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Ancient Indian Mathematics

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(Abstract)

The National Education Policy (NEP) 2020 emphasizes the integration of Indian Knowledge Systems (IKS) into curricula to strengthen education in its cultural and intellectual context. This integration is crucial for ensuring that students are rooted in indigenous traditions while developing global competencies. The Indian Knowledge tradition, extending from ancient times through the pre-colonial era, reflects timeless wisdom in diverse fields such as mathematics, astronomy, medicine, metallurgy, and philosophy. Renowned scholars like Aryabhata, Varahmihira, Charaka, Susruta, Brahmagupta, Madhava and Bhaskaracharya contributed significantly to global learning, particularly in mathematics, where concepts such as zero, the decimal system, and algebraic methods originated.

Education in ancient India, imparted through Gurukulas and Parishads, adopted a holistic and multidisciplinary approach that combined intellectual inquiry with moral and ethical grounding. However, colonial narratives marginalized these achievements, branding them as primitive or outdated, and current curricula continue to underrepresent them. Such neglect undermines the recognition of India's scientific contributions and their potential relevance today.

This paper argues for the urgent inclusion of ancient mathematical knowledge within formal education to promote sustainable development, critical thinking, and problem-solving. Traditional methods of calculation, as documented in ancient treatises, often provide simpler and faster solutions compared to modern techniques taught in schools. Recognizing and revitalizing these approaches under NEP 2020 is essential for creating a more balanced, inclusive, and contextually relevant education system. Ultimately, this work highlights the need to protect, conserve, and transmit indigenous mathematical wisdom as an integral part of global educational discourse.

Keywords- Indian Knowledge System (IKS), National Education Policy (NEP) 2020, Ancient Indian Mathematics, Holistic Education

1. INTRODUCTION

"India was the motherland of our race
and Sanskrit the mother of Europe's languages.
India was the mother of our philosophy,
of much of our mathematics, of the ideals embodied in
Christianity…. of self-government and democracy.
In many ways, mother India is the mother of us all"

- **Will Durant**, American historian (**1885-1981**)

Our ancient knowledge system has a long history. India's ancient knowledge system is rooted in a history spanning over 5000 years, encompassing culture, literature, archaeology, and social practices. While Western scholars date it between 5000–8000 years, indigenous traditions regard it as far more ancient and firmly established. Evidence from Mohenjo-daro (c. 3000 BCE) demonstrates advanced urban planning, metallurgy, and social organization, reflecting a highly developed civilization. Throughout history, India witnessed both foreign invasions and internal conflicts, leading to the rise and decline of kingdoms. Yet, external influences often enriched rather than diminished indigenous traditions, bringing new perspectives to Hindu society. Central to this knowledge system were the Brahmanas, who embraced simplicity and devoted their lives to promoting science, philosophy, arts, and culture. Respected by rulers and society, they served as gurus, legislators, and custodians of wisdom. Their oral traditions played a vital role in preserving and transmitting knowledge, underscoring the significance of orality in the Indian Knowledge System.

In India, the preservation and transmission of ancient knowledge relied primarily on oral traditions until only a few centuries ago. However, with the introduction of significant changes in the education system nearly 200 years ago, this continuity was disrupted, leading to a decline in the practice and near loss of its sustained flow. Reviving, preserving, and documenting this wisdom within the Indian Knowledge System is therefore crucial, as it represents not only cultural identity but also economic resilience and national pride. A deeper engagement with India's knowledge traditions reveals an immense repository of intellectual and cultural wealth that has shaped everyday life since antiquity. The oral tradition of *Śruti*, rooted in the Vedas, exemplifies this transmission from teacher to student across generations. Similarly, the two great epics—the *Ramayana* and the *Mahabharata*—were originally passed down orally before being recorded, and continue to provide ethical and moral guidance through diverse retellings and adaptations.

