Quarterly Journal of The Mythic Society
April – June 2025 | Vol. 116, No. 2
doi.org/10.58844/KHRC6040

Characterisation of Elapsed Time as Historical Past in Hinduism

R.N. Iyengar*

Abstract: Vedic Hinduism styles itself as *sanātana dharma*, that is, eternal and perpetual. Hinduism, as is well known, is not a book-based religion. Nevertheless, the Vedas, Purāṇas and the ancillary texts, being the primary sources of the intellectual, religious, and cultural traditions of India, play significant roles in the day-to-day lives of Hindus. The traditional *saṅkalpa* rite observed all over India, at the start of socio-religious ceremonies like house warming, laying a foundation stone, marriage functions, etc., refers clearly to the most ancient past, historical past and the present time. What theoretical underpinnings are there in such an inherited cultural tradition to delineate the concept of historical past as elapsed time from the birth of the Sun, is explored in this article from an emic perspective.

Keywords: Saṅkalpa, Yuga, Kāla (Time), Manvantara, Kalpa, Purāṇas, Abhaya-Dhruva (Pole Star), Śiṣṭācāra, Mahāmeru, Ayanas (Uttarāyaṇa/Dakṣiṇāyana), Pralaya, Civilisational Memory

1. Introduction

A topic that is hotly debated in academic and other circles is the need to present the History of India from an insider's perspective. This felt need is due to the fact that the available narrations about India are written following Western models and theories of history. It is generally known that such narratives are biased by Eurocentric perceptions of time, chronology, culture and society suited to the so-called Aryan migration into India in the middle of the 2nd millennium BCE. Now, as IKS (Indian Knowledge Systems) is becoming a buzzword, a trend is developing where chronology is taken as the totality of

* Distinguished Emeritus Professor, (IISc), Centre for Ancient History & Culture, Jain University, Bengaluru-560078. Email: RN.Iyengar@Jainuniversity.ac.in

history and efforts are made to fix the dates of the Vedas, the Maha Bharata and the heroes of our epics, some claiming extravagantly ancient dates. As a reaction to this, at the other extremity, there are people arguing that Hinduism lacks a sense of history as evidenced by the relatively recent era starting from the Vikrama Samvat (57 BCE) or the Śakābda (78 CE). The irony is Hinduism refers to itself as *sanātana dharma,* that is, primaeval, perpetual and most ancient, even if some were to consider this to be hyperbole. Hinduism is not a book-based religion, although the Vedas, Purāṇas and the ancillaries play seminal roles in the day-to-day lives of Hindus. The historical past that can be unearthed from the texts is the same and common to all Hindus, even if there is variation among the different societal groups, in the way the contents are internalised for leading a peaceful and purposeful life. The history of a culture is a way of perceiving elapsed time and characterising the societal past, abstracted and pictured in broad brush, as the cause of the present. What attitudes, experiences and evidence our ancients had about their own past, and how has this been chained together and passed on to us as *sanātana*? This elusive question is briefly explored in this paper from the emic perspective of a practising Hindu.

2. Historical Identity

History is about the past; there is no debate on this. We need an agreed-upon origin or starting point in time, such that statements about the past can be verified by others. The European model of history introduced a reference origin as Christ's birth, and thus, in our schools, we were mostly exposed to chronological time markers as AD and BC, now slowly changing to CE and BCE. Most of us know the names of our great-grandparents, but perhaps not the family tree prior to them in correct chronological order. Some royal families have written chronicles, and the priests in Haridwar are said to have a record of some families, but this is not really how the majority of Hindus relate themselves to their historical past.

We know the names of Mahāvīra, Chāṇakya, Gupta kings, Chalukyas, Cholas, Hoysalas, the three Āchāryas, Vijaya Nagar, Rajput and Mughal kings and their dates based on an unbroken tradition and material evidences that can be verified, in case we like to check them personally. We also feel happy about our hazy relation with Bodhāyana, Āpastamba, Pāṇini, Bhadrabāhu,

Bharata, Nanda, Ashoka, Umāswāti, Nāgārjuna, Āryabhaṭa, Tiruvalluvar, Pampa, Vemana and thousands of other kings, poets, astronomers, mathematicians, saints, philosophers, teachers, artists, sculptors, as our ancestors. We like to listen to the past glory of Takshashila, Nalanda, Kāśi, Kāñci and also watch a film on Chandragupta. All this is enjoyable, often lulling us into feeling proud about India's past in relation to other contemporary cultures and countries. This cloud of the past provides a sense of belongingness to a great and strong heritage, on which to build a brighter future, more so when the historical timeline is fair and credible with verifiable evidences.

Would it not be nice if we could extend the above pleasant feeling to Kṛṣṇa and Rāma? The answer will invariably be yes, particularly to meet the question of our youngsters awakened to the history of the countries outside India. When did the above *avatāra* happen? There is no need to elaborate on the *avatāra* concept, but it may be noted, the feelings that arise in our connection to Bhāsa, Kālidāsa, Harsha, Jayadeva, Kamban, Tulasidas and Tyāgarāja are entirely different from the deeper emotions evoked by the main characters and the geographical places of the Mahābhārata (MB) and the Vālmīki Rāmāyaṇa. This is a defining character of contemporary Vedic Hinduism to be felt and gauged in proper perspective.

3. Presenting the past

The past is primarily subjective and qualitative for the large majority of people, but can become objective if a measure of phenomenal time in year numbers can be attached to the narratives. Some people certainly thought of this and proposed 4004 BCE as a start, since they believed their God created the world in that year on 23rd October, supposedly a Sunday. Modern astronomers and planetarium software use the Julian day (JD) count that starts on 1 January 4713 BCE to compute the position of planets on a current calendar date. Long before such proposals, Hindu astronomers like Āryabhaṭa (5th cent.) used *ahargaṇa* to specify civil days starting from the *kaliyugādi,* now reckoned to be 18th February 3102 BCE.

When we like to dispassionately discuss the past of a broad and widely spread culture, not just of a recently migrated community, a notation for elapsed time, widely understood by the society, is needed. The easiest, also a natural one, is to keep our own generation as the origin and talk in terms of

Before Present (BP). This notation is widely prevalent among archaeologists, biologists, anthropologists, geologists and cosmologists. Modern science has brought in technical words like Cenozoic, Precambrian, Jurassic, Triassic and the more recent Stone Age, Bronze Age, etc., to communicate with the past, but still quantified with respect to ourselves as years BP. On the other hand, cosmologists propose the Big Bang as a notional zero (singularity) point and model mathematically what happened at a nanosecond or less from the imaginary time origin. From such theories, a BP chronology for the galaxies, solar system, Sun, Earth, passing on to Continental Drift, Deccan Volcanism, Vindhyās, Tethys Sea, Himālayās, can be worked out in terms of million-year-ago units (Mya).

The above observation may seem superficial, but it helps one in appreciating the Vedic and Purāṇic point of view of *kāla* (time), which has led to the unique notion of *historical time* in Hinduism (also known as *sanātana dharma*), starting from the birth of the Sun.

4. Yuga in the Vedas

The Vedas, starting from the Ṛgveda (RV), know and allude to both short and long intervals of time. In this connection, the word *Yuga,* by which the Purāṇas refer to a very long time period, needs some discussion. The inherent meaning of the word *Yuga* gives a sense of conjunction/ coexistence/ combination/contemporaneity of two entities. This may be a wooden yoke, connecting the back of two bullocks or a time period in days/years when the same two celestial bodies appear in conjunction. The word *Yuga* in pre-siddhāntic astronomy is usually qualified as *Pañcavarṣīya-yuga*, *Rāhu-yuga, Bṛhaspati-yuga,* indicating specific periods of time. In the RV, the word *Yuga* and its derivatives appear more than twenty times. In some places, it is an unspecified 'time' like a *generation,* but in some other contexts, it is an unspecified interval of years. The word *Yuga* in the Vedas has been used in a generic sense with variable values, and hence to fix its value now would be absurd. In (RV 1.158) *daśame yuge* need not necessarily mean forty or fifty years; it could as well refer to the tenth decade of one's life. Word forms such as *yuge-yuge, yugāni, uttare yuge, pūrve yuge, prathame yuge* (RV 10.72) point clearly to an interval of time in years; multiple of which is meant in the plural. A phrase like *devānām yuga/prathama yuga* could refer to the 'time' of *First Creation.* There is no

maximum value in years for *Yuga* in the Vedas proper. In the Ṛgveda, we come across *triyugam purā* (RV 10.97) and c*haturyuga* (RV 2.18), where the value of time meant is not clear, but an argument like "*triyugam purā* should mean *fifteen years before*, because *yuga* could not have been longer than five" lacks logical sense. RV has contemporaneous information; names of kings, laudations, battles, sages, their progeny, that may be worthy of getting marked in 'historical time'. But importantly, RV and other Vedic texts contain what is now denoted as natural sciences.

The Vedic cosmological hymns (RV 10.72, 121, 129) are important for all later literature and Vedic-Hinduism, because all creation started from an unquantifiable, nevertheless laudable, *First Beginning* of the Golden Egg, splitting into the fluidic dark matter. Some of these statements sound contradictory, since articulated words cannot unequivocally convey *The First*. Along with the Big-Split, sentient emanation of Brahman, Āditya, Bhṛgu, Aṅgiras, Pracetas, Prajāpati, phenomenal time, *Vatsara, Samvatsara,* etc., are recognised to have happened self-similarly.

