ECLIPSE PERIOD NUMBER 3339 IN THE RGVEDA

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Among the various numbers, the number 3339 appearing in the Rgveda is perhaps the most intriguing. So far, this has been taken to be the number of Gods honouring Fire, but there is no further explanation on how this number arose. One wonders, how such a large but specific number would have been counted, if there were to be no physical significance behind it. With the help of Brahmāṇḍa Purāṇa it is shown that the above is an eclipse period number. Purāṇa describes this as the number of tithis, counted in the dark fortnights, from Full moon to amāvāsyā. This makes the total number of intervening tithis including the bright fortnights to be 6678, which equals 18 solar years as per the Vedic calendar of 371 tithis per year. There is indirect evidence in Vedic and Purānic literature to show that this was corrected by adding six or seven more tithis. Further, it is demonstrated that 3339 is a correlation number for the syllable counts of RV hymns, taken in the asṭaka format.

Introduction

Ancient Vedic and Purānic literature of India exhibits an intimate relationship with eclipses that is although mythological in many respects, is still pervasive in its cultural influence. Shama Shastryl, the celebrated editor of Arthaśāstra, has made a detailed study of the subject, to find clues to knowledge about eclipses in Vedic literature. He emphatically points out ‘...the whole of our Indian culture is derived from the cycle of eclipses’. He makes a case for taking several numbers appearing in the Rgveda (RV) and elsewhere as somehow connected with eclipse periods. He points out a few hymns, which are remarkable in their poetical imagery and probable reference to eclipses. But the question whether or not the Rgvedic people knew an eclipse period remains unanswered, in the absence of numerical evidences. This can be attributed at

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least partly to a strong tradition which explains every Vedic hymn as being related to either sacrificial practices or mysticism. At the other extreme, many modern scholars have tried to interpret RV hymns in the most mundane manner possible in terms of class conflicts, ethnic differences and migratory patterns. On the other hand, for example, there should be no difficulty in accepting sūkta RV (5.40) as referring to a solar eclipse. Hence, it would follow that the specific word āsura used in this hymn is celestial in purport, referring to the eclipse shadow figuratively. While this may not be the implied meaning of the word at all the places where it occurs, possibility of an eclipse being meant in a few hymns by this metaphor should not be overlooked. The present paper is motivated by the above points to investigate a few hymns of RV in the light of later Purāṇic explanations. It is demonstrated that, there is every reason to believe that the Vedic community was fully aware of a special eighteen-year period, which in all likelihood was the eclipse cycle.

**Number 3339 in the Rgveda**

RV mentions not only small numbers such as one, two, three but also large ones like 1000, 4000, 60,000. For our purpose here, the most intriguing number is 3339. This occurs twice in the Rgveda, first in the third mandala and again later in the tenth mandala. The text and two translations are provided below to bring out the fact that numbers can not be interpreted differently even if their basis may not be understood.

\[
\text{trīni śatā tri sahasrānyagnim trimśacca devā nava cāsarpayan|}
\text{auksan ghṛtairastrṇan barhirasmā ādiddhotāram nyasādayanta||}
\]

\[(RV\ 3.9.9;\ 10.52.6)\]

"Three times a hundred Gods and thrice a thousand, and three times ten and nine have worshipped Agni/For him spread sacred grass, with oil bedewed him, and stablished him as Priest and Sacrificer" (Griffith).

"Gods three thousand and three hundred and thirty and nine waited upon the Fire / They anointed him with many streams of the clarity, they spread for him the seat of sacrifice, and seated him within as Priest of the call" (Aurobindo).

