

**Preliminary Report on the 1992 excavations at Chiripa, Bolivia by
the Taraco Archaeological Project (Proyecto Arqueologico Taraco-
TAP)**

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While there has been much work and interest in the Pre-Hispanic Formative phases in the Andes there are still many questions left unanswered about the political, social, and economic situations that existed during this important political time. Large gaps exist in the Formative of the Lake Titicaca basin with regards to daily life and political interaction. It is most likely that a series of regional formative cultures flourished throughout the Titicaca Basin, not coalescing into one large polity, until after the formative is over. This is just beginning to be systematically investigated as are the economic and political changes beginning to be detailed to the degree where we can understand how the political developments occurred leading up to the Tiwanaku polity that spanned at least the whole Titicaca Basin.

During the Formative times, we know that elaborate symbolic styles existed on pottery and carved monoliths (Yayamama style), suggesting regional elite-symbolic development that could have been linked to broad or local trade and communication networks, increasingly intensive local subsistence production, and/or specialized production of some other sort. With an interest in the local changes and social dynamics that accompanied these physical indications of change within the domestic settings, houses and work areas, we chose to begin our search for evidence of formative daily life and social change at Chiripa, a noteworthy site involved in this formative society. The site is on the Taraco Peninsula, in the La Paz Province and the Canton of Taraco of northern Bolivia. Towards this goal, in the autumn of 1992 we had a two month field season at the site.

Because we know the Chiripa mound had a long-time use sequence (Browman 1991), elaborate structures (Bennett 1936), and good botanical preservation, all suggesting political development in the area. We also know that Chiripa was later incorporated into the Tiwanaku polity, the primary goal of the project was to sample outside of the mound area, looking for domestic occupations through time to study changes in local social and political relations. Building on the previous work of Bennett (1936), Bermann (1990), Browman (1978, 1991), Kidder (1956), and Mohr Chavez (1966) this excavation project chose to complete horizontal excavations at the site of Chiripa.

Browman (1991) has presented a sequence of carbon 14 dates from his Chiripa mound excavations that span 1300 B.C. through A. D. 400, from his 1978 excavations. Our plan was to sample in the most evident formative areas surrounding the mound, based on location and surface sherd evidence, to uncover formative domestic areas. We were aware that this goal was problematic, because Formative houses have not been easy to find in the southern Titicaca Basin. We hoped that by opening up large areas we might discover locations of domestic dumping, use, or at least different activity areas. One useful data set we have to compare with is at the end of the formative sequence at Lukurmata, excavated and analyzed by Bermann (1990; 1994). There, Bermann found oval houses in a sequence through the Tiwanaku phases. Bennett (1936) excavated three formative 'houses' on the mound at Chiripa that are very special and elaborately constructed. It is not clear that these were actual places of daily life residence however. It has been put forward that these might be houses for the elite, or they might be special structures with community wide storage, or even sacred non-occupation space. The other known Formative evidence is from Albarracin-Jordan's excavations at Allkamari, in the Tiwanaku Valley, where he encountered a large terrace wall running parallel with the hillside, but with no clear evidence of domestic trash, hearths, or house walls (1991). Chiripa is a small site, about 2 ha in size, sloping down a hillside towards the lake.

The excavation strategy:

To form our excavation team, we hired maestros from CIAT in Tiwanaku, providing us with experienced excavators, flotation sorters, and cooks. The excavators were Celio Chura, Pedro Choque, Teofilo Choque, and Natalio Limachi. The flotation maestros were Hugo Avalos and Simon Limachi. The cooks were Alacia Limachi and Elsa Choque. We also hired about 20 people from the Chiripa community to help with the excavations and the processing of artifacts. These members of the team are listed in Appendix 1. Everyone worked well and seemed to enjoy the project. We began excavations on September 17, 1992 and concluded on

November 17, 1992.

In addition to our excavations it seemed important to have an accurate map of the site. Mario Loza of CIAT, Tiwanaku spent several days with helpers to plot points and make a topographic map of the site. A small version of his work is seen in Figure 1.

With our problem of lack of structure evidence throughout this long time period we began with two small 2 by 2 m units just to the south of the mound. Within two days we encountered sterile, a reddish pebbly alluvial soil. From these test pits we realized that this region behind the mound had been heavily mined historically for adobe construction. We then moved north and south, farther away from the mound, concentrating our excavations in two modern agricultural fields. To the south we sampled within Sr. Pablo Llusco's field where there was a dense concentration of Formative sherds on the brown earth surface spanning a 15 by 15 meter area. We call this excavation site-area Llusco. There, we began with a small soil auger and probed the field to learn about the depth of deposit. We found that in this one 15 by 15 m region, cultural material went down at least 60 cm, elsewhere it was sterile close to the surface. Based on that, the exact excavation location was outlined.

To the north over the road and downslope from the mound we opened up three major units (6 by 8 m) in Sr. Santiago Choquetarqui's field, just across the street from the church. Today this is a sloping field, and the excavations have demonstrated that this hillside had been terraced since Formative times. This area is called Santiago after the owner at the time, with the units labeled 1-3 running from south to north. These four excavations will be described in more detail below. Each unit was quite different from the others, suggesting a great deal of use and reuse, especially on the northern hill slope. Figure 1 shows where these excavations are located in relation to the mound and the modern road.

In our quest for domestic areas and the recording of daily lifeways of the Formative inhabitants, we focused our excavation strategy on collecting systematic samples of botanical, faunal, and mineral samples, in addition to the 100% screening of the soil for lithics, ceramics, bone and other objects. The volume of all excavated soil was tabulated so that we can record artifactual densities. This meant that with each new locus or separate soil deposit that represented a prehistoric event, an 8 liter soil sample was collected and then processed by water flotation. This technique yields artifactual material down to .5 mm in size. The botanical remains that reflect agricultural production and processing are extracted this way as are lithic debitage and small animal bone. The quantity of samples involved will be described below. We also collected a pollen-soil sample from each locus excavated, that is stored in the Tiwanaku Museum for future analysis. In addition we also collected a phosphate soil sample from every locus. Selected areas of the site will be analyzed for organic content, which phosphates reveal. This procedure is used to discover locations where domestic trash or other organic material has been deposited, therefore providing more insight into past spatial activities. The ceramics and lithics have begun to be investigated on site during the excavations by Lee Steadman and Matt Bandy and their preliminary results are described below. The botanical material will be analyzed in the Archaeobotany Laboratory at the University of California. The animal bones are being analyzed by Dr. Elsie Sandefur at the University of California, Los Angeles, and Dr. David Steadman of the New York State Museum.

