IDENTIFYING MORTUARY RITUAL AND ANCESTOR VENERATION: A SPATIAL ANALYSIS OF THE TOMBS AT HUALCAYÁN

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ABSTRACT

This study is an investigation of the ritual activity associated with ancestor veneration in the Peruvian Andes through a survey of eighty tombs at the site of Hualcayán, located in the Callejón de Huaylas. The location of each of the tombs was recorded in order to map the distribution as a whole. Information about the form, size, and artifacts associated with each tomb was recorded. The results show great variation in size and complexity among the tombs at this site. The practice of ancestor veneration is evident at Hualcayán from the structure of tombs and associated artifacts as well as the use of space surrounding the tombs. In addition, the distribution of the tombs as a whole across the landscape shows a pattern of clustering. This was likely based on the topography and could also reflect cultural choices.

INTRODUCTION

The Andes are home to a wide array of distinct indigenous cultures; however, there are certain beliefs that are commonly held among all of these groups and serve to tie them together despite other differences. One cultural characteristic that indigenous Andean groups share is the concept of ancestor veneration. In the ancient Andes, ancestors were believed to have power that they could exert in the physical world. Their intervention could benefit their descendants or cause harm, so it was important to honor and take care of the ancestors after their death by curating their bodies and holding ceremonies of commemoration. The mortuary practices and material culture in the archaeological record reflect this attitude.

Since ancestors were perceived as important members in the living community, their bodies were deliberately wrapped in layers of textiles forming bundles which were buried, and the bodies were naturally mummified in the arid climate of the Andes. Lisa DeLeonardis and George Lau (2004) discuss evidence for curation and removal of the deceased from their tombs by the fact that tombs in this region were designed to be accessed many times, rather than sealed up for eternity. This supports the ethnohistoric accounts of preserved ancestral remains of the Incas being brought out during rituals and festivals to share in the celebrations (DeLeonardis and Lau 2004). This was one way to show how ancestors were still very much a part of the community.

Since the accessibility and visibility of the ancestors was so important in the daily lives of people in the ancient Andes, I contend that the locations of their tombs and their arrangement across the landscape had cultural significance as well. Identifying patterns in location of the graves in relation to each other, as well as other aspects of the landscape, can provide insight into how Andean cultures viewed the deceased. In order to investigate this idea, I turned to the site of Hualcayán in the Peruvian highlands.

Hualcayán is an archaeological site that has been the focus of investigation since 2009. It is located in the Callejón de Huaylas, a mountain valley in the highlands of Peru. There is evidence of occupation from the Early Horizon Period (900 B.C.) through the Late Intermediate Period (A.D. 1450), a span of over two thousand years (Bria 2013). Recent excavations have been focused on the time period between the Early Horizon and the Early Intermediate Period (900 B.C. - A.D. 600) (Bria 2013). The majority of excavation took place in the ceremonial sector of the site. In addition to this ceremonial architecture, a domestic sector has been identified. There are also over a hundred ancient tombs surrounding the site. My investigation focused on these important mortuary features.

The spatial layout of the tombs at Hualcayán is interesting because there are two distinct types of mortuary monuments. The mountainside overlooking the site is riddled with *machays*, cave-like tombs situated under large, overhanging boulders that occur naturally in the landscape (Figure 1). Secondly, there is a cluster of *chullpas*, rectangular, house-like structures, which are closer to the ceremonial core of the site (Figure 2). Within the tombs, multiple individuals were buried and preserved in mummy bundles, likely members of the same family or kin groups.

Figure 1. A *machay*, a tomb constructed underneath an overhanging boulder.

Figure 2. A *chullpa*, or rectangular stone burial "house."

I undertook a survey in which I identified and recorded the location of eighty of these tombs. In addition, I collected data about the structure, size, and artifacts associated with these tombs. The focus of this investigation was to look for patterns in the distribution of these tombs within the landscape, as well as analyze the structure of the tombs themselves and the associated remains. My goal was to use this data to describe the burial practices of the people of Hualcayán and to evaluate whether or not the practice of ancestor veneration is reflected in the archaeological record.

Showing that ancestor veneration was practiced at Hualcayán lends more evidence to the concept of ancestor veneration as a pan-Andean belief. Similarities between the mortuary monuments and associated practices at Hualcayán and other studies in this region could be used to understand how Hualcayán related to other sites in the area. Aspects of these monuments and practices that are specific to Hualcayán establish it as a center with its own local tradition and style. Identifying the similarities and differences between the mortuary monuments and practices at Hualcayán can help to establish the degree of its interrelatedness to the region as a whole.

In addition to understanding the practices of ancestor veneration through the material remains, documenting the tombs at Hualcayán is important due to the fact that looting is a serious problem in the area, as it is throughout the Andes. All the tombs I recorded were looted extensively, and in tombs where there are still remains, the ancestor mummy bundles have been disturbed and their bones haphazardly scattered (Figure 3). In many cases the structures themselves have been partially destroyed, either for looters to gain better access to grave goods or to use the materials for modern structures and agriculture. Identifying the location and state of these tombs highlights the severity of this problem.

Figure 3. A looted *chullpa* with human bones scattered within.

BACKGROUND

The Andes is a vast region that spans seven countries along the western side of South America. It is a wonder that prehistoric people not only managed to survive but create civilization in one of the harshest environments in the world. While most people are familiar with the Inca Empire and their impressive reign, the Andes have a history going back much farther than the Incas. It is a land of extremes, challenging its inhabitants with its arid climate, high elevation, rough terrain, poor soil, and tectonic activity (Morse 1992:25). Many different environments make up the Andes, as the rapidly changing elevation creates many different ecological zones in relatively close proximity. People adapted by developing economic strategies to take advantage of multiple ecological zones. This created communities of people who weren't necessarily in the same geographic location, but still identified themselves as one group (Morse 1992:46).

The social organization of these communities was structured in such a way that allowed people to maintain this group identity even over geographic distance, a system in which ancestors played a key role. The community itself was known as the *ayllu*. Members of an *ayllu* claimed a common founder ancestor, who became a mythic figure in their oral tradition (Isbell 2004). Therefore, ancestors played a very important role in many aspects of Andean cultures. Ancestor veneration offered the living "…social definition of the local kin group or community (*ayllu)* through ceremony and celebration, and the ritual restatement of an individual's ties to a community as a deceased *ayllu* member was transformed into yet another ancestor and buried with the *malquis* [ancestors]" (Moore 1996:125).

