

Vedic *Adhidaivata* Roots of Purāṇic and Hindu Astronomy

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CONCEPT NOTE OF THE CONFERENCE

For people trained in the modern sciences, Vedic knowledge offers many concepts that may at times appear incomprehensible, or even contradictory..... In fact, traditional texts such as these encompass a rational system of thought also grounded in observational data that can offer significant contributions to contemporary scientific discussions.....

The above concept note has been put up thoughtfully by the organizers, with carefully chosen words. I have highlighted five key phrases that I like to touch upon in my talk.

- Practice of Vedic concepts/tenets/principles; Purāṇas & Śāstras have diffused into daily life of Indians for centuries with many variations, interpretations, sampradāyas, paramparā etc.
- Academically, we can study only published works.
- Vedic texts from the Ṛgveda onwards: Samhitās, Brāhmaṇās, Āranyakas,...,ancillary texts, about 100 texts spread over a period of 3000-4000 years. Not homogenous in style, date, composers.
- Nevertheless Vedas consistently uphold three fundamental principles- Tattva ākāśa:Space
- Prthivi, Antarikṣa, Dyauḥ, not exactly translatable as Earth, Atmosphere, Sky.
- In a sense, these are the minimum number of categories into which humans can put all of their sensory experiences to explain the world/universe around them.

* WHAT IS *ADHIDAIVATAM* IN THE VEDAS
 WHAT IS ITS RELATION TO
ADHIYAJÑA AND *ADHYĀTMA* ?

Adhidaivatam-> *Regarding devatas (cosmic deities/natural forces/agents/actions of celestial bodies/time/rythm/number counts...)*

- *ADHIYAJÑA* ALL INFO THAT IS ABOUT *YAJÑA* WHICH
 - i) REFERS TO *YAJÑA* BY **COSMIC DEITIES** → 3 or 33 or 3339 or 33 Crore or Infinite?
 - ii) PRIMARILY FIRE RITES ON EARTH BY HUMANS:
ŚRAUTA KARMA: SOCIETAL GROUP ACTIVITY
 - iii) *GRHYA*: FAMILY RITES

ADHYĀTMA IS ABOUT “MANAS, ĀTMAN,...INNER SPACE ...SPIRITUAL....”

It is known from the time of Yāskācārya that some RV hymns are being interpreted in different ways. Sāyanācārya while remaining primarily Yajñika, gives occasionally other meanings, without opposing them.

When the *adhidaivata* and also the *adhiyajña* explanations are given, along with the *Vinyoga* (application in a particular rite as per the Shrauta sutras) one starts seeing a figurative similarity between the two ‘meanings’.

Here the *word meaning* does not refer to lexical/ etymological meanings but something like two images/sceneries having close similarities, in colour, numbers, elements,... that is most likely not due to chance.

There are persons who insist that all of the RV is to be interpreted as *adhyātma*. There are traditional sayings that 'Vedās' are meant only for carrying out *yajña*. I will not go into such arguments.

My intention is to demonstrate with examples how, the

devatā → daivata → adhidaivata

leads from cosmological ideas to astronomical observations. This is closely linked to explain or experience or understand **TIME** that eventually merges with *adhyātma*.

I like to present two or three examples to explain my studies.

SOMAPĀNA LEGEND: INDRA DRINKS 30 LAKES OF SOMA

एकया प्रतिधा विचत्साकं सरांसि त्रिशतम् ।

इन्द्रः सोमस्य काण्क्षी ॥

RV. 8.77.4

In a single draught Indra drank 30 lakes full of Soma. Indra is lover of Soma.

एकेन प्रतिधानेनापिवत् । साकं सहेत्यर्थः । इन्द्रः सोमस्य काण्क्षा । कान्त-
कानीति वा । कान्तकानीति वौं । कृतकानीति वा । इन्द्रः सोमस्य कान्त इति वा ।
कणेषात इति वौं । कणेहतः । कान्तिहतः ।

तत्रैतद् याभिका वेदयन्ते । विशदुक्यपात्राणि माध्यन्ते सधन पक्वदेवतानि ।
तान्येतस्मिन् काल एकेन प्रतिधानेन पिवन्ति । तान्यत्र सरांस्युच्यन्ते । विशद-
परपरक्षस्याद्वाराचाराः । विशत्कूर्षपक्षस्येति नैरक्षः । तद् या पताक्षान्द्रमय आगा-
मिन्य आपो भवन्ति रक्षमयत्ता अपरपक्षं पिवन्ति । तथापि निगमो भवति ।

Nighantu & Nirukta by
Lakshman Sarup

यमश्चितिर्मश्चितः पिवन्ति । इति ।

तं पूर्वेषं आप्याययन्ति । तथापि निगमो भवति ।

यथा देवा अंशुमाप्याययन्ते । इति ।

The imperishable one whom the imperishable drink
As the gods cause the moon to grow.

Sāyaṇa Bhāṣya:
नैरुक्त्यप्रसिद्ध्या तु कालाभिमानी इन्द्रः

In the *adhidaivata* sense Indra's drinking Soma that is Moon is passage of time. The interesting point is about quantification as $30 = 15 \text{ days} + 15 \text{ nights}$

Suryā Vivāha Sukta

N&N by Lakshman Sarup

सोमं मन्यते पश्चिवान्यत्सौपिषन्त्सोषिष्म् ।
सोमं यं ब्रह्माणो विदुर्न तस्याश्राति कवर्न ॥ RV 10.85.3
सोमं मन्यते पश्चिवान्यत्सौपिषन्त्सोषिष्मि ब्रथात्तुतमसोममाह । सोमं यं
ब्रह्माणो विदुरिति । न तस्याश्राति कवर्नापञ्जेत्यधिष्म् ।
अथाधिदैवतम् सोमं मन्यते पश्चिवान्यत्सौपिषन्त्सोषिष्मि यजुःसुतमसे-
ममाह । सोमं यं ब्रह्माणो विदुश्चन्द्रमसम् । न तस्याश्राति कवर्नादेव इति ।
अथैवापरा भवति । चन्द्रमसो वा । एतद्य वा ॥ ४ ॥
यस्मां देव प्र पितृनिति तत आ प्यायसे पुनः ।
यस्मां देव प्र पितृनिति तत आ प्यायसे पुनः । RV 10.85.5
वायुः सोमस्य रक्षिता समानां मास आकृतिः ॥
वायुः सोमस्य रक्षिता समानां मास आकृतिः ॥
यत् वा देव प्रपितृनिति तत आपायसे पुनरिति नाराशंसानभिप्रेत्य । पूर्वे-
पश्चापराक्षाविति वा । वायुः सोमस्य रक्षिता । वायुसम्य रक्षितारमाह । साह-
चर्यात् । रसहरणाद्वै । समानां संवत्सराणां मास आकृतिः सोमः । रूपविशेषे-
रोपथिः । चन्द्रमा वा ।

Ayajva ↔ Adeva.

Soma is moon in the *adhidaivata* sense.
Somapāna is the decrease in the digits of
moon's orb in the dark fortnight.

