Sacred Mountains: An Ethno-Archaeological Study of High Andean Ruins

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Casilla 1995
Lima 100, Peru

ABSTRACT Ancient ritual sites have been found on Andean mountain summits up to 6,700 m. In several areas they constitute the most important prehispanic religious structures. Following a discussion of the origin of the sites, a synthesis is presented of historical and ethnographic data from a broad area of the Andes concerning the reasons for mountain worship. It was found that mountains were venerated primarily due to their control of weather and water sources and thus the fertility of crops and animals. Earlier theories to explain the sites are briefly examined. It is concluded that mountain worship helped to unify Andean peoples through shared symbols and rites and is of great antiquity, being based on sound ecological principles. Its study leads to a better understanding of concepts fundamental to traditional Andean culture.

RESUME Les montagnes sacrées: une étude ethno-archéologique des ruines dans les hautes Andes. Des sites historiques de rites religieux ont été découverts dans les Andes, sur des sommets pouvant atteindre 6,700 m. Ils constituent dans plusieurs régions les structures pré-hispaniques les plus importantes. Une discussion sur l'origine de ces sites est suivie d'une synthèse des données historiques et ethnographiques couvrant l'origine du culte des montagnes sur une zone étendue des Andes. Il semblerait que les montagnes étaient vénérées surtout à cause de leur influence sur le temps et les sources d'eau, donc sur la fertilité des plantes et des animaux. Les théories précédentes concernant les sites sont brièvement examinées. La conclusion de cette étude est que le culte des montagnes a permis d'unifier les peuples andins au moyen de symboles et de rites communs, et que ce culte remonte à très loin du fait qu'il est basé sur des principes écologiques très sains. Il en découle une meilleure compréhension des concepts fondamentaux de la culture andine traditionnelle.


RESUMEN Las Montañas Sagradas: Un Estudio Etnoarqueológico de Ruinas en las Altas Cumbres Andinas. Antiguos centros religiosos han sido hallados en las cumbres montañosas andinas, a alturas de hasta 6,700 mts. En varios lugares ellos constituyen las estructuras religiosas prehispánicas más importantes. Luego de una exposición sobre el origen de estos centros, se presenta una síntesis de datos históricos y etnográficos de una zona extensa de los Andes vinculados a las razones del culto a las montañas. Se encontró que las montañas eran veneradas principalmente debido a que controlaban el clima y los recursos de agua, y por ende la fertilidad de los cultivos y de los animales. Se examinen brevemente teorías previas sobre la existencia de estos centros. Se llega a la conclusión que el culto a las montañas ayudó a unificar a los pueblos andinos mediante símbolos y ritos compartidos y es de gran antigüedad, estando basado en principios ecológicos correctos. Su estudio nos permite comprender mejor conceptos fundamentales de la cultura andina tradicional.

INTRODUCTION

It has long been known that deities associated with the features of the natural environment (rivers, lakes, mountains, and the ocean) were worshipped throughout the Andes in ancient times (Garcilaso, 1961; Duviols, 1967; Avila, 1975). Among these, the mountain gods have always figured prominently, often being the most powerful ones directly involved in the day-to-day activities of the people (Guaman Poma, 1956; Duviols, 1967; Kessel, 1980:280). Such beliefs existed into recent times from the northern Andes of Colombia to the southern Andes of Tierra del Fuego (Bridges, 1948).

What is less well known is that archaeological remains,
pre-dating the Spanish conquest of 1532, have been found on numerous mountain summits, including more than 50 sites above 5,200 m (CIADAM, 1978, 1980; Figure 1). Within a vast area of the Andes, encompassing the countries of Chile, Argentina, Bolivia, and Peru, well-built stone structures have been located as high as 6,700 m (Rebitsch, 1966; Figure 2). Nowhere else on earth have archaeological remains been found at such altitudes. Often these ruins constitute the most important pre-Spanish religious structures in an area. Yet, despite the key role that mountains played (and continue to play) in the beliefs of Andean peoples and the importance of finds made on their summits, little attempt had been made to use the ethnographic information to interpret the sites, and even the most basic questions relating to high-altitude sites had not been satisfactorily answered: Why were they made? Who made them and when? If mountain worship was so widespread, why have they been found only in certain areas of the Andes?
FIGURE 2. Ruins on the summit of Llullaillaco (6,723 m) constitute the world’s highest known archaeological site. Numerous artifacts dating to the Inca period were found among these structures. An artificial platform where offerings were made is located at the spot where the figure is standing in the upper part of the photograph.

The sites generally consist of symbolic structures (rows of stones or low walls forming circular or rectangular outlines), artificial platforms, and structures which served for protection from the elements (cf. Cobo, 1964:167; Figures 2 and 3). At the base of some mountains, a fairly large complex of structures (tambo) which provided storage and housing facilities for participants in the ceremonies has been found (Baron and Reinhard, 1981; Figure 4).

In addition, other finds also serve to point out the religious character of the sites. Ritual offerings, such as coca leaves, statues, foodstuffs, cloth, and in rare cases human sacrifices, have all been found in the summit structures (Mostny, 1957; Schobinger, 1966; CIADAM, 1978).

These sites are usually referred to as “high-altitude sanctuaries”; but how high is high? Schobinger (1966:11) labels ruins over 5,200 m as high-altitude sites. However, in a listing of high mountain ruins by the Centro de Investigaciones Arqueológicas de Alta Montana (CIADAM, 1978), sites much lower have been included; ruins on a mountain only 2,000 m in altitude could still be considered “high” relative to people living over 1,000 m below.

None the less, 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 over 5,200 m. Thus, to keep information manageable and the focus on sites of special religious significance to Andean peoples, the emphasis of this paper is on archaeological remains found above 5,200 m.1

THE QUESTION OF ORIGINS

Despite a number of studies, the question as to what peoples made the sites has still not been resolved. Several archaeologists, such as Schobinger (1966:11), LePaige (1978:36), and Raffino (1981:76), have considered the sites to be of Inca origin. However, Beorchia (1978:15) has noted that a large percentage of high mountain sites have not been positively identified as Inca. None the less, no sites have been found to definitely pre-date the Incas, while a substantial number are clearly of Inca origin (Beorchia, 1978:15; CIADAM, 1980). The degree of actual Inca presence in the southern Andes is still unclear and in some areas Inca influence rather than direct Inca occupation may be involved.