Ancestor Veneration

It is no wonder that with the important role that ancestors played in maintaining group identity they were believed to have power in the land of the living and were venerated after their death. This concept of ancestor veneration is described by Michael Moseley as a "fundamental institution" of Andean society (1992:53). Because the ancestors had such influence in the lives of their descendants it was extremely important to honor and take care of the ancestors after their death. They were still active members of the community and therefore were included in the ceremonial events that took place. Lisa DeLeonardis and George Lau describe the beliefs and rituals surrounding this institution:

> Ancestor veneration concerns the religious practices and beliefs centered on specific deceased kin. As the domain of families, kin groups, or lineages tracing descent from known deceased, it is thought that specific progenitors maintain supernatural abilities that can directly affect the living. Ancestral spirits can be both beneficial and malevolent. Their temperament can often influence health, success in warfare or economic production, and bestowing of ancestral wisdom. [DeLeonardis and Lau 2004:78]

The mortuary practices reflect the importance placed on the deceased member of the *ayllu*. Great care was taken in the burial and preservation of the body of ancestors in mummy bundles. The arid climates of both the coast and highlands create an environment that naturally preserves and mummifies. However, specific mortuary practices vary throughout the Andes. For the purposes of this investigation I focus on pre-Inca traditions practiced in the highlands. In this region the ancestors were placed in cave-like tombs, which aided in preservation. The bodies were usually placed in a flexed position, wrapped in layers of textiles and the bundle secured with cords (Figure 4). This not only preserved the bodies, but was also important for ritual activity.

Figure 4. Mummy bundle (Wellcome Trust 2013).

> Beyond the funerary rituals the bodies of the ancestors were continually maintained by their descendants:
>
> > The bond created between the ancestor and his-her descendants involves as its basis a historical memory that encourages formal rites of commemoration that frequently extend beyond interment and associated funerary rites. Expressions of these ceremonies may entail offerings, prayers, consultations, and feasts. Ritual objects, ancestor effigies, and special buildings are important elements in these activities. [DeLeonardis and Lau 2004:78]

Ancestors were consulted, appealed to, and feasted with: For ceremonies of commemoration and feasting the bodies of ancestors were removed from the tombs and brought out as participating members to feast with their descendants. The wrapping of the mummies in bundles facilitated the transportation and curation of the bodies for these activities.

The earliest example of artificial preservation of the dead comes from the Chinchorro culture on the northern coast of Chile. As early as 5000 B.C., two thousand years before the embalming process emerged in Europe, they were creating mummies. This process became more elaborate and technologically advanced over the next two thousand years (Moseley 1992:93). There was much differentiation among how bodies were treated. Burials could be as simple as a body laid out in the extended position which was secured with cord, then covered in mats and clay. The mummification process for other individuals was very elaborate. It included disassembling the bodies and removing brain matter and other liquids, as well as desiccation of the organs and skin. Sticks were inserted to prop up the limbs and the body cavity was filled with straw or other stuffing material. Masks were created out of clay and painted (Rivera 1995:55). Some of the most elaborate burials were that of infants. In the case of the site of Camarones – 15, two infants were found mummified with faces of clay painted red as well as feathered crowns and other elaborate grave goods (Rivera 1995:54). The care and attention given to the burial of these infants points to the elevated status of certain individuals over others.

Mummies were meant to be durable and preserved as close to life-like as possible. The bodies were curated for different lengths of time and kept among the living before their burial (Moseley 1992:94) Michael Moseley explains that care and attention devoted to the physical preservation of the ancestors was so important because "mummies were the preferred symbols of founding fathers and corporate identity" (1992:94).

Mortuary monuments

Tombs served as mortuary monuments which represented the honored place that ancestors had in the community. Many studies have documented the sacred nature of these monuments and the space surrounding them, which was used for ritual activity of commemoration, adoration, and feasting (DeLeonardis and Lau 2004; Isbell 1997; Lau 2002; Moore 1996).

As previously mentioned, there are two distinct types of tombs that I investigated. *Chullpas* are rectangular man-made stone structures, like burial mausolea. Both the *chullpas* and the cave-like *machays* vary widely in size and in complexity. The most basic have just one chamber. They can be more complex, making use of interior walls and columns to mark out distinct chambers within these tombs and even multiple levels (DeLeonardis and Lau 2004). "Chullpas often appear in clusters, and are sometimes enclosed by perimeter walls" (DeLeonardis and Lau 2004:87). The structure of *chullpas* vary widely throughout different regions. They can take many forms, from round tower-like structures, to rectangular multi-leveled towers, to lower rectangular structures, sometimes built on top of platforms (Isbell 1997). Even within the Callejón de Huaylas there is variation in the size and complexity of *chullpas*. The largest *chullpa* in the Callejón de Huaylas is Wilkawain (Figure 5). This structure is three stories and sits on a platform 54 meters by 35 meters. The structure itself is 15.6 meters by 10.7 meters by 9.25 meters high (Isbell 1997:198).

A more modest version of this type of structure is found at Tornapampa, in the Callejón de Huaylas (Figure 6). Originally recorded by the Japanese Scientific Expedition of 1975, a redrawing done by Isbell shows the structure of these *chullpas* to be very similar to the *chullpas* at Hualcayán (Isbell 1997:196).

The Tornapampa Period took place during Late Intermediate Period, but there are ceramics associated with the *chullpas* that indicate use in the Middle Horizon or even farther back to the Early Intermediate Period (Isbell 1997:198), the time during which the tombs at Hualcayán are believed to have been used. I undertook an investigation to better understand the structure and distribution of these mortuary monuments at the site of Hualcayán in the context of this region.

Figure 5. Wilkawain, the largest *chullpa* in the Callejón de Huaylas.

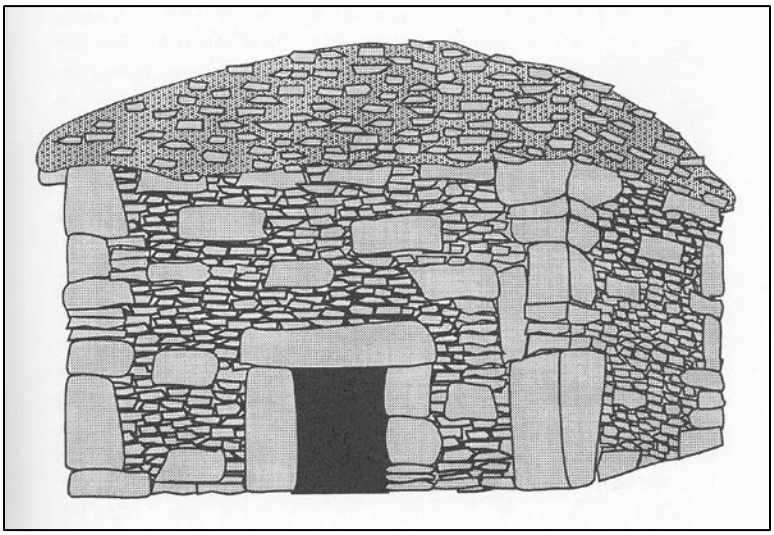

Figure 6. Drawing of Tornapampa *chullpa*, redrawn from Terada 1979: Plates 41-42 and Honcopampa Data (Isbell 1997: Figure 6.7).

