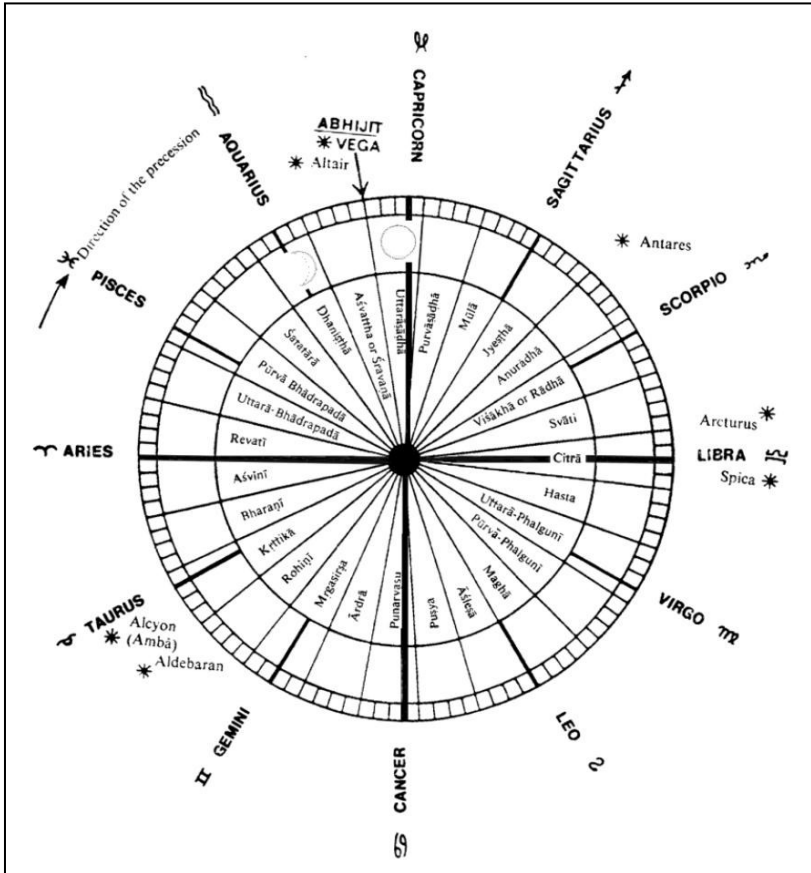


# VEDIC NIGHT PṚTHIVĪ AND THE DATE OF THE ṚGVEDA

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## VEDIC NIGHT *PR̥THIVĪ* AND THE DATE OF THE *ṚGVEDA*

**M. I. Mikhailov, Belarus**

*Mahākāla, Great Time personified,  
is the Father of the Universe.*

*Śaṅkara*

The dating of the *Vedas* presents one of the major challenges for the Vedic Studies. The majority of scholars generally applying relative historical dating accept 1500 - 600 B. C. E. as the most probable epoch of the composition of the *Ṛgveda*. Sometimes some of them admit a long preceding period.<sup>1</sup> But there are others, who propose, mainly on the basis of analysis of the astronomical data contained in the text, dates for different parts of the text going back to 4500 - 2500 B. C. E. (H. Jacobi),<sup>2</sup> 6000 - 4000 B. C. E. (B. G. Tilak),<sup>3</sup> 6500 - 1000 B. C. E. (D. Frawley).<sup>4</sup>

In fact, the historical dating is rather arbitrary, and the astronomical dating seems very ambiguous. Therefore, this *Ṛgveda* dating controversy seems to be irresolvable. According to T. Y. Yelizarenkova, the

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<sup>1</sup> J. Gonda, *Vedic Literature (Saṃhitās and Brāhmaṇas)*, Wiesbaden, 1975, pp. 22-23.

<sup>2</sup> H. Jacobi, "Über das Alter des Ṛg-Veda", in *Kleine Schriften*, Wiesbaden 1970.

<sup>3</sup> B. G. Tilak, *Orion or Researches into the Antiquity of the Vedas*, Poona (4th ed.), 1955.

<sup>4</sup> D. Frawley, *Gods, Sages and Kings: Vedic Secrets of Ancient Civilization*, Delhi, 1999 (First Ed. 1993), pp. 15-18, 198, 254-257.

results of archaeological, geographical, astronomical, botanical, comparative-linguistic, mythological, literary and other methods are only of relative importance. And the date of the *R̥gveda* can be ascertained only approximately.<sup>5</sup>

But I think, we still have a chance to decipher this enigma, if we reject several widespread historical beliefs, such as the Aryan invasion theory and the heterogeneity of the Rigvedic text, and re-examine mythological and astronomical data more carefully. There are several strong arguments, which should be taken into consideration.

In 1989-1992, working on the mythological commentaries to the Russian translation of select *laghukāvya*-s of **Kṣemendra** (XI<sup>th</sup> c.),<sup>6</sup> I re-examined the *R̥gveda* and discovered the calendrical function and core model of the Rigvedic recitation. First, it was formulated in an article in Belarusian<sup>7</sup> and a paper presented at the IX<sup>th</sup> World Sanskrit Conference in

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<sup>5</sup> T. Y. Yelizarenkova, "*Rigveda - velikoe nachalo indijskoj literatury i kul'tury*", in *Rigveda: Mandaly I-IV*, Moskva, 1999, pp. 431-432.

<sup>6</sup> *Vozhdi i prosvetiteli Indii: Velikij učitel' žizni Kshemendra Vjasadasa, Osnovy istinnogo dobropravija: Izbrannye eticheskie i satiricheskie poemny, Vvedenie, perevod s sanskrita i kommentarii M. I. Mihailova* (Leaders and Educators of India: Great Moral Teacher Kṣemendra Vyāsādāsa, Foundations of True Morality: Select Didactic and Satiric Poems, Intro., Tr. from Sanskrit into Russian and Commentary by M. I. Mikhailov), Orsha, 1999.

<sup>7</sup> M. Mikhailov, "*Tajamnica Vedaw: Kaljandarna-hranaljagichnaja gipoteza pahodzhannja vedyjskih s'pevaw*" ("The enigma of the Veda: The calendar-chronological hypothesis of the origin of the Vedic recitations"), in *Krivja: Crivica, Baltica, Indogermanica*, Issue I, Mensk, 1994, pp. 63 - 74.

Melbourne.<sup>8</sup> The latter paper was enlarged in 1995-1997 to form a treatise in English intended to be published in *Bhāratīya Vidyā*.<sup>9</sup> Later, using computer programs and the help of my wife and daughters I examined the model from the point of view of the probability theory in a paper presented at the X<sup>th</sup> WSC in Bangalore (1997)<sup>10</sup> and found it to be coherent. At the same period, **Subhash Kak** formulated independently some similar ideas.<sup>11</sup>

According to my theory, the *Vedas* represent a scientifically devised lunar-solar-planetary recital calendar-chronometer, which had been composed by an academy of ancient sages. I am inclined to treat these highly poetical texts primarily as homogenous and monolithic mathematical-astronomical tables, which are the result of tens of thousands of years of astronomical observations and their further codification along the lines of mathematical astronomy and algebra.<sup>12</sup> The system of the Vedic gods and goddesses,

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<sup>8</sup> M. Mikhailov, "Calendar-based Vedic educational pattern", in *IX<sup>th</sup> World Sanskrit Conference: Abstracts, January 9 - 15, 1994, Melbourne, Australia*, Melbourne, 1994, p. 150.

<sup>9</sup> M. Mikhailov, *Ṛg-Veda As a Recital Calendar-Chronometer* (Bombay, Bharatiya Vidya Bhavan, 1997).