The Excavations:

Overall, we uncovered five use surfaces in the excavations. These roughly date to Formative Mamani, late Formative, terminal Mamani, and three Tiwanaku surfaces. Two of these surfaces were covered with white or yellow plaster, mined from local sources. These phasings are based on the in-field ceramic analysis by Lee Steadman. More analysis and absolute dates must accompany this to confirm the use areas. Two formative areas were bounded by large 2-5 coursed stone walls that ran up the hillside. They seem to be terraces cut into sterile. Finding these walls was exciting and suggest that this is what we must look for in the future. While surfaces were associated with the walls, they did not look like typical domestic occupation and we tentatively have labelled these areas public or ritual use space. This nondomestic context is also likely for the later surfaces. While areas of carbon were uncovered they do not look like what we expect in houses. We must analyze the botanical, faunal, and phosphate remains to discover what these surfaces were used for.

1) The Llusco unit excavations, Claudia Rivera

During the 1992 field season, working within the activities of TAP, I carried out excavations in two areas of the

archaeological site of Chiripa. The first excavated sector, designated Escolar II, is on land owned by the school. This area is situated immediately south of the Chiripa mound, in the interior of a structure which formed part of a coral of the hacienda. Here a large quantity of formative ceramics and lithic instruments were encountered on the surface. A 2x2 m unit was excavated encountering three levels. The first level disturbed by the plough, a second undisturbed level that was certainly deposited during the use of the area, and finally a sterile level. The area did not turn out to be adequate for obtaining information due to the construction of the hacienda effecting and disturbing this location (Figure 2).

Afterward, excavation began in the area designated Llusco which was on the property of Pablo Llusco. A total of 16 units which included three stratigraphic levels were opened. The most important result was the discovery of a 7.80 m long wall (Rasgo 15) oriented north-south that formed a corner of a structure with another small wall oriented to the west (Rasgo 33).

Associated with this larger wall and the units to the south, there is evidence of an episode of activity with the presence of a slightly formal occupation surface that was composed of a mixture of burnt earth and orange plaster.

In the units to the north we encountered a well made floor of a white clay associated with the corner of the structure. Also in this northern part, a small alignment of stones was situated that formed part of another structure.

As for the construction techniques, we are able to say that the location was leveled to compensate for the slope of the hill. To do this, we encountered a cultural fill constituting fine earth mixed with ash and artifacts like ceramics, lithics, and bones. On top of this packing, the walls and the floor were constructed.

The larger stone and mortar wall (Rasgo 15), much like the one in the north (Rasgo 33) was constructed by making a cut into the sterile soil (which in this location is situated very near the ground surface) and rests the stones and mud bricks against this cut. The ceramics, like the floor, are Formative Mamani, therefore we are able to say that these Llusco constructions date to this period.

Finally, I suggest that future excavations should extend south and west to gain more information about the size of the structure, the system of construction and the functions of this structure.

Santiago Area excavations:

The Santiago area is located in a plowed field near the center of a terraced ridge that runs from the Chiripa monticulo area in the south down to the pampa in the north. To the east is a line of trees and then a field, and to the west the field slopes down towards a stream drainage. The one unit in Santiago 1 taken down to sterile appears to have been on top of this ridge, while the others in Santiago 1, Santiago 3, and the test pit appear to have been located more towards the side and edge of this ridge to the west (Figure 4). The Santiago area in general appears to have been used for ritual activities and burials-- probably related to the temple or special use of the mound to the south.

2) Santiago I excavations, Sonia Alconini

The area excavated as Santiago I is located approximately 50 m to the north east of the Chiripa mound past the Chiripa-Tiwanaku-Tambillo road. In this sector thirteen 2x2 m units were opened. Methodologically, the excavation was based on stratigraphic levels; when these were very thick, they were divided into much smaller arbitrary levels (Figure 3).

The following sums up the stratigraphic and occupational sequences:

Level 1 is the humus root zone, previously removed by the tractor, is now in fallow. Due to this farming activity the cultural material associated with Tiwanaku and Chiripa phases is very disturbed and mixed up within this level.

Level 2: Characteristic of the Tiwanaku occupation phases in the region we managed to identify several different episodes of use; levels 2a, 2b and 2c.

Level 2a: There was good evidence of in situ cultural activity. The deposit of this level had characteristics of several different components. We encountered an offering of fish (Rasgo 6), ephemeral burned areas (Rasgo 21) and a secondary burial (Rasgo 7). All were deposited within the matrix below the surface.

Level 2b: In this level, part of a stone foundation of a rectangular structure with a white plaster floor inside was encountered. The walls went beyond the excavated area. This structure had secondarily deposited human burials that were covered by a layer of very white, fibrous vegetation (perhaps decomposed reed material). These burials were deposited inside small circular constructions built of three even lines of rocks constructed specifically for these events (Rasgo 26 and Rasgo 22). Outside these structures in an orange gravel we also encountered a primary burial (Rasgo 63). Below this white floor, in several 2 x 2 m units we encountered two more floors, one white and one yellow respectively, separated by fill. The last yellow floor contained many burned zones, which differentiated it from the first two floors, where this phenomenon was not present. However we reiterate that the presence of these last two floors was spatially sporadic and limited.

Level 2c: was purposefully excavated with the objective to level the surface for the later construction of the above mentioned floors. In this level a complete human burial was encountered that had a bowl possibly related to Qeya ceramics. (p.c. Lee Steadman).

