

# An Examination of Block V at the Site of Pirque Alto in Cochabamba, Bolivia: A Household Archaeological Perspective

Matthew J. Sitek

Faculty Sponsor: Timothy McAndrews, Department of Sociology and Archaeology

## ABSTRACT

One of the most recent trends in archaeological research has become known as household archaeology; its primary focus being the excavation and analysis of domestic remains. This relatively recent shift in direction for many archaeologists is providing a fresh view of not only how individual household populations lived, but also how these small units of people were influenced, affected, and changed, over time, by broader cultural factors of prehistory. For this reason household archaeological approaches will be employed to investigate the household structure and associated remains uncovered at the site of Pirque Alto (CP-11); a site outside of Cochabamba, Bolivia in the South Central Andes Mountains. A variety of statistical tests will be utilized to indicate everyday activity areas (processing food, food consumption, refuse disposal, etc.) that took place in and around the household. This study will help future researchers understand the overall prehistoric context of the site of Pirque Alto and give a general view of what life was like for Cochabamba populations during the Middle Horizon (A.D 500 – 1000); a time characterized by the strong influence of the state level society, Tiwanaku.

## INTRODUCTION

Archaeologists have been refining the methods and focus of research in their discipline since they first began examining the past. One of the current trends in archaeology is known as household archaeology (Wilk and Rathje 1982), with its primary focus being the excavation and analysis of domestic remains. While some individual researchers and institutions have regarded domestic structures to be a significant part in reconstructing past human ways of life, it was not until the last three decades that household archaeology and the study of domestic remains has become the focal point of many archaeological investigations. This relatively recent shift in focus is providing a fresh view, of not only how individual household populations lived, but also how these small units of people were influenced and affected by broader cultural trends and how they changed over time.

The South Central Andes of South America are a prime setting in which to employ a study of household archaeology. For much of prehistory, complex societies thrived in this region; leaving behind some of the most breathtaking monumental architecture and archaeological deposits ever discovered. These prominent finds have long been the focus of much of the archaeological research undertaken in the region, which leaves room for new strategies and fresh perspectives to be employed. Some researchers have been applying a household approach to their study of the region for some time now (Bermann 1993, 1994; Bermann and Castillo 1995; Goldstein 2005; Janusek 2004; Lanning and Hammel 1961; Nash 2009), but much more work still needs to be done.

This study focuses on the site of Pirque Alto (CP-11), located in the Parotani region in central Bolivia (Figure 1). The site is located approximately 15 kilometers west of the major modern city of Cochabamba and just 2 kilometers outside of the modern village of Pirque. The site of Pirque Alto is well suited for diachronic analysis at the “household” level due to its consistent prehistoric occupation, with occupations from the Formative Period (1150 B.C.E.-C.E. 400) through the Late Horizon (C.E. 1470-1535) and given that a sizeable domestic structure was uncovered. One of the site’s primary occupational periods appears to be during the Middle Horizon (C.E. 500-1200) when the site fell within the periphery of the state of Tiwanaku, which had its capitol located on the *altiplano* roughly 450 kilometers northwest of the site. Also giving the site significance is its geographical location; perched on a bluff top overlooking the Tapacari River, the site of Pirque Alto is situated at the intersection of three extremely valuable prehistoric, as well as contemporary, natural transportation routes. The three natural corridors consist of the Pukina valley, which leads northeast to Cochabamba’s Central Valley, the channel of the Tapacari River leads northwest to the Titicaca basin and the *altiplano*, and the southwestern corridor leading to Oruro and Lake Poopó (McAndrews 2007).



**Figure 1.** Map of Bolivia with the sites of Tiwanaku and Pirque Alto marked (after McAndrews and Rivera 2007)

Archaeological investigations began at the site in 2005 with additional excavation seasons in 2007 and 2009. Led by Drs. Timothy L. McAndrews (University of Wisconsin–La Crosse) and Claudia Rivera (Universidad Mayor de San Andrés) both surface collections (2005 field season) and excavations (2007 and 2009 field season) were undertaken at the site, as part of the Prehistoric Parotani Settlement Project (McAndrews and Rivera 2007; McAndrews 2007). During the 2007 excavations in excavation Block V, the foundations of a domestic structure along with concentrations of Middle Horizon ceramics, faunal remains, lithic materials, and a possible ashy midden adjacent to the foundation were uncovered (noted in the field as Feature 1); these domestic contexts will be the focus of this report.

This study is being undertaken in order to characterize and contextualize Block V (Figure 2) of the Pirque Alto site (CP-11). The goal is to determine the significance the domestic contexts, contained within Block V, has in regards to the site and the region as a whole. Specifically, this study investigates the archaeological manifestation of the Tiwanaku (Middle Horizon) domestic unit in the Cochabamba region. This investigation involves looking at distributions of various artifact classes to locate and define activity areas. This study also aims to estimate the total number of people living in the structure, as well as put forth an estimate for how many people may have inhabited the site when the Block V structure was being used. In a broader sense the goals of this study are to define the overall context of the site, Pirque Alto, and give a general view of what life was like for Cochabamba populations during the period of Tiwanaku influence. This information would then contribute to the archaeological discussion of what daily domestic life was like for prehistoric populations living in periphery regions of complex societies.



**Figure 2.** Excavation Block V (from Green 2009)

## BACKGROUND

### *Households and Household Archaeology*

Household archaeology is one of the more recent trends in archaeological research. The study of households has only been practiced in archaeology, especially in the New World, for about fifty years. Before getting into detail surrounding the history of household archaeology in general and in the region, it is important to define what constitutes a household in the archaeological record.

According to Wilk and Rathje, a household is “a group of people living under a single roof and cooperating economically on a daily basis” (Wilk and Rathje 1982). This materialist-type definition is obviously very broad and can be very inaccurate in describing the function of a household for both prehistoric and contemporary cultures around the world. Bender lists three useful characteristics that must be present in defining a household: domestic functions, co-residency, and some form a familial relationship (Bender 1967). In a later article authored by Wilk (Wilk 1991), he explains that households should be defined and explored archaeologically as being made up of overlapping “activity groups,” which consists of “spheres” representing various domestic activities (Wilk 1991:34).

Wilk’s concept of “activity spheres” closely correlates with Flannery and Winter’s concept of “household activity areas” (Flannery and Winter 1976). Flannery and Winter define activity areas as “spatially restricted areas where a specific task or set of related tasks has been carried on, and they are generally characterized by a scatter of tools, waste products, and/or raw materials” (Flannery and Winter 1976:34).

In her recent article Andean archaeologist Donna Nash (2009) directly addresses the extent of household archaeological studies that have been carried out in the region. She outlines both past and present archaeological researches, which have employed a household archaeology focus, both in the Andes and elsewhere. Nash notes that while there has been a positive trend in terms of household archaeology in the region it remains elusive in the literature. In her conclusion she notes that in a JSTOR search of the terms “House,” “Household,” “Domestic,” “Residential,” or “Residence” in the context of archaeological research in the Andes the search engine only yielded 32 results (Table 1).

**Table 1.** Nash's JSTOR abstract search for archaeological publications (from Nash 2009:244)

Search terms	Articles	Total
House or Household	Andes Hildebrand and Hagstrum 1999; Stanish 1989	2
	Argentina Lanning and Hammel 1961	1
	Bolivia Lanning and Hammel 1961	1
	Chile Lanning and Hammel 1961; Pärssiene and Siiriäinen 1997	2
	Ecuador Stahl and Zeidler 1990	1
	Peru Costin and Earle 1989; Costin and Hagstrum 1995; Donnan 1964; Lanning and Hammel 1961; Stanish 1989; Van Gijsegheem 2001; West 1970	7
Domestic	Andes Aldenderfer 1988; Goldstein 2000; Kadwell et al. 2001; Stanish 1989	4
	Argentina	0
	Bolivia Bermann 1997; Bermann and Estévez Castillo 1995	2
	Chile	0
	Ecuador Stahl and Zeidler 1990	1
	Peru Aldenderfer 1988; Burger and Matos Mendieta 2002; Burger and Salazar-Burger 1991; Goldstein 2000; Pozorski and Pozorski 1986; Schreiber and Lancho Rojas 1995; Shimada and Shimada 1985; Stanish 1989 and 1994; Vaughn and Neff 2000; Verano et al. 1999	11
Residential or Residence	Andes Aldenderfer 1988; Blom and Janusek 2004; Goldstein 2000; Janusek 1999	4
	Argentina	0
	Bolivia Bermann 1997; Bermann and Estévez Castillo 1995	2
	Chile Dillehay 1990	1
	Ecuador	0
	Peru Aldenderfer 1988; Bawden 1982a; Dillehay et al. 1989; Goldstein 2000; Haas 1985; Isbell 2004b; Marcus et al. 1999; Rice 1996; Shady Solis et al. 2001; Van Gijsegheem 2001	1
All terms	Combined results	32

\* Search conducted on June 1, 2008 through the University of Illinois-Chicago Library resources

Nash concludes her article stating that “a more contextualized examination of archaeological households offers great promise” for archaeological research in the Andes (Nash 2009:245).

### *The South Central Andes Region*

The South Central Andes region of South America is the dramatic geographical setting for some of the most impressive cultures of the ancient world. The region holds the highest peaks in South America as well as the highest elevation, navigable lake in the world, Lake Titicaca. The region was the location for the development of Tiwanaku, one of the earliest state-level societies in the New World. This section will briefly describe the general geography, climate, and cultural chronology of the region (the specific environment of the Cochabamba region will be discussed later), as well as discussing Tiwanaku and the nature of Tiwanaku's influence and expansion throughout the region.

**Physical Environment.** It is impossible to discuss any cultural process in the Andes without discussing the dramatic setting that makes up the region. The Andean Mountains stretch 4,300 miles down the coast of the South American continent and along with the Himalayas of central Asia, represent one of the highest mountain systems in the world. Numerous peaks in the range reach above 18,000 feet above sea level (Sanabria 2007:38). The climate in the Andes can vary dramatically at different elevations. This powerful geography makes up the core of the famous Inca Empire as well as the civilization focused on in this study, Tiwanaku.

The Tiwanaku State developed on the *altiplano*, a high altitude, semi-arid plain. The *altiplano* sits about 13,500 above sea level in between the two branches of the Andes, the Cordillera Occidental and the Cordillera Oriental (Kolata 1993:40). This geographic region can best be described as a windswept plain, with little to no trees. The northern edge of the *altiplano* holds Lake Titicaca; which at about 13,000 feet is the world's highest elevation, navigable, fresh water lake (Sanabria 2007:38-39). The site of Tiwanaku, the capital for the state, sits just miles from the lakes southern shores, and the Inca Empire considered the lake an extremely religious location; making pilgrimages to the lakes largest islands, the Islands of the Sun and Moon.

**Cultural Chronology.** The cultural chronology described in this study will be restricted to the Central Andes and southern Titicaca Basin regions, ending with a more detailed description of the culture of Tiwanaku. Archaeologists continue to define central Andean prehistory by Max Uhle’s horizon-based chronology (Uhle 1902). However, for defining the southern Titicaca Basin prehistory, archaeologists employ a different chronological method. The southern Titicaca Basin is defined by denoting the earliest stages of village formation and use of agriculture as the Formative, which begins with the Early Formative, Middle Formative, and ends with the Late Formative. Beginning in the Late Formative, Tiwanaku periods are also used. In other words, the Late Formative 1 (200 B.C – A.D. 250) is split between Tiwanaku I and Tiwanaku II. This is the same for the Formative 2 period (A.D. 250 – 450), also known as the Early Intermediate Period, which is also considered Tiwanaku III (Figure 3).