Because they grind the herbs together, one thinks that he has drunk the soma. Of the soma which the Brāhmaṇas know, none whatsoever partakes.²

The hemistich, 'Because they grind the herbs together, one thinks that he has drunk the soma', refers to the uselessly-pressed soma, which is not soma at all. Of the soma which the Brāhmaṇas know, none whatsoever, i.e. no one who does not offer sacrifice, can partake. This is with reference to sacrifice.

Now with reference to the deity. The hemistich, 'Because they grind the herbs together, one thinks that he has drunk the soma', refers to the soma pressed with the *Yajus formula*, which is not soma at all. Of the soma which the Brāhmaṇas know, i.e. the moon, none whatsoever, i.e. no one who is not a god, can partake.

The following, another stanza, is addressed to him, or to the moon.

(Here ends the fourth section.)

O god, when you drink thee, forth thenceforward thou thrivest again. Wind is the protector of soma; the month is the maker of years.

O god, when they begin to drink thee, forth thenceforward thou again thrivest; this refers to some particular libations, or to the first and second fortnights of the lunar month. Wind is the protector of soma. The seer calls wind its protector on account of companionship or extracting the juice.⁴ The month is the maker of years, of annual periods, i.e. the plant soma on account of its (assuming) particular shapes, or the moon.

It is seen that the *hymns have (so to say) three dimensions* ! Several people have noted this feature from the time of Yāska onwards. In practice lay Hindus, include all the three in different proportions in their day to day life. Scholars, however have developed Shāstras (theories) strongly focussed on adhiyajña, adhidaivata, adhyātma individually or in combination or in some subsets.

Vedic *devatās* are traditionally as per Brhaddevata, Nirukta, Śrauta sutras and some Purāṇas. Their outreach as observable phenomena associated with sky pictures of Vedic texts, and interaction with humans is also *adhidaivatam*.

What is *Yajña*? There are some definitions and descriptions on the sacrifices carried out by humans on earth; *darśa-purnamāsa*, cāturmāsyā, paśubandha, atirātra, somayāga, aśvamedha, Rājasuya, agnishtoma etc. All these have association with type of actions or rites done by *devatas*, most likely in the sky or connected with Time.

Darśa-Purṇamāsa rite is a well recorded śrauta yāga/yajña observed even now a days. This is typically astral as it is linked with Full Moon and New Moon.

यजुर्वेदैतिभिरपि । उर्क्ष चाऽपत्स्तम्बेन—“यज्ञ व्याख्यास्यामः । स त्रिभिर्वेदवै-
यते ऋग्वेदयुज्वेदशमवदेः । कृत्वेदयुज्वेदान्यो दर्शपूर्णमासो । यजुर्वेदाऽपिहेत्यम् ।
सवरप्तिष्ठोः” (आप० प० १, १-७) इति

Where in Rgveda DP rite is described or prescribed? The only clue we get is that RV 10.53.2 & 4 are used in DP rite. This is regarding Saucikāgni & Viśvedeva. This has to be read with the previous suktas 10.52 & 10.51

Hymn (10.51) is in the form of a conversation between *devāḥ* and *agni*, where in (v.2), *agni* wonders ‘*how many gods have clearly beheld my form*’. There is also an allusion, like in RV (3.9) to *agni* hiding in secret places. The legend outlined in the hymn is briefly as follows. *Agni* had three elder brothers who were doing the work of carrying sacrificial offerings to gods. The three died due to the harsh *vaṣat* sounds uttered during the sacrifices. Hence the youngest fire known as *Saucīka* fearing the same treatment will befall him was hiding in waters, till *viśvedevāḥ* found him and requested him to come out and help in carrying sacrificial offerings to gods.

(६)	52	(म. 10, अनु. 4)	
ऋषिः सौचीकः अद्याः	छन्दः विष्टप्	देवता विष्ठे देवाः	
विष्ठे देवाः शास्तनं मा वयेह होता वृतो मनवै यश्चिष्ठा । प्र मै बृत भागधेये यथा वो येन पूथा हव्यमा वो वहानि ॥ १ ॥			The number 3339 appears in RV 3 rd Book; in the RV-Khila Suktas; Shukla YV and the Taittiriya Brāhmaṇa. Katha Samhitā, Kapiṣṭhalā KS also state this number.
अर्ह होता न्वरसीदं यजीयान् विष्ठे देवा मूरतै मा जुनानि ॥ २ ॥			The symbolism preserved precisely in the Brahmanāda purāṇa.
अहरहरभिन्नाऽध्यर्यंव वां ब्रह्मा समिद्वर्वति साहुतिवार्यम् ॥ ३ ॥			VIŚVEDEVĀH
अर्यं यो होता किंसु स युमस्तु कमच्छृंह वल्लमुजन्ति देवाः ॥ ४ ॥		COUNTED AS 3339 IN	9
अहरहरजायते मुरिमास्यवा देवा दधिरे हव्यवाहैम् ॥ ५ ॥		THIS HYMN	
मां देवा दधिरे हव्यवाहमप्नुक्तं बहु कृच्छा चरन्तम् ॥			
अग्निर्विद्वान्युजं नः कल्पयाति पञ्चयामं त्रिवृतं सुमतेन्तुम् ॥			
आ वो वक्ष्यमृतत्वं सुवीर्तु यथा वो देवा वरिकुः कराणि ॥			
आ ब्राह्मोर्वर्णमिद्वर्ष्य धेयामयैमा विश्वाः पृतना जयाति ॥			
त्रीणि शता त्री सप्तत्वाण्यग्निं विशाङ्के देवा नवे चासपर्यन् ॥			
ओक्षेन्द्र्यैरस्तृणन्बुहिरस्पा आदिद्वोतारं न्वसादयन्त ॥			

The verse (v.3) alludes to counting of days or nights, where the reference is to one *who springs to life month by month and each day (aharaha jāyate māsi māsi)*.

The conclusion that this should be a reference to moon is unavoidable.

Agni being honoured by 3339 gods (300+3000+39) is the theme of the last verse of this hymn.

Hymn(10.53):

Agni has arrived with the life (TIME) given to him by the gods and has made our offerings to the gods auspicious. We have obtained (UNDERSTOOD) the secret of the sacrifice.

Hymn (10.55)

He is woken up from his slumber running his course with many around him. He who died yesterday is living today. (V.5). The next verse (v.6) is even more cryptic mentioning the arrival of the ancient red bird which has no nest to rest (arunah suparnah anidah).

The night sky is described when moon's colour turned red due to the arrival of saucīkāgni brought in by viśvedevāḥ numbering 3339

If the poetic language is disentangled the context is of a celestial event in which moon is seen and an apparition of red colour also appears. Mention of the red colour of moon makes a strong case for taking this hymn to be alluding to a total lunar eclipse.

