described and grouped according to types. The description is limited to the size and external morphology of the objects and does not include a description of the techniques involved in their manufacture. Quechua names are provided in parentheses.

Spondylus Shell Statues

Zoomorphic Spondylus Shell Statues

E-3 Camelid statue made of red and white *Spondylus* shell: 4.1 cm high, 3.5 cm wide, and 0.8 cm thick (with carved eyes and mouth).

NE-4 Camelid statue made of *Spondylus* red and white shell: 3.9 cm high, 2.8 cm wide, and 0.4 cm thick (with carved eyes and mouth).

S-9 Camelid statue made of red and white *Spondylus* shell: 2.1 cm high, 2.2 cm wide, and 0.4 cm thick (with carved eyes and mouth).

S-12 Camelid statue made of red and white *Spondylus* shell: 3.8 cm high, 3.2 cm wide, and 0.5 cm thick (with carved eyes and mouth).

S-20 Camelid statue made of red and white *Spondylus* shell: 3.2 cm high, 3.7 cm wide, and 0.3 cm thick (with carved eyes and mouth). The eyes are shaped as concentric rhombuses.

S-21 Camelid statue made of red and white *Spondylus* shell: 4.2 cm high, 3.9 cm wide, and 0.4 cm thick (with carved eyes and mouth).

S-26 Camelid statue made of red and white *Spondylus* shell: 3.8 cm high, 2.9 cm wide, and 0.5 cm thick (with carved eyes and mouth).

S-38 Camelid statue made of red and white *Spondylus* shell: 3.8 cm high, 2.8 cm wide, and 0.3 cm thick (with carved eyes and mouth).

Anthropomorphic Spondylus Shell Statues (Male)

NE-6 Male anthropomorphic statue with miniature textile clothing and plume of yellow feathers. Made of orange-red *Spondylus* shell, about 4 cm in size. Partially visible face, with carved eyes, nose, and mouth. It has a plume made up of two yellow feathers, tied with white thread set on a wooden stick. The statue is wearing a red tunic with a blue stripe and red-, yellow-, blue-, and green-trimmed borders. It also has on a white mantle with red- and blue-trimmed borders. A purple external stripe with fringe secures the mantle, wrapping around its top in three folds. The figurine is carrying a 3.5-cm red bag, with a central panel with yellow geometric motifs and two vertical stripes at both sides—on a yellow and greenish-gray background. The clothed statue is 6.5 cm high (8 cm including the plume) and 3 cm wide.

S-11 Male anthropomorphic statue, about 4 cm, made of red *Spondylus* shell with miniature clothing and a plume of black feathers. The face is only partially visible. The statue has a plume of black feathers, tied with white thread set on a wooden stick that is inserted inside the clothing. It is wearing a tunic with black and yellow vertical stripes, trimmed with multicolored broken lines or stripes. It also has on a brown mantle, 5 cm long, with black- and red-trimmed ornamental borders. A black cord with fringe secures the mantle, wrapping around it with five folds. The figurine is carrying a bag decorated with vertical brown, tan, and white stripes. The clothed statue is 5.2 cm high (10 cm including the plume), with a maximum width of 3.5 cm.

S-18 Male anthropomorphic statue, about 4 cm in size, made of red *Spondylus* shell and wearing miniature clothing and a plume of feathers. The plume consists of five pink feathers, tied with blue thread set on a wooden stick inserted beneath the blue cord (*llautu*) that is wrapped around its head (only the top of which is visible). The statue is also adorned with a cephalic silver ornament 1.4 cm in size. It is wearing a red tunic with red, yellow, black, and green edges—and a white mantle, 4.8 cm long, with red- and blue-trimmed borders. The figurine is carrying a 3-cm-long red bag, with a central panel of yellow geometric motifs and two vertical stripes on both sides. The first is black, and the second white with blue motifs. The clothed statue is 9 cm high (13 cm including the plume) and has a maximum width of 5 cm.

S-25 Male anthropomorphic statue, less than 3 cm long, made of red *Spondylus* shell and wearing miniature clothing with a plume of feathers. Its face is visible, with carved eyes, nose, and mouth. It has a plume of yellow feathers tied with red thread and set on a wooden stick that is inserted into the clothing. It is adorned with a golden cephalic decoration (*tupaqochor*), 1.3 cm in size. It is wearing a white mantle, which is 11 cm long—with black- and red-trimmed borders. A red external cord secures the mantle, wrapping around it at the top in three folds. The statue is 12 cm high (15 cm if the feather plume is included) and 4.5 cm wide.

S-35 Male anthropomorphic statue with miniature textile clothing and plume of yellow feathers. Made of red *Spondylus* seashell, it is about 4.5 cm high. Its face is only partially visible. It has a plume of yellow feathers, tied with white thread to a small piece of wood inserted into the clothing. It is wearing a checkered tunic (*uncu*) in white and black—with green-, yellow-, red-, and black-trimmed borders. It is also wearing a brown mantle (*yacolla*), which is 3 cm long—with black- and red-trimmed borders. A black external cord secures the mantle. The figurine is carrying a 2-cm red bag (*chuspa*), with black geometric borders around a central panel with yellow geometric designs. The clothed statue is 5 cm high (6.5 cm if the feather plume is included) and 3 cm wide.

S-40 Male anthropomorphic statue with miniature textile clothing and a yellow feather tuft. Made of red *Spondylus* shell, about 4 cm in size. Completely visible face, with carved eyes, nose, and mouth. It has a plume formed by yellow feathers, tied with red thread set on a wooden stick inserted into the clothing. It also has a cephalic golden decoration 1.3 cm in size. The statue is wearing a checkered tunic in blue and yellow (with blue and red horizontal stripes) and a 7.5-cm-long white mantle, with black- and red-trimmed borders. A red external stripe secures the mantle, wrapping around it at the top in three folds. The figurine is carrying a 3-cm-long red bag, with black geometric figures surrounding a central panel with yellow geometric motifs. The statue is 9 cm high (13 cm if the plume is included), with a maximum width of 5 cm.

Anthropomorphic Spondylus Shell Statues (Female)

E-13 Female anthropomorphic statue made of orange-red *Spondylus* shell, about 4 cm in length. It is wearing

a miniature cloth dress (*acsu*) and a headdress of yellow feathers. Only the top of the statue's head (with its typical hairstyle) is visible. The headdress is formed by a white woolen cap with feathers attached, from which a back panel extends down—ending in blue fringe. The back panel is completely covered with yellow feathers. The headdress is about 14.5 cm high and 10.2 cm wide, and has red feathers set at its end. The figurine is wearing a red dress with a black lower border decorated with geometric green, black, and yellow embroidered ornamental borders. It is also wearing a red and white shawl (*lliclla*) with yellow and black embroidered ornamental borders. The shawl covers the shoulders and extends over the upper half of the dress. Three gold pins (*tupus*) secure the clothing: two of them hold the dress, and a third secures the shawl. The dress is adorned with a red and black cord from which are hung two trapezoidal *Spondylus* shell pendants. A greenish, yellow, red, and gray belt is rolled up around the waist—holding up the clothing. The statue is 8.5 cm high (15 cm if the headdress is included) and 5 cm wide.

E-16 Female anthropomorphic statue made of red *Spondylus* shell, about 4 cm long—with a miniature dress and a headdress of white feathers. Only the top of the head is clearly visible. The statue has a headdress formed by a white woolen cap with feathers attached, from which a back panel extends down—ending in blue fringe. The headdress is completely covered with white feathers and is 13.5 cm high by 8.5 cm wide. It has orange feathers attached at its lower end. The figurine is wearing a dress with white, tan, and brown patterns. It is also wearing a brown shawl with a gray central panel and red, blue, yellow, and light-green embroidered edge. The shawl is about 7.5 cm high and 14.5 cm wide and covers the entire figurine. Two of the three silver *tupus* that secure the clothing are visible. The dress is adorned with a red and black cord from which two trapezoidal *Spondylus* shell pendants hang. A red, white, and black belt is wrapped around the waist—which serves to secure the clothing and the headdress cords. The statue is 9.5 cm high (15.5 cm if the headdress is included) and 5.5 cm wide.

E-27 Female anthropomorphic statue, about 3 cm in size, made of red *Spondylus* shell with a miniature dress and a feathered headdress. Only the top of the head is visible. A white woolen cap supports the feathers of the headdress. The headdress is 16 cm high by 9.5 cm wide. A back panel, completely covered with white feathers, extends down from it—ending in blue fringe. The figurine is wearing a brown dress with black stripes and pale brown ornamental borders. It also has on a brown shawl with a central gray panel and embroidered red, blue, and yellow ornamental borders. The shawl is 7.5 cm high and 14.5 cm wide and covers the entire figurine. Three silver *tupus* secure the dress, which is adorned with a red and black cord from which two trapezoidal *Spondylus* shell pendants hang. A red cord with green and yellow decorations is wrapped around the waist, and it secures the clothing and the headdress cords. The statue is about 10 cm high (16 cm if the headdress is included) and 4.5 cm wide.

N-3 Female anthropomorphic statue, about 6 cm in size, made of red *Spondylus* shell with a dress and a headdress of feathers. The face is visible and has carved eyes, nose, and mouth—and lines indicating a typical hairstyle. It has a headdress formed by a woolen cap with white feathers attached, being about 14.5 cm high and 10.2 cm wide. A back panel, completely covered with white feathers, extends down from it—ending in blue fringe. The figurine is wearing a brown dress with red and yellow panels, and geometric ornamental borders with yellow and black motifs. It also has on a white and red shawl, with two ornamental panels with yellow and black decoration and trimmed ornamental borders. The shawl is folded over the dress. The clothing has three silver *tupus* 3.4 cm long: two of them holding the dress and a third securing the mantle placed over the shoulders. The dress is adorned with a red and yellow cord from which two trapezoidal *Spondylus* shell pendants hang. A white cord coiled up at the waist secures the clothing, replacing the usual belt. The statue is 8.5 cm high (15 cm including the headdress) and 5 cm wide.

N-25 Female anthropomorphic statue, about 3 cm long, made of red *Spondylus* shell wearing a miniature dress. The face is only partially visible—with carved eyes, nose, and mouth and a typical hairstyle. It lacks the cephalic headdress of feathers. It is wearing a red dress with saffron inferior border, decorated with geometric green, blue, red, and yellow ornamental borders. The statue is covered in a folded shawl, with a plain central saffron panel and red lateral ones with geometric ornamental borders in yellow, red, and black. The shawl covers the upper half of the dress. Two gold and silver *tupus* secure the dress, and another secures the shawl that covers the shoulders. A red and yellow belt with geometric motifs and blue borders is wrapped around the middle of the dress. From it extend two braided cords that end in tassels and fringe. The statue is 9.5 cm high (13.5 cm including the fringe) and 7.5 cm wide.

NE-1 Female anthropomorphic statue, about 3 cm, made of *Spondylus* shell wearing a miniature dress and a feathered headdress. Only the top of the head (with its typical hairstyle) is visible. The headdress consists of a woolen cap, which serves as a textile support from which a back panel (completely covered with white feathers) extends down—ending in blue fringe. The headdress is 15 cm high and 10 cm wide, with reddish and orange feathers connected to its inferior end. The figurine is wearing a red dress with a black lower border, decorated with geometric green, black, and yellow ornamental borders. It also has on a red shawl, with yellow and black embroidered ornamental borders and embroidered edge. The shawl covers the shoulders and the upper half of the dress. Two silver *tupus* secure the dress, and a third secures the shawl that covers the shoulders. The dress is adorned with a red and black cord from which two trapezoidal *Spondylus* shell pendants hang. A cord that ends in gray, yellow, and red fringe is wrapped around the waist—securing the clothing. The statue is 10 cm high (17 cm including the headdress) and 4.5 cm wide.

GOLD STATUES

Zoomorphic Gold Statues

N-1 Camelid statue made of gold: 4.1 cm high, 3.8 cm wide, and 0.6 cm thick. The head is 1 cm; the body, 2.3 cm, and the legs, 1.9 cm. The ears are 0.7 cm above the head, and the back section is 0.5 cm long. The eyes, muzzle, and sexual organs are represented. Lightning caused burns that made a hole in the right back leg and scorched the left ear.

S-36 Camelid statue made of gold: 5.2 cm high, 5.2 cm wide, and 0.6 cm thick. The head is 1.2 cm; the body, 3.8 cm, and the legs, 1.9 cm. The ears are 0.8 cm above the head, and the back section is 1 cm long. The eyes, muzzle, and sexual organs are represented. Lightning caused burns that made a hole in the left side of the abdomen and destroyed the front legs.