Beorchia (1973:36) turns this argument around, however, to hypothesize that it may have been the Incas who borrowed the custom of worshipping on high mountain summits from the people in the southern part of their empire. One finding in support of this would be that a large number of high mountain sites are found in areas which were under Inca domination for only a brief period of time: 45–75 years depending on the area (Mostny, 1957:110).

1Since the author began research on this topic in 1980, over 100 ascents have been made, including 75 over 5,200 m. Archaeological remains previously unreported were found on more than 30 of these mountains. Reports and plans of the sites are available from CIADAM, Republica del Libano 2621, Correo de Capital Lazo (5423), San Juan, Argentina. A summary of the known sites will be published by CIADAM in 1985.
However, considering the knowledge of the Inca organization and efficiency (such as can be seen in the roads extending through the same areas), this argument, taken alone, would not seem a particularly strong one.

Another argument that some sites are not of Inca origin is that the two $^{14}$C dates obtained from high mountain ruins have both been $1,000 \pm 110$ years (CIADAM, 1980:34). However, one of the sites dated is clearly of Inca origin which would date it as being after about AD 1470. How could there be such a discrepancy? Archaeologists generally believe that $^{14}$C readings are not sufficiently accurate for such a short time span (Fagan 1978:129). In addition, a re-analysis of the two samples now places them at about the Inca period (Juan Schobinger, pers. comm., 1985).

Perhaps the strongest argument in favour of many sites not being of Inca origin is that very few have been discovered in Peru and those reported are not near Cuzco (heart of the Inca Empire) and they do not extend north of latitude $15^\circ$ South (GIADAM, 1978). The Inca Empire stretched beyond the equator to the north, however, so why then has none been found in these northern areas?

There are several possible explanations for this. One is that such ruins do exist but have not been found or recorded. For example, Albomoz writing in the late 1500s noted sites on mountains extending into Ecuador (Duviols, 1967:32-33). In 1557, Augustinian friars described an Inca site on the summit of a high mountain near Huamachuco in northern Peru (Agustinos, 1918). There is a detailed account written in 1663 of a shrine on a mountain summit near $10^\circ$ South (Robles, 1978). The author has seen three sites at nearly 5,000 m at about latitude $9^\circ$ South, and several more have been reported at similar heights in the area (Reinhard, 1983).
others may have been ravaged by treasure hunters who were quite active throughout Peru (Schobinger, 1966:16). None the less, the fact remains that ruins of definite Inca origin have not thus far been found on high mountain summits in northern Peru. If one assumes that there are no such sites near Cuzco and north of latitude 15° South, would this necessarily mean that the Incas did not construct the ones to the south? Is it possible that the Incas, encountering local inhabitants who believed that mountain worship was essential to their welfare, constructed sites on the summits of the mountains so worshipped? If so, why would the people have not done this themselves?

**ETHNO-ARCHAEOLOGY AND MOUNTAINS**

During an expedition to the mountains near Socaire in the El Loa province of northern Chile, archaeological remains were located on the summits of three mountains. Of particular interest were the important site found on the summit of Chiliques (5,778 m) and the complex of ruins at its base.
The discovery of the site on Chiliques and the less important archaeological remains on other summits related perfectly with the current-day beliefs and practices in Socaire described by Barthel (1959). A ceremony takes place during the canal-cleaning activities in which more than twenty mountains are invoked to help bring rain (Figure 5). The most important of these mountains is Chiliques (Barthel, 1959:32). Although some people had heard of a legendary lake in its crater and knew of ruins at its base (Gomez, 1978:76), no one seemed aware of the ruins on its summit. Chiliques is important to the people today because the main water source of Socaire leads from it (Barthel, 1959:32). In the ceremony the other mountains of the area are invited to make offerings to a stone representing Chiliques (Barthel, 1959:29) and to send their rain to Chiliques so that it can provide sufficient water for the
people of Socaire, both for irrigation of fields and for pasturage.

The actual ceremony is performed in secret outside the village by a man knowledgeable in the rites accompanied by an assistant. The villagers' offerings include alcoholic beverages which are poured out, and grain meal, llama fat, coca, and feathers which are burned and buried; Pachamama (Earth Mother), the ancestors, the mountains, and other water sources are invoked during the course of the ritual. Later there is a communal meal and a special song and dance, the talatur, takes place. This is sung in Kunza, the original language of the region, and the verses relate to the water sources and fertility of crops (Barthel, 1959). It is significant that some important elements of the ceremonies date back at least to Inca times.

Furthermore, although irrigation certainly existed in many areas prior to the arrival of the Incas (Garcilaso, 1961:214), the Incas were well known for constructing new irrigation systems and extending existing ones in conquered lands (Garcilaso, 1961:156; Kessel, 1980:135). The remains of terraces near Socaire suggest that the irrigation system was very extensive in ancient times. Barthel (1959: 41) notes that those ancient settlements near Socaire, which were dependent on irrigation, have been dated by ceramics to Inca times. He concludes, based on archaeological finds and ethnographic parallels, that the construction of the irrigation complex and the ceremony related to it date back at least to the end of the fifteenth century when the Incas extended their empire into this area. Barthel, however, had no knowledge of the existence of ruins on the summits of the mountains invoked in the canal-cleaning ceremony.

Utilizing this new material, it should prove of interest to re-examine his hypothesis.

Ruins have been found on thirteen of the fifteen mountains invoked in the ceremony which have been ascended and most of the mountains with significance for Socaire today have archaeological remains on their summits. This indicates an unbroken tradition from ancient times to the present. In addition, the relative importance of the mountains today accords with the quantity of archaeological finds on their summits. For example, Lejia is considered of secondary importance and the finds on its summit are also of little significance. In a corollary of this, Pular, although of secondary importance to Socaire, is considered the most important mountain to the people of Peine, a village not far from Socaire. It has been found to have substantial ruins (LePaige, 1978:38). Licancabur and Quimal, two mountains also invoked in the Socaire ceremony, were of considerable importance in the beliefs of the people in the region, and numerous finds and substantial ruins have been found on their summits (LePaige, 1978; Jensen, 1979; Baron and Reinhard, 1981; Figures 3, 4, and 6).

The ruins on the summits of other peaks in the area are less important than those of Chiliques, Pular, Licancabur, and Quimal, and this ties in with current-day beliefs. Pottery and other items found on the summits, supported by the type of complex (tambo) found at the bases of Licancabur and Chiliques, clearly point to the sites having been constructed by the Incas.

