The Inca Calendar, the Ceque system, and their representation in *Exsul Immeritus*

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Abstract Besides referring to the Inca calendar, Blas Valera gives in the document of Exsul Immeritus also a simplified drawing of the Ceque system in Cuzco. According to the original description of Polo de Ondegardo from 1559, this consisted of 41 lines or directions going out from the central temple of the Sun. In three *suyus* (quarters of the town) each there were nine *ceques* (lines) in three groups of three but in the fourth *suyu* this number was doubled in such a way that here were 14 *ceques*. This peculiarity of the last *suyu* can be attested in similar ways also for other Andean local organizations. In fact, it results to be a crucial characteristic derived from general Andean concepts of social, political, ritual and calendrical organization. In terms of the calendar, each *ceque* organized also a specific number of huacas, locations in the landscape of the Cuzco valley that were attended ritually in their special days. Thus, the numbers of huacas attached to the ceques are of central importance to our knowledge of the Inca calendar. Blas Valera gives us in his drawing a simplified version of the Ceque system. He represents each group of three ceques by one line. He gives the correct numbers of huacas belonging to the respective suyus but various numbers as attached to groups of ceques differ from those given by Polo and in terms of the individual ceques they become more problematic, especially where they concern the fourth suyu. The article is a critical evaluation of the numbers of ceques and huacas given by Blas Valera as compared by those of Polo de Ondegardo. Now that the Miccinelli documents are published, it becomes of crucial and urgent importance to study them critically, discussing them jointly by specialists of different expertise in terms of what they contribute to our knowledge of the precolumbian world of the Incas.

Key-words: Miccinelli documents; ceques; calendary; Incas astronomy; Andes.

Now that the two documents *Historia y Rudimenta* (HR) and *Exsul Immeritus* (EI) are being published, it will be possible to evaluate them

critically on specific details of information that they provide us with. The documents intend to define a neo-Inca and thus a colonial religion but they contain also important references to Inca culture and Inca religion as it existed in pre-Hispanic times.[1]

Two drawings with their descriptions and explanations included in the bundle of papers that constitute Exsul Immeritus attracted my special attention. Each claims to represent a genuine technical feature of Incaic organization in Cuzco: the first of the Inca calendar and the second of the Ceque system. Whoever was the original informant on the Inca calendar, he was well prepared to tackle the issue (Zuidema 2003; 2004). Nonetheless, in my second paper I also remarked that the names given to the Incaic months had to derive from the list of month names found in the chronicle of Felipe Guaman Poma de Ayala (finished in ~1615), added by another, less knowledgeable person than either Guaman Poma or the original writer of the document.[2]

The reference to the Ceque system of Cuzco in Exsul Immeritus consists of a generally correct but simplified version of it. However, it differs in details from the system originally described by Polo de Ondegardo in 1559 but preserved in the chronicle of Bernabé Cobo (1956) [1653]. This fact makes it of interest to analyze the drawing as it is the only other description that gives us some technical details of the Ceque system. The doubt has been expressed that the description is influenced by my study of the Ceque system (Zuidema 1964; 1971) [1962, 1995]. The existence of the two documents (IR and EI) is, however, well attested from long before the publication of my book (Domenici 2003).

I will take up first briefly again the issue of the Inca calendar in EI and ask the question if and how it could be a reflexion on a real pre-Hispanic construct. I do not need to enter into all the details of my earlier articles but use the conclusions reached there. I will expand,

[1] I sincerely thank the Istituto de Studi Avanzati, Laura Laurencich Minelli and the Dipartimento di Paleografia e Medievistica, all of the University of Bologna, for their interest and continuing support of my research in Andean civilization. I thank especially Dr Clara Miccinelli for allowing me to publish the drawing of the *Cequecuna* from the document Exsul Immeritus.

[2] Nonetheless, I will remark later that the person who added the month names must have been well aware of the fact that he dealt with a primarily solar calendar and not a lunar one.

however, somewhat the scope of the problem to what now we know more in general about Andean calendars. I do so also in view of the second problem, given that the Ceque system also functioned as a precise yearly calendar, this in the context of general Andean ideas about the close correlation between space and time. The so-called 'Ceque calendar' includes references to three different ways of calendrical counting: one of a solar calendar, dividing the year into 12 near-equal fixed, solar months; another of a synodic lunar calendar, following the phases of the moon; and a third of a sidereal lunar calendar, regulated by observing the moving positions of the moon through the stars. The calendar in EI takes into account the first two ways. For a study of the Ceque diagram in EI, the third way is most important.

1. The Inca calendar in Exsul Immeritus

The calendrical system is explained by way of the drawing of a fictitious quipu. Twelve pendant cords represent 12 synodic months in a year, each cord having either 29 or 30 knots. Thus I call the quipu fictitious as we have no knowledge that such a way of representing calendrical numbers really existed; however, for didactic purposes in colonial times, we can accept well this method of explaining the system.

Next to 12 synodic months, the quipu refers also to the existence of 12 solar months of 30 days each. Fifteen red knots are consistently followed by 15 green knots. There where this constant sequence of groups of 30 knots exceeds the number of knots (29 or 30) on a pendant, it is continued on the next pendant. Thus by the end of the 12 pendants, an excess of five green knots is accumulated and is tied into a thirteenth, extra pendant. As this gives a total of 360 knots, the last five days of the year are accounted for by a last group of five red knots on this thirteenth pendant.

This calendar then seems to give primacy to the lunar counting. Above each pendant is, however, a small drawing with the name of the month, not ending by the well known term of *quilla* or *-quis* for "moon" but by that of *pacha* for "time", apparently indicating the fixed locations of the solar months in the year. In fact, those names give primacy to the solar

calendar. In my article of 2003 I compared this account of the Inca calendar with two real quipu calendars, the first from *Ica*, made in Inca times, and the second from *Chachapoyas* --from late Inca times but possibly already from early colonial years--, and with a calendar represented by a textile from earlier *Huari* times. The Huari calendar counts 12 months of 30 days and five extra days and thus it corresponds well with the solar calendar of EI. It makes, however, no reference to any lunar connection. Our first chronicler, Juan de (Betanzos 1987) [1551], describes the same system but as he does not give precise details it is difficult to have full confidence in his report. Our next chronicler, Cristóbal de (Molina 1989) [1574], giving our best information on the Inca calendar, claims to refer to a lunar one. Here, however, I have good reasons to suspect that, in fact, he refers to the Ceque calendar. Next I will explain some of the essential elements of the latter (Zuidema, in press). The Chachapoyas calendar describes in a precise way months of either 30 or 31 days with one of 29 days, a reason to suspect that it was knotted in early colonial times, already influenced by the European calendar with its shorter month of February. The Ica quipu will result to be of most interest for comparison with the calendar of EI.