Hualcayán

Hualcayán is an ancient ceremonial center located in the department of Ancash, Peru. It is part of the Callejón de Huaylas, a mountain valley approximately 500 kilometers to the north of Lima (Figure 7). It is at an altitude of 3,150 meters above sea level, situated on the western slopes of the Cordillera Blanca mountain range, part of the larger chain of the Andes. The Cordillera Blanca is located on the eastern side of the valley created by the Santa River. Across the valley is another mountain range, the Cordillera Negra.

This site was identified as an area of interest by the Proyecto de Investigación Arqueológico Regional Ancash (PIARA) in 2009 (Bria 2013). "PIARA is a long-term, regionally focused, and collaborative archaeological research project...The overarching goal of PIARA is to investigate the socio-political, religious, economic and

landscape transformations through time in the Huaylas province of highland Ancash, Peru" (Bria 2013). Hualcayán served as a regional ceremonial center with continuous occupation from 900 B.C. to A.D. 1450 (Bria 2013). This site was chosen to further investigate the way that power is maintained at certain locations over the course of long periods of time (Bria 2013).

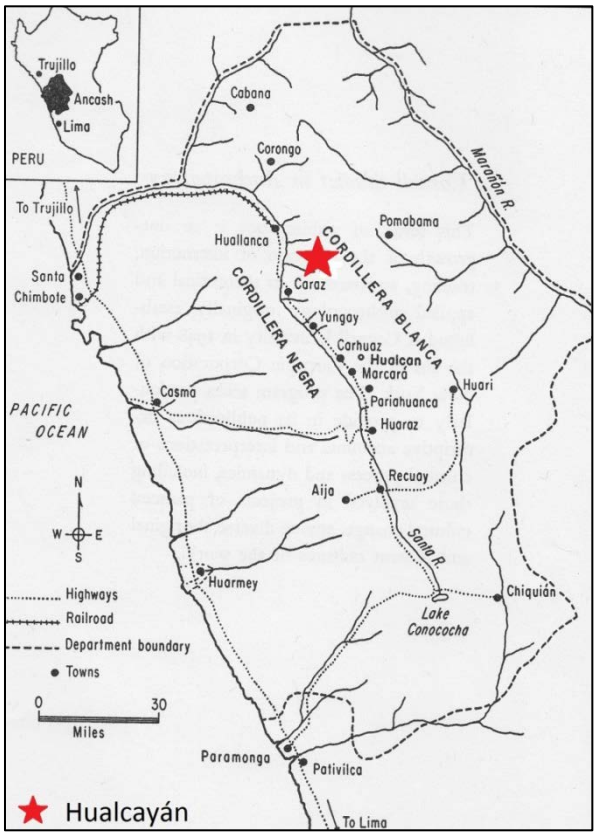

Figure 7. Map of the Callejón de Huaylas (Stein 1961:iv).

The ceremonial area of the site includes two mounds and a sunken circular plaza shown in Figure 8. To the south is a domestic sector. Excavation in the field seasons of 2009 to 2011 focused on the mound area of the site, looking at the Early Horizon through the Early Intermediate Period, 900 B.C. – A.D. 600 (Bria 2013). Surrounding the core of the site are agricultural terracing as well as the tombs. There are well over a hundred of these mortuary monuments, of which I investigated a portion.

Figure 8. Ceremonial sector of Hualcayán, including two mounds and a sunken plaza.

METHODOLOGY

There are several specific issues I address through this research. First is whether mortuary rituals and practices associated with ancestor veneration can be identified through the archaeological remains at Hualcayán. Secondly, I wanted to determine similarities and differences of the mortuary monuments and rituals at Hualcayán compared to other monuments of the region. In order to do this, I looked at the structure of the tombs themselves and the associated artifacts.

The final issue is whether the spatial distribution of the tombs is significant. Are the tombs in a random distribution throughout the landscape or clustered together in patterns? If they do appear in clusters, this could have cultural significance. It has already been established that multiple individuals were placed in one tomb likely based on kin groups (Isbell 1997; DeLeonardis and Lau 2004). The clustering of tombs could indicate a broader pattern of kinship expressed through the spatial distribution, possibly based on lineages or showing kin groups through a long period of time as descendants constructed tombs adjacent to those of their ancestors. Since the connection to a powerful ancestor in the more distant past was important, that could be reflected in the spatial layout of the tombs, with tombs clustering around the burial area of one of these important ancestors.

In order to address these issues I completed a surface survey to map the location and information about the structure and associated artifacts of a portion of the tombs at this site. In addition, I participated in the excavation of one of the *machays* to augment my data with more specific information about the individuals buried there, the area inside and immediately outside the tomb, and the associated artifacts underneath the surface.

Survey

I conducted pedestrian surface survey, identifying the location of eighty tombs in the area surrounding the ceremonial and domestic sectors of the site of Hualcayán. I recorded these locations using a Trimble and Garmin GPS unit, respectively. Because of the steep and rugged mountainous terrain as well as the large expanse over which the tombs are spread, it was not possible to do a systematic survey of the area. There are trails that I used as the basis for my survey. They begin near the site and wind their way up the mountainside to the lagoon that sits at the top of the nearest peak in the Cordillera Blanca. These trails are located to the east of the ceremonial sector of the site. I began hiking on this path. From there, I identified large boulders which stood out in the landscape as potential mortuary monuments and then hiked to these locations. While some of the tombs were adjacent to or near a trail, most were not, and required more hiking off any established path. Therefore, due to the nature of the project and the terrain, the survey was not systematic.

In addition to GPS coordinates I recorded qualitative and quantitative data about the structure of the tomb itself and took photographs of each. This data included identifying it as either a *chullpa* or *machay*. I recorded the approximate size for each as well as whatever architecture was left intact, both exterior and interior. Some tombs were small, with no interior structure. However, others had partitioning which divided the space into multiple chambers and even multiple levels. This architecture and any other features of the structure itself were noted and photographed. Some of the tombs still had intact entrances, which were identifiable as small rectangular openings (Figure 9). These entrances are evidence of the continued use of these monuments. They were not meant to be sealed up for eternity. Instead they were reentered; not only to place new individuals inside but to remove the bodies, either in part or entirely, for rituals and ceremonies so that the ancestors could be a part of these events.

Figure 9. Entrance to *chullpa*.