Vedic texts are voluminous, amorphous, packed with information, tantalizingly coded with multiple meanings, except for number counts that are in the realm of natural truths, cognised without the help of language and hence remain invariant for us also. So, it would be reasonable to take *mānuṣa yuga* to be a hundred years, but *daiva yuga* can be much longer. No estimate of the number of *years* to Creation is available in the extant Vedas till we come to the Purāṇas. But let there be no doubt, the Vedic texts know about long time periods, as in the Atharvaveda

śatam te'yutam hāyanān dve yuge trīṇi catvāri kṛṇmaḥ | (AV. 8.2.21a)

All commentators recognise this hymn to be about time/life period in years (*hāyana*), perhaps 100, *ayuta* may be 10,000 (or one Lakh?) and then something done two, three and four times. What is this, if not the seed for the long Purāṇic *Yuga* concept? Whatever may be the actual meaning of the above hymn, the concept of long periods of time called '*Yuga*' juxtaposed with numbers 2, 3, and 4 was already there in the Vedas.

5. Two types of Time

Vedic texts characterise *kāla* (Time) to be of two types. First is the abstract;

the second is the *time* as related to the sun, the moon and the stars. This is the *mūrta-kāla* (concrete or phenomenal time) such as *nimeṣa, muhūrta*, day, night, fortnight, year, etc. In the *Maitrāyaṇīya Āraṇyaka Upaniṣat* (MAU), time with form having nameable divisions, starts with the Sun. MAU declares Sun to be the origin or generator of time, since *ahorātra* (day-night), based on counting sunrises, is the most natural time unit[1]. Additionally, MAU, with its abstract perception, says that before Sun, it was *akāla* (non-time). The word *kāla* for phenomenal time is a derivative of the word *kalā* (part). Hence, *kāla* denotes that which is related to and made up of digits or parts. *Kāla* and *Akāla* are said to be the two forms of the unitary *Brahman*.

MAU is the first text that states the earliest two-part solar zodiac, when the southern sojourn (*dakṣiṇāyana*) of the sun was from the beginning of the *Maghā* nakṣatra till the middle of *Śraviṣṭhā,* and the reverse northern transit (*uttarāyaṇa*) was from half-*Śraviṣṭhā* to the end of *Āśleṣā*. This helps in the historical dating of the text, highlighted later in this article. Secondly, equally important is the esoteric understanding of time in discrete steps forming the *samvatsara* (year or sun's cycle), which, as phenomenal time, is a measure for life itself. People are said to take birth, live and die in a *samvatsara* (time in the form of a year). Thus, in MAU and elsewhere in the Vedas, *samvatsara* is *Prajāpati* (lord of progeny). It is said that, if one meditates on *kāla* as Brahman, for such a person time recedes far away (*yaḥ kalam brahmetyupāsīta, kālaḥ tasya atidūram apasarati*). This seems to mean that such a person becomes free from the limitations of phenomenal *Time*, which normally controls ordinary humans.

Vedic tradition classifies all knowledge as *aparā vidyā* and *parā vidyā.* The former is the knowledge of the physical world available to the five senses and the intellect, while the latter, *parā vidyā,* is *beyond* this. Without further digression, in the Vedic worldview [redacted] the visible *Sun* is the mystical gateway separating the *aparā* and the *parā* and hence the primacy of *sūryopāsana* (sun-meditation / worship) in the original Vedic and in the later sectarian practices of Hinduism, with or without iconic representation. All later Vedāṅga texts and, as a corollary, the religious injunctions and philosophy of Vedic Hinduism are circumscribed by the above tenet of phenomenal time, time that can be measured by humans, emerging after the manifestation of the visible Sun. This point is of seminal importance in any epistemological

discussion on the history of Hindus and Hinduism, from the RV onwards, passing through the *Sūtra, Purāṇa*, *Smṛti*, *Siddhānta* and *Śāstra* layers to the present day.

6. Purāṇic Continuity

The Purāṇas have carried on the above *Time/Kāla* concepts in their own fashion, still retaining the eternal universal vision and ideal, which is denoted as *sanātana-dharma*. With eighteen major and eighteen lesser Purāṇas, it is nobody's case that these texts, along with the two epics, are coherent and agree with each other. Much of the material is floating stuff, like the foam seen in the top layers of our sacred rivers. One has to avoid getting stuck in this if one has to draw useful conclusions from the Purāṇas.

Even as per the orthodox tradition, MB was edited twice from the original *Jaya* of 8800 verses; to *Bhārata* with 24,000 verses and then expanded as the *Mahābhārata* (MB) of one lakh (100,000) verses. How to grapple with this known historical tradition in extracting a unique date for the Great War from the MB text? Yardi has demonstrated that there may be more than three recognisable layers in the final MB, a view that has been supported by the editors and other scholars of repute[2, 3]. Thus, the notion that the BORI Critical Edition is the real MB for historical purposes and for dating the MB war is wishful thinking. So, what is the sanctity behind the date of the MB war, variously claimed to be 3162, 2448, 1793, 1478 BC. The first figure is the traditional date widely believed. The second is the date that can be surmised from the Bṛhat Saṁhitā of Varāhamihira (6th cent. CE). The last two dates match some of the important and credible astronomical statements in the Epic[4, 5]. Since for Kṛṣṇa we have only textual evidences and an unbroken oral tradition, we can be certain of the historicity of this *avatāra* of Viṣṇu 3500-4000 years BP. There is no doubt that MB is a cultural treasure in the history of Hinduism, but the date of the war is not a unique chronological anchor for ancient history, as some people claim vehemently. The real anchor point is the *Pole Star Dhruva* of the Vedas and the Purāṇas, which will be introduced below.

Purāṇas have grown, like MB; from a single seed text originating from the Vedas that is sometimes called *purāṇa saṁhitā*. Among the available texts, Brahmāṇḍa Purāṇa (BPu) is temporally closest to the Vedas. Like with other texts, parts might have been added into this Purāṇa also at different times by

different people, and now we have three parts (the first and the second are weakly linked; the third part is almost independent) in BPu. The first part, the earliest, is largely free of the two human *avatāra* of Viṣṇu, but has references to the creation of life, Dhruva the Polestar, the four *yuga*s and the *manvantara*s. It has the best Meru-centric astronomy model, yet to be critically explored. It has a fleeting reference to River Godāvari and Rāma, but that particular chapter on geography with mention of China, Tuṣāra, and Bāhlīka is a later addition. Similar is the Vāyu Purāṇa with two parts, which some scholars consider to be the earliest. In the second part (*uttarārdha*), we find Rāma and Kṛṣṇa mentioned in brief, while the *pūrvārdha* is free of the *avatāras*. A reasonable working approach would be to take the shortest of the Purāṇas to be the early ones, to which parts got added at later periods in different regions of Greater India. It has to be pointed out, the word *avatāra* stands for the 'descent of the divine'. The primary historical concern here is about Rāma and Kṛṣna, as they were born of human parents. There are *avatāras* of non-human birth, like Rudra, Devi, and Skanda, that are of celestial origin, but their actions are personified in earthly terms in the Purāṇas.

The following points emerge from the above texts taken together with the more popular Viṣṇu, Matsya, Liṅga, Bhāgavata and Skānda Purāṇas.

i) The law of everything in the universe is: creation, sustenance and dissolution (*sṛṣṭi, sthiti, laya*) symbolically controlled by the trinity Brahma, Viṣṇu, and Rudra (*aka* Maheśwara) respectively.

ii) Discrimination between the body and the *ātman* (*dehātma-buddhi-vivechana*) is the underlying principle of *sanātana dharma,* that is, Vedic Hinduism. The human body is the most excellent of life forms, which one attains after a very long time, as reflected by the early *avatāra*s of Viṣṇu. Dharma in practice includes celebration of the historical *avatāra* in human form, that is also the all-pervasive *antaryāmin* and *paramātman*.

iii) Intellectual effort in threading and weaving a plausible phenomenal timeline, following the Vedic *ākhyāna* style (reasoning through storytelling), starting from the birth of the Sun.

iv) A combination of the above points in different styles, colour and proportion is the self-sustaining dynamo for *sanātana dharma*, along with many social, regional, sectarian, and contradictory corollaries cropping up over centuries.

This is a minimalist interpretation, but in a lively organic system like Hinduism, the above implies a high level of structural complexity. But this is not a case of total randomness and disorder; it is a *fine-structured self-similarity in time and space at different scales* as per Prajāpati's *Manas,* that is considered to be the primordial matter in the Śatapatha Brāhmaṇa (*neva vā idamagre asadāsīt, neva sadāsīt | āsīdiva vā idamagre nevāsīt| taddha tanmana evāsa*||)

Over some two thousand years, competing social groups, natural disasters, population movements and sectarianism have increased the number of Purāṇas to eighteen and more. The cliché of *vaiṣṇava, śaiva, śākta* classification masks the Vedic majesty of describing the cosmos, *srṣṭi, sthiti, laya*, and uni-theism encompassing all the *devatā*s (deities), including *Time* as Brahman. It is evident that the Purāṇas in their present form are chronologically later than the Vedas. But it is important to recognise that the contents are deeply influenced by the concept of *Time* of the Vedas. If we dig and sieve patiently, nuggets of the Vedic *aparā vidyā* (worldly knowledge) might be retrievable from the Purāṇas.