Beginning around A.D. 500, the city of Tiwanaku, along with its influence throughout the region becomes apparent in the archaeological record (Early Tiwanaku IV). A more detailed discussion of the chronology of Tiwanaku and the hypothesis addressing the nature of the culture and the extent of its influence continue in the following section; however, it is important to note that the Tiwanaku cultural periods (Tiwanaku IV and Tiwanaku V) define the southern Titicaca Basin from about A.D. 500 through A.D. 1150 (Figure 3).

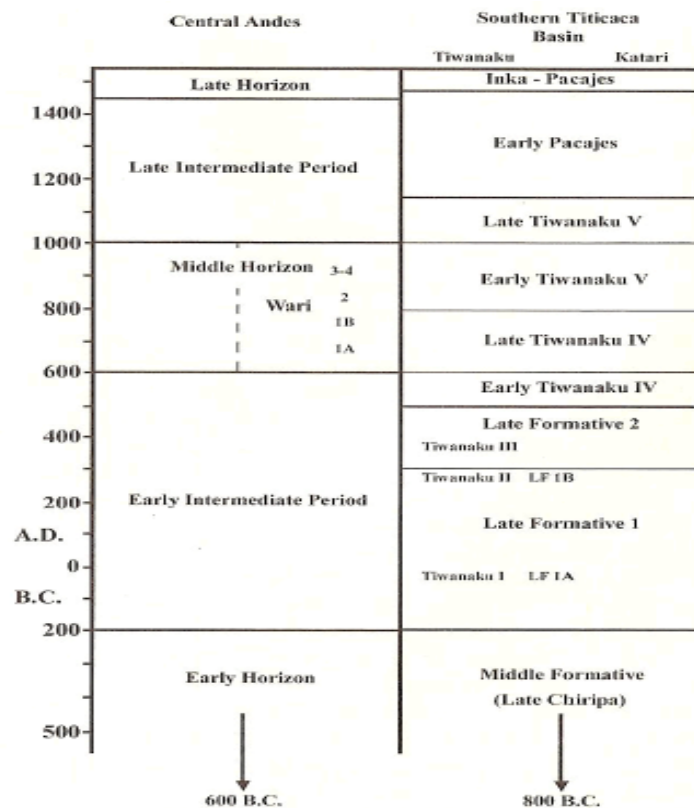
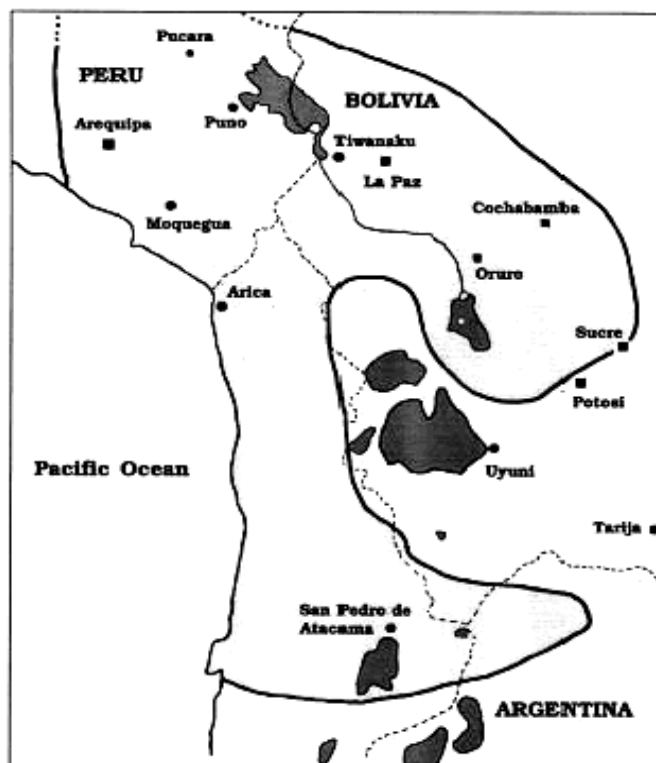


Figure 3. Central and South Central Andes cultural chronology (from Janusek 2003a:31)

*Tiwanaku*

The Tiwanaku culture flourished in the South Central Andean mountains of South America from about A.D. 500 through A.D. 1150 when it collapsed relatively quickly. Tiwanaku is considered, by most experts, to have reached the complexity of a state-level society, which would make it the first state-level society in the South Central Andes (Young-Sanchez 2004:17-18). Heavily dependent on agriculture and pastoralism, Tiwanaku grew from a locally dominant center, to a regionally influential state. The archaeological site of Tiwanaku, was also the political and religious capitol of the mighty Andean civilization, and continued to be a location that regional populations would visit for centuries after the civilization’s collapse. Even the later, well known Incan Empire’s elite class traced their ancestry back to the culture of Tiwanaku (Kolata 1993). Like most civilizations of the New World, Tiwanaku never developed a writing system, but this did not prevent it from greatly influencing the region.



**Figure 4.** Tiwanaku's area of influence (after Albarracin-Jordan 1999:Figure 6.27)

Tiwanaku-style material remains can be found north from the southeast half of modern Peru, south to the northern edges of the Atacama Desert at San Pedro de Atacama, and as far east as the modern city of Sucre, Bolivia (Figure 4). The widespread influence of the Tiwanaku State is agreed upon by Andean scholars; however, the exact nature of Tiwanaku's influence over the South Central Andes has been a topic of debate. One of the most comprehensive accounts of the various theories put forth for the exact nature of Tiwanaku formation and expansion can be found in John Wayne Janusek's recent publication, *Identity and Power in the Ancient Andes: Tiwanaku Cities through Time* (Janusek 2004). Janusek describes three main theories for the process through which Tiwanaku influenced the region; which will briefly be described here. The first theory views Tiwanaku and its influence as the center of a religious cult or ceremonial center. One of the earliest researchers to the area, Wendell Bennett, after brief excavations in the 1930s, determined that Tiwanaku was likely a "vacant ceremonial center," (Bennett 1934:480) or a site of pilgrimage.

The second theory surrounding Tiwanaku and its expansion, views Tiwanaku as a centralized polity and a patrimonial state (Janusek 2004; Kolata 1993). This theory has its origins in the late nineteenth century when South American archeology pioneer Max Uhle visited the site, and believed it to be the earliest Andean civilization (Janusek 2004; Uhle 1903). One of the strongest supporters of the patrimonial state theory is Andean archaeologist Alan Kolata. Kolata's Wila Jawira research project at the site of Tiwanaku and throughout the Tiwanaku Valley, has been one of the most significant, multidisciplinary attempts at describing and explaining the nature of Tiwanaku. Kolata believes that Tiwanaku was a centralized state with much of its power revolving around its highly productive raised field systems, and in turn its ability to produce an extremely abundant surplus in the often hostile environment of the *altiplano* (Kolata 1986, 1993). Kolata and others have hypothesized that Tiwanaku influence was maintained by direct colonial rule over some of the closer peripheral regions while influencing others through state-managed llama caravans that maintained long-distance trade routes (Kolata 1993; Moseley 2001).

The concept of Tiwanaku as a centralized state; with its capital at the site of Tiwanaku controlling various patrimonial settlements throughout the region which acted as provincial centers, supports the model first put forth by John Murra (1972) regarding the employment of direct verticality in the South Central Andes. Murra's hypothesis

was that Andean states would utilize the various altitude zones, their climates and resources by setting up vertical archipelagos (Murra 1972). The direct verticality, backed up by other Tiwanaku archaeologists (Stanish 1989), suggests that individuals from the Tiwanaku core would be sent to various altitude zones as colonists; which would maintain trade routes and control over their provincial centers. A slightly different view, put forth by Paul S. Goldstein (2005) suggests that the Tiwanaku polity consisted of diasporic archipelagos. These diasporic archipelagos were made up of groups of colonists from the Tiwanaku core, which maintained a strong cultural identity with the core region and served, like Stanish (1989) and Murra's (1972) direct verticality hypothesis, as maintainers of peripheral region trade with the core region. Goldstein (1993, 2005) uses the site of Omo of the Moquegua Valley of southern Peru to illustrate direct administrative control and imperialism in the form of diaspora. Excavations at the site of Omo have revealed Tiwanaku-style ceremonial and administrative architecture (Goldstein 2005) and there is even genetic evidence produced from burials at the site, suggesting colonists from the Tiwanaku core on the *altiplano* (Blom et al. 1998).

The third model for the nature of Tiwanaku and its influence of the region suggested by Janusek (2004) is as a "segmentary state" made up of loosely tied local communities. This model suggests that the Tiwanaku State maintained relatively loose control of peripheral regions through trade routes that served as a mechanism for transporting Tiwanaku religion throughout the region. Marc Bermann (1994), after significant household excavations in the Tiwanaku core region, suggested a "local perspective" on the nature of Tiwanaku expansion or influence in the South Central Andes (Goldstein 2005). This model is supported by settlement surveys and the analysis of Tiwanaku Valley settlement patterns (McAndrews et al. 1997) that show "discrete settlement clusters in the Tiwanaku Valley from the Middle Formative Period through the Early Spanish Colonial Period" (Janusek 2004:72). This concept provides a favorable model for regions like Cochabamba, where there is definite ideological influence of the Tiwanaku core, but no archaeological evidence of direct Tiwanaku colonization.

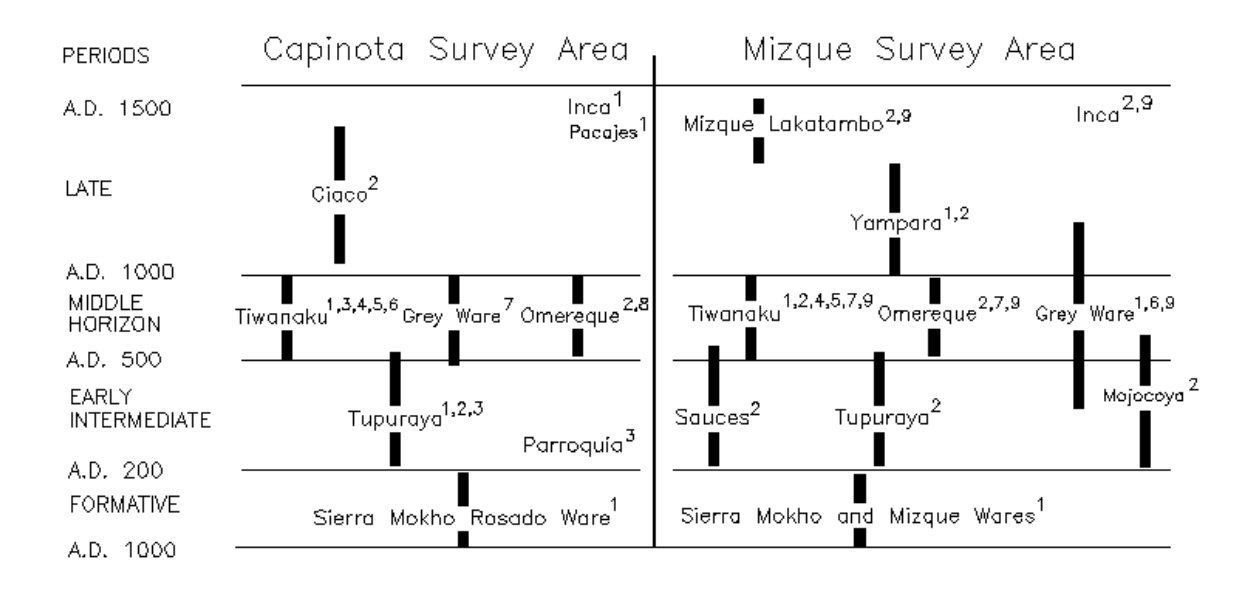
### *The Cochabamba Region*

This section will specifically discuss the Cochabamba region of the South Central Andes, which is the setting of focus for this study, the site of Pirque Alto. Both the environment and cultural chronology are very different in this region, than that of the highland *altiplano* and Titicaca Basin previously discussed. This section will describe the environment of the Cochabamba region, as well as the cultural chronology and nature of Tiwanaku influence.

