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QUECHUA STAR NAMES

by
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CERTIFICATE

I Hereby Certify that the conditions of the Ordinance and Regulations concerning the submission of an M. Litt. thesis have been fulfilled by Mr. William F. Sullivan.

Supervisor

DECLARATION

I Hereby Declare that the present work has been composed by myself, and that, the research of which it is a record has been performed by myself.

This thesis embodies work which is being made public for the first time, and which has not been accepted previously for any degree.

William F. Sullivan

In loving memory
to my father

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CHAPTER ONE:

INTRODUCTION

I.1. AIMS

This thesis is the result of five months of ethnoastronomical research undertaken in northern Bolivia and southern Peru. The purpose of the research was to collect names for and lore about the stars from Quechua-speaking informants. The aims of this thesis are threefold: 1) To compile from fieldnotes a list of Quechua star names and corresponding lore and to identify these names in relation to Western astronomy. 2) To compare this list with material from the Chronicles and from the contemporary literature. 3) To look at the totality of the data in terms of a possible geometrical pattern, which may serve as a basis for further inquiries into the significance of the astronomical heritage of the Quechua Indians.

This thesis is not directly concerned with the sun, moon, or planets of the Quechua heavens. Nor is it meant in any sense as a study of Inca or Quechua calendrics, although, of course, all these subjects are interrelated. Neither is this thesis an attempt to compile all likely star identifications, but rather only to present those which were pointed out to me during fieldwork. Thus for example, certain stars identified by Urton -

especially some connected with the Western constellation Orion (1978a:159) - do not appear here, although there is every reason to suppose that the identifications are correct. Conversely, certain identifications not listed elsewhere, as for instance for the Large and Small Magellanic Clouds, appear here. What this thesis is, then, is a compilation of star names and star lore of the Quechuas based on my own fieldwork subsequently cross-checked with the available literature, both ancient and contemporary. The pattern which emerges from these identifications will be discussed, and a suggestion of its possible cosmological significance will be offered in the Conclusion.

I.2. THE SITES

The two areas where the bulk of the research was carried out were, 1) the Charasani region of northern Bolivia, and, 2) Chinceru and environs in southern Peru. Charasani (Department Bautista Saavedra) lies about sixty miles east of Lake Titicaca in the sierra where the altiplano begins to break up and fall away towards the jungle. Situated at about 3500 meters midway up the slopes of a deep valley, Charasani, with a population of approximately 2000 people, is the homeland of the Callawaya Indians, famous throughout the Andes as herbalists (Bolton:201) and reputed to have been the healers to the Inca court. (Avila: 104; Oblitas Poblete, 1963:15) The Indians in the area (of whom the Callawaya are a minority, perhaps 20%) speak Quechua, although the Callawaya themselves, who travel extensively, are generally bilingual in both Quechua and Aymara. In addition

they speak their own "secret" language.* The women of the region produce weavings ranked among the very finest traditions in all Bolivia. The most important crops are papas and okas, grown on the high slopes, and wheat and maize cultivated and irrigated several thousand feet below in the bottomlands by the rivers. Llamas are pastured above 14,000 feet, and sheep, horses, donkeys and pigs are kept at the lower altitudes. The Charasani region is one of great natural beauty with plunging valleys, fast rivers, large stands of eucalyptus and a spectacular range of nevadas dominated by Apu Acamani. The field data from this region were collected in Charasani and in the outlying village of Kaata. La Paz lies twelve hours away by truck.

Chincheru and outlying communities around Lake Piuray stand at about 3700 meters, but unlike the Charasani region, Chincheru looks out upon a wide plain, stretching away many miles to the west in the direction of Macchu Picchu. The most important crops are papas and okas and beans. The livestock pattern is the same as outlined for Charasani. Chincheru contains the site of a former Inca ceremonial center replete with altars, thrones, and a chinkana, all hewn from the living rock as well as hundreds of meters of massive agricultural terrace walls of the Inca style. A well known (and consequently touristic) market takes place each Sunday. There are about 5000 people in Chincheru and environs. Cusco is 35 kilometers or about two hours away by truck.

* Oblitas Poblete (1968:passim) believes this language to have been the legendary "high Quechua" attributed to the Inca nobility, but Parker and Stark (1972:passim) have more convincingly shown this language to be a combination of Pukina vocabulary and Quechua grammar. The language appears to have been created to guard medical trade secrets for transmission from father to son among the Callawaya.

I.3. METHODOLOGY

The methodology for gathering field data was straightforward. After ascertaining the identity of likely informants, often with the help of the local storekeeper or schoolteacher, I approached potential informants formally, that is with gifts of coca and tobacco, explaining that I was a student of Quechua and wished to learn more about the Quechua way of life. If the informant seemed interested in helping, I would express an interest in learning something about constellations.

("Haqay hanag pachapi qoyllurkuna sutiyochu, mamachu?")

Once what I was looking for was established, it remained to set up a time for viewing the night skies, once (at least) in the evening and, when possible, again before dawn. I simply asked informants to identify stars and groups, and when they stopped, I would ask if they knew any further terms. Then I would ask if the informants knew any stories about the various groupings and also if they observed any groups for purposes of divination. Finally, I asked all the informants who had taught them about the stars. Interestingly, they all answered, "los abuelos."

The results of the fieldwork are summarized in table form in Appendices 1a and 1b. Appendix 1a lists all the asterisms identified, horizontally, at the top of the page, giving the Western name first, followed by the Quechua equivalent (or equivalents). Vertically, at the left of the table, run numbers from 1 to 21 - each number representing an informant. In the boxes which cover the page are indicated which groupings were identified by each informant (reading horizontally). At the

bottom of the page, the total number of times each grouping was identified by all informants is tallied. Appendix 1b matches the numbers for informants in Appendix 1a with the name, place of residence, occupation, and age of each informant. The reader will note that in addition to the Charasani and Chinchero areas, three informants came from Amparaes, above Calca, and one from Pocona, 80 miles south of Cochabamba in Bolivia.

I.4. THEORETICAL BACKGROUND TO THE RESEARCH

In recent years a number of developments, particularly in archaeology, but also in the history of science and anthropology, have necessitated a reappraisal of the level of intellectual achievement of "primitive man." This reappraisal has been triggered by a growing body of work which indicates that from the remotest antiquity man has been sufficiently interested in the night heavens to make and record systematic observations of them.

Marshak (1972) has suggested that as early as 35,000B.C. men were making regular observations of lunar phases and recording these observations - often for two or three years at a time - by means of intricate engravings on bone. The term archaeoastronomy has recently been coined to describe the marriage of engineering, astronomy and high speed computing by means of which the alignments of ancient monuments are gathered and fed into high speed computers which in turn match the data with the positions of heavenly bodies for any date. This technique was put to the test by Hawkins and White (Stonehenge Decoded, 1965) with spectacular results. They demonstrated that megalithic man was involved in

scientifically precise astronomical observations of heretofore unimagined complexity. The early classic work of Lockyer (1901), carried on by Thom (1954), both of whom had labored under a considerable burden of scepticism, was vindicated. Baity (1973) has produced an extremely valuable bibliography, "Archaeoastronomy and Ethnoastronomy So Far." The large number of titles since 1960 listed therein suggests that archaeoastronomy and ethnoastronomy are ideas whose time has come.

Ever since Max Muller's solar interpretation of mythology fell into disfavor, -thanks in no small measure to the implacable opposition of Andrew Lang of the University of St. Andrews (Dorson:26) - and also since at about the same time and for the same reasons Jeremias' astronomical interpretation of myth was discredited, (Ackerman:92-94) the attempt to link myth and the movements of the heavens has met with stony rejection from every quarter of academia. But now, as archaeoastronomy revolutionizes our understanding of "primitive man's" observational capabilities, the possibility of the existence of a bona fide relationship between myth and astronomy is once again being taken seriously. The seminal work in this enquiry has been done by de Santillana and von Dechend, who, in their study Hamlet's Mill, explore the thesis that myth on one level is a technical language to describe astronomical observation.

I.5. LITERATURE ON QUECHUA ASTRONOMY

The literature treating Quechua astronomy is limited. Until recently the Chronicles have remained almost the only

reliable source. A good deal of the early work, as for example that of Hagar (1900), suffered from a lack of data and thus relied on fuzzy assumptions on the correspondences of Old and New World astronomies. The most important early work was done by Lehmann-Nitsche in his "Coricancha", an extensive study of Quechua astronomy. This work is especially valuable for its wealth of references to the Chronicles, lexicons, and early secondary literature not easily obtainable outside South America, but the work suffers from a lack of contact with reliable ethnoastronomical data, and, for that reason, many of Lehmann-Nitsche's identifications for stars named in the Chronicles are faulty, not in the least part because Lehmann-Nitsche did not understand that the Quechuas have names for numerous dark spots in the heavens. (vide infra) Nordenskiöld's pioneering work on astronomical quipus will be dealt with later.

At present three men are involved in the attempt to fathom Quechua astronomy. On the archaeoastronomical side, Anthony Aveni (1979) has shown certain unique techniques of Inca horizon astronomy, including a zenith-sunrise, anti-zenith-sunset line. He has worked closely with Zuidema (1976, 1977, 1978), who has applied his extensive knowledge of the Chronicles and the Inca ceque system to achieve important insights into the Inca calendar. Finally, Gary Urton (1978a,b) has carried out ethnoastronomical researches in the Department of Cusco and has made clear the importance of "black constellations" in Quechua folk astronomy. (1978b:39)* His article on the celestial llama, co-authored with Zuidema (1976) represents

*As of this writing we have not been able to acquire a copy of Urton's dissertation, The Astronomical System of a Community in the Peruvian Andes. (University of Illinois, 1978/9)

the most important ethnoastronomical work yet done on Quechua astronomy.

Two further works deserve mention. The first is Pucher's article on pre-Columbian Quechua and Aymara astronomy (1948). As far as I am aware, Pucher is the first modern writer not only to understand the role of "black constellations" in Quechua astronomy - what he call a "zodiaco negro...las manchas de la Via Láctea," - but also to place the constellation llama in the Milky Way as a large black area. (Pucher:4) The second work is Tony Morrison's study of the Nazca lines along with similar lines in Bolivia and the storied lines of Cusco, better known as the ceque system. He shows that Hawkins' data on Nazca yields no easy conclusions to indicate the lines were simple astronomical alignments, although the data do show that two mounds of the Great Rectangle do align with the rising Pleiades for around 600 A.D. (p. 48) . By exploring other explanations for the Andean lines, he shows the difficulties inherent in sorting out Andean cosmological thinking.

The present study, carried out in Boliva and on sites in the Department of Cusco, confirms and in a few cases augments the basic findings of Urton, that is in terms of the names of groups of stars, thus pointing to the probability of a fairly homogeneous and quite widespread Andean folk astronomy. It is becoming increasingly clear that if we wish to understand so-called "primitive societies", we must be prepared to come to grips with their investigations into the movements of the heavens. It is with this understanding that the present research was undertaken. Michael Coe, with reference to

Meso-American Indians, has stated the proposition succinctly:

I am convinced there is still much to be learned from modern ethnoastronomical research on these peoples, particularly on those who are still relatively isolated from the processes of Ladinoization. The fragmentary data suggest that many groups retain native constellations and names for the bright stars, and this is an area which sorely needs further research. (Coe:13)

* * *

CHAPTER TWO:

QUECHUA STAR NAMES

II.1 INTRODUCTORY: IDEAS ABOUT STARS

The contemporary Quechuas have a rich and varied star lore. Judging from the Spanish Chronicles, so likewise did the Incas. Wiraqocha, we are told, created in one stroke the sun, the moon and the stars, and bade them come forth from Lake Titicaca. (Molina:5; Sarmiento:33; Betanzos:9) It is difficult to exaggerate the sense of awe or the devoted observation which the night heavens inspired in the Inca mind. Avila says:

En la antigüedad, una parte de la gente
rendía culto a estas estrellas grandes.
"Ellas crean, mandan," decían. Otros
veneraban a estos huacas cuando ya aparecían;
pasaban la noche sin dormir ningún instante:
"Desde aquí voy a hazer que venza," afirmaban.
(Avila:125)

We have some idea of the significance of the phrase, "Ellas crean, mandan," from the work of other Chroniclers. Acosta, for example, explains:

Atribuían [los indios] a diversas estrellas
diversas oficios, y adorábanlas los que tenían
necesidad de su favor;...Y, generalmente,
de todos los animales y aves que hay en la
tierra, creyeron que hubiese un semejante en
el cielo, a cuyo cargo estaba su procreación
y aumento. (p. 143)

Cobo affirms, "En suma, de cada especie de animales
conocían una estrella en el cielo, por donde son muchas las

que adoraban y tenían puestos nombres y aplicados sacrificios..."

(T.III:367) And the Anonymous Chronicler describes similar ideas:

Después dieron algunos naciones en decir que en cada uno de estos dioses o estrellas había las ideas y modelos de aquellas cosas que tenían cuidado y oficio; y así, decían que tal estrella tenía figura cordero, porque era su oficio guardar y conservar las ovejas; tal estrella figura de león; tal estrella figura de serpiente. Y que convenía que acá en la tierra se hiciesen estatuas o imágenes de aquellas ideas o cosas, según el oficio que tenía cada uno. Y por esta vía comenzaron los ídolos de piedra, de madera, de oro, plata, etc., que decían ellos representar a los dioses que estaban en el cielo; aunque después que también aquellos eran las mismas ideas. (Anonima:154)

Inca attitudes towards the stars could rightly be termed platonic: each beast had his modelo or prototype in the heavens above, which in turn had an oficio towards its beast in the world below. Avila records a specific example of a man being granted great favors by the celestial llama (called Yacana), as a result of which, "...en el mismo sitio que cayó Yacana, allí lo reverenció...Afirmar que visiones como la que contamos se presentaron ante muchas personas en esta provincia." (pp. 124-25)

Cobo shows that the identification of stars with beings went beyond the animal world to the human world:

Algunos creían que, salida el alma del cuerpo, si había vivido bien, se hacía estrella, y que de allí procedían todas las del cielo, y que allí gozaban de gloria." (T.III:353)

Belief that men have been placed among the stars lives on today in Quechua folk stories. One such story appears in Appendix 2. Here the informant spoke of five brothers who were turned into the Southern Cross and Coalsack. The notion persists today among the Quechuas that each man has his star.