Anthropomorphic Gold Statues (Male)

NE-7 Male anthropomorphic statue, about 4 cm in size, made of solid gold and wearing miniature clothing with a feathered plume. The face is visible and has carved eyes, nose, and mouth. Perforated ears, typical of Inca nobility, are represented—and one of the cheeks bulges in order to indicate the chewing of coca leaves. The statue has a plume of orange feathers, tied with white thread set on a wooden stick. A cephalic 4.4-cm-long trapezoidal silver decoration was added to the costume. The figurine is wearing a black and white checkered tunic with green, yellow, and red embroidered borders. It also has on a 3.3-cm-long brown mantle with red and blue embroidered borders. A brown external cord, which is rolled up around the middle of the statue, secures the mantle. The statue is carrying a cloth bag with geometric green, yellow, red, blue, and white ornamental borders. The statue is 5 cm high (7.5 cm including the plume) and 2.5 cm wide.

S-10 Male anthropomorphic statue, about 6 cm high, made of laminated gold and wearing miniature clothing with a feathered plume. The face is only partially visible. The head and the cephalic decoration show signs of flattening. The plume is formed by three orange feathers, tied with red thread and set on a wooden stick. A 2.4-cm-long trapezoidal silver decoration supplements the costume. The statue is wearing a tunic with red and purple horizontal stripes. It is also covered in a 4.5-cm-long white mantle with red- and blue-trimmed borders. A blue cord with fringe is coiled around the middle of the statue, securing the mantle. The statue is 7.5 cm high (9.5 cm including the plume) and 3 cm wide.

S-17 Male anthropomorphic statue, about 7 cm high, made of laminated gold and wearing miniature clothing with a feathered plume. The face is visible—with carved eyes, nose, and mouth and perforated ears. The plume is formed by five yellow feathers, tied with a red thread and set on a wooden stick and inserted in a cephalic blue cord (*llautu*). The figurine is wearing a blue and yellow checkered tunic with blue and red horizontal stripes. It is also wearing a white mantle, 8 cm long, with black and red embroidered ornamental borders. It is carrying a 3.5-cm red bag, with yellow ornamental borders on a red background that has blue borders edged in green. The statue is 10.5 cm high (14.5 cm including the plume) and has a maximum width of 5.5 cm.

S-34 Male anthropomorphic statue, about 6 cm high, made of laminated gold and wearing miniature clothing and a feathered plume. Only the top of the head is visible. The plume of black feathers extends only partly out of the clothing. The figurine is wearing a 9.5-cm-long brown mantle with red- and blue-trimmed borders. An external blue cord with fringe, coiled in three turns around the upper part of the statue, secures

the mantle. The statue is 10 cm high (12 cm including the plume) and 4.5 cm wide.

Anthropomorphic Gold Statues (Female)

E-15 Female anthropomorphic statue, about 7 cm in size, made of laminated gold and wearing miniature clothing and feathered headdress. The face is visible—with carved eyes, nose, and mouth and typical hairstyle. However, the statue was partially damaged by lightning. It has a headdress made with a white woolen cap that serves as a textile support and from which a back panel extends that ends in blackish fringe. It is completely covered with intercalated yellow and green feathers on the front side and intercalated red and orange ones on the back side. It is 17.5 cm high and 8.5 cm wide. The figurine is wearing a folded red and saffron *acsu*, decorated with green, black, and yellow geometric ornamental borders. It is also wearing a saffron and red shawl decorated with yellow and black embroidered edges. The shawl is folded, covering the shoulders and half of the dress. Only two of the three gold *tupus* that secure the clothing are visible. One of them is broken into pieces. It is adorned with a red and black cord from which two trapezoidal *Spondylus* shell pendants hang. A cord with yellow and red fringe, which is wound around the waist, serves to secure the textile clothing. The clothed statue is 10.5 cm high (18 cm including the headdress) and 6 cm wide.

N-2 Female anthropomorphic statue with miniature textile clothing and headdress of red feathers. Made of gold, of approximately 6 cm in size. Visible face, with representation of eyes, nose, mouth and typical hairstyle. It has a headdress made with a white woolen cap that serves as a textile support, and from which a back panel extends—ending in blue fringe. It is completely covered with feathers. The headdress is 12.1 cm high and 6 cm wide, and it has yellow feathers at its lower end. The figurine is wearing a red dress with border and edges in white color and a decoration with yellow, green, and blue geometric ornamental borders. It is also wearing a red and white shawl with yellow and black decoration and embroidered edges. The shawl was laid on the figurine in a simple way and it covers it entirely. Three 3.5-cm gold *tupus* secure the clothing: two of them secure the dress and a third secures the shawl placed on the shoulders. It is adorned with a red and black cord from which two trapezoidal orange *Spondylus* shell pendants hang. A white cord, which is wound around the waist, represents the traditional belt and serves to secure the textile clothing and the cords of the headdress. The clothed statue is 9.5 cm high (13 cm including the headdress) and 6.5 cm wide.

N-23 Female anthropomorphic statue with miniature textile clothing. Made of laminated gold, approximately 3 cm in size. Partially visible face, with reproduction of eyes, nose, mouth, and typical hairstyle. It lacks the typical cephalic headdress of feathers and instead has two thick cord fringe. It is wearing a saffron dress, with red central panel and decorated with red and yellow geometric ornamental patterns and black and green dark borders. It is also wearing a partially folded shawl, with central saffron panel and red lateral panels with yellow, red, and black geometric patterns. The shawl covers the shoulders and half of the dress. Three 5-cm gold *tupus* secure the clothing: two of them hold the dress and the third secures the mantle placed on the shoulders. A red and yellow belt with geometric decoration and blue borders, which is wound around half of the dress, gives origin to two multiple braided cords that end in big tassels and fringe. The clothed statue is 11.5 cm high (14.5 cm including the headdress) and 4 cm wide.

SILVER STATUES

Zoomorphic Silver Statues

NE-2 Camelid statue made of silver. It is 6.5 cm high, 5.4 cm wide, and 1.1 cm thick. The head is 1.6 cm; the body, 3.4 cm; and the legs, 2.4 cm. The ears rise 1.2 cm over the head, and the back panel is 1 cm long. The eyes, the muzzle, and the sexual organs were reproduced. The surface has been affected by a chemical reaction.

S-19 Camelid statue made of laminated silver. It is 7 cm high, 7.3 cm wide, and 1 cm thick. The head is 1.5 cm; the body, 4.5 cm; and the legs, 2.3 cm. The ears rise 1.3 cm above the head, and the back panel is 1.1 cm long. The eyes, the muzzle, and the sexual organs were reproduced.

S-23 Camelid statue made of silver. It is 5.9 cm high, 5.8 cm wide, and 1.1 cm thick. The eyes, the muzzle, and the sexual organs were reproduced.

S-37 Camelid statue made of silver. It is 6.1 cm high, 5.3 cm wide, and 1 cm thick. The head is 1.3 cm; the body, 3 cm; and the legs, 2.2 cm. The ears rise 1.2 cm above the head, and the back panel is 1 cm long.

The eyes, the muzzle, and the sexual organs were reproduced. It has burns caused by the lightning that scorched the abdomen on the left side, the back leg on the right, and the front leg on the left.

Anthropomorphic Silver Statues (Female)

E-14 Female anthropomorphic statue with miniature textile clothing and headdress of orange feathers. Made of solid silver, approximately 7 cm in size. Visible face, with reproduction of eyes, nose, mouth, and typical hairstyle. It has a headdress formed by a white woolen cap that serves as support, from which a back panel that finishes in blue fringe extends. It is completely covered with orange and red feathers. The headdress is 15 cm high and 10 cm wide, and it has rosy feathers at its lower end. It is wearing a red dress with black lower border, decorated with geometric green, black, and yellow patterns. It is also wearing a red shawl, with yellow and black decoration and embroidered edges. The shawl covers from the shoulders to half of the dress. Three silver *tupus* secure the clothing: two of them hold the dress and the third secures the mantle placed on the shoulders. It is adorned with a red and black cord from which two trapezoidal *Spondylus* shell pendants hang. A red, yellow, saffron, and greenish-gray belt—which is wound around the waist—serves to secure the textile clothing and the cords from the headdress. The clothed statue is 8.5 cm high (15 cm including the headdress) and 4 cm wide.

N-24 Female anthropomorphic statue with miniature textile clothing and headdress of white feathers. Made of silver, of approximately 14 cm in size. Visible face, with reproduction of eyes, nose, mouth, and typical hairstyle. It has a headdress formed by a brown woolen cap and a back flap, 23 cm high and 12.5 cm wide, which are completely covered with white feathers. The cap has cords to adjust it to the chin of the statue. The back panel ends in blue fringe. The figurine is wearing a red folded dress with lower border and edges in white, decorated with yellow, blue, and green geometric fringe. It is also wearing a red and white shawl, with yellow and blue decoration and blue-edged borders. The shawl covers from the shoulders to the middle of the dress. Three 6-cm-long silver *tupus* secure the clothing: two of them hold the dress and the third secures the shawl placed on the shoulders. The figurine is adorned with a red and blue cord from which two trapezoidal red *Spondylus* shell pendants hang. A yellow, saffron, and greenish-gray cord—which is wound around the waist—helps to secure the clothing. The clothed statue is 15.5 cm high (23 cm including the headdress) and 8.5 cm wide.

N-30 Female anthropomorphic statue with miniature textile dress and headdress of orange feathers. Made of solid silver, approximately 3 cm in size. Visible face, with reproduction of eyes, nose, mouth and typical hairstyle. It has a headdress formed by a woolen cap that serves as a textile support and from which a back panel extends that finishes in blue fringe. It is completely covered with orange feathers. The lightly deteriorated headdress is 7.7 cm high and 7 cm wide. The figurine is wearing a folded red and saffron dress, with red and blue stripes and saffron edges. It is also wearing a folded shawl, which has a saffron central panel and red lateral panels with yellow and blue geometric patterns. The shawl covers from the shoulders to the middle of the dress. Three silver *tupus* secure the clothing; two of them hold the dress and the third one secures the mantle placed on the shoulders. It is adorned with a red and black cord, from which two trapezoidal *Spondylus* shell pendants hang. A yellow and blue belt with red borders, which is wound around the waist, helps to secure the clothing. The clothed statue is 4 cm high (8 cm including the headdress) and 3 cm wide.

WOODEN OBJECTS

Cups (Keros)

E-7 Dark brown wooden cup. It is 9.6 cm high and its walls are 0.7 cm thick. The diameter of the mouth is about 8 cm and the one of the bottom is about 5.8 cm. The decoration has a geometric style and carving technique. The motifs divide the piece into two parts: the upper (decorated with parallel zigzag lines on a checkered background) and the lower, decorated with six vertical panels of successive triangles on a horizontally striped background.

E-10 Dark brown wooden cup. It is 9.6 cm high and its walls are 0.7 cm thick. The diameter of the mouth is about 8 cm and the one of the bottom is about 5.8 cm The decoration has a geometric style and carving technique. The motifs divide the piece into two parts: the upper (decorated with parallel zigzag lines on a checkered background) and the lower, decorated with six vertical panels of successive triangles on a horizontally striped background.

E-11 Miniature wooden cup with light brown surface and black decoration.

It is 4.5 cm high and its walls are 0.3 cm thick. The diameter of the mouth is about 3.9 cm and the one of the bottom is 3.1 cm. The geometric decoration is carved on the piece. The motifs are evenly distributed on it. It also has 4 horizontal panels decorated with 12 squares each. These frame carved opposing triangles.

E-12 Miniature wooden cup with light brown surface and black decoration. It is 4.6 cm high and its walls are 0.4 cm thick. The diameter of the mouth is 4.1 cm and the diameter of the bottom is 3 cm. Geometric designs were carved on the cup. The motifs are evenly distributed. It also has 4 horizontal panels decorated with 12 squares each. These frame carved opposing triangles.

Comb

N-7 Cactus thorn comb, made with 50 cactus thorns placed next to each other and tied to two perpendicular wooden slats. Both of them serve to hold the thorns in the middle, and they are joined by means of black woolen yarn sewn along the thorns and knotted at both ends. The comb is 9.5 cm long (the length of the slats) and 9.5 cm wide. The thorns extend 3.7 cm out from each side of the slats.

Spoon (Wiclla)

N-6 Light brown wooden spoon. It has a symmetrically carved handle, is 21.7 cm long, and the diameter of the bowl is 4.5 cm. The handle is 18 cm long and from 1 to 2.5 cm wide.