Sūkta RV (3.9) is by Gāthina Viśvāmitra, a legendary figure of immortal fame in Indian culture. This hymn has Agni as its deity, which from the overall
context of the hymn can be seen to be celestial. This of course does not preclude the interpretation or application of the hymn to terrestrial rituals, as indicated by the later Brāhmaṇa literature. Sūkta (10.52) is about Viśve-devās, by Saucika Agni. The context of this Sūkta is seen to be, some type of time measurement. This is implied from hymn 10.52.3, where the reference is to one ‘who springs to life month by month and each day’ (ahararjāyate māsi māsi). The suspicion that this could be a reference to Moon is unavoidable. Agni being honoured by 3339 Gods is the theme of the last hymn (10.52.6) of this sūkta. An interesting feature of sūktas 51 to 56 of the 10th maṇḍala is their apparent homogeneity. The implied themes of these sūktas are similar and they appear linked even as inspired poetry. Sūkta 10.51 is a conversation between Agni and Gods, where in hymn (10.51.2), Agni wonders ‘how many number of Gods have clearly beheld my form’. There is also an allusion to Agni hiding in secret places. Sūktas 53, 54, 55 and 56 contains the word asura(s), or its derivatives, which could be an allusion to the eclipse shadow. In hymn (10.55.5) there is reference to vidhu that is, Moon, being ‘woken up from his slumber, who runs his course with many around him’. The hymn further observes, ‘he who died yesterday is living today’ and goes on in its poetic language to note, ‘the ancient red bird has had no nest to dwell in’. Mention of the red colour of Moon makes a strong case for taking this hymn to be describing a total lunar eclipse. Duncan Steel in his monograph on eclipses provides the scientific explanation as to why Moon’s orb turns blood red during a total lunar eclipse. However, meanings of many RV hymns and related practices have remained obscure due to break or differences in traditions. Nevertheless, one wonders why a specific number 3339 was enunciated by seers of RV to be preserved religiously over several millennia. Sāyaṇa the great commentator of 14th century AD, in his gloss on Taittirīya Brāhmaṇa (TB. II.7.12.2), where this number occurs, declares that over and above 33 the remaining Gods are supernumeraries. Shama Shastryl takes 3339 to be the number of year of Gods and looks for a link for this number with a 33-year cycle. K.V.Sarma feels that this number ‘apparently refers to a period of 30 years consisting of 371 lunar months.’ Subhash Kak, thinks that 3339 is the total number of Gods in a year, personified as Agni. He breaks the number into its factors 9 and 371 to identify the first as the bhāmsās in a tīthi and the latter as the number of tīthis in a solar year. While these authors have at least attempted to find a rationale for this peculiar number, others have presumed
this to be just a part of variable Vedic mythology, wherein the number of Gods increased from 33 to higher figures with time. For example, Wilson⁸ a translator of RV, referring to the hymn (10.52.6), writes ‘... a solitary passage, and one of which the commentator has given no satisfactory explanation, raises the number of deities, which is wholly incompatible with the ordinary enumeration.’ How invalid this understanding is, can be realized if only more weight is given to Purāṇas, preceding Śāyaṇa by more than 1500 years. These texts are the prime claimants for having preserved ancient traditions outside the canonical Vedic literature.

**Purāṇic Interpretation**

There are eighteen major and eighteen minor purāṇas, making up an enormous body of Sanskrit literature, not easy to read, much less to synthesize to see the common cultural thread linking them with Ṛgveda. Here, only **Brahmaṇda Purāṇa⁹** is considered briefly to show the possible rationale existing behind the specific number of Gods of RV (3.9.9) and RV (10.52.6). **Brahmaṇda**, considered as one of the earliest Purāṇas, explains this as

\[
apūrayan suṣumṇena bhāgam bhāgamahāḥ kramāt |
\text{suṣumṇā āpyāyamānasya śuklā vardhanti vai kalāḥ}|| (part I, 23.61)
\]

“Sun having filled up the phases by his suṣumṇa ray, in daily sequence, the bright parts (of Moon) increase in the śuklā pakṣa”.

\[
bhāksārtham amṛtam somāḥ pournamāsyām upāsate |
ekām rātrīṃ suraiḥ sarvaiḥ pitrbhīḥ sarṣibhīḥ saha ||
\text{somasya kṛṣṇā-paksādau bhāskarābhimukhasya tu} |
\text{prakṣiyante pitr-devaiḥ pīyamānāḥ kalā-kramāt} |
\text{trayaśca trimśatas'caiva trayah-trimśat tathaiva ca} |
\text{trayaśca tri-sahasrāśca devāḥ somam pibanti vai} ||
\text{ityetaiḥ pīyamānasya kṛṣṇā vardhanti vai kalāḥ}|
kṣayanti tasmāt śukla-śca kṛṣṇā āpyāyayanti ca || (part I; 23.66-69)
\]

“Moon is approached by all the gods, manes and ṛṣis for a night on Full moon, for partaking amṛta. From the beginning of the dark fortnight, phases of Moon facing Sun, decrease being drunk by pitr-devatās digit by digit. Three and three
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hundred, then thirty-three and again three and three thousand (3339) Gods drink soma. Being drunk this way, the dark digits increase with corresponding decrease in the bright digits”.