**Physical Environment.** Unlike the extreme highland setting for the site of Tiwanaku, the Cochabamba region sits at an average of 7500 feet above sea level, along the eastern side of the Andes. The region is made up of a series of intermontane valleys, the largest and most significant being the Central Valley. Six other major valleys make up the rest of the region; the Valle Alto, the Mizque, and the Aiquile Valleys to the southeast, the Capinota to the southwest, Santivañez Valley to the south, and the Sacaba Valley to the east (Higueras 1996).

While the climates vary from valley to valley, in the mesothermal Cochabamba region, Alvaro Higueras (1996) has described some trends, in his settlement survey of Capinota-Parotaní region, in which the site of Pirque Alto is included. Higueras describes the climate as temperate with average rainfall anywhere between 250mm – 500mm; however the region has an essentially rainless winter (or dry) season (Higueras 1996). Higueras also reports that 17.2% of the survey area consists of very arable soils with little to no limitation in terms of crops that can be cultivated.

**Cultural Chronology.** The cultural chronology has been debated for the Cochabamba region, partly due to the fact that it appears that there are various cultural chronologies in different valleys. However, all of the chronologies put forth, have been based on ceramic analysis. Two different chronologies have been defined, and are commonly utilized by archaeologists working in the region. The first adapts the chronological sequence defined for the Central Andes, which uses Uhle's (1902) cultural horizon system. It is as follows: Formative (2000 B.C. – A.D. 600), Middle Horizon (A.D. 600 – 1100), Late Intermediate Period (A.D. 1100 – 1470), and Late Horizon (A.D. 1470 – 1535) (McAndrews Rivera 2007). Another cultural sequence for the region (Higueras 1996) defines the chronology as follows, Formative (1150 B.C. – A.D. 200), Early Intermediate (A.D. 200 – 600), Intermediate (A.D. 600 – 1000), and Late (A.D. 1000 – 1600). While both of these chronological sequences are utilized in the region, this study employs Higueras' (1996) chronology for its analysis and discussion. This analysis completed for the ceramic data collected at the Pirque Alto site was defined using terminology defined in Higueras' chronology (Figure 5).



1, Brockington et al 1987; 2, Ibarra Grasso 1965; 3, Anderson and Céspedes 1994; 4, Byrne 1984; 5, Bennett 1936; 6, Rydén 1959; 7, Rydén 1954; 8, Byrne 1964; 9, Walter 1966.

**Figure 5.** Cultural chronology of the Cochabamba region (from Higuera 1996)

The chronology outlined by Higuera will be briefly discussed here. The Formative Period (1150 B.C. – A.D. 200) is defined by monochrome pottery. There are some incised or painted vessels, but they occur in very low frequencies (Higuera 1996). While the Formative Period is split into Early Formative, Middle Formative, and Late Formative for the sake of this study, it will simply be referred to as the Formative Period. The Early Intermediate Period (A.D. 200 – 600) is split into four separate local traditions; Quillacollo, Mojocoya, Saucos, and Tupuraya. Very little information is known about these different local traditions, but they are all defined as being pre-Tiwanaku and a break from monochrome styles of the Formative Period (Higuera 1996).

The Intermediate Period (A.D. 600 – 1000) defined by Higuera (1996) almost exactly coincides with the Middle Horizon (A.D. 600 – 1100). Both of these periods denote the period when Tiwanaku influenced the region. Higuera (1996) defines four different styles that occur in the Intermediate period; the Cochabamba style, the Derived Tiwanaku style, the Omereque style, and the Grey Ware style. The Cochabamba, Omereque, and Grey Ware styles all represent local styles, which for all analysis purposes, represent continuations of the styles from the Early Intermediate and Formative periods (Higuera 1996). The Derived Tiwanaku style, however, represents a style of ceramic, which closely resembles that of the Tiwanaku core area. Much debate has surrounded the nature of this imported style, whether the Tiwanaku ceramics were directly imported through trade as prestige items or if the Tiwanaku ceramic style was adopted by Cochabamba populations. As implied by Higuera's title, Derived Tiwanaku style, he believes that Tiwanaku style ceramics in Cochabamba represent locally produced ceramics. This debate segues into the discussion regarding the theories of the exact nature of Tiwanaku influence in the Cochabamba region; which will be discussed in the following section.

**Tiwanaku Influence in Cochabamba.** As discussed earlier, the nature of Tiwanaku influence and expansion in the region, has been argued, by archaeologists and researchers, since the culture was first defined, and the Cochabamba region is no different. Many believe that the Cochabamba region represents an area of indirect control that was influenced by Tiwanaku through long-distance trade networks (Browman 1997; Higuera 1996). Others support the idea that Tiwanaku directly controlled the Cochabamba region through colonization (Janusek 2004; Kolata 1993).

Many archaeologists believe that Tiwanaku had relatively indirect influence on continuous local traditions that had existed in the region as far back as the Formative Period. This theory of Tiwanaku influences can be understood well through Marc Bermann's (1994) "local perspective." Bermann has done significant research regarding Tiwanaku at both the site of Tiwanaku as well as the other major *altiplano* site, Lukurmata. Bermann's "local perspective" suggests that through studying households the local "continuities and changes" of the region can be observed (Bermann 1994:11). Evidence for this theory of Tiwanaku influence include the lack of certain Tiwanaku



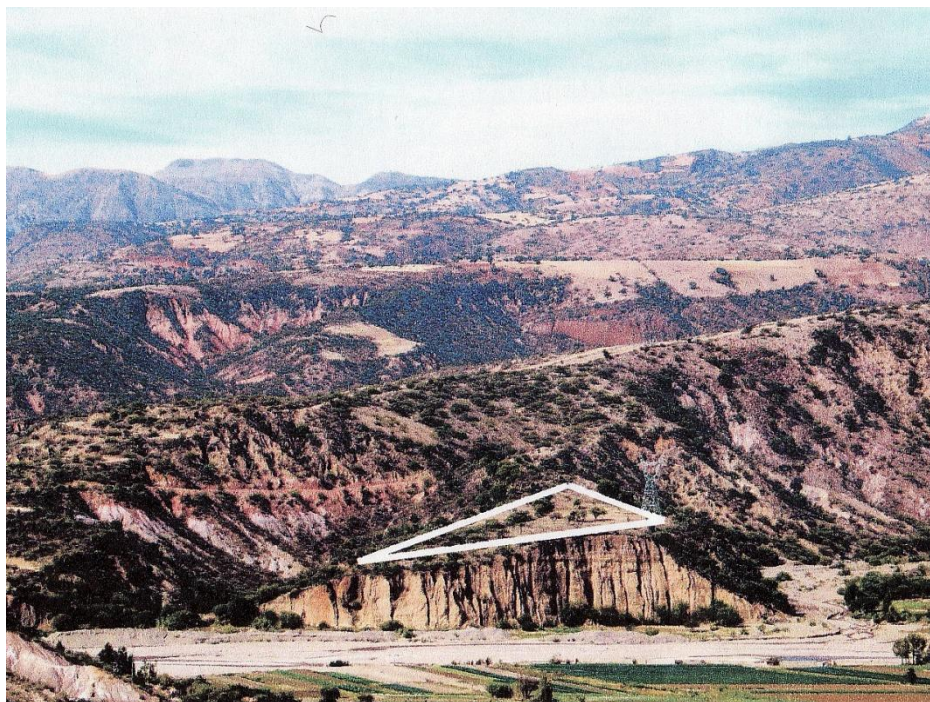
goods that are commonly found at the site of Tiwanaku (snuff kits, etc.) (Browman 1997; Goldstein 2005). Also, continuity in regional settlement patterns from the Formative Period through the Late Period indicates that cultural continuity characterized adaptations in the Cochabamba region (Higuera 1996).

However many of the long-standing theories regarding the nature of Tiwanaku expansion as operating through direct colonization (Bennett 1934; Uhle 1903), have been applied directly to the Cochabamba region (Janusek 2004; Kolata 1993). Janusek suggests that Tiwanaku maintained direct control over the Cochabamba region, and even hypothesizes that populations from "...Cochabamba and Moquegua, would have come to visit, participate, and temporarily reside in the city [of Tiwanaku]" (Janusek 2004:286). Likewise, Tiwanaku expert, Alan Kolata, describes the Tiwanaku core-Cochabamba relationship as one of "intense Tiwanaku colonization" (Kolata 1993:269). Archaeologists that support this theory on Tiwanaku influence, base their beliefs on the widespread utilization of Tiwanaku style ceramics throughout the region, and the occurrence of Tiwanaku style goods in burial offering contexts (Goldstein 2005; Kolata 1993).

While both of these general hypotheses of Tiwanaku influence in the Cochabamba region have produced archaeological support in the region, much work still needs to be done. There needs to be significant studies utilizing Bermann's "local perspective" in the Cochabamba region. Paul Goldstein notes that "This debate can only be settled with future research that includes full coverage survey and household archaeology at Tiwanaku-contemporary sites in the region" (2004:103).

#### *The Site of Pirque Alto (CP-11)*

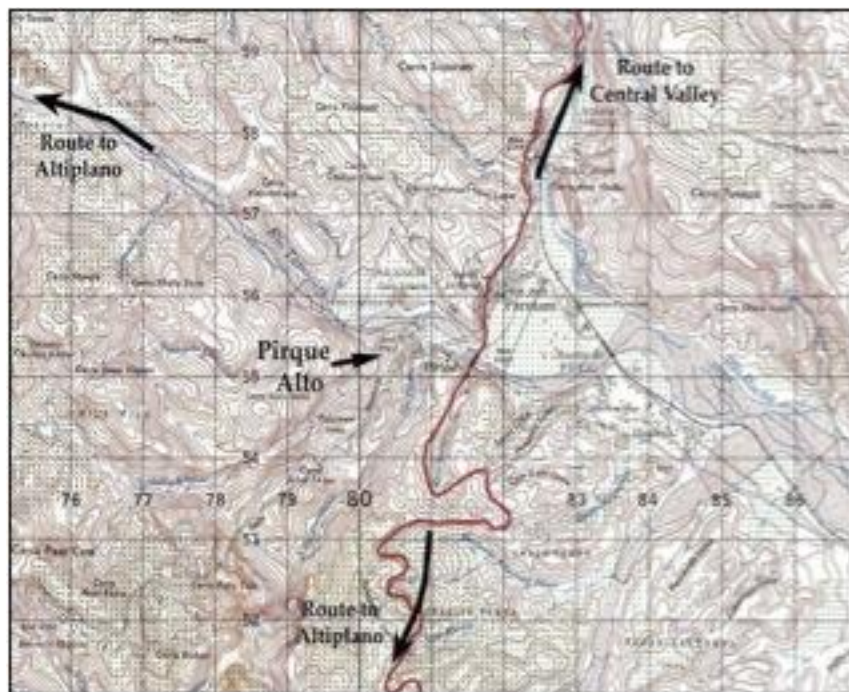
The site of Pirque Alto is situated atop a prominent bluff (Figure 6) in the Tapacarí River Valley, 15 km west of the modern Bolivian city, Cochabamba. The location of the site allows a distant view of the valley in either direction. It is believed that consistent erosion, caused by the river, has caused the site area to decrease significantly; evident in the extremely steep slopes bordering two thirds of the site. The site is approximately 10,150 m<sup>2</sup> or just over one hectare. However, due to erosional processes just described the site was likely approximately 15,000m<sup>2</sup> or 1.5 hectares during its prehistoric occupation (Higuera 1996; McAndrews 2007).