Some of the important work of IKS has been presented in a table 1.1 as follows:-

Table 1.1: Some of the Important work of IKS

Sl. No.	Name of the Work	Period	Remarks
1	Vedas	1500-1200 BCE	Sanskrit Literature/Scriptures of Hinduism, passed onto various sages by The God
2	Puranas	3rd-10th Century, BCE	Spoken by Brahma, compiled by Ved Vyasa, they are named after major Hindu Gods and cover topics about Legends ad other traditional lore, including topics such as cosmology, genealogy of Gods, goddesses etc.
3	Mahabharata	400-200 BCE	Smriti text authored by Sage Vyasa, covering events and after effects of the Kurukshetra war between Kauravas & Pandavas. This also includes Bhagavad-Gita and various stories.
4	Ramayana	7th-5th Century, BCE	By Valmiki, about 7th Avatar of Lord Vishnu
5	Vedanga-Jyotisa	1550-1150 BCE	Supposedly authored by Maharishi Lagadha, on Astronomy/ Astrology & Time Keeping

6	Manu-Smriti	1st-3rd Century CE	Authored by Manu & Bhrigu, on Law
7	Sulba-Sutra	800-200 BCE	Appendices to Vedas, Mathematics of Vedic Period, authored by scribes including Baudhayana, Manava, Apastamba & Katyayana etc.
8	Susruta-Samhita	1500-1000 BCE	Ayurveda, expounded by Dhanvantari and compiled by Susruta, Son of Vishwamitra
9	Astadhyayi, Nirukta	350 BCE	Authored by Panini, Astadhyayi is Grammar Text of Sanskrit. Nirukta is Ancillary Science/ one of six Vedangas – Etymology.
10	Natyasastra	500 BCE-500 CE	Sage Bharata, about Dance & Theatre
11	Buddhist Texts	1st Century BCE-3rd Century CE	Philosophy, Mathematics, by various monks over many sittings of many councils
12	Nyaya and Vaisesika Sutras	Nyaya Sutra: 100 CE, Vaisesika Sutra: 100 BCE	Sage Gautam authored Nyaya Sutra on Science of Logic & Debate. Sage Kanada authored Vaisesika sutra on Building blocks of reality
13	Jaina Mathematical Works	BC 300 – AD 400	Following decline of Vedic religion, Jaina (& Buddhism) religions gave rise to Jaina Mathematics authored by various scholars including Mahavira & Varahmihira.
14	Artha Sastra	3rd-2nd Century BCE	Attributed to Chanakya/ Vishnugupta / Kautilya of Takshila, on Governance (Public Administration, Finance, Foreign Policy etc.)
15	Chandah-sastra	900-700 BCE	Transliteration of Sutras by Pingala in the form of Chandas
16	Yoga-Sutras	400 CE	Attributed to Sage Patanjali
17	Kamasutra	4th Century CE	Attributed to Vatsyayana, deals with philosophy & theory of Love and Desire
18	Maha-bhasya	2nd Century BCE	Attributed to Patanjali, commentary on selected rules of Sanskrit Grammar based on Panini's treatise.
19	Rasaratnakara	1500 CE	Attributed to Jain Poet Salva, on Alchemy-Rasa in Sanskrit Poetics
20	Caraka-samhita (Charaksanhita)	100 BCE-200 CE	Attributed to Caraka and is a revised treatise on Ayurveda based on Agnivesha Samhita
21	Samkhya-Darsana (Sankhya)	Before 500 BCE	Founded by Muni Kapila, views reality composed of two independent principles: Purush (Spirit/Consciousness) and Prakriti (Matter/ Nature-including human mind)
22	Amarakosa (Amarkosh)	700 CE	Is popular name for Namalinganushasanam, a thesaurus in Sanskrit written by Amarsimha, concerning Nouns and Genders.
23	Surya-Siddhanta	800 C E- 400 CE	Sanskrit treatise on Indian Astronomy, attributed to Latadeva.
24	Brhat-samhita	6th Century CE	Attributed to Varahmihira, is a Sanskrit language encyclopaedia on Astronomy, Astrology and other related.
25	Aryabhatiya, Arya-Siddhanta	476-550 CE	First of the major Mathematician-astronomer, Aryabhata authored the Aryabhatiya (a compendium of mathematics and astronomy) & the Arya-Siddhanta (astronomical Computations

