

# Ethnoastronomy: The Sundanese of West Java and their Relation to Ethnoastronomy

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## Introduction

Nothing in nature has intrigued humans more than gazing at a spectacularly star-lit sky. While all people on Earth have observed the same primitive objects in the sky, i.e. the sun, moon, and stars, all cultures have developed their own interpretations of these heavenly bodies within different cultural contexts. There are many different ways in which people have woven concepts and knowledge of sky phenomena and objects they watched into the fabric of their lives. But it is important to realize that in most cultures there was nothing that was thought of as “astronomy.” The phenomena and objects in the sky were merely part of the whole complex of the surrounding world. I use the word astronomy for anything related to what we think of as astronomy in our present context. This article is a preliminary exploration of the Sundanese, an ethnic group in West Java and how they express their perceptions of the universe through ethno-astronomy, the study of knowledge, interpretation, and practices regarding celestial objects or phenomena of specific cultures.

Knowledge of the starry sky and its constellation was indeed common in many ethnic groups inhabiting the Indonesian archipelago. Many studies have already been conducted especially in Central Java and Bali. But to date, only a few have been done in West Java – sometimes known as *Tatar Pasundan* (the land of *Sunda*) by local people. Some of them were written by Sastramidjaja (1991) from Bandung and Igarashi Tadataka (1980, 1987, and 2008).<sup>1</sup> Much more material exists which has yet to be clearly researched and documented. Yet recently, there have been moves to better document Asia’s relationship to ethno-astronomy.<sup>2</sup>

## Sundanese and their Relationship to Time

In the past the Sundanese used natural indicators in understanding traditional time to determine or to name the times of the day. This was based on natural phenomena through what they felt, saw or heard, and in tandem with the effect of the sun’s positions. They used terms which corresponded to specific times of the day, for example, such as *Wanci Tumorek* (*wanci* = period of time, *tumorek* = deaf) for around 00:30 a.m., *Wanci janari leutik* (literally the time after midnight) for 1:30 a.m. and so on. Other terms indicating time were used based on what they felt: *Wanci haneut moyan* (*haneut* = warm, *moyan* = sunbathing) meant the time of day where it begins to warm or good for sunbathing at around 08:00 a.m. These indicators are a few of many which were applicable throughout the year. The Sundanese live near the equator and the time of sunset

and length of twilight are approximately the same all year round.<sup>3</sup> These indicators (more than 20 in number) in effect, represent smaller parts of time segments of a 24 hour day segmented into the morning, noon, afternoon, and evening respectively.

For example, in Salamungkal, a small village in a hilly area about 50 kilometers to the south of Bandung city, people still use these time indicators in their daily social life. In conversations among locals in expressing something related to times, instead of saying “I return home at 6pm,” they will say “I return



Menhir (*lingga*, in Sundanese) found in the former Sunda Kingdom in *Kawali* which might function as a gnomon (like a triangular part of a sundial).

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One of the artifacts in *Kawali* (dating back to 1045 AD), where the former *Sunda* Kingdom is located showed a calendar (*kolenjer* in local language) in the form of matrix.

home on the period when I can hardly see someone's face" or "I return home when the Sun goes down behind the mountain" instead of saying "I return home at 16" to name but a few.<sup>4</sup>

### **Pranatamangsa: the Agricultural Cycle**

Agricultural people like *Sundanese* were deeply concerned with calendrical observations. These were crucial in gauging the time of planting and harvesting to insure successful crops. The appearance and disappearance of certain stars correlated with the seasons of the year, and reminded observers when to plough, sow, hunt, fish, and celebrate other annual events. The *Sundanese* agricultural cycle is known as *Pranatamangsa* (time/season-keeping system)

The most important seasonal markers for *Sundanese* were the Orion Belt (*Bentang Wuluku*) and Pleiades (*Bentang Kerti* or *Bentang Ranggeuy*). The dawn rising of the Orion Belt and the Pleiades in mid-May marked the coming of the dry season. For about forty nights before sunrise the Pleiades was said to disappear from view. This event, usually noted in an almanac, was called *ngerem* in the local language which means to hide itself. The heliacal rising of the Pleiades and the Orion Belt in the evening sky was also important to farmers as a sign of the wet season and the beginning of rice-planting.

Another constellation which is familiar to *Sundanese* is the Southern Cross (Crux), whose *Sundanese* name is *Bentang Langlayan* (the Kite). These stars are also very important for local fishermen since they indicate a Southern direction and for farmers because the appearance of the Southern Cross in the East at sunrise was a sign of the beginning of the dry season. Another local name for the Southern Cross is *Bentang Saung Genjot* (leaning Hut).

Van den Bosch (1980) in his study on the Javanese calendar found that *Pranatamangsa/Pranotomongso* was recognized by Javanese farmers, and although this agricultural tradition was practiced for almost two thousand years, *Pranatamangsa* was officially declared by Sri Susuhunan Paku Buwana VII in



At one of the annual meetings for the forum of former Kingdoms and Sultanates in Indonesia held in Bandung in November 2012. On this occasion I promoted the importance of conducting research in ethnoastronomy in their former Kingdoms and Sultanates regions.