In his remarkable autobiography, Gregorio Condori Mamani says of his early failure to find work in Cusco, "Seguropunin, estrellay, mana Qosqoman muchachomanta llank'ag chayamunay-pagchu karan..." ("It is beyond doubt that, as a boy, it was my star that I was not to reach Cusco for work.") (Valderrama Fernandez, ed., 1977:20) Gow and Condori have found similar contemporary ideas, fixed in such an unmistakably Andean context - that of the Apus - as to alleviate any suspicion that these ideas are merely the product of syncretism with Christian and Western thinking:

La vida virtuosa y pobre simbolizada por el Ausangate puede ser el modelo y aún la realidad de estos hombres que escogen darle culto como a su "estrella," pues hay una afinidad entre el destino de los hombres, y la vida de los apus... Antes, por ejemplo, el altomisa podía decir a un hombre: "Tu estrella es el Apu Estrella Kayankati; tu vida puede llegar a ser igual a su vida, si satisfaces sus deseos y obedeces sus leyes." (p. 39)

Once again we find ideas which may best be termed platonic; In the Timaeus Plato says, "And when he [the Demiurge] had compounded the whole, he divided it into souls equal in number with the stars, and distributed them, each soul to its several star." (Cornford, ed.:142)

As we turn now to an examination of the contents of the Quechua heavens, it will be helpful to bear in mind the material we have just examined. According to the Chronicles, and from what we can glean from contemporary ethnographic material, the Quechuas have always had what can only be characterized as a mystical relationship with the starry world. Like all "archaic" people, the Quechuas appear to live by the timeless adage, "As above, so below." In the material which follows we will find a world populated by men and beasts, crossed

by rivers, bounded by seas and pierced by mountains; in short, a world where the genius of the Quechua people is very much alive.

II.2. THE CIRCUMPOLAR STARS

II.2.a. The Large and Small Magellanic Clouds Quechua: wajus gana and altos gana; or gasa and holq'e.

In Bolivia, in the area of Charasani, these two, large, gaseous nebulae (hereinafter referred to as LMC and SMC) were called altos gana, referring to the SMC, and wajus gana, in reference to the LMC. I have found no satisfactory definition for the term gana, and informants told me that the term refers to the two celestial objects and nothing more. Perhaps the word gana is a dialectical variation of the Cusco Quechua gasa ("frost, ice"), which is the term used in the Department of Cusco to identify the LMC.

The designations altos and wajus do not apply, as might be expected, to the relative size of the two "clouds", but rather to the fact that the SMC, though a few degrees closer to the celestial pole than the LMC, nonetheless rises considerably before the LMC and thus appears higher in the sky.

Working from this differentiation of high and low, the Indians then use the differences in the perceived brightnesses of the two "clouds" to divine the amount of rainfall for the coming planting season. If altos gana is brighter, this means more rain than the norm will fall, and thus one should concentrate his efforts on planting potatoes, which like the moisture and which grow at the higher elevations: altos gana for altos chakras. In very wet weather, the bottomland by the

rivers where wheat and maize are cultivated would become waterlogged.

Conversely, if wajus (bajo) gana is brighter, then one should concentrate on the crops grown low by the river, because brightness in this LMC means less rain, and hence bad conditions for potatoes. The informants who identified these "clouds" said that they take crop decisions on whether to concentrate on potatoes or corn on the basis of the appearance of altos and wajus gana.

It appears, then, that the Indians use the relative rising positions of these two "clouds" as a mnemonic device, that is to connect the higher "cloud" with the higher crop and vice versa. Further, it is possible that ideas concerning the relative prestige value of potatoes versus maize under the Incas - maize being the center of sacred ritual, while the potato was taken for granted (Murra:377-94) - have also contributed to the present identifications. Thus the larger and more luminous "cloud" is connected with the more important crop, maize.

In Peru, the LMC was identified as gasa ("frost"), while the SMC was known as holq'ie ("tadpole"). Here the divinatory use of the two groups was to predict the coming of frosts, which knowledge helps to decide when to set out papas at night for the making of ch'uñu. Presumably this is why the LMC is called "frost". It begins rising before dawn at about the onset of the cold season in May. If the "clouds" appear somewhat obscured, that is not bright and sharp, the chance of frost is less. If on the other hand, they appear clear in the night sky, this is a sure sign of frost. It appears, therefore, that the Quechuas around Chinchero use the LMC and

SMC as a measure of atmospheric conditions related to the rate of nocturnal radiational cooling. The more moisture lingering in the atmosphere (it being the end of the rainy season) in the form of haze, the less will be the earth's heat loss through infra-red radiation into the upper atmosphere, and hence also the less bright will the "clouds" appear. When, however, the sky is completely clear, and the LMC and SMC are at their brightest, the earth will lose heat rapidly. Therefore, it is time to make ch'uñu.*

II.2.b. The Southern Cross and the Coalsack
Quechua: cruz; huch'uy cruz; huch'uy cruz
calvario; lluthu cruz;
and:
lluthu; cuntur; mama mircu; mal ladrón.

At the present time the Southern Cross is known by a number of names, all containing the word cruz: cruz, huch'uy cruz, huch'uy cruz calvario, and lluthu cruz. This final term derives from the name lluthu ("partridge") given by informants in the Department of Cusco to the large, black spot in the Southern Cross known in Western astronomy as the Coalsack. (In the Charasani region, the Coalsack was called cuntur.) The Coalsack is a large cloud of interstellar dust which blocks out the background "glow" from the portion of the universe behind it. Avila himself identifies it: "A la mancha oscura que va un poco adelante de esta sombra que llaman Yacana, le dan el nombre Yutu." (p. 125) As we shall

*

See fig. 1, p. 16 for a rendition of LMC and SMC along with the other circumpolar constellations.

Circumpolar Stars

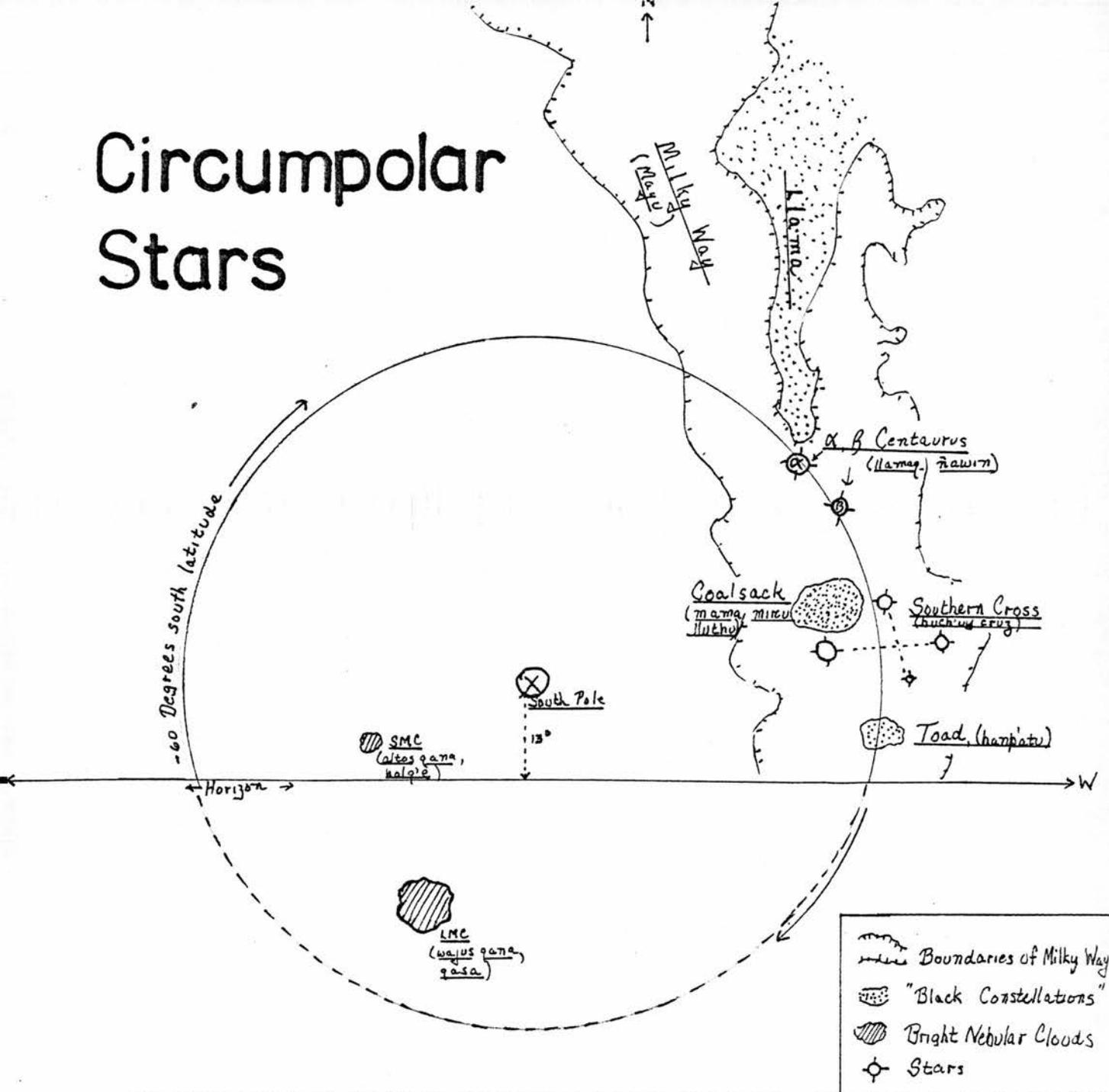


FIGURE 1: The southern circumpolar stars as they appear in the latitude of Cusco at midnight on the winter (June) solstice.

see below (in II.3.b.), Yacana refers to an enormous portion of the Milky Way which stretches from epsilon Scorpio near the ecliptic, all the way down to alpha, beta Centaurus, the "eyes of the llama" (II.2.d.), themselves circumpolar with the Southern Cross and rising after it; it is for this reason that Avila places Yutu "un poco adelante" of Yacana. (See fig. 1, p. 16.) The evidence is clear that Avila's Yutu is identical with the contemporary lluthu, the Coalsack in the Southern Cross.

At this juncture, before pursuing additional notions past and present concerning the Coalsack, it might be well to return for a moment to the Southern Cross and to take note of just how the Quechuas use the word cruz in an astronomical context. In the first place, the Quechuas use the word cruz in identifying a number of constellations. For example, I myself found cruz calvario for the region of the skies occupied by stars in the tail of the Western Scorpio.(II.4.b) Urton's informants in Sonqo mentioned hatun cruz, composed of the stars Sirius, Procyon, Betelgeuse, and Rigel. (1978b:35)

Now, Lehmann-Nitsche has noted the astronomical use of the term chacana among numerous chroniclers - Acosta, Cabello Balboa, Cobo, Morua, and Polo de Ondegardo (1928:4,7,10,13, 15) - but these writers gave no definite identification for the term. We do know, however, that according to Holguin, chacana means "escalera", from chaca, "puente". (p. 89) Now, it will be noted that just as the word chacana embraces the idea of crossing (from chaca, "bridge") and ascending to a higher level, as by an "escalera", so also does the Spanish word cruz in its denotation convey the sense of crossing, while in its connotation it suggests the idea of ascending to a higher, perhaps spiritual level, an idea to which we shall

return in section II.4.b. when discussing cruz calvario.

Zuidema and Urton have concluded that the widespread use of the term cruz in current Quechua astronomy probably reflects an equally widespread and semantically similar usage of the term chacana in Inca times. (p. 63) If this conclusion is correct, then it may explain why so many chroniclers had heard of chacana, but could not identify it: simply, it was not one, but many.

To summarize, it appears that for certain places in the sky, the Quechuas wish to convey the idea of some sort of junction or crossroads. Where once the term chacana served this function, its sense now appears to have been subsumed by the term cruz a word capable of transmitting the same ideas. It remains only to be pointed out that huch'uy cruz, or the Southern Cross, occupies an area of the heavens where the Milky Way crosses the circumpolar region.

Returning now to the discussion of the Coalsack as lluthu, I will now introduce the story of the "Five Brothers Lluthu," which I collected in Chinchero. What follows is a translation of the original Quechua which can be found in Appendix 2, along with data on the informant.

There once lived Juana Lluthu, without father or mother, an orphan, and also Santiago Cruz, also without parents. They were both humble folk, poor and with no family. And so they met and married. From this union came five babes - cinco hijos. Of the five, there was one who was bad ["locu"]. And this bad one showed absolutely no respect for his father or mother or even the local authorities ... After a time, two of the brothers died, [The sense of the text becomes a bit garbled here as it appears that the informant lost count of the deaths.] and so there were just three left. [Three good ones?] Of these three, one married, but he soon died, and the other [good?] brother died. And so now there were just two. One was married and one, the bad one, was single. Then the married brother died and left his widow. And so they lived together.

In time the bad brother died, followed soon by his woman. And they went on high and when they arrived, they were turned into stars. Este altuman ripusqaku chayqa inviértikapuranku estrellaman, tukupusqaku ch'askaman. The bad brother was turned into lluthu. The others are up there, stars called lluthu cruz; and on the left hand side lies the lluthu.

I later had the opportunity to record a second version of this story from the same informant and include the most relevant portion below. The entire story is also in Appendix 2.

The four dead brothers were turned into stars, into a cross, and the bad brother became lluthu. Right? There are four stars in the cross and on the left hand side is lluthu.

Thus far we have seen that the Coalsack can be identified both now and from Conquest times as lluthu, the partridge; and further we have found that there exists today in the Department of Cusco lore about lluthu characterizing this dark spot as a bad, "locu" character. With the help of this story, I would now like to introduce that most remarkable of all Quechua star names, mama mircu, or "he who eats his mother and father." Although this name is mentioned by numerous chroniclers, as for example Cobo (T.III:367), no identification in Western astronomy is ever offered.

What we do know about mama mircu comes from Holguin, who lists:

Mama mircu. Vnas estrellas caue el cruzero. (p. 225)

and

Mirccuni. Comer a su padre o madre, que por ser peccado estupendo le dieron vocablo proprio y en el cielo fingieron vna estrella contraria a este peccado que influye contra lo que lo hazen que llaman Maman mirccuc cuyllur, que dize, Estrella de los que comen a su padre o madre. (p. 242)

I believe that mama mircu is another name for the Coalsack. There are three parallels between the story of the brothers Lluthu and Holguin's description of mama mircu.

First, both versions refer to an object which is near the Southern Cross - "el cruzero" in Holguin, and lluthu cruz in the story by Pablo Paucar. Second, both stories identify this object as an offensive character, formerly a man, now living in the heavens. Third, both stories are about a character whose chief feature is his opposition to good social order. In the lluthu story, the character, "showed absolutely no respect for his father or mother, or even the local authorities." In the second case, one could scarcely find, in a society where the highest social responsibility is to feed the ancestors, a more complete reversal of the social order than to eat one's forebears.