The hypothesis that arises from a study of the ethnographic and archaeological data relating to the Socaire area conforms with that of Barthel (1959), and is substantiated
by information of the high mountain sites. It is that the sites on the summit of Chiliques (and likely those on nearby peaks) were built in the time of the Inca presence in the area for offerings to be made to obtain rain. The terraces and irrigation systems were either built or, more likely, considerably expanded by the Incas, who were following their normal policy of increasing land under cultivation so that the additional crops would help support the Inca state and religion. Water, particularly in this desert region, was critical for this. The presence of the Incas was of such a critical importance to the region that it is probable that worship of mountains for provision of water was already an established custom.

This may seem a reasonable hypothesis for the Socaire region, but does it explain high mountain ruins in other areas?

DEITIES, MOUNTAINS, AND FERTILITY

A large number of supernatural beings were worshipped by the Incas. Among the most important deities were Viracocha (the Creator), Inti (the Sun), and Illapa (the Weather God). Several others, such as Huanacauri, Pachacamac, Pariacaca, and Coropuna, achieved great regional importance. Although the Incas are especially renowned for worshipping Inti, other deities also played key roles in Inca religion and sun worship was not of primary importance throughout most of the Andes prior to the Inca conquest (Rostworowsky, 1983:31).

Of widespread importance was a Weather God who, because of his control of meteorological phenomena, is often referred to as a Sky God (La Barre, 1948:203; Demarest, 1981). Although the Incas called him principally by the name Illapa (lightning), other terms were also used, such as “thunder”, one of his most prominent characteristics (Mariscotti, 1978:201). He was the most widely worshipped of the deities and was only slightly less important than the Sun (Murua, 1946:286). He controlled rain, hail, storms, lightning, snow, and thunder. In times of drought, offerings were made to Illapa from high places (Cobo, 1964).

Illapa shared many similarities with the Aymara Weather God, Tunupa, and frequently the names for these deities were used interchangeably. Tunupa was considered the principal deity among the Aymara because of his control of natural phenomena connected with rain (LaBarre, 1948) and he had a special association with the most important mountain of the Titicaca region, Illimani (Ponce, 1969).

The Inca Creator God, Viracocha, was closely affiliated with a water cult, as his name “foam of the sea” suggests (Cieza, 1977:20), and he is believed to have arisen from Lake Titicaca to make his creations (Cobo, 1964). He, too, was thought to be associated with important mountain deities (Avila, 1975:74; Paredes, 1976:295).

Some scholars (LaBarre, 1948:203; Demarest, 1981:36) believe Viracocha and Tunupa (hence Illapa) to have evolved originally from the same underlying concept of a creator/sky god who controlled meteorological phenomena. It seems more likely that the belief in a generalized weather god arose at least in part out of an attempt to bring numerous weather/mountain deities under one unified concept. However, it is clear that the importance of sun worship was a later development and that a god controlling meteorological phenomena was one of the principal objects of worship throughout a large area of the Andes prior to, and during, the Inca period (LaBarre, 1948:203; Mariscotti, 1978:201, 204).

Beside the trinity of Viracocha, Illapa, and Inti, there were other deities in Inca religion who played important roles with regard to fertility. Pachamama (Earth Mother) was widely worshipped and still is today (Mariscotti, 1978). In many regions it is believed that Pachamama is fertilized by the mountain gods through the water they send (Urbano, 1976:146; Isbell, 1978:143). In some areas, Pachamama is believed to be the mother of the mountains (Nardi, 1967:250) and to reside in them (Mariscotti, 1978:33). But, generally, the mountains are seen as distinct deities who are equal or superior to her (Casaverde, 1970; Urbano, 1976:146; Mariscotti, 1978) as was the case among the Incas (Rowe, 1946; Guaman Poma, 1956; Avila, 1975).

Numerous other deities were also venerated by the Incas, and mountains were frequently the most important deities at the regional level, not only near Cuzco (e.g., Ausangate and Salcantay) but also throughout the Inca Empire (e.g., Catequilla in northern Peru, Pariacaca in western Peru, and Coropuna in southern Peru) (Agustinos, 1918; Guaman Poma, 1956; Duviols, 1967). Unfortunately, the reasons for worshipping many of the mountains were not often stated in historical sources or were given only in very broad terms. However, it is likely that they were mainly worshipped for fertility and for controlling the water supply.

Carrion (1955) provides convincing data that there was a water cult long before the Incas. It is clear that the Incas had an accurate idea of the water cycle—that water from various sources was transformed into clouds from which comes the rain in turn to replenish the water sources (Earls and Silverblatt, 1978:304). The earth was thought to have rested on the sea (Garcilaso, 1961:75) and the water of the important Lake Titicaca was believed to originate from the ocean waters underlying the earth. Lakes were perceived as manifestations of the sea which was the ultimate origin of water (Cobo, 1964:161) and are still today believed to be connected to the ocean. This would help explain why lake water is also used to obtain rain (Martinez, 1976:301).

Water from the ocean played (and still plays) a significant role in many rituals for rain throughout the Andes (Martinez, 1976:301–302; Soldi, 1980:25). Sea shells were also important offerings to water sources for rain (Rowe, 1946:307). The spiral shaped strombus shells were widely used by the Incas to symbolize their connection with the ocean.
used as trumpets (*pututu*) to call the mountain gods (Roel, 1966:30) or cause clouds (Carrion, 1955:80) for rain. But the most important shell was the spondylus, seen as a “daughter” of the sea and considered indispensable for rain (Murra, 1975:257). The offering of these shells on mountain summits (CIADAM, 1978:68-69) further points to the symbolic connection of mountains and Mamacocha, mother of all water (Cobo, 1964:161).

Ritual offerings were made by the Incas to lakes, springs, and other water sources (Cobo, 1964). Toledo in the sixteenth century was told of human sacrifices made for water (Diaz, 1966:153). Avila (1975:66) noted a mountain being worshipped for rain, and Augustinian friars described in 1557 how a high mountain was climbed and offerings made for the same reason (Agustinos, 1918). There is also specific reference made in a document of 1663 describing a mountain being climbed in order to make offerings for rain to an idol on the summit (Robles, 1978:229).

The connection between mountains, clouds, and rain was obvious in ancient times. When lakes were actually found on the mountains, or even in the summit craters themselves (as is the case with a number of peaks containing ruins), the intimate relationship between mountains and water was accentuated (Figure 7). The issuing of water from the sources on the mountainside is probably one reason why there are people who believe that lakes exist inside, or just under, the peaks (Fuenzalida, 1980:161). In Peru there is a belief that ancestors walked along subterranean waterways which are in turn perceived as veins of the mountain (Arguedas, 1956; Favre, 1966). Clearly, high peaks served as models for a powerful combination of symbols and the mountain formed the link (an axis mundi) between the three “worlds” of Underground (ocean), Earth, and Sky.

