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POSSIBLE REPRESENTATIONS OF CONSTELLATIONS IN THE ROCK ART OF THE BASIN OF MEXICO

Francisco Rivas Castro

1. INTRODUCTION

The rocks where were worked as model miniatures; they could be considered metaphors of hills with representations of agricultural terraces and hydraulic systems (Zimbrón, 1992; Rivas Castro, 2006). I propose that this group of rocks were signs that established circuits, where the periodic ceremonies were carried out according to the diverse moments of the agricultural Meso-American calendar; in addition they were used as “offering tables”, where all the elements for the petitions and the investitures that were placed upon them. On the other hand, I recapture the proposal that some groups of xicallis and small canals could also serve as mirrors where...
probably the reflection of stellar groups and stars could be observed at night upon pouring water on them. The observation of these astronomical elements could be used to predict storms or even for other predictions type related to the recovery of the toma and the return of the energy of people.\footnote{There exist data that there are certain rocks with symbols associated to eagles and jaguars; both animals being emblems of the two military orders more prominent in Prehispanic societies. They were represented as diverse animals and even as rays, winds or fireballs that run at high speeds and move in wide spaces at will.}

2. AGRICULTURAL TERRACES AND HYDRAULIC SYSTEMS

Another proposal is that which considers that perhaps the xicallis that contain some engraved pre-hispánico rocks perhaps represent in a metaphoric way hydraulic systems composed by springs, eyes of water, wells, and other bodies of water united by small canals that interconnect them.

On the other hand we know that they were developed in the whole basin of Mexico from the Formative epoch (1500-100 a.C) (Palerm 1990), in Teotihuacan during the Classic period (100 a.C-600 d.C) continuous with the practice of handling the hydraulic systems since there have been detected sistems of well defined channels embedded on tepetate related with the San Juan river which supplied the vital liquid to the city. Petrogliphs that indicate directions, exist and perhaps they were used to indicate lines for the urban construction of Teotihuacan, these are the dotted crosses (Fig. 2). Among the interpretation that have been proposed there is the one made early by Mateo Wallrath, who identified the possible representation of the disintegration of a star supernova; that of 1054 A.D. Studies made by the archaeoastronomer Daniel Flores (2008) seem to confirm that these type of events may have been marked on those large basalt and andesite blocks.

These dotted crosses have a very wide distribution in all Mesoamerica and they continue to be studied by the archaeoastronomers.

During the Toltec time reception of water systems and hydraulic groups related with the river Tula that supplied water during centuries to this city have also been detected. On the other hand, other examples of the Postclassical period exist in Texcoco, in the hydraulic complex that constitutes the hill of Tezcutzingo, where water of these springs was brought from Metectl hill, by means of the channel today known as Caño quebrado al Tezcutzino. The group of terraces that surrounds to hills has been studied by Jeffrey Parsons (2002:54-59); it is interesting to mention that in fact on the periphery of Tezcutzingo, several engraved rocks with staggered elements associated were found, that can
be metaphoric representations of the terrace systems that surround the hills Meteacatl and Tezutzingo (Fig. 3).

In Mesoamerica, the agricultural terraces and hydraulic systems had very early precursors as well as the use of both complementary techniques; this practice extended throughout historical several periods. Soon after these practices for the agriculture, he/she always associated with the ritual and petition of fertility and abundance of water, I consider that the chronology of the appearance of engraved rocks with pocitas or xicallis and small canals exists from hunters’ recollection times and in towns agricultural storms or sedentary.

The presence of engraved rocks with pocitas or xicallis, staggered terraces and small canals, apparently is more common during the Postclassical period (1100-1521 d.C) among the mexicas who copied many elements; they conserved and reutilized many elements of old origin, where dotted crossings of the teotihuacan time possibly existed. These examples need to be analyzed carefully, since “dotted crossings” exist as the examples in situ of the archaeological place of Calvario on the hill of Cocotitlan reported by Melendez (2007:98-99).

3. CHRONOLOGY OF THE CANALITOS OR XICALLIS

The analysis of the circular puddles made in model miniature engraved on rocks, is very relevant for its constant relationship with the petition of water and rain. These rocks from the time of the Olmecas (Early Preclassic period 1500 A.D.) once were related to the rulers, ball players and the priests, because they are found associated to several monumental heads and also isolated on basalt blocks in the contexts of cities of this period (Figs. 4, 5 and 6).