Nor does this exhaust the evidence. Zuidema has identified the Coalsack with mama mircu (1973:25) although unfortunately without including his reasons. Lira, in his study of Quechua healing, tells us of a "star" called "mal ladrón" whom the people watch to see if, "...el mal ladrón está lejos o cerca de la cruz." (1946:18) In a footnote Lira adds that the "cruz" referred to is the Southern Cross. This piece of information supports the view that, whatever it is called, the Coalsack is associated in the Quechua mind with a "bent", or sociopathic character.

Finally, I believe there is an explanation why a direct identification of mama mircu as the Coalsack has been hard to come by. Both Holguin and the chroniclers (as well as Lira and his "mal ladrón") speak of it as if it were a star. Holguin knew that mama mircu was near the Southern Cross, but failed to identify it, because he was looking for a star. With the exception of Avila (p. 124-5) none of the early sources and few modern commentators have understood the role

of "black constellations," that is the naming of celestial dark spots, in Quechua astronomy. So inexhaustible an investigator as Lehmann-Nitsche never understood the role of the "black constellations" in Quechua astronomy, in my opinion because he was working from sources which were equally in the dark and because he himself lacked field contact with the Quechua heavens.

Only relatively recently has the record been set straight, by the work of Pucher (p.4) and most thoroughly by Zuidema and Urton (p.108), and Urton (1978b:34). My own findings only corroborate their discovery of the important place of the "black constellations" in Quechua astronomy. Given, then, that with the exception of Avila, the early sources were unaware of the extensive use by the Quechuas of celestial dark spots in their astronomy, it becomes comprehensible why no positive identification for mama mircu could have been offered, even though it was known to be near the Southern Cross. Lira likewise appears to have assumed that "mal ladrón", being in the sky could only have been a star, and consequently he too, even knowing that it was near the Southern Cross, could not identify it. Fortunately we have the story of the Brothers Lluthu, with its positive identification of the Coalsack as a sociopathic character turned into a celestial object near the Southern Cross. I believe the weight of the evidence supports the view that mama mircu was indeed the Coalsack.

To sum up, we have discerned a number of names for the Southern Cross, each containing the word cruz. The word cruz is widely used in contemporary Quechua astronomy for a number of objects, apparently in the same way that the term

chacana was used before the Conquest. The Coalsack, a dark spot in the Southern Cross is currently known as lluthu in the area around Chincheru, and as cuntur in Bolivia. Before the conquest the Coalsack was known to Avila as Yutu. Finally, Holguin's mama mircu appears to have been another name for the Coalsack.

II.2.c. The Toad
Quechua: hanp'atu

Near the Southern Cross lies another black spot, known to the Quechuas in Chincheru as hanp'atu, the toad. (fig. 1, p. 16) Although there is no direct reference to a celestial toad in the Chronicles, it will be remembered that, according to various Chroniclers, there was a star for every animal. Urton also found the hanp'atu near the Southern Cross. (1978a:160) In a monograph, "El sapo la culebra y la rana en el Folklore actual de la Pampa de Anta," Demetrio Roca Wallparimachi describes the celestial toad as follows: "La via láctea es conocida con el nombre de qasa mayu (río de la helada); al final de este río reconocen una mancha oscura que representa el sapo en el cielo." (p. 59) Since the Milky Way does not "end", one assumes the author means the place where the Milky Way disappears at the horizon. The hanp'atu lies in the Milky Way near the southern horizon.

Before moving on to the final group of circumpolar stars, I would like here to emphasize a point that will be made evident later, in the Conclusion, namely that the Quechuas are afraid of toads. Urton says, "Catherine Wagner (personal communication) informs me that toads are greatly loathed and feared in Sonqo, and I suspect that there exists a rich mythological tradition around this sinister celestial

toad." (1978:37) I myself heard a story in Cusco from a young man who worked as an interpreter for some anthropologists in Písaq. He was clearly terrified of toads. He told me a long, gruesome tale about a man who lived alone and who every day appeared thinner and more haggard. One morning the man was found dead, and when the neighbors came to clear his room, they found an enormous toad, bloated on human blood, under the dead man's bed.

One source for this fear may be the fact that the male Andean toad is said to become extremely aggressive during the short mating season and reportedly will sink his claws deeply into anyone who chances to molest him during copulation, even springing three meters. It is said that once the claws are dug in, one can remove the toad only by burning it off with a red-hot coal. (Roca Wallparimachi:43-44)

Another reason to fear the toad may be connected to the fact that toads are a standard item in the pharmacopoeia of magic, as anyone who has strolled the markets of La Paz or Cusco can attest. The fear of toads, of being bitten, of being fed a potion with toad in it, all this may stem from the fact that the common toad exudes a poison containing bufotenine, "a hallucinogenic drug which has dangerous cardiovascular effects in man and is usable only in low doses." (Dobkins de Rios:148-49) A drug which acts dangerously and directly on the heart could indeed be termed a drug of fear.

II.2.d. Alpha and Beta Centaurus
Quechua: llamaq ñawin

As the table in Appendix 1a shows, alpha, beta Centaurus, called llamaq ñawin ("the eyes of the llama") was an asterism most familiar to my informants. Llamaq ñawin (simply llama ñawi in Bolivia) lie at the southern extremity of the enormous "black constellation", llama, which dominates the Milky Way from the ecliptic to the southern circumpolar belt, of which alpha, beta Centaurus are a conspicuous part.

Llamaq ñawin, together with the lluthu cruz, which rises first, clearly circumscribe the southern polar region of the heavens, devoid in the southern hemisphere of any bright star to mark the pole. Of the entire constellation of the llama, which he calls Yacana, and which includes llamaq ñawin at the southernmost point, Avila says, "Dicen que este Yacana baja a la media noche, cuando no es posible que los sientan ni vean y bebe del mar toda el agua. Dicen que si no bebiera esa agua, el mundo entero quedaría sepultado." (p. 125) This passage vividly describes the nightly journey of alpha, beta Centaurus, as they swing round the pole and disappear under the horizon.

II.2.e. Summary of the Circumpolar Stars

We have found that the Quechuas have names for a number of circumpolar groups. The Large and Small Magellanic Clouds are wajus and altos gana, in Charasani, and qasa and holq'e in the Chinchero region. The Southern Cross is known by a number of names, including huch'uy cruz and lluthu cruz. The contiguous Coalsack, a "black constellation", is called

lluthu in the Department of Cusco, cuntur in the Charasani region. Lluthu is associated with a sociopathic character, as was, in Inca times, mama mircu, probably another name for the Coalsack. Another black spot, known as hanp'atu, is also associated with horrific stories. Finally, llamaq ñawin, too, is linked to frightening lore - the idea of a potential world-destroying flood. Therefore, it can be said that with the exception of the Magellanic Clouds, used for the divination of frost or rain, the circumpolar constellations of the Quechua firmament are connected with stories whose common thread is fear. In the concluding section we shall suggest an astronomical explanation for this fear.

II.3. GROUPS OF THE MILKY WAY

II.3.a. The Milky Way Quechua: mayu; ñan

The Quechuas call the Milky Way mayu ("river") and, less frequently, ñan ("road, way"). All but two informants identified it, and those who did not, I suspect, forgot to mention it simply because it is so obvious. Cobo refers to the existence of the celestial river in conquest times. "Decían más, que por medio del cielo atravezaba un río muy grande, el cual señalaban aquella cinta blanca que vemos desde aca abajo, llamada Via Láctea." (T.III:368)*

*For a diagram of the Milky Way and the other groups associated with it see Figure 2, p. 26.

Groups of the Milky Way

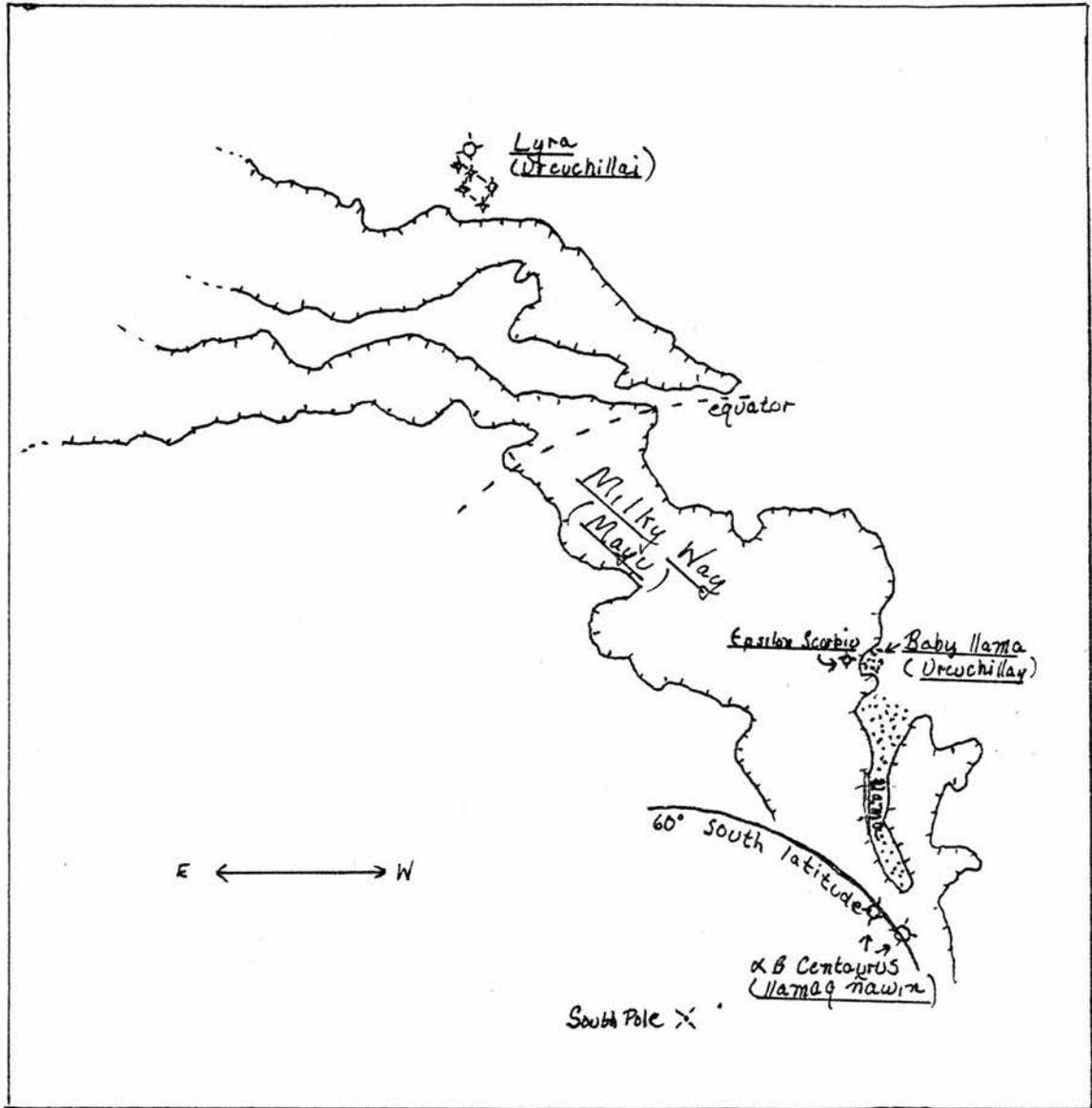


FIGURE 2: In this figure the Milky Way appears as it would, again, on midnight at June solstice in the latitude of Cusco. The viewer is facing south, and to see Lyra without moving he would be obliged to bend over backwards, past the zenith.

There is extensive lore about the Milky Way, connecting it to Quechua beliefs about the transmigration of souls and we will deal with it at length in Section II.4.c. Here I will offer a single example collected by me from Simon Quispe, 16 years old, the son of Luis Quispe, informant 21.

Bueno, así lo que sabemos, no? De cuento dice que cuando nos morimos hay camino, dicen que ... un arco iris, no hay ciertu, parece arco iris en el cielo de estrellas ... ese se llama este Río Jordan ... ese se llama dice. Y por allí no pueden pasar las almas y dice cuando mueren los perros así a nuestro espíritu y el dice un cabello que nos hace pasar a ese río que le dicen. Bueno he salido con mi tata abuelo por allí todavía. Tienen la idea. Así es.

Although this passage is a bit choppy, several points are clear, namely that the spirit of the dead man must cross a river of stars with the help of dogs. We shall later see that these ideas are widely held among the Quechuas. When I asked Simon just where this river was, he took me outside and indicated the Milky Way.

II.3.b. The Llama and Her Calf
Quechua: llama; Yacana; Catachillay(Aymara?)