26	Panca-siddhantika (Panch Siddhanta)	505 CE	Written by Astrologer-astronomer Varahmihira, the text discusses five contemporary astronomical schools and their treatise: Surya, Romans, Pulisha, Sage Vasishtha & Pitamaha-Brahma
27	Mayamata	5th Century CE	A treatise on Dwelling – Vastushastra,
28	Brahmasphuta-siddhanta	628 CE	Written by Brahmagupta, it is a text of mathematical astronomy, including first good understanding of the role of Zero, linear & quadratic equations, computing square roots, Brahmagupta's Identity and Theorem etc.
29	Manasara	400-700 CE	Also known as Mansara Shilpa shastra, it is an ancient Sanskrit treatise on Indian architecture and design, including guidelines o building Hindu Temples.
30	Aryabhatiya-bhasya, Mahabhaskariya	500 CE, 629 CE	Treatise on Classical Hindu astronomy and astrology and a benchmark in mathematics, text by Aryabhata including commentary and text by Bhaskara I
31	Narada-Silpa-sastra	500 CE	Text on Architectural Civil Engineering, it covers town planning, construction of dams, roads, lakes, private and public buildings etc.
32	Ganita-sara-sangrah	9th Century CE	Written by Mahaviracharya, it is a gist of Mathematics and first text book on arithmetic in present times. It also describes the current method of finding LCM
33	Siddhanta-sekhara	1019-1066 CE	Written by Shripati, it is a major work on Astronomy, covering 19 chapters
34	Yukti-kalpataru	1000-1055 CE	A Sanskrit treatise, written and compiled by Raja Bhoj on Ship Building and other topics like selection of woods, jewels etc.
35	Samarangana-sutradhara	1000-1055 CE	A Sanskrit treatise written by Raja Bhoj on Classical Indian architecture – Vastu Shastra and covers discussions on topics like Town Planning, sculpture arts, house architecture etc.
36	Siddhanta-siromani	1150 CE	A Sanskrit treatise written by Indian Mathematician Bhaskara II. It includes 1st Part as "Lilavati" about arithmetic & measurement, 2nd Part as "Beejaganita" on Algebra and 3rd part as "Ganitadhyaya" & "Goladhyaya".
37	Kasyapa-silpa-sastra	10th Century CE	Attributed to Sage Kasyapa and others, it is a treatise on Temple Architecture.
38	Astanga-hrdaya, rasaratna-samuccaya	13th Century CE	Astanga-hrdaya covers Astanga Ayurveda (Eight Limbs Ayurveda) and specially covers many of E.N.T disorders that were not covered by earlier treatises like Caraka Samhita & Susruta Samhita. Rasaratna-samuccaya relates to properties and preparation of mineral & metallic origin drugs. Both were authored by Vagbhata
39	Kerala School of Mathematics	1380-1420 CE	Founded by Sangamagrama Madhavan, it included members Paramesvaran Namputiri, Damodara, Nilakantha Somayaji, Jyeshthadevan etc. it was a school of mathematics and astronomy and

			independently discovered many mathematical concepts like trigonometric functions.
40	Graha-laghava	1520 CE	Written by Ganesa Daivajna, it deals with science of Astronomy.

(Source: Compiled by author on the basis of the information collected from various textbooks)

2. HISTORICAL FOUNDATIONS OF ANCIENT MATHEMATICS

The origins of ancient Indian mathematics can be traced to the Harappan civilization, which flourished along the banks of the Indus River during the third millennium BCE. While the Harappans developed advanced brick technology, references to mathematical concepts are more explicitly found in the Vedic era, particularly in the *Śulbasūtras*. These texts, composed to guide the construction of sacrificial altars, illustrate early applications of geometry and arithmetic. Mathematics during this period was primarily oral, preserved and transmitted in the form of metrical verses within the Vedic corpus. Written records from India do not extend beyond 600 BCE, marking a limitation in the historical evidence.