**Figure 6.** Pirque Alto (from McAndrews 2007:4)

The most significant feature of the site is its strategic location at the intersection of three natural transportation corridors (Figure 7). As described earlier, the three natural corridors consist of the Pukina valley which, leads northeast to Cochabamba's Central Valley, the channel of the Tapacarí River leads northwest to the Titicaca basin

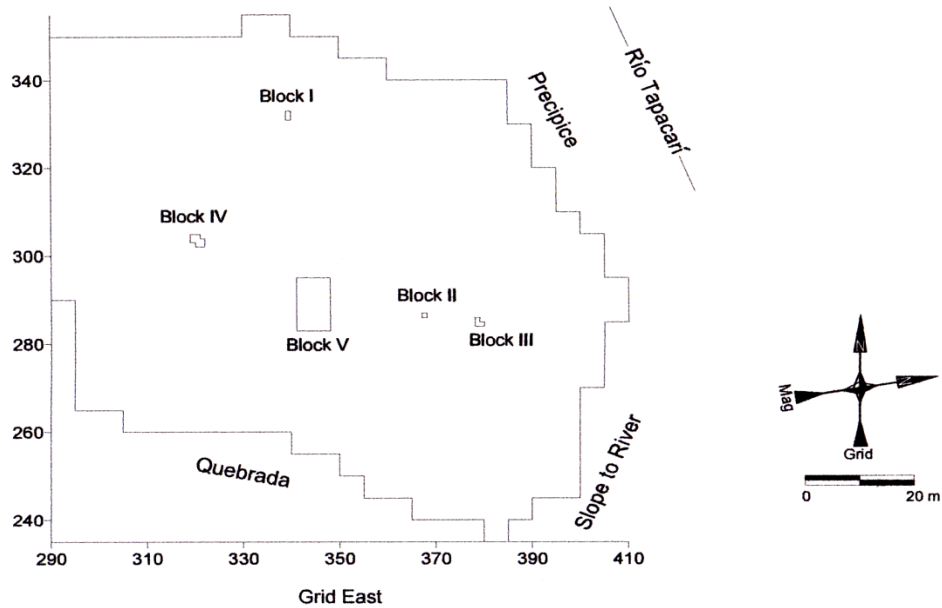
and the *altiplano* (and the site of Tiwanaku), and the southwestern corridor leading to Oruro and Lake Poopó (McAndrews 2007). Recent research has begun to shed light on the extreme importance of these natural transportation routes through the Cochabamba intermontane system. The site of Pirque Alto is located very close to the Paria-Tapacarí Road; connecting the Cochabamba Valley to both the Orruro highlands and the *altiplano*. Gutiérrez Osinaga suggests, using the primary evidence of the location of the Tiwanaku site of Condorchinacato right along the Paria-Tapacarí Road, that the Late Horizon Period road may have been utilized during the Middle Horizon as well (Gutiérrez Osinaga 2005).



**Figure 7.** The Parotani Region with Pirque Alto and the three natural transportation corridors marked (McAndrews 2007:3)

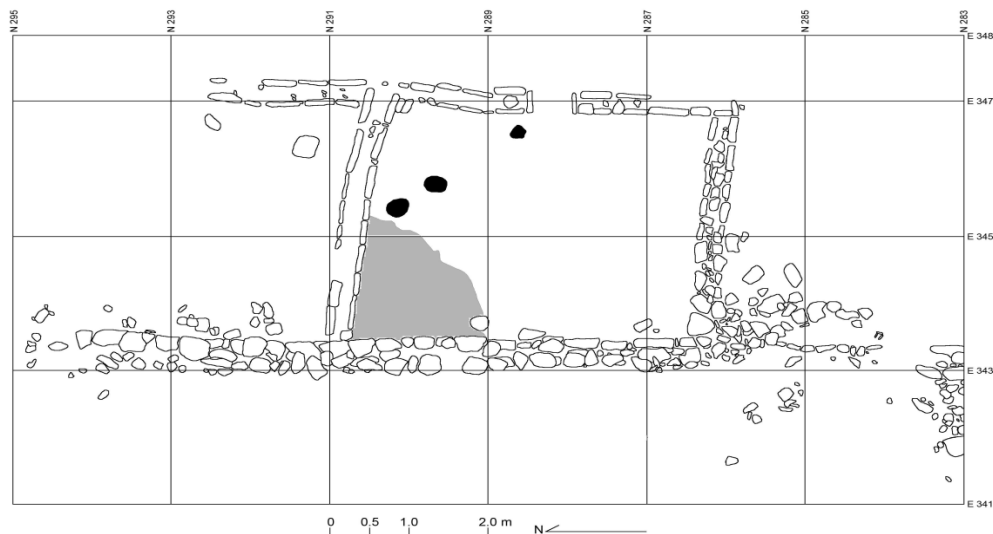
**Previous Work at Pirque Alto.** Archaeological investigations at the site of Pirque Alto (CP-11) were conducted during late May and June in 2005, 2007 and 2009 as part of the Prehistoric Parotani Settlement Project. During the 2005 field season the primary focus, of the field investigations, was a systematic surface reconnaissance, survey, and collection of the site. A total of 406 5 x 5 m units were surveyed with all artifacts collected. The surface collection resulted in the collection of 13,200 diagnostic ceramics (rims, bases, handles, painted sherds) and over 52,000 non-diagnostic ceramics (sherds approximately larger than a nickel, but not belonging to any of the mentioned diagnostic categories).

During the 2007 field season, the primary focus of investigation turned to excavation. Excavations were confined to five blocks (Figure 8), which were selected based on high density of surface artifacts and geographic location. The area of the five excavation blocks totaled 97 square meters. A variety of unit sizes were utilized (1 x 1 m and 2 x 2 m) with all units excavated using arbitrary 10 centimeter levels. The 2009 archaeological investigations at Pirque Alto maintained the excavation focus. All excavated soil was screened through 5-millimeter screens and artifacts were bagged and numbered. Two liter matrix soil samples were bagged for flotation and analysis from every square meter, in every level excavated. During 2009, the same five blocks were re-established using a total station and excavations continued. While the 2009 excavations are noted in this report, artifact analysis is still being conducted on the artifacts collected in 2009 at the Museo Arqueológico in Cochabamba, Bolivia, and therefore will not be used in the analysis discussed in this report.



**Figure 8.** Map of Pirque Alto excavation Blocks I-V (from McAndrews 2007:6)

**Block V.** The block featured in this report, Block V, was the largest of the five blocks excavated at the site; measuring 84m<sup>2</sup> (measurements based on 2007 field season). This block began as a 1 x 1 meter unit, but after exposing what appeared to be part of a stone foundation (Feature 1), an additional 14, 2 x 2 meter units and 16, 1 x 1 meter units were excavated. Block V was excavated to various depths, in order to uncover as much of the stone foundation as possible (Figure 9). Due to the horizontal focus of excavations in Block V, significant depths (all units contained either 2 or 3 10 cm excavated levels) were not reached, however three strata were uncovered (Stratum III was only reached in a few units). Block V produced 1897 diagnostic ceramic sherds, 962 pieces of faunal remains (bone), and a significant amount of lithic artifacts. In addition to these artifacts the sides of three large ceramic vessels were uncovered the northern side of the doorway of the structure; it is believed that these vessels were likely storage jars. Feature 9 was defined within the domestic structure foundation (Feature 1). Feature 9 is described as a grey ashy lens (grey shading in Figure 9), and is assumed to represent a hearth (McAndrews 2007:28). These assumptions are supported by Goldstein's observations of core Tiwanaku domestic structures, noting that "informal hearths" are common in most domestic structures (Goldstein 2005:187).



**Figure 9.** The domestic structure foundation in Block V (after McAndrews 2007)

Three strata were uncovered in excavation Block V. Stratum I contained the 5-10cm thick plow zone; the underlying soil a yellowish brown color. The first stratum held dense concentrations of ceramics, lithics, and faunal remains. Stratum II revealed a different color soil (dark grayish brown), but maintained the high density of ceramic artifacts. The dark grayish soil was most evident outside the western wall of the stone foundation, and closely resembles Middle Horizon midden deposits uncovered in other excavation blocks within the site (most notably Blocks II and IV). However, the strata uncovered within the domestic foundation show a different pattern than that uncovered outside the structure. The fact that the midden-type deposits were absent from within the structure is an indication that the floor within the structure was curated during its inhabitation in prehistory. It is also important to note that while no apparent floor was uncovered, extremely durable soil matrix was revealed at the bottom of the excavation units; this is believed to represent degraded adobe mudbrick, and likely represents the floor of the structure (McAndrews 2007:27-29). This is consistent with Goldstein's (2005:187) description of household structures in the Tiwanaku core region: "domestic structures normally consisted of adobe walls over stone foundations with floors of packed earth or prepared clay."

It should be noted here that this analysis is being undertaken assuming that the structure uncovered in Block V had a primary function of a domestic structure. In 2009 Jaelyn Rodgers (University of Wisconsin – La Crosse), for her undergraduate thesis, sufficiently proved through a comparative study that the 18 m<sup>2</sup> structure (4m x 4.5m) fit the description of a Middle Horizon, Tiwanaku-style domestic compound. Her study showed that structures uncovered at the Mollo Kontu South and Akapana East 1 occupations at the site of Tiwanaku as well as the altiplano site of Lukurmata had extremely similar foundations (Rodgers 2009). Both the *altiplano* foundations and the Pirque Alto foundation had two parallel rows of large stones filled in with a small stone and adobe mix; with the total width of the walls reaching almost 60cm (Bermann 1994; Couture 2003; Janusek 2003b; Rodgers 2009). Both the foundations at the site of Tiwanaku and the foundation at Pirque Alto have a general north-south orientation as well (Rodgers 2009). Although more excavations need to be completed to fully expose the entire foundation of the Pirque Alto structure it appears that it could fit Goldstein's description of the Tiwanaku domestic compound, which consisted of "two domestic structures, a storage building, and subfloor burials" (2005:187).

Other than the apparent architectural traits seen in the Pirque Alto structure that are diagnostic of the Tiwanaku-style domestic compound, Rodgers also submitted charcoal samples from Block V to Beta Analytic for radiocarbon dating. Although two samples were submitted for dating only one will be discussed here because one of the samples was contaminated with modern roots, and produced inaccurate results. The reliable sample, dated through AMS, produced a 2 Sigma Calibration of A.D. 1050-1090 (Cal. BP 900-860), Cal. A.D. 1130-1140 (Cal. BP 820-810), Cal. A.D. 1140-1260 (Cal. BP 810-690) (Rodgers 2009:36). If the charcoal sample was in fact produced during the structures primary occupation that indicates that those individuals occupying the structure lived in the terminal Middle Horizon. This period is defined as Tiwanaku V on the *altiplano* and represents the decline of the state of Tiwanaku. However, during Tiwanaku V the state maintained a somewhat significant influence throughout the South Central Andes.