Level 3: The burning of this level corresponded with the Chiripa Formative occupation, however because of the pressure of time, we only opened a few units. In level 3a, we identified, in particular, a very compact occupation floor, ephemeral zones of white plaster stained by burning, with horizontally deposited ceramics from the post-Mamani phase. To the south of this, we identified an extensive zone of ash with sporadic areas of burning. More to the west, we excavated a magnificent ceramic offering and many worked llama bones such as wichuna weaving tools, needles, and other tools still not identified (in Rasgo 13). On this same surface to the east, we encountered a secondary burial covered with the above mentioned white substance, and 40 beads from a necklace of lapizlazuli and other stones.

Finally, to the west of the area and sloping down towards the stream (Sant. 1) Sigrid Arnott excavated a terrace wall that appears to be associated with the Chiripa occupation with similar characteristics as those excavated by Claudia Rivera in the Llusco area of the site. On the basis of this fact we established an area of occupation on the platform of a terrace above the step she excavated. This area in particular should be excavated in the future.

3) Santiago II excavations, Sigrid Arnott

Santiago II is located just to the north of Santiago I excavation area. The use of Santiago 2 appears to have been primarily for burials. Whereas the area to the south excavated by Sonia Alconini had architecture and may represent some sort of terrace or platform, this area seems to have been outside of any architectural area. No floors were encountered, and the one wall that was only partially uncovered (in N 1098/E968) seems to have formed a corner that enclosed an area to the west of Santiago 2.

There were two basic types of burials: 1) the burials of complete, flexed skeletons within a pit (eg. L. 768, 536, 654, 816), or 2) cranium and long bones in advanced states of decomposition underneath ceramic offerings (L. 677). The one Chiripa burial that was partially excavated was unusual in that it was within a very shallow pit laying face-up, and with the right arm bent underneath the back and pulled up underneath the left shoulder blade (L. 832). For the most part these burials are difficult to date conclusively because they were without burial goods and the pitcuts had been disturbed, but because they were mostly in or cut from level two or above, it appears that most were from at least the time of Tiwanaku use-- if not later. Burial locus 654 seems to have been particularly late because it was on top of level two, and the traces of the pit cut could be seen within the plowzone located in level one. These factors all suggest long-term use of this area for burials, and indicate that this general area was linked to the Chiripa monticulo as a sacred space during the entire time of its use. It is interesting that none of the burials had any grave goods, whereas Bennett (1936) and others describe elaborate goods in the mound burials, including gold bands. It is likely that the mound was a restricted space, but these peripheral areas could have been more accessible for use by non-elites.

Summary of Stratigraphy

Level One is plow zone, and contained mixed Chiripa through modern ceramics. This level represents the modern use of the area as a field, and as a tile production area for the nearby hacienda. The Chiripa ceramics probably did not come from lower levels here, but probably eroded in from disturbance above, near the monticulo. These intrusive ceramics and those in level two could even have washed in from back-dirt from previous excavations of the mound area.

Level Two was disturbed but not totally mixed, and soils were mottled and irregular. This level was used primarily in the Tiwanaku period for burials and a ceramic offering (L. 719). In addition, this level was frequently cut into by pits, most of which contained ashy fills, and could be the product of burying materials from ritual activities. Although the ceramic and faunal analysis are not yet complete, it seemed that these pits did not contain the full range of garbage that would be expected in a domestic midden. They were low in carbon and high in ash, and some seemed to have primarily one class of artifact, eg. just llama bones, as if they were specific acts or offerings.

There were no clear surface areas, which leads me to believe that the area was an outside area without well maintained floors, and that there had been surfaces above level two that were destroyed by plowing and other activities. Because of the disturbance, it is not clear that the original tops of most pits were in this level, this is just where they became archaeologically visible. In fact, one pit found in level 2 (Rasgo 36), that happened to be right next to a Tiwanaku burial, had modern roof tile at the bottom indicating that it must have modern.

Level Three was only fully excavated in unit N1100/E970 and represents the build-up of the soil matrix before the major pit-cutting and burying. The loci in this level were clearly defined by their distinct soil colors and textures, as well as clear water-laid lenses. This level was primarily Tiwanaku with a small in-mix of Chiripa ceramics. I theorize that most of these loci were water-deposited and may have resulted from the erosion of soils during Tiwanaku re-building or land modification of the area, or from activities taking place on the higher terraces of the Santiago area. This would account for the fact that the levels were silty, and artifactually sparse, with some Chiripa ceramics mixed in. Detailed ceramic analysis and soil analysis must be completed for this to be determined. The lower levels of level three were less mixed and an unusual, high-fired late Chiripa ceramic was found here alone.

Level Four was, again, only excavated in N1100/E970. This Chiripa level looked as if it may have been ashy material dumped and then water-packed, but was artifactually sparse. The soil was not finely sorted, as in level three, instead there were clumps of different soil types. The one feature in Level Four was a burial (L. 832) found underneath the trashy material, and directly on top of sterile.

4) Santiago III excavations, Nicholas Jackson

Santiago 3 is an excavation area that was situated in the northernmost area of the Santiago field. The conclusion of this excavation indicates that in Santiago 3, there were five separate stratigraphic episodes and through artifact and ceramic analysis carried out in the field, initial interpretations of these phases and dating of the features can be made with reasonable certainty. Although the interpretive "theme" of the whole area of Santiago is similar among the excavation units, the physical deposits differ vastly between them, making inter-unit correlation difficult. For the case of Santiago 3, however, evidence would suggest that this area was levelled by at least one deep filing episode that created surfaces for burial and ritual deposits, the main activity being dated to the Tiwanaku 5 period.

Santiago 3 represents an area 8m x 6m in three main levels 1,2, and 3 which were excavated over the whole area. Phases 4 and 5 represented by levels 4 through 6, and 7 through 10 respectively. were only exposed in one 2 x 2m square in the northwest corner of Santiago 3, and in a 1 x 1m test pit situated 4 meters north of the same point. These two test pits have 2 meters of deposition.