The above is a clear enunciation of the model behind the 3339 Gods of Rgveda and what their role could have been. The connotation pitṛ-devāh in verse 67 indicates that these were not the general Gods (33 or otherwise) but were special and that their count was sequential, in the order of the decreasing phases of Moon (kalā-kramāt) adding to 3339.

Eclipse Cycle of 18 Years

Gods drinking Soma is a recurring theme in Rgveda. That this was linked with Moon is more than apparent in several places. One example is the celestial marriage sūkta 10.85, where the 5th hymn reads

yatvā deva prapibanti tata āpyāyante punah|
vāyuḥ somasya rakṣitā samānām māsa ākritih ||

“The Gods drink you, but later you become bright again/ Vāyu is the protector of Soma, Moon is the maker of years”(S.B.Dikshit10).

Griffith3 translates the first half of this verse as ‘When they begin to drink thee then, O God, thou swellest out again.’ This meaning is seen to be completely wrong in the light of Purānic evidence. It follows the symbolism of particular Gods drinking away the digits of Moon, which obviously refers to the dark fortnight and their total number being 3339 has its origin in Rgveda. For this characteristic number the above Purānic model has to be accepted as the most likely explanation. 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. In other words, this number is clearly the number of tithis in the dark fortnights counted as 3339 sequentially for a special purpose. If both the fortnights were to be included, this number would have been 6678 tithis. Now, at the rate of thirty tithis per lunation, this number is equal to 222.6 lunations, which in round figures is the eclipse cycle of 223 lunations. It is known that the Vedic calendar was luni-solar. The months were
lunar but the year was solar. From *Vedāṅga Jyotiṣa*, it is known that one solar year was taken to have 371 *tithis*. Hence, the *RV* number 3339, which is half of 6678, stands for 18 solar years, with a fantastic imagery behind it. *RV* 10.52 after giving this number refers in subsequent *sūktas* to *asuras* and *sūkta* 10.55 is indeed a description of a total lunar eclipse with Moon turning red. Thus, this number was linked with eclipses. There are sufficient clues to infer that special ordinals were also associated with eclipses. For example, Atri got back the Sun engulfed in darkness by means of the fourth Brahma (*RV* 5.40.6). Atri alone could restore the Sun whom the asura Svarbhānu had engulfed with darkness (*RV* 5.40.9). Association of the ordinal fourth with this eclipse is here noteworthy. Another hymn, in the same *manda* belonging to Atri family reads,