Informants in both Peru and Bolivia identified the llama as an enormous "black constellation" within the Milky Way, extending from epsilon Scorpio to alpha, beta Centaurus, the "eyes of the llama." They described this area as a llama facing south and walking. When one views the llama, one is looking at its back, that is as if one were looking down from above. (See fig. 3, p.28.) Avila refers to,

Como alguien llamado Yacana baja desde el mundo de arriba (cielo) para beber agua... Dicen que este Yacana al que hemos nombrado es como una sombra del llama, un doble de este animal que camina por el centro del cielo, pues es una oscuridad del cielo. Nosotros, los hombres

The Celestial Llama

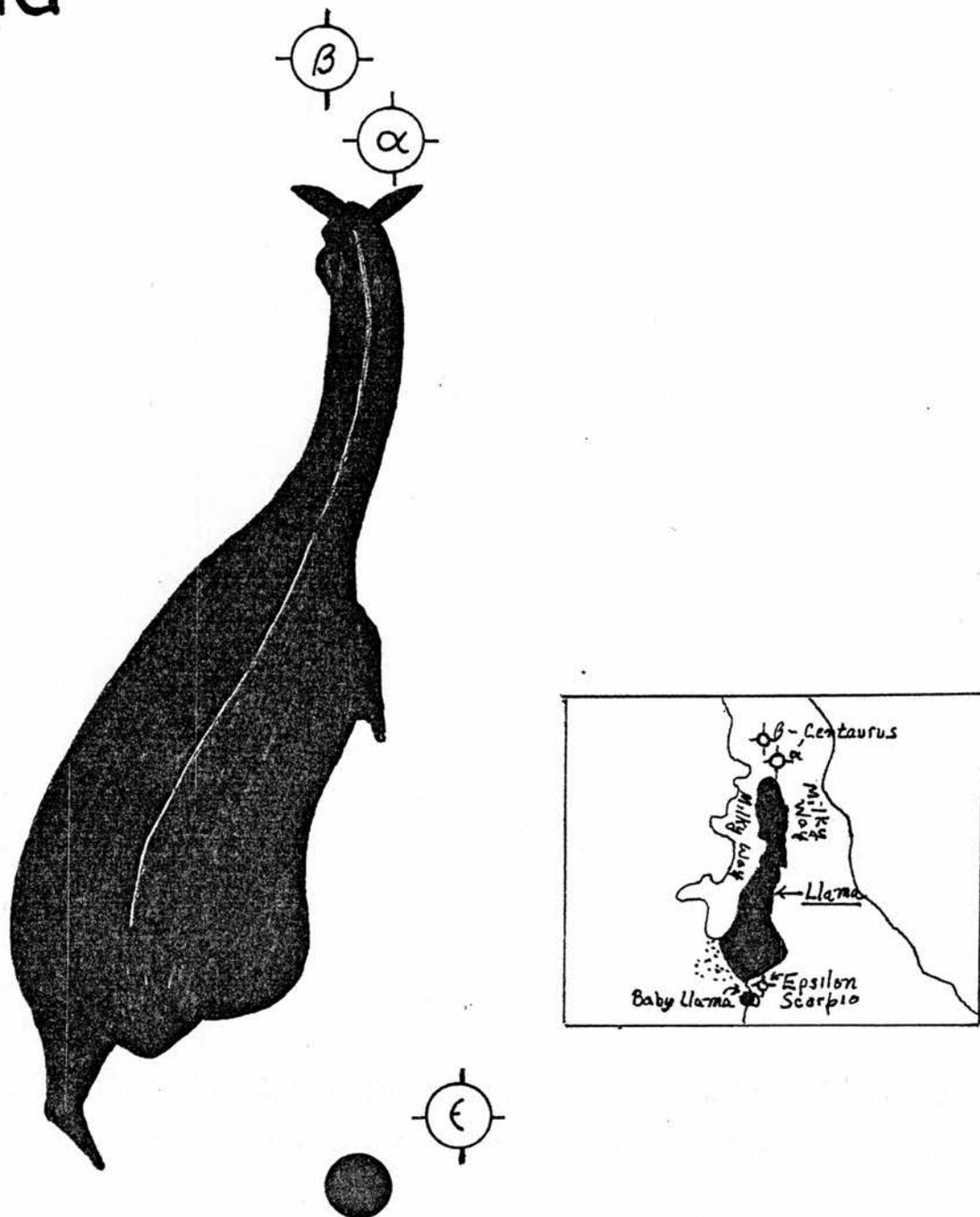


FIGURE 3: The celestial llama, "walking south". Of this "black constellation" Avila said, "...baja a la media noche, cuando no es posible que lo sientan ni vean y bebe del mar toda el agua. Dicen que si no bebiera esa agua, el mundo entero quedaria sepultado." In the above figure, alpha, beta Centaurus lie at the head of the llama, and epsilon Scorpio and the baby llama (in black), behind.

también, si, lo vemos venir así, oscuro. Dicen que este Yacana (al llegar a la tierra) anda por debajo de los ríos. Es muy grande, sí; más negro que el cielo nocturno avanza, su cuello con dos ojos [alpha, beta Centaurus] y muy largo viene. Los hombres lo nombran: Yacana...

Dicen que este Yacana baja a la media noche cuando no es posible que lo sientan ni vean y bebe del mar toda el agua. Dicen que si no bebiera esa agua, el mundo entero quedaría sepultado. (pp. 124-25)

While Avila's description remains the clearest, other chroniclers also made reference to a celestial llama with calf. Garcilaso, for example, places it in the Milky Way.

En la vía que los astrólogos llaman láctea, en unas manchas negras que van por ella a la larga quisieron [los Incas] imaginar que había una figura de oveja [llama] con su cuerpo entero que estaba amamantando un cordero. A mí la querían mostrar, diciendo: "Ves allí la cabeza de la oveja, ves acullá la del cordero mamando, ves el cuerpo, brazos, y piernas del uno y del otro." Más yo no veía las figuras, sino las manchas, y debía de ser por no saberlas imaginar. (T.I, L.2,C.23,p.121)

As for the name of the constellation at the time of the conquest, Yacana aside, most of the Chronicles speak of Catachillay, as for example:

Y éstos [pastores] también hacían veneración á otra que anda cerca desta [constelación Lyra] y la llama CATACHILLAY que también es algo grande, y á otra más pequeña que anda junto á ella; las cuales fingían que era una llama con su cordero que procedían del URCUCHILLAY [ie constelación Lyra]. (Cobo T.III:366)

Martin de Morua (in Lehmann-Nitsche, 1928:13), Acosta (in Ibid:4), and Polo de Ondegardo (in Zuidema and Urton:62) all refer to "una oveja con un cordero," as Catachillay for the llama ("oveja") and for her calf, Ar/cy/chillay, Urcuchillay and Urcuchillay respectively. With the exception of Polo, the authors vary the spelling of the baby llama's name in order to differentiate it from the name for the constellation Lyra, the male llama. Thus we find in Morua: Urcuchillay =

Lyra, while Ar/cu/chillay = the baby llama; and in Acosta Urcuchillai = Lyra, while Urcuchillay = the calf. Further, whereas Holguin's definition for Catachillay is vague - "el cruze"(p.50) - Bertonio's definition for Catachilla from the Aymara clinches the identification: "una estrella nebulosa en la Vía Láctea o las estrellas sobre la nebulosa." (In Zuidema and Urton:64) Finally, Garcilaso tells us that the Aymara also paid homage to the celestial llama. (T.I,L.2, C.19,p.112)

The current work of Urton (1978a,b) and especially the groundbreaking article by Zuidema and Urton, "La constelación de la Llama en los Andes peruanos" show not only the current existence of the constellation in Quechua folk astronomy - called simply llama at present - but also they have offered an identification for the baby llama as a black spot near epsilon Scorpio, that is very near the junction of the Milky Way and the ecliptic.(p.99) We shall refer again to this identification when we discuss the constellation cruc calvario.

II.3.c. Lyra
Quechua: Urcuchillay

The inclusion of the constellation Lyra, known at the time of the Spanish conquest as Urcuchillay, represents the only exception herein to the rule of including only those groups which were pointed out by informants during my fieldwork. The reason for this exception is quite simple. Along with the Pleiades and the Milky Way, Lyra is the only asterism identified by chroniclers with its name in Western astronomy. It is included here under the section on the Milky Way not only

because of its close connection in the Chronicles with the constellation of the female llama - the Milky Way group par excellence - but also because it is visually just beside the Milky Way, on the west and to the north of the ecliptic.

Polo de Ondegardo, (in Zuidema and Urton:62), Acosta, Cabello de Balboa, Morúa (in Lehmann-Nitsche, 1928:4,7,13) and Cobo (T.III:366) all call Lyra Urcuchillay, and identify it as a male llama of many colors. Cobo's description is typical.

Todos los pastores respetaban y hacían sacrificios á la llamada de los astrólogos Lira /sic/, que ellos nombraban URCUCHILLAY, la cual decían que era un carnero de muchos colores que entendiá en la conservación del ganado. (T.III:366)

II.3.d. Summary of the Groups of the Milky Way

The Quechuas call the Milky Way mayu, or ñan. A "black constellation" in the Milky Way running from near the ecliptic at epsilon Scorpio to alpha, beta Centaurus is called llama, and in Inca times Catachillay and Yacana. Zuidema and Urton have identified the baby llama, alluded to in many Chronicles, as a dark spot located near epsilon Scorpio. Finally, the constellation Lyra, named in the Chronicles as Urcuchillay and described as a male llama, grazes by the banks of the celestial river.

II.4. THE STARS OF THE ECLIPTIC

II.4.a. The Pleiades Quechua: qoto; golqa

In the Andes the Pleiades do not fail to uphold their reputation as the world's most mythologized constellation.

Every Quechua I asked was able to identify the Pleiades. In Charasani it was known as goto, "Montón, cosas amontadas o superpuestas." (Lira, 1944:476) In the Department of Cusco it was called qolqa, "troje, granero, depósito de granos." (Ibid:460)

As in many parts of the world, (Andrée:1-19), the Quechuas use the Pleiades both to divine the weather and to divide the agricultural year. In the latitude of Cusco, the Pleiades reappear in the pre-dawn sky in May after a 37 day absence. (Zuidema and Urton:102) The reappearance marks the onset of the very cold weather and the end of the harvest period. It is for this reason that the Indians think of the Pleiades as a mound - of grain or beans - or as an agricultural storehouse, that is as a goto or a qolqa.

Watching for its reappearance in May, Quechua campesinos keep a close divinatory eye on the Pleiades. As one Bolivian informant, Marcelino Yanawaya, explained it, he watches hanag goto, by which he means the leading (ie westerly, first-rising) side of the Pleiades, to see if it is brighter than qhepa goto, the easterly end. If hanag goto is brighter, it means early rains; if qhepa goto is brighter, late rains; if the whole of goto is equally bright, this means rains at the normal time.

An informant in the Department of Cusco, Francisco Amau, said of the Pleiades, "... ñaupaq tarpunapaq, qhepapaqpas kan. Chayqa ñaupaqpi ch'usu o qhepapi ch'usu; sichus igualpi tarpun chay pachataq; igual granos, por igual." [Whether you plant early or late depends on the grain in front (ie the stars' being clear enough to appear as individual seeds) or the grain in back; if they are the same, then you plant

at that (normal) time; uniform clarity ('igual granos') for normal planting time.⁷ This informant, like the informant from Bolivia mentioned above, tried to detect differences in the appearance of the westerly and easterly sides of the Pleiades in order to predict the nature of the coming planting season.

The Quechuas thought about the Pleiades in the same way in Avila's time. "Y cuando las Cabrillas [ie the Pleiades] aparecen, de gran tamaño, dicen: 'Este año vamos a tener maduración excelente de los frutos,' pero cuando se presentan muy pequeñitas, dicen: 'Vamos a sufrir.'" (p.125)

The sense of these various statements, that is how it is that the Pleiades appear to change in appearance is explained by the following fact, which, insofar as I am aware has been overlooked in discussing the fascination of early agricultural peoples with the Pleiades: very simply, "Wisps of nebulosity cover the group, especially bright in the neighborhood of the more luminous stars." (Menzel:162) As the clouds drift, so changes the appearance of the stars. Thus some people speak of the the stars growing brighter or dimmer, while others refer to their growing larger or smaller.

The Pleiades is mentioned by many chroniclers. Garcilaso refers to it only as, "las Siete Cabrillas", but Acosta, Cabello Balboa, Morua, and Polo de Ondegardo all identify it as Collca, the granary. (In Lehmann-Nitsche, 1928:4,7,13,14) Cobo also knew the Pleiades by this name and recorded its very great importance:

Y así, de aquella junta que se hace de estrellas pequeñas llamadas vulgarmente Las Cabrillas, y destos indios COLLCA, afirmaban que salieron todos los símiles, y que della manaba la virtud en que

se conservaban; por lo cual la llamaban madre y tenían universalmente todos los AYLLOS y familias por GUACA muy principal; conocíanla todos, y los que entre éstos algo entendían, tenían cuenta en su curso en todo el año más que con el de las otras estrellas; pero no se servían della de otra cosa, ni trataban de otro virtud que tuviese; y con todo eso, le hacían grandes sacrificios por todas las provincias. (T.III:365)

As Cobo hints, ("...tenían cuenta en su curso en todo el año más que con el de las otras estrellas..."), it is possible that the Incas used, among other calendars, a Pleiad calendar, based on the annual disappearance and reappearance after 37 days of golqa. Nordenskiöld, in his study of the astronomical significance of the quipus held this view. "Molina says that with the Incas the year began in May. The Pleiad year of the Guarani Indians also began then." (pp.8-9) As we have already seen in the Introduction, Tony Morrison has alluded to the Pleiad alignments at Nasca. In his study of the Chiriguano's astronomy, Lehmann-Nitsche has collected a great deal of evidence indicating that the Tupi-Guarani began their year upon the return of the Pleiades, as attested to, for example, by Padre José Gumilla: "Por las Cabrillas computan [los indios] el año; este es cuando al ponerse el sol y descubrirse las estrellas, ven salir por la parte oriental las Cabrillas, entonces empieza su año nuevo." (Lehmann-Nitsche, 1924a:94) Finally, Zuidema and Urton have made the very interesting observation that the number of wakas in the ceque system of Cusco - 328, each one ritually connected to a particular day, - added to the number of days of the invisibility of the Pleiades at the latitude of Cusco - 37 - gives a total of 365 days. (p.102)

It is clear that the Pleiades is a constellation of the

utmost importance in Quechua astronomy. Farmers await its return, when they can divine from its constantly changing appearance the hopes for the coming crop season. We know from the Chronicles that in Inca times golqa was as equally well known as at present, and similarly employed in divination. And, finally, there is evidence to suggest that one way the Incas had of measuring the year was by means of the Pleiades' annual reappearance.

II.4.b. The Tail of the Scorpion
Quechua Tradition: cruz calvario

More than three quarter of the informants identified a group composed of the stars lambda, upsilon, zeta 1 & 2, mu 1 & 2, and epsilon Scorpio as cruz calvario. In Western astronomy these stars make up a part of the tail of the celestial Scorpion. It will be remembered that the llama's calf, Urcuchillay, occupies the same general area of the sky as does cruz calvario, in the form of a dark spot in the vicinity of epsilon Scorpio. This area of the sky, within a few degrees of the ecliptic* and lying in the Milky Way, is, then doubly represented by both a "black" and a "star" constellation. It is important to bear in mind from the outset

*The ecliptic is defined as, "The plane of the earth's orbit projected upon the celestial sphere," or, more simply as, "The apparent path of the sun." (Menzel:336) It can perhaps most easily be visualized by thinking of the sun's passage through the sky during the daylight hours and remembering that it is tracing a path through the stars, which of course are obscured by the daylight. That path is the ecliptic. In Western astronomy, the stars which lie on this band constitute the zodiac, of which Scorpio is a part. The path of the sun, or "ecliptic," crosses the Milky Way at two places - in Gemini, which does not concern us here, and in Scorpio and Sagittarius. Epsilon Scorpio,

of the discussion of cruz calvario, its precise location in the heavens. Figures 4 and 5 (pp. 37 and 38) depict cruz calvario, and its location in the Milky Way relative to the ecliptic, respectively.

The Chronicles contain no positive identifications of any stars in this region of the heavens. Lehmann-Nitsche argues that the constellation known in the Chronicles as Choquechinchay was the figure of a great lion, spanning the Milky Way in the area of the ecliptic where the Western Scorpio and Sagittarius lie. (1928:163-64) Although this identification would accord very well with views we will presently set forth about Capac Raymi (with its ritual reference to the lion in the form of a lion skin dance) concerning its timing to coincide with certain movements of the junction point of Milky Way and ecliptic, still, Lehmann-Nitsche's evidence is not strong enough, in my opinion, to be termed conclusive and therefore this identification must be held in abeyance.