The Ica quipu represents two different calendars. The first one combines a solar with a lunar count and lends itself well to compare with the EI calendar. The second calendar shows intriguing similarities to the Ceque calendar; however, for present purposes I do not need to refer to it here (Zuidema 1989a). The sequence of numbers of the first Ica calendar is as follows:

54 60 61 60 70 60

As the total of all six numbers, 365, agrees with that of the tropical year, we do not need to follow the same numerical sequence in order to analyze its significance. For a first purpose of comparison, the following sequence is useful:

60 54 60 61 60 70

295

The three numbers 60 conform to those of a regular calendar like of Huari ((12 x 30) + 5). The total of the first five numbers is equal to that of 10 synodic months (10 x 29½ = 295). The combined excesses of the four values 60, 60, 61 and 60 above that of 59 (equal to two synodic months) are subtracted from the remaining number resulting in the value of 54 (59 – 5 = 54).[3]

We observe that the Ica calendar does not define in any explicit way the difference between the periods of 12 synodic months (354) and 6 double-months of 60 days (= 12 x 30 = 360), nor of the difference between the latter and the tropical year (365). And while the EI calendar continuously adds to the values of the synodic months (mostly in terms of two-month periods) the Ica calendar subtracts the total of similar amounts from one of the values of 60 or 61. However, by way of the number 70 (= 60 + 5 + 5) it implicitly takes into account the numbers 355, 360 and 365. Thus, the two procedures of the Ica and EI calendars are rather similar. Clearly, the Spanish chroniclers reporting on the Inca calendar –which they always associated with Cuzco, the Inca capital itself-- never realized whether they were dealing with a solar or a lunar calendar. They may not have understood an explanation of indigenous informants who had in mind a calendar like that of Ica. If, however, we can accept that the EI calendar ultimately derives from Blas Valera, then he may have captured something of that indigenous explanation. I would conjecture that in some way he had access to the Inca calendar and studied it well during the time that he was working for the Third 'Concilio Limense', but that from the calendar as published by that Concilio [1585] were subtracted all lunar references, making it conform more to the Christian one.

2. The Ceque system according to Polo de Ondegardo

Before coming now to a critical evaluation of the drawing of a Ceque system in EI, it will be necessary, firstly, to give a brief description of the Ceque system as studied originally by Polo de Ondegardo and,

[3] From this sequence it is not clear why, in stead of the values 54 and 61, could not have been chosen the ones of 55 and 60. For a possible solution of this problem we would have to consider also the second calendar, which is not necessary at the moment.

secondly, to conclude about its calendrical function of which Polo also was keenly aware. The Ceque calendar is now well grounded in archaeological evidence of Inca astronomy and in elaborate descriptions of Inca rituals. It becomes, therefore, an excellent tool for critical comparison with other information.

The Ceque system of Cuzco consisted of 41 *ceques*, going out from the central temple of the Sun, *Coricancha*. Together they organized 328 landmarks in the valley of Cuzco that as places of worship were considered to be *huacas*. On each ceque were enumerated a variable amount of huacas toward the outside in relation to a specific point on the horizon as seen from Coricancha; however, according to the distance of the horizon and/or function of the ceque, the latter could end before, at or beyond the horizon. Each ceque was thus related to a particular straight direction as sightline. One ceque, the last of the whole system, distinguished itself by the remarkable feature of being explicitly mentioned as divided over two directions, ranked differently, thus leading to a total of 42 directions (next to 41 ceques).

The ceques were ranked in descending order, as either *Collana* (a), *Payan* (b) or *Cayao* (c), in groups of three ceques each (numbered by me as 1, 2, 3), being counted from upstream west to downstream east, in each of the four sections of town or *suyus* (numbered by me, again in descending order, as I, II, III, IV). The ranks in groups and suyus were not assigned in any explicit way but can be concluded from their social associations and from their repective higher or lower numbers of huacas on ceques, groups of ceques and suyus. The basic order in the first three suyus was, however, elaborated upon in the last suyu, IV, and this fact will become of basic interest in a moment. For the moment I will only indicate this new order in suyu IV and discuss its particular configuration later.

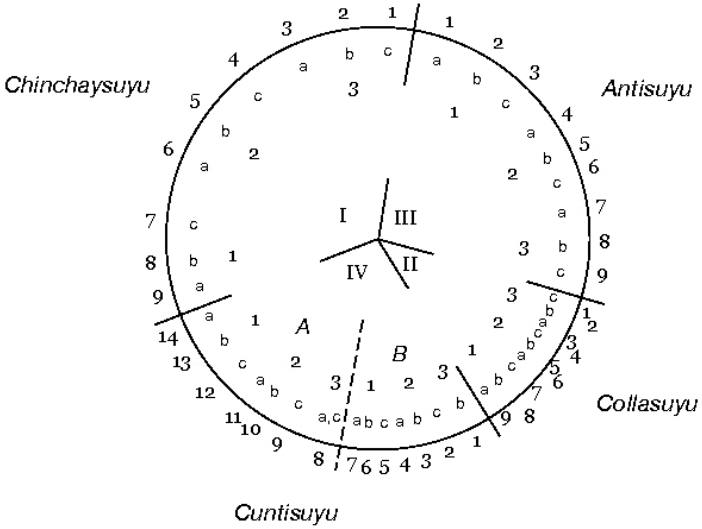

Figure 1
The order in the Ceque system (numbers within circle)

As said, the Ceque system was first studied by Polo de Ondegardo, in Cuzco but also in villages and towns of today's Bolivia whose inhabitants gave him drawings of their plans (Durán 1981) [1559]. He also explicitly refers to the calendrical use of the system in Cuzco but does so with giving only a few clues for solving that problem. No chronicler provides a sufficiently full account of that use; however, the many fragments of information on the socio-political and ritual organization of Cuzco and their close integration in terms of space, social hierarchy and time allows us to reconstruct with confidence the precise calendar with its sequence of 328 days and of its exact place in the tropical year. For calendrical purpose, the ceques were read from the inside out and according to the arrows of a clock throughout the whole system, each huaca accounting for one day. In the next diagram I have assigned to each huaca one degree in a circle of 365° (and thus not of 360°). During the remaining period of 37 days, as indicated, this primarily agricultural calendar did not operate.