## METHODOLOGY

This paper will explore the following research questions:

1. What is the nature (i.e. activity areas, specialization, subsistence, proportions of various artifact classes, etc.) of the domestic structure excavated in Block V at Pirque Alto?
2. What is the nature of Tiwanaku influence on the peoples living at Pirque Alto during the Middle Horizon?
3. What does the Tiwanaku core – Pirque Alto relationship illustrate; in terms of state level societies and their peripheral regions; at the household level?

The data considered in this study are based on excavations undertaken at the site of Pirque Alto, Cochabamba, Bolivia in 2007. Data analysis was conducted on ceramic and faunal data collected at the site. This analysis will involve analyzing relative artifact distributions within excavation Block V. Finally the results of the data analysis were examined in light of existing literature and research on the topic of household archaeology in order to interpret the results gained from the Pirque Alto data.

The site of Pirque Alto was chosen to be the focus of this report for three main reasons. The first is the availability of the site itself and data collected from the site. The University of Wisconsin-La Crosse (UW-L), under the direction of Dr. Timothy McAndrews, with the assistance of the Universidad de San Simon and the Museo Arqueologico in Cochabamba, as part of the Prehistoric Parotani Settlement Project, has conducted three separate archaeological field schools at the site. This represents the entirety of research undertaken at Pirque Alto. After artifacts are analyzed by UW-L's counterparts in Cochabamba, the raw data is made readily available to Dr. McAndrews and the UW-L archaeological student body. The second reason for selecting Pirque Alto for this report is the heavy presence of Tiwanaku (Middle Horizon) diagnostic artifacts; including the Tiwanaku-style domestic structure foundation (McAndrews and Rivera 2007; McAndrews 2007; Plunger 2007; Rogers 2009; Green 2009) which have been found in intact and stratified subsurface remains. This second justification also includes the fact that the Department of Cochabamba is a documented periphery region of the Tiwanaku polity. The final reason is the unique geographic location of the site. As stated in the Background section, Pirque Alto is situated on a bluff top overlooking the Rio Tapacari; which is part of an intersection of three natural corridors leading to the Altiplano, Titicaca Basin, and Cochabamba's Central Valley (Figure 7 in Background section).

### *Field Methods*

While the field methods that were employed at the site of Pirque Alto during were described in the Background section of the report; it is important to repeat a few that applied to the excavation of Block V here, and note the possible bias they placed on the data being analyzed. It is important to note that the nature of excavations were horizontal as opposed to vertical. As mentioned in the 2007 Pirque Alto site report, the horizontal nature of the excavations was used in order to excavate as much of the stone foundation as possible (McAndrews 2007). While excavations were relatively shallow, multiple distinct strata were revealed in Block V, and sterile soil had not been reached. These shallow excavations did not allow for the recovery of all possible artifacts associated with the structure, and therefore restrict the analysis of Block V. However, the 2007 excavations recovered 1897 diagnostic ceramic sherds and 962 pieces of faunal remains; which is sufficient for the preliminary statistical analysis of this study.

### *Data Analysis Methods*

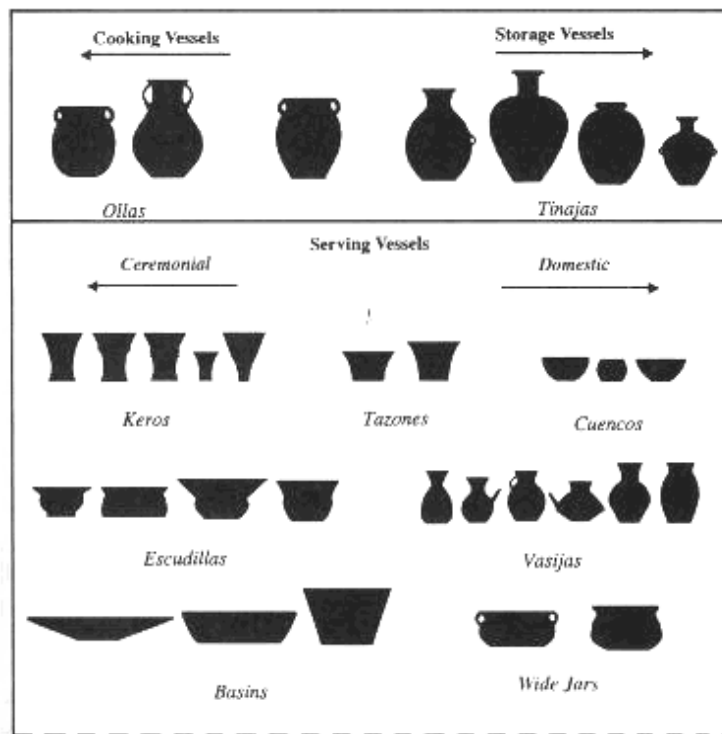
The data analyzed in this study comes primarily from a Microsoft Access database which includes all the 2005 and 2007 ceramic data from the surface collection and excavation of the site of Pirque Alto, as well as the faunal remains recovered during the 2007 excavations. The master table of the ceramics from the 2007 excavations labeled each of the 1897 diagnostic sherds from Block V with its vessel form, provenience, and the cultural sequence.

### *Ceramic Distribution*

I organized the ceramic data first by provenience (unit and unit level), then by cultural period, and finally by vessel form. This study focused on the recovered ceramics diagnostic to the Tiwanaku (Middle Horizon) period; however both earlier and later cultural periods will be included in this study in an attempt to detect change over time; in order to gauge the nature of Tiwanaku influence at the site. I divided the ceramics into different vessel types, which in turn inferred the function of the vessel and whether or not the vessel was used for domestic or ceremonial use. Ceramic vessel types are split into fifteen different types; independently restricted, bowls (cuencos), plates, keros, tazones, challadors, polishing sherds (esteque), spindles, spoons, saumador, chilamis (big bowls/basins), cantaros, globulares, unidentified, and ollas. However, it should be noted here that only eight of the

fifteen vessel forms were identified in the Block V assemblage: independently restricted, keros, tazones, challadors, cantaros, globulares, unidentified, and ollas.

The function of these vessel types is sometimes difficult to pinpoint, however, past studies have sufficiently classified them into four groups based on function; cooking vessels, storage vessels, domestic serving vessels, and ceremonial serving vessels (Figure 10). There are also some vessels considered to be strictly ceremonial items (i.e. incensarios), which have no direct application to food preparation, storage, or consumption.



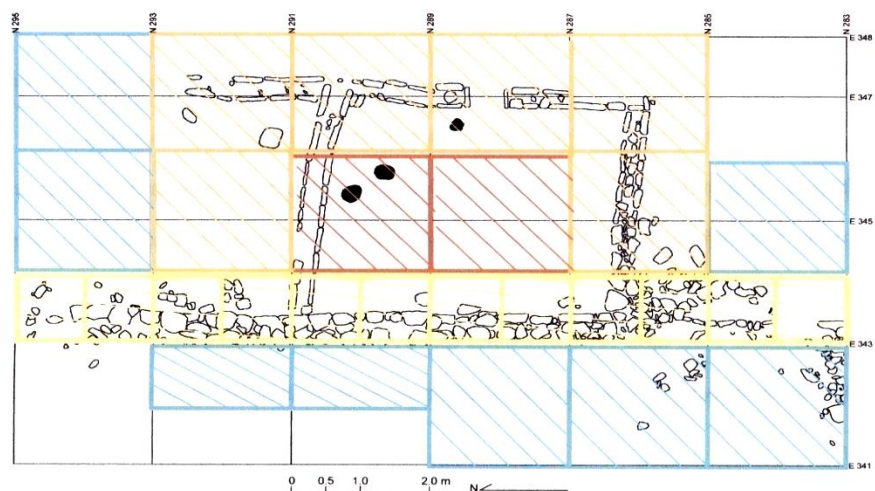
**Figure 10.** Tiwanaku-style cooking, storage, and serving vessels as grouped by Janusek (after Janusek 2004:Figure 3.2)

Once the ceramic types were organized by provenience, cultural period, form, and function densities were calculated (sherds per square meter). This was completed by first, comparing the total number of each category to the total number of sherds found in Block V, and then for distribution analysis comparing the number of each ceramic category to the total amount of ceramics for each unit and unit level.

After the vessels were organized by form and function, and the densities of ceramic categories were calculated, I generated contour and classed post maps (in Surfer) to graphically illustrate densities of vessel types/functions within Block V. These maps (presented below in the Results section) help to indicate possible activity areas, areas of specialization, etc. within and around the domestic structure in Block V.

#### *Faunal Data Analysis*

Similar methods were employed for the analysis of faunal data; however, more previous analysis had been done. Jose Capriles of Washington University in St. Louis, Missouri completed the analysis of the raw faunal data recovered at the site of Pirque Alto. Capriles recorded detailed descriptions of each bone uncovered, including (if possible); side, weight, and cultural modification. Capriles also calculated the number of identified specimens (NISP) and minimum number of elements (MNE), which are extremely useful in interpreting possible subsistence patterns (Capriles 2009). Elizabeth Green, as part of her Masters Thesis at Binghamton State University of New York, elaborated on Capriles faunal analysis. Green organized Capriles faunal data by excavation block, and actually dissected the units of Block V into four separate sections, based on the domestic foundation. The sections are categorized as follows: units outside the structure, units containing the western wall, units straddling the structure, and units within the structure (Figure 11) (Green 2009).



**Figure 11.** Division of Block V (after Green 2009:27)

Due to the amount of analysis completed by both Capriles and Green on the faunal data at the site of Pirque Alto, and specifically Block V, little additional data analysis was necessary for this study. However, much of the results reached by Capriles and Green was reanalyzed and incorporated into this study in order to analyze how different elements are distributed throughout the block.

#### *Ceramic Proportions*

Ceramic proportions were analyzed in order to illustrate the internal chronology of the site of Pirque Alto. In order to determine what the ceramics recovered through excavations could indicate in regards to how the site fits into the regional chronological scheme. This was completed by grouping the data either by horizon-based period (Formative, Early Intermediate, Middle Horizon, etc.) or specific cultural style (Formative, Tupuraya, Tiwanaku Central, Tiwanaku Local, etc.) and dividing them by the total number of recovered ceramics. This produces a percentage, which represents how much of the assemblage is composed of that particular period or style.

#### *Population Estimates*

As another form of data analysis this report then looks at what kind of population estimates can be made from the both the size of the structure as well as the size of the site. From the size of the structure an estimate can be made as to how many individuals may have inhabited the structure. After the number of individuals living in a single structure is computed that number can be applied to the size of the site, and an estimate for the size of the site population can be determined (McAndrews 2005:59).

One of the most appropriate population estimate studies to apply to the site of Pirque Alto was undertaken by Hastorf (1993:68-71) in central Peru. Hastorf looked at the Wanka I period in the Mantaro region, which lasted from A.D 900-1300. This is both a similar environment to that of Pirque Alto as well as extremely close in time period; the Middle Horizon lasted from A.D. 600-1100 in the Cochabamba region. Hastorf gives a range of 35 to 50 structures per hectare (Hastorf 1993:62), and gives an average of six individuals per household (Hastorf 1993:69). Hastorf made this household population estimate from ethnographic information recorded in Huancavelica.

## **RESULTS AND DISCUSSION**

#### *Block V Trends*

Excavation Block V included eight of the sixteen different Middle Horizon ceramic forms included in the Pirque Alto ceramic database. These eight vessel types were relatively well represented in every excavation level (Table 2). However excavation level two was the only level, which included all four ceramic vessel functional categories.