<sup>10</sup> M. Mikhailov, "The Chrono-mythopoetics of Vedic hypertext", in *X<sup>th</sup> World Sanskrit Conference: English Abstracts, January 3-9, 1997, Bangalore, India*, New Delhi, 1997, pp. 361-362.

<sup>11</sup> Subhash Kak, *The Astronocal Code of the Ṛgveda*, New Delhi, 1994.

<sup>12</sup> M. Mikhailov and N. Mikhailova, *The Key to the Vedas: Ancient Indian Metrics as the System of Algebraic Binary Encoding*, Gorki (in progress).

which are personifications of different lunar and nocturnal phenomena, is interpreted as symbolical expression of a rather sophisticated mytho-chronopoetics.

This estimate of the date of the *R̥gveda* is one of the conclusions of the preceding calendrical reconstruction of the Rigvedic text, study of the Vedic mythology in astronomical perspective, synergistic interpretation of the Vedic gods as lunar-time symbols, and rediscovering the true significance of the Vedic Nights.

### *Lunar hypostases*

*Parokṣapriyā iva hi devaḥ.*

Gods, definitively, are fond of symbolical meaning.

*Taittirīya Br. 2.3.11.4*

Modern astronomy has a pitfall or a serious inconsistency in relation to the moon.<sup>13</sup> Due to the heliocentric system's influence, it is difficult for the modern man versed in the astronomical logic of today to understand the astronomical dialectics of ancient sages based on strict observation. But namely the observational astronomy is the key to the proper understanding of the highly metaphorical and symbolical language of the astral mythology. Therefore, first we should reanalyse the basic concepts of the Vedic mythology in the light of observational astronomy.

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<sup>13</sup> A. Volgin, *Lunnaja astrologija* (Lunar Astrology), Moskva, 1992 (1<sup>st</sup> ed. 1936), p. 14.

The majority of scholars interpret Vedic gods along the lines of the solar theory,<sup>14</sup> though the Vedic *Samhitās*<sup>15</sup> and, especially, *Brāhmaṇas*,<sup>16</sup> give plenty of evidence proving the nocturnal and, more precisely, lunar character, of the Vedic gods.

Most prominent Vedic gods such as *Agni*, *Indra*, *Soma*, *Candra*, *Sūrya*, *Savitṛ*, *Rudra*, *Śiva*, *Viṣṇu*, *Brahmā*, *Mitra*, *Varuṇa*, *Bhāga*, *Vāyu*, *Ādityas*, *Aśvinau*, *Vasus*, *Rudras* or *Maruts* have a lunar origin. Their unity postulated by the Vedic texts consists in that they are personifications of different movements, positions among the stars and states of illumination of the same lunar orb. Their apparent differences are the products of the detailed study of dialectical lunar phenomena and chronological laws essential for time reckoning.

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<sup>14</sup> P. Lerner, *Astrological Key in Mahābhārata*, Delhi, 1988; Dh. D. Mehta, *Positive Sciences in the Vedas*, New Delhi, 1974.

<sup>15</sup> *Atharvaveda saṃhitā*, Tr. by W. D. Whitney, Vols. I-II, Cambridge, 1905; *Ṛg-Veda: Die Hymnen des Rigveda*, Herausgegeben von Th. Aufrecht, Zweite Auflage, Th. 1-2, Bonn, 1877.

<sup>16</sup> *Hansarāja evaṃ Bhagavadatta, Vaidik Koṣaḥ, Vārāṇasī*, 1926; *Aitareya-brāhmaṇa of the Ṛgveda*, ed., tr. and explained by M. Haug, Vol. 1, Bombay, 1863.

## *Candra*

*Candramā eva sarvam.*

The Moon is everything.

*Gopatha Br., Pū. 5.15*

*Suparṇaṃ viprāḥ kavayo vacobhir*

*Ekam santam bahudhā kalpayanti |*

*The poet-sages call the single Suparṇa*

*(‘Well-Winged’, Garuḍa) by numerous names.*

*RV, X.114.5*

*Suparṇa (Garuḍa)* mentioned above is the name of *Candra* (the Moon), moving quickly in the deep celestial Waters, symbolising constellations. His light conceals the locations of stars ‘having golden hoops’ (RV, I.105.1). The *deva*-s, embodiments of the lunar phases, are dependent on and derivative from *Candra*, who gives them their shares of the *Soma* drink, or the moonlight and life (RV, X.85.19). *Candra* is a great luminary having grown bigger than all other gods in the *Divi*, the Luminous Sky of the full Moon nights (RV, I.150.3). He is *Manthū* (*Śatapatha Br.*, 4.2.1.1) or *Śiva* churning the ocean of sky in search for immortal light (*amṛtā*) of the Moon, planets and stars.

*Candra* is referred to sporadically throughout the text (RV, VI.49.8; VIII.20.20; IX.97.50) and is called upon to participate always in the meetings of the Vedic gods and celestial sages (RV, VIII.4.9).

He is not a superficial god being identical, according to *Brāhmaṇas*, with *Indra*, *Vṛtra*, *Āditya* (the full moon). He is also *Kumāra*, *Rudra*, *Mahandeva* and *Soma* (sickle and invisible moon). Such names as *Brahmā*, *Prajāpati*, *Dhāta* and *Vidhāta* define the moon, supposedly, of the bright fortnight as the Creator or Progenitor of the personified structural elements of the lunar month and the year. His name *Savitṛ* depicts him as the Generator, Vivifier and Stimulator. *Prāṇa* and *Mana* (‘spirit’ and ‘mind’) and *Annām* (‘food’ of *Āditya*) show that he is the source of spiritual and material being. He is the embodiment of the cosmic *Vāk* (‘speech’) and, consequently, of the *Vedas*. The name *Caturhotā* (‘four priests’) indicates the connection of the moon with the four lunar quarters and four seasons of the year. His name *Yajña* (the ‘sacrifice’) displays the astronomical character of the ancient ritual connected with the observation of the lunar phases. The same astronomical connotation is deduced from his name *Mānuṣya-loka* (the ‘universe of men’), which is defined as the moon connected with the three signs of the zodiac: Gemini, Virgo, and Libra.<sup>17</sup> Truly, the Moon is *sarvam* (‘everything’).

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<sup>17</sup> Vaman Shivram Apte, *The Practical Sanskrit-English Dictionary*, Delhi, 1995.



## *Sūrya*

*Let Sūrya with the nakṣatra-s (the lunar constellations)  
hear us!  
RV, III.54.19*

From this appeal the following judgement may only be deduced: *Sūrya* personifies the Moon, as only the Moon can be observed among the *nakṣatra-s* and is associated with them as husband with his wives. Evidently, *Sūrya* personifies the sun-shaped full Moon or the Moon of the dark fortnight.

The number thirty firmly associated with his ‘horses’ points to the lunar synodic month. The same conjecture is deduced from his nocturnal character: ‘Hardly has he yoked his horses, the Night gives him clothes’ (RV, I.115.4). ‘*Sūrya* goes through the dark space, measuring days by nights’ (RV, I.50.7).

The connection of *Sūrya* with the night sky is supported by his identification with a *nakṣatra* (RV, III.54.19).

Moreover, *Darśa-pūrṇa-māsau*, the new and full moons, signify *Candra* and *Sūrya*, according to the *Śatapatha-Brāhmaṇa* (11.2.4.1-2).

