

Astronomy of tribals of central India

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A summary of the astronomical beliefs of four tribes Gond, Banjara, Kolam and Korku from Nagpur region of Maharashtra has been presented. Primary conclusions are that the tribals are mainly focused on the winter sky with Big Dipper (Saptarshi), the Orion region including Orion, Taurus, Auriga, Gemini, Canis Major and Pleiades. They are also quite conscious of the Southern Cross (Crux) and the region around it. Many tribes are aware of Scorpius but are often unable to define its location in the sky. Gonds are aware of the Great Square of Pegasus and of Leo. We discuss these beliefs in the background of the region of the sky that occupies them and the similarity and differences in their beliefs of these regions. We then summarize the results in the general framework of human intellectual development and the environment in which they live.

Keywords: Astronomical beliefs, conjunctions of Mars and Venus, tribal studies, Orion, Taurus, Ursa Major.

THE mainstream astronomy of India is largely integrated with the astronomical traditions in other parts of the world and is based on the classification developed by Sumerian and Babylonian cultures around 3000 BC. One major difference between world astronomy and Indian astronomy is the Nakshatras (Lunar Mansions) that are typical to India and only weak imitations of the same can be found in Chinese literature. However, even today, the exact identification of Nakshatras remains controversial¹.

Astronomical myths of India² similarly focus largely on the Orion–Taurus complex, the pole star, the Big Dipper and the Milky Way. It is also rich in legends of solar system bodies and the nodal points of interaction between the orbit of the Moon and the Sun. It is also rich in cosmogonical ideas about creation of the Earth and related subjects³.

However, several Indian tribes that have been isolated from this trend have their own understanding of the sky and constellations. Over the last four years we have studied the astronomy of individual tribes namely Gond, Banjara, Kolam and Korku and the results are published elsewhere^{4–6}. A brief discussion of the same is given in the [supplementary information \(online\)](#). While the exact concepts of each tribe vary in detail and the emphasis also varies, there are broad trends and emphasis which can be clearly identified. Here we discuss constellations of specific interest to different tribes and compare and contrast their belief systems.

Tribes studied

Central India is referred to as *Dakshin Path* or southward path from North India. Centred on Satpuda Mountains it

is generally taken to be the path along which the Indo Europeans migrants from the Gangetic plains travelled to the Southern Peninsula. In regions, near Nagpur, there are several tribes that have remained isolated from mainstream India. Genetic data about them suggests that some of them are Austro Asian, some Indo European and some Dravidian in their roots. Even though tribes stay in close proximity to each other, they tend to be endogamous and very conservative about their cultural roots.

Over the last four years, we have spent about a month interviewing Gond, Kolam, Banjara and Korku communities about their astronomical beliefs and their understanding of the sky.

Gonds are probably the most settled of all the tribes we have studied. They have dominated the landscape of Central India and even have forts and other markers of ruling Central India until they lost their dominance to the Marathas. Several ministers of Maharashtra state have come from this tribe. They extensively farm their land.

Kolam have lived as foragers for several millennia and have settled under the recent programme of the Government of Maharashtra. Many elder Kolams still recall their migratory life as children. As foragers they have extensive knowledge of the forest and its dynamics. Sometime in the past, they were also believed to have worked as priests for the Gonds and even though the two live in close proximity, they tend to live parallel lives with little interaction.

Banjaras were traditional traders specializing in moving goods across vast stretches of India and carrying goods of regular use. With the arrival of railways, their primary occupation was lost about a century ago and have since been settling in different parts of central India and have taken to farming. In memory of their old lifestyle, they still refer to their villages as *Tanda*, the old moving

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groups. There seems to be two different sub-identities within them. One group of the Banjaras claim their ancestry to Harappan period and suggest their worship of snakes, etc. as evidence. Another group claims their origin in the period when the Rajputs of (present day) Rajasthan were defeated by the Mughals. Many proudly talk about their past glory and the protection they enjoyed in old kingdoms when they often ended up supplying goods to both warring parties in any dispute. They could cross boundaries of warring sides without hindrance. Several ministers of Maharashtra state have come from this tribe.

Korku are largely isolated people who live on forest produce. They have a long history of settlement and live by a combination of farming and on foraging forest produce. With a government ban on exploiting the tiger reserves in which they live, they are not confined to farming for sustenance.

Each community has its own culture, spoken literature, belief system, etc. These are well documented by several authors in the British period^{7,8} and in a series of books⁹⁻¹². These include records of Gonds⁹, Banjara¹⁰, Kolam tribe¹¹ and Korku¹². These papers carry detailed references regarding each tribe's genetic and social profile, living environment, belief systems, etc. As per their genetic profiles, Gonds and Banjaras are Indo Europeans while Kolams are Dravidians and Korku are Austro Asians in origin.