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pratiprayāṇam asurasya vidvān sūktairdevam savitāram duvasya |
upā bruvīta namasā viśāṇam jyeṣṭham ca ratnam vibhajantamāyoh
duvasya
```

(5.49.2)

"Knowing full well the Asura’s time of coming, worship God Savitar with hymns and praises/Let him who rightly knoweth speak with homage to him who dealeth out man’s noblest treasure (Griffith)."

This beautiful hymn uses a technical word, *prati-prayanam*, which can only mean return journey or return period. Reference to Savitar (Sun), *asura* (eclipse shadow) and his return journey leaves one wondering, why this may not pertain to a predicted solar eclipse. Moreover, this *sūkta* has *Viśvedevah* as its deities, in common with *sūkta* (10.52), which declares the special number 3339. *Sūkta* (10.56) to which reference has already been made is also related with *Viśvedevah* and it contains reference to *asura* who finds light by the third act. Association of an ordinal number here, as in hymn 5.40.6, perhaps refers to the return journey or recurrence of an eclipse.

**Further Corrections**

Between two eclipses at a distance of 18.03 years, the number of lunations would have been obviously 223 without fractions. This fact would have indicated the inaccuracy of either the number 3339 or the round figure of 30 *tithis* in a lunation. There are hints in the texts indicating that attempts were made to correct the above number. The *Brahmāṇḍa Purāṇa* mentions that on 15th day, after the Gods, it is the turn of *pitṛs* to partake nectar for some time.
There is no clarity on whether this was for the time duration of two *kalās* or two *lavās*, but through a symbolism, the number of *pitr̥s* is stated to be six or seven.

samvatsarāstuvaikāvyāḥpañcābdāyo dvijaiḥ smrītāḥ
saumyāstuvrtavaijñeyāhmāsāḥ barhiṣdāḥ smrītāḥ ||
agniśvāttārtavāḥcaiva pitr-sargā hivaidvijaiḥ |
pitṛbhīḥ piyamānasayapañcadaśyāṁkalaṭuvai ||
yāvatprakṣīyatatasyabhāgaḥpañcadaśastuyāḥ |
amāvāsyāṁtādattasyataṭahāpūryateparaḥ || (23.76-78)

“The five years, such as *samvatsara* are called *Kāvyās*. The seasons (*rtus*) are known as *Saumyās* and the months are called *Barhiṣadas*. *Agniśvāta* and *ārtavās* constitute the *pitr-sarga*. When on the fifteenth day the fifteenth part vanishes, being consumed by the *pitr̥s*, then *amāvāsyā* takes place”.

The above verses are in continuation to the verses explaining how the 3339 Gods are to be counted. These verses throw light on the intricacies involved in the classification and symbolism associated with *pitr̥s*. It is known that Vedic calendar had a five-year cycle with names such as *Samvatsara*. *Purāṇa* says these were called *Kāvyās* (related with *kavya*). Similarly, the six seasons (*rtus*) were called *Saumyās* (related with *soma*). The months were called *Barhiṣadas*. For the present discussion, *pitr̥s* named *Saumyās* who partake *soma* or nectar on the fifteenth day are of interest. Their number appears to have been seven as they consisted of one *agniśvāta* and six others related to six seasons (*ārtavaḥ*). Perhaps they were thought to be in a sequence for two *kalās* (a time unit different from Moon’s phase) ending with *amāvāsyā*. This may be interpreted as an effort to accommodate six or seven extra *soumya-pitr̥s* into a ritual. Nevertheless, implication of the above definitions, as culture specific artifices, to measure and quantify time cannot be overlooked. It may be surmised that like 3339 Gods representing that many *tithis*, *soumya-pitr̥s* account for six or seven *tithis*. Thus, beyond reasonable doubt ancient Indians were aware of the so-called saros cycle. At the same time it is difficult to assert that the above addition of six/seven *tithis* to increase the characteristic number as 3345 was known in *Rgvedic* times. However, it may be asserted that the round figure of 18 years was retained for religious purposes, as it was convenient.


Yajurvedic Texts

