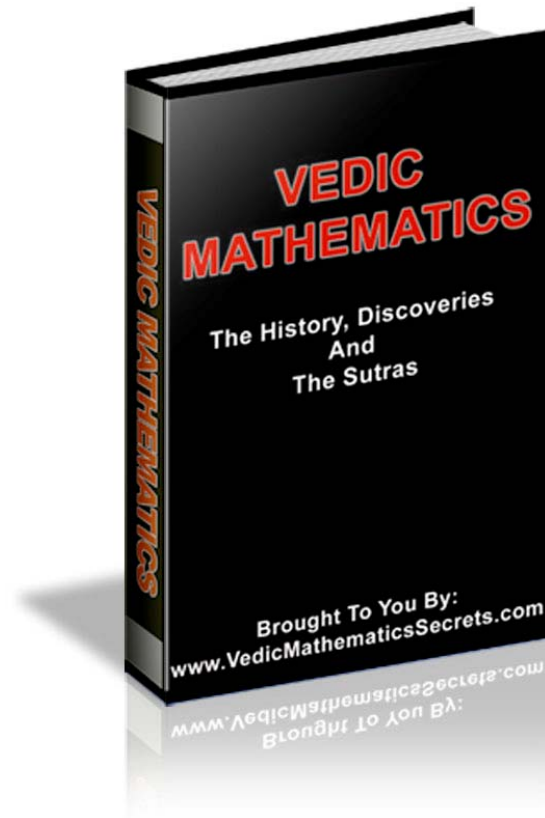


VEDIC MATHEMATICS

The History, Discoveries And The Sutras

By William Q.



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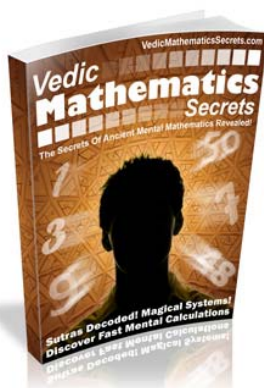
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1. VEDIC MATHEMATICS

Vedic Mathematics and Hindu religion are intertwined to an extent that separating the two would be tantamount to a sacrilege. The birth of Vedic Mathematics is lost in the womb of time. The exact date when the Vedas were written is not clear. Different dates are given by different authorities. Western philosophers and researchers have always treated Greek culture as superior to the Indian and even Arabic cultures. The birth of Vedic texts is therefore claimed to be much later than the two. It is therefore not surprising that the value of *π* and the discovery of *zero* have been popularly viewed as Greek and Arabic in origin. It is assumed that civilization, as it is seen today, is centered on the Greeks just like the Christian belief that the Sun rotates around the earth. This unshakable dogma has for long relegated the importance of Indian civilization to the background.

It is only now that the world is realizing the importance of Indian philosophy and the way of life. Yoga in its many forms and manifestations has become a rage in America. Every street and gymnasium boasts of a Yoga guru. The elevated status of India in the world economy has much to do with the revival of interest in all things Indian. But the ignorance surrounding Indian history and its glorious past is more due to the fact that Hindu scriptures are essentially religious in nature. Vedic math as it is known today is not gleaned from a single source. It is essentially a compendium of methods derived from different Vedic literature.

Another major hurdle in uncovering the secrets of Vedic Mathematics has been the obscure language in which it has been written. A direct logic conclusion is therefore not possible. It is intuitive and requires a thorough understanding of not only the language but also the nuances of the text. The mathematical formulae have been beautifully woven into stories and allegories which are beyond the

comprehension of a common man. As we talk about the sutras directly related to the Vedic Mathematics, the complexities involved in extraction of information will become clear.

Vedic Mathematics may have been ignored for a long time for whatever reasons but it has become a rage in most of the campuses in Europe and the United States. The western world has picked up the cudgels with a vengeance. At the same time, the science of Vedic Mathematics is languishing in the country of its origin. One of the Professors in an American university expressed his amazement at to how sixteen sutras can unravel the complete mathematical code and that too mentally.

It is indeed fascinating to read about the origins of Vedic mathematics.

The impetus to Vedic Mathematics was given by the sacrificial rituals performed by the Vedic priests. The name '**sutra**' is derived from the Sanskrit which means a "**thread**". This thread was required to measure the exact size of the sacrificial alter. Myriad calculations developed from this requirement. If the Vedic religion gave rise to a study of mathematics for constructing sacrificial altars, then it was Jaina cosmology which led to ideas of the infinite in Jaina mathematics.

Later mathematical advances were often driven by the study of astronomy. Well perhaps it would be more accurate to say that astrology formed the driving force since it was that "science" which required accurate information about the planets and other heavenly bodies and so encouraged the development of mathematics.

Religion too played a major role in astronomical investigations in India for accurate calendars had to be prepared to allow religious observances to occur at the correct times. Mathematics then was still an applied science in India for many centuries with mathematicians developing methods to solve practical problems.