Since our field studies were restricted to computer simulation of the skies, we invited several members of the Gond tribe with the most extensive knowledge of the skies to the planetarium in Nagpur. At the planetarium it was possible to simulate the night sky of the entire year. Over 3 days we asked them to explain all aspects of the skies. The detailed study corroborated the field conclusions. However, we could not pursue this for all the tribes due to lack of resources and we hope that this will be done by other researchers over time.

Tribal skies

In general, Indian skies are difficult to see from May to October due to monsoon. Hence all tribes tend to focus on the sky from November till April. The most conspicuous aspect of the sky during this period is as follows. (1) Polaris and region around the Big Dipper is very clearly seen in the north. (2) In late October, Orion region (extending to Pleiades) rises in the east at sunset. (3) Scorpius is visible in the western sky. (4) Pegasus lying between Scorpius and Orion looms large in the sky. In early May, Pegasus once again looms large in the sky. (5) Leo is also conspicuous in the sky in early May.

One of the most conspicuous aspects of tribal astronomy is the general neglect of individual stars. Stars such as Sirius, Vega, etc. which are clearly visible in the sky

are almost never mentioned individually by tribals but were integrated into patterns they perceived in the sky. The only exception to this is Venus and, in the case of Korku, Mars. Other planets were also ignored. We discuss individual regions of interest to the tribals.

The region of the Big Dipper (Saptarshi)

Most tribals we studied had a more or less standard view of this region of the sky (Figure 1). They believe that the first four stars of the Big Dipper that form the square is a cot and the three thieves that follow it are the three stars out to steal the cot. Gonds insist that to prevent the theft, the old lady who occupies the bed must not sleep. In other words the Big Dipper should be circumpolar. Due to precession of the Earth, the Big Dipper was circumpolar in that region till 1000 BC suggesting that the Gond memory of the sky dates to that period. On the other hand, Kolams have no such memory. Korku in fact explicitly talk of setting of the Big Dipper when the servants occupying the bed must get up at dawn and start working. On the other hand, Korku explain the non-rectangular nature of the stars of the Big Dipper as a tug by the thieves. They also seem to have noticed that the middle star of the trio is a binary and suggest that the middle thief is carrying a water jar with him. To Banjaras, the cot of the Big Dipper is the cot of a dead person who will then walk on the great path of Milky Way, presumably to salvation.

Milky Way

All the cultures notice the Milky Way and assume it to be a road in the heaven. They loosely talk of it as being a path of animals (Gond, Kolam) or of dead (Banjara). But Korku find several interesting things. Between Scorpius and the Southern Cross they see that there are two paths in the Milky Way. They therefore suggest that on the main path a person is walking and his younger brother's wife, coming along the other path moves away out of respect for him. Some Korkus also consider this region as a place where the Gods meet to decide on the amount of nature's blessings and curses that the Korku's will receive.

The Orion region

Orion region is the centre of attention of all the tribes (Figure 2). They all see, within it, a harvesting scene of varying complexity. All agree that the belt of Orion is the plough and see bullocks in Rigel and Saiph and, in addition, Korku see the person controlling the plough in Betelgeuse. They then see birds (either in Taurus – Gonds, or Sirius/Taurus – Korku) in the sky. An arrangement for bullocks to move in a circular path to remove the husk is,

