

THE VEDIC TIME SYSTEM: AN EXPLANATORY STUDY

Dr. Chander Kant Sharma*

Dr. Sushil Agarwal**

ABSTRACT

The Vedas are ‘Apaurusheya’ i.e., ‘not authored by humans’. The wisdom and various principles mentioned therein are laid down directly by the Supreme for the welfare of mankind. This knowledge is then handed over by the Supreme to the Sun and then to the Manu and so on¹. The concept of time, as mentioned in the Vedas, is a unique phenomenon and it surpasses the modern way of calculation. The Vedic concept of time was then further explained by many sages in subsequent Vedic literature. In modern times, we are more focused on gross numbers which are used for practical purposes. However, according to the Vedic time system, the time has a multi-dimensional concept. Hence, both formless and gross concepts of time are defined. This paper explains the Vedic time system with various Vedic references and compares it with the modern time system.

Keywords: Kāla (Time), Vedic time system, astrological & astronomical time calculation, Kalpa, Manu, Mahāyuga, Yuga, Varsha (Year), Māsa (Month), Paksha, Ahorātra (Day-Night), Ghati, Pala, Vipal, Prāṇa, Truti etc.

INTRODUCTION

The Vedic Time System is regarded as a multi-dimensional category. There are various inferences and references of ‘Kāla’ (time) in the Vedic literature. The word ‘Kāla’ is most generally referred a synonym of ‘time’. There are two major types of ‘Kāla’ in *Surya Siddhanta*.

लोकानामन्तकृत्कालःकालोऽन्यःकलनात्मकः।
सद्विधास्थूलसूक्ष्मत्वात्मूर्तश्चामूर्तरुच्यते॥²

lokānāmantakṛtkālahkālo’nyahkalanātmakah
sadvidhāsthūlasūksmatvātmūrtaścāmūrtarucyate॥

*Dr. Chander Kant Sharma is working as a Head & Assistant Professor in the Astrology Department, Mewar University, Gangrar, Chittoragarh (Rajasthan) India. Email: hodastrology@mewaruniversity.co.in.

**Dr. Sushil Agarwal is working as a Guest Faculty member in the Astrology Department, Mewar University, Gangrar, Chittoragarh (Rajasthan) India. Email: agarwal.india@gmail.com

It means that there is one ‘Kāla’ (time) which is used for mankind and another one is used for calculation. The ‘Kāla’ which is used for calculation is also of two types, namely ‘Murta’ or ‘Sthula’ (embodied or gross) which is used for practical purposes and ‘Amurta’ or ‘Sukshma’ (formless or subtle).

The word ‘Kāla’ is also connected to the Lord Shiva as he is referred to as ‘Mahākāla’. To understand the formless or subtitle Kāla, *Atharva Veda*³ says

कालो अश्वोऽवहति सुसरश्मिः सहस्राक्षो अञ्जरो भूरिरेताः।
तमा रोहन्ति कुवयोऽपिश्चित्सतस्य चक्रा भुवनानि विश्वाः॥

kālo aśvo vahati saptaraśmīḥ sahasrākṣo ajaro bhūriretāḥ॥
tamā rohanti kavayo vipaścitastasya cakrā bhuvanāni viśvā॥

‘Kāla’(time) refers to a horse (aśva, aśva = without future, i.e., continuous flowing energy) flowing continuously with seven types of rays and thousands of axes and who is always young and extremely powerful. The wise men understand the nature of this horse (time). In other verses of 53rd Sukta, the Kāla has also been referred to as the creator, the preserver and the destroyer.

The word ‘Kāla’(time) has also been frequently used in the Brāhmaṇas⁴. In *Satpatha Brahmana*, it is referred to as the sense of the moment. The more general division of the time (Kāla) is done into three major parts, namely past (Bhuta), present (Bhavatah) and future (Bhavisyatah). The other division of the time is done into Ahan (day), Paksha (a lunar fortnight), Māsa (a month), Samvatsara (a year or a period that the Sun takes to reenter the sign of Aries in the zodiac), muhurta (48 minutes) and a larger time interval of Yuga(epoch) etc.

The concept of space and time is very important in astronomy and astrology. The *Rga Veda*⁵ says

द्वादशारं नुहि तज्जरायु वर्वर्ति चक्रं परि द्यामृतस्याँ
आ पुत्रा अमे मिथुनासो अत्रं सुप्त शतानि विंशतिश्च तस्थः॥

dvādaśāram nahi tajjarāya varvarti cakram pari dyāmṛtasyal
ā putrā agne mithunāso atra sapta śatāni viṁśatiśca taṣṭhuḥ॥

The circle with 12 parts (refers to a solar year having 12 months) is everlasting, i.e., it neither has a beginning nor any end. It further says that it has 720 sub-parts (referring to 360 days and 360 nights). Hence, it is the power of the Supreme.

Initially, a Vedic year was referred to as a solar year (not a lunar year) and later it was slightly improved and a solar year of 365/366 days was defined. It was first known to Jyotish and sage Garga.