**Table 2.** Amount of ceramic vessel form and functional category represented in excavation levels and percent of the total Block V assemblage

Vessel Forms	Vessel Function	Level 1	Level 2	Level 3	Total	% of Assemblage
Independently Restricted (Jars)	Domestic Storage	57	31	12	100	10.76%
Keros (drinking goblet)	Ceremonial Serving	97	37	1	135	14.53%
Tazones (serving bowl)	Ceremonial/Domestic Serving	10	9	8	27	2.91%
Challador (constricted-base kero)	Ceremonial Serving	0	1	0	1	0.11%
Cantaros (pitcher)	Domestic Serving	289	185	97	571	61.46%
Globulares (large storage/brewing jar)	Domestic Storage	55	16	3	74	7.97%
Unidentified	N/A	3	0	0	3	0.32%
Ollas (Pots)	Domestic Cooking	0	18	0	18	1.94%
	Totals	511	297	121	929	100.00%

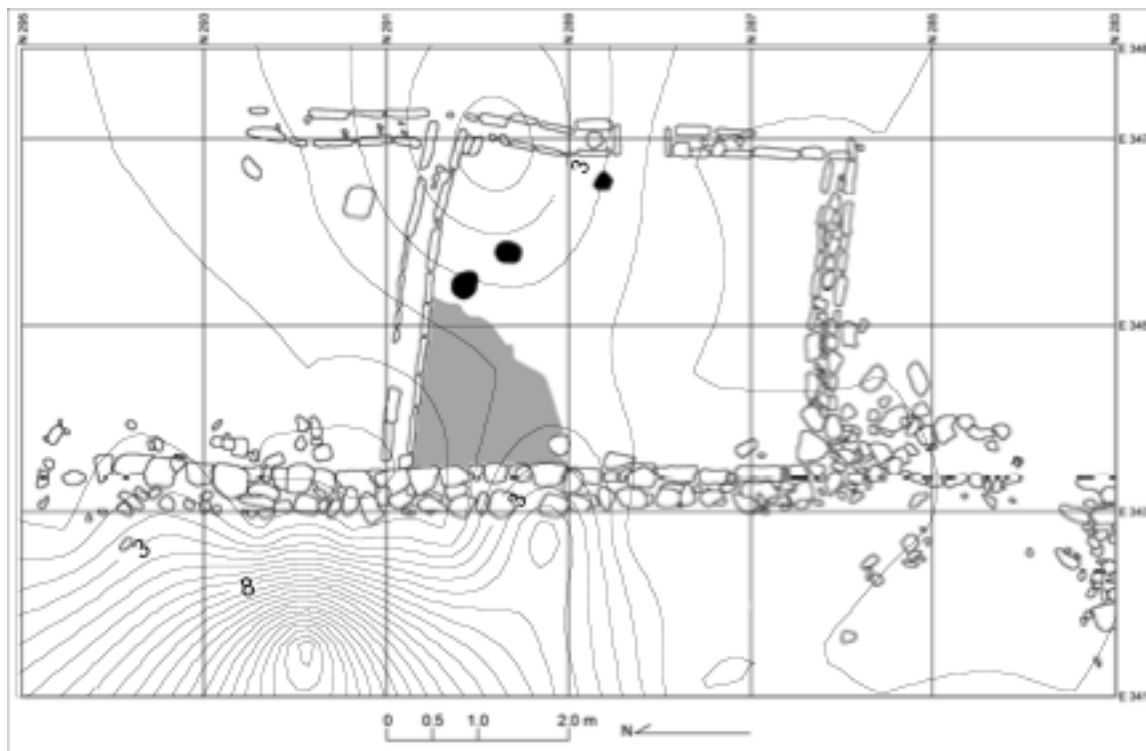
## ACTIVITY AREAS

### *Ceramic Distributions*

The distributions of ceramics in excavation Block V show two important patterns. The first reveals a refuse pattern, which is consistent with that of a midden deposit. The second, illustrated by the almost complete absence of ceramics within the foundation of the domestic structure lends itself to the idea of a curated house floor within the structure. As mentioned in the Results section the most accurate and reliable excavation level for ceramic distribution analysis is excavation level 2. Excavation level 1 was greatly affected by historic and contemporary agricultural practices. Stratum I of Block V consists of a 5-10cm plow zone; which makes up most, if not all, of excavation level 1, and therefore the distributions of ceramics at this level have been significantly altered. Excavation level 3 represents an incomplete sample of Block V, due to the fact that only five of the 28 excavation units contained a third excavation level. Therefore the majority of this discussion will focus on the distributions observed in excavation level 2.

One of the most significant patterns that can be observed from the ceramic distributions in Block V is the apparent midden behind the southern compound wall of the structure. When viewed individually by form type or grouped by functional type the ceramics, with a few exceptions, are most dense directly to the south of the foundation of the structure. All domestic storage, domestic cooking, and ceremonial serving follow this pattern (Figure 12). This is consistent with observations made by Paul Goldstein (2005:213), in which through excavations of Middle Horizon domestic structures, at the site of Omo, noted that the inhabitants used the “backyard” as their primary area for disposing of refuse.

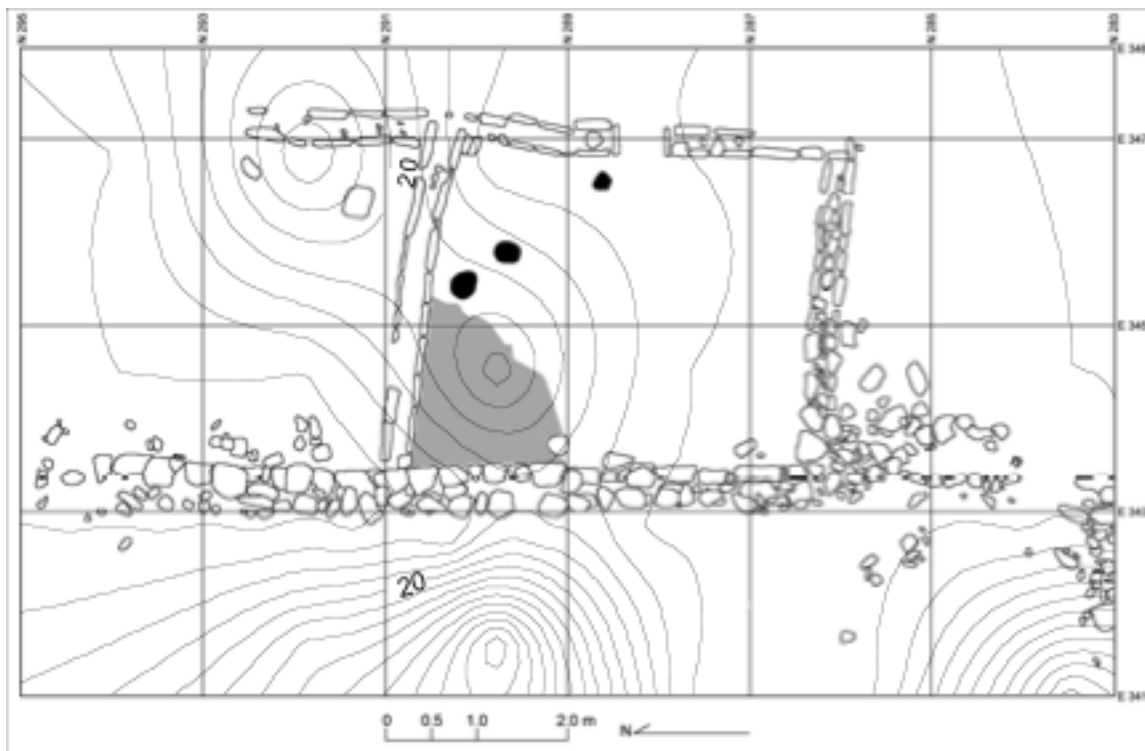




**Figure 12.** Distribution of ceremonial serving vessels from excavation level 2

The ceremonial serving vessel functional category follows this pattern the closest. This may indicate that, given the ritual significance of keros, were ritually “killed” or destroyed after they were used in ritual feasting (libation) ceremonies (Janusek 2004; Goldstein 2005). This would explain why keros and the other ceremonial serving vessels are so neatly confined (with a 3 sherd exception) to the area behind the southern compound wall. Ritual “killing” of certain ceremonial items in this time period is mentioned briefly by Janusek in his description of “ceramic smashes” at Akapana at the site of Tiwanaku (2004:153) and Goldstein’s description of the ritual “killing” of imported items at Tiwanaku period households in the Moquegua Valley (2005:198-199).

The one exception to this pattern (for excavation level 2) is the domestic serving vessels. In the Block V assemblage this functional group consists of a single vessel form type; cantaros (pitchers). Domestic serving vessels have two main centers for concentrations; one is behind the southern compound wall (similar to the other functional categories) and a second directly to the west of the western wall foundation of the structure (Figure 13).



**Figure 13.** Distribution of domestic serving vessels from excavation level 2

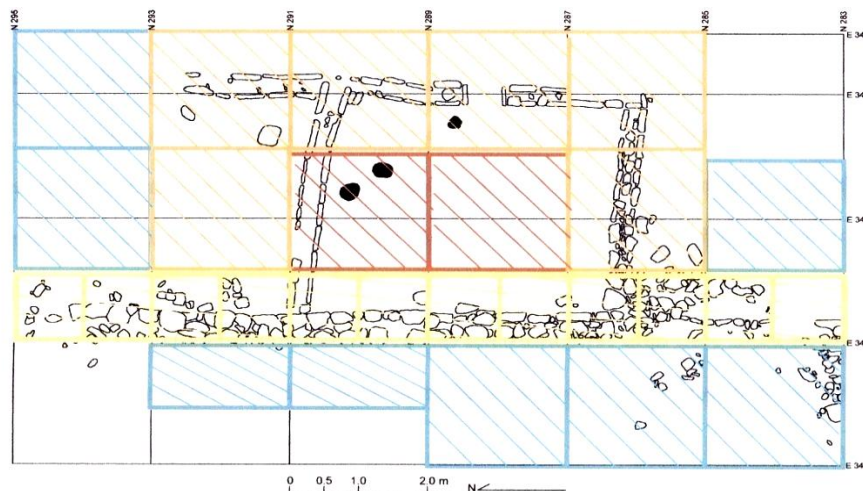
While this functional category does deviate from the general pattern in that its sole concentration is not behind the southern wall it does still show a concentration behind that southern wall, and the sherds found inside the structure appear to be confined to the possible hearth in the southwest corner.

The location of this possible midden is exactly what one might expect to find at a domestic compound such as the structure in Block V. What the concentrations behind the southern wall most likely represent is a refuse pile that accumulated from the refuse produced by the individuals who occupied the structure during the Middle Horizon. It would make sense that the occupants of the structure would go behind the house (southern wall is opposite the doorway to the structure) to deposit their refuse. This pattern is also consistent with the dark grayish brown silt loam matrix found outside the structure which was deemed Middle Horizon domestic refuse deposits elsewhere on the site (McAndrews 2007).

The second pattern, which was made apparent from the Middle Horizon ceramic distributions, most notably in excavation level 2, was the lack of ceramics within the foundation of the structure. While “no discernable floor was identified during excavations” a durable soil matrix was uncovered in excavation levels 2 and 3 which most likely “represent degraded adobe mud brick” (McAndrews 2007:28). Based on archaeological excavations at other Middle Horizon households and ethnographic accounts from the region adobe mud bricks make up the walls of most domestic structures (Goldstein 2005:187). Therefore the layer of degraded adobe mud brick at the base of excavations inside the structure at Pirque Alto probably represent the prehistoric floor of the structure. Based on the fact that it is believed excavations within the structure reached the floor of the structure combined with the general lack of ceramics within the structure it can be concluded that the inside of the structure was most likely swept clean during its occupation in the Middle Horizon.