Of special concern is the perception of people in many areas that, whatever the ultimate origin of water, the mountain deities control the meteorological phenomena such as rain, hail, frost, thunder, and lightning (Mishkin, 1946:464). This concept has a sound ecological basis as these phenomena do normally originate in mountains (Figure 8). Thus, in Peru the mountain deity Wallallo makes its presence known by rain, lightning, and hail (Tello and Miranda, 1923:510). The same belief is found throughout the Andes (Mishkin, 1946:464; Casaverde, 1970:143; Martinez, 1976:324; Oblitas, 1978:180).

Mountain deities may also make fields fertile (Roel, 1966:27; Tello and Miranda, 1923:511) and are responsible for the fertility of livestock (Isbell, 1978:59; Mariscotti, 1978:215). It logically follows that these deities are perceived as being beneficial gods to be respected, but also are feared because, for example, lack of rain destroys crops and pastureage, lightning kills, and hail ruins crops.

Mountain gods are not only concerned with the fertility of crops and animals, but also can influence to a degree that of humans. For example, Avila (1975:60) noted that people believed they would become sterile if they did not worship the mountain deity, Pariacaca; thunder alone could make women pregnant (Cobo, 1964:166). Lightning in particular is seen as having supernatural power (Tschopik, 1951:199). Twins and those born feet first or with distinguishing features were thought to be the children of lightning and thunder (Cobo, 1964:166; Mariscotti, 1978). In northern Chile in ancient times the children born of women without husbands were thought to have been conceived through natural forces and were offered to the mountain TataJachura to obtain rain (Reinhard and Sanhueza, 1982).

The significance of such beliefs is that mountains and meteorological phenomena are intimately linked in the minds of the people in many areas of the Andes and that this linkage is further associated with fertility. It is only a short step to the belief found in several areas that the mountain deities are thought to be responsible not only for controlling meteorological phenomena, but also for bringing success in business, good health, and riches (Martinez, 1976:277-278).
FURTHER ETHNO-ARCHAEOLOGICAL RESEARCH

WATER CULTS AND MOUNTAINS

During an expedition to the mountains of Tarapaca (northern Chile) ethnographic and archaeological data relating to a number of high mountain sites were collected (Reinhard and Sanhueza, 1982). In this region ceremonies to obtain water from the mountains are still held. In Chiapá offerings are made in August at a plaza in the village named after the most important water source, the mountain Tata Jachura (5,252 m). The ceremony is performed secretly at night for Tata Jachura, the mountain Jatamalla (about 4,700 m) perceived as his wife, and for several lower water sources. Ruins were found on the summits of both Tata Jachura and Jatamalla. The large double wall forming an artificial platform on Tata Jachura is most probably of Inca origin (Raffino, 1981:76).

A similar structure was found on the summit of Wanapa (5,365 m), one of the most important among a group of mountains invoked for rain in a ceremony performed in January on a hill, Illimani, located near the village of Cariquíma.

In the village of Enquelca (near Isluga) a ritual takes place on a nearby hill, Caraguano (4,330 m), in January, in which the surrounding mountains are invoked to send rain. Tata Sabaya (5,385 m), which lies in Bolivia near the frontier with Chile, is climbed by the people of the village of Sabaya in present times in order to make sacrifices to the mountain for rain.

Of the three mountains in Tarapaca on which ruins were found, two, Tata Jachura and Wanapa, have ruins which are almost certain to be of Inca origin. Kessel (1980:135) has noted that the Incas stimulated construction of canals and terraces in Tarapaca. Indeed, in this region the Incas are still associated with the mountain deities (Martínez, 1976:326).

Worship of mountains for water has also been reported in recent times for several areas in Peru (Tello and Miranda, 1923:522-523; Isbell, 1978:202) and in Bolivia (Paredes, 1976:118; Oblitas, 1978:180). On the Island of the Sun in Lake Titicaca offerings are made to the mountains Illimani and Illampu for a stable rainfall and to prevent hail (Figure 9). In southern Peru ritual offerings were found at 5,800 m near the summit of Hualca Hualca and people still make an annual pilgrimage to the base of this mountain to make offerings for a stable water supply (Reinhard, 1982). Local inhabitants still ascend to the actual summit of a peak near Lake Titicaca to make offerings for rain (Tschorzik, 1951:260), and they did so in recent times near Lima (Tello and Miranda, 1923:521-523) and Piquiu (Arguedas, 1956:203-207).

Most information on mountain worship in Argentina comes from the northern areas. In contrast to other regions where Pachamama is thought generally to reside below the mountains, in northern Argentina this deity is believed to inhabit the highest summits of mountains and offerings are

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**Figure 8.** East-west profile of the central Andes showing the climatic conditions in relation to mountain systems during the summer months. This demonstrates the ecological basis for the belief that mountain deities control weather and principal water sources along the Continental Divide. Adapted from Rauh (1979).
made to her for water (Nardi, 1967:250; Mariscotti, 1978:33). Mountains are seen as manifestations of Pachamama (Christian Bianchetti, personal communication; cf. Arguedas, 1956:198), who is also seen to some as their mother. People were still ascending Bonete (5,660 m) and Chorolqui (5,615 m) in recent times to make offerings to Pachamama (CIADAM, 1978). Both these mountains lie in southern Bolivia not far distant from the Argentinian studies (Nardi, 1967:248-250) and it seems likely that further research in this region will show that these and other mountains were originally perceived as distinct deities and are still being climbed in order to make offerings primarily for water.

Ancestors, Ethnic Groups, and Mountains

There was a widespread belief during the Inca period that people originated from mountains and other geographical features (Cobo, 1964:151). For example, Robles (1978:228), referring to a document dated 1663, noted that in one area the progenitor of the people was thought to have been the son of a mountain deity. The famous mountain deities Pariacaca (Avila, 1975) and Catequilla (Agustinos, 1918) were both seen as progenitors of people in the areas where they were located.

Current-day beliefs confirm this. According to Paredes (1976:36, 44), Tata Sabaya is considered to be the progenitor of the Carangas people, and the Lupakas, Omasuyus, and Pakajes living along the coast of Lake Titicaca believe themselves descended from the mountain Illampu. In southern Peru the Collaguas and Cavanas people claim they originated from the mountains Collaguata and Hualca Hualca (Hurley, 1978:14-15).