Nonetheless, there are three reasons why I believe that cruz calvario must be considered a constellation of great importance not only to contemporary but also to the pre-Columbian Quechuas. The first reason is simply that cruz calvario is a breathtaking constellation. Three of its four main points are composed of pairs of matching stars. The two parts of the T which it forms meet at exactly right angles. It is a large constellation by Quechua standards and its arms are proportioned most harmoniously. The overall effect is one of exact geometry combined with elegance. (See fig. 4, p.37.)

the "right arm" of cruz calvario, lies almost exactly at the point where the sun's path first begins to cross the celestial river. As we shall see in the next section (II.4.c.) this junction of the sun and our galaxy (Milky Way) is the destination of the transmigrating souls of the dead.

Cruz Calvario

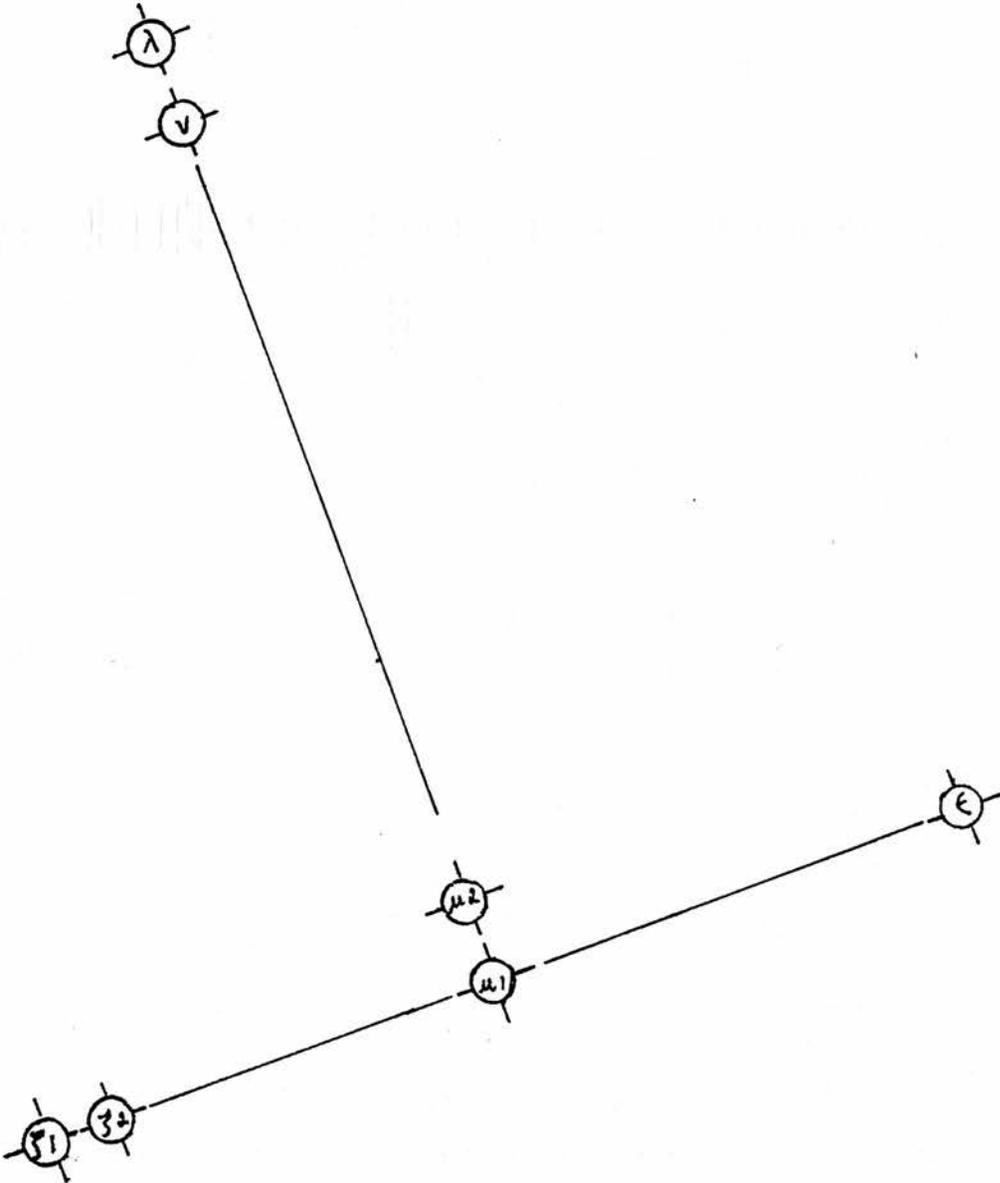
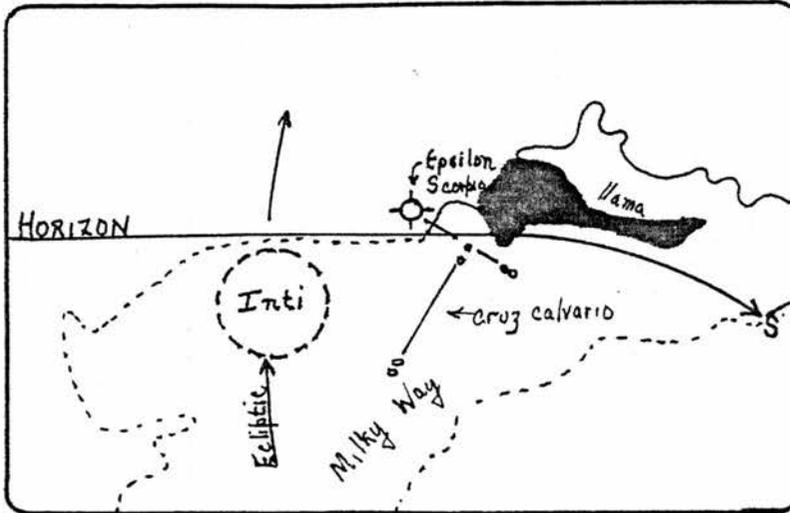


FIGURE 4: Cruz calvario, part of the tail of the Western Scorpio, is made up of the stars lambda, upsilon, zeta 1 & 2, mu 1 & 2, and epsilon Scorpio.

Junction of the Milky Way and Ecliptic

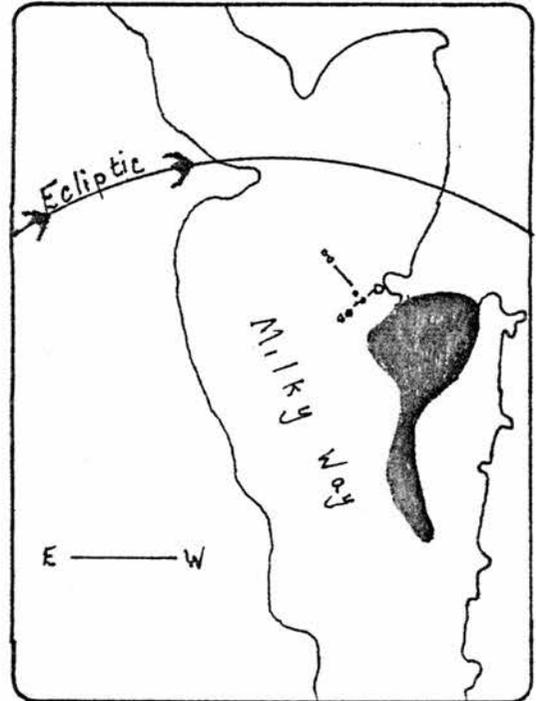


5a

FIGURE 5:

Figure 5a (above) shows the heliacal rising of epsilon Scorpio. The dotted circle represents the sun below the horizon and in the Milky Way. (shown with dashed border below the horizon, and solid border above.) In Inca times the star epsilon Scorpio would have shone above the horizon just before sunrise in the first week of December, signalling that the entrance to the land of the dead was "open."

Figure 5b (right) shows where the ecliptic crosses the Milky Way as seen in the night sky.



5b

The second reason has to do with the peculiar nature of Andean syncretism. It is well known that since the very first days of the conquest, the Indians have fought ceaselessly to preserve their ways. One of the methods of safeguarding their heritage which they have developed has been to pretend to accept Christian forms in order to safeguard and camouflage indigenous beliefs. Whereas many forms of religious syncretism involve the embracing of something new and attempting to blend it with the old, Andean syncretism, by and large is what one might term "guerrilla syncretism," designed to protect older ways by pretending to accept the new. One might go so far as to say that when one finds such a powerful Christian term as cruz calvario among a host of Quechua terms, such as the star names we have seen, one might do well to suspect that something is afoot, that some indigenous belief is being protected under the cover of Christian orthodoxy.

The third reason why I believe cruz calvario is so important involves the indigenous belief that the resting place of the dead, as we will now endeavor to indicate, lies in just that part of the heavens occupied by cruz calvario, that is, at the junction of the Milky Way and the ecliptic.*

Before turning to an examination of this evidence, I would like to prepare the way by showing that the term cruz calvario itself contains several clues as to Quechua beliefs about the immortality of the soul. Taken at face value, the

*It will be remembered that we have already seen the account of one informant (p.27) , stating that the Milky Way is the river that must be crossed by the souls of the dead.

Christian term "the cross of Calvary" is a symbol of death and resurrection, of immortality.* The first clue as to how the Quechuas may look at this term is that the word cruz, as we have already seen (pp.17-18) in all probability is used in Quechua astronomy in the same sense that the word chacana was once used. The sense of chacana as an "escalera" is consistent with the idea of an ascent to heaven; equally important is a second meaning for chacana recorded by Holguin in the 1901 Lima edition of his dictionary (p.64): "litera para conducir los cadaveres." (Cited in Lehmann-Nitsche, 1928:109) In the contemporary Quechua mind the cross is linked to the journey of the departed soul as Casaverdes has demonstrated in connection with the funeral rites witnessed in Kuyo Grande:

También al cadaver del muerto es indispensable ceñirle a la cintura una cruz hecha de hojas de niwa (planta cortadera) como parte integrante de la mortaja, esto para que el alma del difunto sea sea resguardada durante su peregrinación hasta ser juzgada en el tribunal del Ser Supremo. (p.194)

For the Quechua, then, the cruz appears to be connected with the idea of a journey of the soul.

*If we have been correct in characterizing the nature of Quechua syncretism, then the use of the term cruz calvario demonstrates perhaps its most interesting aspect: that the Quechuas have an unerring instinct for choosing from Christian tradition those symbols which most subtly reflect Quechua ideas. It may be argued that this process merely represents ordinary syncretic blending, but the very fact that we find the cross of Calvary in the unconventional and surprising precincts of the Milky Way - where no Christian ever placed it - indicates to this writer the process of "guerrilla syncretism." What we find being hidden here is nothing less than the entire belief system connected with ancestor worship, and immortality. Zuidema and Urton offer a lovely example of just such a process, wherein the sacred mountain of Anahuarque was renamed Sta. Ana after the conquest. Mama Anahuarque was the name of the mythical grandmother of the Oma, early inhabitants of the valley of Cusco, while Sta. Ana was the name of Mary's mother, Christ's grandmother. (pp. 83-84)

As to how the Quechuas think about Calvary, the following story gives some indication. It was told to me by Luis Quispe, a campesino from Amparaes, number 21 on the lists of informants. The story is about his grandfather's experience when near death in a coma:

Journey to Mt. Calvario*

"Our grandfather is dead," my father told me; He has been dead almost two years now. And so on his death when they [the family] had bathed him, they laid him out in his funeral clothes. And then, just when they were lighting the candles, they say his spirit moved in him. Right then. So then he climbed and climbed through eno-o-o-o-rmous piles of snow, like great walls until he reached the top. That place they call Calvario. There is a - whachacallit - a gate there. And so he managed to climb to the top and find the gate there. And also there was St. Peter with his key -con su llave. This is what they say. And so he turned to this place and lo and behold Archangel St. Michael was also there with his scales ... And so St. Michael sent him home; and so grandfather continued right over the top and suddenly a great fire came into view and the sparks reached the mountaintop. And it is said the road disappeared into the fire, and that it is not known where the road went. Probably to hell.

And then [St. Michael] called from afar. "Your wife is crying," he said. "And your children are weeping greatly." And he ordered him to go home. "Your children weep for you," said St. Michael, and this was really so

The house was full of people. And they say that the children beat their father. "You are a condenado," they said. "No," said grandfather, "I am of this life." "Very well," said everyone.

But these travellers, with all they have - llamas, sheep, dogs - trudge along. Is it not said to be so? But they don't look up anywhere; they only proceed bent over, eyes to the ground. Always bent low, with a load on their backs. In this way they reach the top; this would be calvario.

The structure of this story is Andean. The journey, in the company of dogs are elements we will see again in the next section. The idea of carrying a load even on this last journey

*See Appendix 3 for full Quechua transcription.

is curiously reminiscent of the Inca custom that no man could approach the Inca without bearing at least a ceremonial load on his back. Taken as a whole, the term cruz calvario implies the ascent ("escalera") of a dead person ("litera para conducir cadaveres") to a high place at the entrance to the abode of the dead. As we shall now attempt to demonstrate, Quechua tradition holds that the junction of the Milky Way and the ecliptic, cruz calvario, is in actual fact the very place where the dead journey in order to find the entrance to the abode of the dead.