### *Soma*

*The plant, which is considered as Soma by a drunkard, is  
ground into powder; Soma, which is known by  
brāhmaṇas, can not be reached by anyone!*

*RV, X.85.3*

*Soma* is declared to be *Candramā* (the ‘Moon’), *Sanvatsara* (the ‘Year’), *Prajāpati* (the ‘Creator’), the brother of seasons, the father or embryo of *Divas* (the ‘moonlit sky’), *Pṛthivī* (the ‘moonless sky’), *Agni*, *Sūrya*, *Viṣṇu*, *Vṛtra*, *Indra* (the moon in different aspects) and the *vajra* (the ‘moonlight’) of *Indra* (RV, IX.96.5). His importance is evident from the fact that the whole IX<sup>th</sup> *maṇḍala* (a ‘circle, orbit’) is dedicated to him.

He was placed at the origin of the *nakṣatra*-s and by him the *Ādityas* (the lunar phases) are strong and the night sky *Pṛthivī* (her nocturnal character is discussed *infra*) is mighty (RV, X.85.2). He is not once mentioned along with constellations called ‘*nakṣatra*-s’ or ‘*ṛkṣā*-s’ (RV, IV.23.9). No doubt, *Soma* is an allegory of the sidereal and synodic months.

## *Agni*

Almost half of the *Ṛgveda* is dedicated to *Agni* and *Indra*, who are considered intrinsically connected or identical (RV, I.164.45). According to the *Ṛgveda*, *Agni* is the tongue of *Indra* for drinking of Soma, or the moonlight (RV, III.35.9); according to the *Mahābhārata* (1.3153), *Indra* is an old image of *Agni*.

The lunar nature of *Agni* is revealed unequivocally by a number of names and epithets, such as *Citras-bhānu* (the 'Bright Luminary' - RV, I.27.6), *Bṛhad-bhānu* (the 'Great Luminary' - RV, I.27.12), *Candra* (the 'Luminary' or 'Luminous' - RV, V.10.4), *Suṣ-Candra* (the 'Beautiful Luminary' - RV, IV.2.19; V.6.5), *Puruṣ-Candraḥ* (the 'Full Luminary' - RV, I.27.11; III.25.3; V.8.1), *Śambhu* (the 'Peaceborn' - RV, I.65.5-6), *Śiva* (the 'Benevolent', god with the crescent moon - RV, V.24.1), and *Su-Dakṣa* (the 'Beautiful Mighty', having the twenty-seven *nakṣatra*-s as his wives - RV, V.11.1).

These names and epithets, though generally interpreted as abstract terms of light and enlightenment, are stylistic or anagrammatical, if to employ the terminology of F. de Saussure,<sup>18</sup> pointers to the Moon's mythological aspects and incarnations. According to F. de Saussure, the hymn

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<sup>18</sup> "Les anagrammes de Ferdinand de Saussure", Textes inédites, présentés par J. Starobinski, in *Mercure de France*, P., févr. 1964, pp. 249-250; J. Starobinski, *Les mots sous les mots. Les anagrammes de Ferdinand de Saussure*, P., 1971.

is built around a name or an epithet of the god, and poet most often does not name him directly, but alludes to his name by means of assonance, synonyms and epithets. T. Y. Yelizarenkova notes, that this play with attributes-epithets is rather complex producing many ambiguities, when a part of the epithets change their descriptive function and become appellations. Only the context can facilitate a proper understanding of such utterances.<sup>19</sup>

Around *Agni* as the *Paśupati*, the king of the animals or lion, are sitting all the 'beasts' (*paśava-s* - RV, X.142.2) or luminaries. They are gathered round *Agni* lighted up at night (RV, III.9.7). *Agni* guards the moving and immovable 'cattle' (RV, I.72.6), the planets and stars. This is a good description of the images of some famous Proto-Indian seals. As the number of such descriptions having parallels in images on seals is rather high, some scholars believe that there is no reason to oppose the greatest civilisation of the ancient world to the richest literature of antiquity.<sup>20</sup>

*Agni* knows the stakes of the 'villages' or asterisms (RV, I.72.7) and he is distinctively called 'Sūrya', and even 'Sūrya shining in the nights' (RV, III.11.1), or 'Savitṛ' (RV, IV.13.1), 'who rides the horses through the dark night space' (RV, 1.35.1-2). *Sūrya* in his turn is called

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<sup>19</sup> T. Y. Yelizarenkova, "Rigveda - velikoe nachalo indijskoj literatury i kul'tury", in *Rigveda, Mandaly I-IV*, Moskva, 1999, p. 524.

<sup>20</sup> D. Frawley, *Gods, Sages and Kings: Vedic Secrets of Ancient Civilization*, Delhi, 1999 (First Ed. 1993), pp. 15-18, 198, 254-257; E. Richter-Ushanas, *The Indus Script and the Rg-Veda*, Delhi, 1997.

‘*Agni-Pāvaka*’ and ‘*Varuṇa*’ (RV, I.50.1; I.50.6). Besides, *Agni* is the Lover of *Uṣas* or the Night of the bright lunar fortnight, and the Light of *Divas*, the moonlit sky (RV, I.69.1). When *Agni* rises up, he walks like *Sūrya* with *Uṣas* (RV, I.157.1). It is he who can ‘bestow the treasures of the full Moon’ (RV, II.2.12).

*Agni* is nourished by two luminous cows of different hues (RV, I.95.1-2). Only the Moon, not the Sun, is seen under different illuminations by day as well as by night. He is sitting as *Brahmā* (RV, IV.9.4). Unborn, he carries the wide *Pr̥thivī* (RV, I.67.5-6), the night sky (*vide infra*). In the night, *Agni*, the son of Force, is *Śiva* (‘Benevolent’) to those, whom he leads to happiness (RV, IV.11.6). Just like *Indra* (RV, IX.29.1), *Agni* looks more beautiful in the night than in the day (RV, I.127.2). He emits light in the nights (RV, II.2.2) and is not concealed by the darkness even in the night (RV, II.10.3). He sees through the night darkness (RV, I.94.7). He illumines the nights (*Kṣapās* - RV, I.79.6; II.2.2; VIII.71.2), therefore, one of his names is *Kṣapāvan*, the ‘Lord of the Night’ (RV, I.70.5; II.2.2; III.55.17; VIII.71.2). He is lit by ‘women’ (asterisms, nights) *yuga by yuga*, week after week (RV, III.26.3).

But *Agni* is not only the personification of the synodic month, he is praised also as *Dakṣa* (RV, III.14.7), the father of the twenty-seven lunar asterisms, which are the wives of *Soma* or *Candra*. He is named *Dyam* with the *nakṣatra*-s (RV, IV.7.3) and is connected with the

*nakṣatra*-s also as the leader of the *yakṣas*, or *Kubera* (RV, X.88.12.-13).

Of prime importance for our topic is his association with the *Ṛttikā*-s: *Agni* is the *deva* of this constellation. This is the proof of the *Agni-Kārtikeya-Chandra*'s identity, because *Chandra* as well as *Kārtikeya* are known as '*Ṛttikā-bhavaḥ*', 'Born in *Ṛttikā*-s' (RV, I.70.5).

### *Indra and the autumnal equinox*

*Indra*, like *Agni*, is also declared to be *Paśupā* (VI.18.3), *Gaṇapati* (X.112.9), *Nṛtaḥ* (Dancer), *Śiva* (RV, I.30.7; II.22.4), and the son of Force (RV, VI.20.1). He is not once defined with such names and epithets as *Soma*, *Candra*, *Pūrṇa-Candra*, *Puruṣ-Candra* or *Viśvaś-Candra* (RV, VIII.81.9; IX.93.5; X.134.3). *Soma*, in his turn, is called *Vṛtrahan* (the ‘Killer of *Vṛtra*’) or *Indra* (RV, I.91.5).