The pocitas or xicallis were also used as instruments (gnomons) to measure the positions of the sun in the horizon calendar like it has already reported it Broda and Galindo, the most tacit example is in the trail of Cuicuilco, which has a pocitas or xicallis in its higher portion (Fig. 7).

There are many engraved rocks associated to Prehispanic structures, in groups of terraces, not only associated to farming of corn, beans or pumpkin, but also there are recorded examples near places for the recollection of salt, as those studied thoroughly by Hernandez (1989:2008). On the other hand they have also been found forming a group or accompanied with other small designs in stone (Fig. 8).
4. CALENDARIC AND ASTRONOMICAL FUNCTION

As Zimbrón has already reported “...On the most southern part of the American continent, there is a place known as El Encanto at La Serena, Chile. There is a group of flat stones on which several conical puddles were sculpted that fill with rain water; some of them are united by small canals, in one of them, it appears that some investigators have identified a tail of the Scorpio constellation and the Southern star...” (2008:400).

In Peru, in the well-known place as Chavin of Huantar, the archaeologist María Scholten (1982, Vol III: 23), mentions “the existence of a rock, recovered a long time ago near the Southwest corner of the Main square of Chavin. On it, seven ‘wells’ have been carved, of which we reproduce an ‘aerial picture’ taken by Germán Costa. If one speaks of ‘seven’, and of enigmatic things, it is possible to think of the relationship of these wells with the ‘Seven Nanny Goats’, name given by the Spaniards to the Pleiades. Most surely that is the reason that in the town of Chavin they designate this rock as Chinchay, name that is used to refer to the Pleiades constellation.” (Zimbrón 2008:400) (Fig. 9).

5. THE ENGRAVED ROCKS POCITAS AS MIRRORS TO OBSERVE THE FIRMAMENT IN PERU AND COLOMBIA

The same as many cultural elements that their use and symbolism have not been understood, “the stones with tacit so extended in the whole Andean area from the norcolombian territory to the Argen-
tinean south, and whose intrinsic relationship with water has not yet been clarified, different proposals exist... as those of Raphael Girard... who says that the natives conceive them as source of magic attraction of rain, or as mirrors with astronomical purposes. Both proposals do not exclude each other, but they are not yet well based. As Granda says: It is "in my judgement, it is probable the two forms exist, and some rocks with tacit were bound to the petition or request of water and others much more elaborate and located in very strategic places served as mirrors to analyze the firmament" (1998:12)

In South America puddles of this type, were also carved in the rocks denominated as: Moyitas in the archaeological place of Lavapatas located in San Agustín, Colombia. They are also located in figured rocks of Sayhuite and Abancay, Peru.

"These sources, composed by numerous ponds or cisterns, cascades, small channels traced in diverse directions and wells or 'moyitas' in the borders, through them water runs forming a group of extraordinary beauty, they are pacchas carved in the rocks."

In the Peruvian east, the sacred utensil or water pitcher is known as paccha mama, or patcha that means: Moon, jet or stream of water according to Carrion (1955: 56 and 89) (mentioned by Zimbrón 2008:390) (Figs. 10 and 11).

6. ROCKS WITH PETROGLYPHS AND POCTAS OR XICALLIS IN THE BASIN OF MEXICO

On the hill of the Grua, in the outlying region of the sanctuary of the virgin of the Remedies, we report the existence of a petroglyph that represents the constellation of Xonecuilli curved knife of obsidian - that perhaps represents the constellation of the Seven Little Nanny Goats (Rivas Castro and Leticia Garcia 2002:61-72). This same constellation was represented on the edge of the stone of the sun, to-
together with the Pleiades and the constellation of Malahuastli that perhaps represent the constellation of Orion and that of Santa Cruz Acalpixcan, where is associated to nightly aspects and with Venus like the star that also announced the rains to propitiate the emergence of corn, the relationship: Venus-rain-corn has been broadly documented in the works of the archaeoastronomer Iván Sprajc (1996) (Figs. 12 and 13).

In the Moctezuma hill, located in Naucalpan de Juárez, State of Mexico, a great petroglyph exists, where it possibly represented Venus, and the 104-year count (Rivas Castro 1997) (Figs. 14 and 15).

The iconography that this petroglyph imply, refers to other examples of Xochicalco, related with sea stars, emblems of Venus in several contemporary graphic contexts, such as the Venus glyph of the masculine and feminine characters, painted in two jamb of the red temples of Cacaxtla, where the association of Venus with the scorpion can be clearly seen (Fig. 16).