I also wanted to see which direction the entrances faced and if this had any pattern or cultural significance. DeLeonardis and Lau state that *chullpas* have entrances that face one of the cardinal directions (2004:87). Pedro Cieza de León, who traveled throughout Peru in the mid-sixteenth century, noted in his accounts of these travels that entrances of tombs faced east (Isbell 1997:140). From a study of tombs at Quebrada de la Vaca, on the south coast of Peru where there are mortuary monuments very similar to the *chullpas* found at Hualcayán, William Isbell concluded that "the open sepulcher [mortuary monument] need not have an east-facing entrance. East was the most popular and, consequently, perhaps the ideal direction of orientation, but other directions occur quite frequently" (1997:155). I wanted to see if the entrances of Hualcayán conformed to this east-facing trend or any trend at all in its direction. All of the *chullpas* had intact entrances, but the majority of the *machays* had no intact entrance due to the destruction of the architecture, either by looting or by environmental factors. When there was an intact entrance I recorded the outward facing direction in degrees using a compass. When there was no entrance left, I estimated where one might have been based on remaining architecture. In the absence of any remaining architecture I made a best guess based on other tombs I had seen and took a measurement facing outward, perpendicular to the back portion of the tomb. Because many of these measurements are unreliable due to the guesswork involved, in my analysis of the direction of the tomb entrances I only discuss the *chullpa* entrances, which were all intact. I also photographed the view of the surrounding landscape from the entrance to see if there were any aspects of the landscape, either natural or manmade, that were visible and may have influenced the choice of where to place the entrance.

I also looked at the area immediately outside the tombs to see if there was space for ritual activity. Isbell asserted that it was at the *machays* themselves "the desiccated bodies were visited, viewed, and adored. They were cared for, given offerings, venerated, consulted, and asked for favors that ranged from good crops and good weather to protection, health, and riches" (1997:80). Space outside of the tombs would have been necessary in order to perform these rituals.

The final aspect of the survey was identifying the associated archaeological remains. These included human bones, animal bones, ceramics, painted gourds, textile fragments, and cords. I collected ceramic sherds from tombs where these artifacts were laying on the surface and kept them separated according to tomb. However, none of these sherds had diagnostic features that would allow me to date the tomb to a specific time period. All other artifacts I recorded in notes and photographed but left in place in the tomb. Since all of these tombs were looted, nothing was left in *in situ* and I could not gain any information from the placement of these objects, only their presence or absence.

Excavation

I also participated in the excavation of one of the *machays*. This excavation took place in two parts. The first was a surface collection of bones inside. This was one of the larger tombs with bones of ancestors scattered across the surface of the tomb. This surface collection served to give a better idea of how many individuals were buried in a tomb, by determining the minimum number of individuals.

The second part was an excavation of the area immediately outside the tomb. The purpose of this excavation was two-fold. One of the goals was to recover artifacts originally from within the tombs that were displaced. The tomb was heavily disturbed by looters, so artifacts were displaced outside the tomb as a result. In addition, there was a relatively flat area immediately outside the tomb where ritual activity may have taken place. The second purpose of the excavation was to uncover any evidence of offerings or ritual activity if they were still present.

Analysis

There were two parts to the analysis of this data. The first was compiling the data about the structure and presence of archaeological remains for each tomb record. I then compared this evidence with the physical remains as well as ritual activity in previous studies, both in the Callejón de Huaylas and in the broader region as well, particularly using William Isbell's analysis of mortuary monuments throughout the Peruvian highlands.

The second part of my analysis entailed a spatial analysis of the distribution of all the tombs across the landscape. In order to do this, I used the GPS coordinates of each tomb to create a map in AutoCAD showing the distribution of the tombs as a whole. I also conducted a k-means cluster analysis on the spatial data (northing and easting coordinate data for each tomb). This is a method that helps determine: 1) whether or not the data points (tombs) tend toward a clustered distribution or a random distribution; and 2) if clustering is evident, how many clusters were represented in the data (Kintigh and Ammerman 1982). This method has been used in identifying subsystems lying within the broader settlement system using regional settlement pattern data in the Tiwanaku Valley (McAndrews, et al. 1997).

DATA PRESENTATION

Chullpas

Out of the eighty tombs documented, five of these were *chullpas*. The locations of these tombs in relation to each other are shown in Figure 10. They are labeled according to their assigned record numbers, which were continuous for all eighty of the tombs.

Four of these *chullpas* were in close association to each other in a flat, open area. There is a low wall creating an enclosed space between two of the *chullpas*. All four of these tombs were similar in size, approximately 3.5 meters in length on two sides and slightly shorter on the other two. The original height was difficult to determine because the roofs of all of the *chullpas* were at least partially destroyed. Each of the tombs was overgrown and the architecture destroyed in places, either from natural occurrences or looters. In one, looters ignored the entrance and opened up a hole on the opposite side in order to remove artifacts. In this group, each of the four tombs had a low entrance, less than a meter high. These entrances were denoted by a long rectangular lintel stone which was larger than the other stones used for the front facing wall (Figure 11). In each of the four corners of these tombs another larger than average stone was situated upright, as a cornerstone. In some cases these were missing, possibly removed in order to be used as building material for more modern structures, and thereby accelerating the collapse of the structures. All of these *chullpas* were divided into two chambers by a stone partition that ran parallel to the entrance. There were human bones, ceramic sherds, and cord scattered within.

Chullpas 38 and 39 had entrances that faced west (264 degrees and 274 degrees, respectively). *Chullpas* 40 and 41 had entrances that faced the same direction as each other, but these two faced south (174 degrees and 176 degrees, respectively). These measurements correspond to cardinal directions that DeLeonardis and Lau stated was common in *chullpas* (2004:87). However, none of these tombs had east-facing entrances described by Pedro de Cieza de León (Isbell 1997:140) and described as the "ideal" by William Isbell (1997:155). All of the entrances have a commonality in that they face towards the flat, open space in front of the tombs. This is a large area which could have accommodated a large group of people to gather in ceremonies of veneration or feasting with the ancestors.