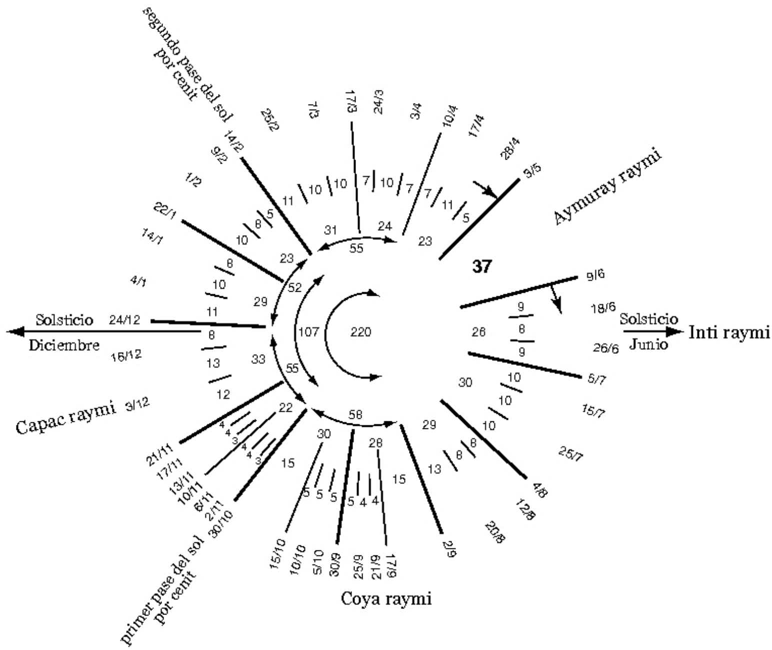

Figure 2
Ceque system as calendar

If we review this calendar starting with the shortest periods as indicated by the numbers of huacas on each ceque, it looks very irregular. (I will refer to them as 'weekly periods'). If we look, however, at the ever larger periods of Incaic 'months', 'seasons', 'half-years' and the 'year', then they become more and more regular. The total of 328 conforms exactly to the period of 12 sidereal months (12 x 27⅓ = 328). At the end of this period, the moon returns to the same position among the stars and at the same time of the night as where it was in the beginning. We might have expected each suyu to correspond to a 'season' of exactly 82 days (4 x 82 = 328). For reasons of social organization and of other solar and lunar observations, these periods were, however,

changed to the values (in calendrical order) of 85 (II), 80 (IV), 85 (I) and 78 (III), thereby maintaining the average value of 82. One other reason for the change was that the Incas considered also the importance of periods of 55 days, these being close to two sidereal lunar months (2 x 27⅓ = 54⅔). We discover this importance looking now at the values in days of the 12 months. (I evaluate later the integration of suyu IV into this sequence). There are six months with values of ~30/31 days and six with values of ~25/24 days. In principle, we might expect each 'long' month to be combined with another 'short' one, giving a joint value of ~55 days.[4] Four such combined periods are especially important as one early but anonymous description of the calendar makes explicit reference to them (Anonymous a). In addition, Molina gives useful details that support their particular roles. These four periods and the dates separating them are:

2/9 58 days 30/10 55 days 24/12 52 days 14/2 55 days 10/4

The two periods around the December solstice (24/12) together measured the exact period from the sun's first passage (30/10) to its second passage (14/2) through zenith, a period of 107 days and of prime interest to the Incas.[5] The anonymous chronicler specifies that in each of these four periods of ~55 days, each being shorter than the sum of two synodic months, only one synodic month, from new moon to some six or eight days beyond full moon, was attended in a ritually significant way. We realize that here the Incas, in a very sophisticated way, combined four types of observation; two pertaining to the sun and two to the moon:

1) They observed the zenith passages and December solstice of the sun.

2) The sidereal-lunar year of 328 days was divided into six months of ~30/31 days and six months of ~25/24 days. The existence of the six months of ~30/31 days reveals that in Cuzco did exist also a full solar calendar with months of 30/31 days, though we miss any specific

[4] In fact, this expectation could only be fulfilled partially given the distribution of the months over the four seasons.

[5] The December solstice is given in the Ceque calendar as 24/12, and not 21/12 or 22/12 as expected. The first date is in agreement with a statement of Molina who observes that the preceding month extended two days beyond the actual date of the solstice.

description of it. The pre-Hispanic evidence that I mentioned before is, however, a good support for the hypothesis.
3) The Incas observed in each of the four ~55 day periods as mentioned only one full synodic month as two would not fit; these four synodic months and their moons could not all be observed in one succession. Of course, we know that all moons in a year got some attention but only a few were ritually important. Each of these important moons was observed departing from another solar observation.
4) Clearly, the four periods were also used to make observations of sidereal months; especially for the first and the fourth periods there is good support for reaching this conclusion from chronicles with significant information on stellar observations. Moreover, as the whole calendar was built up from six long and six short months, and, in addition, had corrected its total length reducing it from 330 (6 x 55) to 328 days (the precise value for 12 sidereal lunar months), we can conclude that it was intended to be a sidereal lunar calendar, though it had a fixed place in the solar year. We understand now also the values of the *suyu* seasons. The two more important suyus with 85 days each combined two long, more important months with one short, less important one, while the two less important suyus, of respectively 80 and 78 days, had only one long month and two short ones.
We come now to the most irregular, 'weekly' periods, their organization being of prime interest for comparison to the drawing of the ceque system in EI. As there are 41 ceques, a more regular distribution of the days over a total of 328 days would have been by means of 'weeks' of eight days each (41 x 8 = 328). Probably such a regular weekly system did also exist. Pedro (Pizarro 1978) [1572), with information that he received in the first days after the Spaniards took Atahuallpa a prisoner in Cajamarca, refers to a rotating service of 41 ladies (the queen and 40 others) to the court, each lady for 8 days. Other, early and late, information also attest for the existence of 8 day weeks in the Andes (Zuidema 1977b). Later chroniclers captured details of the system but did not understand it anymore to its full extent. (Garcilaso 1991) [1609] was, however, aware that, within this context, more important ladies had access to the court for more days than less important ones. Moreover, for astronomical, calendrical and social purposes it was useful to have longer and shorter 'weekly' periods, thus

leading to the longer and shorter months. I conclude, then, that we can accept the organization of the 41 weekly periods as given, as well as the existence of a more regular system.