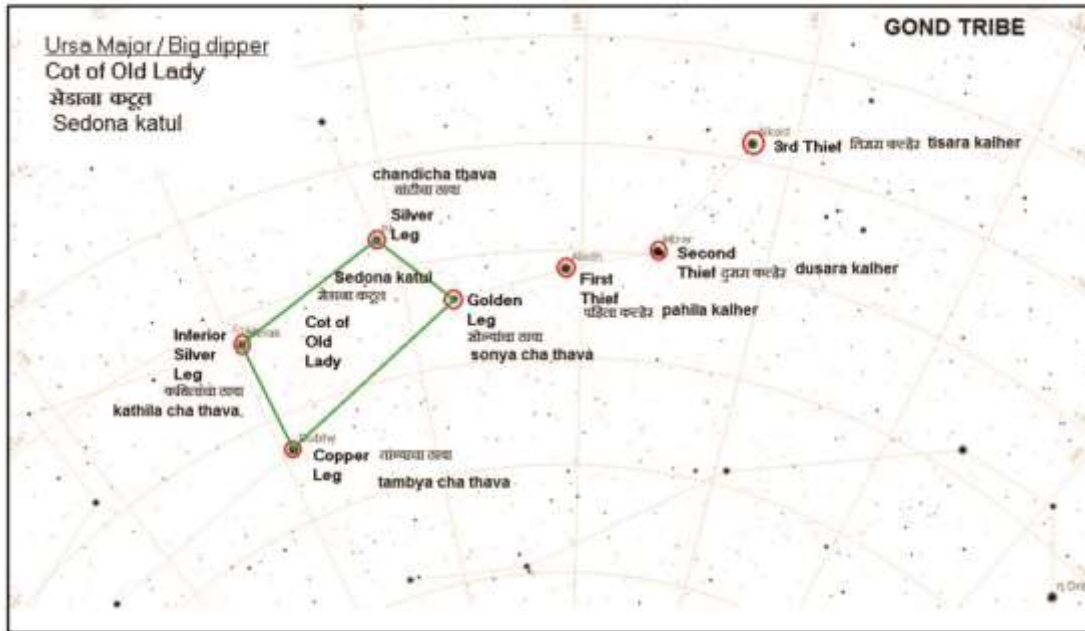


Figure 1. Saptarshi as seen by Gonds. While all the tribes recognize the cot and the three followers, Gonds provided us with the best details.

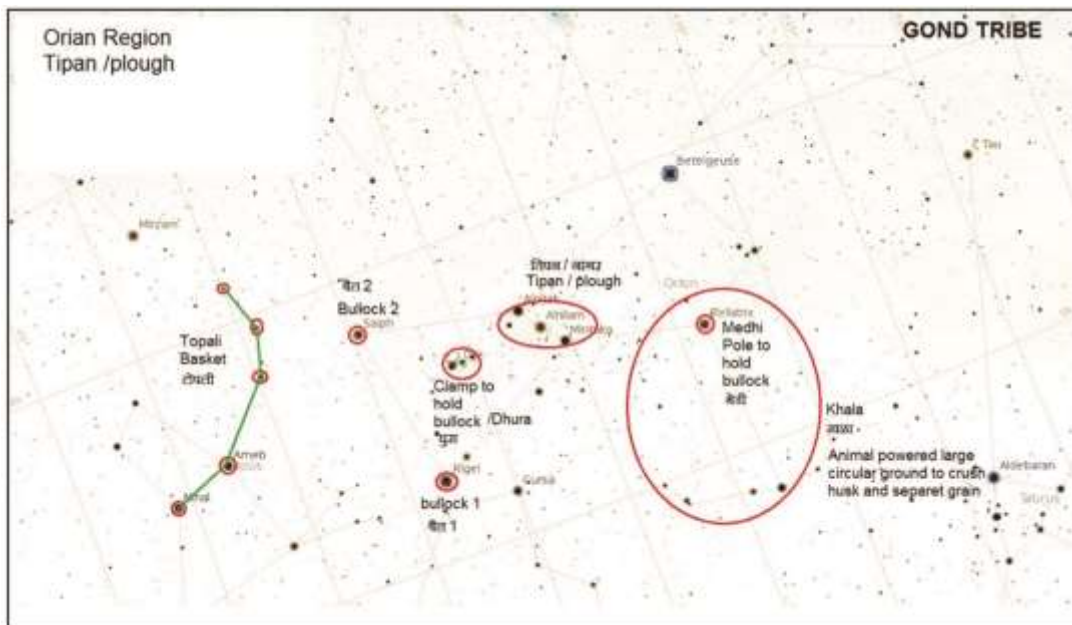


Figure 2. Region around Orion constellations as seen by Gonds.

seen in Lepus to the south of Orion or in Canis Minor (Gonds). While Gonds also suggest that Auriga is a well Korku see Auriga and Gemini, together as a well and two persons taking water out from the well. The only exception is Banjaras who see a deer in Orion.

Pleiades seems to trigger the individuality of each tribe. To Gonds it is a wooden bat to separate the husks. Some Gonds also believe Pleiades to be a handful of stones thrown at the birds trying to pick the harvest sitting in Taurus. To the Kolams it is a pack of birds, while

to the Banjaras it is an ornament typically worn in the parting of hair. To the Korku it is minced cow meat.

The Scorpius region

Scorpius region is another interesting region read more or less the same by all communities. However, Banjaras are not aware of it and some Kolams see a snake there. While Korku agree that there is a scorpion in the sky, at times they show it in the tail of, or even below Scorpius.