Level 1 of Santiago 3 was topsoil/plowzone on average 10-15cm deep. It contained no features and produced mixed ceramics, both historic and pre-historic. This level sealed the reasonably undisturbed level 2.

Level 2 consists of a uniform compact surface that contains a combination of contemporary features, giving the best evidence for dating and interpretation of Santiago 3 as a whole. The main features were burials and redeposited human remains with grave goods and the other deposits through ritual due to the ceremonial nature of the Santiago area of the site.

A total of 5 main features give the best indication as to the activity in this layer. Loci 683, 673, 596 were the grave contexts and cut 527, fill 522, and 635, and fill 636 were the main pit features. All five pits can be dated with some certainty to Tiwanaku 5, from ceramic offerings in the pits from analysis of the sherd contents. All three burials were uniform in context, a shallow cut in level 2d, a deposit of human bone, with two complete vessels, all wrapped in a fiber material, possibly lake tortora reeds, which were woven. This burial pattern is present in all three excavation areas (see Arnott's and Alconini's discussion).

The ceramic offerings were as follows: In the pit 673 was a small jar depicting a face with coffee bean eyes, and a complete decorated bowl; in locus 596 there was a complete kero and a decorated bowl, and locus 683 contained a slim necked jar with a complete bowl. Loci 673 and 596 also contained domestic ware bases.

These vessels, wrapped in the fiber matting, lay over the bones. Again, the contents were consistent among the different pits: two long bones, possibly femurs with crania and jaw fragments. All bones seem to have been crushed carefully onto the matting that covered the bottom of the cuts. The reason for this is unknown.

The other two pits contained ash deposits, with llama bones. The result of samples taken for flotation will hopefully add information as to the origin of the ash. Both pits also contained grinding stones made of a non-local sandstone (see Bandy's lithic discussion). The ceremonial use of this level would suggest that these pits also had some significance other than refuse dumping.

Level 2 sealed level 3, which was a thin, consistent, compact red-brown inclusion free level of deposit. Although this level clearly predates level 12, its function is still unclear. In the center of the area excavated, in level 3 was ASD 6, a combination of loci forming a raised area of red-brown material about 15 cm high, and 3 x 3 m in size. Although excavated in thin arbitrary levels, interpretation of this feature is still uncertain. The constituents of the loci, red-brown clear material and frequently redeposited stone initially suggested some sort of decayed structure and although it has a reasonably clear form and was cut into the level 3 deposits, there were no solid deposits that hinted as to its use. At this stage of interpretation, it would appear to have been a possible small round structure almost entirely decayed to below foundation level, being sealed by the adobe melt deposit of which created the uniform layer around and above it. This melt and the excavation of a solitary skull at its base in level 3E, as well as a deposit of human bone (839) from within the stone lining of a pit in level 3 would indicate that level 3 had some sort of occasional activity. The sparsity of this level and the lack of primary deposits would suggest that its use was short lived and occasional, with level 2 being the main activity level of this area of the site. (It also must be said it is still unclear how much of level 2 has eroded or been plowed off).

Phases 4 and 5 of Santiago 3 represented by arbitrary spits (20 cm deep) in level 4-6 and level 7-10 respectively, were only exposed in test pit 1 and the 2 x 2 m square in the northwest corner of Santiago 3. Although there is quite a depth of deposit below level 3, up to 1.5 meters, it would suggest that these deposits represent at least one dump episode possibly 2 reasonably to level or terrace the area to receive burials. Both deposits produced heavily mixed ceramics, both Tiwanaku and Chiripa. However, grave locus 843 in level 5 of the larger test pit hints that maybe Phase 4 was used for burials as well and dump of cultural material phase 5 (levels 7-10) was the main leveling deposit within this unit.

Thus to conclude, in terms of the objectives of this years excavations, ie. the examination of Formative period domestic units, in the case of Santiago 3, the levels excavated contain no domestic material, and at this stage the stratigraphy represents deposits of a Tiwanaku 5 area.

Test Pit:

Besides the 2 by 2 m test pit in the southwestern corner of Nick Jackson's Santiago 3 unit, we also excavated a 1 by 1 meter pit to the south west of his unit. In that unit (N1116 E693), at 2 meters below ground surface, we found that the Formative people had cut a terrace about 50 cm deep facing north towards the lake, parallel with the hillside. This area was filled with Formative garbage.

Data Analysis and Processing:

It is always more informative to have interactive feedback between the excavators and artifact analysts. Therefore

this project had a team of laboratory archaeologists who continually communicated their results with the excavators as the project progressed. Such information helped us make decisions about which areas we should concentrate on. The following is a brief summary of what we have learned from the artifacts to date.

5) Preliminary analysis of the ceramics, Lee Steadman

The large quantity of ceramics gathered from the excavations carried out by the Taraco Archaeological Project at Chiripa, in addition to time pressures in the field permitted only a preliminary analysis of the ceramics in situ. However, we were able to come to some basic conclusions about this material from the sample that has been analyzed thus far.

Llusco Excavation Area: The ceramics from the first level (plow zone) in the excavations of this area consist of a mix principally from the Chiripa-Mamani phase, from the Pacajes (LIP), a few Tiwanaku IV and V ceramics and some modern ceramics. It is interesting to note that the Llusco area is unique among the four excavations in that it has Pacajes ceramics on the surface and in the plow zone. The floor encountered in level 2, as well as the two levels just above the floor, contained only Chiripa-Mamani ceramics. Because of this we arrived at the conclusion that the floor belonged to this period. The packed fill deposited under the floor contained exclusively Chiripa-Mamani ceramics as well. These ceramics are characterized by fiber temper, frequent large opaque white quartz inclusions, a large percentage of red slip and a primarily burnished finish. The form and decoration of these ceramics is similar to the description by Bennett (1936) and Karen M. Chavez (1966). Straight sided bowls with enlarged rims, jars with inverted necks, flat bases, etc. The decoration is characterized by the use of creme and black or red, incised polychrome, and thick incisions with out slip (Figures 5, 6 and 7).

