Scholars Journal of Arts, Humanities and Social Sciences OPEN ACCESS
Abbreviated Key Title: Sch J Arts Humanit Soc Sci
ISSN 2347-9493 (Print) | ISSN 2347-5374 (Online)
Journal homepage: https://saspublishers.com

A Concise History of the Indian Calendars

Paulo Nuno Martins[1]*

[1]MSc (IST), Ph.D (UNL), CTEC-UFP, CIRET (Paris)

DOI: https://doi.org/10.36347/sjahss.2025.v13i07.009 | **Received:** 28.05.2025 | **Accepted:** 24.07.2025 | **Published:** 31.07.2025

***Corresponding author:** Paulo Nuno Martins
MSc (IST-UL), Ph.D (FCT-UNL), CTEC-UFP, CIRET (Paris), Email: - paulonunom@gmail.com

Abstract **Original Research Article**

Indian calendars are timekeeping instruments that reflect various cultural influences over time, reflecting the country´s multicultural history. Thus, there are four main Indian calendars used for different purposes: Vikram Samvat, Saka Samvat, the Hijri or Muslim calendar and the Gregorian calendar. The Vikram Samvat is a lunar calendar, with year zero beginning in 57 B.C., highlighting the deep cultural roots of the Indian people. The Saka Samvat calendar is a solar calendar, similar to the Gregorian calendar, and is used for both civil and religious purposes, with year zero beginning in 78 A.D. (Saka Era). In this regard, it is important to refer the contributions of ancient texts, such as the Vedanga Jyotisha and the Surya Siddhanta. In addition to the main calendars, other Indian calendars are also used by Indian people, such as, the Hijri or Muslim calendar, which is a lunar calendar consisting of 12 lunar months in a year of 354 days. The Gregorian calendar, on the other hand, is a solar calendar consisting of 12 months in a year of 365 days, and is primarily used for administrative purposes. In 1957, after India´s independence, the Calendar Reform Commission established a standard calendar for all states of India, and adopted the Saka Samvat as the Indian national calendar.

Keywords: Gregorian calendar, Hijri calendar, Indian national calendar (Saka Samvat), Surya Siddhanta, Vedanga Jyotisha, Vikram Samvat.

INTRODUCTION

From Eastern to Western traditions, calendars have been used as tools for timekeeping through the alignment of celestial bodies in the heavens and on Earth, leading to an interconnection between religion, astronomy and day-to-day activities, such as agriculture. Some of the oldest calendars date back to African tribes, as well as Sumerian, Egyptian, Babylonian and Persian civilizations, followed by the Mayan, Islamic, Hebrew, Greek, Roman, Chinese and Hindu cultures, among others (Richard, 2000). In this regard, we need to mention that several cultures have used different ways to measure the daily and yearly cycle of the Earth, such as the moon cycle used by the Islamic calendar, the solar cycle used by the Gregorian calendar, and the lunisolar cycle used by some Indian calendars. Furthermore, astronomical observations, combined with increasingly accurate mathematical calculations, have made it possible to determine specific dates in the calendars of these cultures with precision (Duncan, 1999). Additionally, the construction of calendars across various cultures has influenced one another over time. For example, Greek astronomy influenced Indian calendars, some names in the Persian calendar are also found in the Hebrew calendar, the seven-day week likely originated from Babylonian tradition, and the Egyptian solar calendar of 12 months with 30 days each (totaling 365 days) was adopted by Julius Caeser in the form of the Julian calendar. He established January 1st as the beginning of the New Year and December 31st as its end. Later, Pope Gregory XIII introduced an adjustment – adding an extra day every four years (leap years) – which gave rise to the Gregorian calendar. The terms *Before Christ* (BC) and *Anno Domini* (AD) are used to number years in the Gregorian calendar. The word “calendars” itself originates from the Latin *calends*, which referred to the first day of the month in the Roman calendar, when accounts were traditionally settled. The Gregorian calendar is one of the most widely used calendars in the Western world (Hannah, 2005). Furthermore, the Mayan calendar is still in use in some regions of Guatemala and Mexico within certain cultural contexts. Meanwhile, the Islamic lunar calendar, the Indian national, and Chinese lunisolar calendar remain highly relevant in many Eastern cultures (Ziadeh et al, 2023).

METHODS

In this essay on the concise history of Indian calendars, various articles and books were collected and analyzed. The most relevant sources were then selected, based on their historical and cultural significant to the topic. This approach aims to make the content accessible to readers who seek a general overview of the topic.