Taitriya Samhita divided one year into six seasons, i.e., a season comprises two months each:

मधुश्माधवश्वासंतिकावृत्तशुक्रश्शुचिश्चैष्मावृत्
नभश्ननभस्यश्वार्षिकावृत्त॒ष्ठोर्जश्शारदावृत्
सहश्शसहस्यश्शहैमंतिकावृत्तपश्शतपस्यश्शैशिरावृतु॥६

madhuścamādhavaśvavāsaṁtikāvṛtūśukraścaśuciśvagraiṣmāvṛtū,
 nabhaścanabhasyaścavārṣikāvṛtūśaścorjaścaśāradāvṛtū,
 sahaścasahasyaścahaimaṇtikāvṛtūtapaścatapasyaścaśaiśirāvṛtull

It means that one year has six seasons, i.e., a season of two months each. In Madhu-Madhav (March-April) months, Vasant (spring) season; during Shukra-Shuchi (May-June) months, Grisham (summer) season; during Nabha-Nabhasya (July-August) months, Varsha (Rainy) season; during Isha-Urja (September-October) months, Sharada (autumn) season, during Saha-Sahasya (November-December) months, Hemant (pre-winter) season; during Tapa-Tapasya (January-February) months, Shishir (winter) season.

Sage Lagdha mentioned in his scripture *Vedanga Jyotisha*⁷ that a cycle of 5 years constitutes a Yuga. Sage Rangnatha mentions in *Surya Siddhanta*⁸ that the age of a ‘Kalpa’ (consists of 14 Manus having 71 Mahāyuga each and 15 Junctions) is 4.32 billion solar years.

This large number of solar years constituting the Mahāyuga is given to the common factor divided from the revolutions of planets in that period in *Surya Siddhanta*⁹. These are as follows:

Planets	Bhagana
Moon	57753336
Mars	2296832
Mercury	17937060
Jupiter	364220
Venus	7022376
Saturn	146568

One of the most spectacular results of the *Rgvedic* studies is the evolution of the Hindu calendar. The time reckoned in terms of five components called Panchanga of time, namely Tithi (lunar day), Vāra (day of the week), Nakshatra (constellation), Yoga (derived out of longitudes of Sun and Moon) and Karana (a half of tithi), each with its specific effects in terms of benefic or malefic. Still, in modern times, many publishers are circulating such Panchanga ahead of every year because people still use them to find out benefic time for various festive, social, religious, meteorological, agricultural and other events.

The Hindu calendar is fully based on the movements of heavenly bodies. The sages of Vedic times had recognized five types of years, viz. the solar year, the lunar year, the Savana year (360 days), the nakshatra year and the Brahaspatyam year (calculated based on the movement of Jupiter).

According to many ancient scriptures (in Purusha Sukta of R̄ga Veda, in Yajur Veda, *Vishnu Purana*, *Bhagvada* etc.), the Brahma emerged out of the navel of the Supreme. The Brahma is responsible for creating and destroying the universe cyclically. According to *Vishnu Purana*, the life of Brahma is 100 divine years called Mahakalpa. According to *Surya Siddhanta*¹⁰, the Brahma creates 14 Manus everyday (Brahma’s Day) one by one, who then create and control the humans. So, there are 14 Manus in one divine day called Kalpa of Brahma. The life of each Manu is called Manvantara and it has 71 eras of 4 quarters each. Each quarter has four Yugas

(epoch) – Krta or Satya, Treta, Dvapara and Kali.

The following are the complete calculations of Vedic units of time and periods:

Krati = 34,000 of a second.

Truti = 300 of a second (time taken to tear apart the softest petals of a lotus).

100 Trutis = 1 Lub

30 Lub = 1 Nimesh (a blink of an eye).

27 Nimesh = 1 Guru Akshar (time needed to pronounce a guru alphabet).

10 Guru Akshar = 1 Prana (time taken to breath gently, usually 4 seconds).

6 Prana= 1 Vighatika or Vipal.

60 Vighatika = 1 Ghatika or Dand.

60 Ghatika = 1 day and night (Ahoratri).

According to another system, the division of time is

1 day or 24 hours = 60 Ghatis (also called Pala or Kala).

1 Ghati = 60 Vighati (also called Vipala or Vikala).

1 Vighati = 60 Lipta

1 Lipta = 60 Vilipta

1 Vilipta = 60 Para

1 Para = 60 Tatpara

In Astrology, the birth time was used to be recorded in Ghati and Vighatis. Its conversion is as follows:

5 Ghatis = 2 hours (1 Ghati = 24 minutes).

5 Vighati = 2 minutes (1 Vighati = 24 seconds).

Another system of time at micro level is:

60 Tatparas = 1 Paras.

60 Paras = 1 Vilipta.

60 Vilipta = 1 Lipta.

60 Lipta = 1 Ghatika (Danda).

60 Ghatika = 1 Day & Night.

Hence, there are 46,65,60,000,00 Tatparas in a day and night.