7. Avatāra and Eternity

History in terms of number of years, as demanded today, was not the primary goal of the Purāṇas. Since the human *avatāra* of Viṣṇu was the *parabrahman*, possible contradictions were ironed out by making the texts *para-historical* (not un- or anti-historical) in the cosmological time frame of the *yugas* expanded to *manvantara*s, *kalpa*, and *parārdha*. This effort was as if time and space were created to situate *parabrahman* as one or more *avatāra*. It was important for the Purāṇas to keep the notional origin as the *First Creation,* for which long time periods of self-similar patterns mimicking eclipses, comet appearances, earthquakes, and floods came in handy. This model is derived from Vedic concepts, including *Dhruva*, *Meru*, cosmology, bardic genealogy, comets, solar and lunar observations against the background of the *nakṣatra*s. Something of all the above entities, topics and events is available in the Vedas and the Purāṇas for anyone to read, analyse and understand.

If we sample the texts for realistic astronomical data, assuming the text to be uncorrupted, and be able to date such observations, footprints on the sands of Vedic and Purāṇic times can be discovered by methods of modern astronomy. This would be a Before Present (BP) year value for some human

groups to have read the skies. The cultural groups associated with such celestial descriptions were at least not later than the resulting BP year.

This way, if we derive the date of the Kurukṣetra war or Kṛṣṇa's birth date, we can be satisfied knowing that Rāma and Kṛṣṇa were great historical personages, although the anecdotes around them might have been picturesque poetry, some historical and some others floating folklore. But when the event is couched in the cosmological timeline, the perception of a stated past event in a measured relation to our generation vanishes. Purāṇas characterise the past mentally (*bhāvanā*) as from the first creation, starting from the *Svāyambhuva manvantara* (Era of the Self-created). This is the first era (each era of 300^{+} million years) of the *kalpa,* with fourteen eras that add to about 4.3 billion years in total length. Purāṇas have attempted this type of creationistic science so as to remain true to the Vedic tenet of the birth of the Sun as the origin of *Kāla* (*Time),* who is a form of *parabrahman* only. This way, Purāṇas do not like readers to be bogged down by the earthly frailties of Rāma or Kṛṣṇa, Śiva or Devī, but think of them to be transcendental for cultivating devotion towards them as all-pervasive *antaryāmin*. Further digression on this leads to the *uni-theistic Vedānta* metaphysics; *jñāna* and *bhakti* (intellectual and emotional) as the two modes of the human psyche to be kept in harmony by *dhārmic karma.* This topic is outside the scope of the present article.

8. Saṅkalpa

All over India, Hindus to this day, even if unknowingly, maintain their link to the putative *First Time* through the *saṅkalpa* (mental resolution) before any religious or important activity. This is a daily fixture among the orthodox. Among the lay Hindus also it is [redacted] a must before special functions, such as laying a foundation stone, house warming, religious bathing and the like. Even many governmental bodies observe this in some form in public inaugurations and opening ceremonies, since this has a strong cultural background of millennia.

> *"...ādya brahmaṇaḥ dvitīya-parārdhe śri śvetavarāhakalpe, vaivasvata-manvantare ....kaliyuge, prathame pāde, jambūdvīpe,..... bharatakhaṇḍe....śakābde, ...asminvartamāne, vyāvahārike....samvatsare....ṛtau, māse, pakṣe, nakṣatre, vāsare, tithau, muhūrte, śriman*

nārāyaṇa/ śri parameśwara/ prītyartham ...śilānyāsam/ vāstuhomam/ samudrasnānam/ rudrābhiṣekam / kṛṣṇajayantī-pūjām/ yajñopavīta-dhāraṇam/ kanyādānam/.....darśa-śrāddham/ dakṣiṇa/uttara/ayana-puṇyakāle pitṛ- tarpaṇam/ .....kariṣye"

All over India, Hindus use very nearly the above template in Sanskrit, modified by local customs to suit the context of the event. If the above text is carefully checked, one can see stamps of three time scales. These are: the local calendar date and time (*nakṣatra, tithi, vāsara, samvatsara*), the intermediate scale historical era (*śakābda, śālivāhana, vikrama, kaliyuga*), and the very long time *manvantara*, *kalpa* reaching the *First Creation.* All three are important elements in the Hindu *saṅkalpa* and have to be correct, as ideally envisioned by the Vedas, but formulated per human intelligence over time. This *saṅkalpa*, the key to lifelong *dhārmic* activities of a practising Hindu, seamlessly incorporates historical past as phenomenal *Time* in three orders of magnitude Before Present (BP). Here, the ingrained concept of very long scale (cosmic, natural, geologic, evolutionary), intermediate scale (human history), and short scale (common era years), ending with local personal time, is dynamically enshrined as central to *dharma*.

First, let us consider the intermediate time scale that has spurred many Hindus to question their own history and identity as believers of *sanātana dharma.* This timescale is the historical time related to the rise of human civilisation as understood today. As one wades through the ancient texts for relevant data, what strikes the reader most are the tens of hundreds of names (persons, objects, abstract entities) that appear in the Purāṇas and the Vedas. These are of gods, kings, sages, ordinary people, celestials, demons, serpents, birds, hybrids, rivers, lakes, trees, forests, hills, heavens, hells, winds, years, months, lunar phases, stars, planets, time, numbers, mental concepts and whatnot! In the Sanskrit language, adjectives are also like proper names with grammatical gender endings. In fact, objects take their names in terms of their dominant properties, colour or actions, leading to multiple names for the same object.

Time and space (*kāla and deśa*) manifest together; accordingly, we have to recognise, *dyauh, antarikṣa* and *pṛthivī* as the strata on which the above names/adjectives/objects/ states/forces/*devatā*/gods have existence. For human history, it makes sense only to ask about what is on *pṛthivi* that is

generally, but not in all contexts, equated with earth as we know it now. It is important to note that the names of many kings, sages and even time stamps (*anumati*, *sinīvali, kuhū*) can also be the names of *devatas* (deities) in the Vedas and in the Purāṇas. In such a scenario, one has to be mindful about the figures of speech and whether the text is talking about personified celestial objects or about human ancestors, or kings or *gotra* progenitors. When time units and numbers are personified, one could suspect some scientific concept to be hidden behind the legends. The strong astral connection seen in Indian culture is due to the Vedic dictum *dyauḥ pitā, pṛthivī mātā* (sky is the father, earth is the mother) and the theory of (*sṛṣṭi, sthiti, laya*) being cyclic, as per which, all life and death are repetitive, but on differing time scales.

9. Abhaya-Dhruva the Pole Star

The Vedic text *Taittirīya Āraṇyaka* (TA) clearly says that the seven seers, *Saptaṛṣi* and *Agastya,* are blessed, being with the asterisms.

> *ṛṣayaḥ saptātriśca yat| sarve atrayo agastyaśca| nakṣatraiḥ śamkṛto avasan||* (TA 1.11.2)

This indicates these eight Sages (*Viśvāmitra, Jamadagni, Bhāradvāja, Gautama, Atri, Vasiṣṭha, Kaśyapa* and *Agastya)* were on earth like us before the two constellations (Ursa Major and Canopus) were named after them by the Vedic society. The above eight sages are the *gotra-starters*, to whom Hindus spread all over India trace their origin.

> *viśvāmitro jamadagnirbhāradvājo'tha gautamaḥ | atrirvasiṣṭaḥ kaśyapa ityete saptarṣayaḥ | saptānām ṛṣīṇām agastyāṣṭamānām yadapatyam tadgotramityācakṣate||* (Āśvalāyana Śrauta Sūtra Pariśiṣṭa)

There is much more than what meets the eye here. The celestial disposition of the constellation of Saptaṛṣi and of Agastya taken together reflects the sacred geography of the subcontinent *Bhāratakhaṇḍa* of the previous *saṅkalpa* text, sanctioned from north to south. This was strengthened by the legend of Sage Vasiṣṭha (also star Mizar) and Sage Agastya (also star Canopus), who migrated to the South of the Vindhyas, being brothers. The fuller integration of the terrestrial space of *sanātana dharma* as greater India was carried out by Rāmāyaṇa, the *ādikāvya.*

The *Taittirīya Āraṇyaka* is indispensable for anyone interested in the history of science, religion and culture of the Vedic society, leading to later refinements in Hindu astronomy. The concept of *mahāmeru,* the imaginary tower-like axis connecting earth with the heavens, appears for the first time in TA (I.7). The text alludes to seven suns and one more, the eighth called *Kaśyapa*, who does not leave *meru* but goes round the *mahāmeru (kaśyapo'ṣṭamaḥ sa mahāmerum na jahāti).*

The above Vedic text (TA II.19) also describes the *Śiśumāra* (Draco) constellation with fourteen stars, the last one *Abhaya* (star Thuban or α-Dra) being stationary, with respect to other stars, to be called *Achyuta* and *Dhruva*[6]. Such a naked eye observation would have been possible only in (2830±200) BCE[7]. Thus, *kaliyugādi,* usually taken to be around 3000 BCE, is not wholly imaginary. On the other hand, through the story of the child prince Dhruva, who was blessed by Viṣṇu to be the Pole Star, the Purāṇas have coded an anchor point in the long-term societal memory of Hindus. The above Vedic text is now traditionally preserved and followed, as far as known, only in South India. But this tradition holds that some parts of the TA text are originally from the now defunct *Kaṭha* branch of Kṛṣṇa Yajurveda (KYV), which flourished once upon a time in the North. Thus, we can say that historically, ancestors of present-day KYV followers made the above *Śiśumāra-Dhruva* observation near Kurukṣetra. In this sense, the long-forgotten constellation *Śiśumāra,* which also appears in other Brāhmaṇa texts, is a celestial marker for history before and after *circa* 3000 BCE.