A Concise History of Indian Calendars: A general overview

There are four main types of calendars followed by the Indian people: Vikram Samvat, Saka Samvat, the Hijri calendar and the Gregorian calendar. The multicultural diversity of the Indian people has led to the use of different types of calendars across various regions of the country (Richmond, 1956). For example, the Vikram Samvat, used primarily in Northern India, is a lunar calendar with year zero beginning in 57 B.C., commemorating the reign of King Vikramaditya (77-15 B.C.) and reflecting the deep cultural roots of the Indian people (Chakravarty, 1975). The Saka Samvat, on the other hand, is a solar calendar with year zero beginning in 78 A.D. (Saka Era), marking the ascension of Emperor Shalivahana Shaka in the Deccan plateau region of central India, following his defeated of the Kushanas. Both the Vikram Samvat and the Saka Samvat calendars have been influenced over time by various sources, including the *Vedanga Jyotisha*, based on the Vedas, and the *Surya Siddhanta*, which incorporates elements of Greek astronomy. These texts describe the rules of calendrical astronomy, including calculations related to the positions of the Sun and Moon (Pingree, 1978; Chopra, 2018). In 1957, after India´s independence, the Calendar Reform Commission established a standard calendar for all states of India, and adopted the Saka Samvat as the Indian national calendar through a decree published in the *Gazette of India.* The Saka Samvat is used for both civil and religious purposes, as it helps determine the most favorable times for agriculture activities, as well as the dates of festivals and rituals in Hindu culture.

Historically, the *Rigveda* contains references to the names of the planets and the zodiac, while the *Atharvaveda* mentions the names of constellations or *nakshastras* (Pillai, 1911). The practice of Vedic astrology has influenced both the Vikram Samvat and the Saka Samvat calendars. One of the earliest and most emblematic texts contributing to the Vikram Samvat and the Saka Samvat calendars is the *Vedanga Jyotisha*, a treatise on Vedic astrology attributed to the mathematician and astronomer Lagadha Muni, dated to around 1200 B.C. (Thompson, 2004). The Vedangas are supplementary to the Vedas in Hinduism, and the field of astrology within them is represented by the Rigveda Jyotisha, Yajurveda Jyotisha, and Atharva Jyotisha. For example, Hindu astrology considers nine planets known as the *Navagrahas*: Surya (Sun), Chandra (Moon), Budha (Mercury), Shukra (Venus), Mangala (Mars), Guru (Jupiter), Shani (Saturn), Rahu (North node of the Moon), Ketu (South node of the Moon). Another important element of Hindu astrology is the set of zodiac signs or *Rasi*, which are named in Sanskrit as: Mesha (Aries), Vrisha (Taurus), Mithuna (Gamini), Karkata (Cancer), Simha (Leo), Kanya (Virgo), Tula (Libra), Vrischika (Scorpio), Dhanus (Sagittarius), Makara (Capricorn), Kumbha (Aquarius), and Mina (Pisces). The first ingress of the Sun into a Rasi is called a Samkrati. The Hindu calendar also comprises the seven days of the week, whose names are: Raviãra or Sunday (day of the Sun), Somavãra or Monday (day of the Moon), Mañgalvã or Tuesday (day of Mars), Budhavãra or Wednesday (day of Mercury), Guruvãra or Thursday (day of Jupiter), Sukravãra or Friday (day of Venus), Shanivãra or Saturday (day of Saturn) (Martins, 2023).

The Vedangas aimed to construct a calendar to mark Hindu rituals, referred to as Yajnas (fire rituals), such as Darsapurnamasa and Chaturmasya. The Vedangas describe the movements of the Moon and the Sun, and the solstices and equinoxes. Lagadha Muni also introduced the concept of Yuga (Eras or ages) to mark cycles of astronomical events. The four Yugas in Hinduism are known as Satya Yug, Treta Yug, Dwapasr Yug, and Kali Yug (Parikh&Ravel, 2021). The four Yugas (representing the cosmic cycle of Time) are associated in Vedic literature with the throws of a dice game. Some authors argue that we are in the Kali Yuga, which began around 3102 B.C. when Lord Krishna left Earth and returned to His spiritual abode. During this age, the teachings of the Bhagavad-Gita are expected to guide the spiritual evolution of humanity´s consciousness (Selbie&Steinmetz, 2011).

The Saka Samvat is divided into 12 months, which correspond to the Gregorian calendar. The names and approximate start dates of the months are as follows: Chaitra (30 or 31 days for leap years) – begins on 22nd March or 21st March for leap years, Vaisakha (31 days) – begins on 21st April, Jyaistha (31 days) – begins on 22nd May, Asadha (31 days) – begins on 22nd June, Shravana (31 days) – begins on 23th July, Bhadra (31 days) – begins on 23th August, Asvina (30 days) – begins on 23th September, Kartika (30 days) – begins on 23th October, Agrahayana (30 days) – begins on 22nd November, Pausa (30 days) – begins on 22nd December, Magha (30 days) – begins on 21st January, Phalguna (30 days) – begins on 20th February (Martins, 2023).