#### *Faunal Material Analysis*

The analysis of the faunal material from Block V, carried out by Elizabeth Green, showed similar distributions to that of the ceramics. For her analysis Green split Block V into four different sections: blue, red, yellow, and orange (Figure 14).



**Figure 14.** Division of Block V (after Green 2009:27)

**Blue Section.** The blue section represents excavation units that were dug completely outside the structure (Figure 14). In these units Green found an extremely dense concentration of faunal materials in the units to the west of the structure and exceptionally low concentration of faunal material in the units west and east of the structure. The most common faunal materials from this section were ribs and lower limbs of camelids. Also one of the three bone tools, a needle, was uncovered in one of the blue units occurring south of the thick compound wall (Green 2009).

**Yellow Section.** The yellow section is made up of the 12 1x1m excavation units, which were dug along the southern compound wall (Figure 14). The faunal remains from this section closely resemble that of the blue section with camelid ribs being the most common element type. While the contents of units along the western wall could be considered part of the assemblage from inside the house Green believed that it most likely represents contents from outside the structure (Green 2009).

**Orange Section.** The orange section represents excavation units dug directly adjacent to the domestic structure, but probably still within the greater compound (Figure 14). This section produced extremely low concentrations of bone in the four units that lie to the east of the structure and slightly higher concentrations in the units to the west and east of the structure. Due to the fact that the northern units are in front of the door of the structure this is an indication that the occupants of the structure kept the doorway to the structure clear of refuse. This section also included two bone tools; a bone awl from the unit on the eastern side of the structure (unit N286 E344) and a bone needle from the unit to the northwest of the structure (N285 E346) (Green 2009:64).

**Red Section.** The red section represents the two units which were dug completely within the foundation of the structure (Figure 14). These units contained “very few camelid remains” (Green 2009:57), but a small concentration was found in the western unit. This unit also contained Feature 9 which was “a grey ashy lens that likely represents the base of a hearth” (McAndrews 2007:28), as well as the sides of three large storage jars (represented by black dots in Figure 9). Green also notes that the domestic structure “also returned a few human remains (both adult and child), suggesting the presence of burials, presumably either associated with construction events or the burial of household members under the floor” (Green 2009:60). This would be consistent with Goldstein’s observations of Tiwanaku-style compounds containing sub-floor burials (2004:187).

The analysis of the faunal materials by Green shows a strong correlation to the ceramic analysis completed for this study. There appears to be the densest concentration of faunal materials behind the southern wall of the structure indicating a midden-type deposit (Figure 15). Also the general lack of faunal materials from within the structure indicates the floor of the structure was kept clean during its occupation.

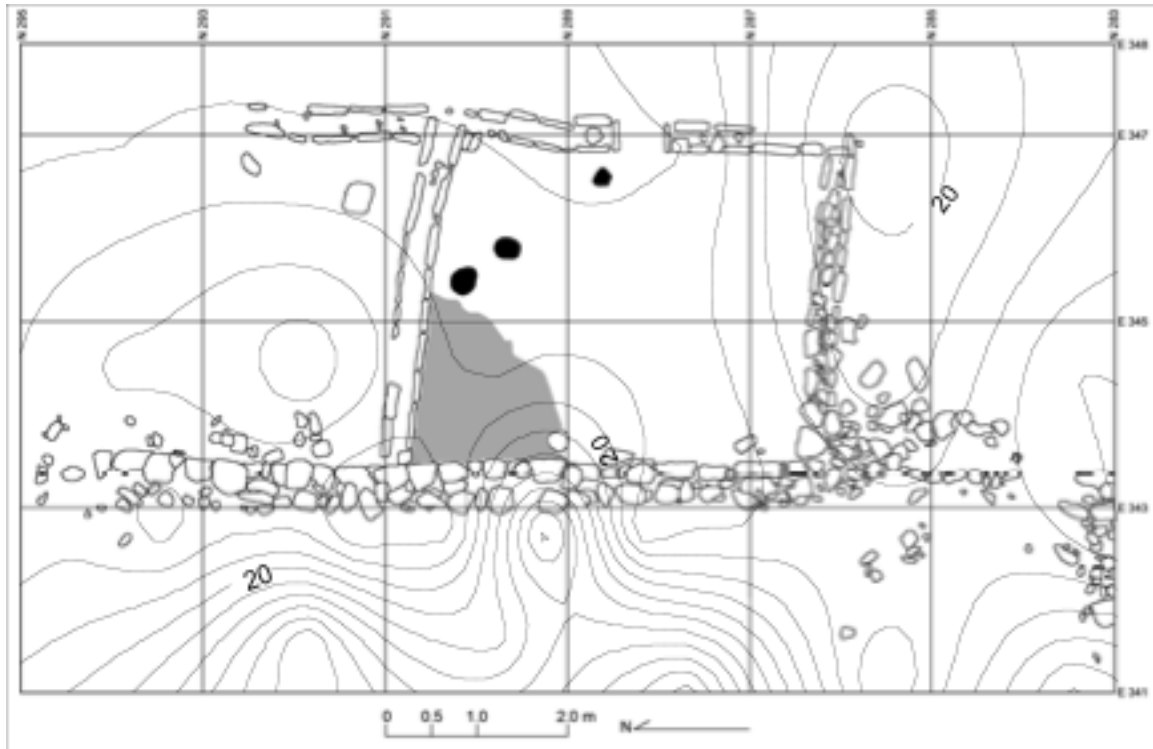


Figure 15. Faunal distributions in excavation level 2 (based on MNE counts)

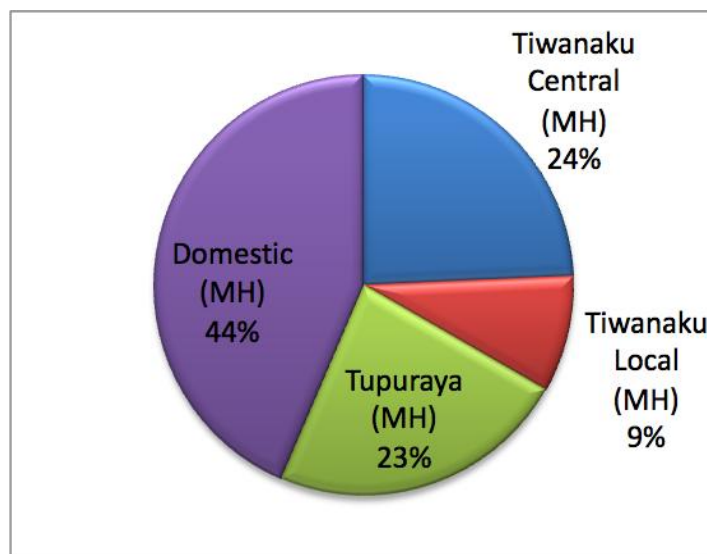
## CHANGE OVER TIME AND TIWANAKU INFLUENCE

### *Ceramic Proportions*

**Site-Wide.** The site wide proportions of ceramics separated by overall horizon-based period show several interesting trends. The fact that 77% of the ceramics recovered during the 2005 surface collection date to the Middle Horizon indicate two possible factors; which are not necessarily mutually exclusive. The first is that the population of the site during the Middle Horizon was far greater than that of any other period. The second is that Middle Horizon populations simply produced a significantly greater amount of ceramics than populations of any other period. However, if the Middle Horizon occupation did indeed have the greatest population of any occupation at Pirque Alto they would obviously also have produced a greater number of ceramics than any other period.

The ceramics collected during the 2007 excavations of Pirque Alto show relatively different proportions. These excavations took place in areas that showed the highest concentrations (from 2005 surface collections) of Formative, Early Intermediate, and Middle Horizon ceramics. The excavation proportions show that Middle Horizon ceramics only represent 40% of the assemblage with Formative Period ceramics making up the majority; with 48% of the assemblage. This does not necessarily contradict the proportions of the surface collection. It most likely represents a difference in the nature of the two collection methods. Since the excavations actually dig into the ground they are more likely to recover older period ceramics.

**Block V.** The trends in Block V regarding culture change over time appear to support the theory of local cultural continuity in the Cochabamba region throughout the Middle Horizon and Tiwanaku influence. Local culture styles including plain domestic wares and the Middle Horizon Tupuraya style represent 67% of the Middle Horizon assemblage from Block V (Figure 16). The domestic wares are simply utilitarian Middle Horizon wares and the Middle Horizon Tupuraya wares are a continuation of the local style, which originated in the Early Intermediate Period.



**Figure 16.** Middle Horizon style proportions from Block V

As stated above this is a relatively good indication that there was a continuation of locally developed styles in the Cochabamba Valley during the Middle Horizon. If Tiwanaku had direct colonial control or even a heavy influence in the region it would be expected to see more than 33% of the ceramic assemblage showing Tiwanaku stylistic traits. For instance Goldstein (2005:195) discusses his ceramic analysis from six Middle Horizon Moquegua Valley, Peru sites that are associated with Tiwanaku. Moquegua, Peru is an area that is generally considered a colony of the Tiwanaku state. At these six sites 100% of the ceramic assemblage consists of Tiwanaku-style pottery (Tiwanaku Plainware, Tiwanaku Redware, and Tiwanaku Blackware); with the exception being a few of the assemblages containing less than 1% Wari ceramics. With only 33% of the Pirque Alto (Block V) Middle Horizon ceramic assemblage showing any direct Tiwanaku-style influence it does not appear that the individuals occupying the Block V domestic structure were Tiwanaku colonists.

**Site Population.** The population estimates for in this report are strictly preliminary, and used only to give a context for the individuals who occupied the Block V structure in the Middle Horizon. Using the population estimates by Hastorf (1993) it can be estimated that approximately six individuals inhabited the Pirque Alto domestic structure. This figure could be increased to twelve if it is assumed that the structure is indeed part of a larger domestic compound, which according to the description by Goldstein (2005) would have typically included two domestic structures. Also using figures produced by Hastorf the site, which is just over one hectare (10,150 m<sup>2</sup>), could have held 50 structures at the maximum and 35 structures for a minimum. When the six person per household estimate, and assuming all of the structures were used as domestic structures, it could be estimated that anywhere between 210 and 300 individuals inhabited the site. When the site size is increased to 1.5 hectares (15,000 m<sup>2</sup>), which is a possibility due to the loss of surface area caused by the heavy erosional processes that the site is prone to, it could be estimated that between 75 and 52 structures could have occupied the site. This would increase the population to between 312 and 450 individuals.

## CONCLUSIONS

### *Prehistoric Life at Pique Alto*

This paper has taken a household archaeological approach to examining the site of Pirque Alto. The Middle Horizon, Tiwanaku-style domestic compound was the focus of the analysis undertaken in this paper. Analysis of the ceramic assemblage uncovered in excavation Block V, recovered through the 2007 excavation at the site, have revealed a few interesting patterns regarding activities that most likely took place in and around the structure during the Middle Horizon occupancy. The first pattern is the midden-type deposit behind the thick, southern compound wall of the structure. The ceramic pattern is consistent with the pattern observed in the faunal distributions. The second pattern visible in both the ceramic and faunal distribution analysis was that of a curated house floor. The general lack of cultural material within the foundation of the structure indicates that the floor was kept clean during its occupation. There also appear to be differential treatment between domestic ceramics and ceremonial ceramics, which constitutes empirical evidence that domestic and ritual activities were structured differently. In particular,

ritual activities were more spatially restricted as ceremonial ceramic sherds were tightly confined to the midden behind the structure with the domestic ceramic sherds having more of a dispersed distribution.