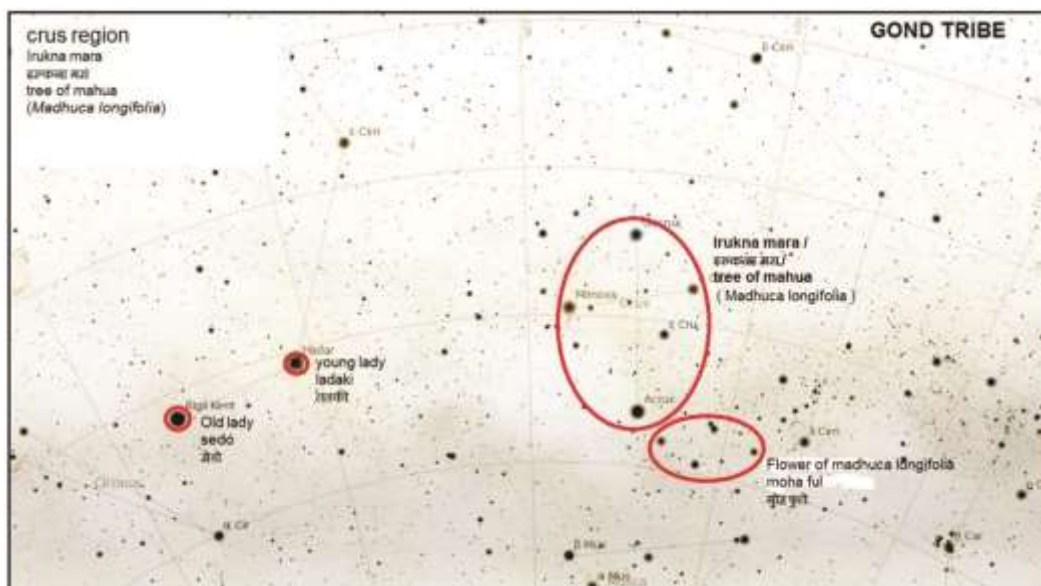


Figure 3. Region around the southern cross.

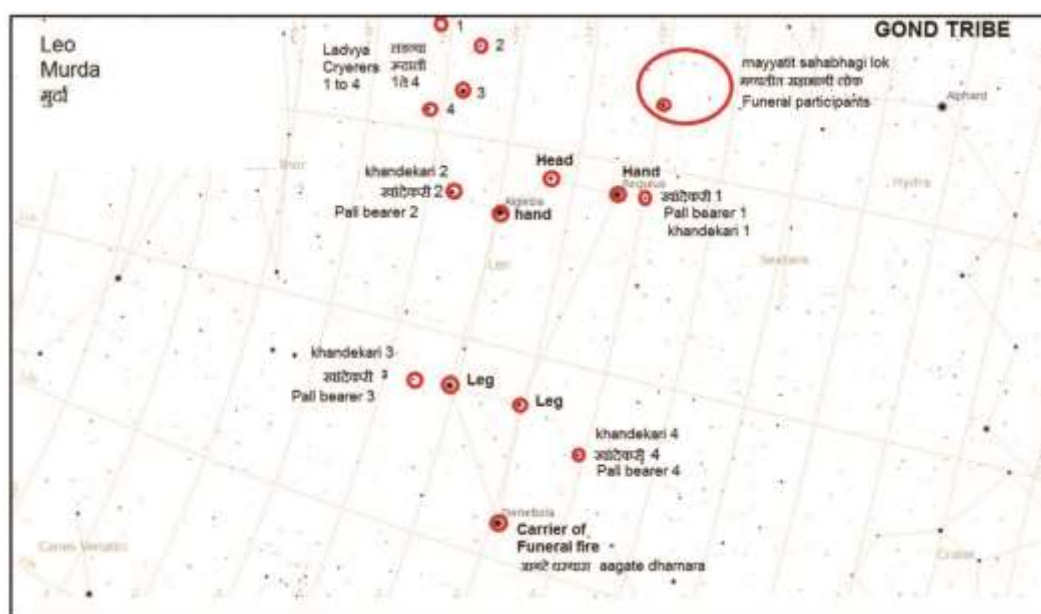


Figure 4. Leo region as seen by Gonds.

Region around the Southern cross

Region of Southern Cross including Crux, Circinus and Triangulum Australe has been noted primarily by Gonds and Korku (Figure 3). Gonds see it as a Mahua tree that is of great use to the Gonds. In Korku, the groom is required to pay the bride’s family certain pre-decided money or perform labour for the bride’s family in order to win the bride. In order to remind the people of the importance of this payment, they have a story in the sky.

On the east of Crux they identify two couples, Dhanaya (female identified with 0.1 mag, Rigil Kent) married to

Bharada (male identified with the bird Greater coucal on Earth and with ϵ Cen, 2.25 mag in the sky) and Dhanaya’s younger sister Charakhaya (female identified with Hadar) married to Pelcha (identified with the bird ‘red whiskered bulbul on earth’ and with Menkent, 1.01 mag in the sky). The story has it that Pelcha (Menkent) did not pay the amount that he had to pay for the bride Charakhaya (Hadar) and hence the wife Charkhaya ate a betel leaf (which gives a red colour to the mouth) and spat on Pelcha. On earth Pelcha is identified with bulbul and hence bulbul has a red vent. This essentially emphasizes the need to pay for the bride as promised or face lifelong consequences.