Subsequent developments emerged during the Gupta period (4th–5th centuries CE) with the composition of the *Siddhāntas*—astronomical treatises that introduced significant advancements. Notably, these works contain references to trigonometric concepts based on the half-chord and employ the terms "sine" (*jiya*) and "cosine" (*kojiya*), derived from Sanskrit. Together, these sources highlight the continuity and evolution of mathematical thought in India, laying the foundation for later systematic treatises. Let us have a look at the Figure 2.1 showing the progress of mathematical numbers in India.

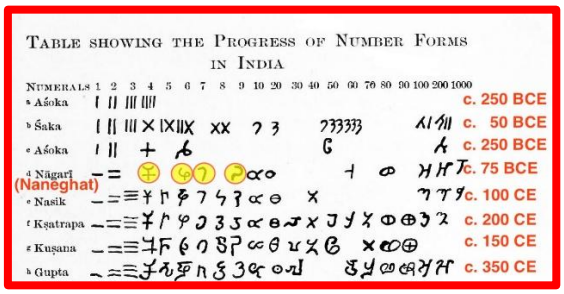
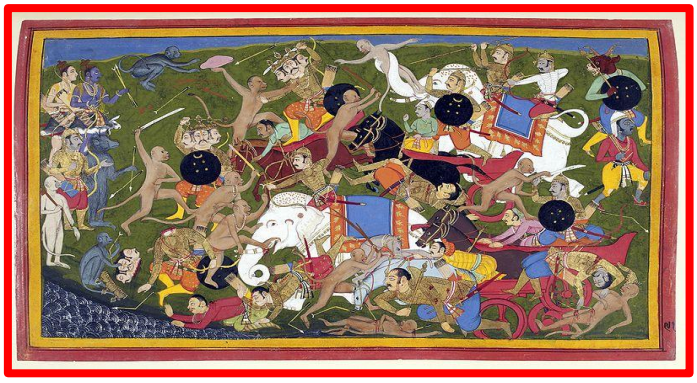


Figure 2.1: 1911 sketch of numerals script
(Source: Wikimedia)

Here is a notable example from *Valmiki Ramayan*. Some of the largest numbers are referred to and defined in the *Valmiki Ramayan*. Valmiki defines these numbers while describing the size of Sri Ram's army in the *Yuddha Kanda*, (६-२८-३३)

शतम् शतसहस्राणाम् कोटिमाहुर्मनीषिणः
शतम् कोटिसहस्राणाम् शङ्कुरित्यभिधीयते ॥ ६-२८-३३
"Wise men call a hundred lakhs as a crore. A hundred thousand crores is reckoned as a Shanku."(Valmiki Ramayana Yuddha Kanda, Sarga 28)



(Pic 2.1: A Picture depicting Ram's army in battle at Lanka)
(Source: Wikimedia).

Moreover evidence shows that Ancient Knowledge system was strong and precise and this knowledge cannot be built in a day. Some of the examples are as follows:-

जुग सहस्त्र जोजन पर भानु लील्यो ताहि मधुर फल जानू ।(श्रीहनुमान चालीसा , चौपाई १८)

This verse is taken from Hanuman Chalisa which means "The sun which was at a distance of twelve thousand **divine miles**, you tried to swallow it, thinking it to be a sweet fruit". Here let us understand the distance of sun from earth.
i divine yuga is 12,000 divine years.
Here the Sanskrit meaning for the word *Sahasra* is one thousand, and one *yojana* is roughly equal to eight miles..
so yuga-sahasra-yojana = 12000 x 1000 yojanas.
= 12000 x 1000 x 8 miles (1 yojana =8 miles)
= 9,60,00,000 miles (1 mile = 1.6 Km)
= 9,60,00,000 x 1.6 km = 153,600,000 km.
which means 96 million miles or 153.6 million kms.
This was the distance between the Sun and the Earth is calculated by India in the 16th century BCE and NASA calculated the distance with latest technology to be 149,600,000 km. It suggests that Tulsidas (the author of Hanuman Chalisa) possessed accurate astronomical knowledge in the 16th century, even without modern scientific tools.