II.4.c. Death and the Ancestors: The Geography of Immortality

The Incas believed in the immortality of the soul. (Molina: 36; Acosta:147; Garcilaso, T.I,L.2,C.7, p.86; Avila:^{*}119) The Incas also believed that the dead lived in heaven, or hanaq pacha. Cobo tells us: "Algunos creían que salida el alma del cuerpo, si había vivido bien, se hacía estrella, y que de allí procedían todas las del cielo, y que allí gozaban la gloria." (T.III,p.353)

A reciprocal relation was believed to exist between the living and the dead. On the one hand it was the responsibility of the living to feed the dead. Molina tells us how food and drink was brought to the mummies of the dead Incas, who were addressed, "'When you were alive you used to eat and drink of this; may your soul now receive it and feed on it, wheresoever you may be.'" Molina adds, "For they believed and held it for

* Avila, of course, wrote of the customs, not of the Incas per se, but of the people of Huarochiri to the north, who were Quechua speakers and within the Inca, or perhaps better, Andean oecumene.

certain that souls did not die, but that those of good men went to rest with the Creator. When they died they declared this belief, and charged their families and relations to perform all that they had left them to do, and that they would see them from heaven." (p.48)

The dead, it was believed, reciprocated.* As Cobo puts it:

Dios había hecho personas señaladas y dado buenos y prosperos sucesos en esta vida, sin ninguna duda iban al Cielo, y sus ánimas allá eran mucha parte para ayudarles y favorecerles en sus necesidades; y así, cuando iban á las guerras y cuando los mancebos se hacían orejones y armaban caballeros, se encomendaban á ellos." (T.III, p.380)

It is clear from the above quotation that Cobo, while speaking generally of relations between the living and the dead is speaking specifically of the Inca festival of Capac Raymi when the youths became warriors and were granted the status of orejones. Indeed, Capac Raymi is the clearest ritual expression the Incas made of this reciprocal relation. Cobo tell us the reason why the mummies of the dead were taken out and displayed:

El fin para que sacaban estos cuerpos muertos, era para beber con ellos sus descendientes como si estuvieran vivos; y en esta ocasión particularmente, para que los que armaban caballeros les pidiesen que los hiciesen tan valientes y venturosos como ellos habían sido." (T.IV, p. 117)

*Belief that the dead help the living lives on today among the Quechua. Hartmann has collected texts among the Quechua in Ecuador expressing this conviction: "...también en mi vida las almas tal vez me sostendrían, que tal vez me conducirían al cielo." (p.207) Rigoberto Paredes says of the Quechua of Bolivia, "Se halla convencido [el indio] de que los muertos nunca abandonan a los vivos, ni les hacen faltar su sombra protectora os sus castigos si los merecen..." (p.290)

The evidence indicates that at Capac Raymi the ancestors were believed really to be present.

In fact, a careful reading of the Chronicles uncovers repeated emphasis on the relation of the young men to the ancestors, who remain an invisible presence throughout the rite. Both Cobo (T.IV, p. 116) and Molina (pp.38-39) describe the slings given to the young warriors as the same as those carried from the caves of Pacaritampu by the ancestors. Throughout the festival a special song, to be heard only at Capac Raymi, was played - the song played when Manco Capac emerged from the cave. (Molina p,44) The youths were continually exhorted to be as brave as the ancestors during the various ceremonies of Capac Raymi (Molina:44,46), and they were continually flogged with slings by their elders to remind them of their obligation as warriors to bear pain stoically. Polo de Ondegardo specifically says that it was the old men who beat the youths: "...les acotavan con hondas los viejos." * The sling, the young warriors, the old men, and the ancestors were thus ritually connected to one of the central mysteries of Capac Raymi, the warrior's death. Now as we turn to examine how the position of cruz calvario in the heavens was connected with the timing of Capac Raymi, it is worth noting that the Aymara call the whole of the Western Scorpio, of which cruz calvario is a part, wuarawar-korahu, "honda de estrellas." (Eyzaguirre S.:89) Here, where the ecliptic meets the Milky Way, is a symbol of the warrior and his mystical connection with the ancestors.

* Cited in Zuidema and Urton, p. 77

We now know, thanks to the ingenious and meticulous investigation by Zuidema and Urton, that the feast of Capac Raymi began on November 30, when epsilon Scorpio was in inferior culmination, that is to say when it was directly underfoot at midnight. The Incas were able to ascertain this position, in turn, from the position of the Pleiades (which lies almost exactly 180 degrees around the ecliptic from epsilon Scorpio) when it was directly overhead at midnight. (Zuidema and Urton:99) John Earls has demonstrated that at the present time this relationship is understood and used in the Department of Ayacucho to ascertain the date of the June solstice: "Allí el día 22 de junio, a las 4 horas de la madrugada, se observa al mismo tiempo la salida helíaca de las Pléyades y la puesta helíaca de la última estrella en la cola de Scorpio (llamada 'Cruz Calvario')." (Cited in Zuidema and Urton, p.98)

Today the rites of the dead, under the guise of the Christian Todos Santos, take place not on November 30 but on November 1.* Like the Incas, the contemporary Quechuas set out food, the night before in this case, in expectation of the arrival of the ancestors. (See for example Rigoberto

*It is one of history's small ironies that Todos Santos - which itself derived from the pre-Christian, pagan rites of the dead, called All Hallows' Eve, or Halloween (Oct. 31), and which was, just as with the Incas, synchronized to the passage overhead of the Pleiades at midnight (and hence also the passage through the depths of the underworld of the Scorpion, symbol of death) - was, strictly speaking, by the time of the conquest a month out of date, since, due to the Precession of the Equinoxes, the superior culmination of the Pleiades had advanced a month since the pre-Christian era from October 31 to November 30. In this sense, the Incas were more accurate astronomers than the Church or the Spanish, who would have been aghast at the origin of Todos Santos. The fact that pre-Christian Europe and the Incas both took their cue for initiating annual rites of the dead from the same portion of the heavens is one that cannot be pursued here, though it does give one pause to wonder.

Paredes:302; Juan Nuñez del Prado:114.) We have already noted (footnote, p. 43) that the contemporary Quechua believe this devotion is reciprocated by the dead. The prevailing belief in Chinchero is that the dead return not long before sunrise, and we know from Avila that the belief in the return of the dead around sunrise was held at the time of the conquest. (p.121) A further indication of the continuity of beliefs about the dead from pre-Columbian times to the present has been recorded by Valderrama Fernandez in his study about the world of the dead in the lore of a community of Apurimac. The Indians there believe in the existence of a city of the dead where, "se está bajo otro sol y otra luna y el día es noche y la noche es día." (1978:56) This description corresponds accurately to the picture we have just seen of the Pleiades overhead at midnight, opposite cruz calvario, which is "beneath" the earth, and where it must be high noon.* Since, as we shall see shortly, the Quechua believe that the land of the dead lies on the far side of a river (mayu), it may be that the idea of the celestial river underfoot at noon was thought of in some way as the land of the dead, or underworld.

To summarize briefly what we have said so far, in Inca times the dead went to heaven and returned at a time of year coinciding with the inferior culmination of cruz calvario, (and its heliacal rising about a week later). The dead helped the living. They are treated in ritual as if they are actually present. Similar beliefs exist today.

*In this context, it is interesting to recall that the celestial llama was described by informants as walking in such a way that one is looking at its back. When the llama is directly underfoot, as it would be at midnite on Nov. 30, then it would appear, at least in the mind's eye, right side up. (cf p.27)

We have taken care to point out that the dead were and are believed to return at sunrise, and at that time of year when the sun rises in the Milky Way near epsilon Scorpio. It would appear no more than a whimsical hypothesis to suggest that the dead returned to earth by "hopping" from the Milky Way, through the sun and onto the earth (of course at sunrise when the sun is "on" the earth), were this not a belief held by various cultures around the world. (de Santillana and von Dechend:242-247) I shall restrict myself here primarily to evidence from the Amerindian peoples.

The belief that the Milky Way is the abode of the dead is a common one among Amerindians. The Mocoví of the Gran Chaco believe that the Milky Way is a river abounding in fish where the spirits of the dead go fishing. (Lehmann-Nitsche, 1924b:76) The Creek Indians of the southeastern United States called the Milky Way, "the spirit road." (Swanton:772) The North American Fox called the Milky Way, "Wâpisipow ... the river of the stars yonder in the sky. Along its shores dwell manitous, people who once lived on earth." (Jones:21) Among the Yuman and Luiseño of California, the Milky Way was known as the "ghost road." (Kroeber:682)

Allied to this belief was an understanding that to get to the land of the dead, one needed to gain access via the sun. Among the Maidu of California, the dead of the hill dwellers, "reach the abounding sky land - 'valley above' is an equivalent rendering - by going east along the path of the sun ... The Milky Way is also pointed out as the road of the spirits. Its fork is the parting of the ways for those going to the good or bad land in the sky, according to their life on earth." (Kroeber:439-40)

The Potomac Indians believed,

...After they are dead here they goe up to the top of a high tree, and there they espie a faire plaine broad path waye, on both sides whereof doth grow all manner of pleasant fruicts, as mulberies, straberries, plombes, etc. In this pleasant path they rune towards the rising of the sun where the godly hare's howse is, and in the midway they come to a howse where a woman godesse doth dwell, whoe hath always her doares open for hospitality ... and when they are well refreshed, they run in this pleasant path to the rising of the sun, where they find their forefathers lyving in great pleasure, in a goodly field, ... and when they have lyved there until they be starke old men, they saie they dy there likewise by turns and come back into the world againe." (William Strachey in Swanton:98-100)

I have chosen a final example from Africa to suggest the ubiquity of this distinctive complex of beliefs, and also because the example is so clear:

According to the Twi speaking tribes, again, the Milky Way is the road which leads from the earth to the world of the spirits. This is for instance the case among the Shanti, Fanti, and Akwapim. The last-mentioned tribe say that when a person has died and been buried, the soul leaves the body to cross the River Volta and go far, far away to the east to the place where the Milky Way, osamam-ne quang ("the road of the spirits") touches the earth. The soul then journeys on this road to "den Ort ihrer ewigen Bestimmung". (Lagercrantz:65)

Such ideas are found in Quechua tradition as well. Besides the belief already mentioned that the dead return at sunrise, there exists a Quechua tradition, recorded by various modern ethnographers, involving the transmigration of the souls of the dead across a river, often called Río Jordan (Marzal:84; Juan Nuñez del Prado:110; Casaverdes:202), and sometimes referred to as the turbulent hurk'an mayu. (Oscar Nuñez del Prado:2) It will be remembered that we have already included a story by an informant who identified Río Jordan as the Milky Way. (See p. 27.) In order to cross this river, one needs the help of

a dog, a tradition found among various Amerindian groups. (See for example Swanton:773 on Creek tradition.) Once one has gained the other side of the river, one has arrived at the abode of the dead,* situated near the river and called simply hanaq pacha. (Oscar Nuñez del Prado:2)

Now, drawing these various strands together, we arrive at the following formulation, or hypothesis. Cruz calvario lies near the junction of the ecliptic and the Milky Way. Various Amerindian groups believe that the dead abide in or near the Milky Way. Judging from the testimony of informants, and from ethnographic data placing the abode of the dead by the banks of a river, the Quechuas apparently hold substantially the same belief. (The Quechua word for river, mayu, is, of course, also the Quechua designation for Milky Way.) Further, we have found evidence of a belief, widespread among Amerindians, that for the dead to be able to enter the Milky Way, and presumably to return to earth also, - as did the dead at Capac Raymi - it was essential that the sun be both on the horizon (sunrise) and "in" the Milky Way, the spot occupied roughly by cruz calvario, so that the spirits of the dead may transfer from the galaxy, to the solar system, finally to alight on earth. We know that this celestial event, the heliacal rising of epsilon Scorpio, the "right arm" of cruz calvario, took place

*It is worthy of note that the turbulent hurk'an mayu, across which lay hanaq pacha, has a rather exact counterpart among the Tukano of the Columbian Amazon. Under the influence of the hallucinogen yagé (branisteriopsus), the Tukano attempt to cross, "... the Milky Way, which is imagined as a celestial river, a great stormy current, and which is the first goal of the ecstatic flight." (Reichel-Dolmatoff:32) The purpose of this crossing is to reach the Land Beyond, a place of "peaceful radiance('the color of young coca leaves')..." (Ibid:13)

in the first week of Capac Raymi when, according to the Chronicles, the dead were believed really to be present.

If Quechua beliefs about the resting place of the dead and of the reciprocal relation between the living and the dead are substantially as we have described them, then it seems hard to escape the conclusion that the Quechuas, particularly in Inca times when they were master of their own ritual calendar, must have watched the heavens for the heliacal rising of the Milky Way, in order appropriately to begin their rites of the dead. Therefore, I believe that the area of the heavens occupied by cruz calvario must have contained a Quechua asterism. Furthermore, I believe that the name cruz calvario is used today by the Quechuas to identify this spot in such a way as simultaneously to camouflage indigenous beliefs connected with the transmigration of souls and at the same time to suggest subtly these same beliefs by choosing the most appropriate Christian symbol. Finally, I suspect the same stars which make up the present day cruz calvario may have been the same ones used in Inca times to mark the all important spot, since together they make a strikingly elegant geometric figure.

* * *

CHAPTER THREE:

PATTERN AND SIGNIFICANCE

III.1. PATTERN:

A GEOMETRICAL REPRESENTATION OF QUECHUA ASTRONOMY

In the previous chapter we grouped the Quechua constellations under three headings, each referring to a different portion of the heavens. Thanks to the work of Zuidema and Urton we have a single image, the llama, to help us conceptualize the Quechua heavens as a possible single whole: the llama (Milky Way), along with its "eyes" (alpha beta Centaurus), trailed by the baby llama, (marking the crossroads with the ecliptic) encompasses the three main groups of stars we found in our fieldwork. Zuidema and Urton have demonstrated the versatility of this image in fixing dates for the Andean calendar.

I would like to propose another image - a purely abstract, geometric one - as an aid for thinking about the general sense of how the Quechuas viewed the heavens. This image, or pattern, is simply two circles, one small - representing the circumpolar stars - and the other large - representing the ecliptic - both of which are joined together by a band, the Milky Way.

As the circles turn together, the Milky Way swings slowly through the heavens like the hour hand of a giant timepiece, a sort of galactic chronometer.*

Representing Quechua astronomy in this manner offers two advantages. First, it allows us to see clearly to what motions of the heavens, the Quechua attended. While this information is implicit in the image of the celestial llama, the best evidence of how the Quechuas perceived heavenly movement comes, paradoxically, from outside the Andes. The pattern represented in Figure 6 (p. 53) is not the exclusive cultural property of the Quechua, or even the Andean peoples in general. The celestial llama is but one conceit for expressing a more fundamental pattern. The Chiriguanos of Bolivia (of Tupi-Guarani heritage) and the Tobas of the eastern Chaco both identify the Milky Way between the ecliptic (at Scorpio) and the southern horizon as an ostrich, the neck and head of which are made, respectively, from alpha and beta Centaurus and the Southern Cross. (Lehmann-Nitsche, 1924a:98-99; 1925:192-93) The Mocoví have similar ideas concerning the celestial ostrich. (Lehmann-Nitsche, 1924b:75-76) When we recall Avila's description of the llama, Yacana, going down to the sea each night to drink all the water from the sea, and compare this with the distinguishing behavioural trait of the ostrich - ie that it sticks its head under the ground (horizon) - there seems little doubt that we are dealing with the same kinematic pattern, whose motions are perceived in the same way, and the image for which is drawn from a familiar phenomenon in the local environment.

*See Figure 6, p. 53.