*Indra* found the ‘large field’ and the full moon, engendered *Sūrya*, *Uṣas*, the Path (the ecliptic), *Agni*, the ‘waters’ (the asterisms) characterised as *Viśvaś-Candraḥ*, ‘All Luminous’ or (embracing) ‘all moon-phases’ (RV, III.31.15-16). *Indra* is the father of *Sūrya* and the illuminator of the night (RV, III.49.4). Therefore, his thirty ‘horses’ yoked by fives in six rows (RV, III.55.18), like the ‘horses’ of *Sūrya*, symbolise the *savana* (ritualistic) synodic lunar month.

He has a name *Kṣapāvan*, like *Agni*, and is firmly connected with the Night, which is designated as his daughter or his Path (RV, VIII.96.1). The singers want to enjoy with *Indra* many nights and, especially, the first bright autumnal nights (RV, IV.16.19).

According to the *Mahābhārata*, the Day of *Indra* is the new moon night near the autumnal equinox, which marked the beginning of the dark half of the year, when the night predominates in the Northern hemisphere, and

when the sky is ornamented with the most splendid collection of the brightest stars and asterisms. This day has a special significance for determining the date of the *R̥gveda*.

In the Indian calendar, one night is dedicated to *Indra* in the autumnal month of *Bhādrapada* (August - September): the *Indra-ekādaśī* (the 11<sup>th</sup> day of the dark fortnight) and another night in the next month of *Āśvina*: the *Kojāgarī-pūrṇimā* or the *Kojāgarī-vrata*. Significantly, this period is close to the *Rāma-ekādaśī* of the dark fortnight of *Āśvina*, the glorification of the return of *Rāma-Candra* with *Sītā* (the 'furrowed soil' or dark night sky) to *Ayodhya* (the 'Unconquerable', 'capital city' of the night sky of the dark half of the year), and the *Naraka-caturdaśī* or the *Dīpāvalipānam*, the festival of Light celebrated on the day of *āmāvāsya* (the new moon) at the end of *Āśvina* and the beginning of *Kārttika*. Finally, this significant interval is associated with the *Viṣṇu-parivartanotsava* or the *Parivartana-ekādaśī* of *Śukla Bhādrapada* and the *Viṣṇu-prabodhini-ekādaśī* of *Śukla Kārttika*, showing great importance of the autumnal reappearance of the moon after the period of rains.<sup>21</sup>

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<sup>21</sup> L. D. Swamikannu Pillai, *Panchang and Horoscope*, New Delhi, 1985.



### *Night as the Empress of the World*

The overwhelming majority of the Vedic hymns is dedicated to masculine deities such as *Agni*, *Indra*, *Soma* and others, representing different hypostases of the Moon and lunar phenomena. Only a small number of Rigvedic songs laud Nights as celestial females, but the real significance of these females is much greater, because they are intrinsically connected with all masculine deities and hence are present implicitly in almost every hymn.

‘The Night is in its essence *Brahmā-māyā* (the Measure of the Great Lord of Space and Time), inseparable from the World Ruler; the goddess, personifying it, is glorified as the Empress of the World’ (*Devī-Purāṇam*).

The Night of *āmāvāsyā* is declared by *Brāhmaṇas* the *kṣatram*, the universal ‘state’, and has a number of hypostases, like her husband, the Moon.

Night and Day are two very luminous spaces, which embrace the whole universe and are parents of this world. They are metaphorically represented as the two Sisters of different colours, the Rivers, which fly around, the black and white Wives or Steeds of *Agni*, which are very swift and never get old (RV, I.140.3).

### *Rātrī or Nakta (Night)*

*Rātrī* is identified by *Brāhmaṇas* with the Darkness, *Śrī* (the night sky), *Savitṛī* (a personification of the *nakṣatra*-s)

and, using metonymy, with her husband *Soma* (*Agni*, *Mṛtyu*, *Varuṇa*, *Sagara*), symbolising the invisible moon, and *Ahaḥ* (the ‘Day’), standing for the moonlit night-sky.

In one *sūkta* of the *Ṛgveda* (X.127), the Night (supposedly, of the new moon day) is extolled as the most beautiful daughter of the Sky (*Divah*). She is docile and airy, as the wind. She, redeemer from the Red Wolf (the sun-shaped full moon), fettered Darkness with stars in the wide, immortal space.

The Night is extolled directly also in several hymns of the *Atharvaveda* along with the lunar asterisms and lunar phases. Worship of the *nakṣatra*-s in this *veda* is so pronounced that *Muñjakeśa* had regarded it as one of the five main topics of the *Atharvaveda*.

The *nakṣatra-pūjā* was ordained by the *Gṛhya-sutras* and found its fulfilment in the *nakṣatra-yoga* concept of the *Purāṇa*-s, ordaining rewards for every *nakṣatra* worship.

### ***Kāla-Rātrī***

According to the ‘Ocean of Stories’ of *Somadeva* (109.100-102), the Night of Time or Doom called ‘*Durgā*’ (‘Fargoing’), ‘*Kālī*’ (‘Black’ or ‘Time’), ‘*Caṇḍikā*’ (the embodiment of the new moon night sky) guards always the southern opening of the Cave of *Śiva*, personifying the first night of the three-days new moon period.

She was created by *Viṣṇu*, when the ‘sea’ (the night sky) was ‘churned’ for the nectar of *amṛtā* (‘immortal’ moonlight). *Naravahanadatta* worshiped her as the power of life, animating all creatures, as the cosmic goddess holding in her hands shining *Sūrya* and *Candra*, the waning and the rising sickle moons. It shows that she is the personification of the new moon night period enclosed between the waning and the rising sickle moons.

### ***Pr̥thivī***

The night sky opens the unlimited cosmic width and is justly called *Pr̥thivī*, ‘Wide’, ‘Widespread’, ‘Ample’, ‘Broad’ (RV, I.65.5-6). *Brāhmaṇas* repeatedly identify *Pr̥thivī* with *Jyotī* (the ‘star light’ or the ‘night illuminated by the stars’, cp. *jyotis*, *jyotiṣī*, *jyotiṣkaḥ*, ‘luminary’, ‘planet’, ‘star’; *jyotiṣaḥ*, ‘astronomy’, ‘astrology’). She is identical with *Śrī*, whose attributes, especially, peacock, refer to stellar environment. She is *Nirṛiti*, the goddess of death and the empress of the South-Western Region, in which, according to the observational astronomy, the Moons actually ‘die’, becoming the celestial Fathers, *Pitṛ*. She is *Yāmī* or *Yamunā*, a maiden-river flowing in the Southern Region, signifying the Night, particularly, of the new moon period. One of her forms is *Aṅgiras*, the father of four ladies, two of them being *Kuhū* and *Sinīvālī*, the maidens with black hair, definitely linked by the *Brāhmaṇas* with the two new moon nights. What is more,

*Pr̥thivī* is identified with *Sinīvālī* and *Kuhū* themselves and with *Darśah*, which are unequivocally determined as the new moon nights.

Nevertheless, *Pr̥thivī* is very often identified by modern scholars exclusively with the Earth, regardless of the statements that she touches the Sky (RV, II.41.20) and suckles with her milk the ‘calf’ (evidently, the rising moon). This cosmic image reminds one iconographic presentation of the Christian Madonna.

Her location is clearly indicated: she, similar to *Kāla-Rātrī*, stands between *Aśvinau*, *Agni* and *Indra* (the rising and the waning moons).

Suffice it to mention the name *Avyathiṣī* (‘free from pain’), which is applied equally to *Pr̥thivī*, the midnight and the night, in order to see the intricate connection of *Pr̥thivī* with the night. Occasionally, this epithet is applied also to *Sūrya* (the full moon as regent of the dark lunar fortnight) and *samudra* (a ‘sea’ or a lunar quarter).