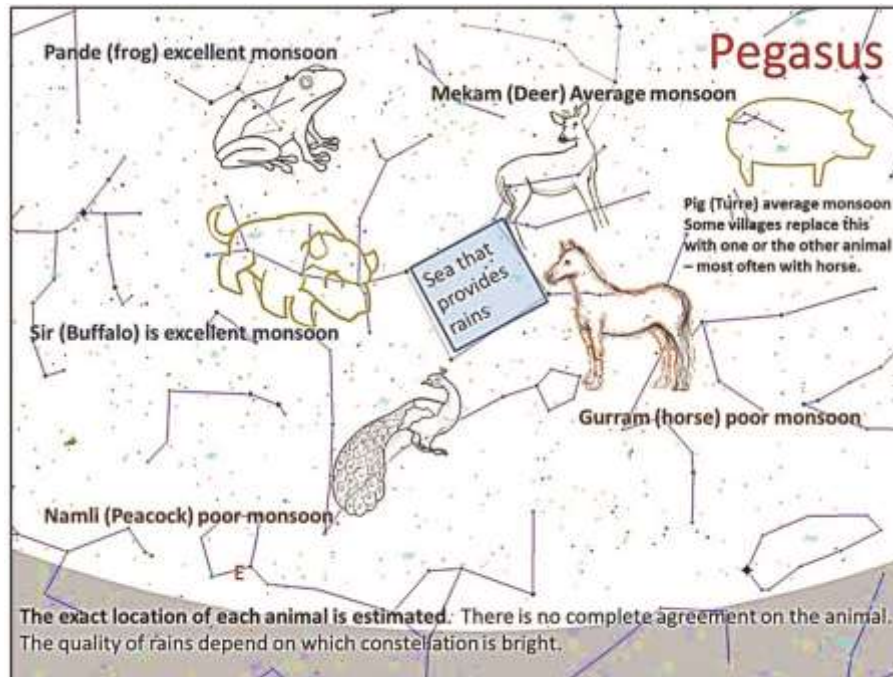


Figure 5. The great square of Pegasus and Monsoon.

The Leo

Only the Gonds recognize the Leo constellation (Figure 4). They refer to it as Murda or a dead body. They can see the dead body in the body of Leo along with the entire funeral procession including pall bearers, the criers and the relatives going to the cremation ground. They say that it reminds them of what would happen to them if people did not respect nature.

Pegasus

Kolams are aware of the Great Square of Pegasus that is visible at sunset in May. They consider it as a great lake surrounded by frog (near Cassiopeia), buffalo (near Andromeda), peacock (near Pisces), horse (towards Aquarius) and deer (near Cygnus) (Figure 5). They then look at the clarity of these animals in the sky. If frog and buffalo (east of Pegasus) are clear, they assume that the monsoon will be good. If peacock and horse are clear (west of Pegasus) they expect moderate rains and if north of Pegasus is clear, they expect a bad monsoon.

Solar system bodies

All tribes know of the Sun and the Moon. Korku have a story about the waxing and waning of the Moon. They believe that Sun and Moon had a common God – mother who sent them to get some food. The Moon ate a little of what he got but brought the rest to the mother who was happy and blessed him saying that he will be in a cool

(night) environment. The Sun on the other hand brought nothing back and the mother cursed him into eternal burning. A variation of this theme can also be found amongst the Korku. In that version the Sun had stolen from the Moon, the food he was bringing back and gave it to the mother and was blessed with brightness while the Moon, who could not bring back anything (since the Sun had stolen it) was forced into waxing and waning. Banjaras, the eternal traders, see a woman sitting under a tree and weaving cloth on the surface of the Moon.

Almost all the communities know the morning and evening star. However, the Korku also know Venus which has roughly the same apparent magnitude as Mars and they say that the time when Mars and Venus are close to each other (which happens every eighteen months or so), is a good time for marriage.

Eclipses

All tribes except the Banjaras are aware of eclipses. However, Kolum consider partial solar eclipse as a bad omen. If the top half of the Sun is covered, it is a bad omen for humans and if the bottom half is covered, it is considered to be a bad omen for animals in the sense that it brings diseases. They assume that Gods pay for human weaknesses and if they pay is full (by total eclipse) the account is properly closed and all is well. Korku seem to have no opinion on lunar eclipse but have an elaborate procedure for solar eclipse. During the eclipse they put the grinding shaft in a flat plate with water and insist that it will stand on its own during the eclipse and when the

eclipse ends, it will fall. The direction in which it falls is the direction from where illnesses come.