Santiago Area 1: On the surface and in the plow zone of this excavation area we found a mix of modern ceramics, Tiwanaku III, IV, and V, Chiripa, and Chiripa-Mamani. Level 2a was also very mixed. Still, in levels 2b and 2c we encountered a percentage of intrusive ceramics from the Tiwanaku period, although the largest part of the ceramics here came from the Chiripa period. Of particular interest is that this Chiripa complex is not the same as that encountered in the Llusco area. Without a clean stratigraphic sequence, it is difficult to place these ceramics into chronological position; however there appears to be a post- Mamani period, or perhaps a final Mamani phase represented in this area. The ceramics are much more fine than the typical Mamani characteristics, with a more dense paste, and fired at much higher temperatures, the major part of this group being of a red to red-orange color with a light grey core. There are fewer burnished pieces and more with a rubbed finish. There is also fewer ceramics with large quartz temper. There seems to be a new type of burnishing that has fine lines with in the burnishing marks themselves. There are also ceramics with much more mica than in typical Chiripa-Mamani ceramics. There is not much decorated ceramics in this complex. In the floor uncovered in level 3a of Santiago 1, they also encountered this "Chiripa-Terminal" ceramic, while in the fill in a pit below the floor they encountered a mixture mostly of Chiripa-Mamani ceramics together with the Chiripa-Terminal.

Santiago Area 2: This area contained the same mix of Tiwanaku and Chiripa ceramics in the disturbed levels 1 and 2. In level 2 they encountered various pits and pit burials from the Tiwanaku V period, all of them disturbed in the upper part. On the other hand, in the matrix of the pits and under them in levels 3 and 4, they encountered ceramics similar to the "Chiripa-Terminal" and one that can be called Tiwanaku I domestic because of the fiber temper, the quantity of mica and the surface rubbing.

Santiago Area 3: This area is distinguished by the quantity of modern roof tiles deposited on the surface, in level 1 and also intrusively in level 2. This second level contained various pits and burials, with ceramics principally from the Tiwanaku V period (Figure 8), the matrix of these pits spanned the entire Tiwanaku IV period. The ceramics from levels 2, 3 and 4, are basically the same. Unfortunately Santiago 3 is the most disturbed areas of the four excavated. Although the principal component of levels 2, 3 and 4 is Tiwanaku IV (Figures 9,10,11 and 12), there was also a high percentage of Chiripa, Tiwanaku V, Tiwanaku III and Tiwanaku I ceramics. Levels 5 and 6, although also mixed, contained a large quantity of Tiwanaku III ceramics, these included bowls with incised rims and black paint as well as white on a light brown. The ceramics from levels 7 to 10 appears to also belong to a single period, although with slight differences between levels, that perhaps correspond to a transition between Chiripa and Tiwanaku I. This complex is characterized by ceramics with light paste, fiber with mica and the rubbed finish; also there are Chiripa ceramics, some with large quartz temper, others with dense paste and high firing, rubbed finish and mica.

Test pit: Initially, we thought to have encountered early ceramics in the lower levels of this 1x1 pit, however later analysis suggested some mix to the levels all the way to the bottom. Levels 2 to 4 look like Santiago 3, principally Tiwanaku IV and with a mix of Tiwanaku V, III, I and Chiripa. Level 5 showed a major component of Tiwanaku III and in level 6 Tiwanaku I (Figure 13); however there are still intrusions of ceramics from the Tiwanaku IV period throughout. Levels 7 to 9 have ceramics from a Chiripa transition, some with large quartz temper, and others of dense paste and high firing. Levels 10 to 12 have many burnished pieces with red slip and quartz temper, these are very similar to Chiripa-Mamani, although there are no decorated pieces (Figure 14). However in all of the test pit levels, including level 12 at the bottom, there is some disturbance as evidenced by Tiwanaku ceramics, suggesting slight rodent activity.

6) Lithics, Matt Bandy

The analysis of the lithic artifacts from the TAP 1992 excavations in Chiripa is as yet not sufficiently complete to permit more than a cursory summary. More complete information will be forthcoming in the near future. This informe will first discuss the chronology of the site briefly, though this discussion more properly is the domain of other investigators than myself, and will then continue to treat the chipped stone, ground stone and other lithic industries present at the site.

Chronology:

The chronological placement of some of the excavated areas is as yet in doubt. However, I have been given to understand by the ceramicists that we do have several areas which can be dated with some certainty. These chronological assignments, however, are preliminary and are conditional on further inspection of the ceramic assemblage. The assemblage from level 2 of the Llusco area, excavated by Claudia Rivera, can be placed with some certainty in the Chiripa Mamani phase, and the upper levels of the Santiago 3 area are Tiwanaku 5. We therefore have secure Formative and late Tiwanaku levels and assemblages which can be compared to one another with respect to technology, production and function. Preliminary and intuitive comparison indicates that there are, indeed, significant differences between the Mamani and Tiwanaku 5 assemblages.

Chipped Stone Industry

The chipped stone industry of the site will be considered in relation to the two properties of production and function. Production refers to the actual systemic process of the reduction of lithic raw materials; their reduction and the distribution of the various phases of this reduction across the social and physical landscape, as well as to the formal artifact classes which result as products of this reductive patterning. Function refers to the role played by these products in the social and techno-economic systems of the culture.

Production:

The lithic production system of the site seems to remain fairly constant over time. There seem to be two fairly distinct chipped stone industries present at the site over all time periods: one based on locally available materials, predominantly quartzites, cherts and metamorphic cobbles from the alluvial cobble terraces above and to the south of the site, and the other based on exotic materials, mainly obsidian.