In the Saka Samvat the first month of the year is Chaitra, while in the Vikram Samvat the first month of the year coincides with the new moon in the Chaitra month. The Vikram Samvat and the Saka Samvat use two ways to measure a day, one based on the movement of the moon, called *tithi*, and the other based on the apparent movement of the sun, called *divasa,*

respectively (Deshowitz&Reingold, 2009). Both of them use a methodology that allows for adjustments between these two ways of measuring the day. The Vikram Samvat calendar recognizes that the lunar cycle has two phases, known in Sanskrit as *paksa*. The waxing phase of the Moon, leading up to the full moon, is called *Shukla Paksha*, while the waning phase, from the full moon to the new moon, called *Krsna Paksha*. Additionally, there are two methods for determining the beginning of a lunar month: the *Purnimanta* tradition, which starts the month with the full moon, and the *Amanta* tradition, which begins with the new moon. The *Amanta* system is currently the more wisely used of the two. For example, the full moon of Phalguna marks Holi or the Festival of Colors, while the new moon of Kartika marks Diwali or the Festival of Lights (Kielhorn, 1897).

The Hindu year also includes several seasons, that correspond to the Indian climate: Vasanta (Spring), Grishma (Summer), Varsha (Monsoon), Sharat (Autumn), Hemant (Winter) and Sishira (Cold&Dewy) (Martins, 2023).

The knowledge described in the *Vedanga Jyotisha* remained a major source for Indian calendar system until the beginning of the Christian Era, when another significant text emerged: the *Surya Siddhanta* (Sewell, 1924). This text consists of 14 chapters and approximately 500 verses, and it is influenced by Greek astronomy. It outlines the rules of calendrical astronomy, including formulae and equations used to calculate the positions of the Sun and Moon. However, the astronomical values obtained through *Siddhantic* methods are not entirely accurate by modern standars, although the *Surya Siddhanta* is still regarded as a foundational reference by calendar-makers for its calendrical principles (Lian, 2000). Some scholars argue that there were originally 18 astronomical treatises (*siddhantas*), of which only five have survived, with the *Surya Siddhanta* being the most prominent and influential among those that remain, especially in the development of Indian calendars (van Wijk, 1927). Like many other Hindu texts, the *Surya Siddhanta* contains elements believed to be of divine revelation, and is traditionally attributed to Mayasura. In addition, it includes sections that are the result of the compilation and refinement of astronomical knowledge by various scholars, including the renowned mathematician and astronomer Varaha Mihira (505 A.C.) and Latadeva, a pupil of Aryabhata (476 A.C.) (Latadeva, 1935).

It is important to note that the old Indian calendars were based on mean time and arithmetical calculations, primarily derived from the Surya Siddhanta, whereas modern Indian calendars use true time and precise astronomical measurements. In this regard, there are differences between the old and modern panchangs which contain calendrical information related to rituals, festivals, and astronomical and astrological events. The accuracy of these various panchangs depends on whether they rely on older arithmetical or astronomical calculations (Lian 2000). For example, Hindu almanac corresponding to the Western years 1871-1872, is shown in Figure 1.

Figure 1 – Hindu Almanac
Photo Source – Unknown author

Furthermore, it is important to acknowledge the contributions of both the Hijri and Gregorian calendars to the development of Indian calendars. The Hijri calendar, a lunar calendar, was introduced during the Muslim invasions between the 10th and 15th centuries. The Gregorian calendar, a solar calendar, was introduced during European rule and British colonization from the 17th to the 20th centuries. Today, the Gregorian calendar is used by the Indian government for administrative purposes.

In fact, the Hijri calendar consists of 12 lunar months where the duration of each lunar month is 29.5 days, in a year of 354 days (11 days less than the solar year). The Hijri was introduced by Khalifah Umar Ibn al-Khattab, and marks the migration of Muhammad from Mecca to Medina, known as Hijrah, around 622 A.C. (Lunde, 2001).

Furthermore, the Gregorian calendar consists of 12 months, each with either 30 or 31 days. To account for the discrepancy in the Earth´s orbit around the Sun, one additional day is added every four years - known as a leap year - to adjust for the apparent movement of the Sun. This calendar divides the day into 24 hours, where each hour corresponds to 60 minutes, while the Indian national calendar divides the day into 30 muhurtas, each lasting 48 minutes (Richmond, 1956). Sunrise, noon and sunset are the most important moments of a complete day in Hindu culture. In the Indian national calendar for every 30 lunar months, one extra month, known as Adhika Maas, is added, in order to align solar year with lunar cycle (Chatterjee&Chakravarty, 1985).