Therefore, it is not surprising that there existed the widespread belief that the souls of the dead returned to reside in mountains. This was noted in Peru at the time of the Spanish conquest (Murua, 1946:180; Avila, 1975:58) and the belief still exists throughout the Andes today. In Bolivia the Callawayas bury their dead turned toward a mountain because they believe they originate from, and return at death to, its summit (Bastien, 1978:47, 174). A similar belief has been noted for several areas in Peru (Roel, 1966:27; Velaochaga, 1979:46).

A particularly detailed account of this was provided by Valderrama and Escalante (1980). They describe the journey that spirits of the adult dead must take on the way to their final destination, the centre of the mountain Coropuna (Arguedas, 1956:227). There they stay in a village where they work as before, but without having to worry about rain and hail (Valderrama and Escalante, 1980:262). Spirits of those who committed great sins go to other mountains, especially Ausangate (Nunez del Prado, 1970:111).

Although the people of Toconce in northern Chile apparently do not believe today that souls dwell in the mountains, they may have believed so in the past, for the dead are buried in positions related to sacred mountains, especially Cerro Leon and Cerro Toconce (Aldunate and Castro, 1981:80). This probably also explains why the chulpas (ancient structures used in rituals for the dead) were generally orientated to these mountains. An artificial platform of probable Inca origin was found on the summit of Cerro Leon.

Such beliefs enable anthropologists to understand better the association of the dead with mountain/fertility cults (Martinez, 1976:279). Bad weather such as hail or drought was thought to occur if mummies were taken away or uncovered (Casaverde, 1970:157; Soldi, 1980:24). By the same token, mummies were sometimes used as intermediaries to the mountain gods to obtain rain (Tello and Miranda, 1923:526; Zuidema, 1978:170). Offerings to the mountain deities for rain were also placed in ancient tombs (Arguedas, 1956:206). Thus, although it fulfilled other functions, ancestor worship was also associated with both fertility and sacred mountains throughout the Andes.

The belief that mountain deities controlled the fertility of crops and animals and that ancestors were their descendants meant that they were frequently considered the
most important deities at the local level (Favre, 1966; Duviols, 1967; Avila, 1975). In many areas lineages, or even individuals, may have personal mountains which they worship (Roel, 1966:26; Martinez, 1976). Babies may be assigned a mountain, so that if they should die the mountain will claim them (Bastien, 1978), and so even a small mountain may be important to a particular lineage or person.

When particularly sacred mountains were widely worshipped by several communities, this could be the basis for a sense of ethnic unity. Favre (1966:139-140) noted how this occurred in central Peru and religious and ethnic groups were formed which may have provided the basis for Inca state administrative units.

The colony was another type of social unit that was involved in mountain worship. The Incas had the practice of transferring colonies of people (mitimaes) throughout their empire as a means of unifying it. These colonies helped to expand pastoralism, irrigation, and maize-producing areas (Murra, 1956:297). Albornoz 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 Hernandez (1923:34) noted colonists worshipping a mountain because it was the deity of the original inhabitants. According to 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 he noted as having 2,000 mitimaes dedicated to its service, and on Putina (Misti) (CIADAM, 1978).

It appears likely that at least some of the high mountain sites were constructed by mitimaes, although that does not mean that the mountains were chosen with no attention paid to local beliefs. It is clear that mountains were already important in the economic-religious concepts of local inhabitants, and mitimaes intent on establishing a solid economic base would hardly have ignored them. They may well have worshipped their pacariscas there, but it is likely that the local mountain deities were important figures in the major rituals performed on the summits.1

Power, Punishment, and Cures

As in the past, mountain deities are believed today to have their own hierarchy of weakness and power. They are usually called apus, wanans, aukis, achachilas, or malkus, depending on the region, although in some areas these names may be used for deities at different levels in the hierarchy (Nunez del Prado, 1970:79-82). The most powerful ones are usually the highest mountains in the area and receive the worship of several communities (Tello and Miranda, 1923:510; Casaverde, 1970; Mariscotti, 1978:222). Some people believe that the most powerful mountain deities are equal to a supreme deity (Marzal, 1971:250) while most seem to believe them to be his intermediaries (Arguedas, 1956:195). They are even believed in some areas to have their own political system with a governor, deputy governor, and judge (Hurley, 1978:290) and to have a jail for those deities who are disobedient.

Thus, mountain deities are often considered the most powerful deities at the regional level and are closely associated with the people who worship them. Therefore, mountain deities are widely perceived as protectors of man and thus also as gods of war (Roel, 1966:26; Marzal, 1971:251). This was a role traditionally played by the deities who controlled meteorological phenomena, since they used these phenomena, especially lightning and hail, as their weapons (Avila, 1975). An image of Illapa, for example, was taken to war by the Inca Pachacuti who greatly extended the Inca empire (Cobo, 1664:160). A deity of meteorological phenomena, "son" of an important mountain deity, also helped the Incas put down a rebellion by destroying the enemy with rain and lightning. The Inca emperor gave 50 servants for the temple of his "father" and offered women to serve the son. The deity refused and demanded mulla (the spondylus) and that the Inca personally assist in worship at his sanctuary (Avila, 1975:102-105).

The association of mountains with warfare must have been even stronger when wars were fought primarily over control of economic resources, such as land and water for agriculture (Murra, 1956:43). The Incas normally took idols of the conquered peoples to be held as hostages in Cuzco (Murua, 1946:66), and as mountains could not be moved the construction of ritual sites on mountain summits would have had an additional benefit of gaining, through offerings, more direct control of the mountain gods.

When angered, the power of mountain deities could also be turned to cause harm among people in their own regions. They would cause illnesses or otherwise harm people (Fuenzalida, 1980:162), especially if people neglected to worship them (Tello and Miranda, 1923:510; Nardi, 1967:251). They might cause accidents, natural disasters, or damage to livestock or crops (Marzal, 1971:251; Hurley, 1978:291). In Peru regular ritual payments are still made to the mountain gods to insure personal safety (Isbell, 1978:59).

Deities who control meteorological phenomena are closely associated with shamans; they perform in rituals for the mountain deities and assist in curing illnesses (Tello and Miranda, 1923:509; Arguedas, 1956). Ritualists range in ability from simple diviners to true shamans who become possessed by the mountain gods and through whom they speak (Favre, 1966; Nunez del Prado, 1979). It is felt that the mountain deities often select these people through the use of lightning (Casaverde, 1970:143; Bastien, 1978:24).

