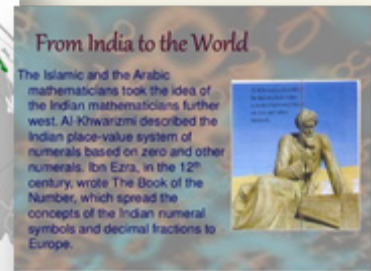


1

India's original contribution to Global systems of

- Language (literary text) and mathematical systems (numeric text)



‘...Meanwhile, in Persia, Muslims came in contact with India. It was from Sanskrit writings that they acquired, during the 8th century, their first knowledge of astronomy. About 830 AD, Muhammad ibn Musa al-Khwarazmi, a translator of mathematical and astronomical books from the Sanskrit, published a book which was translated into Latin in the 12th Century, under the title ‘Algoritmi de numero Indrum’. It was from this book that the West first learnt of what we call ‘Arabic numerals, which ought to be called ‘Indian’. The same author wrote a book on Al-gebra which was used in the West as a text book until 16th century.’

Sir Bertrand Russel

*Page 416, Chapter X : Mohammeden Culture and Philosophy,
A History of Western Philosophy*

“The same holds good with respect to sciences. India has given to antiquity the earliest scientific physicians, and, according to Sir William Hunter, she has even contributed to modern medical science by the discovery of various chemicals and by teaching you how to reform misshapen ears and noses. Even more it has done in mathematics, for algebra, geometry, astronomy, and the triumph of modern science — mixed mathematics — were all invented in India, just so much as the ten numerals, the very cornerstone of all present civilization, were discovered in India, and are in reality, Sanskrit words.”

*Swami Vivekananda
India's gift to the world*

Textual language

The dissemination of Sanskrit to the world happened in four distinct directions:

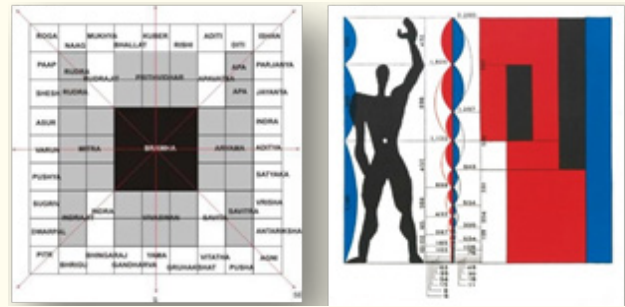
1. The language of the Rig and Yajur Vedas are a very remote variety of Sanskrit. A later version of Sanskrit emerged as an extended portion of the Atharva Veda. The later version got transferred to lands further west. Prophet Atharvan Zoroaster was a forerunner of the movement. In Greater Khorasan, i.e., in lands stretching from eastern Persia to Azerbaijan, adjoining the Indus Valley and mostly in the lands further east (Pishon valley or Land of Gold/ Havilah as mentioned in the Book of Genesis), the ancient Persians or Zoroastrians wrote their first Gathas, in a language closer to these later forms of Sanskrit. From there, the Hittites, in the Anatolian volcanic highlands lying further west, picked up the system from the ancient Persians. The Hittites from Milesian system of cities and Troy transmitted the first language systems of the Greeks of Thrace and the Aegean Sea. The Balkan or the oldest eastern European civilization was born from this east to west movement. Broadly we call this the main branch of Indo-European language tree (branch 1).
2. As opposed to the northern Indian or the relatively non-cursive language systems, a 2nd or the Deccan branch 2 (Dravida desha) of Indian Sanskrit was developed mostly following a cursive script form influencing further extended branch of Dravidian-Elamite form leading to the early Abyssinian/ Arabic branch of languages covering Cush (ancient Egypt and Ethiopia) too. The ancient Sumerian language was a part of this branch 2.
3. In the sea route, the ancient mariners, the Phoenicians transmitted the language system from East to West, from all across the Persian Gulf to the eastern Mediterranean. It led to a third branch of language, which is evident in the Semitic system of linguistics. The later Babylonian branch developed out of this influence. 'Ibri or Hebrew forms of language belong to this branch 3. Of course, there are some overlaps between 2 and 3, which is matter of detailed research.
4. Whereas, in lands across Tartary, stretching north off the Himalayan-Hindukush ranges, a fourth branch developed as a system of graphic language or hieroglyphics. Branch 4 was akin to the Indus valley script and the pictorial system of linguistics went further north-east to Mongolia, China and Japan on the one hand, and the Finno-Ugric system of linguistics of Europe, on the other hand.

