



INCA LANDSCAPES IN KOLLASUYU. THE CASE OF QUEBRADA DE HUMAHUACA, JUJUY, ARGENTINA


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Int. J. S. Am. Archaeol. 15: 47-60 (2019)

ID: *ijsa00081*

Cirex-ID: <[17x.1336.840/s2011-0626.29796x](https://doi.org/10.17336.840/s2011-0626.29796x)>

Available Online at



This information is current as of September 2019

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Received 22.07.2019. Accepted 25.08.2019

Published Online in September 2019



Abstract

The Inca Empire operated a versatile set of policies that responded to distinct local conditions and, consequently, it was comprised of a mosaic of different landscapes. In the central and south-central sectors of Quebrada de Humahuaca, in the north of Argentina, the combined analysis of a number of elements allowed us to infer the nature and degree of imperial intervention, thus enriching the understanding of Inca domination and conquest strategies according to local conditions within a region that presented pre-existing variations. At Pucara de Tilcara, which appears to have functioned as a political, administrative, productive and religious center, we have documented the specialized production of luxury lapidary goods (e.g. alabaster). We also highlight the Inca interest in the resources of the eastern valleys and *yungas* to the south, with an important administrative center in Esquina de Huajra. The distinct economic and social processes observed in Quebrada de Humahuaca, initiated during the Late Intermediate Period and subsequently amplified by the Inca, formed the basis of a regional social dynamic and identity that lasted into Colonial times. Copyright © Syllaba Press International Inc. 2007-2019. All rights reserved ®.

Keywords: Inca Empire, Imperial Landscapes, Northwestern Argentina, Quebrada de Humahuaca, Regional Settlement Pattern Analysis.

Resumen

El Imperio Incaico operó con un conjunto versátil de políticas que respondían a las diversas condiciones locales y, en consecuencia, el mismo estaba compuesto de un mosaico de paisajes diferentes. En los sectores central y centro-sur de la Quebrada de Humahuaca, en el norte de Argentina, el análisis combinado de diversos elementos nos ha permitido realizar inferencias acerca de la naturaleza y el grado de la intervención imperial, enriqueciendo así nuestra comprensión acerca de la dominación incaica y las estrategias de control puestas en juego de acuerdo a las condiciones locales en una región que presenta variaciones preexistentes. En el Pucara de Tilcara, el cual parece haber funcionado como un centro político, administrativo, productivo y religioso, hemos documentado la producción especializada de bienes lapidarios de lujo (e.g. alabastro). También resaltamos el interés de los Incas en los recursos de los valles orientales y *yungas* hacia el sur, con el importante centro administrativo Esquina de Huajra. Los procesos económicos y sociales diversos observados en la Quebrada de Humahuaca, iniciados durante el Período Intermedio Tardío y subsecuentemente amplificados por los Inca, formaron la base de una dinámica social y una identidad regional que perduró hasta momentos coloniales. Copyright © Syllaba Press International Inc. 2007-2019. All rights reserved ®.

Palabras clave: Imperio Incaico, Paisajes Imperiales, Noroeste de Argentina, Quebrada de Humahuaca, Análisis de Patrón de Asentamiento Regional.

Introduction

Archaeological research in the region that once comprised the southern area of *Tawantinsuyu*, the Inca Empire, supports the idea that the Incas devised versatile governmental policies according to local features. Regional studies show particularities in the organization of the population, and above all, in the configuration of landscapes, manifesting the implementation of different strategies for the construction of Inca power and its legitimization (Burguer, *et al.*, 2007; Malpass & Alconini, 2010).

In the framework of versatile Imperial policies that responded to local conditions, different social landscapes might have ensued. The Incas must have had a good understanding of the local political and social dynamics needed to rule newly annexed territories. Quebrada de Humahuaca constitutes a paradigmatic case of study where a wide set of indicators is recognized in order to elaborate a model in which different environments are articulated in order to sustain the specialization of craft activities and agricultural tasks

In the case of Quebrada de Humahuaca, topographical characteristics, the abundance of natural resources, as well as a large local population, allowed the installation of many sites that exhibit evidence of regional control, religious spaces, *tampus* (lodging stations), and administrative and political centers, some of which were built upon pre-existent villages and others on previously unoccupied spaces. The Incas also engaged in the intensification of agriculture and stepped up specialized production in the region (Krapovickas, 1981-82; Raffino, 1993; Albeck, 2016).

In this paper, we offer an analysis of the way in which the different Inca settlements articulated with each other, and the production activities that were developed in the central and south-central sectors of Quebrada de Humahuaca (Figure 1). Recent research in this region indicates that while there was clearly a high degree of Imperial intervention, it appears to have been designed to accommodate local idiosyncrasies. The focus is on the evidence recovered from the site of Pucara de Tilcara. This site appears to have functioned as one of the most important pre-Inca political centers in Quebrada de Humahuaca (occupied since the 12th century) and was later transformed by the Incas into their primary center in the region. We also discuss the large nearby agricultural areas and sources of raw materials, which supplied the local population engaged in specialized craft. We then consider the linkages between Pucara de Tilcara, other settlements in the region and various sacred sites, such as the local *wak'a* (sacred mountains, worshipped since pre-Inca times), which may have possibly influenced the structuration of the landscape and roads network.

Finally, we compare the landscape configuration with that found in the south-central sector of

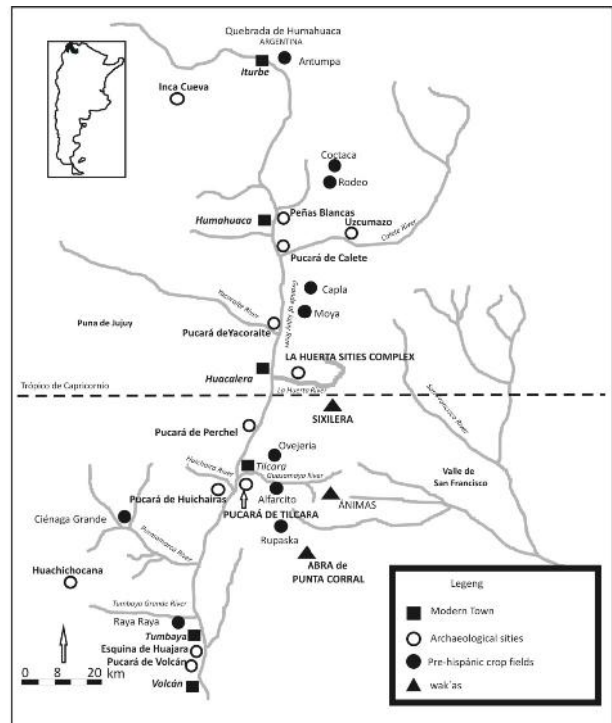


Figure 1. Location of sites in central and south-central sectors of Quebrada de Humahuaca.

Quebrada de Humahuaca, highlighting the role played by two important settlements, Pucara de Volcán and Esquina de Huajra. In order to make this comparison we evaluate strategies of control as well as their connection with the sites located in Quebrada de Tumbaya Grande and the intermountain valleys and *yunga* tropical forests on its eastern borders, likely of strategic interest due to its location as a natural corridor between *Puna* highlands of Jujuy and the *yunga* tropical forests. The analysis of sites, settlements patterns, resources, and artifacts, allows us to offer a clearer picture of variables that may have influenced Inca strategies in this distant province, considering that the central and south-central sector of Quebrada de Humahuaca were possibly complementary within the landscape constructed by the Inca administration in the region. In sum, the analysis also allows us to consider the management of economic resources and the circulation of goods along the *Qhapaq Ñan* (the road system established by the Incas) and thus mobility through the region.