ब्रह्मारडमहापुराणम् Chapter. 23.v 66-70

भक्त्वार्थममृतं सोमः पौर्णमास्यामुपासते
एकां रात्रिं सुरेः सर्वेः पितृभिः सर्विभिः सह ६६
सोमस्य कृष्णपक्षादौ भास्कराभिमुखस्य तु
प्रक्षीयन्ते पितृदेवैः पीयमानाः कलाः क्रमात् ६७
त्रयश्च त्रिशतश्च त्रयस्त्रिंशतश्चेव च
त्रयश्च त्रिसहस्राश्च देवाः सोमं पिवन्ति वै ६८
इत्यैते: पीयमानस्य कृष्णा वर्द्धति वै कलाः:
क्षीयन्ति तस्माच्छुक्लाश्च कृष्णा आप्याययन्ति च ६९
एवं दिनक्रमात्पत्ते विवृथेस्तु निशाकरे
पीत्वार्द्धमासं गच्छन्ति चामावास्यां सरोत्तमाः ७०

47, 7. 8. 9.] कपिष्ठलकठसंहिता [३५३
समीचीनाः सुदानवः प्रीणन्ति तं नरो हितमवमेहन्ति
पेरवः ॥
देवा देवेषु श्रवन्ताम् । प्रथमा द्वितीयेषु श्रवन्ताम् ।
द्वितीयास्तुतीयेषु श्रवन्ताम् । वै स्य त्रय एकादशास्त्रवयम्
त्रिवर्षज्ञवयश्च त्री च 'शतास्त्रवयश्च त्री च सहस्रात्' इमेः
यज्ञमवन्तु ते मासमवन्तु । अतु व आरभे अतु मारभद्वम् ॥७॥

Katha Sam. 35.39

देवा देवेषु श्रवन्ताम् श्रवन्तां द्वितीयास्त्रवयेषु श्रवन्तां वै श्वरं एका-
दशास्त्रवयश्च त्री च शतां च श्रवन्तां च शतां च सहस्रां ते श्वरं यज्ञमवन्तु ते मासमवन्तु

Three hundred and three, then thirty-three and again three thousand and three gods drink soma. (33+303+3003=3339) Being drunk this way, the dark digits increase with corresponding decrease in the bright digits.

The above number is the number of Viśvedevāḥ of the Rgveda ! These are important in rituals connected with ancestral rites.

The ritualistic correlation between moon and pitrs is well known but the astronomical link is intriguing!

11

The count started on a Full Moon to proceed till *amāvāsyā* and stopped till the next Full Moon, to repeat again in the same fashion with gaps in the bright fortnight.

This number is the count of *tithis* in the dark fortnights summed up as **3339** sequentially for a special purpose. If both the fortnights were to be included, this count would be $3339 \times 2 = 6678$ *tithis*.

6678/30 = 222.6 lunations, in round figures is the eclipse cycle of **223** synodic months. Vedic months were lunar but the year was solar. It is known one solar year was taken to have **371-372 tithis**.

$$3339 \times 2 = 6678 = 371 \times 18$$

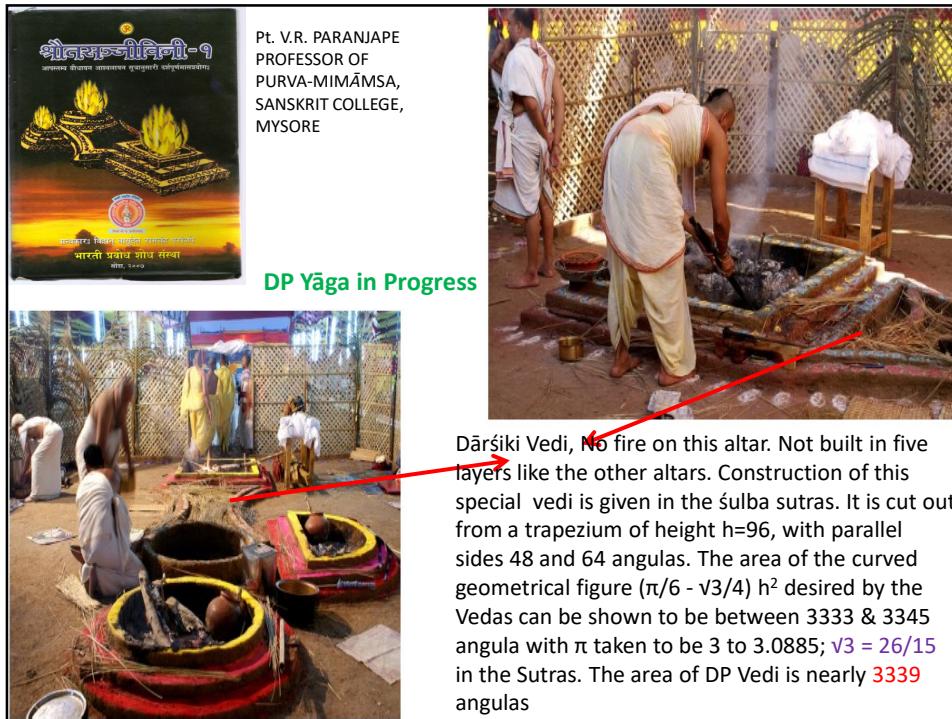
Hence 3339 is a proxy for the 18 year eclipse period, when a lunar eclipse occurs near the same nakshatra in the visible sky.

This the Rāhu-daśa of Hindu astrology !

If the Sāvana year of 360 days is presumed

6678/360=18.55 years the Rāhu (pāta) period of the siddhāntas.

Vrddhagarga and Lagadha seem to have known the following relation to propose the Five Year Yuga calendar **223/18 → 12/1, 25/2, 37/3, 62/5**
241/223 → 13/12, 27/25, 40/37, 67/62



Tai.Br. Describes the background of the Vedi and why it should not be deeper than four angulas.

(If the *vedi* should be) excessively (i.e. too deeply) excavated, it would belong to the Fathers (i.e. the deceased ancestors) (and it would not be fit for the sacrifice to the gods). He (the *Adhvaryu*) excavates it to such an extent that it is equal to Prajapati, the mouth of the sacrifice. (Formerly) the *vedi* hid itself from the gods. They found it four *angulas* deep (in the earth). That is the reason why it should be excavated four *angulas* deep.⁵³ Tai.Br. III.2.9 Transl. By Du Mont

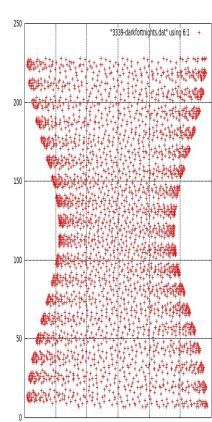
पुरा क्रूरस्य विसृष्टे विराणिन्द्रादाय पृथिवीं जीरदानुर्या ऐरयन् चन्द्रमसि स्वधामः तां धीरासो
अनुदृश्य यजन्ते॥ TS (I.1.9)

...you are the self-law....you the glorious one, take the earth.... by means of its self-law and place it on the moon.

Sāyana's interpretation also the altar was used by the ancestors of the current practitioners to establish earth on the moon as per natural self-law (*svadhā*).