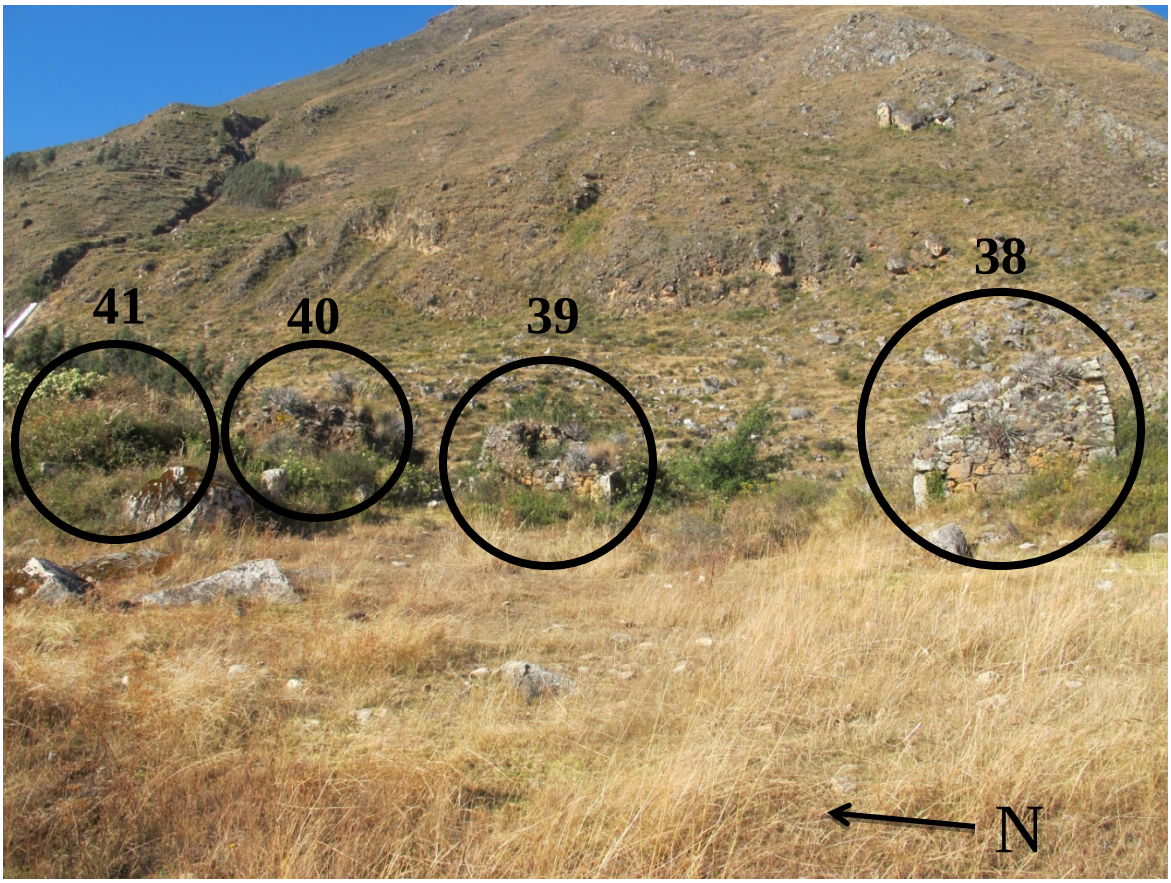

Figure 10. Cluster of four *chullpas* with large open space to west.

Figure 11. Lintel stone and cornerstone of *chullpa*.

The west-facing *chullpas* had an oblique view of peaks of the Cordillera Negra on the opposite side of the valley. Mountain peaks were believed to be spiritual beings known as *apus* according to animistic Andean beliefs. However, if Hualcainos had built these tombs with the purpose to face one of the *apus*, it would have made more sense to build the entrance to face the opposite direction, to the east, where the peak of *Alpamayo* is located. This is the tallest mountain peak in the region and the most important *apu*. Instead, the tomb entrances were facing away from this peak. This is another indication that the people's focus was not on the wider landscape but directed inwards, towards the communal space in the immediate area.

The south-facing *chullpas* had a different view. *Chullpa* 41 had a more direct view across the valley. It was also facing the flat, open space adjacent to this cluster of tombs, with a view of *Chullpa* 38. *Chullpa* 40 would have had the same view but since it is directly to the north of *Chullpa* 39, its view is dominated by the side wall of that structure, which begs the question why the builders would block the view in that way. However, it might indicate some sort of relationship between these two tombs, especially considering these are the tombs that are connected by the low wall, creating a small, enclosed space within (Figure 12).

Figure 12. Low wall creating enclosed space around entrance of *Chullpa* 40.

While *Chullpa* 40 had a south-facing entrance located entirely within the enclosure, *Chullpa* 39 had a west-facing entrance, located outside the enclosure. The enclosure created an exclusive space, where a small group could gather, likely meant only for close kin. This space also had a large flat stone with a depression, serving as a grinding stone used in ritual activity. Since the entrance to *Chullpa* 39 was not within this enclosed space it could indicate that this enclosure was not meant to be used for the occupants of that tomb. Those who built it could have only meant it to be associated with *Chullpa* 40 and simply incorporated the side wall of the other tomb for convenience. Or conversely, *Chullpa 39* could have been built after the other. However, in either of these cases the tombs could have been built in a different location in order for the view not to be obstructed or to avoid any space exclusive to the other. Another explanation is that those who constructed one or both of the tombs wanted to create an association between them in some way.

The fifth *chullpa*, while not in as close proximity as the other four, is within sight of them. This one is larger than the others, approximately five and a half meters along the sides parallel to the entrance and slightly shorter on the other two. It also has more complex architecture within, which can be seen in Figure 13. There are three chambers within this structure. There are not only partition walls but rectangular pillars that support the structure and create internal doorways between chambers (Figure 14). The entrance faces due west (270 degrees). As with the others, human bones and other artifacts are strewn throughout the inside of the tomb.

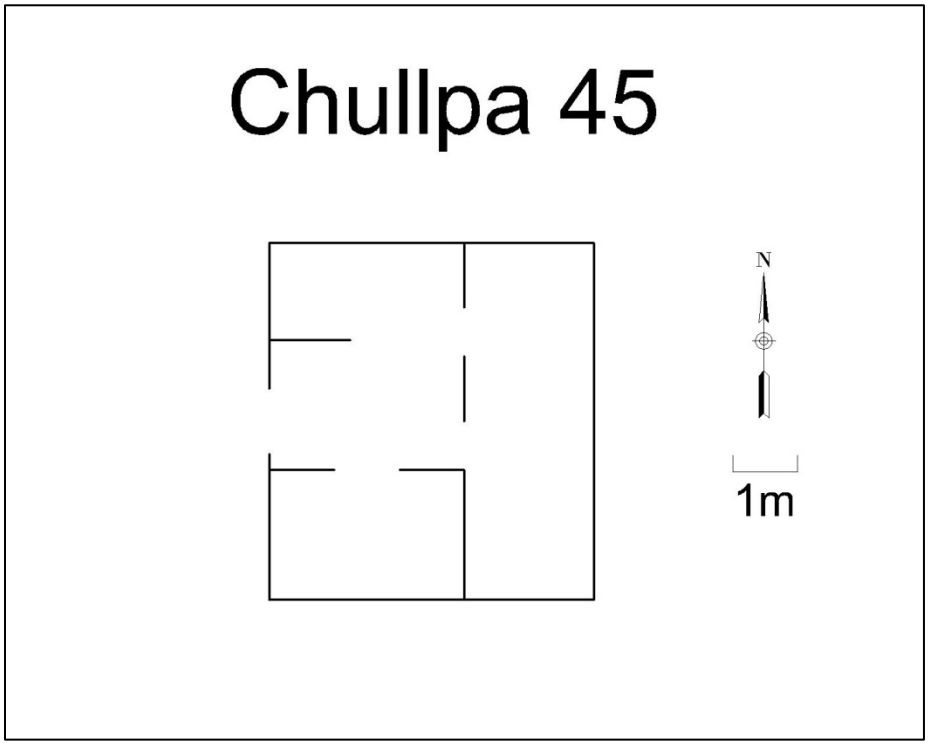

Figure 13. Planview drawing of layout of *Chullpa* 45.