The period 400 BCE to 400 CE have been a period of great activity, where Great Jaina meta Physician *Umasvati*, *Patanjali, Kautilya, Nagarjuna, Caraka, Asvaghosa, Bhasa*, *Kalidas* flourished. Great astronomical *Siddhantas*, *The Surya, The Pitamaha, The Vasistha, The Parasara* were written during this period and decimal place value notation was refined.

Calculations are used in all the worldly transactions including Vedic or religious affairs. Be it a science of love, or a science of wealth, art of music and drama, medicine, knowledge of architecture, knowledge of patterns of rhythm and sound, poetics and logic, science of computation/calculation(*Ganita)* holds high place. It is utilised even in relation to the movement of sun and other heavenly bodies in forecasting eclipse and unification of planets, in calculating the number, diameter and perimeter of islands, oceans and mountains and

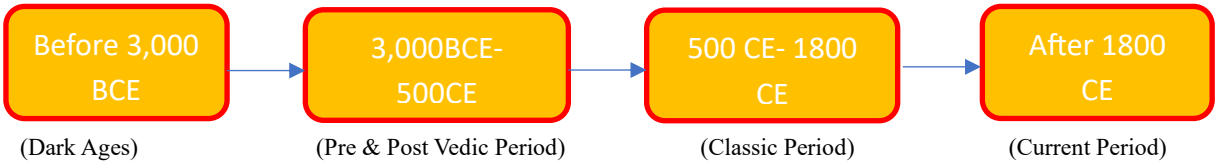
dimension of rows of habitations and halls belonging to inhabitants of the world. (**Ganita-sara-sangraha**, **verse 9-12, p.2**)

The crux of saying all this together is that these are dependent upon (*Ganita*) and cannot exist as apart from *Ganita* (measurement and calculation).
Mathematics played a very important role in Hindu education from the period of kings and noblemen. Major subjects of study were *lipi* or *lekha*(alphabets, reading and writing), *rupa* (drawing and geometry) and *ganana (*arithmetic). *Kautilya* (400 BCE) mentioned in *Arthasastra* that after having undergone the ceremony of tonsure , the student shall learn the alphabets (*lipi*) and arithmetic (*samkhyana*). Same is evident from the inscription found in *Hathigumpha* that king *Kharavela* (163 BCE) of *Kaling* spent nine years (elementary stage of education) in learning *Lekha, rupa and Ganana*.
Ganita literally translates to "the science of calculation" . This term is a very ancient one and occurs very often in Vedic literature. *Vedanga Jyotisha* (1200 BCE) gives it the highest place of honour.
"As the crests on the heads of peacock, as the gems on the hoods of snakes, so is *Ganita* at the top of sciences known as the *Vedanga*."

"**Yatha sikha mayuranam naganam manayo yatha**
Tadvadvedangasastranam ganitam murdhani sthiham."
"यथा शिखा मयूराणां नागानां मणयो यथा तद्वदवेदांगशास्त्रनाम गणितम मूर्धनि स्थितं।"

(Vedang Jyotish, Verse 4)

Indian mathematicians and astronomers have made remarkable contribution in the field of Mathematical Astronomy giving birth to the treatises on Arithmetic, Algebra, Geometry and trigonometry including the development in the field of infinite series expansion and trigonometric expressions. Greater of all these developments was the contribution of Decimal system and place value system, which is incredible in the history of mankind. The decimal place value system permitted the subject of mathematics to be advanced in ways that would have been unlikely.
The history of Indian mathematics can broadly be categorised as follows:-