Pucara de Tilcara in the Inca Landscape of Quebrada de Humahuaca

Pucara de Tilcara is located in the central sector of Quebrada de Humahuaca. The northern limit of this sector is Quebrada de Yakoraite and the southern is Quebrada de Purmamarca (Figure 1). Pucara de Tilcara is one of the most excavated settlements in this region since the beginning of the 20th century. The abundance and quality of materials recovered from this settlement, as well as its architectural features, are

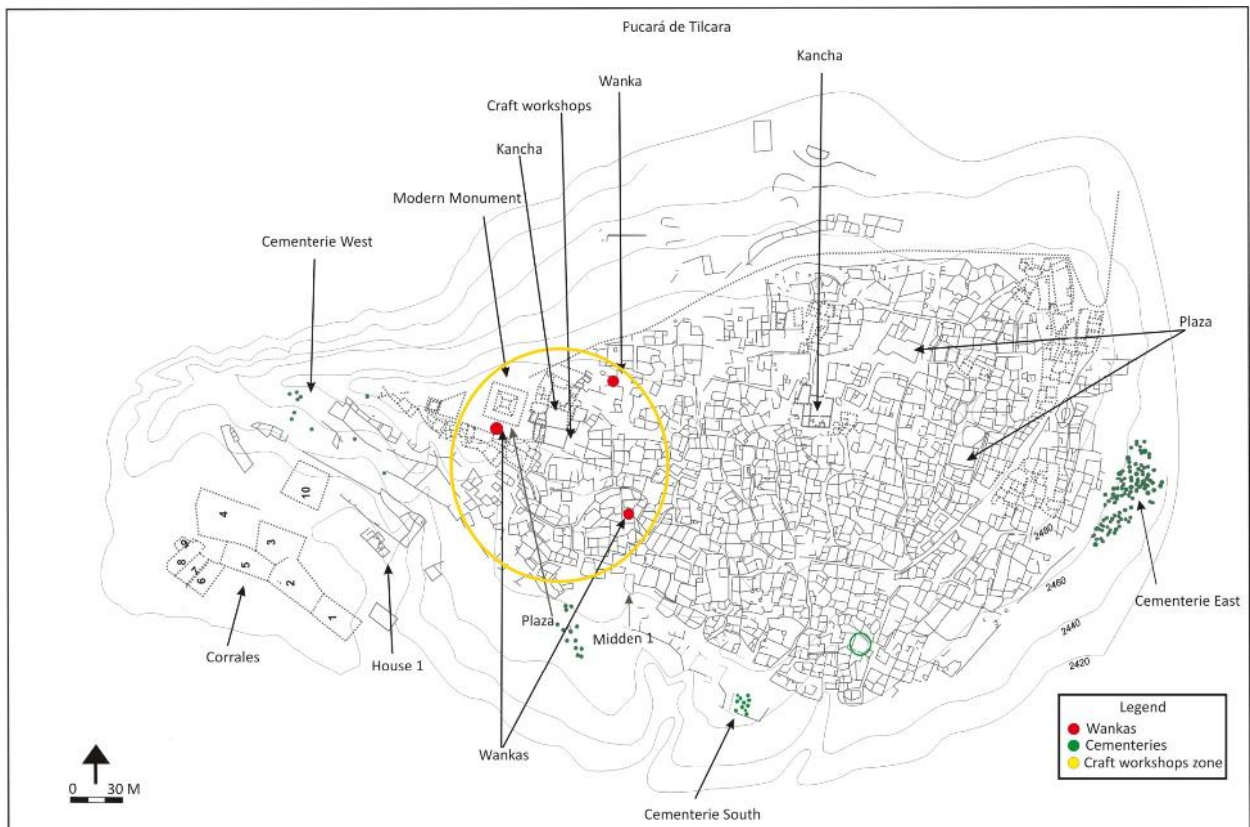


Figure 2. Map of the Pucara de Tilcara (taken from Zaburlín, 2006, north and south survey conducted by Lanzelotti, *et al.*, 2012).

some of the reasons that this archaeological site is considered one of the most iconic in Argentina. Pucara de Tilcara covers an area of 17.5 ha on a hill located on the left bank of the Río Grande de Jujuy.

The results of 27 calibrated radiocarbon datings (AMS and ^{14}C) show a lengthy occupation of the site, since the 12th century to the 16th century AD (Tarragó & Albeck, 1997; Greco & Otero, 2015). Recent research shows that maximum occupancy occurred during Inca times (Otero, 2013; Otero y Rivolta, 2015) (Figure 3). The Inca domination of the site signified the enlargement of the urban design and the remodeling of diverse sectors in order to carry out new economic, administrative and religious functions.

It is one of the largest pre-Hispanic sites in the region with 580 rectangular structures, most of which comprised dwelling spaces and craft workshops (Figure 2). Among these spaces, several of the *plazas* and *kanchas* (rectangular compounds containing three or more rectangular buildings around a central courtyard, *sensu* Hyslop, 1990) have been identified as Inca public and ceremonial places. The residential structures, *plazas* and *kanchas* are defined and separated by four cemeteries. This configuration of space is carefully reflected throughout the site's development history, probably influenced by religious notions taking into account the 16 *huancas* (large stones) associated with the various public spaces and walking trails. This configuration probably responded to preexisting forms of space organization upon the

arrival of the Inca. However, we currently know that the remodeling of some sectors of the settlements was very important.

Most of the 142 loci studied so far, which correspond to residential structures and craft workshops, *plazas* and tombs, are attributed to the Inca Period. More than one third of the structures have been characterized as workshops where metal, shell and stone artifacts were produced. Multi-craft production areas (*sensu* Shimada, 2007) appear to have been house-workshops, as evidence of domestic activities were also detected. In addition to the raw materials that correspond with specialist production, the most frequent artifacts found in these workshops consist of tools such as hammers, chisels, polishers and molds used during the smelting and molding of metal objects. Evidence suggests that the process of incorporating local artisans into the imperial production system was facilitated by preexisting metallurgical workshops in the same location. The Incas possibly took advantage of the artisanal skills and technological know-how of the local metallurgists to install workshops in Pucara de Tilcara that allowed the specialization of this production.

At the site, it is clear that during the Inca domination period (1.410-1.536 AD) a wide variety of metal objects of symbolic and ornamental use were manufactured, including items such as vessels, discs, headbands, rings, *tupus* (metal pins decorated on one end, generally used by women) and *tumis* (ceremonial

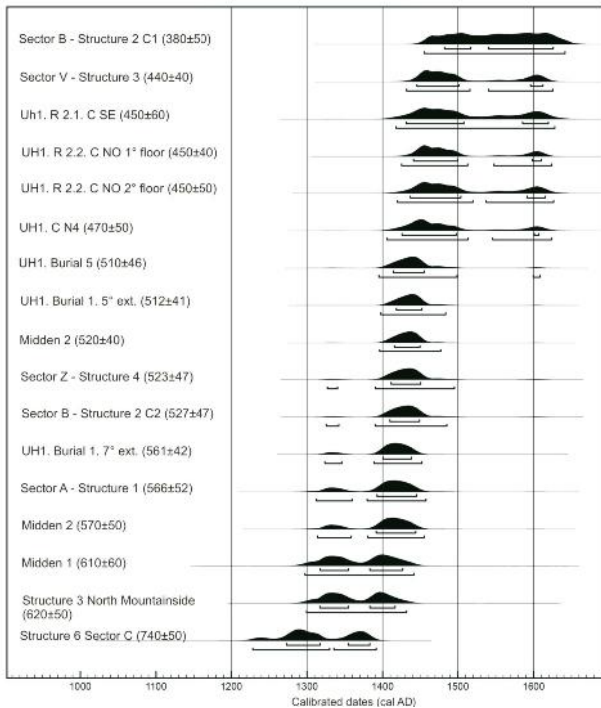


Figure 3. Probability plots of calibrated dates from Pucara de Tilcara (taken from Greco and Otero, 2015).

knives) made of gold, silver, bronze and copper. The second most prevalent type of specialized production documented at Pucara de Tilcara involved the manufacture of plates, pendants, *illas* (small stone figurines related to ritual activities) and containers made of alabaster, onyx and flint (Krapovickas, 1958-59; Otero & Tarragó, 2017). It is worth noting that the various raw materials listed, both stone and metal, were also used in the manufacture of other tools, such as alabaster whorls, punches and chisels of copper and bronze.