It is probable that also the count of the numerals that were carved in this example -52- twice, allude to the Venus 104 years synodic cycle (Fig. 17).

In the Judío hill (in prehispanic times called Mazatepetl), of San Bernabé Ocotpec, in Magdalena Contreras’ region, also exist two elements that refer to astronomical observations: the double scroll and ilhuitl, the glyph of the day (Fig. 18).

7. THE GLYPH OF THE DAY

This glyph is designated in Nahuatl with the word ilhuitl, translated by Molina like: a religious festivity or any day of the week. The glyph is composed by two long scrolls that end up in a circle; each
one in oppsing the other, which denotes constant motion. Vega Sosa explains that this symbol is a more complex variant of the unfolded double spiral which divided in two sections establishes the relationship of the movement of the sun and the earth that generate the day and night (Vega 1979).

8. THE DOUBLE SCROLL Glyph

About this glyph, Charles Ross, denominates the double spiral “the shape of the year”, he considers the above due to some petroglyphs located in the Fajado Butte site, belonging to the Chaco culture and that it represents the solstices and equinoxes, according to the following ethnographic information

- “...The year Shape, Reversing its spiral from winter (left) to summer (right) and straightening around the beginning of spring. The difference in the curvature of the two spirals is drawn by the apparent seasonal drift of the sun and the change of speed of the earth in its orbit”. (Cited by Vega, 1984:156-157)

Vega, in turn also establishes that this glyph of the spiral double is the abstract representation of the movement that defines the relationship of the movement of the sun and the earth to generate the day and the night (op.cit 1984) (Fig. 19).

Another interesting aspect of this archaeological site, is that in it a sculpture was engraved in the basic rock, in front of the main temple; this element refers to the relationship that exists between the turtle and the jaguar like the surface of the earth, represented by the shell of this animal and the characteristics of the jaguar, since it has tail and jaguar claws. We know that the jaguar skin was a metaphor of the starry sky, and this why this iconographic and symbolic association is interesting. In front of the jaguar-turtle sculpture of the hill Mazatepetl, I observed a small pocitas or xicallis; for its size, of 10 cm diameter, I consider that it was used as recipient to place selfsacrifice blood, or to pour another sacred liquid, like water, or pulque, as offerings. On the other hand, from the data of the orientation of this sculpture, and the chronology of the place, and from a computer program that deploys the sky toward the year of 1500 A.D., indeed it is possible to recognize the constellation of Orion as it appeared on early June on the west of the archaeological site.
Finally, it should be mentioned that it is in fact June 11 when patron saint in the region where the Mazatepetl hill is located, San Bernabe Ocotepec, is worshipped. Evidently there is a relationship between the cult to the jaguar-turtle with San Bernabe and the turtle, a metaphor of the earth, mother of the corn, with Maria Magdalena, another patron saint of the region; because formerly the region was named Santa Maria Magdalena Atlitlic, and the observation
of the constellation of Orion that announced the full escalation of the rains, that allowed the corn and the useful plants of the cornfields to mature fully (Cfr. Rivas Castro, 2001; 2005) (Figs. 20 and 21).

On the other hand, upon observing the drawing on the rock with most puddles of the Mazatepetl hill (located behind of the main mound of the site), we find certain similarity with the stars of the Orion belt; let it rest as a working hypothesis that requires to be checked with direct observations in the water mirrors that form in these pocitas or xicallis, a probable observation of the Orion belt, at the beginning of June (Figs. 22 and 23).

9. SOME PETROGRAPHY REFLECTIONS AND THE STARS

The previous examples that are present in petroglyphs of the basin of Mexico indicate us that those symbols were important part of the practices of astronomical observation, because they were worked in specific places where constellations and bright stars like Venus or Orion belt were observed. These elements were of supreme importance for the daily life, and for those that held the knowledge and the priesthood, because they indicated special events for the
agricultural practices of the seasons; as well as to cultivate useful plants to the men.

There are more proposals such as those that indicate that other important events were recorded in the petroglyphs, such as the explosion of supernovas (Flores Gutierrez 2008) and perhaps eclipses that related radical changes in the life of the humans and the animals and that also were omens of famines or misfortunes for wars and conquests. It is interesting to mention that still in the codex's of the early XVI century (Telleriano Remensis for example), the tlacuilo continued painting comets, eclipses and astronomical events associated to military displacements, to famines and to epidemics, which is the reason why we can infer the importance that had for these towns the astronomical observations associated to the prediction and prevention of disasters.

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