Creation myths

The original God of Gonds is Lingo who, with the mercy of the Bada Deo, his wife and Jangudevi the great Goddess, freed them from the curse of captivity. The Bada Deo (also called Pen), freely interpreted as Mahadeo and Shiva, is synonymous to Bada Deo⁵. He even refers to his wife as Parvati but this association is not obvious. The image of the Bada Deo differs from the conventional image of Shiva in many significant ways. For one, he is a creator who, after having initially banished the Gonds for bad behaviour turns around to assist them to the extent of taking on rivalry with Indra⁴ to create the Gonds. He also assists Lingo in a variety of ways.

There are two prevailing systems of belief amongst Banjaras about their origin⁵. One group claims its roots from the (defeated) Rajputs of Rajasthan from the period of Prithviraj Chauhan (~1200 AD), and the other group claims not to be Rajputs at all but instead to belong to a tribe whose roots go back to the Harappan period (~2000 BC). The latter are snake worshippers, and they say that this distinguishes them from the Sun – or Moon – worshipping Rajputs. Since snake-like ornaments are known amongst Harappan dolls, they use this connection to insist that originally they were traders from the Harappan period. This is a potentially important link, since genetically they have an affinity to the gypsies of Europe and the Harappans are known to have traded with West Asia. There are also claims that the Banjaras or Gor manus people (the ‘Harappan group’?) are descendants of Luv, the elder son of the legendary Lord Rama of Ramayan. However, both groups agree that from ancient times, their primary profession was to move and trade goods throughout India.

Kolams consider themselves as *Metlokur*, *Manerwarlu* or *Mughlaikul*. They believe they originated from the Pandavas of Mahabharata and call themselves Pandu Vanshi. They also consider their racial roots from tamarind tree¹¹.

The Korku have a distinct creation myth⁶. They believe that when God wanted to create humans, he sent out a crow to get some soil. The crow while getting the soil dropped some of it along the way and that became the Earth. From the remaining soil the Great God (freely interpreted as Mahadeo or Shiva) fashioned a man and a woman. However, every time he made them, angels would come at night and destroy them. So the wife of Mahadeo (now called Parvati) created a dog that guarded the man and woman and hence dogs are men’s best friends. Once they were given life, there was a dilemma since all humans were brothers and sisters and could not inter marry. So humans went back to God, who created a

massive storm and everyone hid behind different objects like rocks, rivers, trees, some crops, etc. There were 12½ such objects (half for the neuter gender). When the things cooled the God decreed that each group would get a name based on the object they had hidden behind and people who had hidden behind different objects could marry but those who had hidden behind the same object could not.

Justifying their passion for alcohol and hallucinogens they have another story⁶. Shiva was instructed by his wife that he must always knock before coming into the house. Once Shiva forgot and entered without knocking only to find Parvati lying undressed on her bed. She was very angry and told him off. He in turn left and went away determined not to return. Parvati, regretting her outburst, tried to make peace with him by sending various emissaries. She sent a dog and a tiger who were rebuffed. She then sent a naked female wild ass. Shiva just put a cloth around its waist and sent it back. At this stage other Gods offered to step in and solve the problem. They threw a big party with alcohol and hallucinogens. Shiva came to the party and was happy to join in and peace was restored between Shiva and Parvati.

Discussion and conclusions

In Figure 6 we have given the constellation of importance to the all the tribes combined. We have only marked constellations noted by more than one village of any tribe. The broad directions East, West North and South are marked. The stars rise in the east and set in the west and one can imagine the spherical movement of the stars in the image. Solar system bodies are not shown in the figure. Blue circles indicate constellations known to one tribe only (Pegasus to Kolam and Leo to Gonds). Constellations marked in red were known to more than one tribe even, if their individual stories and interpretations varied. Note that some important constellations are not recorded by the tribals because these constellations are monsoon constellations or come during the period when they are occupied with farming.

Astronomy enters human imagination much later than is generally assumed since imagining the dimension of space does not come easily^{13,14} and it requires a major evolution of comprehension to fathom the sky. So while humans learnt a lot of terrestrial survival tricks and adaptations several tens of thousands of years ago, the oldest evidence of astronomy is no more than 15,000 years ago. Comprehension of astronomy therefore marks a major step in the evolution of human comprehension. However, once comprehended, astronomy tends to catch human imagination with its sheer elegance and visual powers. Adding to the beauty of the night sky is the drama of rains, thunder and lightning, rainbows, shooting stars and occasional comets and one can immediately see why the earliest worships were of Mother Earth and Father sky.