We posit that perhaps *mitimaes* (groups of people sent by the Empire to different regions to carry out diverse military, socio-religious and economic tasks) were specialists in the manufacture of alabaster, onyx, flint and limestone objects, at least until local artisans were trained in this activity. Our primary argument rests on our understanding of the implementation of this activity by Imperial mandate as well as the lack of evidence for the use of this material during periods prior to the arrival of Inca authority. Such artisans could have been the kind of “embedded specialists” suggested by Ames (1995) and Janusek (1999), considering that we identified evidence of other, non-specialized craft activities such as pottery and textile production in numerous workshop-houses. The support lent to these artisans shows a strong imperial interest in their work, particularly in the manufacture of alabaster goods, especially since the source of this raw material is situated in Huichairas, near Pucara de Tilcara. Alabaster goods appear frequently in the most emblematic sites of the Empire, like Sacsahuaman (Valcárcel, 1934, 1935) and must have been highly

valued. The great quantity and diversity in size and form of alabaster goods found as funerary objects in numerous graves excavated at Sacsahuaman by Valcárcel (1934, 1935), demonstrates an affinity for this type of craft. The possibility of this type of object production at Pucara de Tilcara further signifies the fundamental importance of this regional enclave for the Empire, highlighting its social and political role as capital of the Inca province, notably control of the route to the south.

The alabaster goods produced in Pucara de Tilcara were consumed in other parts of the Empire. This is proposed on the basis of the absence of this type of element in archaeological contexts from different sites in Northwestern Argentina. Even though a large number of alabaster and limestone preforms have been recorded at Pucara de Tilcara, only three finished *illas*, two spindle whorls, and one pendant have ever been found there (Figure 4). Regarding pendants, as in the case of the small cones, perhaps in their final form they presented some type of perforation for their suspension or sewing onto clothes. Krapovickas, who also found these type of plaques, compared them with the objects from Sacsahuaman presented by Valcárcel (1935: 193, plate 8, figure 1/161 a-b-d). It is possible that, like those found in Peru, the plaques of Pucara de Tilcara were perforated at their narrowest end to attach them to clothing. The alabaster pendants, plaques and containers similar to those found at Pucara de Tilcara were also recovered by both Bingham in Machu Picchu (Rowe 1946) and Valcárcel (1934, 1935) in

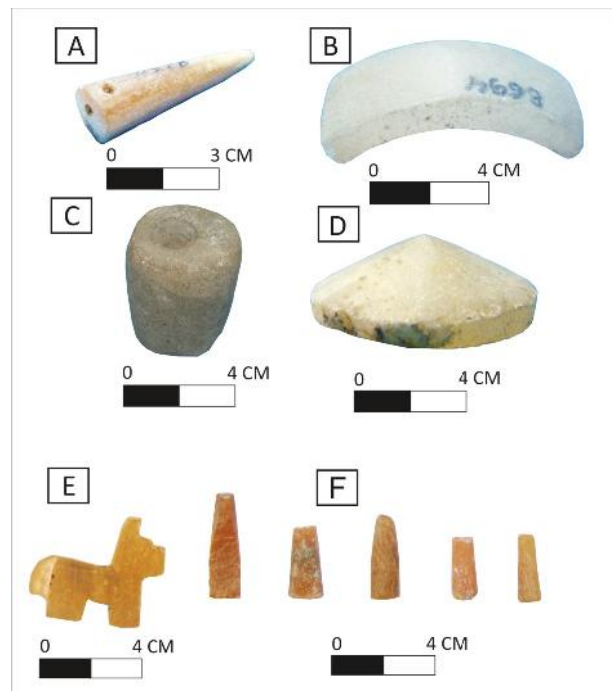


Figure 4. a. Top, left: alabaster conical pendant (MEJBA 8260). Right: alabaster broken handle (MEJBA 8694). Below, left: pre-form of alabaster piece (MEJBA 4718). Right: pre-form of alabaster whorl (MEJBA 28848). b. *Illas* recovered in Pucara de Tilcara.

numerous graves of Sacsayhuaman. To date there are no other references highlighting the presence of alabaster craft production elsewhere in *Tawantinsuyu*.

The control and organization of lapidary and metal production was likely in accordance with the ideological and political framework of the Inca Empire. For example, evidence recovered in one *kancha*, defined as a ceremonial building/compound, suggests the deployment of ritual practices associated with productive activities coordinated within the framework of an imperial religious calendar. Structures oriented to sunrise during the June solstice confirm this possibility (Otero & Ochoa, 2011; Otero, 2013). Also, among the workshop-houses on the top and upper terraces of the site, exceptional architectural features such as slab floors, wall niches and the use of cut stone blocks make clear the added labor and prestige conferred at these places. What is more, finds include high value objects such as Imperial Inca style ceramic, stone maces, *keros* (ceremonial vessels, usually made of wood, wider at the rim than at the base), and gold and silver goods (Otero, 2015). Some of these vessels may have been associated with the Empire service of food and drink, as seen in other distant provinces (Otero, 2015). The distribution of these structures and their exemplary finds, point to the likelihood of occupation by Inca representatives or administrators, who in turn may have controlled activities in the house-workshops.

The evidence presented here defines Pucara de Tilcara not only as a major production site in the region, but also as an important administrative center, especially, if the multifunctional character of major Inca settlements is taken into consideration (see Williams, 2004). As in the case of other regional power centers, Pucara de Tilcara would have been chosen as the main provincial political site. Aside from electing to build upon a pre-existing regional center, a strategy previously noted by Hyslop (1990) for other Inca political-administrative sites, the Inca focused their efforts on Pucara de Tilcara to take advantage of an established population, known resources and traditions of extraction and craft production. At the base of this hilltop site is the Río Grande, a large permanent water source, as well as valuable and productive lands within the valley. Additionally, the Alfarcito-Ovejera agricultural complex, about 700 ha in size and located just a few kilometers away, was also extremely productive. Further evidence indicates that the Incas heavily exploited this area: they expanded the irrigation networks, cleared new parcels of land, and expanded crop production.

Regarding the role of Pucara de Tilcara as a religious center during Inca times, the archaeological evidence indicates the Empire remodeled numerous spaces for the construction of *kanchas* that in many instances appear to have been used for collective public ceremonies. We also believe that the Pucara's

symbolic meaning extended well beyond the limits of the hilltop site, and that the site possibly functioned as a key node within the social landscape due to its relationship with certain natural elements. For instance, it is located approximately equidistant from two mountains, Cerro de Sixilera and Punta Corral (Figure 1), which could have been pre-Inca *wak'as* (sacred spaces), and which still function as spaces for massive congregation and pilgrimage during Catholic festivals (Otero & Ochoa, 2012).