The weekly system points us now to one of the most peculiar but fundamental characteristics of the Ceque system in Cuzco and of similar systems elsewhere in the Andes. It will also be of critical value for a comparison of the Ceque system with the drawing of a ceque system in EI. We realize that a system of 41 weeks, either in its regular or irregular form, does not match well with a system of 12 months, again either in a regular form of months of 30/31 days or in an irregular form as just reviewed. One cannot distribute in any convenient way the number of 12 units (12 = 3 x 4) over that of 41 (the number of ceques; a prime number) or 42 (the number of directions; 42 = 7 x 6). We are dealing here with one of the reasons why the Incas expanded the regular number of ceques, 36, as suggested by the ceque distribution in three suyus, to 41, a process accomplished in suyu IV. Here we find the following distribution:

IVA			IVB			-sub-suyus
1	2	3	1	2	3	-ceque groups
a b c	a b c	a,c	a b c	a b c	(b)	-ceques
4 4 3	4 4 3	15	5 5 5	5 4 4	15	-huacas

(N.B. Hierarchical order: calendrical order)

Suyu IV is first divided into two parts that I call the sub-suyus IVA and IVB, each with three groups of ceques. The third group in IVA consists, however, not of three ceques but of only one divided over two directions ranked as sub-ceques called, resp., a and c. The third ceque-group in IVB consists of only one ceque; it has no indication of its rank but has a proper name, *Anahuarque*, being directed towards the mountain *Anahuarque.* I assume, however, that it should have been classified as a ceque b (this rank indicated in brackets) as this is the only rank missing in this suyu consisting of two sub-suyus. We observe that the total amount of huacas, and thus of days, belonging to the two single ceques as ceque-groups is comparable to that of the other ceque-

groups in IVA and IVB. We can understand the well considered logic of this curious arrangement of the ceques in suyu IV if we compare it to another example of such an arrangement, described in the Quechua dictionary of Domingo de (Santo Tomas 1951a) [1560] and here applied to the five fingers of a hand. The thumb was the principal finger and the index finger was said to follow it; the ring finger was said to follow the middle finger; the pink was the "small" or "young" finger without any companion finger to follow it.[6] This was the way in which the uneven three-fold classification was linked to, expanded and partially redoubled into the equally uneven five-fold one. In terms of the ceque groups of suyu IV (IVA + IVB), we can probably compare best IVA 1 + IVB 1 to the first two fingers and IVA 2 + IVB 2 to the next two fingers, but a combination of IVA 1 + IVB 2 and IVB 1 + IV 2 would also be a possibility. In any case, IVA 3 a,c + IVB 3 (b) together clearly formed only one ceque-group, the one compared to the pink. The interest in and logic of defining a fifth group as a reduction from and combination of the originally fifth and sixth groups, can be documented also with other telling examples from the Andes (Zuidema 1982a; 1989f).

The recurring combination of a 12-part organization with a 41-part one, is one of the most conspicuous evidences that in the Andean world of Peru and Bolivia did exist a common political model that could be applied in larger and smaller contexts. We find it expressed in various colonial records in more or less elaborate but always recognizable forms. Let me give a few examples.

When Cabello Valboa (1951) [1586] describes, in rather mythological terms, the kingdom of *Ñampallec* in the northern coastal valley of *Lambayeque* as it should have existed before the conquest by the *Chimu*, he claims that it consisted of 12 central cities, one of which was the capital, and 40 villages, each delivering to the capital a different kind of service. It had been ruled by a succession of 12 kings, each ruling for less than 12 years (Zuidema 1990a).

[6] There did, however, exist a word for the anomalous but sometimes occurring condition of a person with six fingers in Quechua, the Inca language. The dictionary of González Holguín reports the word: *Puma chaqui* or *huaccaruna,* He who has six fingers like a lion (= *puma*).

Hernández Príncipe (1923) [1622] describes the following organization of the village of *Allauca*, near *Choque Recuay*, in the northern province of *Ancash* Zuidema (1973; 1989b).

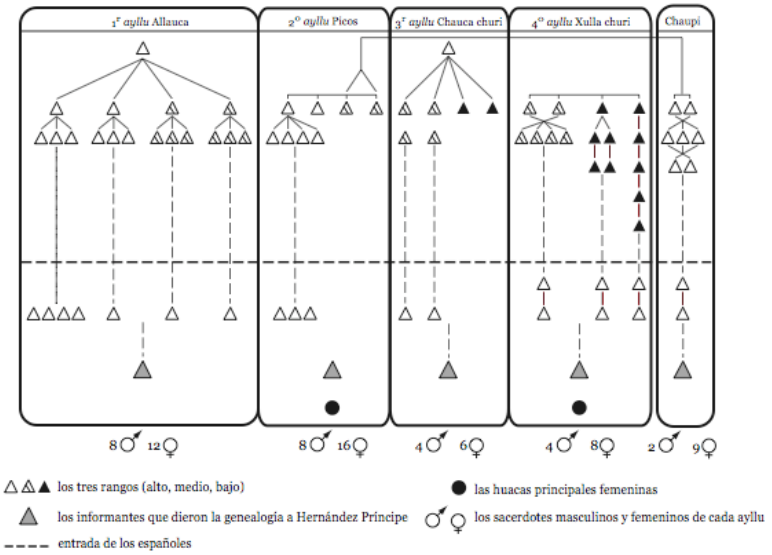

Figure 3
The social organization of Allauca

Four named ayllus claimed to have each four male ancestors (16 ancestors in total). The third and fourth ayllus were indicated as *churi* "son", being of lower rank than the first two; in addition, the name of the last, fourth, ayllu was *sullca* "youngest". In the first ayllu, each ancestor started a line of male succession and had three sons; in the second ayllu, each ancestor apparently had 4 sons. The pattern in the third and fourth ayllus is less clear but comes to fewer lines of succession. Besides, there was a kind of fifth ayllu, called *Chaupi*, "middle", mentioned after the other ones; it contained members who also belonged to the second ayllu. More complete is the list of young male and female priests that in each year represented their respective families in the ayllus and sub-ayllus in their service to the whole

community. Thus are reported for the resp. four ayllus the following numbers of male and female priests:

Male priests:	8	8	4	4
Female priests:	12	16	6	8

We observe that the numbers of female priests in the first and second ayllus correspond to the numbers of sons there, while the numbers of female priests in the third and fourth ayllus are exactly half those first numbers. The pattern suggests that in Allauca there existed a total of 42 families or households, although surely we are dealing here with an ideal situation. The numbers of male priests in the third and fourth ayllus were also half those in the first and second ayllus but here the total is 24 (= 2 x 12). Apparently, they represented the four male ancestors in each ayllu. In that case we must suppose, however, that each ancestor in the first two ayllus was represented by two male priests and in the last two ayllus by only one.

As I will come now to a comparison to Cuzco, I want to mention one other feature that so far seemed to be missing in Allauca: a three-fold hierarchy like that of the terms Collana (a), Payan (b) and Cayao (c) in Cuzco. The ancestors were ranked as high (h), middle (m) or low (l) as follows:

1st ayllu	2nd ayllu	3rd ayllu	4th ayllu
h h m m	h h m m	m m l l	m m l l

Most remarkable to observe is how in this small provincial town of Allauca –-classified as a *pachaca,* a unit of 100 families--, and in the imperial capital of Cuzco, a very similar political ideology was expressed in somewhat different ways. We can compare the organization of 2 x 12 male priests in Allauca to the 12 ceque-groups in their regular organization in Cuzco and the 42 female priests there to the 41 ceques (42 directions) in the expanded version of the Ceque system here. We do not know the rules of transmission of the priestly offices but we can surmise that some kind of parallel pattern was followed: one from father to son and from mother to daughter. The distribution of those 42 units in Allauca and Cuzco was, however,

rather different from each other. In Allauca, the 42 female priests were distributed in a kind of logical and regular pattern over the four ayllus, while in Cuzco the expansion from 36 to 41 ceques was carried out exclusively in the fourth suyu. We might have expected the fifth ayllu in Allauca to play a role in the female organization (see next), but there is no evidence that this ayllu had any function in this context. Clearly, in both organizations there existed a class of intellectuals who well thought out how to apply the common 12-41/42 contrast in a different local situation. There did exist in Allauca a material expression of its social organization in a way similar to the Ceque system: each family of the supposedly total number of 42 placed its offerings in another row descending from a common hill. There is, however, no indication that these rows, radiating out from the top of the hill, could have been organized in groups of three like the ceques of Cuzco. The three-fold pattern was only expressed in a way as indicated above. Thus we might have another reason here to suggest why the distribution of the 42 female priests in Allauca was different from that of the ceques in Cuzco.[7]

Beyond the differences, we notice, however, also some striking similarities. In both cases, there is an important opposition between a higher, 'male' and more hierarchical system of political organization and a lower, 'female' and less hierarchical one. The first organization is supported in Cuzco by the tropical calendar of 12 solar months of 30 or 30/31 days each, while the second is expressed in a clear and detailed way by the sidereal lunar calendar. We can consider the synodic calendar then as a kind of connection between the two organizations and between the first two calendars. The opposition is also one: between a calendar observed in day time and one observed in night time; between dry season, with times for male and non-agricultural activities above ground of harvest, warfare and plowing, and wet

[7] If there had existed in Allauca something comparable to the more regular, underlying order of 12 ceque groups in Cuzco, then we might hypothesize that it would have been an organization of 36 patrilines and of 36 female priests, distributed over the four ayllus as follows: 12 12 6 6 (total 36). Both the second and the fourth ayllus would have been involved in the expansion to 42 (12 16 6 8) patrilines and not just the fourth ayllu alone like in the case of Cuzco.

season with strong female, underground connotations, when plants were sprouting and growing.

The integration of the two political systems is demonstrated especially well in its calendrical form. We saw how in Cuzco the organization of suyu IV resulted from the duplication of the three-fold organization into one that simultaneously was represented as a five-fold and six-fold one. The total number of huacas in this suyu remained, however, similar to that in the other suyus and its representation by three social groups in charge of their three respective months remained so too. In fact, suyu IV represented well the three months, in a way similar to the other suyus, effectively redividing them into six half-months. It did so as follows:

| 4 4 3 4 4 3 || 15 5 5 5 || 5 4 4 15 |
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22 **30** **28**

The organization of this suyu, in particular because of its small subdivisions, even might have had special calendrical importance, given that then, in the season of planting (~September-November), the most important astronomical observations were made: first those around the September equinox (Anonymous a 1906; Guaman Poma 1987); then of the first passage of the sun through zenith (30 October, Gregorian calendar), and finally during the upper culmination of the Pleiades (Zuidema 1981; 1982b; 1989a; 1992; 1997a; 1997b; 2005a). We notice an irregularity in the fact that the longest month was in the middle; it can be understood taking into account the overall social, astronomical and calendrical organization and need not be dealt with here.

Apparently, the Cuzco way of handling the 12-41/42 opposition was more influential in southern Peru. This we detect in even simple and rather late accounts of local organizations. Let me finish this section with two examples.

Members of the old panacas and ayllus in Cuzco lived also in the two other towns of Incaic origin in the same valley: *Sañu*, today San Sebastián, and *Oma*, today San Jerónimo. Information from an XVIIIth century document explains how the distribution of the ten panacas over

the suyus was carried out in San Jerónimo. The town had been classified in Inca times as a *pichqa pachaca*, an organization of 5 x 100 families. Members from the first suyu lived in the first pachaca, from the second suyu in the second pachaca and from the third suyu in the third pachaca. Those from the fourth suyu, divided into IVA and IVB were divided over the fourth and the fifth pachacas (Zuidema 1995b) [1964]. A fourfold organization was made to conform to a fivefold one of very different origin. The example reveals, moreover, another possible reason for the expansion of the Ceque system in Cuzco. Besides being the capital of the Inca empire, it was also the capital of its own province with the rank of an *Hunu*, of 40.000 families. While the Ceque system, with the internal order of its 41 ceques and 42 directions ((3 x 3 x 3) + (5 x 3)) could not express well the internal order of the Hunu (4 x 10 x 1000), at least it could refer to the latter's rank with the total of its ceques (one royal ceque and 40 others). It is by way of the Hunu that (Murúa 2004) [1590] and (Guaman Poma 1987) [1615] explain the internal order of Cuzco and not by way of the ceques.