पूर्वे यजमाना वेदिरूपं यां पृथिवीं कृत्स्नभूमेरासुर्याः सकाशादूर्ध्मादाय चन्द्रमस्यमृतकिरणैः
सार्थ स्थापितवन्तः इदानीन्तनास्तु धीमन्तः तामिर्मा वेदिं मनसानुचिन्त्य तथ्यां यजन्ते॥

Sāyana Bhāṣya (TS I. 1.9)



Plot of position (rise azimuth/declination) of moon for 3339 consecutive nights only in the dark fortnights starting from 7th Sept 2006 a lunar eclipse, Bhādrapada month, Moon near Nakṣatra: Purvā-Bhādra.
18th Sept.2024 is predicted to be LE night , moon near the same nakṣatra P.B.

मित्रावरुणौ त्वोत्तरतः परिधनां ध्रुवेण धर्मणा॥ TS (I. 1.11.12)

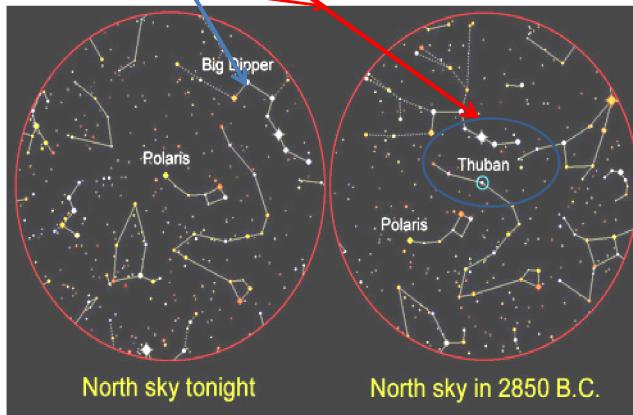
THE SACRIFICER PRAYS TO THE DP-VEDI SO THAT HE COULD ATTAIN A PLACE NEAR THE SAPTARSHI-MANDALA (U.MAJOR) IMPLIED TO BE ABOVE THE NORTHERN LIMB OF THE DP-VEDI.

The consent of Brahmā is conveyed in the following words. “प्रणय , यज्ञं देवता वर्धय त्वं नाकस्य पृष्ठे यजमानोऽस्तु । सम क्रषीणां सुकृतां यत्र लोकः - तत्रेम् यजमानं च धेहि ” ३. ‘ॐ प्रणय’ – इति ॥

Cosmography: Where is nāka?
Where is the loka of Saptarshi?

अम्भय्यारे भुवनस्य मध्ये नाकस्य पृष्ठे महं तो महीयान् ।
शुक्रेण ज्योतीषि समनुप्रविष्टः प्रजापतिश्चरति गर्भे अन्तः ॥

Heaven was perceived to be near Saptarshi constellation U.Major near to the Centre of Universe, i.e North Celestial Pole- Dhruva which was not the present day Polaris in U.Minor. This was due to precession. Vedic texts are aware of this phenomenon.



Taittiriya āraṇyaka is the first known text that cites Saptarshi and Agastya to be staying with the Nakṣatras of the same name.

ऋषयः सप्तात्रिश्च यत् । सर्वेऽत्रयो अगस्त्यश्च । नक्षत्रैः शंकुतोऽवसन् (तै० आ० १-११)

It also refers to Meru, and says ‘Kaśyapa’ does not leave the Meru. This indirectly says that the star named Kaśyapa was circumpolar. Most importantly the constellation Draco is described.

२३ भूः प्रपद्ये भुवः प्रपद्ये स्वः प्रपद्ये भूर्भूवस्त्वः प्रपद्ये ब्रह्म प्रपद्ये ब्रह्मकोशं प्रपद्ये उमृतं प्रपद्ये उमृतकोशं प्रपद्ये चतुर्जालं ब्रह्मकोशं य मृत्युनार्बपश्यति तं प्रपद्ये देवान्नपद्ये देवपुरं प्रपद्ये परीवृतो वरीवृतो ब्रह्मणा वर्मणाऽहं तेजसा करयपस्य यस्मै नमस्तच्छिरो धमा मृथानं ब्रह्मोत्तरा हनुयज्ञोऽयरा विष्णुरहदय ५ संवथ्सरः प्रजननमधिष्ठनौ पूर्वपादावत्रिमध्यं मित्रावरुणावपरपादावत्रिः पुच्छस्य प्रथमं काणं तत इन्द्रस्तः प्रजापतिरभयं चतुर्थं ५

स वा एष दिव्यः शाक्तः शिषुमारस्त ५ ह य एवं वेदाप पुनर्मृत्युं जयति जयति स्वर्गं लोकं नाथनि प्रमीयते नाशो प्रमीयते नाप्सु प्रमीयते नानपत्यः प्रमीयते लघ्घाशो भवति ध्रुवस्त्वमसि ध्रुवस्य क्षितमसि त्वं भूतानामधिपतिरासि त्वं भूतानाग् श्रेष्ठोऽसि त्वां भूतान्युपर्यावर्तन्ते नमस्ते नमस्सर्वं ते नमो नमः शिषुकुमाराय नमः ॥ १० ११ ११ २३ ॥ ११॥

Fourteen stars with their names and location on the body of the celestial animal Śiśumāra are mentioned. This constellation is said to be Dhruva-> Fixed around which all beings circumambulate. The last star, the fourth on the tail, is ABHAYA, which became the POLE STAR Dhruva in the Purana.

Śiśumāra of Tai. Āranyaka c 3000 BCE

Abhaya-Dhruba (α -Draconis) was the Pole Star during 3200-2400 BCE. In this long period, the declination of this star varied from $87^{\circ} 56'$ to $87^{\circ} 36'$, reaching $89^{\circ} 53'$ in 2830 BCE. The concept of Meru (peak or mountain or just a pole) connecting Prthivi and Dhruba goes to this period. One could model all the celestials to be circling Dhruba, around the Axis-Meru. [Roots of Purāṇic cosmology and astronomy are here.](#)

[Brahmānda Purāna] पुराणम् MAHARISHI UNIVERSITY OF MANAGEMENT VEDIC LITERATURE COLLECTION

यदहा करुते पापं द्रष्टा तत्रिशमुच्चते
यावल्यथैव तारास्ता: शिशुमाराश्रिता दिवि १००
तावन्त्येव तु वर्षणि जीवताभ्यधिकानि तु

साकारः शिशुमारश्च विज्ञेयः प्रविभागशः १०१
औतानपादस्तस्याथ विज्ञेयो ह्युत्तरो हनुः
यज्ञः परस्तु विज्ञेयो धर्मो मूढानमाश्रितः १०२
हृषि नारायणः साध्यो ह्यश्चिनो पूर्वपादयोः
वरुणश्चार्यमाचैव पश्चिमे तस्य सविथनी १०३
शिशनं संवत्सरस्तस्य मित्रोऽपानं समाश्रितः
मुच्छेऽमिश्रं महेंद्रश्च मारीचः कश्यपो ध्रुवः १०४
तारकः शिशुमारस्य नास्तं यांति चतुष्टयम्
नक्षत्रचन्द्रसूर्याश्च ग्रहास्तारागणेः सह १०५
उम्मुखा विमुखा: सर्वे वक्रीभूताः श्रिता दिवि
ध्रुवेणाधिष्ठिताश्चैव ध्रुवमेव प्रदक्षिणम् १०६
परियांतीश्वरश्रेष्ठं मेढीभूतं ध्रुवं दिवि
अग्नीद्रकश्यपानां तु चरमोऽसौ ध्रुवः स्मृतः १०७
एक एव भ्रमन्त्येष मेरुपर्वतमूर्द्धनि
ज्योतिषा चक्रमताद्दृ गदा कष्ठवाहुखः
मेरुमालोकयत्येष पर्यति हि प्रदक्षिणम् १०८
इति श्रीब्रह्मांडे महापुराणे वायुप्रोक्ते पूर्वभागे द्वितीयेऽनुषंगपादे
ध्रुवचर्याकीर्तनं नाम त्रयोविंशतिमोऽध्यायः २३