La Huerta Complex in Quebrada de Sixilera

La Huerta complex is situated 20 km north of Pucara de Tilcara, It's located near the archaeological settlement of La Huerta, comprises the sites of Peñón de la Huerta, Pucara del Pie del Peñón de la Huerta and Morro 1 and 2 (Figure 5). La Huerta has been previously identified as an Inca administrative center (Raffino, 1993), and may have been closely connected with the religious practices and pilgrimages carried out in Cerro Sixilera. In recent years, several sites on nearby slopes have been identified as those associated

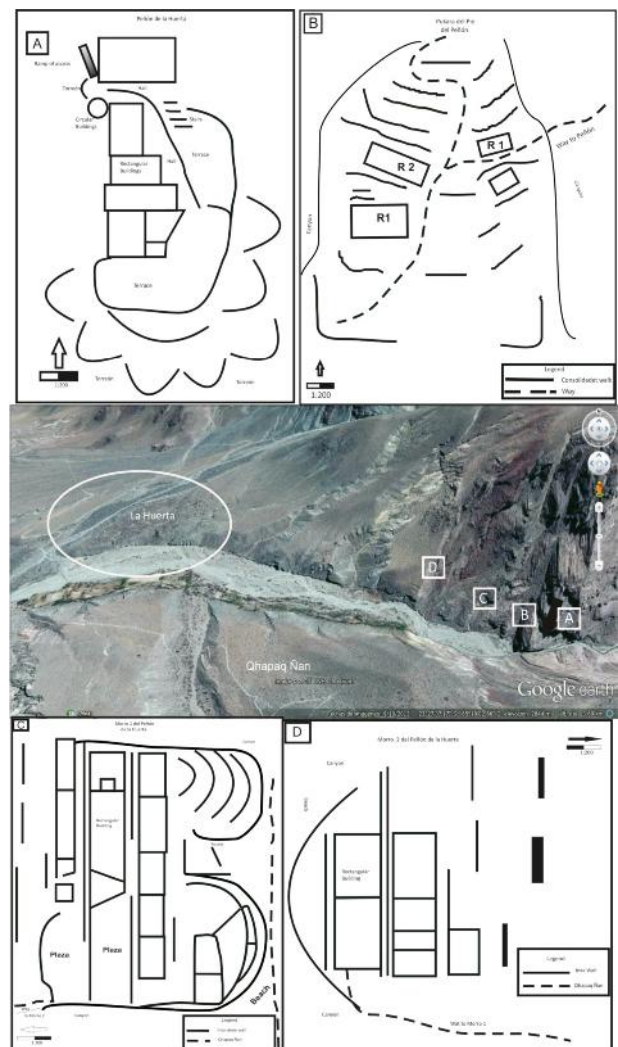


Figure 5. Location and layout of archaeological sites registered in Quebrada de la Huerta and in Quebrada de Sixilera.

with Inca authority, as evidenced by key architectural features of the Empire (Ochoa, 2017). These sites are located on a tributary of the Río Grande.

Peñón de la Huerta is built on a ridge that is difficult to access. Different non-local building techniques were used in its construction, including pink quartzite cut stone blocks and walls without mortar. The architectural ensemble includes a *kancha*, corridors next to terraces, a dozen semicircular towers (*torreones*), walls over three meters tall with attached interior benches as lower platforms, defensive window openings, cantilevered steps in some walls and a single ramp.

Pucara del Pie del Peñón de la Huerta and Morro 1 and 2 are located in proximity to each other, along the pathway to Peñón de la Huerta (Ochoa, 2017). These sites probably functioned as control points of the route to the eastern valleys. Within this control system, Peñón de La Huerta was probably the most important site, considering its strategic defensive position.

The Sacred Cerro Sixilera

Twice a year, hundreds of pilgrims climb to Cerro Sixilera in order to venerate the Virgin, who is known as *Nuestra Señora del Rosario de Sixilera*. Today local communities conceive of Cerro Sixilera as a protective mountain, in the sense discussed by Martínez (1989) and Ramírez (2005). It is a guardian deity of the landscape, one that stands out for its shape and color (Merleau-Ponty, 2002). It is the highest peak in the region, and it is visible from many of the archaeological sites found in the central sector of Quebrada de Humahuaca. On the top of this mountain, at an elevation of 4.865 m, a number of archaeological structures have been identified, some of which continue to be used by pilgrims. One of these structures consists of a stepped platform, resembling an *ushnu*. During a survey conducted on the summit of Cerro Sixilera, known by locals as the Alto, two obsidian projectiles, five made of flint and basalt, as well as Humahuaca and Humahuaca-Inca style pottery fragments, necklace beads and small pieces of copper ore were recovered (Figure 6). The paths leading to the Alto, the main sector of worship, show features of Inca architecture, including stairs aligned in a zigzag pattern. In addition, at the base of the hill are springs that could have also been elements of veneration in this landscape. Finally, there is good evidence for pre-Hispanic crop terraces along the slopes.

Other paths surrounding Cerro Sixilera also exhibit evidence of Inca intervention, including carved stairs and contention walls. We interpret these features as part of the materialization of Inca power in the area (Hyslop, 1992; Castro, *et al.*, 2004). It is possible that the roads associated with Sixilera constituted a real cartography of the landscape, where Geo-symbols act as landmarks (Albornoz, 1582;

Ochoa, 2016), distinguished as ritual roads due to their proximity to the sacred hill. Today, as observed elsewhere in the southern Andes (Pimentel, 2009), the ritual significance of the landscape manifests itself in some practices maintained throughout time, such as offerings deposited at different points along the Sixilera pilgrimage route. On the other hand, these roads stand out for their constructive techniques such as cobblestone and flagstone pavement. These roads differ from those located in the sections that connect agricultural areas with administrative centers and tambos. The mentioned constructive differences point to an intention to materially distinguish these roads due to their religious importance.

Remarkably, these current ritual activities link the sacred site of Cerro Sixilera with Pucara de Tilcara. Although ritual practices must have been modified throughout time, certain characteristics point to their pre-Hispanic origin. Once the worship of the Virgen de Sixilera is performed during the September equinox on Cerro Sixilera, her statue is carried by bearers, probably as it was done in the past with *mallquis*, to the catholic church of Tilcara, following a path located at 4.200 m and running along the edge of the Serranía de Tilcara. During the descent, the bearers pass through the pre-Hispanic crop fields of Ovejería-Alfarcito. Several Inca enclosures have also been documented on a lower lying hill along this route and have previously been demonstrated to relate to the sunrise during the winter solstice (Otero & Ochoa, 2011).

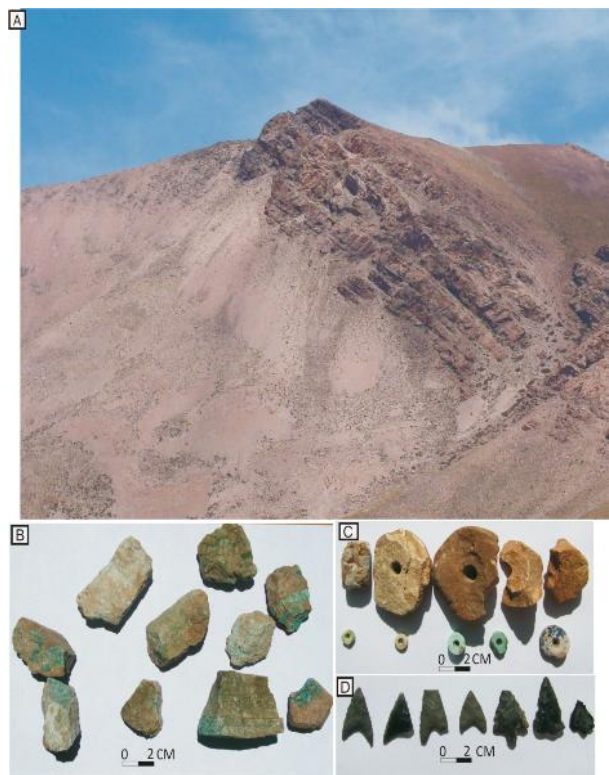


Figure 6. Panoramic view of Cerro Sixilera. Findings collected from the top of the hill: projectile points, beads and pieces of copper.