Agastya, as a star rising for short heights (altitude) in the southern horizon, would have been visible to the Vedic people around Kurukṣetra several centuries before 3000 BCE. The earlier name of this southern star was *Māna* (*a short measure*) and *Mānya* (one related to *Māna*) in the Ṛgveda (RV 1.166, 1.168). With the passage of time, the visibility interval of this star increased but remained at low altitudes without attaining height, unlike other stars. This celestial effect is attributable to Agastya's depiction as a dwarf in later iconography. Sage Agastya, who was perhaps the first to recognise the importance of this star for knowing the cardinal south direction, holds a high place in Hinduism.

The concept of celestial bodies going round *Meru,* held by the Pole Star, has been the inspiration for the *dhruvadarśana* ritual in Hindu marriages. In

the accented text *Ekāgni-kāṇḍa* of KYV hymns to be used in household rites are given. The hymn for observing and addressing the Pole Star, Dhruva, is

> *dhruvakṣitiḥ dhruvayoniḥ dhruvamasi dhruvataḥ sthitam | tvam*
> *nakṣatrāṇām methyasi sa mām pāhi pṛtanyataḥ || (Ekāgnikāṇḍa* 1.9)

This hymn almost follows the last part of TA (II.19) describing the constellation *Śiśumāra*; further alluding to the astronomy of that period. Here, the quality of fixity becomes the name for the star *Dhruva*. *Dhruva* is praised as the *methi* or the central point of a fixed column by which the *nakṣatra*s are controlled. This is an empowering hymn for the newly married bride, so that she is stable in her new home, with the assurance that the siblings of her husband will obey her. The commentator Haradatta explains the word *methi* as *khalevālī*, a thick wooden peg fixed in the ground, to which animals are tied so that they do not stray away[8]. This *methi* became the *meḍhī,* a pole or column in the Purāṇas, highlighting the fixity of the star *Dhruva* and the importance of *Meru* in the development of early astronomical models.

10. Effect of Precession

Axial precession of Earth is a reality, like sunrise and sunset**.** Apart from the daily and annual periods, Earth has a very long period of about 26000 years, called the precession cycle. No star-worshipping culture can escape experiencing this, and, in some manner, this would have found expression in the form of special rituals, unprecedented questions and doubts. Change in the celestial scenario around the Pole is extremely slow to be observed with the naked eye, but could be felt over generations in comparison with past beliefs and narrations. Today, with the knowledge of Earth as just another planet in the solar system, the fixity or otherwise of a star at the North Celestial Pole may not mean much. But for our ancients with a geocentric world view, any change in the behaviour of the Pole Star in the *Śiśūmāra* constellation would have had strong repercussions on their belief system and the way life on earth related itself to the visible sky. Available Yajurveda texts richly attest the experiential effect of precession on the rituals, social practices and the spiritual quest of the Vedic people.

10.1 Dhruva Graha

The stability of the star *Dhruva* in the sky is reflected in the Vedic *Agniṣṭhoma* rite, where *Soma* juice is drawn in the morning in nine cups (*graha/sthāli),* the ninth being the *dhruva-graha.* In the *Taittirīya Saṁhitā* (TS), we come across the hymns for invoking the *dhruvagraha* in TS (1.4.13) and the reasons for this in the (Brāhmaṇa) part TS (6.5.2). If the two parts are not studied together, the meaning of the *dhruvagraha* gets translated literally as a cup, which, for the sacrificial process, is lexically correct, with no insight into the astral imagery behind the Vedic mantra. In the first place, the TS text adopts RV (6.7.1) for invoking *vaiśvānarāgni* overhead in the sky as *samrāt* (emperor) and to laud the *dhruva* cup in the sacrifice as the abode of fixity, firm among the firmest, and the most permanent among the permanents[9]. All this laudation is for the star named *Dhruva* in the north will be clear, only when we read the explanatory *Brāhmaṇa* part for the mantra in TS (6.5.2). The relation between the *Dhruva* cup on the sacrificial ground and the eponymous star is made clear through an etiological legend.[10]

> *The demons (asurāḥ) from the north attempted to turn the earth around; the gods (devāḥ) firmed it up with Dhruva; that is how Dhruva gets his name, for Dhruva is placed in the north for fixity.* (TS. 6.5.2)

The above Vedic statements uphold that indeed a star known as Dhruva in the northern sky was considered to be fixed in the sky, but then there was apprehension that it was susceptible to some perturbation, felt with respect to the earth. The initial fixity for several centuries and later slow change of the star Dhruva, perceptible to the naked eye, must have had many social, philosophical and religious implications for the Vedic people. The experience of this change would have had deep impressions on the Vedic society, some of which are available in the KYV texts, carried on to the Purāṇas with many colourful modifications.

The *Maitrāyaṇīya Saṁhitā* (MS) belongs to the group of *Taittirīya, Kaṭha* and *Kapiṣṭhala Kaṭha* texts of KYV. Like with the TS text, *agniṣṭhoma* and *soma-graha* (*soma* cups) are met with in the MS also. The broad picture is the same in all four Yajurveda texts, but a special ritual, hitherto not widely known, is available in MS about the *Dhruva-graha* and its connection with the star of the same name. *Dhruva-sthālī* is an earthen pot filled with *soma*

juice kept in the northern shed on a special seat, unlike the other eight kept on bare ground in the southern shed. MS (4.6.6) is a long text of which only an extract is presented here[11].

> *Dhruva is verily the length of life (āyuḥ).... This [Dhruva cup] is kept on a piece of gold for one desiring long life..... Rājaputra (the prince) protects the Dhruva vessel; this way, he protects the life of all the people; hence, he (prince) becomes the strongest. If the patron (yajamāna) likes to do black magic(abhicaret), he [the priest] says 'hereby for so and so I disturb the life' by turning the Dhruva [cup].....'I displace you, Dhruva, from this fixed abode; this way, he displaces him [the targeted individual] from his exalted seat; he is liable to perish when Dhruva is displaced; all the worldly beings are prone to be displaced. The patron (yajamāna) may also be displaced. He touches the Dhruva cup and prays 'Protect the celestials in the sky, intermediaries in the atmosphere and humans on the earth'.*

10.2 Dhruva Moves

All the texts associate Dhruva with *āyu*, that is, life span. The principle behind the *abhicāra* (black magic) of turning and disturbing the *Dhruva cup* to displace a human king from his office can be attributed to a religious custom based on observed changes to a star that was, over generations, believed to be stationary and fixed. The felt effect of the unsuspected anomaly in the Pole Star is further substantiated in the *Maitrāyaṇīya Āraṇyaka Upaniṣat* (MAU). King Bṛhadratha expresses his anguish about the phenomenal world to ask Sage Śākāyanya, a long set of questions, part of which reads.[12]

> *Why the oceans are getting dried up, why are the peaks of mountains are falling down, why is Dhruva moving, why are the air strings (holding celestial bodies) are cut and dipped, why the earth moves from its place.*
> MAU (1.4)

King Bṛhadratha laments about the transient nature of life, listing sixteen of his predecessors: *Sudyumna, Bhuridyumna, Indradyumna, Kuvalayāśva, Yauvanāśva, Vadhrya, Aśvapati, Śaśabindu, Hariścandra, Ambarīṣa, Nanaktu, Śaryāti, Yayāti, Anaraṇya, Akṣasena* and the more ancient Marutta and Bharata before him. The King wonders why orbits of celestial bodies dip,

why the Earth shifts, and why the peaks of mountains fall. He continues to ask why even *Dhruva* moves, which doubt is due to the felt effect of precession, notwithstanding the belief of his predecessors that the Pole Star remains always stationary. With further data in the text about *dakṣiṇāyana* starting from *Maghā nakṣatra* to *half-śraviṣṭha* (*fn.*. 1), the above episode can be dated to about 1800 BCE. Beyond a reasonable doubt, the above sixteen kings preceding Bṛhadratha were historical and lived during the centuries around 1800 BCE. The above date is of special interest as this fits exactly with the Purāṇa observation of equinoctial full moons in the *Kṛttika-one fourth* and *Viśākha-three fourth* sectors[13].

