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It is difficult to determine the role played by the stars in the life of people of pre-Inca Ecuador. On one hand, archaeoastronomical studies conducted in the country are not numerous and, generally, they lack solid hypotheses. On the other hand, the social memory of present day Ecuadorians regarding past cultures has become alienated by mixed perceptions. In fact, popular imagination, practically, does not recognize a local culture before to the Inca. And if there were local archaeological remains to be recognized, the pre-Columbian culture of these groups is not considered to be different from Inca culture.

Therefore, the discourse pointing to the Inca as worshipers of stars is made to fit perfectly into the worldview of many pre-Inca communities of Ecuador. Altogether, these equivocal approaches have shaped a pseudo-scientific entourage booming as ever, but leaving aside the achievements of scientific archeology, to the satisfaction of an audience hungry for sensationalism.

In this paper we will briefly cover the monumental sites that have drawn the eye of tourist attention in recent years, most of which have been opened to debate by “formal” archaeology. The main ones are Tulipe, Puntiachil, Catequilla and Cochasquí.

Before turning to the purely archaeological discussion, let's give space for a debate about why is it that pre-Inca cultures are widely linked to the stars. To professional archaeologists, it is clear that this discussion depends on a number of issues, such as ritualism, worldview, iconographic interpretation, etc., along with its accompanying empirical evidence. However, for those authors who dare to understand the past as amateurs, the cognitive process of professional archaeologists is ignored, or seen as useless, because they are driven to discover a reality simply blinded by the banality of a discovery that almost always is going to 'revolutionize' history.

Not surprisingly, many of these 'scientists' have claimed monumental sites as observatories, without sufficient archaeological evidence. In the long run, bold interpretations are postulated, with more touristic than scientific appeal, supported by the national press or other media which are responsible for the distribution of this information. Take for example publications in newspapers and online news pages.

Pre-Inka archaeoastronomy in Ecuador

Written by Iván Toscano

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“Museo de sitio Tulipe; Cara a cara con los yumbos” <www.hoy.com.ec> published on March 23rd, 2007. “From the terrace of one room, visitors have a panoramic view of the six pools in which each year the feast of the Equinox, a ritual for the beginning of the agricultural cycle, is celebrated. In the pools, all shaped differently -round, squared, rectangular- yachaks and shamans performed ceremonies worshiping the Sun and the Moon. In addition, wise men used the pools as mirrors to watch the sky reflected in the water, for their astronomical studies.

“Tulipe: centro ceremonial del pueblo yumbo” < www.mercuriomanta.com > “Tulipe pools, located at 1450 m above sea level, belong to the second occupation, that of the Yumbos, whose archaeological vestiges, contrary to ethnohistorical news, speak of a culture that embodied in monumental works, knowledge of astronomy, geometry, architecture, space management, etc.”

These two paragraphs state a hypothesis about the stone pools complex known as Tulipe. It should be noted in this connection that science is constructed through hypotheses that must be contrasted with empirical evidence in order to be confirmed.

Archaeoastronomical methodology requires measurements to detect significant alignments between monuments and the astral plane. Additionally, the alignments should be represented in the structure with an architectural feature, like a window, an idol, poles, etc., to put into light the physical manifestation of the ritual involving a star.

However, in the case of Tulipe swimming pools, there is insufficient evidence of an astronomical ritual feature. Unfortunately, press articles do not consider the hypothetical character that the “researchers” themselves give to their claims, promoting instead a false idea of history which is usually identified with the historical pride of a nation.

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In other words, one untested hypothesis can easily lead to the social reconstruction of a past people, more marketable for tourism and more inclined to feed with lies the pride of a nation. This is what we call pseudo-science. Fagan and Romey have highlighted in *Archaeology* magazine (volume 56, number 3), that pseudo-archeology and pseudo-science are disseminated by television and the internet, in media programs supposedly scientific, including major networks such as Discovery, The History Channel and occasionally, on stations like ABC, NBC, and Fox.

One could say that, somehow, amateur archaeoastronomers have replaced a rational logic with an emotional one. The phrase “astronomy, the mother of all sciences” (Jara 2006), seems to reflect the intention of glorifying the knowledge, always “advanced”, that pre-Columbian groups had. No matter that no solid evidence for this exists. Amateur archaeoastronomers are not here to give an account of their search for the truth; they just try to say what people want to hear.

The second problem I wish to address is the cultural confusion that is observed in both modern interpretations, and popular historical memory. This confusion often revolves around the extrapolation of cultural achievements of advanced societies to the least developed ones. Such is the case, for example, for some pre-Columbian peoples of Ecuador of which it is assumed, without reason, that they possessed an astronomical knowledge pretty much equal to that of their invaders, the Inca. It's not surprising, then, that certain circular structures with stone pavement, whose cultural affiliation is unknown, have been interpreted as timers based on solar alignments, as in the case of Catequilla and Tulipe sites. There may be similarities in the material remains of two cultures, but we can not understand two societies in the same manner, even less if we cannot grasp the nature of their worldviews.