Southernmost Inca Landscapes in Quebrada de Humahuaca

From Quebrada de Purmamarca to the south, the Inca presence exhibits various other idiosyncrasies that we associate with alternative models of control and exploitation, distinct from those implemented in the Tilcara area. This would reflect a fundamental difference in the organization of authority.

The south-central sector of Quebrada de Humahuaca extends from the previously mentioned Quebrada de Purmamarca to Arroyo del Medio (Figure 1). This sector encompasses the southeastern valleys of the Tiraxi-Tesorero basin, and it is characterized by the proximity of three environmental units: the western highlands in the Andean plateau (*Puna*), the semi-arid valley of Quebrada de Humahuaca and the tropical forest to the east (*yungas*). Therefore, the sector constitutes a transition zone between the semi-deserts and the humid subtropical area (Reboratti, 2003). This situation gives access to a variety of resources within relatively short distances through transversal valleys to the east and west. Two major sites with evidence of Inca occupation were found in this sector, Pucara de Volcán and Esquina de Huajra.

Pucara de Volcán

Pucara de Volcán is a large settlement with over 600 rectangular structures that exhibit distinctive rounded corners, an architectural pattern not found in other sites of Quebrada de Humahuaca but similar to that registered in the upper reaches of Quebrada del Toro, in Salta Province (Figure 7). The similarities registered in the architectural features, as well as in numerous ceramic attributes between Pucara de Volcán and sites located in Quebrada del Toro (Cremonte & Fumagalli, 1999), predate the Inca conquest, and thus indicate well established patterns of interaction that may have been enhanced during Inca times.

This settlement, with a size of approximately 10 hectares and over 600 structures, is located at 2.000 m over a plateau transversally oriented to the axis of the Río Grande. An axial east-west path runs through the entire settlement, dividing it into two halves from which secondary pathways emerge. The occupational history of the site (Figure 8) extends from the late 13th century through the 16th century AD (Fumagalli, 1998). It constitutes the largest pre-Hispanic settlement in this sector. The evidence discussed here corresponds to the excavations carried out in two enclosures and one small midden corresponding exclusively to the Inca occupation (Cremonte & Scaro, 2010; Fumagalli, *et al.*, 2011).

At the eastern end of Pucara de Volcán there is a *plaza* of approximately 2.400 m² with an artificial mound that once likely contained a burial (looted

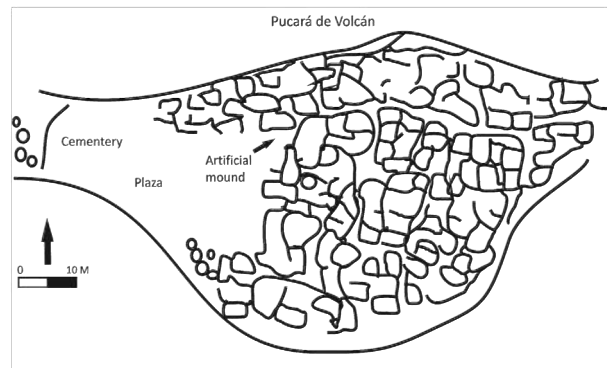


Figure 7. Map of Pucara de Volcán showing in detail the plaza, mound and cemetery (taken from Fumagalli, 1998).

before the first systematic excavations undertaken at the site in the mid-20th century). Associated with the mentioned mound there is an area containing burials placed in circular stone chambers (Figure 7). This was referred to as a “*plaza-mound-cemetery complex*” (Cremonte & Scaro, 2010) and it appears in other sectors of the southern Andean region. We believe that this complex reflects a symbolic use of space linked to rituals and community ceremonies. A similar space was identified, in the Inca center of Potrero Chaquiago, located in Andalgalá, Catamarca Province (Williams, 1991; Williams, *et al.*, 2005). The complex presents *plazas* and platforms relevant to Imperial administrative, political and religious activities.

Regarding the Inca occupation of Pucara de Volcán, the excavation of Enclosures 2 and 5 and of the midden B2 (Cremonte & Scaro, 2010) point to contexts that would have been functional to the activities developed in the nearby “*plaza-mound-cemetery complex*”, inasmuch as they indicate supradomestic ceramic consumption. The celebrations that occurred in the *plaza* would have been framed in the interests of reinforcing affiliation with the Empire by the inhabitants of Pucara de Volcán, a well known strategy of control used by the Incas in the provinces (Cremonte & Williams, 2007). Although Inca architecture *per se* indicating a restricted Inca administration area is not present in this site, many of the households, the above-mentioned ceremonial complex and the axial path, appear to have been remodeled in Inca times. This has been proposed in the basis of the presence of debris to elevate the path and the evidence of modified enclosures around it (Fumagalli, 1998). During this period, Pucara de Volcán experienced a significant demographic increase, a process that may have resulted from the relocation of groups from different regions, probably mainly from Quebrada de Humahuaca. Evidence of this is the increase in the size of the settlement during the Inca Period and the abandonment of smaller settlements in the area (Scaro, 2015).

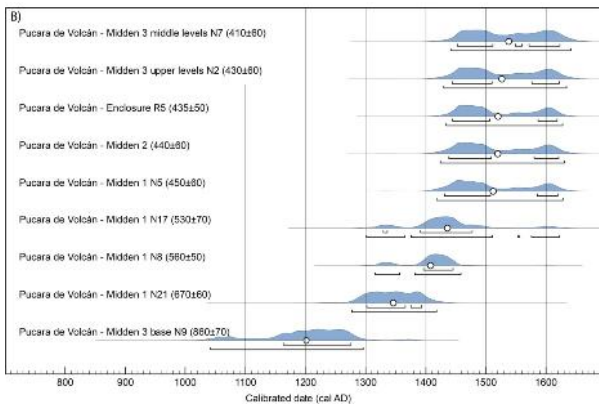


Figure 8. Probability plots of calibrated dates from Pucara de Volcán (taken from Greco, 2017).

Esquina de Huajra and its Surroundings

Esquina de Huajra, just 5 km north of Pucara de Volcán, was constructed in front of one of the most important access points to the tropical forest (*yungas*) through Quebrada de Huajra. From Quebrada de Huajra, travelling east, one can reach the Tiraxi Chico-Tesorero system in one day. This system encompasses a set of Inca sites referred to as API (contemporary with early Inca occupations of Pucara de Volcán), the Cucho de Ocloyas and Mula Barranca sites, both contemporary with Esquina de Huajra (Fumagalli, 2005), as the most representative sites. Archaeological surveys carried out in Quebrada de Huajra reinforce the idea that it was an important interaction area, connecting Quebrada de Humahuaca with the southeastern valleys during different periods (Cremonte, *et al.*, 2011).