Archaeo-astronomical study of the Sanskrit texts is the only rigorous and objective approach to arrive at chronology prior to Chandragupta and Chāṇakya. Once the meaning of the Sanskrit texts on celestial description is agreed upon as credible in modern terminology, error estimation is possible, and the results can be verified by others. Vedic texts have been preserved with great fidelity, but the same cannot be said about the Purāṇas. The astronomical parts of some of the Purāṇas are consistent, even though the reasons for the reported numbers may not be clear. When reliable statements of sky observations are analysed, consistent historical dates can be obtained as described above. The unique period of (2830±200) BCE from TA, the rituals and aetiology associated with the Pole Star in KYV amply demonstrate the civilizational historical past of Vedic Hinduism. The convergence of the MAU and the Brahmāṇḍa Purāṇa sky pictures, a thousand years later, *c* 1800 BCE, speaks for itself about the spiritual link between the Vedas and the Purāṇas in *sanātana dharma.*

11. Archaeology

If the textual geographical names of towns, villages, forests, lakes, and coastlines are believed to be the same as the current names, archaeology would be helpful to unearth history. Excavations and consistent match of textual data with field stratigraphy and cultural artefacts can lead to reasonable dates. For example, drying of the River Sarasvati is described in the Skānda Purāṇa, MB and several other texts. This can be verified scientifically to present-day standards on the ground in the Brahmāvarta region, to have happened *circa* 4000 BP, that is, around 2000 BCE. The texts have perpetuated the memory of this

slow natural event in umpteen different ways, and there is no denial that this has remained in the societal memory, as evidenced by the migrant community with the moniker *Sāraswata* spread all over India. Considerable caution is necessary in archaeological excavations since displaced people usually name new settlements with their previous city/village/river names of fond memory. In some of the Purāṇas, this shows up as a discontinuity or a contradiction in the geo-environment, purportedly of the same sacred site. For example, the present-day towns of Dwaraka and Somanath (also known as Prabhasa Patan) do not answer to the descriptions of the places with the same names in the MB and in the Harivamśa[14].

12. Genealogy

Names of Kings, sages and their genealogy are too fluid and diverse. Even though a reliable royal succession line could help in estimating the time intervals, the recorded names may be *gotra* names, which are still used even now. As can be easily verified, Nārada's name comes up in so many places, starting from the Vedas, in the sky, on earth and in almost all legendary royal courts. Parāśara's name appears in the Veda, Purāṇa, *smṛti*, astronomy, and astrology texts. Similar is the case of many famous Kings and their priests. Pargiter laid out a formal framework of mapping this mosaic, that has been followed and refined by his followers[15,16]. In this approach, there are too many possibilities, and hence it is difficult to arrive at a consensus among a group of people. Genealogy studies are helpful to arrive at a broad picture of the historicity of the Vedic Sages and ancient heroes. But specific questions may remain unanswered. For example, it is not possible to say whether the Ambarīṣa mentioned by Bṛhadratha in MAU, cited above, is the same as the one in the Bhāgavata Purāṇa. The texts are clear that *Daśaratha Rāma,* as a historical person, preceded Kṛṣṇa, the son of Vasudeva and Devaki. But the linkages between the two, as per the Uttarakāṇḍa and the Harivamśa, are not exactly compatible. Similar is the case of *Rāma* appearing in the 10th *maṇḍala* of RV. This cannot be asserted to refer to the son of Daśaratha of the epic Rāmāyaṇa.

13. End of an Era

Talking about the not-too-distant past, one should wonder why elapsed years are recollected as in the Śaka Era (*śakābde)* in the religious *saṅkalpa*. The

word *śaka* in current parlance is used in the sense of *Era/Epoch*. But, in reality, the word *Śaka* refers to the violent tribes of Scythians who came from outside, created havoc and established themselves in parts of northern India, till they were routed out by the Guptas. In the *saṅkalpa*, Hindus are made to recollect a turbulent period of their past, when Scythians invaded and destroyed well-established *dhārmic* kingdoms of Pāṭaliputra, Sāketa, and Avanti (100BC-100AD). The famous Purāṇas do not have much to say on this period, but some of the Sanskrit dramas and Jaina texts allude to the tragedies of this period. There is a tiny text with just 115 verses, called *Yugapurāṇa* (YP), that provides some real history of this period. This Purāṇa is like a conversation between Śiva and Skanda, but the present-day *Skānda Purāṇa* editions do not have this chapter. This short YP text remained submerged as a part of the larger Vṛddhagārgīya Jyotiṣa (VGJ) manuscripts, till recognised for its importance first by Mankad[17] and later critically edited by Mitchiner[18]. The identity of the author is not known, but that does not reduce the importance of this text, that has nothing to do with either astronomy or astrology, but is about the political history of India subsequent to the misery caused by the Śakas. The YP text is in Purāṇa style, primarily aimed at linking its narration chronologically with the heroes of MB.

As per YP, very briefly, the first *Kṛtayuga* ended with the *Tārakā war (devāsura yuddha,* a metaphor for an ancient period when the sky was disturbed with extra-terrestrial impacts causing disasters in India). The *Tretāyuga* ended with Rāma destroying *kṣatriya*s twenty-one times, which is a clear reference to Paraśurāma and not to Daśaratha Rāma. Keśava (Vāsudeva Kṛṣṇa) and Pāṇḍavas were at the closing part of *Dwāpara*; whereas Janamejaya Pārikṣita (son of Parīkṣit) was at the start of *Kaliyuga*. This *yuga* was said to have gradually transitioned after the Yavanas and Śakas were pushed back. Northern India was devastated by famine, followed by people resettling peacefully in twelve different regions of India, including the South, waiting for a new era as though *Kaliyuga* was ending! This text helps one to appreciate how *śakābda* got mandated, in parts of India, into the *dhārmic* vocabulary.

It may be inferred that YP and other relatively short texts must have originated from the same ancient source, which is cryptically mentioned as *purāṇam* by Nārada in the Chāndogya Upaniṣat. The popular Purāṇas, when scripted in the royal courts, were expanded in their size and also in the length

of the *yuga*, so that they became *para-historical* by design. Several other *smṛti* and *āgama* texts also appear *para-historical* with their authorship ascribed to Vedic sages; Manu, Vasiṣṭha, Kaśyapa, Parāśara, Agastya, Nārada, Viśvāmitra, Hārita, and Yājñavalkya. One may wonder why so; were the original *Purāṇa* bards unethical, or did they have a greater nobler ideal in front of them for a special purpose? It appears they had set for themselves to give to society a taste of what had been lost due to one or more apocalyptic events with widespread destruction, denoted by the generic word *Pralaya*. The people directly bearing the brunt could not have left any record. Only the survivors and their progeny, gathering their lives and spiritual strength, could have said or written about their ancestral past. Possibly, the School of Vyāsa not only organised the family texts of the Vedas for proper preservation, but also sowed the seeds for the *Purāṇa Saṁhitā* meant for public consumption in the storytelling tradition. We have no access to the original deliberations, but the *Brahmāṇḍa Purāṇa* provides some clues to this.

14. Śiṣṭācāra

A very powerful phrase, *śiṣṭāchāra,* is usually cited by *dharmaśāstra paṇḍits* when questioned about the validity of some peculiar socio-religious practices. The word *śiṣṭa* in current Sanskrit means one who is exceptionally pious/ learned/cultured/eminent. Hence, *śiṣṭāchāra* would mean what is done by such persons or role models, as an answer for some knotty questions and doubts. But as per the Purāṇa, the original sense of the word was closer to the etymological meaning of *'remainder* or *left back'* from the past,

> *śeṣaśabdaḥ śiṣṭa iti śeṣam śiṣṭam pracakṣate|*
> *manvantareṣu ye śiṣṭā iha tiṣṭhanti dhārmikāḥ||* (BPu.1.32.37)

The word *smṛti* is also defined as what is remembered from previous historical epochs. Not everything can be written down, nor remembered. This permitted flexibility in practice, avoided fanatical fundamentalism, but still bound the society by the eight principles (*lakṣaṇa*) of *dhārmic śiṣṭāchāra* (BPu. 1.32.41). These are declared as *dāna* (charity), *satya* (truth), *tapas* (penance/meditation), *jñāna* (knowledge), *vidyā* (learning), *dayā* (compassion), *ijyā* (*puja/* ritual worship), and *vrajana* (*yātra*/renunciation/emigration/resettlement).

The oft-repeated *pañcha lakṣaṇa,* namely, *sarga, pratisarga, vaṁśa,*

manvantara, vaṁśānucharita, are there in the Purāṇas, but these are mere supporting crutches to promote and continue the practice of the above eight principles, bequeathed by our most ancient ancestors as the essentials of *sanātana dharma.*

15. Structure of Sanātana

The word *sanātana* in the sense of *very ancient* is traceable to the *Śatapatha Brāhmaṇa*. The word *sanātana* refers to a concept that is ancient, primaeval, perpetual and eternal. It is apparent that Vedic-Hinduism promoted by the Purāṇas, epics and the *āgama*s, expect *sanātana-dharma* followers to connect themselves emotionally and intellectually with the First Matter/ Creation/ Creator as their source! One among Viṣṇu's thousand names in the *Anuśāsana Parva* of MB is *sanātsanātanatamaḥ*; *ancientest than the ancient*. This is not just a dictum for those meditating with their eyes and ears closed. Hinduism helps average people with a hundred-year life period, also, to link elegantly and objectively with a very long-time scale, in the practice of *dharma*.