The examination of the temporally diagnostic ceramics from Block V also revealed some interesting patterns. The high percentage of local style ceramics (67%) from the Middle Horizon assemblage appears to support the local cultural continuity theory for Tiwanaku influence in the Cochabamba region. Although the domestic structure appears to be of Tiwanaku influence, which in and of itself can be a strong indicator of state level influence (Aldenderfer and Stanish 1993), it appears that the inhabitants at Pirque Alto maintained much of their cultural identity that was established locally, in earlier periods.

The preliminary population estimates made in this report give a rough idea of how many individuals likely inhabited the Block V domestic structure, as well as how many structures and individuals may have occupied the site during the Middle Horizon. It is likely that around six related individuals occupied the Block V domestic structure, and if indeed future excavations reveal that the Block V structure is part of a domestic compound, with two or more domestic structures within, the compound probably accommodated twelve or more individuals. The site population estimates concluded that anywhere between 35 and 75 structures may have been constructed at the site; with 210-450 inhabitants.

### *Future Research*

There is still a significant amount of research to be completed at the site of Pirque Alto, the Cochabamba region, and the South Central Andes in general. Specifically the structure in Block V needs to be completely excavated in order to determine if it truly is a Tiwanaku-style, domestic compound, so a complete analysis can be completed on the structure in its entirety. While the ceramic and faunal material has been identified, cataloged, and uploaded in a database, lithic, botanical, and metal artifact identification and analysis still must be completed. More archaeological investigation in the Cochabamba region needs to be undertaken to reveal a clearer depiction as to what the true nature of Tiwanaku influence was during the Middle Horizon. The style-based ceramic analysis in this report is not enough to truly determine this influence; although it appears, in this study, to support the local cultural continuity theory. Finally as noted by some of today's preeminent Andean archaeologists (Bermann 1994; Goldstein 2005; Timothy McAndrews, personal communication 2010; Nash 2009) continued household archaeological investigations are necessary to truly understand the prehistory of the mighty South Central Andean region.

## **ACKNOWLEDGEMENTS**

First and foremost I have to thank Dr. Tim McAndrews for introducing me to the world of Andean archaeology, providing the opportunity for me to travel to and work in Bolivia, and being my primary reader for this paper. I owe a debt of gratitude to Dr. Connie Arzigian for being a reader of my thesis as well. I would like to thank Dr. Dave Anderson for maintaining his sanity while handling his 27 thesis students. I would also like to acknowledge the entire UW-La Crosse Archaeology and Anthropology faculty, specifically Dr. Christine Hippert, Dr. Joe Tiffany, and Dr. Jim Theler for shaping my young undergraduate archaeology experience. Acknowledgement must also be paid to the staff at MVAC (The Mississippi Valley Archaeology Center) for providing me with an opportunity for hands-on archaeology lab and fieldwork experiences. I must thank the Committee of Undergraduate Research for providing me with funds to pay for much of my research. I would like to acknowledge the hard work done by individuals in the Bolivian town of Pirque for assisting in field work at the site of Pirque Alto; as well as the individuals at Universidad de San Simon and the Museo Arqueologico in Cochabamba, Bolivia for their artifact analysis. Thank you also to Liz Green for allowing me access to her faunal data from Pirque Alto. I also must thank my friends and family for their patience and guidance throughout my thesis work and life in general. Last but very much not least, I need to thank my mother, Karla, for proofreading all of my undergraduate writing, including my thesis.

## **REFERENCES**

- Albarracín-Jordan, Juan V. **1999**. *The Archaeology of Tiwanaku: The Myths, History, and Science of an Ancient Andean Civilization*. La Paz: Impresión P.A.P.
- Aldenderfer, Mark S. and Charles Stanish. **1993**. Domestic Architecture, Household Archaeology, and the Past in the South-Central Andes. In *Domestic Architecture, Ethnicity, and Complementarity in the South-Central Andes*, edited by Mark S. Aldenderfer, pp. . University of Iowa Press, Iowa City.
- Bender, D. **1967**. A Refinement of the Concept of Households: Families, Co-Residence, and Domestic Functions. *American Anthropologist*, 69; 493-504.

- Bennett, W. C. **1934**. Excavations at Tiahuanaco. *Anthropological Papers of the American Museum of Natural History*, 35; 359-494.
- Bermann, Marc. **1993**. Continuity and Change in Household Life of Lukurmata. In *Domestic Architecture, Ethnicity, and Complementarity in the South-Central Andes*, edited by Mark S. Aldenderfer, pp. 114-134. University of Iowa Press, Iowa City.
- Bermann, Marc. **1994**. Lukurmata: Household Archaeology in Prehispanic Bolivia. Princeton University Press, Princeton.
- Blom, Deborah E. with Benedikt Hallgrímsson, Linda Keng, Maria C. Lozada, Jane E. Buikstra. **1998**. Tiwanaku 'colonization': bioarchaeological implications for migrations in the Moquegua Valley, Peru. *World Archaeology* 30(2):238-261.
- Browman, David L. **1997**. Political Institutional Factors Contributing to the Integration of the Tiwanaku State. In *Emergence and Change in Early Urban Societies*. Linda Manzanilla, ed. Plenum Press. New York.
- Couture, Nicole C. **2003**. Ritual, Monumentalism, and Residence at Mollo Kontu, Tiwanaku. In *Tiwanaku and Its Hinterland Archaeology and Paleoecology of an Andean Civilization, vol. 2 Urban and Rural Archaeology*, edited by Alan L. Kolata, pp.202-225. Smithsonian Institution Press, Washington and London.
- Flannery, Kent V. and Marcus C. Winter. **1976**. Analyzing Household Activities. In *The Early Mesoamerican Village*, edited by Kent V. Flannery, pp. 34-45. Academic Press, New York.
- Goldstein, Paul S. **1993**. House, Community, and State in the Earliest Tiwanaku Colony: Domestic Patterns and State Integration at Omo M12, Moquegua. In *Domestic Architecture, Ethnicity, and Complementarity in the South Central Andes*, edited by Mark S. Aldenderfer, pp. 25-41. University of Iowa Press, Iowa City.
- Goldstein, Paul S. **2005**. *Andean Diaspora: The Tiwanaku Colonies and the Origins of South American Empire*. University of Florida Press.
- Green, Elizabeth T. **2009**. An Evaluation of Camelid Skeletal Frequencies, Patterning, Deposition, and Food Utility at the Site of Pirque Alto, Cochabamba, Bolivia. M.A. Thesis, Department of Anthropology, Binghamton State University of New York.
- Hastorf, Christine. **1993**. *Agriculture and the Onset of Political Inequality Before the Inka*. Cambridge:Cambridge University.
- Higueras-Hare, Alvaro. **1996**. Hispanic Settlement and Land Use in Cochabamba, Bolivia. Unpublished Ph.D. dissertation, Department of Anthropology, University of Pittsburgh, Pittsburgh, Pennsylvania.
- Janusek, John Wayne . **2003a**. Vessels, Time, and Society Toward a Ceramic Chronology in the Tiwanaku Heartland. In *Tiwanaku and Its Hinterland Archaeology and Paleoecology of an Andean Civilization, vol. 2 Urban and Rural Archaeology*, edited by Alan L. Kolata, pp.30-89. Smithsonian Institution Press, Washington and London.
- Janusek, John Wayne. **2003b**. The Changing Face of Tiwanaku Residential Life: State and Local Identity in an Andean City. In *Tiwanaku and Its Hinterland Archaeology and Paleoecology of an Andean Civilization, vol. 2 Urban and Rural Archaeology*, edited by Alan L. Kolata, pp.264-295. Smithsonian Institution Press, Washington and London.
- Janusek, John Wayne. **2004**. Identity and Power in the Ancient Andes: Tiwanaku Cities Through Time. Routledge, New York.
- Kolata, Alan L. **1993**. *The Tiwanaku: Portrait of an Andean Civilization*. Blackwell Publishing, Cambridge MA.
- McAndrews, Timothy L. **2005**. *Wankarani Settlement Systems in Evolutionary Perspective: A Study in Early Village-Based Society and Long-Term Cultural Evolution in the South-Central Andean Altiplano*. University of Pittsburgh Memoirs in Latin American Archaeology, No. 15. Pittsburgh: University of Pittsburgh.
- McAndrews, Timothy L. **2007**. *Report on Prehistoric Parotani Settlement Project 2007 Field Season: Excavations at Pirque Alto (CP-11)*. Project Report. Department of Sociology/Archaeology, University of Wisconsin-La Crosse.
- McAndrews, Timothy L. and Claudia Rivera. **2007**. *Proyecto Arqueológico Parotani: Sociedades Aldenanas Tempranas y Transitorias Socio-Culturales Posteriores en Cochabamba, Bolivia*. Edited research report submitted to and accepted by the Universidad Mayor de San Simón Instituto de Investigaciones Antropológicas y Museo Arqueológico, Cochabamba, Bolivia. Edited by Timothy L. McAndrews and Claudia Rivera.
- McAndrews, Timothy L., Juan Albarracín-Jordan, and Marc Bermann. **1997**. Regional Settlement Patterns in the Tiwanaku Valley in Bolivia. *Journal of Field Archaeology*, 24; 67-84.
- Mosely, Michael E. **2001**. *The Incas and Their Ancestors, 2nd ed.* Thames and Hudson, New York.
- Murra, John V. **1972**. El 'Control Vertical' de un Máximo de Pisos Ecológicos en la Economía de las Sociedades Andinas. In *Visita de la Provincia de León de Huánuco en 1562*, edited by J.V. Murra, pp.429-476. Universidad Nacional Hermilio Valdizán, Huánuco.

- Nash, Donna J. **2009**. Household Archaeology in the Andes. *Journal of Archaeological Research*, 17; 205-261.
- Plunger, Beth. **2007**. Evaluation of the Nature of Tiwanaku Presence in the Cochabamba Valley of Bolivia: A Ceramic Analysis of the Pirque Alto Site (CP-11). B.A. Thesis, Department of Archaeology and Sociology, University of Wisconsin-La Crosse.
- Rodgers, Jaclyn. **2009**. Domestic Architecture in the South-Central Andes: Placing the Pirque Alto (CP-11) Wall Foundation in Perspective. B.A. Thesis, Department of Archaeology and Sociology, University of Wisconsin-La Crosse.
- Sanabria, Harry. **2007**. The Anthropology of Latin America and the Caribbean. Pearson Education Inc., Boston.
- Stanish, Charles. **1989**. Household Archaeology: Testing Models of Zonal Complementarity in the South-Central Andes. *American Anthropologists*, 91(1); 7-24.
- Uhle, Max. **1903**. Ancient South American Civilization. *Harper's Monthly Magazine*, 107; 780-66.
- Wilk, Richard R. **1991**. *Household Ecology: Economic Change and Domestic Life among the Kekchi Maya in Belize*. University of Arizona Press, Tucson.
- Wilk, Richard R. and William L. Rathje. **1982**. Household Archaeology. *American Behavioral Scientist* 25(6): 617-639.
- Young-Sanchez, Margaret. **2004**. *Tiwanaku: Ancestors of the Inca*. University of Nebraska Press. Lincoln.