The deities help these specialists by coming to themusually in the form of birds—when they are called for consultations (Arguedas, 1956:199). Shamans are also reputed to be able to change into animals and to send their souls to the mountains while in a trance (Favre, 1966:136). Oracles at the shrines for such powerful mountain deities

1The use of mountains in a ceque (imaginary line) system such as existed at Cuzco is examined by Zuidema (1980), who noted that such a system could have been a means of unifying the Inca empire. Mariscotti (1978:79-82) discussed the possibility of a ceque system existing at Socaire. For a brief discussion of this, and the use of mountains in making astronomical observations, see Reinhard (1985a).
as Pariacaca, Catequilla, and Coropuna were considered among the most important in the Inca empire (Agustinos, 1918; Cieza, 1977:107). In view of such beliefs it is no surprise that the ritual specialists serving important mountain shrines were considered among the privileged of the Inca emperor who personally supported them (Guaman Poma, 1956).

**ANIMALS AND MOUNTAINS**

Mountain deities are believed in many areas of the Andes to be the protectors of livestock (Martinez, 1976:269), and responsible for their fertility (Isbell, 1978:59). Stones in the shape of livestock are believed to be gifts of the mountain gods which help increase the fertility of the herds (Arriaga, 1920; Flores, 1975:16). Mountain worship is thus an important part of the pastoralists' life today and was also clearly so during the Inca period (Duviols, 1967:21).

Many wild animals are thought to be owned by the mountain deities. The condor is widely viewed as a manifestation of a mountain god (Roel, 1966:26; Isbell, 1978:59; Kessel, 1980:280), although other birds, especially birds-of-prey, may be so as well (Arguedas, 1956:199; Mariscotti, 1978:203). Pumas are seen as the "cats" of the mountain gods (Mishkin, 1946:463; Casaverde, 1970:141) which are sent to do their bidding. They have the function of guarding the herds while at the same time eating animals of those pastoralists who have in some way angered the gods. The mythological feline that flies through the air is important in many areas of the Andes and is believed to be one of the mountain deity's servants. It gives off lightning, brings rain and hail, produces thunder, and also is a sponsor of ritual specialists (Mishkin, 1946:464). Foxes play a role similar to the puma, as they are perceived as the "dogs" of the mountain gods (Gasaverde, 1970:141), who send them to eat animals of those people with whom the god is displeased (Urbano, 1976:131). In one legend the fox was a principal helper of the mountain deity Pariacaca in the construction of an irrigation canal (Avila, 1975:47). The snake had a similar role in this myth and is widely associated with water cults and mountain deities in the Andes (Favre, 1966:138). It is believed in mythology to personify lightning (Cobo, 1964:159; Mariscotti, 1978:203). Vicuñas and guanacos are seen as the mountain god's "llamas" (Roel, 1966:27; Casaverde, 1970:141).

In addition many other animals, both wild and domesticated, are also associated with mountain deities. A careful study of such beliefs would doubtless be of help in interpreting ancient iconographies such as petroglyphs (Reinhard, 1985a). The information available suggests that the figures of animals are not to be interpreted in isolation, but rather as part of a coherent system of beliefs which likely has its base in fertility concepts relating to deities that control meteorological phenomena—and reside in mountains.

**ORIGINAL HYPOTHESES TO EXPLAIN HIGH MOUNTAIN RUINS**

**Sun Worship**

It is well known that Sun worship was an important characteristic of Inca religion, and it has been commonly accepted as a reason for high mountain ruins (Mostny, 1957:59). That it does not take place today could be explained that Sun worship was a particularly Inca cult imposed upon others (Garcilaso, 1961) and, when the Incas left, the cult disappeared as well. But it would still seem curious that so little mention has been made in historical and ethnographic sources relating Sun worship to ritual sites on mountain summits.

There seem to be three basic reasons why Sun worship is an explanation for high mountain ruins: (1) the Incas would normally introduce Sun worship whenever they conquered an area; (2) mountain summits are high, and thus they bring the worshipper closer to the sun (Rebitsch, 1966:58); and (3) the structures are often aligned such that the openings are to the east. In some cases the alignments are even in accord with the sun at the time of the December solstice when an important Inca festival took place (Mostny, 1957:59).

However, the fact that mountain summits are closer to the sun is not a particularly strong argument in favour of the Sun worship hypothesis. The alignment of the structures with their openings to the east could be explained by the fact that east is a ceremonial direction throughout South America and, indeed, most of the world. The specific alignment with the position of the December solstice would not necessarily mean that the only, or even the main, cause for the construction of the structures or selection of the site was Sun worship. Religious structures were often aligned toward sacred celestial bodies or in cardinal directions (which were considered sacred) but the principal functions of these structures usually involved other factors. There is insufficient evidence to claim that Sun worship was the reason underlying the construction and purpose of high mountain sites.

**Minerals and Gods**

A few of the sites seem to have a connection with Inca mines (Checura, 1977:140). The Incas were known to have considered a metal-bearing mountain as sacred and prayed to it to yield up its metals (Cobo, 1964:166). Raffino (1981:243) notes that there is a very high correlation of Inca sites with mineral exploitation in Argentina. He states that 75 percent of the sites were linked to mining, and it seems apparent that the search for mineral deposits was one of the causes of Inca penetration in Argentina. The Inca specialist Oswaldo Silva (personal communication) feels that this was likely the case in Chile also (cf. Llagostera, 1976:215), where a number of Inca mines have been found (Checura, 1977:140). Miners in Argentina still today make offerings to the mountain in which a mine is located (Santander, 1962; Nardi, 1967:251), and this practice is known in other areas of the Andes as well.

The importance of minerals to the Incas, combined with...
one of the current-day pattern of worship relating to mines and mountains, suggest that a few of the high mountain sites were constructed with the idea of propitiating a deity because of mining the mountain in which it resided. However, many mountains with ruins on their summits are not associated with mines, and the evidence is lacking to point to this as being a cause for the large majority of mountain sites.

**The Signal Factor**

One of the earliest suggestions made to explain the existence of ruins on mountain summits was that the sites could have been used as vantage points from which signals were transmitted (San Roman, 1896:36). This possibility has been noted several times since (Jurcich, 1974:24). Garcilaso (1961:197) verifies the use of fire and smoke signals among the Incas, albeit from low-lying posts. According to Garcilaso, they were only used in exceptional circumstances, such as an uprising in one of the provinces. In recent times the use of smoke and fire signals from hilltops has been reported in northwest Argentina (Bowman, 1924:305) and Bolivia (Paredes, 1976:143–144).