POTTERY ITEMS

Aribalos (Makas)

E-8 Jar with attached woolen cord. The jar has the typical form of an *aribalo*: an ovoid body, conical bottom, cylindrical neck, curved mouth opening, and two vertical handles located at the lower part of the body. It is 15.4 cm high and 11.5 cm wide, with walls up to 0.5 cm thick. The diameter of the spout is 5.3 cm, and the diameter of the mouth is 1.5 cm. The diameter of the bottom of the body is 8.3 cm. The jar has two protuberances with holes under the border of the mouth and another one at the base of the neck. The surface, which was painted in yellowish color, has homogeneous polishing. The painted decoration is limited to the neck and the body of the vessel. The neck has horizontal black stripes resembling rings on a yellowish background. Black and red were used to paint the border of the mouth. The borderline between the lower part of the body and the bottom is delineated with a red stripe. The body has vertical panels resembling "ferns" and geometric designs [cf. Linares (1966), who interpreted the botanical designs as representing ferns in his description of Inca ceramics found on the volcano Pichu Pichu in southern Peru]. The jar has a thick, white woolen cord tied to the handles and knotted near its end.

N-16 *Aribalo* with woolen cord and "cork." It is 22.8 cm high and 17 cm wide, with walls 0.5 cm thick. The diameter of the mouth is 7.4 cm, with an opening of 2.2 cm. The diameter of the bottom of the body is 12.5 cm. The *aribalo* has two protuberances with holes under the border of the mouth and one at the base of the neck. Different colors were used to paint the container: ocher for the body, black for the neck, and red for the mouth and the bottom. The surface has a homogeneous polishing. The painted decoration is circumscribed to the neck and the body of the vessel. The neck has horizontal white stripes (resembling rings) on a black background, and the body has patterns resembling "ferns" in addition to geometric designs. The vessel has a thin woolen cord tied to the protuberances under the mouth. It is joined at the other end to a vegetable-fiber cork.

S-24 *Aribalo* with a "cork." It is 15 cm high and 12.5 cm wide, with walls up to 0.5 cm thick. The diameter of the spout is 6 cm, and the diameter of the mouth is 2.5 cm. The diameter of the bottom of the body is 9 cm. The *aribalo* has two protuberances with holes under the border of the mouth and one at the base of the neck. Different colors were used to paint the container: ocher for the body and the bottom, red for the neck and for a circle that delineates the bottom of the body, and black for the external border of the mouth. The surface has homogeneous polishing. Painted decoration is limited to the neck and the body of the vessel. The neck has horizontal black stripes resembling rings on a yellowish background. Black and red were used to paint the border of the mouth. The borderline between the lower part of the body and the bottom is delineated with a red stripe. The body has vertical patterns resembling "ferns" and geometric designs. It has a thick, white woolen cord tied to the handles and knotted near the end.

Pedestal Pots (Chullanchaquis)

E-1 Pedestal pot with ceramic lid. It has an ovoid body, everted border, and conical bottom with hyperbolic pedestal—in addition to a handle that extends beyond the border of the piece. It is 14 cm high and 16 cm wide, and the maximum diameter of the handle it is 5.2 cm. The diameter of the mouth is 11 cm, and the one of the bottom of the body is 12.5 cm. It has two protuberances applied to the upper part of the body, opposing the handle insertion. The surface is not painted but it was smoothed. Stains from the burning process and particles from the golden minerals that were used to cover the surface are visible on the body. It has a ceramic lid 9 cm in diameter and 1 cm high, with a handle on top.

N-21 Pedestal pot with ceramic lid. It has an ovoid body, everted border, and conical bottom with hyperbolic pedestal—in addition to a handle that extends beyond the border of the piece. It is 14.8 cm high and 15.6 cm wide, and the maximum diameter of the handle is 6.5 cm. The diameter of the mouth is 9.5 cm, and the one of the bottom of the body is 11 cm. It has two protuberances applied to the upper part of the body, opposing the handle insertion. The surface is not painted except for some black spots on the border of the mouth. Stains from the burning process are visible on the body. It has a ceramic lid 7.4 cm in diameter and 0.7 cm high, with a handle on top.

Jugs (Aisana Puchuelas)

E-11 Jug with lateral handle. It has an ovoid body, everted mouth, and flat bottom—in addition to a vertical flat handle that extends beyond the border of the piece. It is 6.8 cm high and its walls are 0.3 cm thick. The diameter of the handle is 3.2 cm. The handle is inserted at 3.5 cm from the bottom and reaches up to 7.7 cm. The diameter of the mouth is 4.1 cm, and the one of the bottom is 7.5 cm. The surface has homogeneous polishing on a yellowish background. The body has vertical panels resembling "ferns" and geometric designs in red separated by means of horizontal black stripes. The handle is also decorated with a similar geometric panel. Two rectangles with smaller ones on the inside were drawn.

N-22 Jug with lateral handle. It has an ovoid body, everted mouth, and flat bottom—in addition to a vertical flat handle that extends beyond the border of the piece. It is 10.5 cm high and its walls are 0.6 cm thick. The diameter of the handle is 4.5 cm. The handle is inserted at 3.5 cm from the bottom and reaches up to 9.5 cm. The diameter of the mouth is 6.5 cm, and the one of the bottom is 9 cm. The surface has homogeneous polishing on an ocher background. The red and black painted decoration is circumscribed to the neck and the body of the jug. The body has horizontal black stripes resembling rings on a yellowish background. Black and red were used to paint the border of the mouth. The bordering line between the lower part of the body and the bottom was delineated with a red stripe. The body has four vertical black panels resembling "ferns," which are separated by groups of parallel horizontal black stripes. The border of the mouth is delineated in red. The jug has a thin black woolen cord tied to the upper part of the handle and joined to a vegetable-fiber "cork" at its other end.

Bowls (Mancas)

E-5 Two-handled bowl with a cylindrical body, everted mouth, and flat bottom. It has two horizontal handles perpendicularly inserted at both sides of the pot. It is 5.6 cm high and its walls are 0.5 cm thick. Each handle has a diameter of 3.5 cm. The handles are inserted at 2 cm from the base and reach up to 2.8 cm high. The diameter of the mouth is 9.5 cm and the diameter of the bottom is 9 cm. The surface, which is painted in ocher, has a homogeneous polishing. The decoration is circumscribed to an 8.5-cm-wide and 1.5-cm-high horizontal panel on the body. The border is black and the bottom is white. The decoration also has lines of successive red rhombuses along the entire panel. The border of the mouth is internally delineated in red and black.

E-21 Two-handled bowl with a cylindrical body, everted mouth, and round bottom. It has two horizontal handles perpendicularly inserted at both sides of the pot. It is 5.5 cm high and its walls are 0.5 cm thick. Each handle has a diameter of 3.5 cm and is inserted at 2.5 cm from the base and reaching up to 2.5 cm high. The diameter of the mouth is 7.8 cm and the diameter of the bottom is 7 cm. The surface, which is painted in ocher, has a homogeneous polishing. The decoration is circumscribed to a 9-cm-wide and 1.5-cm-high horizontal panel on the body. The border is black and the bottom is white. The decoration also has lines of successive red rhombuses along the entire panel. The border of the mouth is internally delineated in red and black. The handles are decorated by means of black stripes.

Plates (Chua Pucus)

E-3a Plate with an ellipsoidal body, concave bottom, and round flat base. As plastic addition it presents two couples of parallel prominences in opposed sectors of the border of the piece. It is 1.9 cm high and the diameter is 10.5 cm (11.4 cm if the prominences are considered). The internal surface, which is covered with yellowish coloring, is also decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the entire internal face of the plate. The border is highlighted with a motif resembling red streamers. The center of the body has red panels that extend from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red Xs separated by groups of black parallel lines. The external surface is ocher colored and polished.

E-3b Plate with an ellipsoidal body, concave bottom, and round flat base. As plastic addition it presents two couples of parallel prominences in opposed sectors of the border of the piece. It is 1.8 cm high, and the diameter is 11.1 cm (11.2 cm if the prominences are considered). The internal surface, which is covered with yellowish coloring, is also decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the entire internal face of the plate. The border is highlighted with a motif resembling red streamers. The center of the body has red panels that extend from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red figures in Xs separated by groups of black parallel lines. The external surface is ocher colored and polished.

E-4a Plate with an ellipsoidal body, concave bottom, and round flat base. As plastic addition it presents two couples of parallel prominences in opposed sectors of the border of the piece. It is 1.6 cm high, and the diameter is 10.2 cm (11.5 cm if the plastic additions are considered). The internal surface, which is covered with yellowish coloring, is also decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the entire internal face of the plate. The border is highlighted with a motif resembling red streamers. The center of the body has red panels that extend from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red figures in Xs separated by groups of black parallel lines. The external surface is ocher colored and polished.

E-4b Plate with an ellipsoidal body, concave bottom, and round flat base. As plastic addition it presents two couples of parallel prominences in opposed parts of the border of the piece. It is 1.8 cm high, and the diameter is 10.9 cm (11.7 cm if the plastic additions are considered). The internal surface, which is covered with yellowish coloring, is also decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the entire internal face of the plate. The border is highlighted with a motif resembling red streamers. The center of the body has red panels that extend from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red figures in Xs separated by groups of black parallel lines. The external surface is ocher colored and polished.

E-6a Ornithomorphic ceramic plate with ellipsoidal body, concave bottom, and round flat base. It has a two-color handle representing a duck head, on the border of the piece—and at its other end a pair of parallel prominences, probably representing the back panel of the bird. The diameter is 9.2 cm (13 cm if the ornithomorphic ornaments are considered). The body is 1.4 cm high and the head is 4.4 cm high. The internal surface, which is covered with yellowish painting, is decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the internal face of the plate. The border is highlighted with a motif resembling red streamers. The center of the body has red panels that extend from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red figures in Xs separated by groups of black parallel lines. The external surface is ocher colored and polished, and it has cooking stains. The added ornaments representing the head of the duck are painted in black, white, red, and ocher.

E-6b Ornithomorphic ceramic plate with ellipsoidal body, concave bottom, and round flat base. It has a two-color handle representing a duck head, on the border of the piece—and at its other end a pair of parallel prominences, probably representing the back panel of the bird. The diameter is 9.9 cm (13.2 cm if the ornithomorphic ornaments are considered). The body is 1.8 cm high and the head is 4.5 cm high. The internal surface, which is covered with yellowish coloring, is also

decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the internal face of the plate. The border is highlighted with a motif resembling red streamers. The center of the body has red panels that extend from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red Xs separated by groups of black parallel lines. The external surface is ocher colored and polished, and it has cooking stains. The added ornaments representing the head of the duck are painted in black, white, red, and ocher.

N-17 Plate with an ellipsoidal body, concave bottom, and round flat base. It has two pairs of parallel prominences on opposed parts of the border of the piece. It is 1.3 cm high, and the diameter is 10.8 cm (11.4 cm if the prominences are considered). The internal surface, which is covered with yellowish coloring, is also decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the entire internal face of the plate. The border is highlighted with a motif resembling black streamers. The center of the body has red panels that extend from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red Xs separated by groups of black parallel lines. The ocher-colored, polished, external surface is decorated in black. This decoration represents panels with segments of parallel lines in their interiors.

N-18 Ornithomorphic ceramic plate with ellipsoidal body, concave bottom, and round flat base. It has a two-color handle representing a duck head, on the border of the piece—and at its other end were added a pair of parallel prominences, probably representing the back panel of the bird. The diameter is 8.2 cm (12.1 cm if the ornithomorphic ornaments are considered). The body is 2.4 cm high and the head is 3.6 cm high. The internal surface, which is covered with yellowish coloring, is also decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the entire internal face of the plate. The border is highlighted with a motif resembling red streamers. The center of the body has red panels that extend from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red Xs separated by groups of black parallel lines. The external surface is ocher colored and polished, and it has cooking stains. The added ornament representing the head of the duck is painted in black and white, and it reproduces the specific characteristics of the animal.

N-19 Plate with an ellipsoidal body, concave bottom, and round flat base. It has two pairs of parallel prominences on opposed parts of the border of the piece. It is 1.8 cm high, and the diameter is 10.8 cm (11.7 cm if the prominences are considered). The internal surface, which is covered with yellowish coloring, is also decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the entire internal face of the plate. The border is highlighted with a motif resembling black streamers. The center of the body has red panels that extend from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red Xs separated by groups of black parallel lines. The ocher-colored, polished, external surface is decorated in black.

N-20 Ornithomorphic ceramic plate with ellipsoidal body, concave bottom, and round flat base. It has a two-color handle representing a duck head, on the border of the piece—and at its other end a pair of parallel prominences, probably representing the back panel of the bird. The diameter is 9.1 (12.2 cm if the ornithomorphic ornaments are considered). The body is 2 cm high and the head is 3.7 cm high. The internal surface, which is covered with yellowish coloring, is also decorated in red and black—and it has a homogeneous polishing. The decoration is geometric and extends on the internal face of the plate. The border is highlighted with a motif resembling red streamers. The center of the body has a red panel that extends from border to border. Two geometrical parallel panels framed within red ones stand out. They show a pattern of red Xs separated by groups of black parallel lines. The external surface is ocher colored and polished, and it has cooking stains. The added ornaments representing the head of the duck are painted in black and white, and they reproduce the specific characteristics of the animal.