Galactic Chronometer

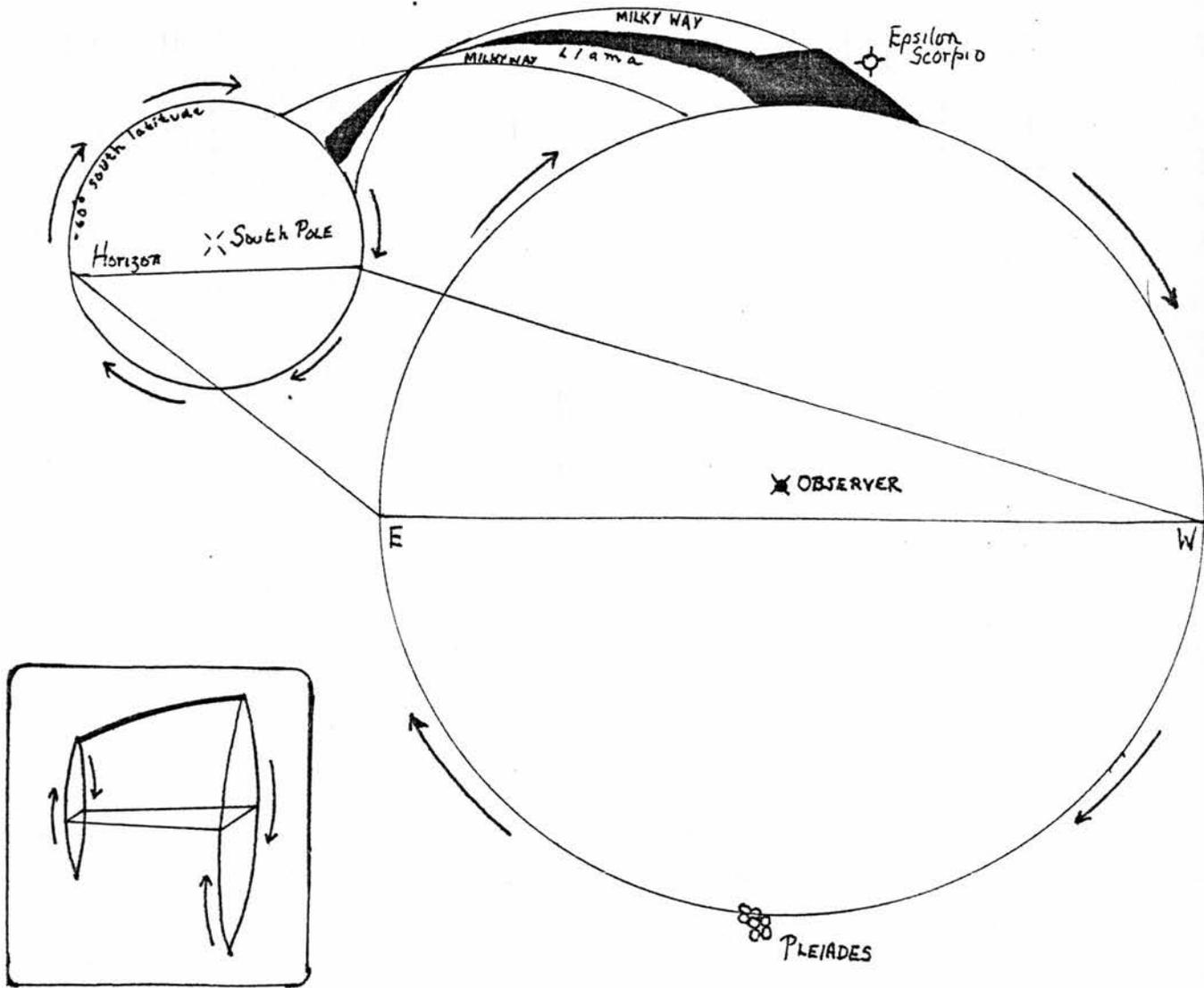


FIGURE 6: A geometrical representation of Quechua astronomy. The small circle represents the path of the circumpolar stars; the large circle is the ecliptic. As the two circles turn, the portion of the Milky Way connecting them swings like a giant cable through the heavens. Because the Incas watched the Milky Way so closely, it would eventually tell them that the stars were not moving in concert with the sun, thus serving as the 'hour hand' of the Precessional cycle.

This comparison of the celestial llama with the celestial ostrich allows us to state with a reasonable degree of confidence that the Quechuas actually were working with the pattern which we have proposed. Whether the origin for the idea of the celestial ostrich came originally from the Andes, or the llama from the Chaco, or both images from a third source does not affect our argument. What is important is that the comparison reveals an underlying intention, namely to describe a complex movement of interrelated stars. (See Fig. 6.) In the Conclusion we shall offer an explanation - reconciling astronomy with cosmology - for why the Quechuas paid special attention to the interrelated movements of ecliptic, Milky Way and circumpolar stars.

The second advantage to looking at Quechua astronomy in the manner we are proposing, stems from the first: if we are correct in saying that the Quechuas were conscious of the pattern of movement depicted in Figure 6, then we may assume that they could have been aware of changes in the pattern. In other words, this pattern may have served more than one function.

The one function to which our attention has so far been directed has been calendrical. Thanks to the work of Zuidema and Urton we have seen how the Incas used the inferior culmination of epsilon Scorpio to ascertain the first day of Capac Raymi. They have stressed the importance of this date as a way of correctly timing the December solstice, 22 days later; their reasoning in my opinion is brilliant, especially in seeing the significance of the fact that Capac Raymi is the only solar month in the Inca calendar (all the others being lunar, called killa, the Quechua word for moon), and the only

month with 22 days, a number explicable only through the relationship of November 30 to the solstice 22 days later. (pp. 90-93) The authors conclude with the suggestion that a "calendario de llamas" could be developed for the entire Inca year. (p. 106) This first function of the pattern, we can term the function of utility: the Incas, or more likely their predecessors, had discerned a pattern and put it to work making calendars.

The second function, which we shall now explore in the section which follows, is termed the function of feedback, that is to say what the Incas may have learned about astronomy simply as a result of having first discerned the proposed pattern. In order to put forth a theory of such a function, it is necessary to show not only that the Quechuas could have, but also in fact did, learn something from having observed the behaviour of this pattern over time. What I wish to suggest is that the Quechuas, beginning from a date of undetermined antiquity, have by means of the proposed pattern, this galactic chronometer, observed and ultimately attempted to allow for the Precession of the Equinoxes.*

III.2. PRECESSION AND THE ABODE OF THE DEAD

For ancient man, behind the relatively crisp and predictable cycles of the day, lunation, and the solar year, there loomed a disturbing and little understood celestial phenomenon, which

*For a thorough discussion of all the issues involved in the sort of approach we are taking in the following section, the reader is referred to de Santillana and von Dechend, particularly the chapter, "A Guide for the Perplexed." The following section stands on its own, but owes a debt to the above-mentioned work.

we call the Precession of the Equinoxes. In terms of modern celestial mechanics, Precession is understood as follows:

Determining the positions of the stars presents one complication we do not encounter in the finding of positions on the earth's surface. The earth's pole of rotation is relatively fixed in the earth, except for a very minor variation of about 50 feet ... The celestial poles, however, are not fixed. They slowly move relative to the stars. Since these poles lie directly above the earth's pole of rotation, we conclude that the earth's axis of rotation is tilting with reference to the stars. The gravitational pull of the sun and moon on the earth's equatorial bulge produces this motion, which is similar to that of the axis of a tilted, spinning top...

This motion of the earth's axis causes each celestial pole to follow a circular path, completing a full cycle every 26,000 years. It also causes the celestial equator to shift slowly among the stars with the pole of the ecliptic as a center..." (Menzel, pp. 329-30)

In naked eye astronomy the effects of Precession are most clearly noticeable in the heliacal rising of stars of the ecliptic in relation to important sunrises, (important in the sense of keenly observed) such as the solstices and equinoxes. Thus, for example, in the time of Christ, Pisces, the Fish, was rising heliacally at the Spring equinox, whereas now it has almost disappeared below the horizon on this date, replaced by the "descending" Aquarius. The problem with making such naked eye observations is that the rate of Precessional movement is so majestically slow - one degree every 72 years - that a human lifetime does not suffice to discern any change. What is needed to discern such a change in a pre-literate society is a transmitted heritage in which certain astronomical data are encoded.

If we have been correct in assigning extraordinary importance for the Quechua to the area of the heavens occupied by cruz calvario, due to the area's cosmological connection to the relationship between the living and the dead, then the Quechua rites of the dead celebrated at Capac Raymi represent just that transmitted heritage needed to notice the effects of Precession. We have shown that the Quechuas in Inca times likely believed that the heliacal rising of epsilon Scorpio was a crucial date, the moment when the dead could alight on the earth. Owing to Precession, it would by no means always have risen in early December, but earlier and earlier in the year as one went back in time.

It is known that in the valley of Cusco the rites of the dead were celebrated in November in the month of Ayamarca (which means "month of the dead") and not in December as with the Incas. (Molina:35) Another group in the valley, the Omas even celebrated similar rites in October. Zuidema and Urton have pointed out that these groups, the Ayars and the Omas, were known as cacacuzcos, "the uncles of cuzco", in relation to the Incas, a reference to the status as very early inhabitants of the valley. Zuidema and Urton further suggest, "Los meses Omaraymi y Ayarmarcaraymi probablemente obtuvieron su nombre - raymi - por los ritos de iniciación que entonces los cacacuzcos tenían en imitación a los ritos en Capacraymi." (p.90)

While the boring of the ears of the youths and other features of their initiation probably were in imitation of the Incas, I would suggest that insofar as Capac Raymi was a rite of the dead, it was part of a vastly older Amerindian tradition and therefore in imitation of the cacacuzcos. If this view is correct, the Inca rites of the dead represent the

temporal realignment of rites formerly held in the Valley of Cuzco in November and even October by the earlier inhabitants. In the case of the Ayars and the Omas, it appears that tradition had fixed their rites of the dead to a particular time of the year* and that Precession had simply passed them by, dropping the entrance to paradise below the horizon until the beginning of December. The Incas, keen astronomers, merely updated the rites. The sheer overriding importance which we have tried to suggest for the heliacal rising of epsilon Scorpio, would have made such an updating by the Incas not only probable, but completely unavoidable.

III.3. CONCLUSION

We have tried to demonstrate that the Quechua perceived the heavens in a manner that emphasized the interrelated movement of the circumpolar stars, the Milky Way, and the ecliptic. Zuidema and Urton have shown how knowledge of this pattern, imagined as a celestial llama, was used for calendrical purposes. We have suggested that a second function of this pattern may have been for feedback about Precession. That the Incas updated the rites of the dead appears to warrant such a conclusion.

To recapitulate the argument which brought us to this conclusion: from the remotest antiquity, Amerindian people in general and the Quechuas in particular have attached paramount importance to right relationship to the ancestors. The ubiquity of a highly idiosyncratic set of beliefs among the

*As happened with our Halloween.

Indians of the Americas, which point to the junction of the Milky Way and the ecliptic as the entrance to the land of the dead, suggests a common origin for these ideas, which in turn reinforces the hypothesis that these beliefs vastly predate the Incas. If, then, Quechua ideas about the transmigration of souls are very ancient, and if they are tied specifically to the importance of the heliacal rising of epsilon Scorpio, then one concludes that over time the Quechuas must have observed Precession. As further evidence we showed that among the Ayars and the Omas - very early inhabitants of the area around Cusco - the rites of the dead were celebrated a month and more before Capac Raymi. Thus, while for the Ayars and the Omas the sun would have risen on the same point on the horizon and the season of the year would have remained the same, the starry backdrop - the very gates of heaven - would have "sunk" below the eastern horizon rendering their rites of the dead meaningless, fossilized as it were, and buried under the sediments of the river of time. Our first conclusion, then, is that the Incas, in updating their own rites, Capac Raymi, were aware of the effects of Precession.

To observe the effects of Precession is, however, a far cry from understanding it. "After all," as Reiche points out, "the correct explanation of a phenomenon commonly comes long after its routine observation. And for that matter, even Hipparchus [the 'discoverer' of Precession in the conventional view] failed to provide the correct kinematic explanation - an explanation not furnished till Galileo." (Reiche:87) One of the central themes of the work of de Santillana and von Dechend is the electrifying effect upon early man of his observation of the effects of Precession. The Golden Age

shattered with the realization that the starry heavens were out of kilter. (p.154) Time and the agony of history, so beautifully elucidated in Eliade's The Myth of Eternal Return, had begun. Men were afraid of the consequences of the flow of time, the time so inscrutably marked out by Precessional motion. For the Norsemen of the prose Edda this fear took the form of a dread that a mighty flood would destroy the world should the world tree (the north celestial pole) be pulled from its resting place. (de Santillana and von Dechend:234, note 9)

The Quechua, likewise, were afraid. We have already shown (II.2.) that the southern circumpolar region of the Quechua heavens was a place of terror. The celestial llama (including alpha, beta Centaurus) laboured ceaselessly to prevent flood. The loathsome toad (hanp'atu) was also there. Finally, the terrible black spot, mama mircu - "he who eats his mother and father" - otherwise known as the "locu" lluthu, or as the "mal ladrón" of Lira - wheels malevolently round the pole. Indeed mama mircu is the perfect paradigm to express the anguish men may have felt at seeing the pole wander, the very cosmos itself appear to wobble. In a world where the feeding of the ancestors was the foundation of cosmological order, mama mircu means the destroyer of order, the archetypal harbinger of chaos. Our second conclusion, then, is that the fear which the Quechua projected into their lore about the southern circumpolar stars was an expression of the terror they experienced at witnessing the, for them, unfathomable effects of Precession.

Finally, we come back to the question left hanging in section III.1 (p.54), namely, why did the Quechuas pay special

attention to the interrelated movements of ecliptic, Milky Way and circumpolar stars? An examination of what we know about the celestial llama, the image which best expresses these interrelated motions, will help us find an answer. It will be recalled (p.24) that Avila recounted how the celestial llama descended each night to the sea and, when no one could see her - that is when she was under the horizon - drank all the water from the sea in order to prevent the world from being flooded. This passage introduces us to a very important idea for the understanding of the place of astronomy in Quechua ritual, namely that the heavens were thought of as a great sea. Thanks to Santa Cruz Pachacuti Yamqui's recording of Manco Capac's prayer to Wiraqocha, we know that the Quechuas equated the heavens with the idea of sea:

Maypin kanki -	Dónde estás -
Manan churiyki	Como si no fuera
Kayman hina -	Yo hijo tuyo
Jananpichu	Arriba
Urinpichu	Abajo
Kinrayninpichu,	En el intermedio
Qhapaj usnuykipichu?	O en tu asiento de supremo juez?
"Jay" nilláway,	Oyeme,
Janan qhochapi	Tú que permaneces
Turayaj,	En el oceano del cielo
Urin qhochapi	Y que también vives
Turayaj.	En los mares de la tierra.