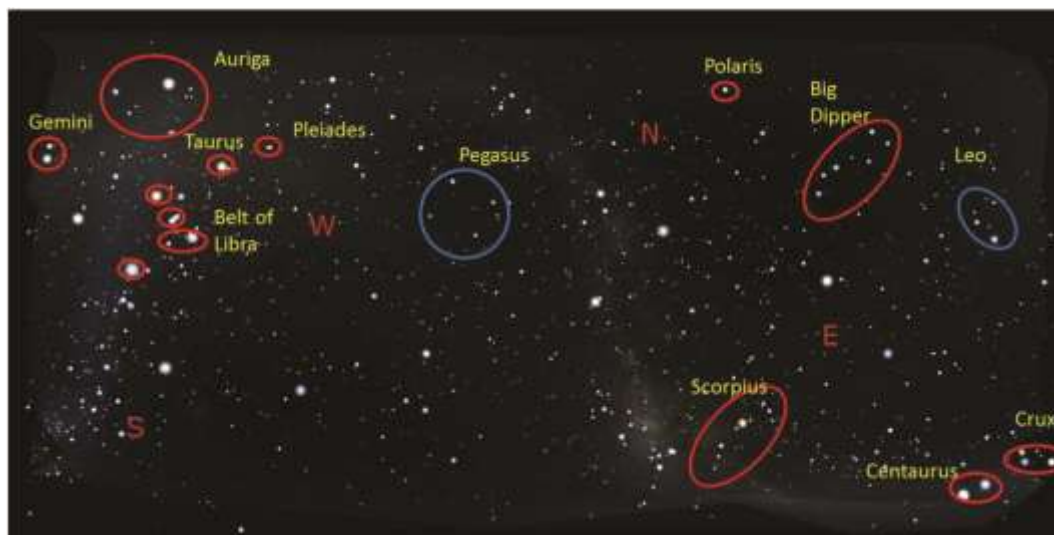


Figure 6. Constellations of importance to the tribals of Central India. Blue circles indicate constellations known to one tribe only (Pegasus to Kolam and Leo to Gonds). Constellations marked in red were known to more than one tribe even if their individual stories and interpretations varied.

Studying the evolution of astronomy therefore provides a perspective into layers upon layers of intellectual progression of a culture or a civilization. While the mainstream astronomy of the world, from Sumer to Mesopotamian, Greek, Egyptian, Chinese and Indian astronomy have extensively been studied and interpreted, other parallel streams of human comprehension of the sky have received little attention, especially in India. Here we present the astronomical beliefs of four tribes of Central India, namely Banjaras, Gonds, Kolams and Korku. Apart from this, we have also studied another tribe called Cholannaikans¹⁵ who are an extremely primitive group of foragers near Kozikode who have only recently been contacted but they have little comprehension of the sky.

The stories and other astronomical ideas of the tribals can be divided into the following categories. Daily time keepers; calendrical, expression of human activities, mythological and cosmogonical.

Typical stories of time keeping involve looking at the movement of stars and the phases of the moon. One group of Korku tribals also use the relative movement of Saptarshi in the night sky to keep track of passage of time. Many groups use the sighting of the first star as a time to start settling for the night. Amongst all the tribes we met, the Gonds had some ideas about the passage of months and years in a formal way and had encountered the first problem of observational astronomy, namely realizing that 12 full moons amounts to nearly, but not exactly a year. In classical astronomy, this problem of synchronizing the two is achieved through the addition of an intercalary month every 2½ years. Gonds simply reset their calendar every three years and hence their memory of events beyond 3 years is weak. Other tribes live simply

hand to mouth not bothering to keep any long-term track of time, except when they meet modernity and see a calendar. This is not unsurprising as long-term calendars are not really required for farmers and foragers; all they need to know is the upcoming season and monsoon.

Not surprisingly, however, humans also see a lot of human and divine activity in the sky. From the well of Auriga coming up early in the night and bringing monsoons, for Korkus and Gonds, to the punishment meted out to men who do not pay the *stree dhan* for Korkus (Southern Cross), to the Gond visualization of a funeral in Leo, sky is used to project human frailty, and this visualization is especially the important to them. This is unusual since, in conventional astronomy, only myths, heros and fantastic animals are projected in the sky.

Myths are of course the most appropriate similes for the sky and the tribals are no exception to this attraction. So the shooting stars become the excreta of stars or odes to the death of a good person, comets become brooms of Gods and the Saptarshi becomes the little story of a cot and thieves. The Milky Way is the great walkway of animals and humans and the more observant Korku even notice multiple lanes within the Milky Way and explain it in the context of the respect the younger sister-in-law should show to the elder-brother in-law.