TEXTILES AND FOOTWEAR

Moccasins and Sandals (Ushutas or Llanques)

E-2 Leather moccasins made of brown tanned leather. They are 16.5 cm long and 7 cm wide. The openings for the feet are 11.5 cm long by 3.5 cm wide in both shoes. The opening has a zigzag embroidered border made with white thread on a dark brown background.

E-9 Sandals made of one layer of dark brown leather. The soles are made of untanned dark leather, which

keeps dark brown hair. They are 15.3 cm long and 7.5 cm wide. Their shapes resemble the feet silhouette. They have four buttonholes perpendicularly placed along the borders of the soles. Two of them are at the front, and the other two at the back—3 cm inward from the borders of the sandals. Sandy and brown woolen cords, which were meant to hold the feet, go through these holes and are knotted at the instep. This pair of sandals does not show signs of use.

S-28 Sandals made of three overlapped light tan layers of leather and white fur. They are 14.5 cm long, 6.5 cm wide, and 1 cm thick. Their shapes resemble the feet silhouette. They have four buttonholes perpendicularly placed along the borders of the soles. Two of them are at the front, and the other two at the back—3 cm inward from the borders of the sandals. Black woolen cords, which were meant to hold the feet, go through these holes and are knotted at the instep. This pair of sandals does not show signs of use.

S-29 Sandals made of three overlapped light tan layers of leather. They are 15.5 cm long, 7 cm wide, and 1.5 thick. Their shapes resemble the feet silhouette. They have four buttonholes perpendicularly placed along the borders of the soles. Two of them are at the front, and the other two at the back—3 cm inward from the borders of the sandals. Sandy woolen cords, which were meant to hold the feet, go through these holes and are knotted at the instep. This pair of sandals does not show signs of use.

Skin Bags

E-22 Two animal skin bags filled with human hair. The bags appear to have been made from the scrotum of a camelid. They are tied at both upper ends and joined by means of a sandy woolen cord. They are about 8 cm long and 3 cm wide. One of them is almost empty, and the other is full.

N-15 Two animal skin bags filled with human hair. The bags appear to have been made from the scrotum of a camelid. They are tied at both upper ends and joined by means of a tan woolen cord. They are about 7.5 cm long, 5 or 6 cm wide, and 4.5 cm thick.

S-32 Two animal skin bags filled with human hair. The bags appear to have been made from the scrotum of a camelid. They are tied at both upper ends and joined by means of a sandy woolen cord. They are about 12 cm long, 4 cm wide, and 3 cm thick.

Slings (Huaracas)

S-31a Sling, 2.20 m long, made of woolen thread in natural colors—with segments differentiated according to the weaving style and the color of the wool used in each. The ends of the object are 93 to 97 cm long, formed by multiple woolen braids 0.6 cm wide and 0.5 cm thick. The central part is 25 cm long and is divided in two parts at both sides of an 8-cm opening that goes along the middle. The lateral parts, which are braided in black and white wool, are each 7 cm long, 0.6 cm wide, and 0.5 cm thick.

S-31b Sling, 2.25 m long, made of woolen thread in natural colors—with segments differentiated according to the weaving style and the color of the wool used in each. The ends of the object are 96 to 98 cm long, formed by multiple woolen braids 0.4 cm wide and 0.3 cm thick. The central part is 25 cm long and is divided in two parts at both sides of an 8-cm opening that goes along the middle. The lateral parts, which are braided in black and white wool, are each 11 cm long, 1 cm wide, and 0.5 cm thick.

Feathered Bags (Chuspas)

E-20 Woolen ceremonial bag covered with feathers, made of brown and white colored wool and completely covered with red and orange feathers sewn along the bag in parallel lines and partially overlapped. In this way, the stitches are not visible—except for the parts that are worn out. It is 18.5 cm high, 11.5 cm wide at the bottom, and 8 cm thick. It has a woolen cord that serves for holding the object, which is inserted at both sides of the bag 8 cm from the upper border. The upper border is sewn. It possibly contains coca leaves.

S-33 Woolen ceremonial bag covered with white feathers. The feathers are sewn along the bag in parallel lines and partially overlapped, so that the stitches are not visible. It is 18.5 cm high, 11.5 cm wide at the bottom, and 8 cm thick. It has a fine white cord that serves for holding the object, which is inserted at both sides of the bag 5 cm from the upper border. The upper border is sewn. It possibly contains coca leaves.

Pouches and Woven Bags (Chuspas)

E-12 Woven pouch (bag) made of light sandy wool. It is 16.5 cm long, 9 cm wide, and 4.5 cm thick. It is completely sewn in its borders with white woolen thread.

E-19 Woven pouch (bag) made of white wool and knotted with brown thread. It is 12.5 cm long and 10.5 cm wide. The knot is 2.5 cm. Its borders are trimmed with white thread.

N-9 Woolen pouch (bag) made of multicolor wool (red, yellow, white, and green). It is 11.5 cm long and 10 cm wide in the bottom. Seven parallel vertical red and yellow stripes were woven on a sandy background. The lateral borders were trimmed with red, yellow, green, and white woolen thread. The upper border was trimmed with red thread. It is closed at its upper border with a red and yellow cord knotted a few centimeters away from the border.

N-10a Woven pouch (bag), containing food, made of multicolor wool (sandy, black, raw, blue, orange, red, and yellow). It is 14 cm long, 10.5 cm wide, and 7.5 cm thick. The decoration is woven in single horizontal stripes grouped according to symmetry of colors. The body of the bag is divided into three parts: lower, central, and upper. The upper and lower parts are decorated with alternated sandy, white, and black stripes. The central part is divided with two orange stripes and a blue one between them. The three sections are distinguished by red and yellow horizontal stripes that separate them one from the other. The border of the bag has concentric blue, yellow, and red rhombuses. It has a thin holding lace (1 cm wide) inserted 4 cm from the upper opening of the bag. This lace, which is decorated with rectangular white and black motifs, serves to tie the bag to a similar one. The upper opening was sewn to avoid the loss of peanuts contained in the bag. A comb of thorns hangs from a brown white cord that emanates from the seam.

N-10b Woven pouch (bag), containing food, made of multicolor wool (sandy, black, raw, blue, orange, red, and yellow). It is 13 cm long, 12 cm wide, and 6.5 cm thick. The decoration is woven in plain horizontal stripes grouped according to symmetry of colors. The body of the bag is divided into three parts: lower, central, and upper. The upper and lower parts are decorated with alternated sandy, white, and black stripes. The central part is divided with two brown stripes and a gray one between them. The border of the bag has a decoration of parallel red, yellow, and brown stripes. It has a thin holding lace (1.7 cm wide) inserted 2 cm from the upper opening of the bag. The lace is decorated with rectangular white and black motifs, and it serves to tie the bag to the *chuspa* N-10. The upper opening was sewn, and its content is not visible.

N-13 White woolen pouch (bag) with wooden spindle whorl for spinning. It is 13 cm long, 6 cm wide, and 4 cm thick. The upper opening was sewn with fine thread in the same color. It has a fine line of sandy and brown threads that secures the wooden spindle whorl. The whorl is 4 cm in diameter.

E-17 White woolen pouch (bag) partly burned by lightning. It is 11.5 cm long, 10.5 cm wide, and 5 cm of thick. The upper opening was partially closed by means of a braided sandy woolen cord. It appears to contain dehydrated potato (*chuño*) or beans.

E-18 White woolen pouch (bag) containing food. It has been partially burned by lightning. It is 12.5 cm long, 10.5 cm wide, and 5 cm thick. The upper opening was partially sewn with fine braided brown and white woolen cord. It contains dry meat (*charqui*) and grains of corn.

N-27 Pouch (bag) containing coca leaves that is made of multicolor woolen threads (brown, red, black, green and yellow, white, blue, gray, sandy, and light blue). It is 15 cm long and 16 cm wide, and its bottom is 4.5 cm thick. Three plain parallel vertical brown stripes were woven on a sandy background. The sandy and brown stripes are separated one from the other by red and yellow or red and blue parallel stripes. The lateral borders were edged with multicolor woolen threads in blue, red, yellow, gray, and light blue. The upper border is trimmed in red. The angles at the lower border are white. The bag is closed at the upper border with a red and yellow cord knotted a few centimeters from the border. It contains coca leaves.

N-28 Woven pouch (bag) made of white wool. It is 16 cm long, 12 cm wide, and 6 cm thick. It is completely sewn in its borders with sandy woolen thread.

S-30 Pouch (bag) made of wool of multiple colors (brown, dark red, black, green, and yellow). It is 10.5 cm long and 8.5 cm wide, and its bottom is 3 cm thick. The decoration is woven in plain horizontal stripes grouped according to symmetry of colors—a dark red central stripe, two black stripes at both sides, and two dark red stripes and two brown stripes at both ends of the body. The horizontal stripes are separated by light green and yellow horizontal stripes. The border was embroidered with multicolor woolen threads forming red, yellow, and brown parallel stripes. It has a thin holding lace,

1.3 cm wide, inserted at the upper opening of the bag—which is decorated with rectangular light green and yellow motifs. The upper opening was knotted.

Belts (Chumpis)

N-8 Set of rolled woolen belts (*chumpis*). It is made up by one or more identical belts, 2 cm wide each. They are first rolled vertically in four visible turns and then horizontally in five visible turns. The decoration alternates woolen stitches in white colors and brown. The group is 11 cm long, 11 cm wide, and 4.5 cm.

N-14 Little woolen belt, probably a headband (*vincha*). Made with red, yellow, white, and black woolen threads. It is 1.5 cm wide. It is rolled up and tied with a white and black cord that ends in a knot with fringe.

Tunics and Mantles

N-33 Male woolen tunic *(uncu*). Woven with blue, yellow, green, and red woolen threads. It is 87.5 cm high and 72.5 cm wide. The slit is 17.5 cm, and the openings for the arms are 14 cm. The geometric decoration combines a part with checkered motifs and a part with plain horizontal parallel stripes. The checkered section is 56 cm from the upper border of the garment. It is made up by 8 vertical stripes and 10 columns. The squares, which are 7 cm each side, are repeated in oblique stripes ending in squares at both ends. Two separate squares fill the empty spaces at both sides of the band and are placed according to the color of the background. When the background of the square is yellow, the motif is red—and when the background is blue, the motif is green. The lower part is decorated with six plain horizontal parallel bands that alternate according to the color (blue or red). The lower border of the garment is trimmed in blue, yellow, green, and red. It also has a motif of broken lines in blue and red. The slit border was trimmed with blue woolen thread. The tunic was originally folded and did not show signs of use. It was found together with the frozen mummy of the Llullaillaco maiden.

N-34 Outer mantle woven with natural-colored woolen threads. It is sandy with vertical red and brown stripes. It is a single-piece garment, 135 cm high and 145 cm wide, adorned with thin vertical stripes: two brown stripes with white borders (1 cm wide) placed near the lateral borders and two broader red stripes with black and yellow stripes, separated 6 cm from each other, on the central part. The borders of the garment show sandy trims. The garment was secured to the Llullaillaco maiden's bundle by means of two cactus thorn *tupus* placed on the left lower extreme of the textile. It has been partially damaged by lightning.

N-35 Mantle to cover the head (*nañaka*), woven with sandy and brown woolen threads. It is a single-piece garment, 116 cm high and 75 cm wide, divided in three vertical panels. The central panel is brown, and the lateral panels are sandy. Each panel is about 23 cm wide. The borders were trimmed with multicolor woolen thread. It was part of the Llullaillaco maiden's funeral bundle at the Northern tomb.

S-42 Male tunic (*uncu*) woven with dark gray or black woolen thread. It is 53 cm high and 46 cm wide. The slit is 12 cm, and the openings for the arms are 22 cm. The sides were sewn with red thread. This garment was part of the offerings associated with the Llullaillaco boy, at the Southern tomb.

S-43 Male outer mantle (*yacolla*) made with reddish and brown woolen thread. It is 106 cm high and 101 cm wide. It is a three-piece garment. The central piece is dark reddish and the lateral pieces are brown. The pieces are joined one to the other by intermediate seams. Each piece is about 32 cm wide. The central panel is decorated with four thin vertical yellow stripes. The borders of the garment show multicolor woolen trims. The mantle was part of the boy's bundle at the Southern tomb.