It is situated in an area where there is much terracing for agricultural purposes. This tomb is located at the edge of the hillside before it drops off towards the south. This terracing creates a platform that elevates the tomb slightly compared to the surrounding landscape. The terracing around the *chullpa* could have served a ritual purpose as well as agricultural. This terracing created flat, open spaces below the tomb to the south and the east, where rituals associated with ancestor venerations could have occurred.

Figure 14. Internal structure of *Chullpa* 45.

Machays

Out of the 80 tombs documented, 75 of these were *machays*, which makes up the vast majority. Unlike the *chullpas*, which were relatively uniform in size and structure, the *machays* displayed much variation. There was wide variety in size as well as architectural complexity of these structures. I categorized each of the tombs into relative sizes of small, medium, or large based on approximate dimensions of length, width, and height (Table 1). Small tombs were two cubic meters or less and would only have been able to accommodate one to three people. These would not have been used multigenerationally. They might have been visited by descendants but not used to bury multiple generations of people. Medium tombs were greater than two cubic meters but less than 15 cubic meters. These could accommodate extended family or multiple generations of kin. Large tombs were greater than 15 cubic meters, with the largest being approximately 54 cubic meters. These tombs generally had more complex architecture and a greater presence of artifacts. They were likely used over a long period of time. Of the 75 tombs, there were 37 small tombs, 26 medium tombs, and 12 large tombs.

Table 1. The varied sizes of *machays* at Hualcayán.

Relative size	Approximate Size (cubic m)	Quantity	Percent of total
small	less than 2	37	49.3
medium	2 - 15	26	34.7
large	greater than 15	12	16

In general, increasing size also correlated to increasing complexity in the architecture. It was in medium and large *machays* where there was division of space, which created internal structure. Walls and partitions created multiple chambers and even multiple levels within these tombs. Some even had features of decoration, such as the remains of reddish plaster that had once covered the front architecture of one of the tombs. This is consistent with other tombs in the region, noted by Isbell in his survey of tombs in the Callejón de Huaylas (Isbell 1997).

I did not analyze the direction of the entrances for the *machays* as I did for the *chullpas*. This is because for the *machays*, Hualcainos were using natural elements of the landscape (the boulders) and creating the tombs around these existing elements. Therefore, they did not have as much control over the location of the tomb itself as well as the placement of the entrance. It is quite possible that the placement of these tombs was influenced by practical matters, such as making use of the naturally occurring elements of the landscape, rather than holding particular cultural significance. However, in constructing the *chullpas* the builders made deliberate choices about the location and placement of each of the elements of these tombs, and their choices about the placement were likely culturally significant.

Of the surveyed *machays*, 48 percent (36 tombs) had bones or other artifacts associated with them. Human bones and remnants of mummy bundles were the most common. In one of the tombs, the entire lower half and spinal column of a mummy was found intact, in a flexed position. The mummified remains and cordage is evidence of the use of mummy bundles to preserve the ancestors.

One of the most interesting and puzzling tombs was discovered late in the project. This tomb, shown in Figure 15, was built underneath an overhanging boulder, like a *machay*. However it had front and side walls that were similar to the architecture of a *chullpa*. There was a partition inside that divided the space into a front and back chamber, similar to the cluster of *chullpas*. In addition, it is in this tomb that an entire mummy bundle was found, more or less intact. The remains were wrapped with cord in a tightly flexed position (Figure 16). In the tomb it was surrounded by vegetal fibers which acted as padding around the bundle.

Figure 15. *Machay* 80, which displays characteristics of both a *machay* and a *chullpa.*

Figure 16. Mummy bundle from *Machay* 80.

Excavation

In addition to the survey data, I participated in the surface collection and excavation of one of the *machays*, shown below in Figure 17. The goal of this investigation was to gain a better understanding of the individuals buried in the tomb through an examination of the osteological remains, as well as uncover any evidence of ritual practices, such as offerings made to the ancestors in the space adjacent to the tomb.

Figure 17. Excavated *machay.*

This was one of the larger tombs, with more architecture intact than most. There was an impressively large boulder that made up two of the adjacent walls as well as the roof. The semicircular wall created an enclosed space around the boulder. The uppermost part of the wall was torn out by looters and when we first encountered the tomb there was a rock pile (which had once been part of the architecture of the top of the wall) covered with earth from inside the tomb. A large majority of our time was spent systematically clearing this layer in order to expose the architecture, and documenting the artifacts found in this area.

Many bones were recovered from inside and outside the tomb, both human and animal. Animal bones included camelid, guinea pig, and possibly other small rodents. Cordage was also recovered, both yarn made from camelid fibers as well as thicker rope made from vegetal fibers. The thicker, coarser rope made from vegetal fibers was likely from mummy bundles. Most of the yarn was part of plain weave textile scraps but some of the yarn recovered was dyed red, a decorative touch that was probably part of a fine textile placed as a grave good or offering. There were at least eighteen individuals present in this tomb, including multiple subadults and infants.

The tomb itself was not as wide or long as some of the others I encountered in my survey, only measuring approximately two meters by two meters. However, it was quite deep, at least three meters. It was also different in that the architecture extended well below the ground level on the outside and extended deeper towards the back. It ended in a pit against the back western corner, which held many bones. These bones were likely scattered and fell into this space due to looting activity. There was a large boulder immediately outside of the tomb that had a flat surface, although not level. If rituals were performed in the area adjacent to the tomb it must have been there because the rest of the surrounding area is covered in steeper hillside and narrow agricultural terracing. It is not an ideal area for gathering, but it could have served for a small group.

No evidence for a specific ritual event was found in the area immediately outside of the tomb, but the presence of artifacts used as offerings suggests that people did return to this spot in order to appeal to the ancestors. In

addition, the relatively large number of individuals present in this tomb means that it was used over multiple generations. The wide age range of individuals, from infants to adults also suggests burial by family group, which is consistent with other scholars' conclusions about the organization of burials (DeLeonardis and Lau 2004; Isbell 1997).

Spatial Analysis

In order to analyze this data, the coordinates for all of the tombs were compiled in AutoCAD to create a map of the distribution of tombs on the landscape, which is shown in Figure 18. Looking at this map, there are definite clusters of tombs on the landscape. In order to show this statistically as well as visually, I used a K-means cluster analysis, which determines if there are clusters represented in the data, as opposed to a random distribution, by testing it against random sets of data. It can also be used to determine how many clusters best fit the dat,a as well as which points fall into which clusters.