Though the identification with the Earth may seem sometimes justified, many attributes of the Vedic ‘Earth’ are quite extraordinary. Once upon a time (apparently, in the period of the new moon), ample ‘Width’ (*Pr̥thivī*) has extended her body for the feeding of the Eagle (the Moon). This peculiarity is paradoxical, if applied to the earth, but it is well fitting as a description of the night. The duration of the night is changing during the year, and thickness of darkness depends on the day of the lunar

month. Therefore, the terrestrial ‘width’ is to be treated, naturally, in the context of the night sky.

It is very significant that the single hymn of the *R̥gveda* (V.84) addressed directly to *Pr̥thivī* proclaims her to be lauded by poets in the nights (*aktubhih*), to be very luminous (*arjunī*, ‘white’; ‘bright’) and to be ‘wet’ with the rain of rays from *Divas* (Full Moon). In the next hymn dedicated to *Varuṇa*, *Pr̥thivī* is compared to the skin spread for *Sūrya*. The skin is a usual metaphor of the sky - (cp. RV, IV.13.4, where the black hide is clearly identified with the darkness of the night sky).

*Varuṇa* measured *Pr̥thivī* with *Sūrya*. As *Varuṇa* personifies according to *Yāska* (the ancient symbolical author of the Vedic *Etymology*) the night sky, or more precisely, the Moon (husband of the Night), that implies his connection with the night sky’s width. At least, her character is celestial, not terrestrial. According to *Brāhmaṇas*, *Varuṇa* personifies the new-born *Māsa* (Moon or the Moon of the bright fortnight), etymologically the ‘measurer’ (of lunar time and cosmic space).

No less important, *Sāyana* (the most authoritative commentator of the *Vedas* of the XIV century) postulates the airy or celestial character of *Pr̥thivī* (RV, I.102.3).<sup>22</sup> His opinion may be supported by statements that ‘*Indra* stretched the solid ground (the unshakeable space) on the columns of the sky’ (RV, I.56.5) and ‘fixed the unshakea-

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<sup>22</sup> *R̥gveda with Sāyana Bhāṣya*, Ed. by M. N. Datta, Vol. 2, Calcutta, 1906-13.

ble foundation of the bright and ample (*pr̥thivī*) space' (RV, I.56.6).

*Pr̥thivī* is described as mobile (*vicārinī*) in spite of her hardness, seeing that night sky, really, shows constant and perpetual movement of stars and planets. The hardness of *Pr̥thivī* or starry regions is also well fitting, since the disposition of the motionless stars in the empyrean sphere appears to be eternally fixed. Certainly, she is similar to the 'hard ground' of the Bible, which had been created before the Earth and the primaries and originally, according to our hypothesis, had symbolised the upper sky (*Genesis*, ch.1.6-8). The *Old* and *New Testaments* also are based, definitely, on the lunar calendar as was shown, for example, by **N. A. Morosov**<sup>23</sup> and **E. Zeren**.<sup>24</sup>

### *Daughters of Aṅgiras*

Of great significance to this lunar theory is the mentioning of the four daughters of *Aṅgiras* (who, like his son *Agni*, should be treated in this context as the personification of the synodic month). *Rākā* and *Anumati* represent the fourteenth and the fifteenth full-moon nights. *Sinīvālī* and *Kuhū* are two nights of the new-moon period (RV, II.32.4-6, 8).

*Sinīvālī* is depicted as a fertile woman with fluffy, splendid hair, the mistress of the 'villages' (RV, II.32.6-7). Hence, it follows that the 'villages' really

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<sup>23</sup> N. A. Morosov, *Hristos*, Vols. I-VII, Moskva, 1924-1930.

<sup>24</sup> E. Zeren, *Lunnyj bog* ("The Lunar God"), Russian Tr., Moskva, 1976.

represent asterisms. It is natural to postulate further the celestial character of the *pura*-s ('fortresses'), of the 'states', of their inhabitants and of their interrelations. In the Vedic literature, the terrestrial plane exists only as the source of metaphors and models for the description of the night sky and the nocturnal phenomena important for time reckoning. Namely, this description had caused the primary concern of the ancient astronomers.

### *Uṣas*

Nights of black and white colour are engendered by the Rivers (the day-and-night periods) on the permission of *Agni* (RV, I.73.7). Two milk 'cows' follow each other in the established order measuring endless paths and attracting to themselves all majestic thoughts (RV, I.146.1-3).

Two halves of the day go round the thirty *yojana*-s, evidently, the thirty parts of the zodiac, consisting of 12° each (RV, I.122.8). *Uṣas* and *Nakta* move forward by thirty *yojana*-s in a day (RV, IV.55.3). Thirty *yojana*-s represent, no doubt, in this context thirty *muhūrta*-s ('hours' consisting of 47 minutes each) of the day or, metaphorically, thirty days of the month, and *kratu* (the daily ceremony) being a symbol of a day and night.

'*Uṣas*' go day by day from house to house, changing their names' (RV, I.123.3). This is comparable to the movement of the Nights, which have different names (cor-

responding to the twenty-eight *nakṣatra*-s). Significantly, ‘*Uṣā*’ (the variant of *Uṣas*) means also ‘night’, especially, in Vedic context (*Taittirīya Br.*, 3.8.16.4). Moreover, ‘*Uṣā*’ is identical with *Rākāā*, the night of the full moon day (*Aitareya Br.*, 3.48).

*Uṣas*’ (the full moons) appear always in the east and follow each other, never changing their direction (RV, I.124.3). However, dawns (the mundane substitute for *uṣas*’) do change the direction diametrically, moving during the year from the lower to the higher azimuth and vice versa, not speaking of the evening afterglow, which can **never** appear in the east.

The widespread identification of *Uṣas* with the dawn is, no doubt, erroneous, because *Uṣas* emits light with the help of the *bhanuna candrena*, the ‘lunar orb’ (RV, I.48.8), emits light in the darkness of the night and stands on the lunar disk as on the deck of a boat (RV, III.61.2; VI.65.2). This image may be compared to such iconographic representations of the Virgin Mary, as the one placed in the Münster’s Art Gallery (Germany), where the Mother of Jesus is standing on the crescent in the night sky. No doubt, the Virgin impersonates in this context the longest night of the year, figuratively, the Mother of the New Moon of the New Year (winter solstice).

The *Mahābhārata* depicts the period of five nights (which, most probably, is the difference between the solar and ritualistic *sāvāna* years) using the similar metaphor: *Draupadī*, who personifies the Night, enters the sacrificial



grounds every night with one of the five *pandava*-s and remains virgin.

The new moon nights associated with the autumnal equinox and winter solstice are decorated with the splendid assembly of the most brilliant constellations of *Orion*, *Taurus*, *Gemini*, *Leo*, *Auriga*, *Canis Major* with *Sirius*, *Lira*, *Cygnus* and *Bootes*. In the Vedic tradition, one of these nights is called *Mahā-Śiva-Rātrī*, the ‘Great Beneficent Night’ (now celebrated on the fourteenth night of *Kṛṣṇa-pakṣa*, the dark fortnight, of *Maghā*). Her other names are *Durgā* (‘Far-going’), *Tāraṅinī* (‘Stellar’, a starry night, during which stars are visible), *Ghṛtācī* (‘Radiant’, ‘Night’, ‘*Sarasvatī*’, one of the principle *apsara*-s in the *Indra*’s heaven). As the ecliptic is placed in autumn and winter nights over the celestial equator, the night sky seems magnificent and bright with stars.

Moonless and moonlit nights dressed in black and white clothes follow each other. *Uṣas* and *Nakta* are two Weavers, who weave the same cotton (RV, II.3.6). The Lord of the sky fills the black goddesses with the ‘sour milk’ (the Milk Way) and white ones with the ‘fresh milk’, the moonlight (RV, I.62.8-9).