The second example derives from the modern town of *Puquio*, in the department of Ayacucho, with an origin in early colonial and possibly Incaic times (Zuidema 1964b: 82, 84, 99; 1995b). Puquio consists of the four ayllus *Collana*, *Chaupi*, *Cayao* and *Piscachuri* (Arguedas 1956: 184, 185). The same names were already attested in 1830. The first three names correspond to those of the ceques in one group, *chaupi* "middle" being used in stead of *Payan*. *Pisca churi* means "five sons". We can thus well compare the four ayllus of Puquio, in terms of their ranks to the four suyus of Cuzco. We do not know to what kind of social reality the name Piscachuri could have referred, but it clearly included a concept of fivefold division similar to that of suyu IV. The comparison supports the conviction that the contrast between suyu IV and the three other suyus was not an accidental one but an essential property of the Ceque system. I might adduce other examples of this contrast and of the fact that the Ceque system in this way and other Andean examples in similar ways in fact integrated two different kinds of socio-political structures, one with a more male and the other with a more female connotation. For present purposes the examples as presented here may, however, suffice.

3. The Ceque system in Exsul Immeritus

We come now to the Ceque system as drawn in EI (f. 12v) of which Laura Laurencich (2004a, 2004b) already observed the following organization and correspondence to the ceque system as originally described by Polo de Ondegardo.

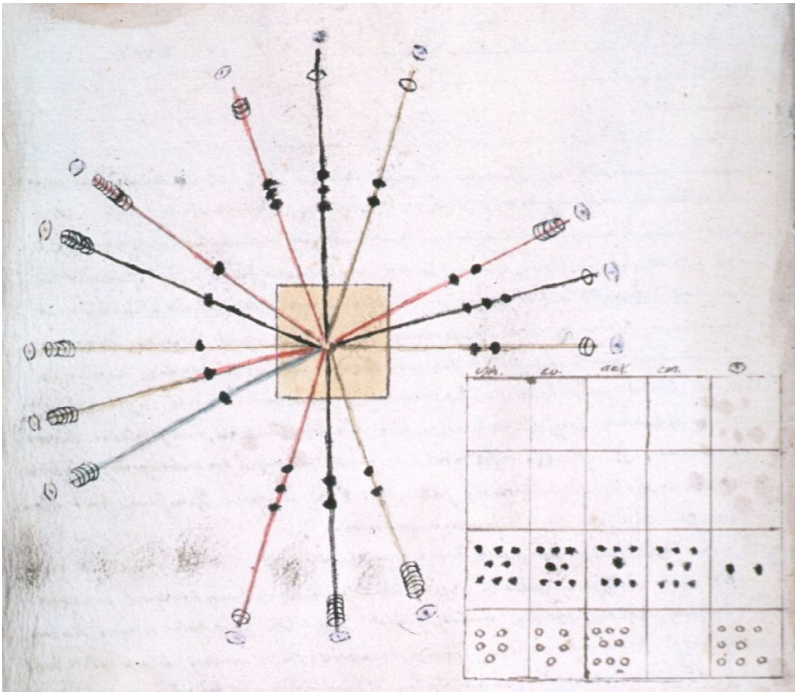

Figure 4
The ceque system as drawn in Exsul Immeritus

In stead of the individual ceques, now the three ceques together of each ceque group are represented by one line.[8] The lines (i.e. the ceque-

[8] The text of EI (f. 12r) refers to ceques in terms of their imperial extensions and not in their local context. Garcilaso also mentioned the imperial system and not the local one. Santillán (1968), who had seen the account of the Ceque system in the hands of Polo de Ondegardo, already in 1564 described an 'imperial' ceque from Pachacamac to Cuzco

groups) are ranked by the respective colors red (corresponding to 1), black (2) and green (3) and the numbers of huacas are indicated on the lines as normally done on quipus. In the suyu corresponding to IV, there are, however, five lines. The first three (resp. red, black and green) might well conform to IVA. The fourth line is first red and then green, and the fifth line shows a new, independent color, that of blue. If together these last two lines were intended to make up sub-suyu IVB, then their resp. rankings could have been 1/3 and 2. However, because of the color change of the fifth line we cannot be completely sure if that was the intention.

In the following diagram, I compare the two ceque systems in their hierarchical orders: of Exsul Immeritus (from 1618+) and of Cobo. I assume that the latter faithfully copied the description that Polo de Ondegardo had added to a drawing (both lost) in 1559. I give also the numerical values of the huacas and their totals in the ceque-groups (or lines) and suyus. (For suyu IV in the Ceque system, I give in addition the totals for IVA1 + IVA2, IVA3 + IVB1 and IVB2 + IVB3):

Exsul Immeritus				Cobo (Polo)				
(IV)	**80**	**(I)**	**85**	**IV**	**80**		**I**	**85**
red	18	red	33	A1	11	22	1	33
black	17			A2	11			
green	15	black	31	A3	15	30	2	29
r.-gr.	15			B1	15			
blue	15	green	21	B2	13	28	3	23
				B3	15			
(II)	**85**	**(III)**	**78**	**II**	**85**		**III**	**78**
red	32	red	25	1	29		1	31
black	26	black	31	2	30		2	24
green	27	green	22	3	26		3	23
Total: 328				**Total: 328**				

and Hernández Príncipe referred to another one in 1623 (Zuidema 1978) [1989]. The EI text describes the ceques in groups of three but it is not clear whether it refers to three lines in each suyu of the drawing or to three ceques of each ceque-group as represented by a line.

For a comparison of the two systems we have to take into account various issues.

