

Astronomy in the Argentinian Chaco

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The Chaco Region

The Great Chaco region is located in central South America. It partially covers the south of Bolivia, Paraguay, and northwest Argentina. The Argentinean portion of this region includes the provinces of Chaco and Formosa, the oriental portion of the provinces of Salta and Santiago del Estero, and the north portion of Santa Fe.

The Argentinean Chaco was inhabited by various aboriginal groups and a complex non-aboriginal population. Before the arrival of the Spaniards, the social organization of the Argentinean Chaco aboriginal groups was based on small bands. Originally most of them were hunters and gatherers. The three most prominent linguistic groups were and still are the Guaycurú, Mataco-Mataguayo, and Guaraní.

These aboriginal people underwent several changes during colonial times and had complex relationships with the colonial society. Despite the fact that they were politically independent from the colonial government, many types of exchanges between these aboriginal groups and the Creole and European population existed from trade to military conflicts.

Between the eighteenth and nineteenth centuries, numerous religious actors arrived in the area, like the Jesuits and later on the Protestant missionaries. These presences played a key role in new Indian resignifications of Christian practices and cosmologies (López, 2014a, b).

Nowadays, a population of around 133,000 original people survive by working as rural laborers and by developing a variable amount of hunting and gathering (*INDEC. Encuesta Complementaria de Pueblos Indígenas (ECPI) 2004–2005*).

Specific Groups

We will focus on two specific aboriginal groups in the region to exemplify some of the main characteristics concerning their conceptions of the sky. In the examples selected we analyze notions that are key to a large variety of Chaco groups, which indicates the relevance of exchanges in South American cosmologies, both in pre- and post-Columbian times (López, 2014a, b).

Toba of Western Formosa

The Toba (Guaycurú linguistic group) who settle in the west of the province of Formosa (Argentina) specifically reside in the Bermejo Department. Both among the Toba and other Chaco groups, the

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celestial sphere is mythically related to the female domain. The mythical origin of women is the sky, from which they descended. Stars are also considered to be female beings. Hence, there are well-defined links between the sky and the female world. An example of this is the relationship established with the moon. In the narrative level Moon is a masculine entity which conducts the mythological conformation of the Toba woman. Rafael Karsten's 1912 ethnography of the Bolivian Toba also suggests that they thought that menstruation was caused or influenced by the moon (Karsten, 1923, p. 26). The myth about sexual relationships between the moon and women who have had their first period can still be heard among the Toba. The moon is still thought of as a masculine entity which is responsible for the mythological conformation of Toba women. In the words of a Toba, "Moon is the first man of every woman." When their first period appears, mothers still say to their young daughters that the "Moon is to blame." Therefore, in this context mothers utter things such as "It is as if the moon had raped my daughter." As we have already said, according to Toba oral tradition, the moon is responsible for the mythical formation of femininity. Thus, the moon plays the role of the primordial hero "the fox," who let the primeval men in mythical times have sexual intercourse with women who had just descended from their celestial abode. Indeed, as the moon had his first sexual intercourse with the girls and thus helped them get married, the fox had his first sexual intercourse with the celestial women and helped them have their teeth removed from the vaginas and thus become the wives of men. Likewise, the lunar imaginary is used to measure diverse temporal cycles. The Toba explanation about the moon refers to a group of organic ideas which evoke youth, maturity, and death of a living agent (Gómez, 2014b).

Among the Toba of Western Formosa, political leadership is associated with the asterism known as *Dapi'chi*, which is represented by the Pleiades. This asterism controls cold in general. Its appearance also announces the arrival of a new bountiful period starting around December, when the bush abounds in algarroba, and they say that the asterism seems to "vanish" from the sky. According to the evidence gathered, *Dapi'chi* is "a very important man" wearing a red crown that can only be noticed when he first becomes visible, that is, when coming up in the east before dawn, in winter, during his heliacal rising. Just like the Toba leader, *Dapi'chi* is the "leader" because he knows all those under his control: the other stars. *Dapi'chi* is also reinterpreted concurrently with the changes in the blurred political leadership figures among the western Toba Indians (Gómez, 2014a; 2011). On the other hand, this asterism has been critical in accounting for the beginning of a new annual cycle.

Mocoví

The Moqoit or Mocoví belong to the Guaycurú linguistic group. They inhabit the southern area of the Chaco region, in the Argentinean provinces of Chaco and Santa Fe. We will underline two main components of their rich astronomy that are also present in other Chaco groups.