The industry based on local materials seems to be what has been called a 'terminal production system' (Ericson 1984): that is, all stages of production take place at the site of raw material procurement, which in this case happens to be the site of Chiripa itself. Quartzite cobbles were worked into hoes as well as into flake tools of varying degrees of formality. Metamorphic stones, on the other hand, were very rarely chipped into formal products; flake removal was expedient and informal, suited to the task at hand. Cherts, on the other hand, were worked into a variety of formal bifacial and unifacial tools, including projectile points, scrapers and the like. In all cases, however, debris from all stages of the manufacturing process (see Collins 1975) are present at the site, including the actual end products of reduction.

The obsidian industry, however, is what has been termed an 'irregular production system' (Ericson 1984). A large number of the projectile points and small, elaborated bifaces from the site are made of obsidian, but the amount of manufacturing debris is so small that it leads me to suspect that a significant proportion of the obsidian artifacts were imported already completed into the site. I have no way of knowing, however, whether this was the result of

actual exchange between groups or a seasonal or sporadic excursion on the part of the locals to obsidian sources, such as has been documented ethno-historically in California (Ericson 1984). I would suspect the former, however, if the Formative inhabitants of Chiripa are to be thought of as sedentary (an assertion which, although it seems probable, has yet to be conclusively demonstrated). There was, however, some production of obsidian bifaces on the site, as evidenced by a number of obsidian biface reduction flakes encountered in the excavations. There were also a number of small obsidian cores encountered from which small circular and ovoid flakes were removed, presumably for expedient use. These cores, however, retained cortex on their surface and were made from small, previously unworked nodules. There is no evidence of the importation of prepared cores into the site, or of the centralization or formalization of production, or, indeed, of any extensively-developed craft specialization of any sort with regard to the chipped stone industries. Both completed bifaces and unworked nodules of obsidian were imported into the site, suggesting an informal and decentralized lithic economy in all time periods.

Function:

Functional analysis of the flake tools is as yet so incomplete that I can do little more than list the general types of tools encountered, and am unable to cite frequencies and distributions of the types at this point. The types encountered include: a notched tool, with heavy use-wear, which would traditionally be termed a 'shaft-straightener;' scrapers; unretouched, straight-edged flakes with grinding use-wear, probably informal knives; pointed tools with use-wear and no retouch which were probably used as borers and perforators; tools with large-scale denticulate edges and grinding use-wear, possibly used as shredders to extract fibers from reeds and other plants in order to produce cordage. Further analysis promises to shed light on the activities that were conducted at the site, and their spatial and temporal distribution. Some patterns seem apparent already. For example, the denticulate shredders are extremely rare in the upper levels (1-3) of the Santiago area, but are much more common in level 2 of Llusco and levels 4+ of Santiago, especially of Santiago 3 and the Test Pit. Further typological distinctions and spatial analysis will certainly reveal more subtle patterning.

Ground Stone Industry

There are a variety of ground stone artifacts present at the site, including mortars, pestles and others. The only types that are common enough to warrant discussion however are manos and metates.

Production:

The manos at the site are almost exclusively made of locally-occurring quartzite cobbles, minimally modified. These would have been locally-produced and utilized. There are some exceptions to this rule, however, including several manos made of a type of gray rhyolite. This rhyolite is not local, and its source is unknown to me, but there is enough manufacturing debris of this material present to indicate that at least some of it was imported into the site in an incomplete form and that some working of it occurred at the site.

The metates, on the other hand, are almost all made of large slabs of yellow and red sandstone. These materials do not occur locally in nodules of sufficient size to allow the manufacture of metates. This fact, coupled with the lack of significant amounts of manufacturing debris of these materials, indicates that the metates were imported in an already complete form from some other area. I am unsure as to the location of this source, but Martín Giesso has informed me that such materials in sufficiently large pieces are present in the mountains directly to the south of the site of Tiwanaku itself. Another fact which indicates the energy expenditure required to import metates to the site, and their resultant economic value, is that all the metates encountered are ground on both sides, some with as many as three grinding surfaces present, and the grinding surfaces themselves are deeply grooved, for the most part, and have been repeatedly rejuvenated by extensive pecking. Metates which have been broken, rendering the already-utilized surface useless, have often been utilized on the reverse side, creating a narrower and less deeply-incised surface.

Function:

The function of manos at the site seems to be fairly straightforward as far as I can tell: they were used to grind things, most likely quinoa and possibly maize. Metates, however, are a completely different story.

The majority of the metates recovered were from burial contexts in the Santiago area, and date to Tiwanaku 5. The use of stone slabs to cover burials is apparently a widespread phenomenon in the Lake Titicaca area. The use of metates for this purpose at Chiripa can be explained by the fact that they are, indeed, slabs of stone, and that there are no naturally occurring slabs of sufficient size in the local area to serve this purpose. Only one non-metate stone slab was discovered serving as a burial cover. In addition, all but one of the burial metates were broken. This suggests that the people who inhabited the site in Tiwanaku 5 times were using broken, though not useless, metates to serve as slab covers for burials. This can be seen as the most economically efficient way to fulfill what seems to have been a mandate of tradition, namely the placement of a stone slab over the burial pit of an individual.

In addition, on three of the metates recovered from burial contexts the smaller ground surface on the reverse side of the piece preserved remnants of a red pigment of as yet unknown origin. The side with the pigment was invariably placed face-down, and it was common to find traces of a red pigment in the matrix of the burials when they were excavated. All of this suggests a close connection between metates, pigment and burial customs at the site in Tiwanaku 5 times, and perhaps earlier. This connection will be explored in more detail in future analysis.

One implication of this connection is that basically all of the metates recovered in the excavations come from a ritual and not a domestic context. This evidence suggests, together with other data (see informes written by Sigrid Arnot and Sonia Alconini in this volume) that the Santiago area, at least Santiago One, was in Tiwanaku 5 times a sort of ritual burial terrace. A similar terrace was excavated in November, 1992 by Martín Giesso (personal communication) at the site of Tiwanaku itself.

Other Lithic Industries

In addition to the chipped and ground stone industries present at the site, there are a number of other industries evident. These will be described briefly below.