It is assumed that in the pre-Inca Ecuador, Cochasquí is a site more likely to be considered as an astronomical observatory. It is an archaeological complex with 15 truncated pyramids with ramps, made of cangahua. It also has smaller hemispheric mounds used as burial sites. Several scientists have visited these pyramids, or have worked there. The first was Max Uhle (1933), followed by Oberem (1964-1965), Ziolkowski and Sadowski (1992), and finally Yurevich, Almeida, Espin and Guayasamin (1995). The results of their studies lack consensus. Ziolkowski and Sadowski estimated that the site was not used as an astronomical observatory, as they did not observe any alignment of the ramps with the sun, the moon and the Pleiades, nor with their respective movements and luminosity. However, Yurevich, Almeida, Espin and Guayasamin, using a projection to the sky at the time of the probable operation of the site, manage to find a lineup of one of the pyramids with the constellation Ursa Major (specifically with its seventh star, Benetnash), which is supposed to coincide with the months of planting. But ultimately, the discovery is not very encouraging, as the agricultural calendar of the area has been questioned, by the same authors, for being variable. Oberem doesn't find any significant alignment of the site, either. However, they all say that Cochasquí holds on to a 'special significance', which

does not mean much.

The only thing that is perhaps relevant is that the site constituted the seat of the Caranqui or Cara chiefdom (Moreno, Oberem 1981), where, according to the chronicle of Montesinos, princess Quilago became strong to lead the resistance against Huayna Capac.

Puntiachil is another site that has a set of pyramids with ramps, although their state of preservation is disastrous (the site has been almost completely destroyed in the manufacture of bricks). According to Yurevich, Almeida, Espin and Guayasamin (1995), the site has a number of astronomical alignments, but the authors do not specify the exact location of the pyramid from which the alignments originate, a key information that would allow us to determine, at least, the mountains delimiting the portion of observable sky. Apparently, the sun would be one of the stars observed, although it is not proven if the site was built according to it, or that there is at least some structure built to follow the solar movement, as indicated by Aveni (1981) in his methodology. All these details cast a shadow of doubt over this research.

Rumicucho is considered a pucara with three circular platforms, which according to Yurevich, Almeida, Espin and Guayasamin, are important astronomical observatories. However, there is no consensus that they have in fact been observatories. Actually, a hypothesis runs around that these platforms were used to grind grain in Colonial and Early Republic times. By the way, our researchers have not been able to determine the cultural affiliation of the site, which is not surprising, since the same archaeologist who excavated the site (Eduardo Almeida) said, on one hand, that its equatorial position was a major factor in the 'native' worldview for solar rituals performed at the Mitad del Mundo (he mentions as archaeological evidence the sites of La Marca, Catequilla and Rumicucho), while in another publication he states that Rumicucho was built by the Inca and inhabited by the imperial elite (1993, 1999).

Catequilla is a site located on the homonymous hill, which shelters on its slopes the village of San Antonio de Pichincha. Responsible for its study is the amateur archaeoastronomer Cristobal Cobo. It is an archaeological complex partially destroyed, circular in shape (although Cobo describes it as a semicircle) which, because of its location on top of Catequilla and in the equator, would have been an astronomical observatory. This "research" is the most problematic of all. First, because the site hasn't been excavated extensively; actually not even the entire surface of the structure has been opened. Second, because the prehistoric structures spread throughout the area adjacent to the hill Catequilla apparently are not prehistoric either. As Almeida (1998) himself reports in his article "Plataformas circulares de piedra en la zona de Rumicucho", these platforms are threshing floors (although, in 1993, he reported in Catequilla the existence of a large-scale "bohío" – a pre-Columbian house). Likewise, the site does not

have in the platforms any fixed features for departing alignments.

The Tulipe complex is comprised of 8 “swimming pools” (polygonal in shape, except one, which is circular), several truncated pyramids and artificial mounds, all located in a tropical forest area to the northwest of the city of Quito. Unlike other sites, in Tulipe it is not the pyramids which are archaeoastronomically relevant, but the pools, as noted in the recent book “Tulipe y la cultura yumbo” (Jara 2006). It is considered that the pools had a ritual function, mostly as astronomical observatories. Oddly enough, stars were not observed looking directly at the sky, as dictated by common sense, but in their reflection in the mirror at the pool’s water! Except for the circular structure, which was not used for stargazing, because it was a solar calendar.

To start with, the site is located in a rainforest area, making it difficult not only a direct vision of the sky, but the observation of the stars reflected at the pool’s water as well. Naturally, these structures could be used to delimit the sky, but no effort has been made to detect any alignment, an absolutely essential feature in scientific archaeoastronomy. For the rest, proposed alignments are a bit forced, as the semicircular pools and the surrounding rectangular ones, have no common orientation whatsoever. In my view, these pools are more connected with water than with the stars, because if we look at the so-called Yumbo culture, petroglyphs are located on large rocks on the banks of local streams, such as the Pacto River.

On the other hand, in the publication referred to, serious consideration is given to comments by Bishop Haro, an avocational archaeologist who appears interpreting the Yumbo culture with such confidence that he seems to know the whole truth about the cosmology of Tulipe culture. Unfortunately, rather than clarifying the matter, Haro casts another shadow of doubt over the results of FONSAL. Indeed, so well understood descriptions are only possible in an ethnographic work.

In conclusion, it is clear that in Ecuador archaeoastronomy faces many difficulties concerning interpretation that adversely affect the popular understanding of the history of our pre-Columbian communities. False evidence feeds the pride of both researchers and readers who identify themselves with a fantasized past belonging to the domain of a fairy tale rather than a reality based on rigorous research.

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