*Uṣas* (the ‘Day’, the ‘Bright fortnight’) and *Nakta* (the ‘Night’, the ‘Dark fortnight’) form the body of a Milk Cow (the Lunar Month), personifying two fortnights - dark and bright. *Agastya* (the waning moon) measures *arka* (the ‘poetical speech’ and the ‘moonlight’) near her

‘udder’ (RV, I.186.4), symbolising, supposedly, the new moon period.

The Day and the Night follow the way of *Vāyu* (RV, III.14.3) or *Rta* (RV, III.12.7), the yearly path of the moon, which was strictly measured, as is evident from the statement that *Viṣṇu* set the pairs of steeds moving with four multiplied by ninety names (RV, I.155.5), which discloses the division of the zodiac into four quarters consisting of ninety degrees each. As it is well known, the division of the year into three hundred sixty days (720 days and nights) is also clearly mentioned (RV, I.164.11).

*Viṣṇu* supports *Dakṣa*, lunar zodiac, sets in motion and drives pairs of ‘horses’, as a wheel, and measures three hundred sixty units of time (RV, I.55.6). It is clear that the division of a yearly cycle into 360° is meant here. The Rigvedic poet addresses him with the following request: ‘*Viṣṇu*, give us the wealth of the full moon!’ (RV, VII.100.2). It shows that *Viṣṇu* personifies the yearly course of the full moon and justifies his surname ‘*Upendra*’, the ‘Assistant of Indra’.

### ***Aditi***

*Aditi* is identified more than once with *Pr̥thivī* as well as with *Dyava-Pr̥thivī* (the nights of bright and dark fortnights). *Indra-Viṣṇu* (the full moon and its path) and *Maruts* (the lunar phases) are her embodiments. She is the great *Svar*, the Heaven, the Mid-air, the Mother, the Sire and the Son, all gods or *deva*-s (litt. luminaries), five-

classed ‘men’ (five small planets or five seasons), and all that had been born and shall be born. She is declared the great *Rta* (the ‘Order’ or the Zodiac). Besides, she is associated with *Dakṣa*, the zodiac, as his mother and daughter (RV, X.72.4).

### *Vāc*

Night is *Vāc*, cosmic Speech, identical with *Sarasvatī* (*Padma Purāna*, Pa. 107), the wife of *Brahmā*, symbolising, most probably, the night as such, and especially the nights of *parvan* days or changes of the moon: the new moon night, the night of the first lunar quarter, the night of the full moon day and the eighth night of the dark fortnight).

She is personified as the wife of *Āditya* (the full moon) and the wife of *Kāśyapa*, who is embodiment of the yearly solar-lunar zodiac or, more precisely, of the yearly course of the full moon via the twelve or thirteen signs. She is also depicted as a daughter of *Dakṣa* (the sidereal Moon) and the mother of the *gandharva*-s (the lunar phases) and the *apsarasa*-s (the lunar asterisms).

She is *karma* (the lunar ‘ceremony’), *yajña* (the lunar ‘sacrifice’, particularly, of the bright fortnight) and *hotr* (the ‘sacrificer’ or ‘priest’ of the *yajña*). She is all the *ṛtvija*-s (chronologers) and all the *deva*-s (luminaries). She transforms herself into *Candramā*. She has four *stana*-s (four breasts or lunar quarters). *Bhekuri*-s (‘apsara-s’, ‘asterisms’) sacrifice to her,

showing her connection with the zodiac. *Agni* is inside her or is her embodiment. She is the battle for *Sītā*, beloved wife of *Rāma-Candra* (the ‘Bright, Beautiful Moon’). *Sanvatsaraḥ* (the ‘year’) and the very spirit of the seasons (*ṛtu-s*), which is calendrical time, are her forms.

*Vāc* speaks about herself as the Empress of the World, supporter of all the gods, pervading *Dyaus* and *Ṁrthivī* (RV, X.125.1-8). Her surnames ‘*Brahmā*’, ‘*Prajāpati*’, ‘*Tvaṣṭṛ*’ and ‘*Viśvakarman*’ (the ‘Creator’) support this ambitious self-identification. Vedic *Samhitās* and *Brāhmaṇas* also call her Empress of the world and identify with *Sinīvālī* (the night sky of the new moon period). She is declared to be *Samudraḥ* (the ‘sea’, the ‘sky’, number ‘four’, the lunar quarters, *Śiva*), *Arbudam* (‘swelling’, ‘hundred millions’, a ‘snake’), the embodiment or symbol of the path of the moon and stellar sky. Such names as ‘*Dyaus*’ (the ‘Sky’, the ‘Full Moon Night’), *Antarikṣam* (the ‘Intermediary Space’), ‘*Parama-vyoma*’ (the ‘Highest Space’), *Virat* (the cosmic ‘Space’) clearly shows her celestial cosmic nature. One of her names is *Ṁrthivī* (*sic!*). In addition, she is identified with two significant lunar asterisms: *Aṣādhā* and *Revatī* (*vide infra*).

### *Asterisms*

*‘The lunar asterisms (ṛcha) are seen during the night (of the new moon days). Where are they in the light (of the full Moon)? Unchangeable are the rotations (vrata-s) of Varuṇa; Candramā (the Moon) is going, looking round in the night’.*

*RV, I.24.10*

Distinct descriptions of the starry regions are available in the *Ṛgveda*, though mainly fragmentarily and metaphorically.

Sometimes the Rigvedic text mentions *nakṣatra*-s directly, for instance: ‘As thieves, *nakṣatra*-s run away, when *Sūrya Jatavedas* appears’ (I.50.2; cp. X.22.10; X.111.7). More often they are mentioned indirectly, as in the following examples alluding to their number: ‘the thirty-four ribs of the Sacrificial Horse’ or ‘the thirty-four lights’ and ‘the thirty-five *deva*-s’ (RV, X.54.3). The twenty-seven or twenty-eight *nakṣatra*-s along with the seven planets are most likely referred to in such passages.<sup>25</sup>

Sometimes *nakṣatra*-s are mentioned in connection with the dark fortnight: ‘*Pitaraḥ* (the ‘Fathers’, moon’s phases of the dark fortnight) garnished the sky with

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<sup>25</sup> *The Hymns of the Ṛgveda*, Trans. With a Popular Commentary by Ralph T. H. Griffith, Ed. By Prof. J. L. Shastri, Delhi, 1995, p. 570.

the asterisms, like a dark horse, gave darkness to the Night and light to the Day' (RV, X.68.11).

Firm 'houses' in the sky habituated by *nara*-s, 'men' of the suit of Agni (RV, I.73.4), are metaphorical expressions with clear astronomical purport.

Not seldom the *nakṣatra*-s take the form of shining 'cows', which are filled with and ooze out milk (RV, I.173.6). Alternatively, the asterisms are represented as bears (*ṛcha*-s, *madhu-ada*-s, 'mead-eaters', Russian 'medved', fairytale's symbol of the summer's Moon). Characteristically, the king of the *ṛcha*-s or *madhu-ada*-s is the Moon.

Sometimes, they are called *strī*, 'celestial nymphs' (RV, I.166.11), whose husband is the Moon. The association with heavenly water bodies, *āpaḥ* (RV, X.30.8), also points to the stellar environment as among them is clearly mentioned *Āpo Revatīḥ*, a *nakṣatra* situated in Pisces close to Aries (RV, X.30.8; X.86.13). *Āpo Revatīḥ* is to be compared with the standard name of the *Bharaṇī-nakṣatra*: 'Āpo-Bharaṇī' (the end of Taurus). The name 'apsara-s', 'water nymphs', whose number twenty-eight or forty ( $40 = 27 + 13$ ) definitively points at lunar monthly and yearly zodiacs.