**ETHNO-ARCHAEOLOGY AND OFFERINGS**

**Human Sacrifices**

More than any other kind of offering, it has been that of human sacrifices which has most caught the attention of both the public and archaeologists. Mostny (1957) and Schobinger (1966) have described two sites of human sacrifice and numerous writings (e.g., Cobo, 1964) confirm that human sacrifices were for the Incas the most valuable offerings. But why were some made on mountain summits ranging as high as 6,300 m?

Human sacrifices were made by the Incas for numerous reasons—when the emperor was sick or died, when the emperor in person went to war, during famines, at the major festivals in June and December. All principal huacas were supposed to receive part of the cacaccho offerings (which included children), although this does not mean they all received the human sacrifices.

Human sacrifices were also made for rain or for deities related to it (Diaz, 1966; Velasco, 1978), and when there was a drought (Murua, 1946:281). Avila (1975:51–52) described human sacrifices to a mountain deity, Wallallo, who was a Weather God and was also called “lightning” (Tello and Miranda, 1923:61–62). The child was sent to the Inca to be sacrificed to the Sun, 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 of a human sacrifice on a mountain summit in prehistoric times. It is important not only because the mountain was sufficiently prominent to be viewed and worshipped from other distant mountains, but also because it makes clear the complex reasons (economic, social, political, and religious) that came into play in at least one cacaccho ceremony.

In the same document several human sacrifices were noted as being offered to “Lightning”, principal attribute of mountain deities. Hernandez (1923:4) reported that the cacaccho were also sent to Chile. It is known that a human sacrifice took place near Santiago on the summit of El Plomo (Mostny, 1957), a mountain likely worshipped for water (Bibar, 1966:138).

Thus, although specific reference to human sacrifices taking place on high mountain summits is rare, it is known that such sacrifices were made to mountains, especially for rain. Zuidema (1978) noted that the cacaccho were intertwined with the cult of water and generally occurred prior to the rainy season, were invoked for rain, had ritual elements shared with water cults, and were often associated with irrigation and lightning.

In more recent times information on human sacrifice understandably becomes scarce. A human sacrifice reportedly took place in 1958 on a mountain near Lake Titicaca in order to obtain rain (Waisbard, 1975:177) and two cases of human sacrifice have been noted in Peru where in 1942 and 1945 children were sacrificed (with parental approval) to prevent a drought; the people claimed this was
FIGURE 10. Sacrificial offerings were made to the sacred mountain Coropuna. Human sacrifices, including children, were the most important offering in the Inca period and have been reportedly made to mountain deities in recent times, especially for rain. From a drawing of Guaman Poma (1613).

people maintain that even today human sacrifices are made to mountain gods, especially during major public works, such as tunnel and road construction, which disturb them. They fear that if there are no sacrifices, the mountain will cause mortal accidents among the workers (Favre, 1966:131). The way in which the sacrifice is conducted closely parallels Inca human sacrifices for which there is more evidence.

Although, of course, there may be other reasons for human sacrifice, it is highly suggestive that such sacrifices offered to mountains generally were made for fertility or to prevent disasters. It seems, therefore, a reasonable hypothesis that at least some human sacrifices were made on mountain summits to the mountain gods for the same reasons.

Statues

Although human sacrifices on mountain summits were fairly rare (CIADAM, 1978), another type of offering, that involving the use of small statues, was more frequent and of considerable importance, both in terms of religious value for the Incas and for archaeology, as relatively few Inca statues have survived to this day (Figure 11).

Metal statues of humans and animals have been noted as offerings made by the Incas (Garcilaso, 1961:190; Cobo, 1964; Duviols, 1967:17). Statues made of shells were favourite offerings of the Incas to water sources (Rowe, 1946:307). Shells were considered "daughters" of the ocean and the mullu (the spondylus shell) was considered indispensable in ceremonies for rain (Murra, 1975). Thus, it does not seem to be merely the value of the spondylus (thought by the Incas to be more than gold) that is the reason for its use in construction of half of the 50 statues found on mountain summits (CIADAM, 1978:68-69).

Some present-day studies point to animal statues being used as a means to increase the abundance of the images represented (Tschopik, 1951:247; Arguedas, 1956:204; Roel, 1966:26-27). This was also the case among the Incas (Arriaga, 1920). Isbell (1978:151) noted small figures representing livestock being offered to the mountain gods because they are viewed as owners of these animals. Mountain deities have been described as looking like humans, either the same size or smaller (Martinez, 1976:324; Isbell, 1978:59) and it was common in Inca times to make miniature human-like statues of gods (Cobo, 1964). 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 (Mariscotti, 1978:65).

There are three possible explanations for the statues: (1) as representing the deity; (2) as items depicting what the people want to be increased; and (3) as substitute offerings for the living being represented. 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, while human figures represented the deity or deities.

The Incas normally buried statues in a site where it was felt that the deity resided (Mostny, 1957:53). It is possible that supreme deities were perceived to reside at the ritual site (albeit if only during the time the offerings were made), although mountains in most cases were thought to be inhabited by deities specific to them. Thus, the evidence suggests that the statues found at summit sites were generally offered to local deities—the mountain gods.

CONCLUSIONS

Mountains played, and continue to play, an important role in the beliefs and ritual practices of Andean peoples. They were believed in many areas to be places where the spirits of the dead resided and often were thought of as the original ancestors of peoples. The mountain deities were guardians of fields and livestock. They showed their powers through causing illnesses and storms that killed men and animals and destroyed crops. At times mountains were worshipped because they contained minerals. They may have been used on occasion for worship of the Sun and for signalling, as earlier hypotheses suggest. Many of these beliefs and practices were integrated, but it was the concept of fertility, with water as its main element, that has been found underlying the vast majority of the beliefs relating to mountains.

