

The Astronomy Art of the Tamils

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Abstract:

This article explains the astronomical art of the Tamils through seven parts. They are Structure of Cosmos, Sky and its Movements, Five Great Elements, Planets, Measuring times, Astronomical Texts and Astronomical terms and their meanings.

Keywords: Cosmos, Planets, Astronomy, Measure

1. The Structure of the Cosmos

Fire, air, sky, earth, and water—the five great elements—along with the Moon, the sacrificial leader, the five planets including Mars, the Asuras as the rulers of lunar phases, the eight Vasus, the twelve solar deities (Adityas), the eleven Rudras (Kapilars), the two Ashvins (divine horsemen), Yama and his attendant Kootravan, the three worlds, and all living beings within them—all originated from you and expanded within you.

Verses 3:4-10 of the Paripadal by Kaduvan Ilaveynanar, beginning with *"The fire, the vast sky, the earth, and the water,"* describe the thirty-three deities. The same poem further explains:

*"The sages living in this world,
The twelve solar deities residing in the sky,
The eight Vasus, the eleven Rudras,
And the two Ashvins—these four groups of deities—"*

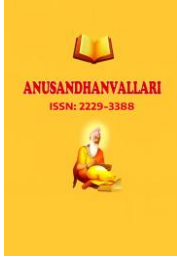
This is reaffirmed in the same poem with the lines:

*"The gods dwelling in the world,
And the thirty-two deities in the heavens,
Who joyfully sing in praise."*

The creation of the world and living beings is detailed in verses 2:3-9 of Paripadal, which begins with *"The golden world."*

2. The Sky and Its Movements

The movement of the red Sun, the measurement of how far it travels within specific time units, the rotation known as *Parippu*, which determines the Sun's displacement over time, the sphere enclosed by this motion, the direction



in which the wind moves, and the sky, which remains suspended without support—all these were directly observed and understood.

The poem by Uraiyr Mudukannanaar, starting with *"The movement of the red Sun and the orbit of the dark Sun,"* in Puram 30:1-2, showcases the deep astronomical knowledge of Tamil scholars.

A verse from Purananuru (365:3) also highlights this knowledge:

*"A vast expanse, where the wind does not traverse,
A great sky, motionless and immense."*

This suggests an understanding of the atmosphere and the vast space beyond.

3. The Five Great Elements

The Purananuru verse (20:3-4) states:

*"The land that spreads,
The soil that holds the earth,
The air that moves in the vast sky,
The fire that glows above,
And the flowing water—
These five great elements form nature."*

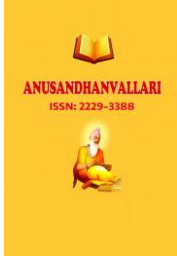
4. The Planets

Unlike other cultures, the Tamils named five days of the week after planets, excluding Sunday and Monday. Additionally, they identified nine celestial bodies, including Rahu and Ketu, referring to them as shadow planets. The Tamil scholars were well aware that the Sun and Moon were not planets and did not belong to the 27 constellations.

The verse from Pathitruvalu by Kumattur Kannanar states:

*"The Sun, Moon, and the five planets,
Along with their celestial alignments,
Together shine as one."*

This verse indicates a clear distinction between the Sun, Moon, and planets.



5. Measuring Time

The ancient Tamils understood that the movement of the Sun around the Earth caused seasonal changes. They measured time based on day and night cycles. The full Moon cycle determined the month, as referenced in the Manimekalai (24:42):

"She completed one full Moon cycle."

The year was measured based on seasonal changes. A pole was placed on the ground to observe the Sun's shadow for time measurement. The Nedunalvadai poem (72-76) and its commentary by Nachinarkiniyar confirm this practice.

Ancient Tamils also observed stars to measure time, as noted in Perunkathai:

*"Observing the bright stars in the sky,
He determined the time precisely."*

Like modern planetariums, the Tamils had their own devices to study celestial movements.

6. Astronomical Texts

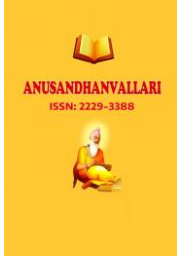
A verse from Perunkathai (2:2:10-14) states:

*"The great science that grants precise numbers,
The luminous knowledge of the celestial sphere."*

This confirms the existence of astronomical texts and research in ancient Tamil society.

7. Astronomical Terms and Their Meanings

- **Gnalam (Earth):** Derived from "*Gnal*," meaning 'to float,' indicating the Earth's suspension in space.
- **Ulakam (World):** Originates from "*Ulav*," meaning 'to move,' referring to the Earth's movement around the Sun.
- **Mandilam (Orbital Path):** A Tamil term denoting the elliptical paths of planets.
- **Nyayiru (Sun):** Considered the leader of the planets, an idea recognized by Copernicus only in 1543.
- **Thingal (Moon):** Named for its reflected light, as it does not emit its own.
- **Sevvai (Mars):** Named for its red color.
- **Budhan (Mercury):** The closest planet to the Sun, originally called "*Puthaiyan*" (hidden one).
- **Viyazhan (Jupiter):** The largest planet, named for its greatness ("*Viyal*" meaning vast).
- **Velli (Venus):** Named for its bright appearance ("*Vell*" meaning white).
- **Sani (Saturn):** Named for its slow movement and dark color.
- **Vinmeen (Star):** Named for its twinkling light.
- **Naalmeen (Zodiac Stars):** Refers to the 27 constellations.
- **Kolmeen (Planets):** Distinct from stars, indicating early Tamil awareness of celestial classifications.



8. Conclusion

The Tamils meticulously observed and documented astronomical phenomena, distinguishing planets from stars and understanding celestial movements with remarkable precision. Their advanced astronomical knowledge influenced global terminologies and remains a testament to their scientific legacy.