But behind all the four branches, all originating from different layers of Sanskrit in history, there was a common and a powerful transfer of galaxy of ideas from where words are formed. In Indian cosmology, Purusha and Prakriti are seen as Idea (formless and vibration driven) and words (expressive and text driven), one inseparable from the other. Thus, in tracing language tree, Ideation or 'Bhaba' is the primordial cause or ideational semiotics, from where structured semantics and syntax are further derived. Thus the etymological idea of 'Roma', is rooted in ROM, which pertains to desire, ecstasy and progression in reverie. Words like Romance in Latin and Ramana have stressed the first part and evolved. Where words like Ratha in Sanskrit or Rotary was in European language have use the other side of progression. But in the Vedas, both are integrated when we see the word RAMA, which means both movement or progression and divine ecstasy as a cause of that movement. Another instance is the word, 'JOY', which mainly stands VICTORY in Sanskrit, as the causal semantics, whereas in later European language it stands mainly for bliss or happiness, which is mostly an Effect of that victory.

Here is an example of that galaxy covering just 2 systems, anthropometrics and numeric.

Systems of Anthropometric

- Anguli — Angle (fingers and their spread)
- Anga – Wing
- Anta – Anti (the other side)
- Dwara – Door
- Danta – Dental
- Hasta – Hoist (which is handy (can be lifted up))
- Kala – cella, a cell (a part of an sector or whole)
- Kendra – Centra (central) – going within from outside or from below
- Kala – kilak: Clock
- Kala-antara: Calendera (Calendi) - call of time.
- Kalash – Class (a group, a class; a container); ecclesia (classification; grouping)
- Kara – Chiro (palm)
- Krisha / Karsha – Cursory; Course (center line/ axis line/ progress line)
- Loka – Location; Locus standee
- Pada – Foot, footage, podium (base or the feet)



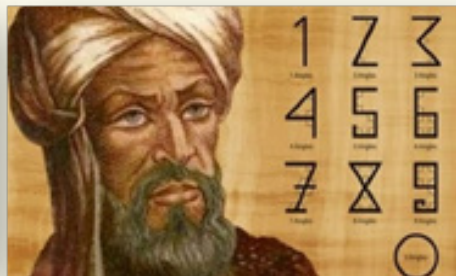
- Nasa – Nose; nasal
- Rupa – Roof (final enclosure or a footfall of form)
- Sakala – School (assembly of all kala); scala: scaler (scaling – including all)
- Pala – Filla, pillar (any statute)
- Patra – Pottery (container)
- Sita – Site (point of helm line)
- Sthala – Stall (installation on ground)
- Sthithi – Static
- Stara – Storey (levels), store, steering (leveling person)
- Sutra – Suture (thread)
- Twastha /Takhanna – Techno (sculpturing; art and science of making things)

Numerological system:

- *Eka, Oikyyo (one, unity, a single house): Oikos (unified house or point of convergence) – words like ecology (OIKOS-LOGOS or unity of logic and system building) and economics (OIKOS-NOMOS or the unity of external arrangements and relationships) have originated from here*
- *Dui, Dwaita – dual (of two), duet (by two): dia-meter (double metric around a center point or Greek God Dionysus - meaning twice-born – nascent / naza (reth) / natal*
- *Teen, Tri – Tri-angle, Triple, Trigonometry (Triple combination of Gunnas / Konas)*
- *Char, Kshetra (usually four sided) – Quadro, Quarter*
- *Panch, Poncho – Penta-gonos*
- *Schoy, Sashta – Sexta, Six*
- *Sapta – Sapta, septuplet; Seven (Shivan – Lord of seven planes)*
- *Asta – Octo, Eight*
- *Novom – Novem, Nine*
- *Das, dasam – Decem, Decimal system*

Numeric language

Hindu–Arabic numeral system										
European (descended from the West Arabic)	0	1	2	3	4	5	6	7	8	9
Arabic-Indic	•	١	٢	٣	٤	٥	٦	٧	٨	٩
Eastern Arabic-Indic (Persian and Urdu)	•	۱	۲	۳	۴	۵	۶	۷	۸	۹
Devanagari (Hindi)	०	१	२	३	४	५	६	७	८	९
Tamil	௦	௧	௨	௩	௪	௫	௬	௭	௮	௯



Apart from textual systems as an essence of Idea or thought, humanity has also emphasized ‘Numbers’ as the expression of that in a logical sequence. Today, number systems have evolved as what we call CODING, a unified attempt to decipher the cipher or intangible. The two key numbers, 1 and 0, i.e., unity and cipher, have essentially been initiated by the Indian Rishis or Sages. Today, it has evolved to be the binary system.