The mountain deities were seen as essential for the fertility of the livestock and fields, and it was primarily in their position as controllers of meteorological phenomena that they gained such an important position in Andean religion. Such beliefs clearly predate the Incas and have been found throughout the Andes. Indeed, they are based on basic ecological facts: rain, clouds, and lightning often originate in mountains, and rivers lead down from them. When the Incas entered areas where these beliefs already existed, they apparently felt it necessary to construct ritual sites to help in gaining what was, in effect, greater control (political, religious, and economic) over the people and land they conquered.1

Mountain worship also influenced the way in which some aspects of Christianity are perceived. For example, Santiago is often identified with the Inca Weather God, Illapa, and with mountains; beliefs relating to Pachamama are still carried on under the name of the Virgin Mary; the cross is used in some areas as a symbol for mountain deities and saints can be found associated with sacred mountains; Saint Peter is believed in some cases to be waiting with the key to open the door, not of the gates of Heaven, but of the spirit world within the mountain Coropuna; God and saints may be worshipped so that they help the mountain gods. Numerous other examples could be given, but it is clear that an interesting study remains to be made on the relationship of Christianity to mountain worship.

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But why would the local inhabitants not have constructed the sites? First, it is necessary to consider what is involved in construction at such heights: supplies, wood, and water sufficient for several days and a reasonable number of men would have been essential. In addition only men well acclimatized and supplied could have built stone structures up to 6,700 m. The Incas appear to have always chosen the best routes to the summits, and so it seems obvious that experienced mountain people were utilized. Roads often led to structures at the base of the mountains (and, in some cases, nearly up to the summits) requiring still further planning and labour. The ruins themselves indicate they were for periodic use, with priests and assistants climbing to the summits repeatedly through the years. All of these facts indicate the builders were very well organized and supplied. The Incas had this capability, whether or not one assumes the structures to have been built by them or by special groups of colonists (mitimases).

Furthermore, the Incas had particularly compelling reasons. It was their policy not to take food away that the people actually needed and to keep supplies in reserve in case of scarcity. However, they also needed food supplies for the Inca state and religion and thus expanded lands under cultivation wherever they went. Irrigation was particularly important for expanding agriculture, especially for maize, a key staple of the Inca army.1

The Andean peoples were totally convinced that deities controlled the economy. At the same time, it appears that the Incas, during the period of their conquest, were especially pragmatic in dealing with the gods. Topa Inca (who was responsible for expansion into areas where most high mountain sites have been found) was well known for not being afraid of dealing directly with the deities, calling them to task if bad weather resulted despite his offerings or threatening to destroy the idols if the gods did not respond by helping him against his enemies (Avila, 1975:102).

Many mountains were impossible to ascend and thus were worshipped from places from which they could be viewed (Hernandez, 1923:62; Avila, 1975:60). It may well be that, just as today, people were afraid to go to the summits of the highest mountains where the most powerful deities resided and with good reason. Not only were there the obvious physical dangers (such as storms, cold, altitude sickness, physical exhaustion, falls—all in turn attributable to the gods), there was also doubtless a psychological factor involved. The mountains were in the non-civilized zone with powerful deities on their summits, and there were also evil spirits and spirits of the dead residing in and around the mountains. In many areas still today climbing these mountains is viewed as certain to bring misfortune.

None the less, it could be that some of the sites, especially those on lower summits, will prove to pre-date the Incas. This would seem more probable where well-organized states existed, as in the mountains bordering the eastern side of the Chimu empire (where great irrigation works have been built). But the reasons for constructing them would most likely have been the same. Until further evidence proves otherwise, it is reasonable to assume that the Incas were responsible for building the majority of the high mountain sites above 5,200 m. It is clear that between 1470 and 1532, the Incas not only constructed sites on, but also made multiple ascensions of, numerous mountains above 5,200 m and ranging as high as 6,700 m. This constitutes one of the most awesome accomplishments known from ancient times.

The study of high mountain ruins and mountain worship is important for understanding many aspects of traditional Andean religion. In several areas the ruins constitute the only known prehispanic religious sites and indicate areas of Inca expansion. Since mountains were worshipped prior to the Incas (even if the sites themselves prove of Inca origin), they provide evidence of prehistoric religious concepts.

Mountain worship has been called the “keystone of Andean culture”, providing an underlying cultural unity for Andean peoples (Bastien, 1978). Its great antiquity is obvious, since basic features of mountain worship have been found throughout the Andes; it has been noted in the earliest historical sources and pre-Inca legends; it is based on sound ecological observations; and it has persisted, despite considerable Christian proselytism, with few changes to the present day. Findings concerning mountain worship have proved to be applicable also to low-lying ancient ceremonial centres (Reinhard, 1985a, 1985b). The uniformity of basic beliefs and practices associated with mountain worship supports the interpretation of elements of ancient iconographies as parts of a meaningful whole. The study of high mountain ruins and mountain worship thus extends beyond a simple investigation of only one aspect of religion and involves principles and concepts that are fundamental to traditional Andean culture.

ACKNOWLEDGEMENTS

The study of mountain worship and high Andean ruins was supported in 1983 by a grant (No. 2571-82) from the National Geographic Society and in 1984–85 by a grant from the Joint Committee on Latin American Studies of the Social Science Research Council and American Council of Learned Societies with funds provided by the National Endowment for the Humanities, the Ford Foundation, and the Andrew W. Mellon Foundation. Additional financial aid was received from the American Philosophical Society and the American Alpine Club for part of 1982. I would like to express my sincere gratitude to these organizations for their assistance. Other institutions which aided my research include: the Corporación para el Desarrollo de la Ciencia, Santiago; Instituto Nacional de Arqueología de Bolivia, La Paz; Instituto Nacional de Cultura, Lima; and the Universidad del Norte, Antofagasta. I would especially like to thank Constance Ayala for help with the manuscript.

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1Irrigation dramatically reduces growing time and thus the risk of crop failure due to hail and frost; the association of mountain gods with irrigation systems has been noted by several authors. Paulsen (1976) suggests that there were cycles of several centuries of droughts and that these, combined with population increase during the preceding fertile periods, provided the subsistence pressure that triggered military conquests.
and Joanna Burkhardt for obtaining many publications for me. Antonio Beorchia made available to me the results of his considerable research on high-altitude sites. Robert Blatherwick and Louis Glauser not only joined me on numerous ascents, but also assisted in many other ways with the project. Others who provided valuable assistance include: Carlos Aldunate, Christina Bianchetti, Ralph Cané, Evelio Echeverrría, Alfredo Ferreyros, Peter Getzels, John Hyslop, General (R) Eduardo Iensen, Federico Kauffmann, Patricio López, Tom Lynch, Carlos Ponce, María Rostworowski, Julio Sanhueza, George Serracino, Osvaldo Silva, Gary Urton, Miguel Zarate, and Tom Zuidema.

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