Names of the 14 stars of the Śiśumāra constellation and the corresponding body parts making up the animal figure

The last four stars ending with Dhruba are circumpolar

Dhruba-Meru centric astronomical model

ततो मन्दतरं नाभ्यां चक्रं भ्रमात् वै यथा
 मृत्पिंडं इव मध्यस्थो ध्रुवो भ्रमति वै तथा ६४
 त्रिंशन्मुहूर्तनिवाहरहोरात्रं ध्रुवो भ्रमन्
 उभयोः काष्ठनोर्मध्ये भ्रमते मंडलानि तु ६५
 कुलालचक्रनाभिश्च यथा तत्रैव वर्तते
 ध्रुवस्तथा हि विज्ञेयस्तत्रैव परीवर्तते ६६
 उभयोः काष्ठनोर्मध्ये भ्रमते मंडलानि सः
 दिवानन्तरं च सूर्यस्य मन्दा शीघ्रा च वै गतिः ६७



THE OIL MILL COMPARISON OF THE PURĀNA SHOWS THE MODEL MAKING ABILITY OF THE OBSERVERS OF THE SKY IN THE MOST ANCIENT PERIOD. THEY LOOKED FOR PHYSICAL EXPLANATIONS THAT CAN DESCRIBE MOVEMENTS OF PLANETS. THIS WAS POSSIBLE ONLY BECAUSE *DHRUVA* WAS ALMOST FIXED WITH DAILY ROTATION AROUND THE POLE IN THOSE DAYS

around 1200 BC



Vishnu-sahasranāma-Bhāṣya; on the
441st name Nakshatranemi

शाङ्करभाष्ये 800
CE

नक्षत्रनेमिः

भाष्यम्

“ *नक्षत्रतारकैः सार्थं चन्द्रस्यादयो ग्रहाः ।
 वायुपाशमयैर्वन्दिनिवद्वा ध्रुवसंज्ञके ॥ ” इति ।
 स ज्योतिषां चक्रं आमर्यांस्तारामयस्य शिशुमारस्य ^१पुच्छदेवे
^२ व्यवस्थितो ध्रुवः । तस्य शिशुमारस्य हृदये ज्योति
 शकस्य ^३नेमिवत्प्रवर्तकः स्थितो विष्णुरिति — नक्षत्रनेमिः
 शिशुमारवर्णने “ विष्णुर्हृदयम् ” (तै. आ. २-१९) इति

पराशर भट्टाचार्यः भगवद्गुणदर्शणे 11 cent

(४४०) महामतः । (४४१) नक्षत्रनेमिः,

ॐ महामताय नमः । ॐ नक्षत्रनेमये नमः ।

२ शा०— “ कुण्डलाश्च ” इति प्रत्ययः, बहुलवचनाद्विर्वश्च,

(२) “ धर्मौ मूर्धनमाश्रितः ”

(३) “ तच्छिरो धर्मः ” इति च. ॥३॥

प्राप्तिविद्या प्राप्तो गतोऽपापापाप तदि । प्रापापाप । प्राप

18TH CENT. BY RĀGHAVENDRA SURI

मद्रामदः यद्यनी इयर्थः । महातो मत्तो यस्मादिति वा यं प्रतीति वा । नक्षत्राणां ज्योतिषां ने
 मिथ्यकं नक्षत्रनेमिः । शुशुमारवर्णने विष्णुर्हृदयमिति सायायात्रात्मणे ग्रहये । नक्षत्री नक्षत्रात्
 १० ॥१०॥ ध्रुमः ध्रुमे इति ध्रुमः । ध्रुमः ध्रुमः । अणोणीषान् इति ध्रुमः । सूर्याद्यर्थम्



Icon of Vishnu as Śiśumāra with Dhruva at the tail.
1500-1600 CE

How did Siddhānta astronomers handle “Dhruva” ?

Brahma Gupta (7th cent) Bhāskara II (12th cent.)

“ यदा भरणीस्थो रविर्भवति तदा तस्यास्तमयकाले ध्रुवमत्यस्तिर्थकर्त्त्वे भवति । तस्य मुखतारा पश्चिमतः । पुच्छतारा पूर्वतः । तदा मुखतारासूत्रे रविरित्यर्थः । अथ निशावसाने मुखतारा परिवर्यं पूर्वतो याति । पुच्छतारा पश्चिमतो याति । ततो मुखतारासूत्रगतस्यैवार्कस्योदयो दृश्यते ” (सिद्धान्तशिरोमणि)



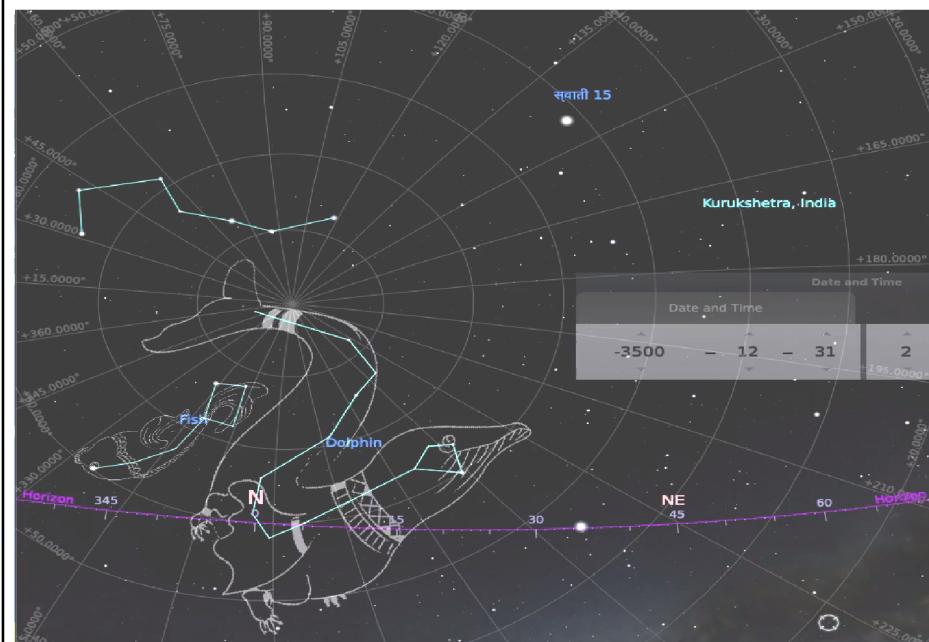
Figure 2: Dhruvabrahma yantra, made for Yado Joshi, resident of Ukale grama (Akola), latitude 20 degrees. Reverse side, with the sine quadrant.
Raja Dinkar Kelkar Museum, Pune.