Tracing the history of mathematics during the earlier centuries, the name of **Yavanesvara**, in the second century AD cannot be overlooked. He played an important role in popularizing astrology when he translated a Greek astrology text dating from 120 BC. His specific contribution goes beyond the literal translation. He popularized the text, by resetting the whole work into Indian culture using Hindu images with the Indian caste system integrated into his text. This is an important contribution since, mathematics seen as separate from religion would have been unacceptable to the general public and more so to the Hindu pundits of that era. This merger into Hindu gods and goddesses was an effective method to assimilate the knowledge of other civilizations.

By about 500 AD the classical era of Indian mathematics began with the work of **Aryabhata**. His work was both a summary of contemporary Jaina Mathematics and the beginning of new era for astronomy and mathematics. His ideas of astronomy were truly remarkable. He beautifully wove a scientific thread of reason and popular religion with and astronomical calculations, based on the Greek epicycle theory, giving a new interpretation of the two demons **Rahu**, the **Dhruva Rahu**, which causes the phases of the Moon and the **Parva Rahu** which causes an eclipse by covering the Moon or Sun or their light, with a modern theory of eclipses. He introduced trigonometry and integer solutions indeterminate equations which arose in astronomical theories.

Aryabhata, a renowned scholar and astronomer worked and lived in Kusumapura in the northeast of the Indian subcontinent. His work was of such seminal importance that his ideas formed the basis of further research in mathematical and astronomical research in India for many centuries to come. At the same time, Ujjain rose as another epicenter of astronomical research.

Varahamihira another scholar in Astronomy was a gigantic figure who worked from this center of knowledge. His work on trigonometry is noteworthy. It is to be

noted that mathematics remained a tool for exploration of the heavenly bodies. The concept of mathematics as a pure science was not an acceptable concept in India. This is because mathematics evolved as a means for conducting religious ceremonies and later in Jaina philosophy as a tool to determine the position of the stars and planets.

The fascination of Jaina philosophy with astronomy and the science of celestial bodies automatically led to an interest in the concept of infinity. It continued to flourish with scholars such as **Yativrsabha**. He was a contemporary of **Varahamihira** and of the slightly older **Aryabhata**. Together, the two schools of Astronomy were involved in the continuing developments of the numerals and of place-valued number systems. By the seventh century a new figure rose from the Ujjain school. **Brahmagupta**, made one of the most major contributions to the development of mathematics with his outstanding contribution on negative numbers and zero. It is a sobering thought that eight hundred years later European mathematicians would be struggle to cope without the use of negative numbers and of zero. These were certainly not Brahmagupta's only contributions to mathematics. He made other major contributions to the understanding of integer solutions to indeterminate equations and to interpolation formulas invented to aid the computation of sine tables.

It is important to understand the social, cultural milieu of the times when these seminal works were produced. The educational system in India at the time did not allow talented people with ability to receive training in mathematics or astronomy. Rather, the whole educational system was family based. There were a number of families who carried the traditions of astrology, astronomy and mathematics forward by educating each new generation of the family in the skills which had been developed. We should also note that astronomy and

mathematics developed on their own, separate for the development of other areas of knowledge.

The tradition of family education led to a situation where knowledge databases, so to say, were confined within the families themselves. The commentaries and explanations most probably continued to be passed from generation to generation. Many of the commentaries would be commentaries on commentaries on commentaries etc. Mathematicians often wrote commentaries on their own work. They would not be aiming to provide texts to be used in educating people outside the family, nor would they be looking for innovative ideas in astronomy.

Astronomy was considered to be of divine origin and each family would remain faithful to the revelations of the subject as presented by their gods. The problem was that accepting new concepts and ideas was almost blasphemy and religious beliefs being intertwined with astronomy became a major hurdle in the acceptance of new ideas. Another issue which has been remarked upon is that there was no systematic calculation or observation and there does not seem to have been a major observational program set up. Paramesvara in the late fourteenth century appears to be one of the first Indian mathematicians to make systematic observations over many years.

A contemporary of **Brahmagupta** who headed the research centre at Ujjain was **Bhaskara** who led the Asmaka School. This school would have the study of the works of **Aryabhata** as their main concern and certainly **Bhaskara** was commentator on the mathematics of **Aryabhata**. More than 100 years after **Bhaskara I** lived the astronomer **Lalla**, another commentator on **Aryabhata**.

The ninth century saw mathematical progress with scholars such as **Govindasvami**, **Mahavira**, **Prthudakasvami**, **Sankara**, and **Sridhara**. Some of these such as **Govindasvami** and **Sankara** were commentators on the text of

Bhaskara I while **Mahavira** was famed for his updating of Brahmagupta's book. This period saw developments in sine tables, solving equations, algebraic notation, quadratics, indeterminate equations, and improvements to the number systems. The agenda was still basically that set by **Aryabhata** and the topics being developed those in his work.