Although the lack of ethnohistoric data for this area is discouraging, an example of the link between the lands of Tumbaya, where Esquina de Huajra is located, and Tiraxi can be found in colonial sources:

"...que tengo una chacra en el valle de Tumbaia de donde cojo algunas comidas para el sustento de mi casa... son cortas dichas sementeras por lo que pido hacerme merced de sinquentes fanegadas de sembraduras de maiz en un valle sercano al dicho Tumbaia llamado Tiracsse...esta estancia que estara como cinco o seis leguas poco mas o menos del valle de tumbaia a las espaldas de la cordillera...entrando por la quebrada que llaman Uacra..." ATJ, litigation over land in Huacalera, 1767, file 1442, f. 176. [Copy of land grant given by Governor Felipe de Albornoz in March 1634].

(...that I have a farm/field in Tumbaia valley where I collect some foods to provide for my house ... the mentioned fields are small, therefore I ask to be given a merced of a fifty fanegadas of corn fields in a valley near Tumbaia, called Tiracsse ... this farm will be around five or six leagues from the Tumbaia valley behind the mountain range... entering though the valley known as Uacra).

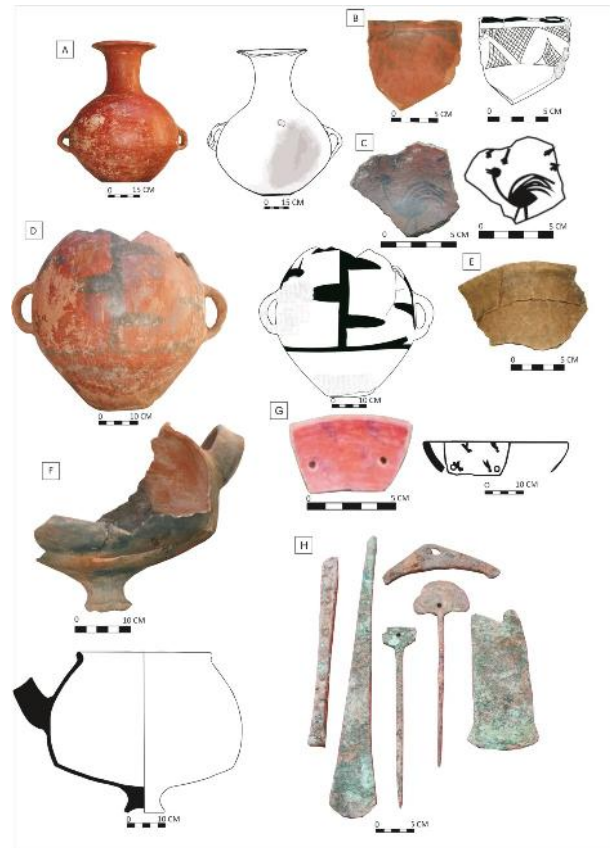


Figure 9. Pottery and metal objects found in Esquina de Huajra.

This fragment shows how Quebrada de Huajra, a small valley that leads to the east was used as a pathway to the southern valleys of Tiraxi through time, marking the importance of the complementarity between the agricultural lands of Tumbaya and those located in the valleys.

Esquina de Huajra is an Humahuaca-Inca site with few superficial architectural indicators; 222 m² were excavated on the lower slope of a hill where cultural remains were found in three artificial levels that we have called Terraces 1, 2 and 3. Terrace 1 corresponds to a domestic context, Terrace 2 to a circulation space and Terrace 3 to a sector of burials.

This settlement yielded a wide variety of Inca vessels (pedestal based pot, *aríbalos*, plates, etc.) and non-local pottery styles (Inca Paya, Inca Pacajes, Yavi-Chicha, Pucos Bruñidos, and Casabindo Pintado), metal objects, lithic artifacts, and bone material from both domestic and funerary contexts (Figure 9). These finds raise a set of questions regarding the function of this site and allow for the investigation of a unique Imperial archaeological context (Scaro & Cremonte, 2012). Statistical analysis of the calibrated dating obtained (Figure 10) points to an approximate period of occupation between 1.500 and 1.580 AD (Greco, 2017), contemporary with the later pre-Hispanic occupation of Pucara de Volcán, evidenced in the midden Tum1B2. Furthermore, Esquina de Huajra has an unusual feature consisting of a sector with adult secondary burials and children interred in funerary

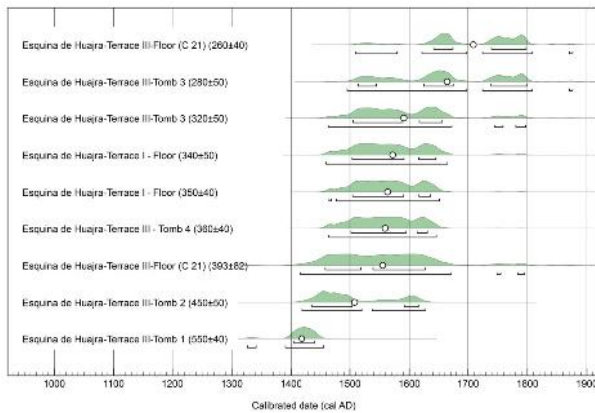


Figure 10. Probability plots of calibrated dates from Esquina de Huajra (taken from Greco, 2017).

vessels with different mortuary offerings (Cremonte & Gheggi, 2012). Such mortuary practices may have been emblematic of social power, ethnic reaffirmation or associated to religious protection.

One of the most important items found in the graves are colored powders. The presence of azurite, atacamite, hematite, realgar and oropiment as blue, green, red, orange and yellow pigments was clearly identified, with varying proportions of silicate mineral present. None of the colored powders (with the exception of hematite) were found in large amounts. Atacamite and azurite (the former comes from the area of northern Chile) might be construed as evidence for the exchange of minerals and metal objects coming from the southern *Circumpuneña* area, as suggested by Nielsen (2006) and Angiorama (2006). This hypothesis is further supported in the case of Esquina de Huajra by the presence of high quality turquoise beads, copper objects, bronze or tin-silver-copper alloys, and of Yavi-Chicha and Casabindo Pintado pottery from the highlands.

Tumbaya Grande and the Agricultural Area of Raya-Raya

The agricultural sector known as Raya-Raya covers more than 80 ha of an old river terrace located at 2.500 m in the Tumbaya Grande basin. In Raya-Raya, Scaro (2015) was able to determine a relative chronological association of different constructive sectors, which indicates that the area had been a zone of agricultural exploitation since the Formative Period (600 BC-600 AD). Regarding the Inca Period, Scaro defined one type of architecture, referred to as Group A, which includes terraced structures built with quartzite blocks and circular or rectangular enclosures with similar architectural features. Piles of stones accumulated during the clearing of the fields (called *despedres*) are typically elongated in shape and of variable height. Similar *despedres* were recorded by Albeck (2001) in the major agricultural areas of Rodeo and Coctaca (northern sector of Quebrada de Humahuaca).

Surface surveys in this area have yielded mainly plain pottery, but some diagnostic materials corresponding to the Inca Period were recovered, such as black-on-red polished sherds; purple or brown polished fragments and non-local Yavi-Chicha pottery (mainly found in Inca contexts of this region). Although the importance of Raya-Raya during the Late Intermediate Period is clear, agricultural production intensified in the region under the Inca administration. As documented by Scaro (2015), Raya-Raya was remodeled and enlarged during this time. Architectural changes demonstrate the adaption of space, notably in Group A.