ORNAMENTS

Headdress of Feathers

N-26 Headdress made of wool and completely covered with white feathers. It is made of a conical cap and a semicircular fan of feathers that goes along the upper part of the cap. The cap is 21 cm high, the diameter of the base is 31 cm, and the apex is 8 cm. It is woven with brown wool and has two braided cords (each 16 cm long) that hang from both sides of the lower border. This was meant to hold the chin. It is covered with 14 lines of small white feathers (3.5 cm long) set downward and partially overlapped so that the stitches are not visible. The arch of feathers is made up by a first line of medium feathers (5.5 cm long) on top of longer ones (14 cm), which are spread out forming a fan. The object is in total 34 cm tall and 47 cm wide.

Seashell Necklace

S-22 Necklace made of *Spondylus* seashell. It is held by a thick cord made of multiple braids. Black woolen threads as well as human hair were used to make the braids in the cord. Thirteen trapezoidal pieces of carved *Spondylus* shell hang from this cord. The cord is 75 cm long and 2 cm wide, and ends in knots with fringe measuring 13 cm. The pieces of red *Spondylus* shell are 5 cm long, 2.5 cm wide, and 0.5 cm thick. Each piece has two holes in its upper end, through which the textile cord is secured.

Metallic Bracelet

NE-5 Miniature trapezoidal metal bracelet made of a thin plate of gold alloy. It is 2.9 cm high. The smallest diameter is 0.9 cm, and the largest is 2 cm. It has a longitudinal opening of 0.5 cm, and two holes at both sides to allow its attachment.

BASKETWORK

Mats

A-1 Straw mat, 1.18 m wide and 1.6 m high, made with small bundles of straw held by five woven vegetal-fiber lines placed horizontally.

A-1´ Straw mat, 1.5 m wide and 1.7 m high, made with small bundles of straw held by five woven vegetal-fiber lines placed horizontally.

Woven Bags

A-2 Bag made of interwoven vegetable fibers. It is rectangular in shape, and has a smaller opening in one of the sides. It is 45 cm high, the base is 29 cm wide, and the opening is 29.5 cm. The maximum thickness of the bag is 3.5 cm.

A-3 Bag made of interwoven vegetable fibers. It is rectangular in shape, and has a larger opening in one of the sides. It is 40 cm high, the base is 39 cm wide, and the opening is 42 cm wide. The maximum thickness of the bag is 4.5 cm.

A-4 Bag made of interwoven vegetable fibers. It is rectangular in shape, and has a larger opening in one of the sides. It is 33 cm high, the base is 38 cm wide, and the opening is 36 cm wide. The maximum thickness of the bag is 3 cm.

Miscellaneous

E-23 Leather piece with a cord attached. A leather rectangle is 5 cm long and 2 cm wide. The piece has holes with brown woolen braided threads through them and a small bundle of woolen cord attached.

Appendix B

Distribution of Llullaillaco Summit Offerings

The offerings and the artifactual assemblages excavated from inside the Inca funerary platform on the summit of Llullaillaco are grouped according to their original depositional contexts. The data about depth, distance, and orientation of items are in reference to the main datum of the site—which was established at the central sector of the eastern wall of the platform next to the external border. Some of the offerings have been mapped in relation to the craniums of the individuals buried together with them.

Note: The orientations are in relation to a datum point and according to compass readings made to magnetic north. In the case of the three mummies, the direction they faced is noted as the "orientation of the body."

Southwest Sector of the Summit Platform: Southern Burial (S)

Mummy of Boy

- *Depth of the skull*: 1.2 m
- *Depth of the bottom of the body*: 1.67 m
- *Distance*: 4.7 m
- *Orientation*: 282°
- *Orientation of the body*: 90° (due east)

Elements of the offerings directly associated with the boy (distance and orientation measured to the skull of the mummy):

- *Spondylu*s male statue (S-25)
  Depth: 1.64 m. *Distance:* 0.35 m. *Orientation:* 235°
- *Spondylu*s camelid statue (S-26)
  Depth: 1.66 m. *Distance:* 0.33 m. *Orientation:* 233°

Elements in the funerary bundle of the male mummy:

- Sandals (S-28)
- Sandals (S-29)
- Small bag (S-30)
- Slings (S-31)
- Set of bags made of animal skin containing human hair (S-32)
- Bag adorned with feathers (S-33)
- Gray tunic (S-42)
- Red and brown outer mantle (S-43)
- Natural valve of *Spondylu*s (S-39)
  Depth: 1.2 m. *Distance:* 5.7 m. *Orientation:* 278°
- Medium-size bottle *(aribalo)* (S-24)
  Depth: 1.1 m. *Distance:* 4.7 m. *Orientation:* 294°

Offering Assemblage S-I

- *Spondylus* camelid statue (S-9)
  Depth: 1.2 m. *Distance:* 3.44 m. *Orientation:* 260º
- Gold male statue (S-10)
  Depth: 1.38 m. *Distance:* 3.41 m. *Orientation:* 265º
- *Spondylus* male statue (S-11)
  Depth: 1.4 m. *Distance:* 3.41 m. *Orientation:* 265º
- *Spondylus* camelid statue (S-12)
  Depth: 1.42 m. *Distance:* 3.4 m. *Orientation:* 265º

Offering Assemblage S-II

- Gold male statue (S-17)
  Depth: 1.55 m. *Distance:* 3.89 m. *Orientation:* 280º
- *Spondylus* male statue (S-18)
  Depth: 1.6 m. *Distance:* 3.89 m. *Orientation:* 278º
- Silver camelid statue (S-19)
  Depth: 1.59 m. *Distance:* 3.93 m. *Orientation:* 276º
- *Spondylus* camelid statue (S-20)
  Depth: 1.69 m. *Distance:* 3.92 m. *Orientation:* 274º
- *Spondylus* camelid statue (S-21)
  Depth: 1.66 m. *Distance:* 3.99 m. *Orientation:* 272º
- Necklace of *Spondylus* shell (S-22)
  Depth: 1.59 m. *Distance:* 3.93 m. *Orientation:* 276º

Offering Assemblage S-III

- Gold male statue (S-34)
  Depth: 1.5 m. *Distance:* 3.89 m. *Orientation:* 295º
- *Spondylus* male statue (S-35)
  Depth: 1.54 m. *Distance:* 3.88 m. *Orientation:* 150º (of statue S-34)
- Gold camelid statue (S-36)
  Depth: 1.58 m. *Distance:* 3.89 m. *Orientation:* 60º (of statue S-34)
- Silver camelid statue (S-37)
  Depth: 1.58 m. *Distance:* 3.89 m. *Orientation:* 50º (of statue S-34)
- *Spondylus* camelid statue (S-38)
  Depth: 1.55 m. *Distance:* 3.87 m. *Orientation:* 145º (of statue S-34)

Offering Assemblage S-IV

- *Spondylus* male statue (S-40)
  Depth: 1.15 m. *Distance:* 5.25 m. *Orientation:* 251º
- *Spondylus* camelid statue (S-41)
  Depth: 1.15 m. *Distance:* 5.25 m. *Orientation:* 251º
- Silver camelid statue (S-23)
  Depth: 0.17 m. *Distance:* 4.93 m. *Orientation:* 255º

NORTHERN SECTOR OF THE SUMMIT PLATFORM: NORTHERN BURIAL

Mummy of Female Adolescent (the "Maiden")

- *Depth of the skull*: 1.52 m
- *Depth of the bottom of the body*: 2.20 m
- *Distance*: 4.08 m
- *Orientation*: 344º
- *Orientation of the body*: 56º (facing northeast)

Elements in the funeral bundle of the maiden:

- Inca "key" tunic (N-33)
- Headdress of feathers (N-26)
- External mantle (N-34)
- Head cloth (N-35)

Artifactual offerings associated with the female juvenile individual (depths, distances, and orientations of the objects measured with regard to the mummy's cranium):

- Dried meat (N-4)
  Depth: 0.4 m. *Distance:* 0.44 m. *Orientation:* 81º
- Dried meat (N-5)
  Depth: 0.49 m. *Distance:* 0.23 m. *Orientation:* 77º
- Wooden tablespoon (N-6)
  Depth: 0.29 m. *Distance:* 0.39 m. *Orientation:* 117º
- Comb made of cactus thorns (N-7)
  Depth: 0.41 m. *Distance:* 0.45 m. *Orientation:* 99º
- Bundle of belts (N-8)
  Depth: 0.35 m. *Distance:* 0.49 m. *Orientation:* 95º
- Small bag (N-9)
  Depth: 0.4 m. *Distance:* 0.43 m. *Orientation:* 99º
- Two bags (N-10a and N-10b)
  Depth: 0.5 m. *Distance:* 0.45 m. *Orientation:* 103º
- Miniature wooden vase (N-11)
  Depth: 0.45 m. *Distance:* 0.45 m. *Orientation:* 99º
- Miniature wooden vase (N-12)
  Depth: 0.45 m. *Distance:* 0.43 m. *Orientation:* 99º
- Bag with attached disk (N-13)
  Depth: 0.32 m. *Distance:* 0.39 m. *Orientation:* 117º
- Small woolen wristband (N-14)
  Depth: 0.58 m. *Distance:* 0.43 m. *Orientation:* 74º
- Set of two bags made of animal skin containing human hair (N-15)
  Depth: 0.34 m. *Distance:* 0.31 m. *Orientation:* 122º
- Large bottle *(aribalo)* (N-16)
  Depth: 0.41 m. *Distance:* 0.39 m. *Orientation:* 99º
- Ceramic plate (N-17)
  Depth: 0.48 m. *Distance:* 0.49 m. *Orientation:* 79º
- Ornithological plate (N-18)
  Depth: 0.49 m. *Distance:* 0.49 m. *Orientation:* 79º
- Ceramic plate (N-19)

Depth: 0.51 m. *Distance:* 0.49 m. *Orientation:* 79º
- Ornithological plate (N-20)
  Depth: 0.52 m. *Distance:* 0.49 m. *Orientation:* 79º
- Pedestal pot (N-21)
  Depth: 0.49 m. *Distance:* 0.4 m. *Orientation:* 74º
- Medium-size jar (N-22)
  Depth: 0.53 m. *Distance:* 0.39 m. *Orientation:* 65º
- Gold female statue (N-23)
  Depth: 0.37 m. *Distance:* 0.42 m. *Orientation:* 304º
- Silver female statue (N-24)
  Depth: 0.37 m. *Distance:* 0.46 m. *Orientation:* 306º
- *Spondylus* female statue (N-25)
  Depth: 0.45 m. *Distance:* 0.49 m. *Orientation:* 308º
- Medium-size bag (N-27)
  Depth: 0.45 m. *Distance:* 0.55 m. *Orientation:* 102º
- Medium- size bag (N-28)
  Depth: 0.45 m. *Distance:* 0.49 m. *Orientation:* 95º
- Natural valve of *Spondylus* (N-29)
  Depth: 1.12 m. *Distance:* 4.8 m. *Orientation:* 300º

Offering N-I

- Gold camelid statue (N-1)
  Depth: 1.44 m. *Distance:* 4.75 m. *Orientation:* 356º

Offering Assemblage N-II

- Gold female statue (N-2)
  Depth: 1.12 m. *Distance:* 3.21 m. *Orientation:* 342º
- *Spondylus* female statue (N-3)
  Depth: 1.12 m. *Distance:* 0.23 m. *Orientation:* 343º

Offering N-III

- Silver female statue (N-30)
  Depth: 0.72 m. *Distance:* 3.9 m. *Orientation:* 300º

Offering Assemblage NE

- *Spondylus* female statue (NE-1)
  Depth: 1.17 m. *Distance:* 3.83 m. *Orientation:* 350º
- Silver camelid statue (NE-2)
  Depth: 1.89 m. *Distance:* 3.76 m. *Orientation:* 356º
- *Spondylus* camelid statue (NE-3)
  Depth: 1.82 m. *Distance:* 3.59 m. *Orientation:* 355º
- *Spondylus* camelid statue (NE-4)
  Depth: 1.85 m. *Distance:* 3.69 m. *Orientation:* 354º
- Gold miniature bracelet (NE-5)
  Depth: 1.82 m. *Distance:* 3.48 m. *Orientation:* 353º
- *Spondylus* male statue (NE-6)
  Depth: 1.68 m. *Distance:* 3.45 m. *Orientation:* 349º
- Gold male statue (NE-7)
  Depth: 1.85 m. *Distance:* 3.29 m. *Orientation:* 353º

Additional Artifacts Close to Surface

- Potsherd (lacking diagnostic characteristics) (N-31)
  Depth: 0.05 m. *Distance:* 4.1 m. *Orientation:* 296º
- Unidentified organic matter of apparent animal origin (N-32)
  Depth: 0.1 m. *Distance:* 4.1 m. *Orientation:* 296º