The pursuit of deep systems of Indian Cosmology have had led to a great realization, the underlying unity of the universe as an ensemble of super intelligence and consciousness, and the position of an evolving humanity within that ensemble. Thus, the ideas of the Macrocosm (Brahmanda) and Microcosm (Pinda) are the fundamentals of Indian cosmology, which also influenced the earliest Milesian Greek philosophers. From Plato, Protagoras and Pythagoras to Plotinus, Spinoza and Le Corbusier, it somehow survived in western system of the Modular and the ‘Human form (Anthropic principle) as the measure of all things’. Later, the branches of anthropometrics and Ergonomics were born from these earliest literature. So was the Book of Architecture by Vitruvius in ancient Greco-Rome, that was re-discovered after the dark Ages under a Church, in an ancient pagan cell at St. galen, Switzerland. It revolutionized the later European concepts of Beauty, Formation, and Utility, and ultimately, triggered the European civilization.

The basics of Indian system

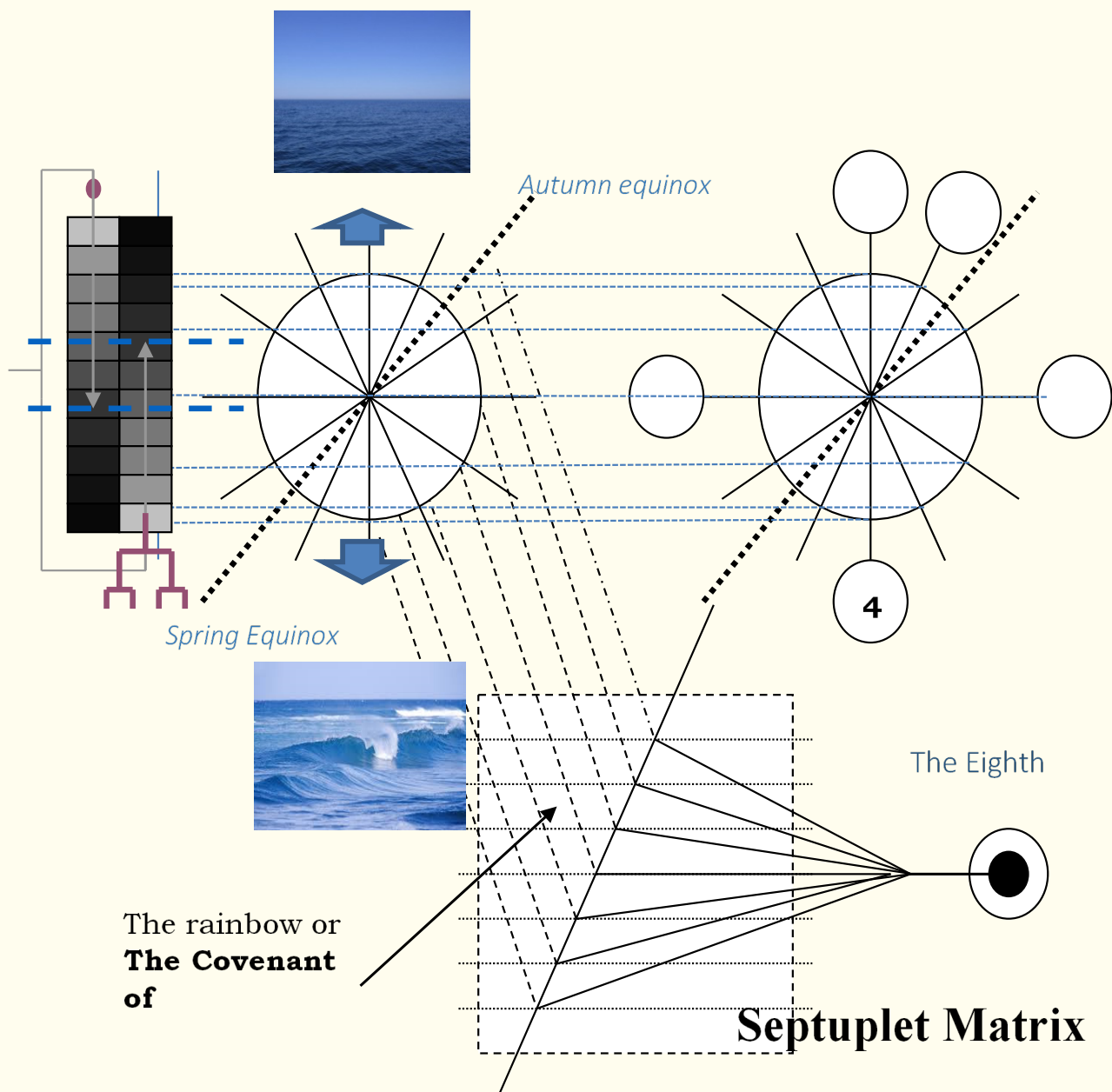
A rotational decimal (*dasam*) system was developed based on the astral construct of ‘*Dasagwa*’ form of movements by Sages (Rishis) in the vast macrocosmic cycles, which are complementary to our annual seasonal and yearly circles in the measured microcosm. The Rishis followed the cycles of years, and realized a larger frame of time conceived as Aeons or *Kalpas*.