The Sanctuary at Nevado del Chañi

Nevado del Chañi is one of the highest mountains in the sector, and a *Capaccocha* ritual was registered there (Ceruti, 2001; Vitry, 2007; Besom, 2010). We consider that the above mentioned *Capaccocha* was part of the strategies used by the Empire to introduce conquered areas into the political, social and symbolic landscape built by the Incas. The ritual would have played an important role both in the reproduction of the Inca social order and in its political dimension; it served to strengthen relations between Cuzco and the provinces (Schroedl, 2008).

In the high sanctuary of Nevado del Chañi, in 1905, the mummy of a child of around 5 years of age was found, wearing an *uncu* (Inca male shirt made of wool) and accompanied by a series of objects linked to the Inca elite (Besom, 2010). From the base to the summit of Nevado del Chañi, more than ten archaeological sites of logistic functionality related to the Inca road that allows access to the sanctuary have been registered (Ceruti, 2001; Vitry, 2007). These elements further point to the establishment of a pilgrimage center where pilgrims from different areas would converge.

Quebrada de Tumbaya Grande is a direct passage to the western highlands that allows access to Nevado del Chañi through the El Moreno area, San José del Chañi and Chañi Chico. This possibility of access could indicate that the south-central sector of the Quebrada de Humahuaca would have been the starting point of the periodic pilgrimages made to the aforementioned high-altitude sanctuary. Probably, Nevado del Chañi was part of the Inca landscape in this sector linked to the sacralization of the conquered region.

Exploitation of Resources in the Eastern Valleys

In the southeastern valleys, a suite of sites that likely represents a reorganization of the local population under Inca rule has been documented. Through their networks and local government structure, Inca authorities facilitated the collection of labor tribute (Fumagalli, 2003; Cremonte, *et al.*, 2003,

2005). In this region, the Inca invested in labor for agricultural purposes, specifically aimed at the early harvest of maize and potato seed production, as well as the extraction of special resources native to the *yunga* zone, including hallucinogens such as cebil (*Anadenanthera macrocarpa* and *Anadenanthera collubrina*), colored feathers, woods, etc. The easternmost installation registered so far in this area corresponds to the Cucho de Ocloyas, likely a garrison or checkpoint (Fumagalli, 2003).

Late Intermediate Period sites in this region (such as El Tinajo, Cebadilla, Mesada, and Alto Cutana) have been interpreted as sites of migrants from Quebrada de Humahuaca. They were likely involved in agricultural production in order to supply Pucara de Volcán, and in the extraction of resources from the rainforest. This means that groups from Quebrada de Humahuaca would have controlled the area from about 1.000 AD. During Inca times, a reorganization of resource exploitation would have taken place, as evidenced by the presence of Inca settlements for the extraction and production of resources, and checkpoints along access routes to Quebrada de Humahuaca and Chaco plains. The sites known as AP1, AP2, Lagunita, La Bolsa, Puesto Mendez, Piedra Parada, Media Loma, Mula Barranca and Cucho de Ocloyas, which are located between 1.500 and 1.900 m, are associated with the Inca Period (Fumagalli, 2003, 2005).

AP1 is an example of early Inca settlements in these eastern valleys. The site is located at 1900 m within a landscape of mountain meadows and pastures (Fumagalli, 2003). It is comprised of 40 rectangular stone enclosures of approximately 4 x 5 m, arranged around an open central space 25 m long. One of the five rooms excavated had a large fireplace that covered 75% of the floor structure, which might suggest a communal kitchen. Associated with the fireplace, abundant Angosto Chico Inciso ceramics, linked to culinary activities, as well as other ordinary cooking vessel fragments were found. Yet also present in lesser number at AP1 are painted pottery shards assigned to the Humahuaca Black-on-Red style, as well as Yavi-Chicha and Santa Maria styles from the highlands, and an ornithomorphic Inca plate. Radiocarbon dates from AP1 situate it at the earliest period of Inca occupation in this region, indicating that these types of lowland production sites were operating from the very outset of Inca rule. It may have been only after the establishment of such sites that defensive ones, like that of El Cucho de Ocloyas, were installed in order to discourage the possible entry of lowland groups.

El Cucho de Ocloyas is a small settlement, composed of 27 enclosures (generally rectangular with poorly defined angles) with some possible circular storehouses, an artificial platform oriented to the west and a perimeter wall that faces east, delimiting this control point within a *yunga*

environment (Fumagalli, 2003). This site is located 20 km east of the settlements that integrate the Tiraxi settlement system, in a lower and rainy forest area. It could have been installed in order to protect those productive sites, given that from Cucho one of the most important entrances from the Chaco plains can be visually controlled (Cremonte, *et al.*, 2005).

Discussion

In the framework of versatile Imperial policies that responded to local conditions, different social landscapes might have ensued. The Incas must have had a good understanding of the local political and social dynamics needed to rule newly annexed territories. Quebrada de Humahuaca constitutes a paradigmatic case of study where a wide set of indicators is recognized in order to elaborate a model in which different environments are articulated in order to sustain the specialization of craft activities and agricultural tasks. Although the availability of workforce could have been one of the main factors that influenced the reconfiguration of local landscapes, the productive potential and the extractive possibilities were perhaps more important. Our findings allow us to propose that the areas of Tumbaya and Tilcara were complementary, probably related to the differential distribution of agricultural resources, considering the *yunga* area and the diversity between the south-central and central sectors of Quebrada de Humahuaca. Additionally, each sector shows particularities linked to the use of space, defined by the distribution and connection between residential sites, sacred places and agricultural areas. These different ways of organizing space are also reflected in the configuration of the road network identified in each sector, as pointed out regarding ritual and/or secular roads.

For the central sector of Quebrada de Humahuaca, the landscape seems to be organized according to the concern for control over the different access roads to the *Puna* and lower-lying valleys, as has been registered in the case of other boundary areas (Bray, 1992). The location of control sites in cliffs and at pinch points in the landscape are indicative of the movement of people, raw materials and goods, which in turn is evidenced by the presence of *tampus* near settlements involved in administrative or productive functions as seen at Pucara de Tilcara, La Huerta and Yakoraite (Ochoa & Otero, 2017).

Another important aspect of the Inca occupation in this sector relates to the intensification of agricultural production, which led to the development of wide contiguous crop fields in Serranía de Tilcara (Alfarcito, Ovejera, El Churcal, La Huerta, Sixilera, etc.). The intensification of farming in the region would have had to meet imperial standards while functioning within local productive frameworks. Pucara de Tilcara offers a particularly good case for

understanding the political and economic strategies that were enacted in an orchestrated manner by the administration in distant parts of the Empire. The artisanal activities developed on a large scale in Pucara de Tilcara imply, on the one hand, the availability of food resources to support a vast population dedicated exclusively to artisanal tasks, possibly transported from other regions (Otero & Tarragó, 2017). On the other hand, they would have constituted a well organized circuit to transfer a large quantity of raw materials destined to the manufacture of luxury objects in Pucara de Tilcara. In turn, this type of production necessarily implied the availability of scarce resources in the area, such as water and wood used as fuel, to develop different stages of metallurgy and lapidary production. The regulation of these activities possibly led to the installation of an organizational structure in which all the attributes that strengthen an Empire would have been deployed.

One of the main strategies used by the Incas was the constant promulgation of the system of religious beliefs that gave rise to their power, always integrated with local religious practices as a mechanism of assimilation. A persistent feature of the landscape, due to its sacred and symbolic character, is the Cerro Sixilera. Its potential function as a local *wak'a* would have led to its integration into the imperial cult as part of its strategy of territorial domination, re-signifying its role as a place of memory and collective ritual expression (Connerton, 1989; Abercrombie, 2006). Furthermore, the location of Cerro Sixilera near the Tropic of Capricorn suggests that it may have played a substantial role during certain important events in the Inca productive and religious calendar (Bauer & Dearborn, 1998).