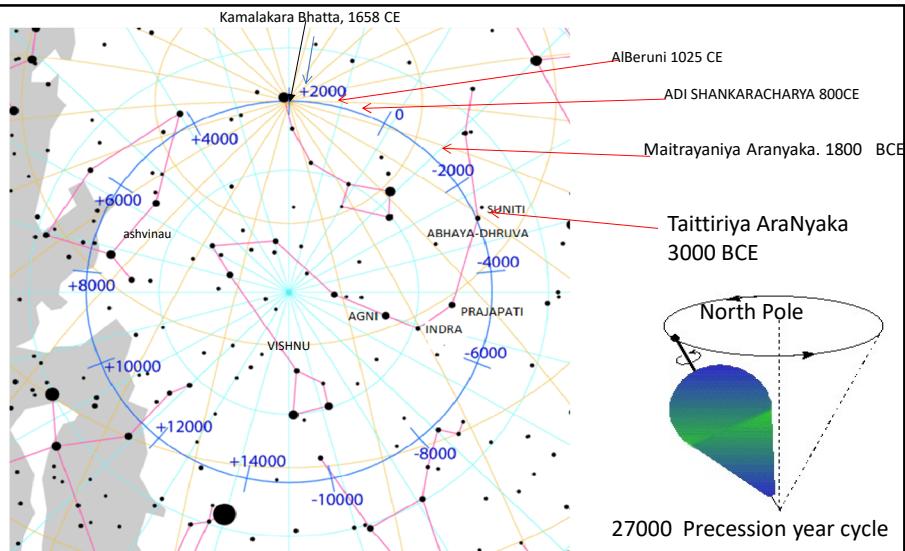
चलेऽचलेऽपि ध्रुवमे स्थेषा
द्राशितयं तदधूकः शस्त्रु ।
षट्पृष्ठिभागः ६६ परिणीतनार्या(२)
महत् फलं दर्शनतोऽस्ति यत्प ॥ १८ ॥

Siddhānta astronomers say nothing about Purānic or Vedic Dhruva or Śísumāra. They knew U.Minor with 7 stars as Dhruva-Matsya or Polar-Fish.

“The star at the mouth of the fish was Polaris (α Ursa Minoris) and the one at the tail end is called Markatī in Sanskrit (β Ursae Minoris or Kochab). If these two were joined by a straight line, this line would rotate like the hand of a clock and make a full circle in a sidereal day of 23 hours and 56 minutes.” Padmanābha used this to make his Yantra for finding time. But they very well knew their Vedas and Purānas. They also knew that Dhruva may not be fixed as thought popularly. They were true to their science. Kamalākara in 1658 CE proclaimed that in marriages the star α Ursa Minor should be shown to the bride as Dhruva. Obviously he should have known about the meaning of the Vedic Mantra that says the star shown is Fixed. He chose the spirit of the Vedas and not the letter.

शिशुमारस्य व्यावृत्या तारामत्यस्य धीमतः ।
ज्योतिषां च गति विद्यादार्तवीं पूर्वदर्शनात् ॥ Vrddhagarga Jyotisha





Taittiriya Āranyaka describes constellation Draco as Śiśumāra with **14 stars at the end of which Abhaya-Dhruba (α-Draconis or Thuban) was stationed. (2400-2800-3200 BCE)**

Ekāgni of Krishna Yajurveda pictures this as a Fixed Peg driven in ground around which animals go round.

वेदा हि यज्ञार्थमभिप्रवृत्ताः कालानुपूर्वा विहिताश्च यज्ञः ।
तस्मादिदं कालविधानशास्त्रं यो ज्योतिषं वेद स वेद यज्ञम् ॥ (याजुष ज्योतिषम्)

This is a famous verse, which says all Veda is for carrying out rituals. This of course is an exaggeration. Some of the rituals were for measuring time, and others just for worship of **Kāla** that is **Time!** Or lament like King Brhadhratha (Mai. Āranyaka) that even Dhruva moves and every thing in the world is transient.

सर्वे चेदं क्षयिष्यु पश्यामो यथेऽम
द्वशमशकादयस्त्वपावन्नत्वयोऽद्भूतप्रवृच्छस्त्वः ॥ ४ ॥
अथ किमेतैर्वीन्यानां शोषणं महार्णवानां द्विखरिणां (किमेतैर्वीर्ण्यानां)
प्रपतनं धृवस्य प्रचलनं (व्रश्ननं वातरञ्जनां)
(स्थानं वा तरूणां)
निमज्जनं पूर्थिव्याः स्थानादपसरणं सुराणं

MAU 6.15 -

द्वे वाव ब्रह्मणो रूपे कालश्चाकालश्चाथ यःप्रागादित्यात्सोऽकालोऽकलोऽथ य आदित्यायः स कालः सकलः सकलस्यवा
एतद्वापं यत्संवत्सरः संवत्सरात् खल्वेमाः प्रजाः प्रजायन्ते संवत्सरेण हैजाता विवर्धन्ते संवत्सरे प्रत्यस्तं यन्ति
तस्मात्संवत्सरो वै प्रजापतिःकालोऽन्नं ब्रह्मनीडमात्मा चेत्येवं ह्याह ॥

Philosophical categorization: **Kāla and Akāla**.

Our interest is in the **Kāla** which begins with Sun and has parts, particularly days, months & years. The number of day-nights (*ahorātra*) can be counted by observing the sunrises. By observing the Full Moon and the No-moon, number of days in a month can be estimated.

In similarity with the *śukla-* and the *kṛṣṇa-pakṣa* (bright- and dark-fortnight) being presided over by the number 15, the day and also the night are equated with 15 *muhūrta* of time, that is

1 *ahorātra* (day-night)= 30 *muhūrta*

counted from sunrise to next sunrise.

In the Rgveda there are three instances where the number 30 is invoked referring to *Uṣas* (twilight) or Sun specifically illuminating and crossing 30 divisions every day.

अनवद्यः**त्रिशतं** योजनान्यैकैका क्रतुं परि यन्ति सद्यः। RV (I.123.8 b).

But in the next hymn we have *mināti dhāma aharahar niṣkṛtam ācaranti*

Further;

हित्वी शिरो जिह्वा वावदच्चरत्तिंशत्पदा न्यक्रमीत् ॥ RV (VI. 59.6 b)

त्रिशङ्काम विराजिति वाक्पतगङ्गाय धीयते।प्रति वस्तोरह दयुभिः॥ RV (X.189.3)

The context of the hymns is about **time as *aharahaḥ* (day by day)** and hence Sāyaṇācārya's interpretation of 30 *dhāma* and 30 *pada* as equivalent to 30 *muhūrta* of time should be acceptable. Space and time divisions were congruent or similar. In the *Parāśaratatantra* it is asserted ***kāla-kṣetrayoḥ sāmyam. Purāṇas also say, sun covers 1/30th of prthvi in one muhūrta***

Declaring that day-night is made of 30 muhūrta similar to the month having 30 divisions (Tithi) is a principle of similarity. But measuring the parts of Time within a day or night demands considerable thought and ingenuity. In RV (5.76.3) the day is divided into FIVE parts from sunrise to sunset. These intervals are named

prātaḥ, saṅgava, madhyāhna, aparāhna, sāyam.