EASTERN SECTOR OF THE SUMMIT PLATFORM: EASTERN BURIAL

Mummy of Young Girl (the "Lightning Girl")

- *Depth of the skull*: 1.2 m
- *Depth of the bottom of the body*: 1.74 m
- *Distance*: 1.84 m
- *Orientation*: 347º
- *Orientation of the body*: 245º (looking west)

Offerings associated with the infantile female mummy:
- Pedestal pot (E-1)
  Depth: 1.13 m. *Distance:* 1.7 m. *Orientation:* 354º
- Mocassins (E-2)
  Depth: 1.25 m. *Distance:* 1.74 m. *Orientation:* 356º
- Ceramic plate (E-3a)
  Depth: 1.12 m. *Distance:* 1.68 m. *Orientation:* 353º
- Ceramic plate (E-3b)
  Depth: 1.12 m. *Distance:* 1.68 m. *Orientation:* 353º
- Ceramic plate (E-4a)
  Depth: 1.12 m. *Distance:* 1.61 m. *Orientation:* 348º
- Ceramic plate (E-4b)
  Depth: 1.12 m. *Distance:* 1.61 m. *Orientation:* 348º
- Bowl with two handles (E-5)
  Depth: 1.18 m. *Distance:* 1.7 m. *Orientation:* 354º
- Ornithological plate (E-6a)
  Depth: 1.16 m. *Distance:* 1.68 m. *Orientation:* 353º
- Ornithological plate (E-6b)
  Depth: 1.16 m. *Distance:* 1.68 m. *Orientation:* 353º
- Wooden vase (E-7)
  Depth: 1.16 m. *Distance:* 1.61 m. *Orientation:* 348º
- Small bottle *(aribalo)* (E-8)
  Depth: 1.23 m. *Distance:* 1.7 m. *Orientation:* 354º
- Sandals and comb (E-9)
  Depth: 1.28 m. *Distance:* 1.72 m. *Orientation:* 356º
- Wooden vase (E-10)
  Depth: 1.25 m. *Distance:* 1.74 m. *Orientation:* 349º
- Small jar (E-11)
  Depth: 1.23 m. *Distance:* 1.69 m. *Orientation:* 356º
- Textile bag (E-12)
  Depth: 1.38 m. *Distance:* 1.69 m. *Orientation:* 335º

- *Spondylus* female statue (E-13)
  Depth: 1.35 m. *Distance:* 1.82 m. *Orientation:* 336º
- Silver female statue (E-14)
  Depth: 1.35 m. *Distance:* 1.81 m. *Orientation:* 335º
- Gold female statue (E-15)
  Depth: 1.35 m. *Distance:* 1.78 m. *Orientation:* 334º
- *Spondylus* female statue (E-16)
  Depth: 1.35 m. *Distance:* 1.76 m. *Orientation:* 333º
- Bag containing dried potatoes or beans (E-17)
  Depth: 1.14 m. *Distance:* 1.95 m. *Orientation:* 350º
- Bag containing dried meat and corn (E-18)
  Depth: 1.26 m. *Distance:* 1.95 m. *Orientation:* 350º
- Knotted bag (E-19)
  Depth: 1.32 m. *Distance:* 2.0 m. *Orientation:* 349º
- Bag adorned with feathers (E-20)
  Depth: 1.33 m. *Distance:* 2.0 m. *Orientation:* 349º
- Bowl with two handles (E-21)
  Depth: 1.16 m. *Distance:* 1.73 m. *Orientation:* 355º
- Bag made of animal skin (containing human hair) (E-22)
  Depth: 1.43 m. *Distance:* 1.73 m. *Orientation:* 351º
- Leather piece with cord attached (E-23)
- *Spondylus* female statue (E-27)
  Depth: 0.79 m. *Distance:* 1.3 m. *Orientation:* 280º

Appendix C

Conservation of the Mummies and Artifacts

The Llullaillaco mummies are unusual even among the world's few "ice mummies." This is because the *capacocha* victims were frozen immediately at the time of their deaths and remained so until their discovery five centuries later. There are several reasons for their excellent preservation, but the main one would have been the continuity of below-freezing temperatures at the high altitude of Mount Llullaillaco (cf. Jones 2001:71). Cronyn (1990:24) noted that although some humidity is necessary the absolute absence of water causes shrinkage and embrittlement of organic materials by water loss. Therefore, "the best condition for preservation is that of extreme cold—for here, since all water is turned to ice, it is inactivated without being lost and so both inorganic and organic materials are unaffected" (Cronyn 1990:24).

On Mount Llullaillaco, additional factors would have played roles. The volcanic ash layer surrounding the mummies would have inhibited bacteria, while maintaining moisture (Angelique Corthals, 2009 personal communication to Reinhard). The vapor barrier established by this combination of conditions in the burials would have also impeded decomposition (Quigley 2006:16).

Once mummies were uncovered on Mount Llullaillaco, a number of strategies to maintain their preservation were employed at different stages in the excavation and in the mummies' subsequent transportation to, and storage in, a laboratory. These strategies were based on our previous experience recovering frozen mummies, especially on Mount Ampato (Reinhard 2005). Recovery procedures specific to Salta Province had been established thanks to our recovery of organic materials, including the remains of a frozen mummy, on Quehuar only weeks earlier (Reinhard and Ceruti 2005). Thus, prior to leaving for Llullaillaco we had already arranged with Salta's Cultural Patrimony Office (Dirección de Patrimonio Cultural, Salta) for any organic materials that might be recovered to be kept in freezers in a laboratory at Salta's Catholic University (Universidad Católica de Salta) where they could be studied under controlled conditions. Satellite phone communications were to be maintained throughout the expedition in order to have facilities and transportation organized with a minimum of delay.

During the excavation, the mummy bundles and other artifacts were wrapped in plastic and aluminum foil after they had been recovered from the burials (Figures C.1 and C.2). The mummy bundles (and some

Fig. C.1. The preparation of a mummy bundle by Arcadio and Ignacio Mamani to be carried down from Llullaillaco's summit.

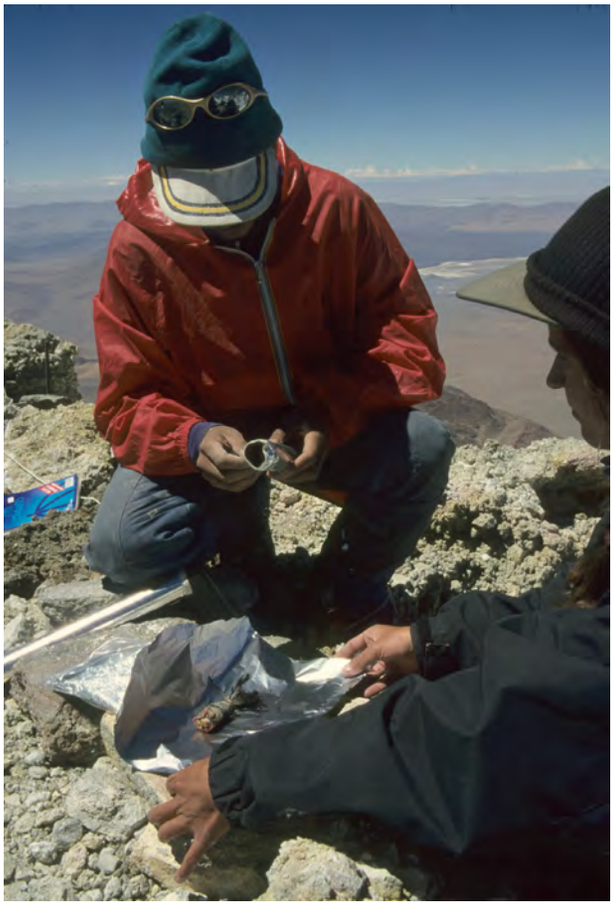


Fig. C.2. Wrapping up an artifact on the summit of Llullaillaco.

Fig. C.3. Insulation for a mummy being carried by Orlando Jaen to the summit of Llullaillaco.

artifacts) would be kept covered in snow to better protect them against sunlight. They were later transported down the mountain wrapped in insulating materials, and artifacts would be further wrapped for transportation to the laboratory (Figures C.3 and C.4). The Argentine Army provided transportation to the closest city, Salta, some 500 km distant. During the trip, the mummies—still wrapped in insulated bundles (Figure C.5)—were kept in wooden boxes containing dry ice (cf. Ceruti 2003b; Reinhard 2005). Once in Salta, they were removed from the boxes and placed in commercial freezers (Figures C.6 and C.7).

In March of 1999, the Ministry of Education of the government of the Province of Salta entrusted Salta's Catholic University (Universidad Católica de Salta) with the temporary custody of the three mummies and the other artifacts recovered from Llullaillaco, and designated Johan Reinhard as Scientific Coordinator. The interdisciplinary studies on the Llullaillaco and Quehuar mummies were supervised in collaboration with Constanza Ceruti at Catholic University of Salta's Institute of High-Mountain Research (Instituto de Investigaciones de Alta Montaña). More than 20 specialists from different parts of the world provided advice as honorary members of a committee established for the preservation of materials recovered from mountaintop sites.

With the support of the Salta government, CT scans of the mummies were undertaken at San Bernardo Hospital five days after their arrival in Salta—demonstrating their nearly perfect preservation (Figure C.8). A laboratory was set up at the university campus of Castanares, in the suburbs of the city (see *www.ucasal.net/ceruti*). Three rooms were dedicated to the laboratory at Salta´s Catholic University, where the mummies and artifacts were preserved in freezers from the time of their discovery in 1999 until the government had constructed a new laboratory and museum in 2004. The university's laboratory was protected with an alarm system—against fire and robbery—and provided with permanent around-the-clock police protection.

The atmosphere in the laboratory was controlled with an air-conditioning system, and cold lights were installed to illuminate the rooms. Access to the laboratory was

Fig. C.4. Inventory and packing of artifacts at Llullaillaco's base camp.

Fig. C.5. Packing of mummy bundle in a box containing dry ice for the journey to Salta.

Fig. C.6. Removing a mummy bundle from the freezer truck to take into the Hospital of San Bernardo (Salta) for a CT scan.

restricted to the scientists who coordinated the research and to the personnel from Salta's Cultural Patrimony Office. An individual code number was necessary to disable the alarm and enter the room in which the mummies and objects were stored. On 18 November 2003, the Education Ministry of the government of Salta established (Decree 2284) a Scientific Committee to assist in evaluating research and conservation procedures. Its members consisted of Dr. Johan Reinhard (President), Dr. Constanza Ceruti (Vice-President), Dr. Carlos Previgliano, Dr. Juan Schobinger, Dr. Gerardo Vides, Dr. Josefina González, and Dr. Facundo Arias.

Five freezers were connected to a generator that automatically supplied energy in the eventuality of a breakdown of electricity. (The Ministry of Education of the Province of Salta provided the freezers and alarms.) Each mummy was located in its own freezer, and there was a spare freezer available in the eventuality of an engine failure. The temperature and humidity inside the freezers were monitored by thermometers and hygrometers.

Several specialists were consulted in the field of frozen tissue and mummy conservation (cf. France et al. 2005). Given the newness of this field, it was to be expected that different opinions existed concerning specific points. Nonetheless, there were general lines of agreement. The mummies were wrapped first in a

Fig. C.7. Refrigerators being checked in 2004 by conservation specialist Miguel Xamena in the laboratory of the Museum for High Altitude Archaeology (MAAM) (Salta).

Fig. C.8. CT-scan images of one of the Llullaillaco mummies being examined the Hospital of San Bernardo (Salta) by doctors Jorge Pastrana and Carlos Previgliano.

layer of sterilized surgical material and then in a layer of acid-free cotton cloth. They were covered in transparent plastic sheets that were sealed to avoid the loss of the humidity in the corpses, as well as the incorporation of humidity from the environment. The bodies were preserved at a temperature of –13° C to slow down as much as possible the chemical and biological processes responsible for the destruction of soft tissues, without endangering the mummies by exposing them to lower temperatures that could potentially have an impact on the condition of the cellular walls.

The microenvironment that surrounded the mummies inside the freezers was controlled with the use of silica gel, with relative humidity values between 45 and 65 percent—recommended for the preservation of organic materials (Cronyn 1990:34, 72). Microbiological tests performed in late 1999 by the physician Dr. Arnaldo Arroyo (1999) proved negative, suggesting that microorganisms in the environment had not affected the mummies.