The Vājasaneyasamhitā (33.7) and Kāṇva Samhitā (32.7) of Śukla Yajurveda repeat RV hymn (3.9.9; 10.52.6). The Taittirīya Brāhmaṇa (TB) records the same hymn at (II.7.12.2). Thus, the number 3339 was widespread and its solar year equivalent 18 was well known in Vedic literature. Shama Shastry\(^1\) claims that TB (III.11.3.25) mentions the number of Gods to be 3349. The present author has not been able to trace this in the currently available versions of TB. If the above claim were to be correct, this would be an evidence for efforts to fine-tune the number of tithis in the eclipse cycle, to a better figure. In any case, TB (I.3.10) describes the legend of Indra returning on an amāvāsyā after having defeated asuras, which may be taken as a solar eclipse. It further refers to the arrival of pītṛs at that time and they being given a boon to drink soma on amāvāsyā. Their number is said to be six as being related to six seasons (ṣaṭ sampadyante|ṣaḍvā ṛtavah |ṛtavah khalu vai devah pitarah). This is most probably a legendary reference to the shortage of six tithis in the previous count of 3339 for an observed eclipse. Further, TB (III.10.4.1) lists the names of years in a six-year cycle, using the imagery of a bird. This perhaps denotes an attempt to divide the 18-year cycle into three shorter cycles. TB (IX.1) on As'vamedha in the very first hymn introduces eighteen as the prime symbolic cosmic number of the ritual. Several other descriptions of what look like eclipse related imagery are to be found in Yajurvedic texts as discussed by Shama Shastry\(^1\).

Correlation of 3339 with Rgveda

Tradition in India holds that RV is about Sun, who is called Arka, literally one related to Rk. Naturally, one expects the contents of the RV text to have some information about eclipses. The discussion so far brings out, besides actual observations of a few eclipses, the periodicity of the node, called Rāhu in later literature, is mentioned in Rgveda. In the absence of physical records, it may be surmised that this discovery should have been based on long observations, as Taittirīya Āraṇyaka (1.4) says,

\[
\text{smṛtiḥ pratyakṣam aithihyam anumānah catuṣṭayam |}
\text{etaiḥ āditya-manḍalam sarvareva vidhāsyate ||}
\]
“Memory (of past records), direct observation, anecdotes and inference form the quartet. With these, Sun’s circle is understood by all”.

Evidence available so far, points out that the number was discovered with the help of lunar eclipses. This is implied by the counting of the 3339 tithis starting from a Full Moon and carrying this count only during the dark fortnights, to end again on an amāvāsyā. The expectation would have been that the subsequent Full Moon would be eclipsed. Steel⁵ discussing how ancient civilizations could have arrived at the 18-year cycle mentions about observation of lunar rather than solar eclipses as the more natural possibility. This brings up the interesting question, whether RV contains more astronomical information than what meets the eye, in a codified manner. Kak⁷ has investigated this question to some extent taking the mandāla division as the basis. It is generally held that RV was originally in the āstaka (eight-book) format and for some reason not yet clear, was reorganized into ten mandalas. Āstaka, also has a technical meaning referring to the 8th day of specific dark fortnights in a year. This has a distinct flavour of time measurement, like amāvāsyā and pournimā. What is intriguing in this context is the apparent correlation between the number 3339 and the number of syllables in the eight āstakas. This is demonstrated in the accompanying table.

**Table 1. Correlation between 3339 and the Āstakas**

<table>
<thead>
<tr>
<th>Āstakas</th>
<th>Syllables (N)</th>
<th>N/3339</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48931</td>
<td>14.654</td>
</tr>
<tr>
<td>2</td>
<td>51718</td>
<td>15.489</td>
</tr>
<tr>
<td>3</td>
<td>47636</td>
<td>14.266</td>
</tr>
<tr>
<td>4</td>
<td>49762</td>
<td>14.903</td>
</tr>
<tr>
<td>5</td>
<td>48022</td>
<td>14.382</td>
</tr>
<tr>
<td>6</td>
<td>48412</td>
<td>14.499</td>
</tr>
<tr>
<td>7</td>
<td>47562</td>
<td>14.244</td>
</tr>
<tr>
<td>8</td>
<td>52178</td>
<td>15.627</td>
</tr>
<tr>
<td>average</td>
<td>49278</td>
<td>14.758</td>
</tr>
</tbody>
</table>

The āstakā division is known to be approximately uniform with nearly equal number of syllables, in the eight books. Hence, divided by the same number the result also would be nearly equal. However, the internal structure
of RV, leading to the results of the last column in the above table, appears to be due to some plan and not due to chance. The results seem to vary around fifteen, but are not too close to that figure. If the compilers of RV wanted this to be precisely fifteen, given their attraction to count and record large numbers, they could have easily achieved the same. What is noteworthy is the syllable count hovering around an average value and hence its possible link with some type of time measurement. If this conjecture is correct, the number of syllables would represent a finer time measure of the period between two eclipses separated by eighteen years. In the present case, each aṣṭaka could be a measure for fifteen mūhūrtas covering half-a-day (sunset to sunrise) or multiples thereof. It may also be a measure of ardha-māsa or half-synodic month, which is less than 15 solar days.