The first issue concerns the straightness of the lines as drawn in the figure of EI. From the description in Cobo we can safely conclude that a concept of straight sightline was combined with a reality of the locations of huacas belonging to a ceque that did not conform exactly to such a straight line. In present-day Quechua, the word *ceque* preserves the connotation of straight line and the old translation by the spanish word "raya" probably also meant just that. Another question is, however, if in the pre-Hispanic central Andes there could have existed drawings of ceque-systems with straight lines. Polo claims that he saw drawings of ceque-systems but we have no idea what they looked like. Anyhow, we may wonder if these drawings could have been made already under Spanish inspiration. In a recent article, Beyersdorff (2002: 50-51) asks, in a rhetorical way, if Cobo, following Polo, had not been inspired by the drawing of a wind rose (of 32 directions) that European mapmakers in his time would add to their maps. I had made once the same comparison but without implying that the Ceque system would not have been a genuine native construct. Anyhow, the EI drawing, rendering the radiating lines in a rather regular way -–that is, with similar angles between them--, is like a wind rose.

I have the feeling that, of the written sources, Guaman Poma (1987: 261(263)) probably is closest to an Incaic way of representing the Ceque system, taking into account drawings of similar organizations from the XVIth century that Beyersdorff provides.

Guaman Poma gives a drawing of king Tupa Yupanqui talking to the important huacas of Cuzco and explains in his text that the king consults them about distant places and about the past and the future. He represents them in terms of a circle of 12 personalized mountains toward which the king, meant to be standing in the center of the circle, is looking. The imaginary sightlines themselves are only assumed but not indicated. Evidently, the author had in mind the regular version of the Ceque system by way of the 12 ceque-groups. Nonetheless, pre-Hispanic drawings of lines radiating from a center do exist, although we miss explanatory texts. In *Machu Picchu* is found a petroglyph of 16 straight lines radiating from a center and in the ruins of *Tucume*, Lambayeque, occurs a similar drawing engraved in an adobe surface.

Given the existence of the Nazca lines, renderings of ceque lines in whatever medium might well have been known to the Incas.

Figure 5
Tupa Yupanqui talking to the huacas of Cuzco

A second issue concerns the colors red, black and green of the three lines representing the three ceque-groups of each suyu in the EI drawing. Ethnohistorical examples indicate that the categories Collana (a), Payan (b) and Cayao (c) in this order could be represented also by the colors white (a), white-and-black (b) and black (c) (Zuidema 1964:

104-5, 138-9). I have no information that the colors used by EI could have represented an alternative indigenous choice and it seems very unlikely to me. However, there should not be too much of an objection against the fact that EI chose its own colors, although it is somewhat surprising that it chose black for second and not, for instance, for third color.[9]

Still, EI's aberrant distribution of the lines in suyu IV as compared to that of the ceque groups, indicated above, remains without a good explanation or justification. The earlier contraction by the Ceque system in IVA of the ceques a and c of ceque-group 3, is now applied by the EI drawing to one line corresponding to the two ceque groups IVB 1 + 3. Moreover, the former ceque-group IVB 3, consisting of the single ceque (b), is now replaced in the EI drawing by a line occupying

[9] Laura Laurencich rightfully observed to me that Blas Valera elsewhere in EI takes the same three colors red, black and green, together with a fourth color blue, to refer, not to the three ceques (a, b, c) of a group of ceques, or to the three groups of ceques (1, 2, 3) of a suyu, but to the four suyus themselves. Here they occur in the following order: I, red, corresponding to the first rank of Collana; II, black, to the second rank of Payan; III, green, to the third rank of Cayao; and IV, blue, to the extra fourth rank (probably also included into Cayao). The color blue, in stead of being applied to the single ceque Anahuarque of the rank IVB 3 b (as we noticed before), now indicates the whole suyu (IV) to which this ceque belongs. Perhaps, Valera had a good reason for carrying out this procedure. In a recent article (Zuidema 2005b), I made the argument that a technical analysis of Guaman Poma's description of the political hierarchy in Cuzco leads to the conclusion that *Cuntisuyu* (suyu IV), the lowest ranked suyu, also represented the extra class of *Incas by privilege* –-non-Incas from around Cuzco whose curacas had received the lowest rank of Inca nobles-- of all four suyus within the local context of the city of Cuzco. In fact, Mama Anahuarque had been considered to be the pre-Inca ancestress of these Incas by privilege.

Still, Valera's choice of four colors is completely his own and there is no other supporting evidence. The only Incaic example that I can bring to the fore at the moment where four colors apparently are used in representation of the four suyus (without indicating which color is used for which suyu) is Molina's description, in 1574, of the braided rope *Muru urco* carried by noble men and women of all four suyus together (Zuidema 1990b). Here were used the colors black, white, red ('bermeja') and tawny ('leonada", dark yellowish). This choice of colors conforms better to a more widespread use in pre-Hispanic Andean arts of four colors for symbolic reasons.

At the moment, however, we can make a more fruitful comparison between the 5/6 fold division in suyu IV of the Ceque system and the 5/6 fold division of the five panacas in the upper moiety (suyus I and III) and their association with the 5/6 fold division of the acllas (virgins) of the Sun, as described by Guaman Poma (Zuidema 1990c: 51-66).

the position of former ceque-group IVB 2. For these two reasons, the position in EI of ceque-group IVB 3, now remains vacant. Apparently, the person who constructed the EI drawing did not understand anymore the logic of the former organization.[10] The following diagrams may illustrate and visualize the discrepancy.

	IVA			IVB		
Ceque system:	1	2	3	1	2	3
	a b c	a b c	**a/c**	a b c	a b c	**(b)**
Exsul Immeritus:	1	2	3	**1/3**	**2**	

Ceque system			Exsul Immeritus		
IVA		IVB	IVA		IVB
1		1	1		1/3
a b c		a b c			(a/c?)
2		2	2		2
a b c		a b c			(b?)
3			3		
a/c	b				

[10] Let me focus for a moment only on the problem of the number of ceques. If all five lines of suyu IV in the EI drawing had stood each for a group of three ceques, then this drawing did not apply the reduction of all 42 ceques to the astronomical and calendrical important number of 41 ceques. If the fourth red-green line had been intended to stand for only two ceques in stead of two ceque-groups, representing a total of 41 ceques, then, of course, we do not understand why the fifth, blue line probably also should represent one ceque in stead of three and why it could not have been included as a single ceque b into the fourth line, reducing the total of ceques to 39. The initial mistake was, of course, that EI did not understand the logic anymore of why one ceque-group 3 had to belong to IVA and had to consist of only one ceque divided over two sub-ceques and why another ceque-group 3 had to belong to IVB and also had to consist of only one ceque. The author of EI clearly had lost the understanding that the informant of Polo de Ondegardo, and possibly this chronicler himself too, still had preserved in 1559.