The main mathematicians of the tenth century in India were **Aryabhata II** and **Vijayanandi**, both adding to the understanding of sine tables and trigonometry to support their astronomical calculations. In the eleventh century **Sripati** and **Brahmadeva** were major figures but perhaps the most outstanding of all was **Bhaskara II** in the twelfth century. He worked on algebra, number systems, and astronomy. He wrote beautiful texts illustrated with mathematical problems, some of which we present in his biography, and he provided the best summary of the mathematics and astronomy of the classical period.

It was over 200 years before any other major contributions to mathematics were made on the Indian subcontinent. In fact for a long time it was thought that **Bhaskara II** represented the end of mathematical developments in the Indian subcontinent until modern times. However in the second half of the fourteenth century **Mahendra Suri** wrote the first Indian treatise on the astrolabe and **Narayana** wrote an important commentary on **Bhaskara II**, making important contributions to algebra and magic squares. The most remarkable contribution from this period, however, was by **Madhava** who invented Taylor series and rigorous mathematical analysis in some inspired contributions. **Madhava** was from Kerala and his work there inspired a school of followers such as **Nilakantha** and **Jyesthadeva**.

Some of the remarkable discoveries of the Kerala mathematicians include a formula for the ecliptic; the Newton-Gauss interpolation formula; the formula for the sum of an infinite series; Lhuillier's formula for the circum-radius of a cyclic

quadrilateral. Of particular interest is the approximation to the value of π which was the first to be made using a series.

This formula, as well as several others referred to above, was rediscovered by European mathematicians several centuries later. **Madhava** also gave other formulae for π , one of which leads to the approximation 3.14159265359.

The first person in modern times to realize that the mathematicians of Kerala had anticipated some of the results of the Europeans on the calculus by nearly 300 years was Charles Whish in 1835. Whish's publication in the "*Transactions of the Royal Asiatic Society of Great Britain and Ireland*" was essentially unnoticed by historians of mathematics. Only 100 years later in the 1940s did historians of mathematics look in detail at the works of Kerala's mathematicians and find that the remarkable claims made by Whish were essentially true.

2. VEDIC MATHEMATICS IN MODERN INDIA

One of the names worth mentioning in the development of Vedic mathematics in modern India is that of **Sant Kumar Kapoor**. He has authentically expounded the foundations of all order in nature, as the basis of the Vedic literature available to us through the time honored oral Vedic tradition. His Ph.D. thesis has reaffirmed the authenticity of the Veda and Vedic literature. With mathematical precision he has reestablished the credibility of Vedic literature as the most orderly and comprehensive literature. Modern Indian philosophers believe that this has the potential to revolutionize education in all parts of the world and bring perfection to life on Earth. It is claimed that this revival of the absolute order with which the unified wholeness of natural law functions and maintains orderliness at every stage of evolution of life is a blessing in this scientific age.

Sant Kumar Kapoor has carried out extensive research work in Vedic Mathematics. He has developed concepts involved in the structure of “Om” and the two Vedic structures “Know Brahman quarter by quarter” and “know fourth quarter Brahman as integrated value of the first three quarters.” He has also developed Vedic concepts of multi-dimensional geometrical space and structural frames and systems. He has established that the regular bodies of geometrical domains constitute a framed domains sequence.

$$a^n/2na^{n-1}, \text{ where } n = 1, 2, 3, 4, \dots \text{ and } a = \text{dimensional unit.}$$

Using the above concepts, he has analyzed several Vedic scriptures. He has published several works in many international journals. Some of his contributions are :

- (i) Mathematical concepts and application to structural frames and systems of **Sri Vishnu Sahastranam Stotram**.
- (ii) Vedic mathematical concepts and applications to structural frame and systems of **Sama Veda Samhita**.
- (iii) Vedic mathematical concepts and application to structural frames and systems of sixteen sutras.
- (iv) Vedic mathematical concepts and application to structural frames and systems of **Shrimad Bhagwad Geeta**.
- (v) Vedic mathematical concepts and application to unsolved mathematical problems – Five proofs of Fermat’s Last Theorem.

The last one “Fermat’s Last Theorem” has been published in the form of a book. Three Proofs have been published as a research paper in M.I.U. Journal “Modern Science & Vedic Science” Vol.3, No. 1, pp 75-104, 1989 USA. The two proofs have been submitted as a research paper to “Mathematical Reports of the Academy of Sciences” Canada. This work has acquired great importance because the original theorem was proposed by French Attorney and mathematician Pierre de Fermat in 1637 and nobody has succeeded in getting the proof in spite of continuous attempts by distinguished mathematicians for more than 350 years.