**Discussion**

Vedas are broadly divided into Samhitā, Brāhmaṇa and Upaniṣads. The Rgveda Samhitā is the most ancient among those belonging to 3rd - 4th millenium BC. Samhitās are organized as sūktas, made up of mantras or metrical verses endowed with knowledge, that was revealed to a rṣi (seer). What is interesting is that these contain special numbers, at least one of which, namely 3339 is connected with the 18-year eclipse cycle. Brāhmaṇas are supposed to be explanatory texts for Samhitās. However, in their available format, the explanations are too convoluted with ritualistic jargon and hence not amenable always for establishing a one-to-one relation with the original hymns. In the present case, it is the Brahmāṇḍa Purāṇa, which preserves a simple explanation of the number. This also provides an insight into the symbolism involved in RV. This leads one to the conclusion that 3339 represents the tithis, in the dark fortnights, separating two eclipses of the same type. Tīthi is a time unit well known to Vedic Jyotisha, Purāṇas and Siddhāntic Astronomy and continues to be used in India. The present study indicates, that this has come down to us from RV times. One may wonder, why the number is stated to be that there are many Gods and not tithis? The answer to this will be clear to any serious student of Vedic literature. Ancient Indians worshipped Time, notwithstanding its abstract nature. Hence, referring to time measures of tīthi, māsa, samvatsara as Gods is the norm in the Vedas. Perhaps this helped them to deal with Time, inasmuch as they were able to formulate extremely
small and large measures of time. One may still question whether composers of RV were aware of the word *tithi*. The answer is in the affirmative, if the structure of Sanskrit language in which RV stands is any evidence. Sanskrit allows negation of almost any noun by the negative prefix (na ~ a). Use of such a prefixed negative word presupposes knowledge of the basic word, like a number with a minus sign presupposes the existence of the original positive number. RV uses the word *atithi*, meaning guest; one who comes without appointment, in profusion (e.g. RV 1.44.4, 1.127.8, 1.128.4, 1.186.3, 2.2.8, 2.4.1, 2.14.7, 3.2.2, 3.3.8, 3.26.2, 4.1.20, 4.2.7, 4.26.3, 4.40.5, 5.1.8, 5.1.9, 5.3.5, 5.8.2, 6.15.1, 6.15.6, 6.18.3, 6.26.3, 7.3.5, 7.8.4, 7.19.8, 7.42.4, 8.8.4, 8.9.3, 8.19.8, 8.21.16, 8.84.1, 8.103.12, 10.1.5, 10.48.8, 10.68.3, 10.122.1). The derivation and meaning of this word proves the prior knowledge of the word *tithi* in the sense of date. Now, turning our attention to Purāṇas, there is a view that in the remote past these were fewer in number. Since the present day versions contain same or similar texts in too many places, it is logical to imagine the origin of these books from a single source, which is not traceable now. *Itihāsa* and *Purāṇa* were known at least from Brāhmaṇa and Upaniṣadic times as evidenced in TB (III.12.8.2) and Chāndogya Upaniṣad (3.4.1). It is possible, like Brāhmaṇas explaining the ritualistic and Upaniṣads the philosophical aspects (e.g. Brhadāraṇyaka Upaniṣad, III.9), Purāṇas once explained the physical or worldly meaning of the Vedas. This view is upheld by the age-old adage, *itihāsa purāṇābhyāṃ vedam samupabrḥmahet* |

“Veda has to be understood (synthesized) with the help of itihāsa and puraṇa”.

The anecdote of Gods and Pitrs partaking nectar of Moon appears in several Purāṇas. However, the number of Gods mentioned in Viṣṇu and Linga purāṇas are different from 3339.

\[
\text{trayastrimścat-śatāścaiva trayastrim śat tathaiva ca} \\
\text{trayastrimścat-sahasrāni devāḥ somam pibanti vai} \\
\text{evam dinakramāt pīte vibudhaistu niśākare} \\
\text{pītvārtha-māsam gacchanti amāvāsyam surottamāḥ} \]

(Lingga P. 56.11,12)

The number given here adds to 36333. Viṣṇu puraṇa gives the same number, with the text being slightly different. Now, this may be purely due to recording errors on the part of the scribe in copying previous versions, since