The *sāligrāma,* widely worshipped in public temples and in private homes, is a direct manifestation of Viṣṇu. No special *prāṇa pratiṣṭhā* (infusion of life energy) is needed, unlike in the case of large metallic and granitic icons. The *Garuḍa Purāṇa* and the *āgama* texts extoll worship of *sāligrāma.* How and why did this practice spread all over India? Is it purely by chance, or is there any special significance? A votary of modern science can say without contradiction that the *avatāra* of Viṣṇu as *Ammonite/Sāligrāma-śila* happened during the epoch 500-566 Mya. The earliest visualizers of the divine on earth also realised primitive life forms to be modes of Viṣṇu and selected *sāligrāma* to represent a very ancient period (*manvantara)* in the course of an average Hindu's life. One can say that for a good Hindu, it is not sufficient to know the *avatāra* stories of Rāma, Kṛṣna, Śiva, and Śakti for developing *Bhakti*, but it is necessary to ponder also the origin of life on earth.

There seems to be no direct statement about *sāligrāma-śīlā* in the Vedas, although there may be links to Vedic rituals, based on the principle of similarity in creation. In the Vedic rites of *agnichayana* and *pravargya,* an important *sambhāra* (component) to be collected is the *valmīka-vapā*. This is the special mud with a thin white fungus-like cover (*vapā*) from a termite mound.

Without digressing on the rituals, it is noted here that the Vedas laud termites (*vamrīḥ*) as the firstborn of this creation on earth (*devīrvamrīrasya bhūtasya prathamajā ṛtāvarīḥ*| TA. 4.2.3). Modern science estimates this life form to have evolved about 250 million years BP. One wonders whether this could have been the precursor for *sāligrāma* worship in Hinduism.

The above are not isolated cases of ancientness (*sanātanatā*) built into the worldview of Vedic-Hinduism. The Skānda Purāṇa in the Prabhāsa-khaṇḍa (PK) describes an ancient extraterrestrial impact as part of the physical features of the old Prabhāsa region. This provides the aetiology for worshipping *Liṅga*, literally an insignia, but commonly taken to be Śiva's phallus fallen on earth. The text graphically describes;

yo'sau kālāgnirudreti procyate vedavādibhiḥ |
so'yam bhairavanāmnā tu prabhāse suvyavasthitaḥ ||
agninā yatra taptantu divyābdānām caturyugaṁ |
meghavāhanakalpe tu tatra liṅgam babhūva ha ||
agnimīḍheti vedokta prabhāvaḥ surasundari |
kālāgnirudranāmā ca devaiḥ sarvairudāhṛtaṁ ||
agni īśāneti deveśi nāma tritayamucyate | (PK 4.68,71-73)

This means, one who is called *Kālāgni-rudra*, by the followers of the Vedas, is in Prabhāsa by the name Bhairava. When *Agni* burnt continuously for a length of four *yuga*s in the *Megha-vāhana Kalpa,* a *Liṅga* manifested. This *Liṅga* is said to have three Vedic names, *Agnimīdha, Kālāgni-rudra* and *Agni-īśāna*. This manifestation of fiery Rudra as *Liṅga* is easily recognisable as Śiva or Īśvara, one among the *Trinity* of Hinduism responsible for disaster and dissolution. In the eleventh Chapter of PK, the Purāṇa narrates the legend of the Sun falling down on the Prabhāsa region. Here again, the concept of a very ancient epoch is introduced. Sun's birth is said to be at the beginning of the present *Śvetavarāha Kalpa*, that is, about 2300 Mya. The descent or fall of a part of the Sun is said to have happened in the *Svārociṣa manvantara,* which works out to be 1665 Mya. It is said that the sea near Prabhāsa receded for a thousand years and also overflowed after a long time. The text also identifies that out of the first fifteen parts of the falling Sun, the discus of Viṣṇu, the trident of Śiva, the spear of Skanda, the weapons of all the gods and demons got formed (PK 11.195-205). This alludes to the celestial origin and

inspiration for the sacred religious symbols. All of this strange but powerful narration in the Purāṇa is combined with the vanishing or drying up of the River Saraswati in a picturesque and poignant style[19].

It should be noted here that the historical event (*circa* 4000 years BP) of the River Saraswati vanishing in a place called *vinaśana,* and the inherited memory of meteorite impacts and craters on the ground, have had the effect of the Vedic people asking questions about their own ancient past. Consequently, as plausible explanations, methods were devised to quantify long periods of time, punctuated by natural disasters. One may wonder how the Purāṇa authors could have estimated the length of the *manvantara*s and the time to the birth of the Sun as 2.3 billion years BP. There are no clear-cut answers, except that we can speculate that this might be connected with the slow drift of the original Pole Star.

Even though the Purāṇas profess to describe what has been left over by the survivors of one or more natural disasters, it is still possible to decipher the relevance of some of the stories. For example, in the *Bhāgavata Purāṇa,* we come across the narration of Dhruva marrying Śiśumāra's daughter by name *Bhrami* (*one-who-rotates*), the union of the two leading to two offspring named *vatsara* and *kalpa*,

> *prajāpaterduhitaram śiśumārasya vai dhruvaḥ|*
> *upayeme bhramim nāma tatsutau kalpavatsarau||* (Bhā. 4.10.1)

This is obviously a euphemism for star Dhruva-the-fixed, acquiring the property of rotation, which is taken to produce the short-time-period *vatsara* (year) and also a long-time-period called *kalpa.* The constellation of Śiśumāra, having fourteen stars emphasised forcefully in several of the Purāṇas, could have been the inspiration for proposing fourteen *manvantara*s to be in a *kalpa*.

16. Common Era

The recent timeline of Hinduism, from the beginning of the *Śaka Era*, almost the same as CE, is well known to be repeated here. Two new time parameters, namely *Vāra* (seven weekdays) and *Rāśi* (twelve signs: *meṣa.....karkāṭaka,..... tulā,....makara... mīna*), not available in the Vedic oral tradition, got introduced into the Hindu religious vocabulary. Vedic time characterisation had been an interlacing of the solar and lunar phenomena by direct experience

of the sky. Some of the Purāṇas extended this to planets also, to introduce special religious observations. Always, the background of the moving bodies was specified with respect to eighty-six stars, grouped into the twenty-seven nakṣatras along the ecliptic. Siddhānta astronomers of CE refined the above, with sophisticated mathematical models, spherics and computational trigonometry. Somehow, notwithstanding the growth of intellectualism and mathematical astronomy, horoscope astrology and the printed word gained the upper hand in the last few centuries, to the detriment of direct observation of the sky. Somewhere along the line, conversation between astronomers and *Dharmaśāstra* interpreters took a back seat, with distorted notations getting introduced for solar standstills and equinoxes. This has made the last section of the tripartite timeline in the *saṅkalpa* part somewhat disconnected from the Vedic ideal of harmony with the Sun's transits.

The earliest twelve divisions of the year was with respect to the two *ayanas* and the six seasons, which in turn depended on the summer solstice being the longest day (*ahas*) of the year, reckoned as the beginning of the *varṣa ṛtu* (rainy season) of two months named appropriately *nabha, nabhasya.* Similarly, the longest night (*rātri*) of the year, which indicated the winter solstice, such that consecutive sunrise points started moving northward (*uttarāyaṇa*), was the onset of the *śiśira ṛtu* (winter) of two months; *tapa, tapasya.* The other two solar phenomena of equal day and night were at the *middle* of the *vasanta* (*madhu, mādhava*) and the *śarat* (*iṣa, ūrja*) seasons. Even now, these are the four Vedic invariants or fixed points experienced directly in terms of the duration of the *ahas* (day) and *rātri* (night) within observational errors. The Vedāṅga Jyotiṣa texts discussed previously introduced additionally early morning *nakṣatra* rise as season markers, recognising fully well that these named asterisms will change over centuries, but not the *ayana, viṣuva day markers* along with *ṛtu* and their given names.

The above points should make it clear that, as per *sanātana dharma*, in the *saṅkalpa* rite, the two yearly *ayana* (*uttarāyaṇa/ dakṣiṇāyana*) and the invariant four solar *ahorātra* have to be in synchrony with the Sun's transit each and every year; past, present and future. It has been pointed out by many that the present *makara saṅkrānti,* as per the *rāśi* notation in the published almanacs of many Hindu religious institutions, does not correspond to the real northern turning point of the sun, and hence the other three fixed points

and the six seasons are also faulty by about three weeks. Surely, some people will say, if the new year is celebrated on different days by different linguistic groups, there can be no grave harm to Hinduism in general. True, but the issue here is not just about the name of a month, or some day in the year and the celebration associated with it.

All ancient religious feasts, fasts and life events of Hindus have been connected with the solar *ayana* and *ṛtus* since the Vedic period. To cut a long story short, many pious Hindus awaiting their last days wish to pass away when the Sun is in northward transit, even as the Grand Sire Bhīṣma waited for *uttarāyaṇa* to start, for leaving his earthly body after the MB war. All over India, Hindus honour Bhīṣma as an exemplar *dhārmika* and hold him as a role model. Now, imagine the horrendous psychological impact of the error by marking *uttarāyaṇa* and the older Vedic month *taiṣya* (*tai* in Tamil) to start on 14th January, instead of on or around 21st December in the current civil calendar. The reason for this mistake is not difficult to guess. Some influential sectarian religious text seems to have ignorantly equated the computed *Rāśi* divisions (*meṣa, vṛṣabha, etc.)* with the then prevalent twelve solar months (*chaitra, vaiśākha, etc.)* somewhere around the 12th century. Let the *makara saṅkrānti* and the *poṅgal* day be any day, but the fault of showing the period between 21st December and 14th January as *dakṣiṇāyana* cannot be brushed aside nor excused as *śiṣṭācāra.* This is not a small error but a serious mistake to be addressed and corrected by the followers of Vedic Hinduism.