The third and principal issue concerns the numbers of huacas given in the EI drawing as compared to those given by Polo and Cobo. The numbers of the two total systems and of their suyus agree well and EI repeats them in the accompanying abacus. Especially with the number 328 we can have confidence that it was intended by the Incas.[11] We observe, however, significant discrepancies between the two sources in the organization of especially the numbers of huacas in suyu IV but also in the other three suyus, numbers of importance for their ensuing astronomical and calendrical use. Thus we have to ask about the EI drawing: was there an astronomical and calendrical significance of the huaca numbers in all four suyus and in particular of suyu IV?

First of all, most important in the Ceque calendar was the period, from IVA2 to I3 included, of 107 days (22 + 33 + 29 + 23 = 55 + 52) (see figure 2 and diagram below). It represented exactly the period between the two solar passages through zenith (30/10 – 14/2), evenly distributed around the December solstice (DS, 24/12). It was a period of fundamental importance in Inca astronomy and Inca calendar. The period still is celebrated in modern Andean culture, now being represented by that from All Souls day to Carnival (Harris 1982) [2000]. We do not know whether the EI drawing was also meant to represent a calendar. But assuming this to have been the case, it provides much less satisfactory dates for the purpose of indicating the two solar passages through zenith at the latitude of Cuzco.

[11] While Cobo does say that there were some additional huacas, although these were not counted on the ceques, Polo is quoted in "Los Errores ...", published in 1586 at the order of the Third Concilio Limense (Durán 1981: 478), as confirming that there were 328 huacas. In fact, Polo mentioned 340 huacas, but here he included the 12 *sayhuas* or 'pillars' that, according to him, indicated "where the sun reached that month". Thus he counted the 12 huacas twice as they had been included already in the group of 328.

```
   II          IVB       IVA          I          III        -suyus
3  2  1     3  2  1   3  2  1     1  2  3     1  2  3       -ceque groups
                                   DS|24/12                 -solstice
26 30 29     15 13 15  15 11 11    33|29 23    31 24 23     -huacas/days
             ------------ ----------|-----    -----
                  58           55       52       55        -periods of
                          -----------------                  ~55 days
                                   107                ---> -zenith
             ---------------------------------------        passages
                                   220
```

```
   II          IVB      IVA          I          III        -suyus
3  2  1     3  2  1   3/1 ?        1  2  3     1  2  3     -lines
                                   DS|24/12                 -solstice
27 26 32     15 15 15 17 18        33|31 21    25 31 22
             ------------ ----------|-----    -----
                  62           51       52       56        -comparable
                          -----------------                  periods
                                   103
             ---------------------------------------
                                   221
```

Comparing the Ceque calendar (above) and suggested EI calendar (below)

Secondly, as we noticed before already, the four periods in the Ceque calendar of ~55 days (58 + 55 + 52 + 55 = 220), from IVB3 to III2 included, also found their good documentation in the chronicles about the observations of the sun, the moon and the stars during those respective periods.[12] The discrepancy of the first period (62 days) in the EI calendar from the average of 55 days is large and thus this period does not conform anymore to, or even approach, one of two sidereal lunar months. The similar discrepancies of the second and third periods in the EI calendar are less but still significant. In conclusion, I have not been able to find an equally convincing rationale for the EI numbers as for those of the Ceque system. Nonetheless, the total of 221 days (instead of 220) for the joint four periods might have worked.

[12] In fact, the correspondence was probably even better than it looks on first sight. The total of the second and third periods had to be reduced by three days in order to conform to the zenith period. These three days were taken from the third period as the second extended three days beyond the date of the December solstice (a fact also observed by Molina). Clearly, to add these three days to the first period was the most acceptable solution.

We do not know where the original author of the EI drawing got his information from. If Blas Valera was that author, he probably could and would have had access to the account and to the "carta" or drawing of the ceque system, that Polo de Ondegardo had made of it in 1559 and that had been consulted in the Concilio Limense. Possibly, Valera later did not remember accurately any more the minor numbers of the Ceque system, having lost access to that account and drawing.
Remains to be researched more fully to what extent the EI ceque system as a calendar and the EI Pachaquipu as as calendar could have been connected to each other. Two observations are of interest here. The Pachaquipu combined its synodic lunar months with a system of solar months in which the first 15 days were represented by red knots and the second 15 days by green knots. Moreover, the lunar months were divided there into weeks of 10 days or, some of them, 9 days. The EI ceque system applies a similar sequence of red and green but with an intermediate use of black; it refers with these colors not to three weeks in a month but to three months in a season.[13] Secondly, we observe that both the Ceque calendar as described by Polo and the Pachaquipu one begin with the fixed month around the June solstice and that the same beginning should have been made also for the EI ceque system in case it functioned as a calendar. In this sense, Blas Valera could well have been the author, or the origin and inspiration, of both drawings. However, it seems that either he or a follower of him did not understand anymore the full technical meaning of the Ceque system. Nevertheless, it is worthwhile to investigate if they could have intended another valid calendrical interpretation of the numbers for 'monthly' and 'weekly' periods that so far created a problem. Perhaps the EI ceque calendar was valid for another location, not on exactly the same latitude as Cuzco but a slightly different one. But this seems to me a very faint possibility.

13 We should be reminded again, however, that the Ceque system itself did not apply the terms Collana (a), Payan (b) and Cayao (c) to the three ceque-groups (1, 2, 3) and that no document on Cuzco refers to it. This application was introduced only by me in 1964 comparing the Cuzco organization with that of other villages, towns and provinces. Nonetheless, I still think that my argument there was fully convincing.

The Ceque system may have had a sacred meaning for Blas Valera but originally and primarily that system was a great technical and precise tool for registering spatial and temporal aspects of political and ritual organization in the Cuzco valley; it were aspects that we can still study with the help of various other chronicles. As such, the Ceque system had been of use for people high and low, from king and priests to common people. In order to make a good and practical use of it, they would not have needed to know any extra meanings. Before we study in Exsul Immeritus any sacred aspects of the calendar and the ceque system, we first have to clarify the accessible technical aspects, as I tried to do here, and we have to evaluate if, and how well, the second are grounded in the first.

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