All the names of twenty-eight asterisms are given, as it is well known, in the *Yajurveda* (*Maitrayanīya saṃhitā*) and the *Atharvaveda* (XIX.7.2-5). The *Śatapatha-brāhmaṇa* and *Taittirīya-saṃhitā* mention the number twenty-seven. Twenty-seven asterisms were connected

closely with the sun, and twenty-eight asterisms represented the path of the moon.

The ecliptic or the path of the sun consisting of the twenty-eight asterisms was divided into one hundred and eight *dhāma*-s, ‘houses’, or *pāda*-s, ‘footsteps’ (RV, IX.97.39). The Vedic poets (*kavi*-s) lead *Agni* in the ‘footsteps’ (RV, I.146.4). The ṛc RV, X.97.1 mentions one hundred and seven houses (*dhāma*-s). The ṛc X.13.3 mentions nine steps (*pāda*-s): ‘I climbed five steps, then four steps more, as usual’. Each of the twenty-seven lunar *nakṣatra*-s is subdivided into four *pāda*-s, and each of the twelve solar zodiacal signs, respectively, into nine or five and four *pāda*-s (see diagram *infra*).

The lunar zodiac is personified as *Dakṣa*, the father of twenty-seven lunar asterisms. It seems that he is identical with *Varuṇa*, who is called pure *Dakṣa*, holding the sky upside-down (RV, I.24.7) and unwrapping the *nakṣatra*-s. The Night (‘*Bhūmā*’, ‘Plenty’, ‘Abundance’, a ‘great number’) appears, when *Varuṇa* exposes the second *nakṣatra* (RV, VII.86.1). *Sūrya* is observing the ascending asterism (RV, VII.81.2).

Seven very significant asterisms are mentioned in the *R̥gveda*: *Kṛttikā* (the ‘Seven ṛṣi-s’ or ‘*Sūnā*’, a ‘slaughterhouse’, RV, I.161.10), *Rohiṇī* (RV, I.103.2), *Aghā* (*Maḡhā*), *Phalgunī* (= *Arjunī*, RV, X.85.13; = ‘*śakṛt*’, the ‘cow dung’, RV, I.161.10), *Śravaṇā* (‘*Śroṇā*’, RV, I.161.10), *Dhaniṣṭhā* (‘Mother *Dhaniṣṭhā*’, RV, X.77). *Viśākhā* (or *Rādhā*), supposedly, is also alluded to as the

wife of *Indra* and as bounty full of moonlight (RV, V.57.7). *Taittirīya-Brāhmaṇa* determines her to be the female ruler, the mistress of *Prajāpati* (3.1.1.11).

The division of the zodiac into parts is corroborated by the affirmation that the celestial ‘steed-bird’ (*Āditya*, *Sūrya*) has three tethers in the ‘water-bodies’, the ‘luminous sky’ and the ‘sea’ (RV, I.163.4). According to Dh. D. Mehta,<sup>26</sup> these regions represent, apparently, the zodiacal subdivisions, as they are described in the *Atharvaveda* (XIX.8.1-2) to be places, where the *nakṣatra*-s are situated.

*Śravaṇā* and *Dhaniṣṭhā* are the first asterisms in the ancient calendars of *Viśvamitra* and *Brahmā*, respectively, supplemented by the calendars of *Skanda* and *Candra* beginning with *Kṛttikā* and *Rohiṇī*. *Maghā* and *Phalgunī* are mentioned in connection with the wedding ceremony of *Soma* and *Sūryā*. The text indicates that the rays of the Moon (*gāvāḥ*) are slain in *Maghā*, and the light of the Moon (*Sūryā*) reappears, is switched on or ‘wedded’ to the Moon, in *Arjunī*-s (RV, X.85.13). All these *nakṣatra*-s represent conjugated diameters (*vyāsa*-s) and were connected with the locations of the *pratipāda* or the first crescent moon on the days of the equinoxes and solstices.

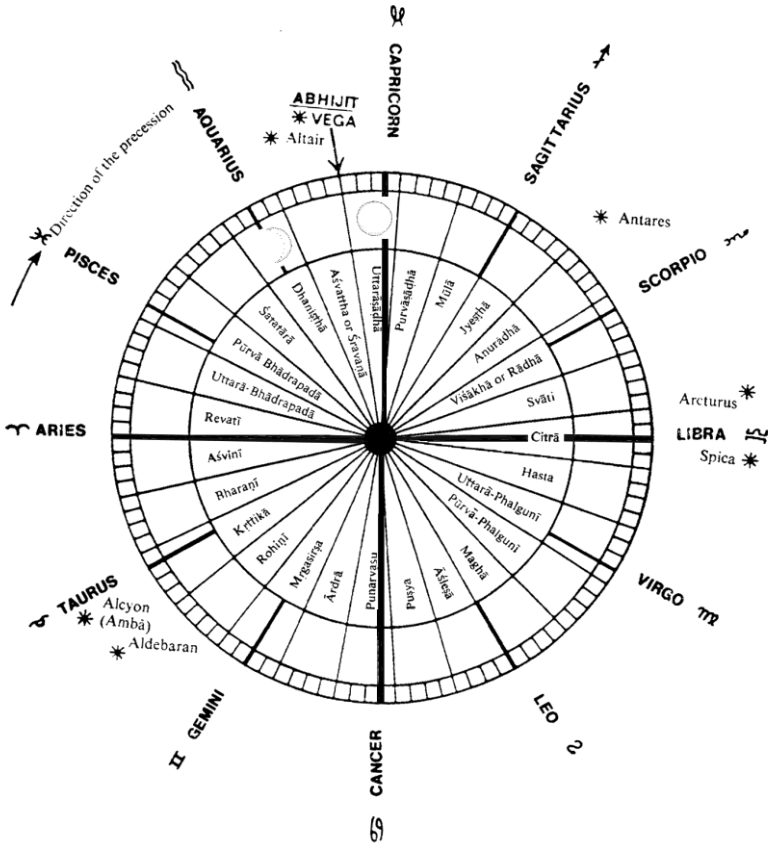
The equinox (*viṣuvam*, the equinoctial point) is clearly mentioned in the *Ṛgveda*. The *ṛc* II.40.3 says: ‘Oh, *Soma* (the new moon) and *Pūṣan* (the full moon), hasten on the equinoctial turning-point (*viṣū-vṛtam*, ‘rolling in various

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<sup>26</sup> Dh. D. Mehta, *Positive Sciences in the Vedas*, New Delhi, 1974.



directions', 'balancing', 'equally divided') your seven-wheeled cart having five bridle-reins (the image of the year having thirteen months and five seasons) harnessed by thought and measuring space!' As it is well known that the point of the vernal equinox was situated at the first points of Aries and Libra two thousand years ago, the main task is to define, to which epoch the Rigvedic description of constellations fits best. Though the *R̥gveda* specifies the location of the sun very strictly, to my mind, it has been defined wrongly due to the mythological contamination of the sun with the moon.



**Fig. 1. The conjugated diameters of the equinoxes and solstices with the Sun in *Prthivī* (*Uttarāṣāḍhā*) and the *pratipāda*-Moon in *Dhanuṣṭhā* (on the basis of the *nakṣatra*-s diagram by P. Lerner<sup>27</sup>).**

<sup>27</sup> P. Lerner, *Astrological Key in Mahābhārata*, Delhi, 1988, p. V.