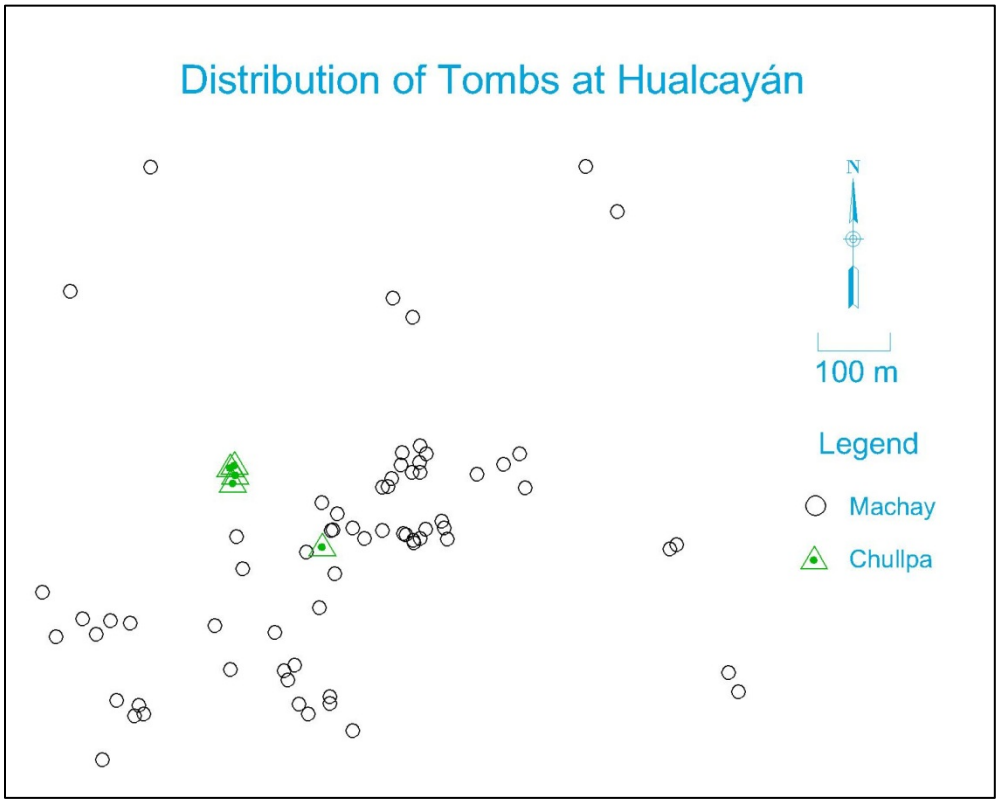

Figure 18. AutoCAD map showing the distribution of tombs at Hualcayán.

The way that this statistical test determines whether the data is clustered is by comparing it to random sets of data, using the sum squared error, or SSE. The results of this analysis are shown in Figure 19, where the coordinates from the tombs at Hualcayán were compared to five random sets of data.

This graph shows the percent sum squared error plotted for different cluster configurations. The y-axis shows the percent sum squared error, while along the x-axis the data is separated into an increasing amount of clusters. If the data was positioned above the random sets it would indicate a uniform distribution. If it was on or near the same trajectory as the random runs it would indicate a random distribution. Clustered data is indicated when it falls outside the random runs of data. In this case, the data from Hualcayán falls below the five random sets of data, showing that there is a clustering pattern as opposed to a random distribution.

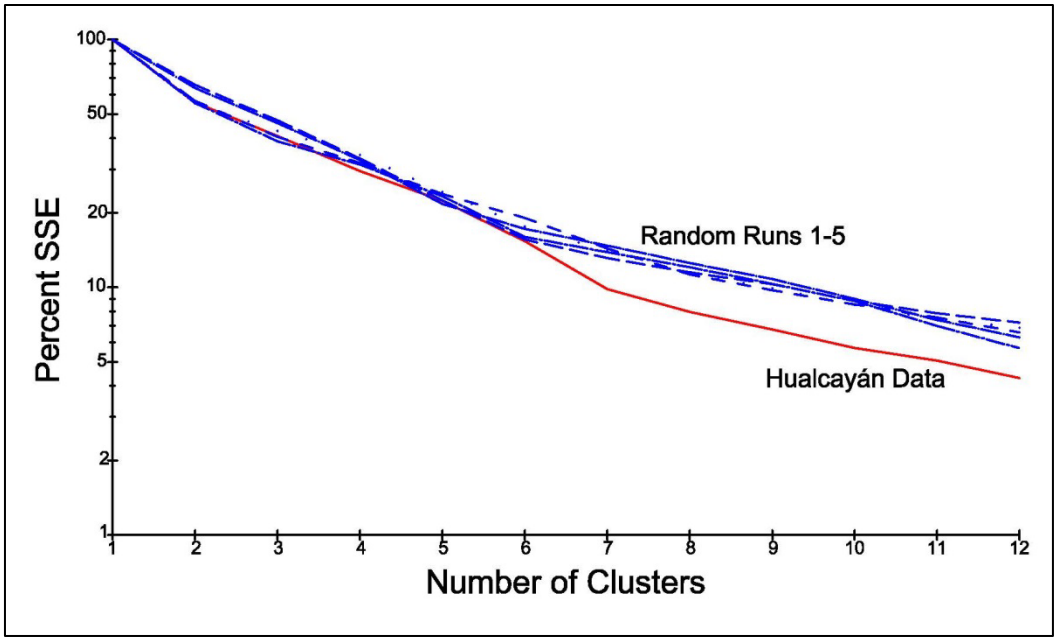

Figure 19. Results of the cluster analysis distinguishing Hualcayán from random data sets.

In order to show how many clusters were appropriate for this set of data I used the elbow method employed by McAndrews, et al. (1997) in their analysis of settlement patterns in the Tiwanaku Valley. This method uses the SSE to determine the number of clusters that best fits the data. The SSE values and percent SSE for each cluster configuration of the tombs at Hualcayán are shown in Table 2. The SSE decreases significantly from one cluster configuration to the next until it reaches seven clusters. At that point there is a break, after which the change is much less significant. This change is also indicated in Figure 19 by the abrupt change in slope, or elbow, at seven clusters. This signifies that the distribution of tombs at Hualcayán is best separated into a configuration consisting of seven clusters. Figure 20 shows a map of the distribution of tombs separated into a seven cluster configuration based on the K-means analysis and indicating the relative size of each cluster.

Table 2. Results of K-means Cluster Analysis.