Each of these intervals are dependent on the position (*kṣetra*) of sun in the sky. These are notionally **three muhūrta long, as stated in the Viṣṇu Purāṇa.**

But what about the night ? Aitareya Brāhmaṇa through a legend explains the method. Indra wanted to pass through the Night and asked for help. But the Devas being afraid of Death refused to accompany Indra. Only the Chandas (meters) agreed. With their help in **three paryāya (three equal cycles)** Indra passed through the night.

अहर्वै देवा आश्रयन्त रात्रीमसुरास्ते समावद्वीर्या एवासन्न व्यारतन्त सोऽब्रवीदिन्द्रः कक्षाहं चेमानितोऽसुरात्रात्रीमन्वेष्याव इति स देवेषु न प्रत्यक्षिन्ददिभ्यु रात्रेस्तमसो मृत्योस्तस्माद्वायेतर्हि नक्तं यावन्मत्रमिवैवापकम्य बिभेति तम इव हि रात्रिमत्युरिव तं वै छन्दांस्येवान्ववायंस्त यच्छन्दांस्येवान्ववायस्तस्मादिन्द्र श्वैव छन्दासि च रात्रीं वहन्ति न निविच्छस्यते न पुरोरुद्धन धाया नान्या देवतेन्द्र श्व ह्यैव छन्दासि च रात्रीं वहन्ति तान्वै पर्यायैरेव पर्यायमनुदन्त यत्पर्यायः पर्यायमनुदन्त तत्पर्यायाणाम्पर्यायतं तान्वै प्रथमेनैव पर्यायणा पूर्वरात्रादनुदन्त मध्यमेन मध्यरात्रादुत्तमेनापररात्रादपि शर्वर्या अनुस्सीत्यब्रूवन्नपिशर्वराणामपिशर्वरत्वम्॥ AB 4.5॥

Reference to Real Time in Vedic Rites

Allegorical explanation of how the night rites are to be carried out during the *Atirātra* sacrifice, which is a one day *soma-yāga* is available in the *Aitareya Brāhmaṇa* (16.5). This starts with the legend of Indra clearing away *asurās* through the night with the help of the seven *chandas* (meters), that are defined in terms of the number of syllables contained in the hymns. This night ritual is carried out by the ordained group of priests in three cycles (*paryāya*) each comprising four *camasa-gaṇa*. The text reads:

तान्वै प्रथमेनैव पर्यायेण पूर्वरात्रादनुदन्त मध्यमेन मध्यरात्रादुत्तमेनापररात्रात्।

Here, there is clear mention of three part division of the night each of which was taken to be of equal duration. Sāyaṇācārya the renowned representative of the practicing sacrificial tradition explains that each division of the night is meant to be of ten *ghatikā* (five *muhūrta*)

क्रमेण निराकरणप्रकारं दर्शयति – दशदश घटिका एकैको भाग इत्येवं रात्रेस्त्रयो भागाश्वलारश्वमसगणा एकः पर्याय इत्येवं द्वादशानां चमसगणानां त्रयः पर्यायास्तैः क्रमेण रात्रिभागत्रयादसुरानपानुदन्त॥ (Sāyaṇācārya's Commentary)

The time unit *ghatikā* is not met in Vedic texts, but widely used in the medieval period as measured by a water clock. Hence we can infer that Sāyaṇācārya refers to actual practice during his time.

Vedic rituals continue to be performed in India to this day and it should not be surprising to find modern time keeping methods in vogue. How equality of time periods was kept up in the most ancient period is not known but mention of *paryāya* indicates chanting, oblations and ritual acts that should have been nearly identical in the three cycles and carried out at the same speed. Section (16.6) of the above Brāhmaṇa text describes in detail the hymns to be sung in the three cycles on the night of the *Atirātra-yāga* which is a type of *Agniṣṭoma* sacrifice.

17th Chapter of the text prescribes the *Aśvinaśastra* hymns to be chanted covering a part of the night till sun rise. These lauds are made up of all the meters such that the recitation consists effectively 1000 *bṛhatī* verses.

This is a modification of the standard *prātaranuvāka* composed of 1000 *bṛhatī* verses which is chanted in the night during the *somayāga* and several other Vedic sacrifices.

The earliest reference to the *prātaranuvāka* is in the Taittirīya Saṃhitā (TS) where it is enjoined that this should be completed before other voices are heard, indirectly meaning the chant should end by early morning before sun rise.

पुरा वाचः प्रवदितोः प्रातरनुवाकमुपाकरोति यावत्पेव वाक् तामवरुच्छे । TS (6.4.3)

The same text in another place mentions that the chant should commence in the deep of the night

यदि सोमौ संसुतौ स्याताम् महतिरात्रियै प्रातरनुवाकमुपाकुर्यात् । TS (7.5.5)

The chant had to start after midnight when large part of the night was remaining and should end before the birds started chirping in early morning. The Sūtra texts that give the procedural details also say that the chant starts in the *mahārātri* part of the night such that the 1000 verses could be completed (before sunrise)

अथ महारात्रे महाप्रताय प्रातरनुवाकमुपाकुर्वन्ति । यथा परिसहस्रमनुब्रूयात् ।
Śāṅkhāyana Śrauta Sūtra (17.7)

Sabdakalpadruma, states that *mahārātri* starts two *muhūrta* after midnight

महारात्रिः - अर्द्धरात्रात् परं मुहूर्तद्वयम्

If we take the night (sunset to sunrise) to be of 15 *muhūrta*, the chanting had to start $\frac{1}{2}$ to 1 *muhūrta* after midnight and end $\frac{1}{2}$ to 1 *muhūrta* before sunrise. This essentially means the time taken for chanting would have been $5\frac{1}{2}$ to $6\frac{1}{2}$ or on average 6 *muhūrta*, at the rate of 6000 vedic *akṣara* per *muhūrta*, that is 3000 vedic *akṣaras* per *ghatika*. Depending on the season this may be faster also.