1) Before 3,000 BCE (Dark Ages)
2) 3000 BCE - 500 CE (Pre Vedic and post Vedic period)
3) 500 CE – 1800 CE (Classic Period)
4) After 1800 CE (Current Period)

Table 2.1 Some of the Major Contributors in Mathematics

Before 3000 BCE	**3000 BCE-500 CE**	**500 CE-1800 CE**	**After 1800 CE (Current Period)**
Veda	Taittareya Samhita	Aryabhata	Bapudev Shastri
Purana	Shatapata Brahmana	Brahmagupta	Sudhakar Dwivedi
Ramayana	Yajurveda	Sridhara	Srinivasa Ramanujan

Mahabharata	Atharveda	Mahavira	Swami Bharti Krisnateerthaji
	Rig-Veda	Bhaskara I	Shakuntala Devi
	Sulbhasutra	Bhaskara II	
	Jain Mathematics	Narayana	
	Bakshali Manuscript		

Before 3,000 BCE is called Dark ages. It is called dark ages as Europe was enveloped in darkness due to a lack of cultural advancement. As per Merriam Webster Dictionary, Dark age is a time during which a civilisation undergoes a decline.
3000 BCE - 500 CE is called Pre Vedic and post Vedic period. Major work done in this era includes discovery of "Zero" and "10 place value method". This Richa from Rigveda indicates the usage of numerals based on 10.

द्वादश प्रधयश्चक्रमेकं त्रीणि नभ्यानि क उ तच्चिकेत ।
तस्मिन्त्साकं त्रिशता न शङ्कवोऽर्पिताः षष्टिर्न चलाचलासः ॥ (**Rig veda 1.164.48**)

Translation is "The fellies are twelve; the wheel is one; there are three axles; but who knows it? Within it are collected 360 spokes, which are, as it were moveable and immoveable." This means that the wheel is the year of twelve months, the three axles are the double seasons, or hot, wet and cold and three hundred and sixty spokes are the days of the lunar-solar year. In the above Richa, Dwadesh (12), Treeni (3) and trishat (300) numerals have been used. This indicates the use of writing numerals based on 10. In this age, the discovery of 'Zero' and the '10 place value method' is a great contribution to the world by India in the arena of mathematics.
Various instances have been found in Vedas , where ten has found the basis of numeration in India and that too with long series of number names for very high numerals. Greeks had no terminology above *myriad* (10^4)and Romans above the *mille* (10^3) , the ancient Hindus dealt freely with the numbers up to 18 denominations. In modern times also, the numeral language of India is superior than other nations. In *Yajurveda Samhita*, (**Vajasaneyi**) we find the following numeral denominations:-

Table 2.2 Numerals used in Yajurveda Samhita

Eka	1		Arbuda	10,000,000
Dasa	10		Nyarbuda	100,000,000
Sata	100		Samudra	1000,000,000
Sahasra	1000		Madhya	10,000,000,000
Ayuta	10,000		Anta	100,000,000,000
Niyuta	100,000		Parardha	1000,000,000,000
Prayuta	1,000,000			

(Source: *Yajurveda ka Subodh bhashya,* New Delhi, India, 1985, p. 298, para 2)

The same list occurs in *Taittareya Samhita* (**vii.2.20**). The *Pancavimsa Brahmana* has the *Yajurveda* list up to *nyarbuda* inclusive and then *Nikharva, vadava ,akshiti* etc. The *Sankhyayana Sutra* continues the series after *nyarbuda* with *nikharva*, *Samudra, salila, antya, Ananta*(=10 billions). Since each denomination is 10 times the previous number, so they were called *dasagunottara* Samjna.