CONCLUSIONS

Historically, Indian calendars are much more than just a timekeeping instruments, as they reflect the multicultural heritage of the Hindu people through the ages. There have been several contributions to the development of Indian calendars, including the spirituality of the Vedas, the astronomical knowledge of the Greeks, the lunar cycle from Islamic culture, and the solar cycle from European traditions (Lian, 2000). Consequently, Indian calendars are richer and more complex than simple lunar or solar systems, as they integrate both solar and lunar cycles to maintain a harmonious balance between these two methods of timekeeping (Ohashi, 1993). Thus, the dates of festivals, rituals and other events in Hindu culture show the harmonious integration of cultural preservation with the application of scientific astronomical knowledge by the Indian people (Stone, 1981).

Acknowledgments

The author of this essay gratefully acknowledges the unknown author for permitting the use of the photo in Figure 1, as sourced from the website: https://commons.wikimedia.org/wiki/File:Hindu_calendar_1871-72.jpg.

REFERENCES

- Chakravarty, A. (1975). *Origin and Development of Indian Calendrial Science*. Calcutta, WB: Indian Studies, Past and Present.
- Chatterjee, S.K. & Chakravarty, A. K. (1985). Indian Calendar from Post-Vedic Period to 1900 A.D.. *Indian Journal of History of Science*, 20: 252-308.
- Chopra, R.K. (2018). *The History, Science and Mathematics of Indian and Other Calendars*. B.Tech. (Mining Engg) – Kindle Edition.
- Dershowitz, N.&Reingold, E.M. (2009). Indian Calendrical Calculations. In: Yadav, B., Mohan, M. (eds.), *Ancient Indian Leaps into Mathematics*. Boston, MA: Birkhäuser, pp. 1-31.
- Duncan, D. (1999). *Calendar*. London: Harper Perennial.
- Hannah, R. (2005). *Greek and Roman Calendars*. London: Bristol Classical Press.
- Industril Research, Council of Scientific (1955). *Report of the Calendar Reform Committee.* New Delhi, ND: Government of India Publications.
- Kielhorn, F. (1897). Festal Days of the Hindu Lunar Calendar. *The Indian Antiquary*, vol. XXVI, 177-187.
- Latadeva (1935). *Sūrya-Siddhānta c.1000*. Translated by Burgess, E., Edited by Gangooly, University of Calcutta.
- Lian, L. (2000). *Indian Calendars*. Degree of Bachelor of Science with Honours in Mathematics, Faculty of Science National University of Singapore.
- Lunde, P. (2001). *Islam: Culture, Faith and History.* London: Dorling Kindersley.
- Martins, P. (2023). A Concise History of Hindu Astrology and Indian Spirituality. *Sch J Arts Humanit Soc Sci*, 11(2): 33-36.
- Ohashi, Y. (1993). Development of Astronomical Observations in Vedic and post-Vedic India. *Indian Journal of History of Science*, 28(3).
- Parikh, A.&Raval, A. (2021). Decoding Indian Calendar. *International Journal of History and Research*, 11(1): 59-66.
- Pillai, L.D. S. (1911). *Indian Chronology, Solar, Lunar, and Planetary. A Practical Guide*. Madras: Manohar Publishers.
- Pingree, D. (1978). *History of Mathematical Astronomy in India*. In: Gillispie, C.C. (eds). Dictionary of Scientific Biography, vol. XV, suppl. I, pp. 533-633.
- Richard, E. (2000). *Mapping Time.* Oxford: Oxford University Press.
- Richmond, B. (1956). *Time Measurement and Calendar Construction*. Leida: Brill Archive.

- Selbie, J., Steinmetz, D. (2011). *The Yugas*. Bothell, WA: Crystal Clarity Publishers.
- Sewell, R. (1924). *The Siddhantas and the Indian Calendar.* Calcutta, WB: Government of India Central Publication Branch.
- Stone, A. (1981). *Hindu Astrology: Myths, Symbols and Realities.* New Delhi, ND: Select Books.
- Thompson, R.L. (2004). *Vedic Cosmography and Astronomy*. New Delhi, ND: Motilal Banarsidass.
- van Wijk, W.E. (1927). On Hindu Chronology V: Decimal Tables for Calculating True Local Time, According to the Sūrya-Siddhānta. *Acta Orientalia,* vol. V, pp. 1-27
- Ziadeh, N., Ronan, C., Bickerman, E.J., Schmidt, J., Lin, C., Proskouriakoff, T., Wiesenberg, E.J., van Buitenen, J.A.B. (2023). *Calendar*. EncyclopaediaBritannica. https://www.britannica.com/science/calendar.