The six *Vedangas*, or the wings (*Anga*) of Vedas provided the expansion and ramification of the Time based system based on meters and rhythms called *chhandas*. The *Chhandas* are analogous to later concepts of Testament Psalms, Gregorian hymns, and their meters or chants, are traceable in original Orphic/ Dionysian system of ‘iambic’ meters (iambic/ Thiarmbic/di-thriambic).

In Vedic Sanskrit, ‘imabic (*Ambaka*) means a visionary boundary condition, or an eye of Supreme, or particularly, Shiva, who often has a great visionary frame of capturing the Cosmos as a whole. The idea of an unified Cosmos remained with ancient Greece with the worship of Sebazius, the older form of Dionysius and Gaia, the earth Mother. The principle place of that worship were in different places of Anatolia, and finally, at Delphi, which was finally destroyed under the ‘label of paganism’ by Emperor Theodosius with the advent of Christianity.

The idea of unity or *Adwaitam* is the seat of Srutis or the Vedas. Sages after sages have reached the sovereign unity of the cosmos and the human existence, creating the universal lineage of realization. It is represented as Unity and 1, and the idea of fullness contained within that unity is cipher, which is 0. In structural terms, it is called the 'Mandala', a concept that is popular world over now from Buddhism to concept of fractals.

The two, i.e., 0 and 1 constitute the foundations of Indian numeric system. The system has both absolute and positional values based on the constructs of fixed stars and movements of planets in the cosmos.



The rainbow or
The Covenant
of

Septuplet Matrix

Vedic Cosmology and the two-way ladder

The description in the turning of the Cosmic Wheel and its symbolic representation by the twelve months, of which the zenith is the tenth month, is forwarded in the following words:

These are the four eternal worlds hidden in the guha (the inner cave), the secret, unmanifest or superconscient parts of being which although in themselves eternally present states of existence (sana bhuvan ā a) are for us non-existent and in the future; for us they have to be brought into being, they are yet to be created. Therefore the Veda sometimes speaks of Swar being made visible, as here (vyacaks.ayat svah.), or discovered and taken possession of, vidat, sanat, sometimes of its being created or made.

These secret eternal worlds have been closed to us, says the Rishi, by the movement of Time, by the months and years; therefore naturally they have to be discovered, revealed, conquered, and created in us by the movement of Time, yet in a sense against it.

This development in an inner or psychological Time is, it seems to me, that which is symbolized by the sacrificial year (samvatsara / sana) and by the ten months (dasagwas) that have to be spent before the revealing hymn of the soul (brahma) is able to discover the seven-headed, heaven conquering thought which finally carries us beyond the harms of Vritra and the Panis (darkness).

Sri Aurobindo
The Secret of the Vedas

Evolution of the Decimal system

In later years, the decimal (10th) system and in years, even much later the binary system (0 and 1) further developed. Through the intermediary Arabic system (vide the Court of Baghdad in 7-10th century), garnered by the rise of Arabia, the Indian knowledge of numbers and their relationships was transmitted to Iberia, during the Islamic hold of over the Emirate of Cordoba in Spain. From 10th to 13th century, Islamic-Arabic and later Jewish scholarship founded the first books of Mathematics and Algebra, marking the beginning of civilization and sciences in Western Europe.

The great French mathematician-physicist-astronomer of the 18th century, Simon Laplace, exclaims thus:

“It is India that gave us the ingenious method of expressing all numbers by means of ten symbols, each symbol receiving a value of position as well as an absolute value.”