The strategy of preservation of the Llullaillaco frozen mummies involved daily control of the conditions of temperature and humidity in the freezers, combined with limited working sessions in which several interdisciplinary studies were performed simultaneously. The working sessions with the frozen mummies were limited to a maximum duration of 20 minutes and were planned several months in advance. The participation of different specialists was coordinated in order to maximize the use of the time when the mummies were out of the freezers.

In collaboration with the authors, local and international specialists have participated in the interdisciplinary studies on the Llullaillaco materials and mummies: paleopathology (Dr. Bob Brier, Dr. Vides Almonacid, and Dr. Arthur Aufderheide), paleoradiology (Dr. Carlos Previgliano and Dr. Niels Lynnerup), dental studies (Dr. Facundo Arias and Dr. Josefina González), pediatrics (Dr. Rubén Gurevech and Dr. Gael Lonergan), ancient DNA (Dr. Keith McKenney, Dr. Angelique Corthals, and Dr. Andrew Merriwether), ancient hair analysis (Dr. Larry Cartmell and Dr. Andrew Wilson), microbiology (Dr. Arnaldo Arroyo), textiles (Dr. Clara Abal and Dr. Vuka Roussakis), Inca archaeology (Dr. Craig Morris, Dr. Thomas Besom, and Dr. Juan Schobinger), and ceramic analysis (Dr. Tamara Bray).

While at Catholic University, examination of the mummies and materials always took place inside the laboratory. In the case of X-ray studies, a complete set of radiological equipment had to be installed in order to avoid any risk in the transportation of the mummies outside the laboratory (Figures C.9 and C.10). The studies that were undertaken were primarily noninvasive in order to maintain the integrity of the mummies' body tissues and interior organs.

Working sessions with the mummies and other organic materials have been used as part of a plan of

Fig. C.9. Preparing the maiden for an X-ray.

Fig. C.10. Examining X-rays of the Llullaillaco maiden.

periodic controls (Figures C.11 through C.15) that involve macroscopic exams, microbiological analysis, photography, and filming (for tests conducted, see France et al. 2005). (Whereas the organic materials from Llullaillaco and Quehuar were in the custody of Catholic University, the majority were kept frozen in freezers in order to preserve them as sources of scientific information.) As of 2004, no changes had been recorded in the external appearance of the three bodies during the period they were preserved under the conditions described previously (cf. Corthals 2004).

Tests undertaken in recent years in Italy have demonstrated that complications can arise with frozen mummies when they are placed in more open units, such as used in displays. The results of the tests—and of measures taken to overcome them—were noted by Bruttini and Samadelli (2006) and Egarter-Vigl (2002, 2003, 2005, 2006). Artificial lighting can damage textiles, and therefore it was necessary to control for this as well. One lux is the amount of light given off by a candle, and more than 30 lux is thought to be harmful to textiles over time (cf. Abal 2003:248). While in custody at the Catholic University of Salta, the mummies and artifacts were kept within freezers in the dark. In August of 2004, the mummies were transferred to a laboratory in the Museum for High Mountain Archaeology [Museo de Arqueología de Alta Montaña (MAAM)]. The museum opened to the public in November of 2004 (Figure C.16).

Using recommendations of an international group of specialists, the engineer Mario Bernaski of MAAM oversaw the construction of specially designed units that would ensure the continued long-term conservation of the mummies while allowing them to be displayed. (In 2007, one of the mummies went on public display for the first time.) The units are kept in an environmentally controlled laboratory constructed to maintain pollution-free conditions. In addition to the procedures and standards originally established in 1999, the units replicate the atmospheric pressure on the summit of Llullaillaco. The oxygen content of the air inside the units was reduced to inhibit the activity of aerobic organisms that might negatively impact on organic materials (cf. Cronyn 1990:24).

The company selected to create the units by MAAM was INVAP, an Argentinean technology company that develops multidisciplinary technological projects in the nuclear, industrial, medicinal, and educational fields. It is the only company in Argentina qualified by NASA (the U.S. Aeronautics and Space Administration) for projects in outer space. An examination to establish the state of preservation of the three Llullaillaco mummies was undertaken by specialists in December of 2008, and the conclusion they reached was that the mummies were being maintained in a remarkably stable state and would remain so for many years to come (Corthals 2009).

Fig. C.11. Placing a needle biopsy sample into a vial for storage.

Fig. C.12. Taking a sample from the older girl's mummy.

Fig. C.13. The labeling of samples by Jorge Pastrana and Constanza Ceruti in Catholic University's laboratory.

Fig. C.14. Examination of the male tunic found with the Llullaillaco maiden by the textile specialist Clara Abal de Russo.

Fig. C.15. Images of the wart on the boy's hand being examined by Dr. Gerardo Vides.

Fig. C.16. The exterior of the Museum for High Altitude Archaeology (MAAM) in Salta (2004).

Appendix D

Chronology of the Expedition

The following is a brief chronology of the logistical and research activities carried out during the archaeological expedition to Llullaillaco in February and March of 1999. Team members who took part in the summit excavations include Constanza Ceruti and Antonio Mercado (Argentineans); Jimmy Bouroncle, Orlando Jaen, Arcadio Mamani, Edgar Mamani, Ignacio Mamani, and Ruddy Perea (Peruvians); and Johan Reinhard (American). In addition, team members who participated in the initial ascent of the mountain and establishment of Camp 2 (the highest camp) include Adriana Escobar, Sergio Lazarovich, Alejandro Lewis, and Christian Vitry (Argentineans). The American photographer Gordon Wiltsie accompanied the team to Camp 1.

February 26 to March 2: During this period, team members, supplies, and equipment were transported from Salta to the base of Mount Llullaillaco in a rented Land Rover and two Unimog vehicles provided by the Argentine Army. The night of February 26 was spent in San Antonio de los Cobres, February 27 in Tolar Grande, February 28 in Socompa, March 1 en route to Llullaillaco, and March 2 at Llullaillaco's Base Camp (Figures D.1 and D.2). Regular satellite phone communication with Mario Lazarovich, director of Salta's Cultural Patrimony Office (Dirección de Patrimonio Cultural, Salta) was begun March 2.

March 2–3: A survey and test pits were undertaken in the cemetery [at 4,900 m (16,076 ft)] at the base of Llullaillaco while some loads were ferried to be left at the site of Camp 1 (Figure D.3).

March 4: A survey was made of the *tambo* (way station) at 5,200 m (17,060 ft). Mapping was completed of the ruins below the *tambo* at about 4,960 m (16,273 ft). More loads were ferried to the site of Camp 1 [at about 5,800 m (19,029 ft)], and two men remained there the night.

March 5–6: Test pits were excavated at the *tambo*.

March 6: Two men carried loads to leave near ruins at 6,400 m (20,997 ft), and four others carried loads and set up tents at Camp 1.

March 7: A survey was done of the complex of ruins at approximately 5,600 m. Some men carried loads to leave at Camp 2 [about 6,600 m (21,653 ft)] and examined the summit. The remainder of the team moved to Camp 1 (Figure D.3).

Fig. D.1. Unloading supplies from army trucks at base camp in 1999, with Llullaillaco in the background.

Fig. D.2. Base camp on Llullaillaco at 4,900 m (16,076 ft).

March 8–9: A survey was undertaken of ruins at about 6,260 m (20,538 ft). A high camp (Camp 2) was established at about 6,600 m (21,653 ft) and loads were ferried up to it from the base camp (Figures D.4 and D.5).

March 9: At Camp 1, photographer Gordon Wiltsie was discovered suffering from pulmonary and cerebral edema and he descended with Ignacio Mamani to the base camp.

March 10–11: A survey was begun of the summit ruins at 6,715 m (22,031 ft) (Figure D.6).

March 12–13: Field activities were suspended due to a snowstorm (Figure D.7). The stocking of supplies at Camp 2 was completed. On March 13, Adriana Escobar, Sergio Lazarovich, and Christian Vitry returned to Salta as originally planned. Orlando Jaen and Alejandro Lewis drove them and Gordon Wiltsie to Socompa, where they caught the train to Salta. (Alejandro Lewis departed later, on March 15.)

March 14: The survey of the summit ruins was completed. A test pit was excavated in the windbreak structure on the summit and in the stone circle of the platform.

March 15: A test pit was conducted in a stone circle on the promontory, and excavations begun at the summit platform. The first offering assemblage was uncovered in the southern side of the platform and was recorded (Figure D.8).

March 16: Excavations were expanded to the northern side of the platform. The recording of other offering assemblages was begun at the southern side of the platform and a discovery made of the boy's burial (Figure D.9).

March 17: The older girl's burial was located and excavations begun in this northern burial. Excavations of the southern (boy's) burial were finalized.

March 18: Excavation continued of offering assemblages in the northern and southern areas of the platform, and the mummy bundles of the maiden and boy were removed (Figure D.10). Arrangements for transporting the mummies were discussed with Salta's Cultural Patrimony Office via satellite phone.

Fig. D.3. Camp 1 at 5,850 m (19,193 ft).

Fig. D.4. Preparing loads at the high camp at 6,600 m (21,653 ft).

Fig. D.5. Overview of the high camp at 6,600 m (21,653 ft).

Fig. D.6. Survey on the summit ridge at 6,710 m (22,014 ft) on Llullaillaco

March 19: The excavation of the eastern (younger girl's) burial was begun. Test pits were started in the two-roomed structure near the platform.

March 20: Excavations continued in the eastern burial, and the recording of an offering assemblage to the northeastern side of the platform was completed. Excavations in the two-roomed structure continued. The backfilling of some of the excavations was begun.

March 21: The complex of ruins at about 6,500 m (21,325 ft) on the saddle was surveyed. Some team members descended to Camp 1 at about 5,800 m (19,029 ft) (Figure D.11).

March 22–23: Descent was made to the base camp. Archaeological materials and mummies were transported part of the way down the mountain. On March 22, final arrangements for transporting the mummies and for their storage were made with Salta's Cultural Patrimony Office and with Catholic University via satellite phone.

March 24–25: An inventory and initial preparation of the archaeological materials was undertaken at base camp for transportation to Salta.

March 26–27: The team returned to the city of Salta together with Cultural Patrimony and Argentine Army officials (Figure D.12).

Fig. D.7. Snowstorm while the team descends from Llullaillaco's summit to the high camp.

Fig. D.8. Arcadio Mamani, Constanza Ceruti, and Jimmy Bouroncle (left to right) survey the summit platform at the beginning of the excavation.

Fig. D.9. Taking vertical measurements at the boy's burial in the summit platform.

Fig. D.10. Members of the team that carried out the investigations on Llullaillaco's summit: Standing in the back row (left to right) are Ignacio Mamani, Antonio Mercado, Ruddy Perea, Jimmy Bouroncle, Constanza Ceruti, and Johan Reinhard. Kneeling in the front row (left to right) are Arcadio Mamani, Edgar Mamani, and Orlando Jaen

Fig. D.11. Final day's descent to base camp.

Fig. D.12. Two Land Rovers, an army vehicle, and a truck of the Municipality of Tolar Grande leaving base camp at the start of the return to Salta.

Appendix E

RESOURCES

ORGANIZATIONS

- **The Museum of High-Altitude Archaeology (Museo de Arqueología de Alta Montaña, MAAM)** in Salta has the following address: Calle Mitre 77, 4400 Salta, Argentina *(www.maam.org.ar)*. Video clips about the Llullaillaco mummies and the museum are currently (2008) available on the museum's web site. The first video (titled "MAAM") provides scenes of the museum, the expedition, testimonies of indigenous people, and so on. Footage of the new laboratory, the display units, and conservation procedures can be seen in the clip titled "Laboratory."
- **The Institute of High Mountain Research (Instituto de Investigaciones de Alta Montaña) of Catholic Universit**y can be reached at: Universidad Católica de Salta, Calle Pellegrini 790, 4400 Salta, Argentina *(www.ucasal.net/ceruti/)*.