Number of Clusters	Sum Squared Error (SSE)	% Sum Squared Error (SSE)
1	5503504.38	100.00
2	3065977.83	55.71
3	2245149.43	40.79
4	1621431.39	29.46
5	1228774.06	22.33
6	843902.12	15.33
7	540756.52	9.83
8	438235.52	7.96
9	371892.53	6.76
10	313122.72	5.69
11	278696.24	5.06
12	236754.99	4.30

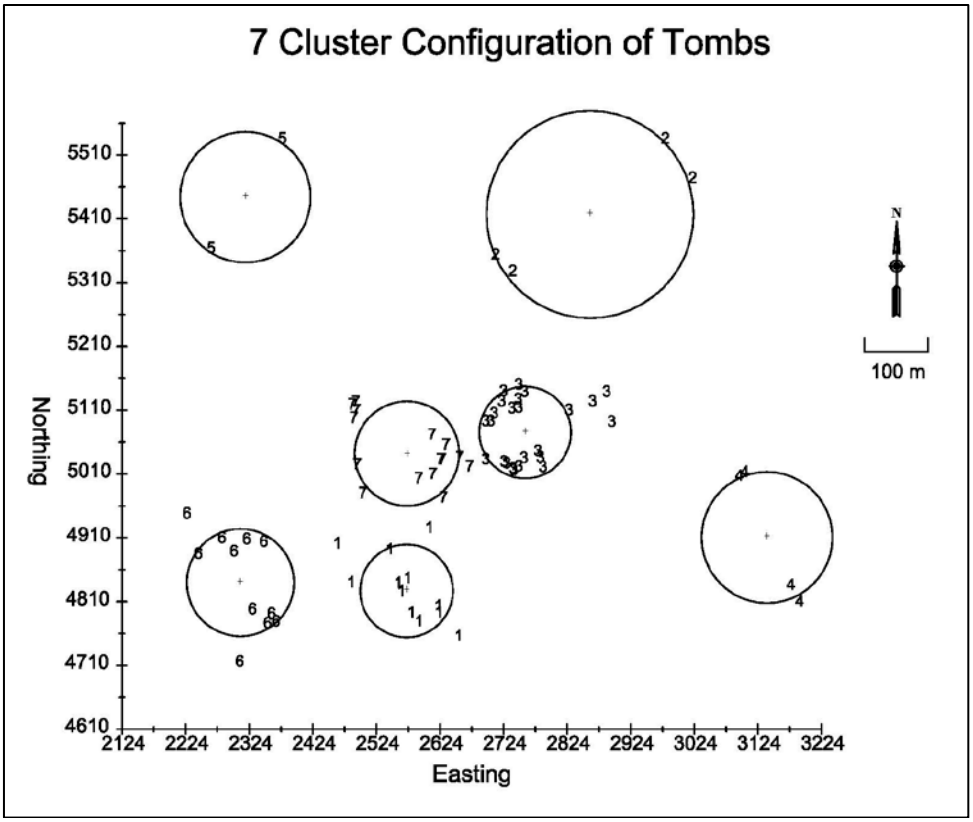

Figure 20. Seven cluster configuration of tombs at Hualcayán, based on the K-means analysis.

CONCLUSIONS

The structure of the tombs at Hualcayán reflects characteristics consistent with other mortuary monuments in the region as well as the practice of ancestor veneration. The design of the tombs allowed for continued access with an entrance that is open rather than sealed up. The *chullpas* provide the best evidence for cultural choices about location and deliberate positioning of the entrance of the tombs since in this case builders were able to control these aspects of the monuments, more so than the *machays.* Each of the *chullpas* have entrances that face cardinal directions, and among the cluster of four *chullpas* each faces towards a central area that could have accommodated a large group of people for ritual activity, such as feasting and other celebrations.

The spatial organization of the area surrounding the tombs, especially the *chullpas*, supports the conclusion of ritual activity taking place near the tombs themselves. Celebrations and feasting could have taken place on a large scale in the flat, open space adjacent to the cluster of four *chullpas*. In addition, the low wall surrounding the entrance to *Chullpa* 40 created an exclusive space where a small group of people, likely more immediate kin of the deceased, could have gathered for private ceremonies.

The presence of many individuals who were at one time preserved in mummy bundles shows that the bodies of ancestors were preserved and curated, able to be removed from their resting place for ritual activity. In the excavated *machay*, there were bones of at least eighteen individuals present, evidence of the long period of usage over many generations. Many of the artifacts found in association with the tombs, including camelid bones, textile fragments, and ceramic sherds were items given as offerings.

The spatial analysis of the distribution of tombs as a whole shows that there is definite clustering of tombs on the landscape. This clustering could reflect cultural choices being made, where members of the same kin group or lineage situated their tombs near each other to create a physical association on the landscape to reflect and reaffirm their kinship ties. Since some of the tombs were small and this area was occupied continuously for over a thousand years, the clustering of tombs could reflect this long usage. As tombs became occupied and filled with ancestors, Hualcainos may have constructed new tombs near existing ones occupied by relatives. This would have given them more space as well as allowed them to maintain that physical connection to the ancestors by situating tombs of the recently deceased near those of the long dead.

The distribution of tombs as a whole shows a sparseness of tombs to the east and north, which could also reflect geographical influence on the placement of tombs in the landscape. The topography becomes very steep to the east as the elevation rises quickly toward the mountain peak overlooking the site. This terrain would have been more difficult to access and less than ideal as a location for tombs.

It is likely that all of these factors contributed to the location of tomb placement on the landscape. The topography had to be taken into consideration, but in addition, the desire to maintain association with the ancestors through geographical association on the landscape was likely a motivating factor in the placement of tombs.

Since this was only a survey of a portion of the tombs associated with the site, there is much more opportunity for research in documenting more of these tombs as well as a more detailed analysis of the topography. Because these tombs are disturbed and continue to be looted it is important to record their presence and their current state. Besides expanding the size of the study, more information about the practice of mortuary ritual and ancestor veneration can be gained from the bodies of the ancestors themselves. Analyzing the bones of individuals in clustered tombs for genetic anomalies that are passed down through generations in a certain family groups could shed light on familial relationships of individuals in different tombs. Combining that with the spatial analysis already done could provide more information about relationships between individuals in tombs located in close proximity. Inherited genetic traits that are visible in the osteology, such as sternal foramina which were observed in several of the bones of individuals, could lend evidence to the genetic relatedness of individuals across the landscape as a whole.

There is also more opportunity for research to address contemporary issues at this site. There is a small community which was established relatively recently in this area. Over the last twenty-five years since it was established, it has been growing and expanding, encroaching on the site itself. As a result of this, present-day Hualcainos have been altering the landscape for agricultural purposes and to support this growing population. This has also led to increased looting activity as well as destruction of the tombs and other features of the archaeological site.

The current residents of the village of Hualcayán do not trace their heritage back to the ancient inhabitants and do not appear to feel a sense of continuity with the past or the past inhabitants. The social organization of this community in the present is different from the *ayllu* organization that characterized the Andes. Understanding the views and beliefs of the modern residents, especially their views on the past inhabitants and what connection, if any, they feel to the ancestors would be beneficial in several ways. First, it would be an interesting comparison of a modern community in the Andes and the influences that have changed its nature from that of traditional Andean community ties. Second, it would be helpful in planning a course of action to both protect the integrity of the site as well as work with the local community members to ensure their needs are heard and respected. This research, as well as the work done by PIARA, could aid in that dialogue by presenting a construction of the past and the ancestors, helping people today understand and feel a connection to these past people.

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