Lapis lazuli industry:

Production of lapis lazuli (azurita) beads and pendants was practiced at the site. Lapis obviously is a non-local material, but some unworked pieces and manufacturing debris were recovered, suggesting that production did take place at the site. In addition, a number of lapis artifacts were recovered, predominantly from burial contexts. Beads were also recovered which were made of other materials. These include turquoise as well as a red or pink variety of what seems at this point to be soapstone and a dense, green crystalline limestone, which is most likely from a source approximately ten kilometers east of the site. Interestingly, no unworked nodules or manufacturing debris of these other materials were recovered. The flinted lithics have, however, not yet been analyzed, and more evidence may be forthcoming.

Ground bowls of eroded limestone:

A number of bowls made of a very soft, white eroded limestone were encountered in the excavations, mainly from Tiwanaku 5 levels. These bowls vary greatly in shape and size, although none were recovered intact. Their function is entirely unknown, but they are similar to ones recovered in the last several seasons by excavators at the site of Tiwanaku (Martín Giesso, personal communication). Their virtual restriction to Tiwanaku 5 levels may be a temporal indicator, but it could also be that the bowls are a ritual artifact. The Tiwanaku 5 levels excavated appear to be ritual contexts, while the earlier levels may not be. There is a source of the material within a kilometer of the site, so I assume that the bowls were produced and utilized locally (though they may also have been produced for export).

Ground slate knives:

A number of knives made of ground metamorphic slate were found in the excavations. They are ground to a fairly fine edge and use-wear and polish were apparent. They could have been produced locally, as metamorphic slate is available in small quantities in the alluvial terraces south of the site, but this is by no means certain. Their function is also uncertain, though analogies can be found in the ethnographic and archaeological records. With the exception certain Inuit groups, who have no other available stone sources, such implements seem to be used for the cutting and processing of fairly soft, pulpy vegetal material. For example, such knives in the Hohokam area of

Arizona are known as 'agave knives,' and were used for removing the blades of that plant. And the Kim-Yal people of the village of Langda in highland New Guinea use similar knives "- which come in oval, kidney or subtriangular form - to cut off the leaves and stem of the taro root, scrape the outer surface clean, and then split the root for cooking" (Toth, et. al. 1992: 92). The knives of Chiripa, then, could have been used for the processing of potatoes or other tubers. They could also have been used for the cutting of the numerous reeds that grow along the margins of the lake and which were probably an important material for thatching, boat-building and other purposes, including culinary ones.

Other industries:

Other industries included the production of fishing weights from local quartzites, usually involving minimal modification of the original cobble, and the making of 'trompos,' small worked cones of local material. The presence of trompos was ubiquitous, but their function is entirely unknown. Further analysis may shed light on this subject.

7) Botanical remains: Carol Nordstrom,

Collection Procedure:

Flotation samples of 8 liters in volume were collected from each level and locus in every excavated unit. A total of 522 soil samples were collected and floted by Maestro Hugo Avalos of Tiwanaku, Miguel Loa of Chiripa and Carol Nordstrom of the University of Minnesota.

Two types of soil samples were taken: bulk and scatter (Lennstrom and Hastorf 1990). A bulk sample is collected from a specific location within a unit level and unit locus. Bulk samples are point provenience items. The exact location of the bulk-flot sample is mapped on the excavation sheets. Scatter flots consist of an 8 liter soil sample derived from soils taken over the whole excavated area of a provenience. Scatter flots are representative of the locus as a whole.

Recording Procedures:

Each flotation soil sample was given a unique flotation number. The numbering system for the Taraco Archaeological Project began at 10,000. This numbering system joins together all other flots analyzed by the Archaeobotanical Labs in Minnesota (now California) including those taken by Wila Jawira.

Effectiveness of flotation procedures will be analyzed by the use of poppy seeds which were placed in approximately one of every 20 samples floted. Poppy seeds, are indigenous to the Old World and therefore will not appear in any pre-Columbian soil matrices. Fifty seeds were placed a sample every day of floting by the team. Once analyzed the number of seeds will be counted enabling a percentage count of how effective the flotatoin machine and team was during the flotation procedure. We used a modified SMAP machine built by Christine Hastorf from Watson's (1986) origian model.

Analysis:

Flotation procedures produce two fractions for analysis; a heavy fraction and a light fraction. Heavy fractions were sorted in the field under the direction of Maestro Simon Limache of Tiwanaku. An assortment of archaeological remains exist in the heavy fraction including ceramics, bones, carbon, burnt soils, and lithics. The ceramics from the heavy fraction will not be analyzed this year. These ceramics have been stored in a deposito in Tiwanaku. The lithics from the heavy fraction will be analyzed by Matthew Bandy and later stored at Tiwanaku. The bones from the heavy fraction will be analyzed by Dr. Elsie Sandefur at the University of California at Los Angeles and later returned to Bolivia. The carbon from both the heavy fractions and the 1/4" screens will be analyzed at The University of California under the direction of Dr. Hastorf. These carbon samples will be used for dating purposes as well. A small sample of the remaining soils from the heavy fractions have been retained for possible future analysis, these, along with the burnt soils are also being stored in the deposit at Tiwanaku.

Light fractions produce mainly carbonized plant remains, the majority of which are seeds and small wood fragments. From cursory analysis it appears that there are substantial amounts of Chenopodium. Without the aid of

a microscope it also appears that there are maize fragments and potato.

Until this analysis has occurred, it is difficult to make any sort of interpretation. This analysis will be further confounded by the lack of many pure, unmixed contexts. Analysis of botanical remains, however, can prove to be an effective means of unravelling the the use areas uncovered in teh excavations.

8) Phosphate collection: Laurie Butler

During the 1992 Taraco Archaeological Project field season, soil samples were taken to study possible activity areas and habitation units. The soil samples will be chemically tested for phosphate and pH levels. These relative levels can then be used to indicate areas where different activities may have occurred. Because of a lack of laboratory facilities and adequate chemical supplies in the field, the samples will be shipped to the United States and analyzed there within one year. The samples have been collected systematically from nearly every unit and level. Figure 15 is a schema of our collection procedure.