Surakarta (Central Java) on 22 June, 1856. In *Pranatamangsa*, the days in a month (more exactly *mangsa*) varied from 23 days to 43 days, depending on specific observable environmental elements. Ammarel (1996) and Salmun (1956) confirmed that every *mangsa* have their own characteristics. Names of the month (*mangsa*) in *Pranatamangsa* and the length of the periods have now been standardized in agreement with the Gregorian Calendar.

With *Pranatamangsa*, all farmers conducted all phases of cultivating rice exactly at the same period of time otherwise rice would be exposed to crop pests. When rice was flowering, insects were eating in other areas. However, if farmers were too early or too late at any phase of cultivation, pests would afflict the crops due to a lack of other food sources. Though recently the climate does not exhibit the same patterns as before, to some extent *Pranatamangsa* is still in use in some remote places in West Java, e.g. Cisolok-Sukabumi, Kampung Naga-Tasikmalaya, and Baduy area (Adimihardja, 1990). This suggests that historically *Pranatamangsa* was used by all agricultural people on Java island.

### **Folklore**

Human understandings of the sky were expressed in many forms, and celestial lore and storytelling formed a core component of this. I found some examples of the diverse and wonderful ways in which *Sundanese* people described specific objects or phenomena in the sky in lore. Most older *Sundanese* were familiar with tale of *Nini Anteh*. There are variants, but the most well-known one relates how *Nini Anteh* (grandmother *Anteh*) lived in the Moon with her spinning wheels accompanied by her cat. When she was a little girl she lived with her step mother who mistreated her. She then subsequently escaped and flew to the Moon, helped by a ray of light coming out of it. To this day, when the Moon is full, people say that one can see *Nini Anteh*, sitting beside a spinning wheel accompanied by her cat. By way of comparison, we have celestial lore of the ancient

people from both North America and the Far East, including Japan, where the rabbit appears in the moon: the lunar disk presents the same shape and is identified as a rabbit.

For all ancient peoples, the Sun and the Moon are probably the best documented sky objects amongst other celestial bodies, in particular the eclipses of both have always been impressive to all people. The Sundanese also possessed their own celestial lore about these spectacular events. There is an oral story in some parts of West Java which explains the lunar eclipse.

“In heaven *Batara Guru* (the god of gods), shot a fake god with a bow and arrow, separating his body from his head. The body fell down to the Earth and changed into a rice mortar but the head was still alive in the sky. The head ate everything in the sky including the Moon. Yet when he ate the Moon, an eclipse occurred. Since he had no body, the Moon went out from the bottom of the head and the eclipse ended.”

The solar eclipse however, was seen as a couple in love. People on Earth beat rice mortar with pestles and the noisy sound like two annoyed lovers who separated from each other.

Sundanese people did not generally separate phenomena which we currently classify as meteorological from what we now think of as astronomical. The phenomenon of rainbows, which is called *Katumbiri* was regarded as the angels from *kahyangan* (heaven) coming to Earth to take a bath. The rainbow itself symbolized a golden ladder used by angels to descend to earth and to return to heaven.

No feature of the sky was more amazing than the Milky Way: the sky consists of darkness as well as light, a bright splash of light broken by dark separations. This specific object which is observable during the dry season in West Java was known as *catang bobo* or *catang* which means rotten tree trunk full of holes (Igarashi, 2013), while in Javanese in Central and East Java it is described it as *Bima Sakti* (a hero in *wayang* story). To the south-east of Southern Cross stars (*bentang langlayangan* – the Kite) two bright stars  $\alpha$  *Centauri* and  $\beta$  *Centauri* are observable almost at the same period of time during the dry season. The Sundanese story of these constellations relates that a younger brother,  $\beta$  *Centauri* flew a kite in a rice field. Due to strong winds he was drawn up by the kite. The elder brother,  $\alpha$  *Centauri*, helped by holding him from behind. However, the wind was so strong that both of them were drawn up into the sky. It is fortunate that some celestial lore are still remembered and can be recorded, but many may have been lost or not yet revealed and need to be further explored.

### Appraising our Rich Ethno-astronomical Past

I have briefly touched upon the ethno-astronomical historical of the Sundanese and every attempt has been made to include as many relevant materials as possible. However, I cannot claim to have given a complete and comprehensive account of their ancient astronomy-related culture. Yet, I hope that my work will stimulate research interest into exploring ethno-astronomy in other regions of Indonesia; not only on the main

islands (Java, Sumatra, Kalimantan, Sulawesi, Papua) but also in many smaller island regions. To do so will allow us to start the construction of an encyclopedia of Indonesian ethno-astronomy which can simultaneously contribute to the ongoing project of documenting the ethno-astronomy of Asia.

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### Notes

<sup>1</sup> I wish to thank Dr. Igarashi Tadataka for sharing much unpublished data and information and for many productive discussions.

<sup>2</sup> Norio Kaifu, the President of the International Astronomical Union, is collecting Asian stories and histories relating to stars and universe in collaboration of fourteen Asian countries into a book called “Stars of Asia.”

<sup>3</sup> These times are different in northern and southern latitudes.

<sup>4</sup> Private communication.