(In Lara:47)

A third reference connecting the heavens with the sea can be found in Molina's account of the departure from earth of the sons of Wiraqocha: "Thus they went until they reached the sea, whence they ascended into heaven, after accomplishing all they had to do in the world." (p.7) Betanzos records that Wiraqocha himself left the world by walking out to sea. (p.11

If the sea of Quechua myth is not to be found on the earth, then one may legitimately wonder where the numerous floods of Quechua myth transpire. If Avila's celestial llama is drinking water from the celestial sea, then one would appear to be well within the bounds of common sense to assume that the llama is attempting to prevent a celestial flood, that is a rising of the "sea" to "drown" some location in the heavens, rather than on the earth.

This line of reasoning, I believe, offers the key to understanding both Avila's story about the celestial llama, and the reason why the Quechuas were so interested in the coordinated movement of the circumpolar stars, the Milky Way, and the ecliptic; for even as the llama dipped its head (represented by the circumpolar alpha, beta Centaurus) into the troubled waters of the circumpolar "sea", her calf (by epsilon Scorpio, in the Milky Way at the ecliptic, the very gates of paradise) was constantly slipping "deeper and deeper" into the "sea" as the heliacal rising date of epsilon Scorpio fell later and later in the year; due, of course, to the Precession of the equinoxes.

Molina (9-10), Avila (32-33), and Cobo have each recorded versions of another flood myth in which a llama plays a central role. Below is Cobo's version:

Los indios de la provincia de ANCASMARCA, distrito del CUZCO, tenían la fábula siguiente: Refieren que cuando quiso venir el Diluvio, un mes antes las LLAMAS ó carneros de la tierra mostraron gran tristeza, que de día no comían y que las noches se las pasaban mirando á las estrellas, hasta tanto que, reparando en ello un pastor, les preguntó la causa de su tristeza; al cual respondieron, que mirase cierta junta de estrellas que le mostraron, las cuales estaban en ayuntamiento y consulta sobre que se había de acabar el Mundo con agua. (p.350)

The story finishes with the shepherd climbing to the top of Ancasmarca with his children, weathering the flood which destroys the world, and returning to repopulate the province.

Zuidema and Urton have given a calendrical interpretation to the llama-flood motif; they interpret the significance of the motif to the Inca's in terms of changing seasons. Thus the sadness of the llama in various myths refers to the coming rainy season and the yearning for good rains. (p.79) I believe that a calendrical explanation cannot fully explain the significance of this material because it does not adequately explain the use of the term flood. If the flood is good, in that it brings needed rain, why is the shepherd afraid and the world destroyed; and why, in Avila's description of the celestial llama, does the llama drink the whole sea to prevent a flood, if the flood is a reference to the approaching rains and rain is desirable?

The correct explanation of the llama's being linked with the flood is, in my opinion, that the Quechuas wished to pass on information about the observed effects of Precession. The image of the celestial llama links the circumpolar region to the ecliptic via the Milky Way. I suggest that by this conceit, the Quechuas wished to express their belief that the odd behaviour of stars in the circumpolar region (over time) was in some way connected with what for them must have been very disturbing anomalies in the appearance of the entrance to paradise, and hence right relationship with the dead. This, then, constitutes the answer to our question: why did the Quechuas pay special attention to the interrelated movements of ecliptic, Milky Way and circumpolar stars?

This conclusion is supported by the fact that a separate line of evidence, with no dependence for its validity on the image of the celestial llama, but drawn also from the Quechua star names, points to the same conclusion. In the first place, as Appendix 1a shows, six informants identified the Southern Cross as huch'uy cruz calvario while at the same time identifying the area of the Tail of Scorpio as cruz calvario. This linking of the circumpolar region with the junction of the ecliptic and Milky Way, here on a philological level, is even more strongly pronounced on the level of cosmology when we consider, in a slightly different light, the significance of mama mircu.

As we have already suggested, the term cruz calvario suggests the idea of immortality, while at the same time the place occupied by the star was believed to be the entrance to (or the exit from on special days) the abode of the dead. Applying this reasoning to mama mircu, its name implies the destruction of right relation with the dead, while the place it occupies in the heavens is in some way implicated with this destruction. Just as with the image of the llama, the Quechuas in this instance, I believe, were expressing the idea that something in the behaviour of the circumpolar stars was connected with and threatened the regular appearance of epsilon Scorpio, at the entrance to the land of the dead. These ideas represent, to say the least, a profound astronomical intuition.

* * *

It is beyond the scope of this thesis to pursue the ramifications of these conclusions. It is enough to say that they raise two important questions. First, if the Quechuas had observed Precession and were concerned about it, would they have had any way - some language - for speaking and thinking about it? Our discussion of the astronomical content of such mythical terms as "Flood" and "sea" (gocha) opens the way towards an answer. For example, the name Wiraqocha ("great sea") along with the eponymous name apu gocha ("lord sea") may well have an astronomical level of meaning.

The second question raised by our conclusions is this: having observed Precession, did the Quechuas, particularly the Incas, try to do anything about this cosmic state of affairs? I am inclined to believe that the sacrifices made to the Pleiades (see above p. 34) - 180 degrees around the ecliptic from epsilon Scorpio - and the sacrifices of human beings known as the capac gocha - "the imperial sea"* - were an attempt to seek some assurance from Wiraqocha ("great sea") of stability in the cosmos, or to seek some assurance that Wiraqocha could be stabilized by another agent, namely the sun. In short, a good deal of the Inca state apparatus of sacrifice may have been an attempt to stop time, in the sense of Precessional "drift."

* This definition with all respect despite Duviols' conclusions that "la capacocha" means capac hucha, "the sin of the sovereign." (p. 40)

In the future we may come to find that during the brief flowering of Quechua civilization under the Incas, the central preoccupation of its greatest minds was with merciless time. From the earliest ice age lunar notations etched in the bones of now extinct mammals, to the telescopes which now orbit our earth, mankind has always turned to the heavens to study the measures of time and probe the mysteries of his origin. For man is blessed and cursed with an unquenchable yearning to endure: blessed because the yearning can lead to blinding flashes of purely scientific insight, like the image of the celestial llama or Einstein's equation; and cursed because so often the yearning turns to despair and the despair to fear triggering those unrealistic fantasies manifest in such travesties as human sacrifice - "to feed the sun", in the chilling Aztec phrase - or the current destruction of the body of our planet "to preserve our way of life."

And just here lies the cruellest of ironies. When the wish to live in the Golden Age, to be connected with the beginning of things, to transcend time, as, for example expressed by ancestor worship, bears the taint of fear, history as we know it, the dreary litany of successive abuses of power, begins; And what is history if not the attempt by successive peoples to seize the power to endure, the power to suspend time and live in the Golden Age? And so the urge to return to the source becomes transformed into the force which makes return impossible. As Joyce's Ulysses lamented, "History is a nightmare from which I am trying to awake." In this sense, Inca cosmological speculation, far from being an exotic mirage shimmering on the horizon of anthropology, becomes a mirror for our times.

APPENDIX 1b:

LIST OF INFORMANTS*

BOLIVIA:

1. Tomas Pinto; Charasani; campesino; age 87
2. Martin Trudella; Charasani; campesino; age 72
3. Elsa Yanawayá; Kaata (nr. Charasani); campesina; age 23
4. Marcelino Yanawayá; Kaata; campesino; age 49
5. Juan Willk'a; Kaata; campesino; age 54
6. Florencia Morato Peña; Pocona (Dept. Cochabamba); campesina; age 78

PERU:

7. Pedro Pablo Pumaylla; Chinchero; campesino; age 50
8. Rosalea Cusihuaman; Cusco; housewife; age 35
9. Maria Uskape; Ch'usu (nr. Umasbamba, lake Piuray); campesina; age 38
10. Qosme Kuwiru; Ch'usu; campesino; age 28
11. Juan Crisoto Hanqo; Umasbamba; campesino; age 23
12. Agustín Ano Cusihuaman; Umasbamba; campesino; 27
13. Andres Kanillaupa; Umasbamba; campesino; age 29
14. Fransisco Amau; Chakapunku (nr. Chinchero); campesino; age 65
15. Basilio Amau; Chakapunku; campesino; age 17
16. Lino Puma; Umasbamba; campesino; age 83
17. Pablo Paucar; Cuparllaqta (Chinchero); campesino; age 25
18. Hermogenes Cusihuaman; Ch'usu; student; age 15
19. Eva Flores Ortiz; Amparaes; housewife; age 47
20. Hernand Ortiz; Amparaes; storekeeper; age 53
21. Luis Quispe; Amparaes; campesino/carpenter; age 52

*The number before each informant's name corresponds to the list of numbers in Appendix 1a.

APPENDIX 2:

THE STORY OF

THE FIVE BROTHERS LLUTHU

Below are two versions of the same story, both told to me by Pablo Paucar (informant no. 17) in October and November 1978 in the village of Cuparllaqta, a part of Chincheru.

FIRST VERSION:

Juana Lluthu kasqa mana mamayoq mana papayoq, asf herfano; despues Santiago Cruzpis kallarrantaq mana ni mamapas karanchu ni papanpas karanchu. Chayqa anchayna pobrilla karanku, wakchallan, mana mamayoq ni mana papayoq. Chayqa hinaman tupusqaku chayqa casaru kapuranku; chay casaru kasqankumanta pisqa wawanku karan - cinco hijos - ; chayqa chay pisqantin wawankumanta huj kaq locu karan. Chayqa chaymanta huj locu kasqanmanta karan mana ni papanta ni mamitanta respetaranchu ni kuraqninkunatapis ni respetu karanchu. Chayqa chaymanta ... chaymanta karanku chayqa ... chay iskay kaq wañupuranku. Kinsallaña karanku. Chay kinsantin kaqmanta huj kaq casaru karan. Chhayna chayqa kasaru kaq wañupuran. Chhayna chayqa mana casaru kaqpis wañupullarrantaq. Iskayllaña casaru karanku. Iskayllaña casaru huj kaqqa mana casarupaschu. Huj kaq casaru karan. Huj kaqtaq solterulla chay locu kaq. Chayqa chaymanta chay casaru kaq wañupuran. Chayqa warminta viudata saqepuran. Chayqa chaymanta

chay locu kaq warminwan tiyapullarantaq. Hina-
man kau- ... tiyaranku, tiyaranku, tiyaranku.
Chayqa chaymantataq hinaman kaq chay locu kaq-
pas wañupuran. Kaq señorapis warminpas wañu-
pullarantaq. Chayqa chaymanta ripuranku altu-
man; este altuman ripusqakus chayqa invierti-
kapuranku estrellaman. Tukupusqaku ch'askaman.
Hujnin kaqtaq inviertikapuran lluthuman; tuku-
puran lluthuman. Chayna anchayna hina kashanku
altupi estrella lluthu cruz sutiyoy; chayqa
nanpitaq este lloq'e laru makinpa pachanpitaq
kashan lluthu.

SECOND VERSION:

Lluthu kasqaku; mamitan karan. Duña Juana Lluthu;
papantaq Santiago Cruz karan. Chayqa paykuna
kasqaku chayna pobrillan; hinaspa chaymanta wawan-
kuna karan pisqa - cinco, cinco hijos -; Chayqa
chaymanta karanku este tawa kaq hermanuntin;
huj kaqtaq karan as locu y despues malioso con
 ? este malcriado, no anchhayna karan huj
kaq chayqa. Chaykuna wakchalla karanku mana ni
imankupas karanchu - no tenfan nada, ni este ni
capital; chayman hina karanku paykunaqa riki ...
entonces chayman hina paykunaqa tiyaranku, kau-
sakuranku, llank'aranku, hinaspa hinaman chay-
llaman, wañupuranku chay tawa hermanukuna. Chay-
qa chaymanta wañupuspanku por que este diosnin-
chisqa munasqa; hina ch'askaman tukupurenku chay
tawantin kaq cruzman. Hinaspa chaymanta chay
hujnin kaq chay locu lluthuman tukupuran. Ya?
Chayqa chaymanta anchhayna hina kunan kashan
tawa estrellakuna cruz anchhayna lloq'e laru-
ninpitaq lluthu kashan. Nada más.

APPENDIX 3:

MOUNT CALVARY

Machulachayku kaq kasqa wañupusqa wañupurqan papaymi willawan; hinaspas wañusqa casi iskay watachá wañuran. Entonces banapusqakuña hinaspa mortajata churapusqaku. Hinaspa mortajata churapusqaku hinaspa. Actual ... na ... al ... velashaqtinkus riki hinamanta t'iksi t'iksi almaqa kuyukachasqa. Hinaspas, riki. Hinaspas rit'i-i-i-i-i-t-a-a-a-q askhallapuni así perqa perqamanta; perqa q'asatas wasaparqun riki. Hinaspas chaypi calvariun kashan. Nataqsi icha punkutaqsi kashan ... hinaspas q'asata wasaparun; hinaspas punku kashan chaypis na kashan. San Pedro con su llave ... llavintin. Chaysi nin riki. Chaymantas kutimun chay pata-pitaqsi este kashallantaq riki como se llama, San Miguel, arcangél con su balance ... San Miguel arcangél chaymanta riki kutichimun hinaspas q'asata wasaparqusqa; hinaspas nina fogota hap'irusqa hinaspas chispallan q'asaman chay-arusqa. Chaysi camino haykupushan chay nina fogotamankama. Chaymansi alma haykun. Chaymansi mana ni mayman risqan yachakapunchu. Será infierno pues.

Chaysi chaymanta nimusqa, "warmiyki waqashan," nispa. "Nisiuta wawykikuna waqan," nispa. Kutichimusqa. "Wawaykikuna waqashan," nispa. Hinaspas cheqaqta waqayusqaku. Hunt'asyá kayusqaku. Chaysi chaymanta waqtapun wawankunaqa. "Condenakamunkin," nispa. Hinaspas, "Mana. Kay vidan kani," nispa nisqa. "Allinta," nispa...

Pero chay ripuqkunaqa, pero tropa tropas
riki llamacha oviyacha, alqocha hinaqaychan-
tinsi seqayapun; manas hinallaqa ripunkuchu.
Pero manas maytapas qhawarikunkuchu, k'umu
k'umuyuspallas ripunku. Maypitaqman k'umuyuspa
... q'epiyokkama ... Chaysi chay q'asaman
wasapayapunku. Chaynaman calvariun kasqanman.

The story of Mount Calvary was told to me in Amparaes
(Department of Calca) by Luis Quispe, informant no. 21.

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