The heads of religious institutions and learned astronomers should prevail upon the interpreters of *smṛti* texts to introduce corrections into the almanacs, as per observable *ayana*, and *ṛtu* and not be carried away by the definition of *Rāśi* notation that became fashionable in the country only around the 3rd century CE.

17. Scientific Temper

New thoughts, corrections and explanations in characterising time were always encouraged, so much so that astronomy was defined long ago, as *kālavidhāna śāstra,* that is, *the science of time determination*. Historically, this has been cultivated by following the seasons, sun, moon, planets and comets in the background of the *nakṣatra*s. Checks and balances were always invoked to introduce corrections wherever needed. This system depended on

observation, analysis and synchronisation of the 'time' of the mathematical *Jyotiṣa* and the practical *Dharmaśāstra* disciplines, which now remains nearly broken. An example of how a correction was introduced, keeping the Vedic spirit in mind, may not be out of place here.

The star *Abhaya-dhruva* in the Vedic *Śiśumāra* constellation was not just the pivot for Vedic history and astronomy, but over centuries, weathering the effects of precession, *Dhruva* merged with the very fabric of the Hindu society, so as to have an ethereal existence even when the star could not be physically seen. The marriage manuals of the Common Era following the *Pāraskara Sūtra* mandate that the bride should say 'I see' even if she is unable to see *Dhruva* (*astamite dhruvam darśayati, dhruvamasi dhruvam tvā paśyāmi.... iti*| *sā yadi na paśyet paśyāmi ityeva brūyāt* ||)[20]. This *Sūtra* belongs to the Śukla Yajurveda branch, largely followed in North India and Nepal. Interestingly, this tradition does not have the additional *arundhatī-darśana*, as with the *gṛhyasūtra* of KYV, followed in the South.

The long-lasting memory of the times when there was a fixed Pole Star has been immortalised in the poem *Kumārasambhavam* of Kālidāsa (5th cent.), where the marriage of the divine couple includes *dhruvadarśana*

> *dhruveṇa bhartrā dhruvadarśanāya prayujyamānā priyadarśanena*|
> *sā dṛṣṭa ityānanamunnamayya hrīsannakaṇṭhī kathamapyuvāca* || (7.85)

Here, Śiva lovingly shows to the shy Pārvatī the star *Dhruva,* prompting her to raise her head coyly and somehow say *dṛṣṭaḥ* (seen).

It is quite possible, lay people, without serious concern for the meaning of the Vedic hymn, showed the bride some star in the night sky, just as in another ritual. But the paradoxical situation did not escape the attention of Kamalākara Bhaṭṭa, a reputed astronomer of Vārāṇasi in the 17th century. He seems to have faced the ethical (*dharma-saṅkaṭa*) question of which star should be seen by the bride in Hindu marriages. This issue should have been very relevant, since the prescribed Vedic hymns laud the fixity and the unchanging nature of Dhruva. Furthermore, even if one were to know the location of the original Vedic star in the Draco constellation, it would be at low altitudes, deviated from the north direction. True to the spirit of the Vedic *mantra*, Kamalākara in his treatise *Siddhānta-tatwa-viveka* (1658 CE) declared

cale'calepi dhruvabhe svameṣādrāśitrayam taddhruvakaḥ śarastu|
ṣaṭṣaṣṭibhāgāḥ pariṇītanāryāḥ mahatphalaṁ darśanato'sti yasya||
(*Bhagrahayuti v* 8)

This meant that the ecliptic coordinate of the star to be seen by the bride was at 90° longitude and 66° latitude. This was clearly the star at the mouth of the *Dhruvamatsya* (U. Minor), the new *Dhruva* (Polaris) that continues to be the current Pole Star, prescribed to be shown to the bride in Hindu marriages.

17. Discussion

The concept of past and historical time in the practice of Vedic Hinduism has been explored in this article from an emic perspective. The *saṅkalpa* rite, which applies to Hindus of all traditions and is practised widely in social, secular and religious contexts, has been used as a touchstone to bring out the intricacies of the tripartite historical time scales of Hinduism. These are: (i) the most ancient, deemed to be from Sun's birth, (ii) the intermediate and (iii) the recent past merging with the present. The three connected seamlessly provide the substratum of *Kāla* (*Time*) in the practice of *sanātana dharma*. The original Vedic hymns about cosmology, *kāla* and *akāla,* the Pole Star *Abhaya-Dhruva,* felt ~~the~~ effect of precession, rituals connected with *dhruva-graha*, *dhruvasthāli,* and chronological coherence among the cited Vedic, epic and Purāṇa texts, characterise the first two timescales. The first, by definition, starts from the birth of the Sun, whereas the second, which underlines the civilisation dimension of Vedic culture, has had its anchor in *Abhaya-Dhruva,* the Pole Star in the constellation *Śiśumāra* (Draco) during (2830±200) BCE. The perfect match between the solstice points of the Vedic MAU and the equinoctial full moon stations of the Brahmāṇḍa, Vāyu, Viṣṇu, and Matsya Purāṇas, on the solar *nakṣatra* zodiac of the epoch 1800 BCE, upholds the chronology on the intermediate time scale. This period can be said to be the historical beginning of post-Vedic Indian astronomy or *Vedāṅga Jyotiṣa,* as described in the "*Mahāsalilam*" preserved in the Vṛddha-Gārgīya Jyotiṣa[21]. Further chronological benchmarks are available in the astronomical works of Parāśara and Vṛddhagarga when the winter solstice day was observed to occur at the beginning of the *Śraviṣṭhā* (Aquarius/Delphinus) sector correspond-

ing to 1400-1300 BCE. The *Ṛtuswabhāva* chapter of VGJ provides another observational date of *c* 500 BCE[22]. With this, one arrives at the end of the intermediate timeline line transitioning to the known historical period of Mahāvīra, Gautama Buddha, Chandragupta, Chāṇakya and the third timeline of the *Śaka Era* starting from 78 CE.

The *meru-dhruva* centric kinematic astronomy model, as available in the Purāṇas, is yet to be evaluated for its scientific content. Although some of this material may sound fanciful, the numbers and possible correlations challenge one to wonder what experience might have inspired such large astronomical numbers. In the *Brahmāṇḍa Purāṇa*, Dhruva is said to be fixed and stationary, holding the other celestials by air strings. The Śiśumāra constellation with fourteen stars, the last four ending with Dhruva, being circumpolar, is systematically described. However, in another place, the diurnal circular movement of Dhruva in harmony with the day-night of thirty *muhūrta*s is mentioned[23]. It seems, as an improvement of a previous idea, the autorotation of Dhruva was taken to be the cause of the rotation of the Sun, the Moon and other bodies. In the present state of the Purāṇas, very delicate statements as above are mixed up with stories of child prince Dhruva going to the forest for penance and getting the boon to stay as the Pole Star till the end of the world, along with his mother *Sunīti* as a companion star. Indeed, the ancient Pole Star α-Dra has a companion star i-Dra as *Sunīti*, which could have helped the identification of star *Dhruva* in religious rites before the Common Era.

The Purāṇic *kalpa* of 43,20,000 years was adopted by astronomers to state accurately the integral number of revolutions of the moon and other planets. As is known, Āryabhaṭa was the first person to state that the earth rotates on its axis, causing day and night. It would not be wrong to infer that he knew the Purāṇic lore of star *Dhruva* doing diurnal rotation in the same place for *thirty muhūrtas* and interpreted this to be a relative motion as seen from earth, to propose his new model of a rotating earth, while the stellar cage (*bhapañjara*) remained fixed.

18. Conclusion

The religious and cultural practices in Hinduism are the results of a deep desire to align human activities with natural rhythms and cycles for all time; past, present and future. This does not mean time in Vedic Hinduism is

cyclic, as some mistakenly interpret. Such an explanation is similar to a casual observer misunderstanding the waves for the ocean. The *Taittirīya Āraṇyaka* of KYV, in the very beginning (1.2), explains time to be like a river with small streams (time units) adding up to form the *samvatsara* (year), flows continuously and is irreversible. The sense of past as historical time in Hinduism is esoteric, although in religious practices, it is tangible to all as a combination of ancient Vedic tenets, Purāṇic societal memory, recent past and the present continuous.

The Vedic definition of measurable time, stated to be from the birth of the Sun, is textually evidenced in a technical sense in the historical period of MAU (*c* 1800 BCE), but this concept must have come down from the time of the Ṛgveda or even earlier. A unique concept of evolutionary modes of life forms is also inherited from the Vedic past. The natural history of the *Iriṇa* (Rann-of-kutch) and the *Arbuda* (Arāvali) mountainous region, including the episode of the drying of River Saraswati, is available in the Vedic texts and the Purāṇas. It is remarkably symbolic and also realistic that *Kālāgni-Rudra* should be hailed as *Iriṇya* in the Yajurveda. The rationale for devising long time intervals in the Purāṇas approaching the *infinite past* must have been due to deep reflection on the gradual drying of the sacred river Saraswati, extraterrestrial impacts and the transience of *Abhaya-Dhruva,* the pole star, once extolled as *Achyuta.* The Purāṇic concept of *sanātana dharma,* deemed to be coeval with the Sun's manifestation 2.3 billion years ago, may sound emotional, imaginary and fanciful, but the number is remarkable for its order of magnitude being in harmony with similar modern cosmological and natural history estimations.