### *The date of the Rigvedic astronomy*

The identification of *Pr̥thivī* with the Mother of the World, with *Aditi*, the mother of the *Āditya*-s, *Prathamā Citiḥ* (the ‘primary altar’), and, especially, her precise identification with the asterisms *Aṣādhā*-s (the end of Sagittarius - the beginning of Capricorn), ‘which are above all the *deva*-s’ (*Taittirīya Br.*, 1.5.1.4), and *Kuhū* (the new moon night) is of supreme significance for our topic. This identification points to the beginning of a certain calendrical period, in all likelihood, of the New Year of an important year cycle.<sup>28</sup>

The importance of the Capricorn as the starting point of chronological cycle is confirmed by the presence of two significant constellations. One is *Śravaṇā* also called *Aśvattha* and the other is *Abhijit*. *Aśvattha* is depicted on the Proto-Indian seals, which shows its importance at that epoch. *Abhijit* is situated farthest from the ecliptic, as if being left out. Myths emphasise this peculiarity showing that its location was not arbitrary. Though the true meaning of this displacement was forgotten in the course of time, it is evident that it was justified by some reasons. To my mind, *Abhijit*

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<sup>28</sup> About Babylonian and Greek year cycles *vide* Van der B. L. Waerden, *Science Awakening, II, The Birth of Astronomy*, London, 1974 (first ed. *Die Anfänge der Astronomie*, Groningen: Noordhoff, 1965; Basel: Birkhäuser, 1968).

was an intercalary *nakṣatra* corresponding to an intercalary day, which was inserted every third sidereal month in order to coordinate the number of days with the sidereal months. As one such month is equal to 27.3 days, one whole day should be inserted at the end of three months.

Moreover, the texts, mentioning that ‘*Brahmā* counted time from *Dhaniṣṭhā* (the beginning of Aquarius), when the *neomenia* (*pratipāda*) happened there’, define implicitly the precise position of the sun, namely, *Uttarāṣādhā*.

The *Aṣādhā* and *Puṣyaā* asterisms are situated on the axis opposite one another and had been, presumably, connected either with equinoxes or solstices, as *Aṣādhā* is declared to be the highest among the *deva*-s (*Taittirīya Br.*, 1.5.1.4), identical to *Prṭhivī* and *Vāc* and placed in the centre of the asterisms of *Yama* or the dark half of the zodiac. *Brāhmaṇas* indicate that this half is enclosed between *Rādhā* (*Viśākhā*) and *Kṛttikā*, representing, evidently, the conjugate diameter to the line *Dhaniṣṭhā* - *Maghā*.

The myth about *Prajāpati* (identified by *Brāhmaṇas* with lunar gods *Dakṣa*, *Soma*, *Candra*, *Indra*, *Agni*, *Brahmā*, *Mahandeva*, *Vasiṣṭha*, *Manu*, also with *Yajña*, *Sanvatsara*, Year, Month, Day) and his exclusive connection with *Viśākhā* (*Taittirīya Br.*, 1.5.22) and *Rohiṇī* (*Aitareya Br.*, 3.33), at which he met his doom, also emphasises the importance of the axis *Kṛttikā* - *Rādhā*. These

two conjugate diameters or axes mark the *neomenia* (the appearance of the first sickle-moon) near the four turning points of the year.

So, the strict location of the first sickle-moon, which was of primordial significance for observational astronomy, is indicated more than once in the Vedic texts. Nevertheless, scholars erroneously substitute the sun in place of the Vedic moon. A. K. Chakravarti,<sup>29</sup> H. Jacobi,<sup>30</sup> Ramatosh Sarkar,<sup>31</sup> and B. G. Tilak<sup>32</sup> used *argumentum ex silentio* deducing conjunction of the sun with *Kṛttikās* from the vague statement that *Kṛttikās* rise in the east. A. Parpola uncritically has taken *Skanda* or *Kārtikeya* for a sun god.<sup>33</sup> But according to the lunar theory, the myths speak definitely about the *birth* of the Moon in *Kṛttikā*, from which only the appearance of the first sickle moon (*neomenia*) in the constellation Pleiades can be deduced.

So, we have the other important position of the sun at the time of codification of the *Ṛgveda*: it was situated on

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<sup>29</sup> A. K. Chakravarti, "The asterisms", in D. Chattopadhyaya, *History of Science and Technology in Ancient India: The Beginnings*, Calcutta, 1986, pp. 495-501.

<sup>30</sup> H. Jacobi, *Über das Alter des Ṛg-Veda*, Kleine Schriften, Wiesbaden 1970.

<sup>31</sup> R. Sarkar, "Further note on the Kṛttikās", in Chattopadhyaya D., *op. cit.*, Calcutta, 1986, pp. 502-503.

<sup>32</sup> B. G. Tilak, *Orion or Researches into the Antiquity of the Vedas*, Poona (4th ed.), 1955.

<sup>33</sup> A. Parpola, *Deciphering the Indus Script*, Cambridge 1994, p. 206; A. Parpola, "Sanskrit kāla-"time", Dravidian kāl "leg", in *Indologica Taurinensia 4-5 (1975-1976): Proceedings of the Second World Sanskrit Conference*, Torino, 9-15, June 1975, p. 373.

the boundary between *Revatī* (the end of Pisces) and *Aśvinī* (the beginning of Aries). Both of these constellations are portrayed as very prominent Vedic goddesses, the former sometimes called ‘*Puṣā*’ or ‘*Pr̥thivī*’, the latter being the loveliest wife of *Sūrya*. There, the point of the vernal equinox, really, was in the beginning of the Common Era, when the axis of solstices, correspondingly, passed through *Aṣādhā* and *Puṣyā*.

To suppose that the Vedic calendar is bound to the beginning of the Common Era contradicts the historical evidence. It is more logical to move the axes of solstices and equinoxes at least 90° back in relation to the precession of equinoxes. Then the point of the winter solstice would be behind the present point by 118°. Taking the average velocity of the precession equal to 1° in 72 years, it moves us back 8500 years. So, the *neomenia* in *Dhaniṣṭhā* corresponded, most probably, to the autumnal equinox in *Uttarāṣādhā* 6500 B.C.E. The *neomenia* in *Kṛttikā*, accordingly, signified the winter solstice, the *neomenia* in *Maghā* marked the vernal equinox, and the *neomenia* in *Rādhā* corresponded to the summer solstice at the same epoch.

*Mahābhārata* defines strictly the locations of the so-called ‘four quarters of the globe’: the Northern quarter is marked by the constellation *Svāti* (V.109.9-17) identical with the star *Arcturus* in the Libra, the Southern one by the presence of the sage *Raivata* (V.107.8-14), whose name is an allusion to the

constellation *Revatī* (the end of Pisces). Therefore, the Western quarter was connected with the Capricorn, and the Eastern one with the Cancer. In the context of the two ways of the sun (*Dakṣināyana* and *Uttarāyana*), the quarters were associated with the seasons in the following way: East = spring, North = summer, West = autumn and South = winter. These mythological symbols testify once again to the fact that the autumnal equinox was in Capricorn at the time of codification of the Vedic calendar.

This estimation of the date of the *Ṛgveda* coincides with the beginning period of the Proto-Indian civilisation and points at the Vedic language and literature as the product of the highly developed urban civilisation.<sup>34</sup> This literature apart from belonging to the exclusively refined and perfected poetical tradition of the remote antiquity is intrinsically interwoven with astronomical and mathematical ideas. Therefore, further scientific investigations are needed for more adequate understanding of this great message from the ancient creators of the ideology of the spiritual global civilisation.

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<sup>34</sup> Buddha Prakash, *Ṛgveda and the Indus Valley Civilization*, Hoshiarpur, 1966; E. Richter-Ushanas, *op.cit.*, Delhi, 1997; Dr. S. Kalyanaraman, *The River Sarasvati: Legend, Myth and Reality*, Mangalore, 1999.