The Milky Way and the *Nayic* as a Conceptual Structure

For the Moqoit, the Milky Way holds many articulated meanings, which are highlighted according to the circumstances or the narrator. A common element throughout these meanings, however, is the structuring role that is played by the Milky Way in Moqoit cosmology (Giménez, López, & Granada, 2002).

Star brightness is related for the Moqoit people to the notion of the brightness of powerful beings. In this sense, the Milky Way and its myriad of stars make up a space seen as extremely powerful. The different positions of the Milky Way are used for finding the way in woodland at night and as a temporal marker. Beyond these, the Milky Way is seen by Moqoit as a path, a tree, and simultaneously a whirlwind that gives structure and maintains the communication between the different levels of the cosmos. But it is not simply a naive picture: tree, whirlwind, and path act as true models to think about key aspects of the fundamental dynamics and structure of reality as the Moqoit people experience it.

The Moqoit word *nayic* means “path,” and it is related to the idea of going deep into nonhuman space. One such space is the forest, along which a sequence of markers unfolds, each one commemorating a pact with the ruling powers of the world. The notion of “path” is a general Moqoit conception to organize reality: a tale, the life of a human being, the community memory, and the universe itself. The Milky Way is seen as the path followed by the mythic Rhea, the Mañic, as it flees to the sky haunted by the ancestors of the Moqoit. Stories about these events make up a kind of serial narrative linked to the history of the “hunting of Mañic” and are “strung” by means of the Milky Way. In this sense, the representation of the Milky Way as a “path” structures the Mocoví’s oral narrative about stars.

But this path in the sky is also seen as the road of the celestial powerful beings that descends to the Earth and the way in which the *pi’xonaq* or shamans obtain power. The *pi’xonaq*, the specialists of the sacred, have a capacity to see this structure of the universe. Their healing capacity is based on their capacity to travel around the world and build alliances with the entities governing it.

Iron Meteorites, Power, and Colonialism

Given the sediment composition of the Chaco plains, it is very rare to find rocky or metallic objects. The area inhabited by several Moqoit communities is dotted with pieces of this kind related to the sky – iron meteorite fragments making up the strewn field of Campo del Cielo (Giménez Benítez, López, & Granada, 2004). These pieces are seen as manifestations of the celestial presence on Earth. It is believed that, after falling from the sky and getting buried in the ground, meteorites start to come up to the surface and appear to those people they were designed for, bringing them luck, wealth, and health. The contact between humans and meteorites may cause rainfall, and only shamans are capable of manipulating them with no risk. To the Moqoit, the wealth-generating capacity of meteorite fragments is a manifestation of the power they confer as agents of the “powerful” of the sky.

In this context, the Moqoit believe that the inequality, violence, and exploitation they suffer from the non-aboriginal society are ultimately due to the way in which the latter has monopolized access to the cosmic sources of power. For these reasons, through texts (Martínez, 2006) and public actions, Juan Carlos Martínez and other young Moqoit leaders have demonstrated the connection that the Moqoit see between their notions about the cosmos and their land and cultural claims (López, 2011). In doing so they have emphasized the importance of the relationships between humans and powerful nonhuman beings in shaping Moqoit notions of territory and way of life. They used the Campo del Cielo crater field as a symbol of those relationships. The successful Moqoit resistance to the transportation of the largest meteorite found to Germany for the dOCUMENTA13 art exhibition should be understood in this context (López, 2014c).

Conclusions

The notions that the Chaco aboriginal groups have about the sky are not a whimsical set of quaint and naive fantastic stories. On the contrary, they are part of complex considerations about the world and the humans which involve the use of sophisticated metaphors and elaborate ideas of such notions as identity, personhood, body, causality, and power. Thus, structures are used both to organize the sky around the Milky Way and to shape the account of a person's life. Just like the ideas of any human group about the world, these aboriginal conceptions of the sky are not static but change over time. Furthermore, they are related to the life of the societies that generate them, albeit not necessarily being their reflection. In this sense, the intense relations among the various groups in the region, even if belonging to different linguistic groups, are reflected in the multiple interactions between their astronomies. On the other hand and regarding the groups in question, the sky is strongly tied to abundance and power on Earth, so that all considerations about the sky are regarded as major political issues. As these societies are not hierarchical and many social actors vie for leadership, we are faced with a variety of competing versions of the sky and its inhabitants and of how humans can relate to them.

In the groups analyzed, the process of developing ideas about the sky and the competing interpretations thereof are in full force and are not merely a curious thing of the past. Their views of the celestial sphere play a major role in the current struggle for their cultural, territorial, and health-care rights.

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