Mention of big numbers up to 29 places is found in Jaina Canonical work *Anuyogadvara-Sutra* (100 BCE) while describing the total number of human being in the world is given as " the number which occupies 29 places(sthana), or it is beyond 24th place and within the 32nd place , or it is number obtained by multiplying sixth square(of two) by (its fifth square) i. e. 2^{96} or a number which is divided (by two) ninety six times." According to commentator Hema Candra (CE 1089), another big number mentioned in *Sirsaprahelika* is $(8,400,000)^{28}$, which occupies 194 notational places(anka-sthanehi). The first use of the word "place" for the denomination was used in Jaina work. Aryabhata I (499 CE) also used the names for denominations. Sridhara (750 CE) gave 18 names of the places. Mahvira (850CE) gave 24 notational places as *eka, dasa ,sata ,sahasra ,dasa-sahasra, laksa, dasa-laksa, koti, dasa-koti, sata-koti, arbuda, nyarbuda, kharva, mahakharva, padma, maha-padma ,ksoni, maha-ksoni ,sankha, maha-sankha, ksiti, ksobha, mahaksobha*.

Bhaskara II(1150 CE) also agreed with that of Sridhara except for mahasaroja and saritapati which he replaced by their synonyms *mahapadma* and *Jaladhi*.

Table 2.3 A comparison of the numerals used by various Mathematicians

Aryabhata I (499 CE)	**Sridhara (750 CE)**	**Mahavira (850CE)**	**Bhaskaracarya II (1150 CE)**	**Narayana (1356 CE)**
Eka	Eka	Eka	Eka	Eka
Dasa	Dasa	Dasa	Dasa	Dasa
Sata	Sata	Sata	Sata	Sata
Sahasra	Sahasra	Sahasra	Sahasra	Sahasra
Ayuta	Ayuta	Dasa-sahasra	Ayuta	Ayuta
Niyuta	Laksha	Laksha	Laksha	Laksha
Prayuta	Prayuta	Dasa-Laksha	Prayuta	Prayuta
Koti	Koti	Koti	Koti	Koti
Arbuda	Arbuda	Dasa-koti	Arbuda	Arbuda
Vrnda	Abja	Sata-koti	Abja	saroja
	Kharva	Arbuda	Kharva	Kharva
	Nikharva	Nyarbuda	Nikharva	Nikharva
	Maha-saroja	Kharva	Maha-padma	Mahabja
	Sankh	Mahakharva	Sankh	Sankh
	Sarita-pati	Padma	Jaladhi	Paravara
	Antya	Maha-padma	Antya	Antya
	Madhya	Ksoni	Madhya	Madhya
	Parardha	Maha-ksoni	Parardha	Parardha
		Sanka		
		Maha-sankha		
		Ksiti		
		Maha-Ksiti		
		Ksobha		
		Maha-ksobha		

One of the most important indigenous numeral notation is decimal place value notation. In this system there are nine *anka* from one to nine and the tenth one is zero, which was called *sunya*.

The literal meaning of sunya is empty. G. B Halsted categorically mentioned that creation of Zero mark, giving a name, a picture, a symbol and helpful power to airy nothing is the characteristic of the Hindu race. Professor Halsted mentioned "The importance of the zero mark is that it is adopted by all civilised people of the world."

3. HISTORY OF ZERO AND INDIAN NUMBER SYSTEM

The concept of zero was already in India for thousands of years, the concept of Shunyata of emptiness of mind experiencing emptiness is a cornerstone of many of the Indian philosophical traditions and so zero was already ingrained as a concept in the culture so that gave the atmosphere to develop this incredible invention the Indian number system the first surviving reference that we have it probably goes back well before this the writing of this writing in the system but the first surviving reference in which the Indian system of enumeration was used is Bakshaali Manuscript (200-400CE).

When we use only two symbols 0,1 instead of ten 0,1,…..,9, this is called binary system instead of decimal system except that we are using two symbols instead of ten symbols. This binary system. The Binary system first occurs in *Pingala's Chhandashaastra*, Around 300 BC, and is now basis for all computer computation.