Similarly, who we are and what is our relation to the heavens, the early cosmogonies also get projected in the sky. So the Korkus remember that there was a period when all Gods were in touch with the humans, but now only Sun and Moon are visible and are the guardians of humans. They recall that eclipses are related to Gods and their quarrels. So while one finds the idea of dragons eating humans amongst Gonds and Korku, Kolams go a step further in interpreting the eclipses, dividing the eclipse

Table 1. Summary of villages of different tribes and their environment

Tribe	Number of stories in 2 or more villages	Comments
Banjara	19	No. of stories is more or less flat indicating small region of spread and interactions
Kolam	26	No. of stories is more or less flat indicating small region of spread and interactions
Gond	20	High degree of homogeneity – a lot of stories are known to several villages
Korku	41	Separation due to terrain is seen. Number of common stories decreases

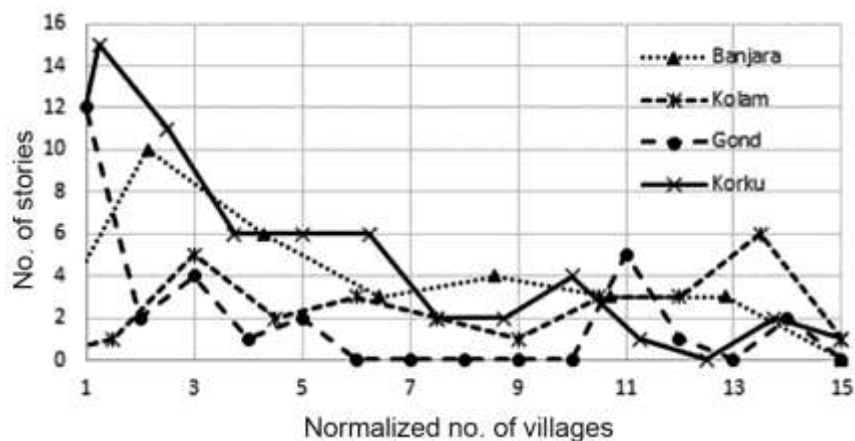


Figure 7. Frequency of appearance of stories in the number of villages.

into partial which is a bad omen and a total eclipse which is good for all. Then there are Banjaras who see a woman under a tree on the Moon and the Korku who experiment during an eclipse to try and see where the resultant calamity may fall – the only examples we encountered where there was a physical experiment associated with an astronomical event. Indeed none of the tribals told us any stories of the shadows during the day and seasons.

Since heaven and sky are connected from the Mother Earth–Father Sky association of early cosmogony and religion, one would expect that people would send their ancestors to the sky. Few within these communities vaguely suggested this and only the Banjara, taking the Saptarshi to be the cot of the dead, let the dead walk on the Milky Way. Korku believed that if you could not see the Polaris on a clear night, your death was near. In general however, all communities kept their dead on the earth. All these communities bury their dead with the body in North-South (Gonds, Korku) or East-West (Kolams, Banjara) direction depending on their local beliefs – East–West to honour sunrise and sunset directions, North–South not to dishonour the Sun and legs to the South either out of contempt for the Northerners (Gonds) or to ensure that when the dead get up he or she faces the holy north (Korku).

Regarding their origin, the communities also have different stories. Gonds talk about being liberated from slavery by the great God, Banjaras are more preoccupied with their existential lives, recalling their Rajput or Harappan past as the case may be, but want to be called

the descendants of Luv and Kush, the sons to Rama while Kolams talk of them being Pandu Vanshi and the Korku are the only ones who have an elaborate story of Gods taking soil and creating humans, protecting them with a dog and then dividing them into clans.

Rajamanickam¹⁶ reported a study of the astronomy of the tribals in Andaman and Nicobar islands. He notes that they can identify Centaurus as a chicken cage, the belt of Orion, Southern Cross as a direction pointer, Aldebaran in Taurus, Ursa Major as pointer to the north and as a clock, Pleiades and Venus. Apart from Centaurus the list is common to the communities on the mainland that we have discussed here. While they seem to use the stars to determine north and south, like the Banjaras they seem to be more reliant on landscape for movement even though they are island bound. This reinforces the observation that in spite of its obvious utility, the use of sky for navigation is a relatively modern idea that seems to have risen after urbanization.

During our survey of 15 villages of Gonds⁴, 7 villages each of Banjaras and Kolams⁵ and 12 villages of Korku⁶, we did not encounter all the stories all the time. In Figure 7 below, we have plotted the normalized number of villages versus the frequency with which a story appeared in the community.

The data is given in Table 1 along with the broad feature of the observation. In the analysis, we have ignored the stories found in only one village. However, these are plotted in Figure 7.

A few features emerge immediately. Gonds seem to be far more cogent, with the same or very similar stories appearing in many villages. Korku, who largely reside in hilly regions and tiger reserves and have low mobility, tend to have different stories or large variations in their stories. Banjaras who were largely travellers do not seem to have used the skies for their mobility, a feature they explicitly confirmed, and hence do not have too much to say about the skies while the Korkus, living on hilltops and scattered landscape seem quite fascinated by the skies.

We hope that this will encourage researchers in other parts of the country to undertake similar studies of the astronomy of the tribes of India before modernity completely overwhelms them.

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