For the south-central sector of Quebrada de Humahuaca and its associated eastern valleys (Tiraxi-Tesorero basin), we lack the evidence for craft production and specialization found at Pucara de Tilcara. However, the evidence found so far would indicate that this sector could have been primarily linked to the exploitation of agricultural resources, as well as diverse goods from the *yunga* region. This difference regarding the situation proposed for the central sector allows us to define different roles for Pucara de Volcán and Esquina de Huajra within the Inca regional landscape.

In Pucara de Volcán, there is no distinctive "Inca" architectural sector, but remodeling and expansions of the pre-existing settlement. Examples of these "renovations" include the construction of an axial road, an artificial mound associated with the large plaza and a segregated cemetery. These changes could indicate the importance of massive public events carried out in the *plaza*, through which the bonds of the local population to the Inca would have been sealed. We believe that such an imperial strategy would have been essential and unavoidable for securing the labor necessary to the processes of

agricultural intensification evidenced in Raya-Raya and for the agricultural and extractive tasks undertaken in the eastern valleys. The latter occurred given that the exploitation of the rich valley resources would have been facilitated by natural connections and ancestral social interactions between the south-central sector of Quebrada de Humahuaca and the eastern valleys. However, Pucara de Volcán maintains an architectural homogeneity of local character, and objects of high value or prestige are not abundant. This represents a different situation from that of Pucara de Tilcara, allowing us to think that the role of both settlements within the major Inca landscape of the region could have been different.

Esquina de Huajra presents a completely different case, since in its domestic context the high incidence of foreign objects is notable, especially of items from the highlands (*Puna*). The non-local nature of its assemblage is also evident in the kind of vessel shapes present, the care in surface treatments, and the presence of service vessels of fine pastes. These findings would refer to a context of status and interaction, allowing us to argue that Esquina de Huajra was a strategic and special settlement (Scaro & Cremonte, 2012). In this sense, Esquina de Huajra could have played an important role in controlling the workforce in the eastern valleys and perhaps in structuring and maintaining the Inca eastern border (Cremonte, *et al.*, 2007).

In the *yunga* and eastern agricultural lands, the occupation and control of the territory would have been increased and reorganized during the Inca Period. The Inca settlements reflect a strategy of territorial control achieved at the expense of the local Humahuaca population, who were linked to the exploitation of resources in this zone. The presence of non-contiguous garrisons such as that of Cucho de Ocloyas suggests that the Inca occupation of this region was also aimed at absorbing interactions with groups of "Chaco tradition", a situation that is witnessed elsewhere in the Andes (Malpass & Alconini, 2010).

Regarding the possible structuring of the Inca eastern border, data indicates that this would have occurred as a later development. Furthermore, it does not appear that the Inca were interested in the creation of a "hard" frontier with fortified sites. It rather looks like they may have encouraged a kind of porous borderland characterized by a considerable amount of social dynamism. We posit that this borderland zone likely served as a protective buffer for the agricultural production zones operated by the Inca. Along the lines suggested by Parker (2006), we see the eastern frontier in this sector of the Empire as porous, fluid and discontinuous, serving as a protective buffer for the peripheral settlements and as a zone of regulation of trade within and between regions. In this borderland, economic, political and cultural limits would have been juxtaposed and perhaps overlapped.

As for the cultural dynamics, we can imagine its richness through links between very different groups: traditional Chaco groups distributed on the eastern sub-Andean slope and Chaco plains, Humahuacas and probable *mitimaes* from the highlands.

The organization and control of this border for the development of agricultural areas would have created a loose and permeable zone, although perhaps one characterized by fluctuating conflicts with groups from the lowlands. This may imply that risky political decisions were made due to the need not only to access *yunga* resources but also to sustain the productive forces installed in the central sector of Quebrada de Humahuaca.

Conclusions

The features of the two different sectors of Quebrada de Humahuaca discussed here likely originated from differences in environment, geography, secular processes of social interaction and production strategies, resulting in a complementarity between both sectors within the landscape built by the Incas, in which each settlement analyzed would have had a particular role. In the central sector, the imperial intervention would have aimed at intensive agricultural production and specialized handicraft manufacture. In the center-south sector, in addition to the importance given to crop production, the intensive exchange of resources between different environments would have been prioritized. This points to the logic implemented by the Inca Empire, which sought to strengthen the productive and extractive capacities of each annexed group.

A particular interest in the specialized production of luxury goods -especially in alabaster- was clearly noted at Pucara de Tilcara, which fulfilled the role of a political, administrative, productive and religious center. The large investment in infrastructure for the organization of production and the local population is evidenced both in the density of workshops and in the remodeling of spaces for religious purposes. While Inca architectural features are minor compared to those registered in other regional political centers, the different types and quantities of objects signaling Cuzco affiliation such as *aribalos*, pedestal based pots, shallow plates, *keros*, *illas*, *tupus* and *tumis*, underscore the degree of imperial intervention. Elsewhere in the central sector, Inca architectural features using non-local designs and techniques appear to have been more important. Such is the case of Peñón de la Huerta, likely a multifunctional site orientated towards the control of interaction circuits and the performance of public events linked to the sacred Cerro Sixilera. In this sense, we might speak of an imperial landscape organized around a local *wak'a*. On the other hand, the importance of a road network articulating the various villages, *tampus*, control sites and agricultural fields in the region must also be

recognized. These linkages may indicate the structuring of a landscape in which both productive and symbolic dimensions were equally important. We believe in the existence of a direct association between road, *tampu*, administrative center and *wak'a*.

In the southern sector of Quebrada de Humahuaca, we observe an emphasis on the control over *yunga* resources. Building on the foundations of social and economic processes initiated during the Late Intermediate Period, the Incas appeared to have increased interactions and control over eastern piedmont populations, who might have been governed from settlements like Pucara de Volcán and probably Esquina de Huajra. The agricultural intensification in Raya-Raya and other areas of the eastern valleys that would have permitted early maize harvest would also have been important. The social dynamics within this region, solidified during the Inca domination period, contributed to the creation of a regional identity that lasted until Colonial times. The archaeologically documented features of eastern lowland cultures may be considered as peculiar ingredients of that identity.

The appropriation of pre-existing forms of social, economic and symbolic organization and knowledge in relation to diverse modes of production, demonstrate the application of versatile imperial policies that responded to local conditions (Santoro, *et al.*, 2010). This versatility of policies demonstrates the Empire's interest in seeking different strategies to achieve a marked regional intervention, despite being a frontier area far from the center of the Empire. Nevertheless, the economy of the Empire was strongly integrated with regional economies (Williams, 2004). As in other Andean cases, Quebrada de Humahuaca shows a complex process of production and distribution of luxury goods made of lithic materials that did not exist until the Inca domination. This study case is presented as an example where the Incas possibly developed a very strong administrative, political and military structure with the intention of achieving control of an important area for imperial interests. The available resources and the capacity to sustain a dense population in the region, were perhaps sufficient reasons to concentrate the inhabitants in large-scale sites, such as Pucara de Tilcara in the central sector, where they would have been dedicated to artisanal and agricultural tasks; and Pucara de Volcán in the central-south sector, destined to agricultural tasks, extraction of *yungas* resources and probably linked to the control of the eastern border. In this way, taking advantage of the potential of each of the sectors of Quebrada de Humahuaca, and organizing their complementarity, the Empire managed to build a landscape crossed by territorial, symbolic and productive dimensions that allowed consolidating the new political order.

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