Conceptual and mathematical notions of zero in India existed several centuries before the appearance of its written symbol. The earliest confirmed example of a zero sign, represented as a dot, was discovered not in India but in Southeast Asia . Within the development of Indian numeral systems, there is an approximate gap of 900 years between the non-positional Brāhmī numerals, used until the third century BCE, and the emergence of positional 'Hindu' numerals, which appear in manuscripts and inscriptions from the sixth or seventh century CE (**Datta & Singh, 1938; Bag, 1979**).In Bakshaali Manuscript , the number zero was written as a dot, But Brahmagupta formalised this dot -this Shunya as par with other number and the properties of zero as the properties of other numbers were formalised in Brahmagupta's Brahmasphutasiddhanta in 628 CE. This was the first time when the number zero was not used as a placeholder but the number in it.

The Hindu number system was transmitted to Arab world around 800 CE. It was popularised by great Persian mathematician Al-Khwarizmi (On the Calculation with Hindu Numerals, c. 825 CE) and by the great philosopher Al Kindi (On the use of Hindu Numerals, c. 830). When Arabians and Persians were referring to Hindu number System, then Hindu wasn't necessarily referring to a religion, it was referring to the people who live near the Sindhu River. The sound "S" moves to Persia and it becomes "H" sound. So the civilization/people around the Sindhu river were known as Hindus and so the number system was coming from that region was called Hindu Number system.

From the Arab world, the Hindu number system transmitted to Europe by around 11CE. The European thus learned this Hindu number system from Arabs so mistakenly called it the "Arabic Numerals". Textbooks in India finally corrected this around the world over the last several years.

4. CONCLUSION

The study of ancient mathematics shows that India made remarkable and original contributions that deeply influenced the growth of mathematical knowledge across the world. Ancient mathematics in India holds an overpowering significance in the history of the subject. The ancient mathematics of India made revolutionary innovations , ranging from geometric principles in Vedic texts to the discovery of Decimal system and concept of Zero by Aryabhata. Brahmagupta's work on negative numbers and Bhaskaracarya's exploration of infinity further enriched India's legacy. The discoveries and achievements of Indian Mathematics have left a long-lasting impact on the world of mathematics and continue to inspire scholars. The classical era of Indian mathematics stands as a testimony to the intelligence of ancient Indian mathematicians and their continuing pursuit of knowledge and wisdom. In essence , indigenous mathematics provides the language and tools that allow us to describe, analyse and understand both the physical world and abstract concepts. Without it, the scientific and technological progress we've seen would not have been possible.

However, these contributions have often been ignored or undervalued in mainstream history due to the motivations and biases of certain scholars who shaped a Eurocentric view of mathematical development. Many historians from the colonial and post-Enlightenment periods aimed to present Europe as the center of intellectual progress. As a result, the rich mathematical traditions of India—reflected in the works of scholars like Āryabhaṭa, Brahmagupta, and Bhāskarācārya—were overlooked or presented as secondary to Greek and European achievements.

This research highlights that such neglect was not accidental but rooted in cultural and political attitudes that sought to reinforce the superiority of Western knowledge systems. The exclusion of Indian mathematics from the global narrative represents a significant injustice to the shared intellectual history of humankind. By analysing the motivations behind this neglect, it becomes clear that revisiting and reinterpreting mathematical history is necessary to ensure fairness and accuracy.

Recognizing India's contributions helps restore balance and inclusivity to the story of mathematics. It reminds us that mathematical knowledge did not develop in isolation but through the combined efforts of many civilizations. Reintegrating India's mathematical heritage into global awareness is therefore both an academic duty and a step toward honouring the true, interconnected evolution of human thought. Hence there is a need to preserve, protect and reawaken our ancient mathematics. The intent of reawakening of Traditional Knowledge is not only being stressed upon at the national level but it is emphasised at international level also through United Nations Permanent Forum on Indigenous Issues in the 2019 session.

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