In addition to the excavation units, samples were also systematically collected from a modern abandoned house belonging to Sr. Llusco (Figure 16). These samples will be used as a modern ethnographic example for comparison with the excavation samples. The resulting data set, both the modern and the excavated tested samples, will become part of the total data set. The collection procedure was to collect a small soil sample in a clear zip lock bag every 2 x2 m unit (Figure 15) in all proveniences below level 1, the humus root zone. On a floor or patio area collect a phosphate soil sample every .50 m (Figure 16). This was done in the modern house collections as well. In special fetures, such as burials or pits, we collected four samples spaced evenly throughout the provenience.

9) Animal Bone: Christine Hastorf

The identifiable animal bone is being analyzed by Dr. Elsie Sandefur at the University of California, Los Angeles Zooarchaeology Laboratory. In the field we sorted the identifiable bone out from the total collected to be sent. In addition we catalogued the worked bone that is housed in Tiwanaku, noting completeness, size and functional type. The worked bone consisted of about 200 pieces, including projectile points, weaving implements (wichunas), needles, awls, jewelry, pipes, and scrapers. The smaller rodent bone will be analyzed by David Steadman.

10) Human bone: Christine Hastorf

Twenty four partial or complete human interments were uncovered in the excavations. Most of the interments were very partial and fragmentary. We believe that these were secondary purposeful reburials that could have been ritual in nature. The complete burials tended to be fragile and in bad condition. These specimens must be studied by a physical anthropologist in the near future.

Summary of the results:

While we are still in the process of analyzing the material that has been excavated over the two months, as can be seen from the above reports, we can say a few things about the architecture, the dates of the use areas, and the types of use of the areas we have excavated.

The site of Chiripa has clearly been used and reused a great deal over the 3000 plus years of its occupation. While no clearly identified domestic areas have as yet been discovered, the periodic dumping of domestic garbage suggests that people of at least the Mamani-Tianaku 5 phases lived nearby the excavations. Over the time span uncovered by our excavations, we saw that pits were in commonly excavated and filled, receiving not only ritual burials and offerings but also garbage and even just stones, as if for land clearing. We encountered Mamani phase ceramics in several locations, but unlike Browman's deep cuts we did not find his earlier Llusco or Condori ceramics complexes. The Llusco area that is from the Mamani Chiripa phase might be a enclose like a Yayamama temple that has been encountered by Karen and Sergio Chavez. The Chiripa people seemed to have maintained their own identity throughout their own Formative power as well as under the Tiwanakota. The Tiw 4 pottery is distinctly different from that at Tiwanaku during the same time (Alconini personal communication), suggesting local production and probably meaning in the styles. There are a series of rough monoliths found around the site.

The ones with carvings have frogs and snakes, reflecting the fertility emphasis during the formative times in the iconography. While more analytical work needs to be done on the ritual offerings we excavated, their evidence suggests that this area in front of the monticulo continued to be a sacred spot for many years.

There are some areas on the site that still could yield domestic areas, these will probably be either farther away from the central monticulo or much closer. Both of these areas should be investigated in the future. Much of the area near the mound has been destroyed due to the hacienda buildings and use of the archaeological soils. Of the areas that were opened up this year, expansion in and around Santiago 1, Sonia Alconini's excavations should be investigated. We plan to continue to analyze the material we have collected and will begin to publish on aspects of the material over the next several years.

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References

- Albarracín-Jordan, Juan and James E. Mathews
1990 *Asentimientos prehispánicos del valle de Tiwanaku*. Vol 1, Producciones Cima, La Paz.
- Bennett, Wendel
1936 Excavations in the Bolivian highlands in the southern Lake Titicaca Basin. *American Museum of Natural History, Anthropological Papers* 35(4):412-451, New York
- Bermann, Marc
1990 *Prehispanic households/empires at Lukurmata, Bolivia*, PhD dissertation, Department of Anthropology, University of Michigan.
1994 *Lukurmata, household archaeology in prehispanic Bolivia*, Princeton University Press, Princeton.
- Browman, David
1991 *The dynamics of the Chiripa Polity*, Congress of the Americanists, New Orleans, July 1991.
- Collins, M.B.
1975 Lithic technology as a means of processual inference. In E.H. Swanson (ed.) *Lithic Technology: Making and Using Stone Tools*, pp. 15-34. Mouton, The Hague.
- Ericson, J.E.
1984. *Toward the Analysis of Lithic Production Systems*. In J.E. Ericson and B.A. Purdy (eds.), *Prehistoric Quarries and Lithic Production*, pp. 1-10. Cambridge University Press, Cambridge.
- Kidder, Alfred
1956, *Diggings in the Titicaca Basin*. *University Museum Bulletin* 20(3), University of Pennsylvania, Philadelphia.
- Lennstrom, H. A. and C. A. Hastorf
1992 testing old wives' tales in paleoethnobotany: a comparison of bulk and scatter sampling schemes from Cancan Peru. *Journal of Archaeological Science* 19:205-229.

Mohr Chavez, Karen

1966, An analysis of the pottery of Chiripa, Bolivia: A problem in archaeological classification and inference. MA thesis, University of Pennsylvania, Philadelphia.

Toth, N., D. Clark and G. Ligabue

1992. The Last Stone Axe Makers. Scientific American, pp. 88-93, July 1992.

Appendix 1:

Members of the TAP team from Chiripa:

Facundo LLusco
Juan Quispe
Juan Alejo
Feliciano Huaricona
Pedro Marca
Eloy Loa
Pedro Huaricona
Antonio Callisaya
Emeterio Choquehuanca
Pablo Marca
Valentin Choquetarqui
Luis Tarqui
Isidro Huaricona
Alejandro Wilka
Andres Choquetarqui
Saturnino Llusco
Alfonso Loa
Silverio Huaricona
Ignacio Huaricona