the above is not the Vedic number. However, it is plausible, there were efforts to formulate longer cycles based on the Vedic theory of counting only the *tithis* in the dark fortnight. The second verse above again upholds this way of counting. It was on daily basis (*dina-kramat*) and only in the dark fortnight, since the Gods are said to go away on *amāvāsyā*. Some of the further verses in *Līnga Purāṇa* are same as the ones in *Brahmāṇḍa Purāṇa*. It is known that Jain astronomy, which did not follow the Vedic tenets, nevertheless influenced by it, had a 20,000-day eclipse cycle\(^{13}\). This harmonizes with reference to a period of 10,000 (days) in *Taittirīya Āranyaka* (1.18-19).

\[sa \text{ drapsaḥ | tasayiśā bhavati | avadrapsom' s'umāṭīmatiṣṭat | iyānāḥ kṛṣṇo daśabhiḥ sahasraḥ|}\]

"It is the Drapsa; the following is said about it. The Drapsa has taken its stand on the one shining Aṃśu-umatī. This Kṛṣṇa has come by ten thousand (days)" (Shama Shastry 1).

This may be an obscure reference to an eclipse property, since Kṛṣṇa literally means dark-person, as conjectured by Shama Shastry\(^1\). The focus in the present study has been on the number 3339 of *RV*. It is found that this number is correlated well with the syllable count of the hymns of *RV* in the *aṣṭaka* (8-book) format. The strong relation of *RV* with the eclipse period number makes one to speculate that chanting of the hymns might have been used as a method to keep track of long periods of time. This is a possibility, when it is recognized that chanting of *RV*, which is still a live tradition, adopts time scaling. A given hymn with a fixed number of syllables can be chanted in different ways, each taking more time than the original. In each style the phrase order and the total number of syllables change in a defined fashion. Kashyap\(^14\) shows that this ancient tradition has evolved an error correcting code for memorizing the orally transmitted hymns of *RV*. It is found that if a hymn in *anuṣṭup* meter with 32 syllables takes one unit of time in *pada-pāṭha*, the same hymn in *krama* takes nearly two units of time and in *danda* five units of time, where as in *sīkhā* and *rekhā* it would cover more than six units of time. As was shown previously, the observation required was in the dark fortnight and would be met by counting the nights. Thus, it is conceivable the number of syllables in the *aṣṭakas* might have stood for the observed length of time from sunset to sunrise.
Since RV is shown to contain the period number of 18 years, was this used for making predictions? Apart from the significant terminology of the return journey of the eclipse shadow (prati-prayāṇaṃ asurasya) in RV (6.49), no other clue has been yet found in Vedic literature, as to how this number could have been used. However, a multiple of 18 finds place in Mausala Parvan (2.19-20) of Mahābhārata. It is mentioned that when a solar eclipse occurred, Kṛṣṇa understood that the 36th year after the war had arrived, indicating his last days, as had been foretold by Gāndhārī. There is an assertion that this eclipse was similar to the one at the time of the war. This is one occasion mentioned in ancient texts for possible application of the knowledge of the 18-year cycle. There is another claim for prediction, again associated with Kṛṣṇa in Bhāgavata (10th Book, Ch. 82.1-2). It is said that Kṛṣṇa along with others went from Dvārakā to Kurukṣetra for performing religious rites during a solar eclipse, which had been predicted by astronomers in advance.

**Conclusion**

An investigation of the Rgvedic number 3339, with the help of a few RV hymns and Brahmāṇḍa Purāṇas text has been presented in this study. It is found that this was the characteristic eclipse number of ancient India. This represents the number of tithis between two similar lunar eclipses separated by nearly eighteen solar years, counting only the dark fortnights. There are internal evidences in Purāṇas and Brāhmaṇa literature to the effect that efforts were made to add another six or seven tithis to the above number. It is found quite unexpectedly, that the structure of RV quantified in terms of the number of syllables in the āstaka format is correlated with number 3339. With the help of the above new results, it may be possible to understand some parts of Vedic literature in a more rational and scientific manner, without discarding the esoteric and mystical contents, than has been so far possible.

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References