The Vedic injunction, *kālam brahmetyupāsīta,* applies equally to all followers of *sanātana dharma*, whether they be *vaiṣṇavas, śaivas, śāktas* or atheists. True to this, the primary sources of Vedic Hinduism have preserved verifiable celestial events for their historical past at least up to about 3000 BCE. Prior to this period, the texts and equally well the continuing religious practices prompt Hindus to picture the natural history of Greater India, and to contemplate on the cosmogony and cosmography of the solar system and beyond.

Notes

1. अथान्यत्राप्युक्तमन्नं वा अस्य सर्वस्य योनिः कालश्चान्नस्य सूर्यो योनिः कालस्य । तस्यैतद्रूपं यन्निमेषादिकालात् संभृतं द्वादशात्मकं वत्सरमेतस्याग्नेयम् अर्धम् अर्धं वारुणम् ।मघाद्यं श्रविष्ठार्धमाग्नेयं क्रमेणोत्क्रमेण सार्पाद्यं श्रविष्ठार्धान्तं सौम्यम् । .... यः **कालं ब्रह्मेत्युपासीत** काल स्तस्यातिदूरमपसरतीत्येवंह्याह ।..... द्वे वाव ब्रह्मणो रूपे, कालश्च अकालश्च, अथ यःप्रागादित्यात्सो अकालो अकलो, अथ य आदित्याद्यः स कालः सकलः, सकलस्यवा एतद्रूपं यत्संवत्सरः, संवत्सरात् खल्वेमाः प्रजाः प्रजायन्ते संवत्सरेणेह वैजाता विवर्धन्ते संवत्सरे प्रत्यस्तं यन्ति तस्मात्संवत्सरो वै प्रजापतिःकालः..... । (MAU 6.14; 6.15).
2. Yardi, M.R., 1986.
3. *Ibid.*, 2001.
4. Iyengar, R.N., 2003, pp.77-115.
5. Bhatnagar, A.K., 2017.
6. यस्मै नमः तच्छिरो धर्मो मूर्धानम् ब्रह्मोत्तराहनुः यज्ञो अधरा विष्णुर्हृदयम् सम्वथ्सरः प्रजननम् अश्विनौ पूर्वपादौ अत्रिर्मध्यम् मित्रावरुणौ अपरपदौ अग्निः पुच्छस्य प्रथमम् काण्डम् तत इन्द्रस्ततः प्रजापतिः अभयम् चतुर्थम् ।सवा एष दिव्यः शाक्करः शिशुमारः तंह। य एवम् वेदाप पुनर्मृत्युं जयति जयति स्वर्गं लोकं। नाध्वनि प्रमीयते नाग्नौ प्रमीयते नाप्सु प्रमीयते नानपत्यः प्रमीयते लघ्वान्नो भवति ।ध्रुवस्त्वमसि ध्रुवस्य क्षितमसि त्वम्भूतानां अधिपतिरसि त्वम्भूतानाम् श्रेष्ठोसि त्वाम्भूतानि उपपर्यावर्तन्ते नमस्ते नमः सर्वं ते नमो नमः। शिशुकुमाराय नमः॥ (TA. II.19)
7. Iyengar R.N., 2011, pp.23-39.
8. *Ekāgnikāṇḍa* ,1902.
9. मूर्धानं दिवो अरतिं पृथिव्या वैश्वानराय जातमग्निं ।कविम् सम्राजमतिथिं जनानामासन्ना पात्रम् जनयन्त देवाः॥.....ध्रुवोसि ध्रुवक्षितिः ध्रुवाणां ध्रुवतमः। अच्युतानां अच्युतक्षित्तम...॥(TS 1.4.13)
10. ... असुरा वा उत्तरतः पृथिवीं पर्याचिकीर्षन् तान्देवा ध्रुवेण अदृंहन्तद्ध्रुवस्य ध्रुवत्वम् यद्ध्रुवः उत्तरतः साद्यते। (TS 6.5.2)
11. आयुर्वै ध्रुवस्तमुत्तमं गृह्णात्युत्तमंह्यायुः...हिरण्येऽधिसादयेदायुःकामस्य...।...राजपुत्रो ध्रुवं गोपायति, सर्वासां वा एतत् प्रजानामायुर्गोपायति, तस्माद्राजपुत्रो वीर्यवत्तमो, यद्यभिचरेत् ॥ इदमहममुष्यामुष्यायणस्यायुः प्रवर्तयामि ॥ इति ध्रुवं प्रवर्तयेदायुरेवास्य प्रवर्तयति.... ध्रुवं त्वा ध्रुवक्षितिममुमास्थानाच्च्यावयामि॥ इत्यास्थानादेवैनं च्यावयति, प्रमायुको भवति, ध्रुवं वै प्रच्यवमानं विश्वा भूताऽनु प्रच्यवन्ते, प्र यजमान आस्थानाच्च्यवते तदभिमृश्यो , दिविं दिव्यान् दृंहान्तरिक्षे अन्तरिक्ष्यान् पृथिव्यां पार्थिवानिति॥ (MS 4.6.6)
12. ...अथ किमेतैर्वारण्यानाम् शोषणं महार्णवानां शिखरिणां प्रपतनम् । ध्रुवस्य प्रचलनं ब्रश्चनं । वातरज्नूनां निमज्जनं पृथिव्याः स्थानादपसरणम् ॥ MAU (1.4)
13. Iyengar R.N. and Chakravarty S., 2023, pp. 241-49.

14. Iyengar R.N. and Radhakrishna B.P., 2005, pp. 285-92.
15. Pargiter F.E., 1922.
16. Roy S.B., 1975.
17. Mankad D.R., 1951.
18. Mitchiner J.E., 1986.
19. Iyengar R.N., 2004, pp. 11-49.
20. Bakre, M.G. (ed.), 1982.
21. Iyengar, R.N., 2024.
22. Iyengar R.N. and Chakravarti S., 2021, pp.159-70.
23. ततो मन्दतरं नाभ्यां चक्रं भ्रमति वै तथा। मृत्पिण्ड इव मध्यस्थो ध्रुवो भ्रमति वै तथा॥
त्रिंशन्मुहूर्तानेवाहुः अहोरात्रं ध्रुवो भ्रमन्। उभयोः काष्ठयोर्मध्ये भ्रमते मण्डलानि तु॥
कुलालचक्रनाभिश्च यथा तत्रैव वर्तते। ध्रुवस्तथाहि विज्ञेयः तत्रैव परिवर्तते॥ (B.Pu. 1.21.94-96)

References

Bakre, M.G. (ed.),1982, *Pāraskara Gṛhyasūtram with five commentaries,* N. Delhi.

Bhatnagar, A.K., 2017, 'Date of Mahābhārata War Based on Astronomical References' *Indian Journal of History of Science 52*.

Srinivasacharya L., 1902, *Ekāgnikāṇḍa with the Commentary of Haradatta*, Mysore.

Iyengar R.N., 2004, 'Profile of a natural disaster in ancient Sanskrit literature.' *Indian Journal of History of Science 52*. 39, pp.11-49; 2011, 'Dhruva the Ancient Indian Pole Star: Fixity, Rotation and Movement', *Indian Journal of History of Science 46*, pp.23-39.

Iyengar R.N. and Chakravarti S., 2021, 'Transit of Sun through the seasonal nakṣatra cycle in the Vṛddha-Gārgīya Jyotiṣa,' *Indian Journal of History of Science 56*, pp.159-70; 2023, 'Equinoctial full moon of the Brahmāṇḍa Purāṇa and the nakṣatra solar zodiac starting from summer solstice,' *Indian Journal of History of Science 58*, pp.241-49.

Iyengar R.N. and Radhakrishna B.P., 2005, 'Evolution of the Western Coastline of India and the Probable Location of Dwārakā of Kṛṣṇa: Geological Perspectives,' *Journal of Geological Society of India, 66*, pp.285-92.

Iyengar, R.N., 2003, 'Internal Consistency of Eclipses and Planetary Positions in the Mahābhārata,' *Indian Journal of History of Science 38*, pp. 77-115; *Ibid.,* 2024, *Mahāsalilam (Critical edition with introduction, translation and notes*), N. Delhi, Central Sanskrit University.

Mitchiner J.E.,1986, *Yuga Purāṇa*, Kolkata,The Asiatic Society.

Pargiter F.E., 1922, *Ancient Indian Historical Tradition*, London,Oxford University Press.

Roy S.B.,1975, *Ancient India, a Chronological Study*, N.Delhi, Institute of Chronology.

Yardi, M.R., 1986, *The Mahābhārata, its Genesis and Growth*, Pune, Bhandarkar Oriental Research Institute; *Ibid.,* 2001, *Epilogue of Mahābhārata*, Pune, Bharatiya Vidya Bhavan.

■