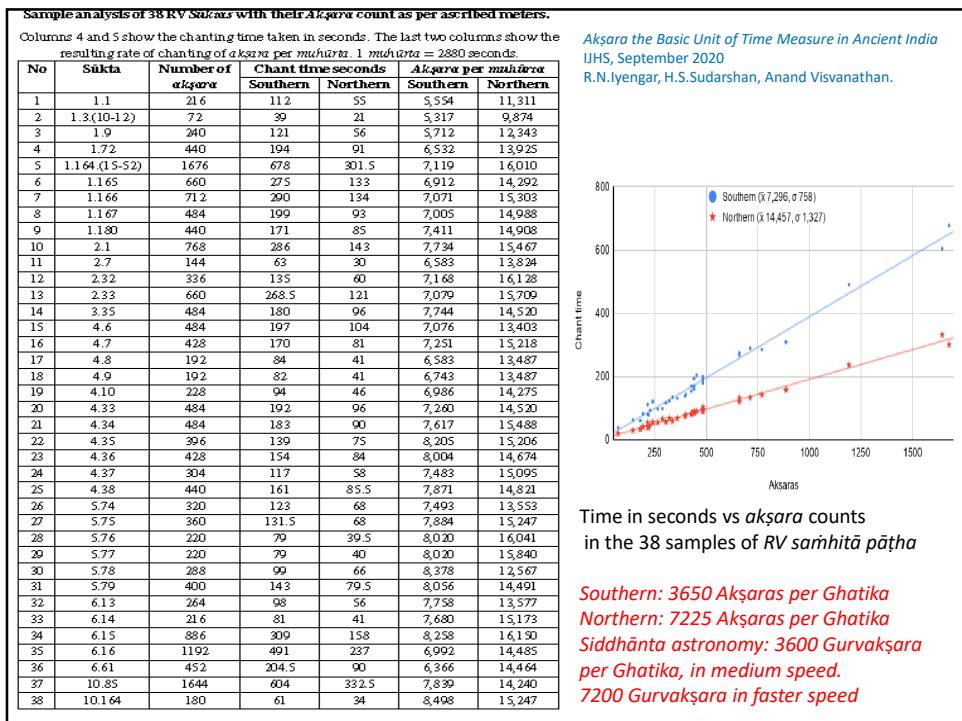
The traditional *anukramani* texts have preserved the meters of all the hymns with the stipulated number of *akṣara*. This is the only unambiguous definition we get for counting syllables in continuous recitations or records of the Ṛgveda.

Recorded Ṛgveda

1. Ṛgveda audio record of S.S.Sharma and S.K.Bhatta. Published by Sri Ranga Digital Software Technologies (Pvt.) Ltd. *Mysore*, 2012.
2. Ṛgveda audio record of Vishvanatha Sharma from *Vārāṇasi*, Private Collection



ऋक्प्रातिशाख्ये -
तिसो वृत्तीरुपदिशन्ति वाचो विलम्बितां मध्यमां च द्रुतां
च । वृत्त्यन्तरे
कर्मविशेषमाहुर्मात्राविशेषः प्रतिवृत्यैति ॥18
अभ्यासार्थे द्रुतां वृत्तिं प्रयोगार्थं तु मध्यमाम् ।
शिष्याणामुपदेशार्थं कुर्याद्वृत्तिं विलम्बिताम् ॥19



Siddhānta astronomers before and after Āryabhaṭa being aware of the prevalent use of akṣara count as a time measuring artifice, standardized one *vināḍī* (*vighāṭī*) to the audible scale of 60 *gurvakṣaras* embedded by verses in a particular meter known as *līlākhela*, with 15 long/heavy syllables per quarter. The speed of recitation is said to be neither too fast nor too slow but in medium pace as pointed out by Bhāskara.



Govt. Museum, Chennai.
 Coconut shell bowl of
 1- *Ghaṭikā* measure=24
 minutes

गुर्वक्षरेषु मध्यमवृत्तिग्रहणम्। "गुर्वक्षराणि षष्ठिः" इत्यत्र मध्यमायां वृत्तो षष्ठिः गुर्वक्षराणि विनाडिकाकाल इति वक्तव्यम् । अन्यथा हि तिसृष्टु अपि वृत्तिषु अविशेषेण ग्रहणं प्राप्नोति । तद्यथा - द्रुतायां वृत्ते षष्ठिः गुर्वक्षराण्यल्पेन कालेन पठ्यन्ते, विलम्बितायां महता कालेन इति, मध्यमायां पुनर्न अल्पेन, न महता कालेन । तर्त्तव्यं मध्यमवृत्तिग्रहणं कर्तव्यम् । कथमनुच्यमानमवगम्यते, लोकप्रसिद्धेः । तद्यथा - लोके अनिर्दिष्टेषु कार्येषु मध्यमप्राप्तिः ॥

Commentary of Bhāskara-I on the Āryabhaṭiya

1 Muhūrta = 13500 laghvaksara (Purāṇa)
=16000 vikṛtāksara (Parāśara Tantra)
=12462 akṣara (Lagadha's Vedāṅga jyotiṣa)
= 7200 gurvakṣara (Siddhāntic astronomy)

The time of the astronomers being real their 60 gurvakṣara audio scale had to be made phonetically accurate by selecting a particular meter, among many possibilities, such that 3600 syllables span half-muhūrta. For arriving at such specific refinement there must have been precedence for quantifying a part of day or night by a long count of akṣara. Apart from the Purāṇas and Tantra texts, the still more ancient traceable source for such an effort is the importance given in the **Vedas for the meter bṛhatī of thirty-six akṣara for representing time intervals.** This cannot be treated as a fortuitous coincidence since the astronomical half-muhūrta of 3600 akṣara is numerically congruent, in true Vedic style, with 100 bṛhatī verses.

This eventually was achieved with the calibration of the *vighatikā* (24 seconds) by the medium pace recitation of Bhāskara's humorous verse

मा कान्ते पक्षस्यान्ते पर्याकाशे देशे स्वाप्सीः कान्तं वक्रं वृत्तं पूर्णं चन्द्रं मत्वा रात्रौ चेत् ।
क्षुत्क्षामः प्राटंश्वेतश्वेतो राहुः क्रूरः प्राद्यात् तस्माद्वान्ते हर्षस्यान्ते शश्यैकान्ते कर्तव्या ॥

with sixty *gurvakṣara*. This also lead to the final design of the sinking bowl type water clock. **It can be verified by any one, that this verse takes about 24 seconds for medium speed chanting.**

Indra's (Atirātra) overnight sojourn with the **छन्दांसि** (seven meters) eventually helped our siddhānta astronomers in their Kālanirṇaya Śāstra.

Summary & CONCLUSION

1. The Devatā (deity/god) of the RV is a cosmic entity
2. The Vedas laud/worship/pray/describe forms/actions of several devatā in the visible sky.
3. In many cases 'quality' is used as the Name of the entity. 'Śukra' one who is white/bright
This may lead to ambiguity; but with the actions and location the ambiguity can be reduced.
4. Somapāna is the astral phenomenon of the waning moon
5. Indra is closely connected with TIME through Soma that is Moon.
6. SUN is the generatrix of human time.
7. RV number 3339 stands for the 18 year eclipse period (**Saros attributed wrongly to Chaldeans**)
8. **The forgotten Śísumāra Constellation with Dhruva as the Pole Star is the origin of Meru centric cosmology of the Purāṇa**
9. Precession has been responsible for observing the sky closely; [Maitrāyaṇiya, Parāśaratantra, Vṛddhagārgya Jyotiṣa, Yoga sutra]
10. Indra taking help from the Chandas (meters) is an allegory for estimating passage of night time by chanting 1000 RV suktas, in Bṛhatī meter.
11. The Brahmanḍa, Vāyu, Viṣṇu, Matsya Purāṇa seem to have retained much of Vedic concepts.
12. Siddhānta Astronomy is basically founded on the *adhiavata* perception of the Vedas.

THANK YOU