WEB SITES RELATING TO THE INCAS AND HIGH-ALTITUDE ARCHAEOLOGY

- For a comprehensive listing of web sites about the Incas, see: *www.ex.ac.uk/~RDavies/inca/links.html*
- National Geographic's web site (including a video clip) about the 1999 expedition to Mount Llullaillaco is found at: *www.nationalgeographic.com/events/99/mummies/*
- National Geographic's web site about the 1996 Pichu Pichu expedition and the "virtual autopsy" of the Ampato Ice Maiden is found at: *www.nationalgeographic.com/features/97/andes/*
- NOVA's web site about the 1996 Sara Sara expedition and discovery of an Inca mummy is found at: *http://www.pbs.org/nova/peru*
- For results of the Ice Maiden's DNA testing, visit the Institute for Genomic Research's web site: *http://www.tigr.org/cet/dna/ice/index.html*
- For a description of the special unit designed to preserve the Ampato Ice Maiden, visit Carrier Corporation's web site at: *http://www.carrier.com* (click on Site Map → Unique Projects → Ampato Maiden)
- National Geographic's web site about the 1995 Ampato expedition and the Inca Ice Maiden discovery is found at: *http://www.nationalgeographic.com/features/96/mummy/index.html*

- The Mountain Adventures web site has exercises for teachers at: *http://www.kidsgardening.com/TMI/teachers/m1.html*
- NOVA's online teachers' guide for mummies is found at: *http://www.pbs.org/wgbh/nova/teachersguide/icemummies/*

FILMS

Many films have appeared about the Incas (e.g.. *Inca: Secrets of the Ancestors* by Time/Life TV in 1995 and *Searching for Lost Worlds: Machu Picchu* by Discovery TV in 1997). Films that focus on the importance of sacred landscape among the Incas and/or findings relating to Inca frozen mummies include the following:

- National Geographic TV's *Child Mummy Sacrifice* (2009) describes scientific research undertaken with the Llullaillaco mummies.
- National Geographic TV's *Ice Mummie*s (1999) is devoted to the Llullaillaco discoveries.
- NBC/National Geographic TV's Special *Inca Mummies: Secrets of a Lost Empir*e (2002) contains scenes of the Llullaillaco discoveries.
- National Geographic Explorer TV's film *Mystery of the Inca Mummy* (1996) is about the 1995 expedition to Ampato and laboratory work undertaken with the Inca Ice Maiden. Part of this film has also appeared in National Geographic's hour-long video *Ancient Graves: Voices of the Dea*d.
- NOVA's hour-long film *Frozen in Time* is about the 1996 expedition to Sara Sara.
- The film *Andes: Life in the Sky* appeared on Discovery TV and documents the 1996 Pichu Pichu expedition. It is available at the following web site: *http://www.brandoquilici.com/buy_video.asp*
- The film *Light at the Edge of the World: Sacred Geography* (2007) by 90th Parallel Productions (Toronto, Canada) examines concepts about sacred landscape of the Incas, including at Machu Picchu.
- Digital video footage is available from Johan Reinhard documenting Inca sites (e.g., Cuzco, Sacred Valley, Machu Picchu, Island of the Sun) in the Andes and the following high-altitude archaeological expeditions: Ampato 1997, Misti 1998, Quehuar 1999, Llullaillaco 1999, Chañi 2000, and Pachatusan 2002.

PUBLICATION FOR SCHOOL TEACHERS

- The National Geographic Society published (1999) a *Read & Explore Kit*, including a teacher's guide, to be used in conjunction with Johan Reinhard's book *Discovering the Inca Ice Maide*n (for ages 10 and up).

Glossary of Foreign Terms

Note: The origin of a word is denoted "S" for Spanish, "Q" for Quechua, and "A" for Aymara.

achiote (S): The annato seed (*Bixa orellana*).

aclla (Q): A woman selected for royal service at a young age, who generally was sequestered in a special building.

acsu (aqsu) (Q): A dress.

alpaca (Q): *Lama paco*. A domesticated species of Andean camelid with fine wool.

altiplano (S): The plateau between the eastern and western ranges of Peru and Bolivia, consisting of high and relatively flat grasslands.

altomisayoq (S and Q): The most learned and powerful ritual specialist.

amaru (Q): A mythological giant serpent, usually thought to be underground.

Ampato (A/Q): A mountain in southern Peru. The term appears to have been derived from the Aymara/Quechua word for frog.

anti (Q): Eastern forested area.

Antisuyu (Q): The northeastern quarter of the Inca Empire.

apacheta (apachita) (Q): A mound of stones (normally found on high places along a road) used ritually.

apu (Q): A traditional nature spirit, often a mountain. Frequently used in the Inca period to denote a lord or person of high authority.

Arequipa (Q): A city in southern Peru.

Atacama Desert: One of the world's driest deserts, located in northern Chile.

awki (Q): A general term for mountain deities in the central Andes.

ayllu (Q): A social group, usually localized, whose members share a common focus. A localized descent group.

Aymara (A): An ethnic and linguistic group, which basically bordered the Quehua-speaking region to the east and south of Cuzco.

ayni (Q): Exchange labor. Aid given that is to be reciprocated.

braza (S): Fathom. A length of measurement of about 5 feet 6 inches (1.67 m).

cabildo (S): Spanish term meaning "council of authority," it is also used in Cabanaconde to denote the mountain deities with authority over the region.

cancha (Q): See *kancha*.

capacocha (Q): An Inca ceremony in which sumptuous offerings were made, including the sacrifice of children.

Capac Raymi (Q): One of the most important of the Inca festivals, which took place at the December solstice.

ceque (Q): The word for *line*, used here to mean a conceptualized line such as those that formed the system of symbolic lines radiating out from Cuzco.

ch'alla (A/Q): Offering a libation.

chañar (Q): A tree (*Geoffroea decorticans*), the fruit of which is edible.

charqui (charki) (Q): Dried meat.

chasqui (chaski) (Q): A runner who carried messages on Inca roads.

chicha (awarak): A fermented beverage, usually made from maize, called *aqha* in Quechua.

Chinchaysuyu (Q): The northwestern quarter of the Inca Empire.

chullpa (Q): Funerary tower. Burial structure that is above ground.

chumpi (Q): Hand-woven belt.

chuño (Q): Freeze-dried potato.

chuspa (Q): Bag.

coca (Q): *Erythroxylon coca*. A plant whose leaves contain a mild stimulant and that is chewed by Andean peoples.

Collasuyu (Kollasuyu) (Q): The southeastern quarter of the Inca Empire.

collca (qollqa) (Q): A storehouse.

coya(Q): The principal wife of the Inca ruler.

cumbi (Q): Very fine weaving.

Cuntisuyu (Kuntisuyu) (Q): The southwestern quarter of the Inca Empire.

curaca (kuraka) (Q): A traditional leader of a community. An indigenous authority.

curandero (S): A traditional healer.

despacho (S): A bundle containing ritual offerings to nature spirits, which are usually burned.

encomendero (S): A person who was the holder of an *encomienda* (see following).

encomienda (S): A "commission," which in the Andes referred to land allotted to a person to whom the land's inhabitants owed tribute and labor.

enqa (enqaychu) (Q): A natural object, usually a stone, resembling a thing it is believed to represent and considered a repository of its essence.

estado (S): State; also a unit of measurement of about 5 feet 2 inches (1.57 cm).

gendarmería (S): National armed force that patrols the frontiers.

guaca (Q): See *huaca*.

guanaco (Q): *Lama guanicoe*. The larger species of the two wild camelids of the Andes.

hanan pacha (hanaqpacha) (Q): The world above.

huaca (waka or guaca) (Q): A shrine, sacred place, or object. It might also refer to a meteorological phenomenon (e.g., a rainbow) or a feature of the landscape.

Hualca Hualca (Q): A mountain in southern Peru.

ichu (Q): Wild bunch grass.

illa (Q): See *enqa*.

Illapa (Q): Deity of lightning, whom the Incas believed controlled weather.

Instituto Nacional de Cultura (INC) (S): National Institute of Culture, a government body whose responsibilities include overseeing the protection of Peru's cultural patrimony.

Inti (Q): The sun. The Sun deity of the Incas.

kallanka (Q): A long hall.

kancha (Q): An enclosure. A group of buildings around a patio.

kay pacha (Q): This world. The earth, as opposed to the underworld and the sky.

kero (Q): A vase.

k'intu (Q): An offering of coca leaves.

legua (S): A league, or about 3.5 miles (5.57 km).

llama (Q): *Lama glama*. A domesticated species of Andean camelid.

llareta (Q): A resinous moss known for its high heat output.

llautu (Q): A wool cord wrapped around the head (used by Inca nobles).

lliclla (Q): Shawl worn by women.

Llullaillaco (Q): A mountain on the border between Argentina and Chile.

Mamacocha (Q): Mother Lake, often referring to the ocean.

marca (Q/A): Village or town.

misa (S): Ritual offerings on a cloth, originally taken from the Spanish word *misa* (for the Catholic mass) and possibly linked with *mesa* ("table").

Misti (S): A prominent volcano in southern Peru near the city of Arequipa.

mit'a (Q): Compulsory labor tribute.

mitimaes (Q): Colonists sent by the Incas.

Mukurka (Muqurqa) (Q): A lake on the west side of Mount Ampato.

mullu (Q): Mainly used to designate *Spondylus* seashells, it has come to be more widely applied to seashells employed in rituals generally.

nañaca (Q): Head cloth.

pacarina (Q): A sacred place of origin to a group of people.
pacha (Q): The world; earth; time.
Pachamama (Q): Earth Mother.
pago (S): Ritual payment to traditional deities, which is usually burned.
pampa (Q): Flat plain.
paqo (Q): A ritual specialist.
Pichu Pichu (Q): Mountain in southern Peru. Pichu means "peak," and its repetition refers to a massif with many summits.
pirca (Q): A building of stones made without mortar.
pucara (Q): A fortress.
puna (Q): The high grasslands.
Qoyllur Riti (Rit'i) (Q): A festival in the mountains east of Cuzco.
Quechua (Q): An ethnic and linguistic group, which was originally concentrated in central Peru—including the region of Cuzco. The language spoken by the Incas.
Quehuar (Q): A mountain in northern Argentina.
quipu (khipu) (Q): A knotted string device for use as a mnemonic aid for keeping records.
reducción (S): A nucleated settlement into which the Spanish resettled Indians from dispersed communities in order to maintain better control.
repartimiento (S): An allotment that in the Andes referred to the allocation of land to a person by the Spaniards who could obtain tribute from its inhabitants.
Sabancaya (Q): A volcano in southern Peru that was active in the 1990s.
Salta (S): A city in northern Argentina.
Sara Sara (Q): A mountain in southern Peru. Sara means "maize," and its repetition indicates an abundance of it.
saya (Q): A division into halves.
Sendero Luminoso (S): Shining Path, the name of a Marxist revolutionary movement that began in Peru in the 1980s.
sierra (S): Mountain range, often referring to the Andean highland region in general.
suyu (Q): A quarter. One of the four parts of the Inca Empire.
Tahuantinsuyu (Tawantinsuyu) (Q): The name used by the Incas for their empire, literally meaning "the land of four quarters."
tambo (Q): A way station of the Incas.
Taqui Onqoy (Q): Literally "dancing sickness," and applied to an indigenous religious movement of the 1500s.
tierra (S): Earth; land.
t'inka (Q): A libation in which drops of liquid are flicked into the air.
tinku (Q): Ritual battle. Literally, an "encounter."
tio (S): A deity of mines. According to some chroniclers, this was originally derived from *dios*, the Spanish term for "deity."
Tunupa (A): A pre-Hispanic deity associated with weather.
tupu (Q): Shawl pin. Its synonym is also used to designate a measure of land.
ukhupacha: The underworld.
uncu (Q): A tunic worn by males.
ushnu (usnu) (Q): A raised stepped platform used in religious and political contexts by the Incas.
ushuta (Q): Sandal.
vara (S): A staff of office; also a unit of measurement of 2 feet 7 inches (83.6 cm).
vicuña (Q): *Lama vicugna*. The smaller of the two wild Andean camelids. It has exceptionally fine wool.
Viracocha (Q): The Inca creator deity and culture hero.
waka (Q): See *huaca*.
wamani (Q): A term for a mountain deity in the central Andes.
waraca (huaraca) (Q): A sling.
yacolla (Q): A mantle worn my males.
yaku (llacu) (Q): Water.
yanantin (Q): A matched pair.
yatiri (A): A ritual specialist.
yawar (Q): Blood.
Yawar Fiesta (Q and S): Literally the "blood festival," referring especially to the festival in which a condor is tied to a bull.
yunga (Q): Warm region.

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The Incas carried out some of the most dramatic ceremonies known to us from ancient times. Groups of people walked hundreds of miles across arid and mountainous terrain to perform them on mountains over 6,096 m (20,000 feet) high. The most important offerings made during these pilgrimages involved human sacrifices (*capacochas*). Although Spanish chroniclers wrote about these offerings and the state sponsored processions of which they were a part, their accounts were based on second-hand sources, and the only direct evidence we have of the *capacocha* 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 describe the results of research undertaken on Mount Llullaillaco (6,739 m/22,109 feet), which has the world's highest archaeological site. The types of ruins and artifact assemblages recovered are described and analyzed. By comparing the archaeological evidence with the chroniclers' accounts and with findings from other mountaintop sites, common patterns are demonstrated; while at the same time previously little known elements contribute to our understanding of key aspects of Inca religion. This study illustrates the importance of archaeological sites being placed within the broader context of physical and sacred features of the natural landscape.

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