The large Vedic units are in Yugas or eras/epochs. According of Vedic literature, their calculation by *Surya Siddhanta*¹¹ is as follows:

Sata Yuga = 17,28,000 Years ($432000 \times 4 = 1728000$)

Treta Yuga = 12,96,000 Years ($432000 \times 3 = 1296000$)

Dwapar Yuga	= 8,64,000 Years ($432000 \times 2 = 864000$)
Kali Yuga	= 4,32,000 years.
1 Mahayuga	= 4,320,000 years (the total period of 4 Yugas).
71 Mahayuga	= 1 Manvantara ($43,20,000 \times 71 = 30,67,20,000$ Years)
14 Manvantara	= 1 Kalpa (4,294,080,000 Years)

The earth remains submerged in the water for the period equivalent to Satyug before the start of each Manvantara. It also remains submerged in the water for the same number of years after the completion of the last Manvantara, hence having a total of 15 Sandhis (junctures) in total.

1 Kalpa	= 14 Manvantaras + 15 Sandhis
14 Manvantara	= 4,294,080,000
15 Sandhis	= 2,59,20,000 ($1728000 \times 15 = 25920000$)
1 Kalpa	= 4,320,000,000 years.

One day & night of Brahma = 4320000 Mahayuga $\times 100 = 432000000$ Years.

Since the one moment in the life of Brahma is considered to be of our 100 divine years, therefore the life of Brahma in 100 years will be

$$4,32,00,00,000 \times 360 \times 100 = 1,555,200,000,000 \text{ Years}$$

The present age of the cosmos, according to the Vedic System, is as follows:

- 1) The time elapsed till the start of current Manvantara
 - There are 14 Manvantaras altogether. At present, we are passing through the 7th Manvantara (Vaivasvata Manvantara).
 - One Manvantara consists of 71 Mahayug, out of which 27 Mahayug (of 7th Manvantara) have already passed. We are passing through the initial phase of the Kali Yuga of the 28th Mahāyuga.
 - As mentioned above, 1 Manvantara is of 30,67,20,000 Years.
 - Till the start of 7th Manvantara, the creation has witnessed 7 pralaya (1 before the start of 1st and subsequent 6 Manvantaras). Pralaya is the event when the earth submerges into the water for a period equivalent to Satyuga, i.e., 17,28,000 years. It means that the creation till the start of the 7th Manvantara has witnessed 12,096,000 years ($17,28,000 \times 7 = 12096000$) in water. Thus, 1,852,396,000 years ($1840300000 + 12096000 = 1852396000$) have elapsed from the start of Kalpa to the beginning of 7th Manvantara.
 - 2) The time elapsed till the start of the current Mahayuga
 - 27 Mahayuga have passed, each consisting of 43,20,000 years.
- $4320000 \times 27 = 116640000$ years have passed,
- Total ($1852396000 + 116640000 = 1969056000$) years.

3) The time that has elapsed till Kaliyuga

- In 28th Mahayuga, following three yugas have elapsed

Sata Yuga = 17,28,000 Years.

Treta Yuga = 12,96,000 Years.

Dvapar Yuga = 8,64,000 Years.

Total = 38,88,000 Years.

So, Kaliyuga came into existence approximately 38,88,000 years after the start of this 28th Mahāyuga.

4) Kali Yuga started on Bhadrapada, Krishna Paksha, 13th day, in Vyatipaata yoga at midnight, in the Ashlesha Nakshatra. The time elapsed in the existing Kaliyuga is 5122 (till Vikram Samvat 2078 or 2021 AD of Gregorian calendar or Shaka 1943).

Sum of all the three eras (Yuga) is the Sum of 27 Mahāyuga and Manvantara + the period of Kali Yuga till date. Kalpa consist of 4,32,00,00,000 years and out of these 1,97,29,49,101 years have passed. Therefore, the earth's existence, according to the calculations devised by our ancient sages, comes up to 1,97,29,49,101 years to date. It is interesting to note that according to scientific calculations, the age of the cosmos is estimated between 15 and 20 billion years.

CONCLUSION

There are various theories about the age of Vedas but Hindu scriptures have themselves defined it that it starts with the advent of the creation. The Vedic literature that was created thereafter, like Samhitas, Vedangas, Puranas, Smritis etc. was created by sages to explain it in a more detailed and understandable way. This paper has established that the time concept of Vedic literature is still valid and parallel with the calculations of modern science.

ENDNOTES

1. Bhagvada Gita 4.1
2. Sūrya Siddhānta 1-10
3. Atharvaveda 1 9.53.1
4. Śatapatha Brāhmaṇa 1.7.3.3
5. Rgveda Samhitā 1.164.11
6. Taitirīya Samhitā 4-4-11
7. Vedāṅga Jyotiṣa śloka 1-5-28
8. Sūrya Siddhānta, Madhyamādhikāra, śloka 21
9. Sūrya Siddhānta, Madhyamādhikāra, śloka 28-33
10. Sūrya Siddhānta, Madhyamādhikāra, śloka. 21
11. Sūrya Siddhānta, Madhyamādhikāra, śloka 15-16

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