3. VEDIC MATHEMATICS - THE 16 SUTRAS

The revival of Vedic Mathematics is no less than a miracle. Extracting the theorems and corollaries from religious texts requires not only an understanding of the scriptures but also a genuinely intelligent mind. **Jagadguru Swami Bharti Krisna Tirthahji Maharaj, Shankracharya** of Sharda Peeth and **Goverdham Math** discovered 16 Vedic Sutras and 13 Upsutras in the Parishista of **Atharvved**. This he achieved through rigorous tapas and transcendental meditation. Through sheer intuition and scholarly pursuit he was able to decode them and get wide ranging mathematical principles and applications from them. He found that these Sutras covered all aspects of modern mathematics. He wrote extensively on the subject, but unfortunately he later discovered that none of his works had been preserved. In his old age with his failing health and eyesight, he wrote from his memory an introductory account of the subject. He attained **Mahasmadhi** in 1960. A book on Vedic Mathematics was published in 1965 and was edited on the basis of manuscript and notes left by **Swamiji**. This

book is the first of its kind which explores the Vedic basis of mathematical calculations.

After many decades there has been a fresh interest in the subject both among Indian scholars and foreigners. It may be noted that at the time of the publication of the book a controversy arose about the source of these 16 Sutras and the level of mathematics contained in them. One view was that these Sutras do not have a Vedic source and that they deal only with simple arithmetical operations.

The latest research in Vedic mathematics suggests that there are sixteen Sutras which have been expanded upon by an additional thirteen Sub-Sutras or corollaries. A brief discussion on each of these is in order.

The Sutras

1. “Ekadhikena Purvena” “By one more than the previous one”

The working of the Sutra is quite simple. In the case of the vulgar fraction $1/19$ whose denominator ends with 9, in the normal method 18 steps are required. But with this Sutra it can be accomplished in only one step. The actual calculations and steps are beyond the scope of this writing. This is just to show the ease with which we can apply Vedic mathematics to everyday calculations as well as for solving complex equations.

2. Nikhilam Navataścaramam Daśatah “All from 9 and the last from 10”

This is a cryptic Sutra for multiplying numbers. According to Vedic maths multiplication tables are not required beyond the 5 multiplied by 5. It is claimed that with this sutra multiplication becomes a Childs play.

3. The Ūrdhva Tiryaghyām Sūtra "Vertically and crosswise (multiplications)"

This is another short Sutra for multiplication

4. Parāvartya Yojayet "Transpose and apply"

This Sutra is used to solve simple equations

5. Sūnyam Sāmyasamuccaye "If the Samuccaya is the same (on both sides of the equation, then) that Samuccaya is (equal to) zero"

This Sutra is used to solve special type of equations. "Samuccaya" is a technical term which has several meanings in different contexts. In fact, a single word taking on different meanings is the beauty of Sanskrit text. At the same time it is also confusing and confounding to those who have not mastered the language. If looked at it from different angles, Sanskrit is a boon as well as a bane. Misunderstanding and misinterpreting is quite common among scholars. In as much as the scriptures are concerned, the meaning of words becomes all the more important.

6. (Anurupye) Sunyamanyat (If one is in ratio the other one is zero)

There are some simultaneous equations which may involve large numbers and may therefore seem hard to solve, but owing to certain ratios between the coefficients can be readily and easily solved using this Sutra.

7. ***Sankalana-vyavakalanabhyam***
8. ***Puranapuranaabhyam***
9. ***Calana-kalanabhyam***

The above three Sutras are used in solving different types of quadratic equations.

10. ***Yavadunam***

This Sutra is used for squaring and cubing.

11. ***Vyastisamastih***
12. ***Sesanyakena Caramena***
13. ***Sopantyadvayamantyam***
14. ***Ekanyunena Purvena***
15. ***Gunitasamuccayah***
16. ***Gunakasamuccayah***

The above Sutras are used for different mathematical calculations in conjunction with other Sutras.

Subsūtras or Corollaries

1. ***Anurupyena***
2. ***Sisyate Sesasamjnah***
3. ***Adyamadyenantyamantyena***
4. ***Kevalaih Saptakam Gunyat***
5. ***Vestanam***
6. ***Yavadunam Tavadunam***
7. ***Yavadunam Tavadunikrtya Varganca yojayet***
8. ***Antyayor-Daśake'pi***

- 9. *Antyayoreva*
- 10. *Samuccayagunitah*
- 11. *Lopanasthapanabhyam*

4. CONCLUSION

Hinduism is not only a religion but a way of life. Vedas which are the equivalent of the 'Bible' for Hindus is an ancient knowledge which passed from one generation to another by word of mouth. In ancient times, the knowledge of Vedas could be acquired only by the Brahmin class and was not widely available. Since no written texts existed, many of the Vedas have been lost in posterity. Moreover, the resonance and meter of the Vedic rendition was very important for ritualistic purposes. The exact pitch and frequency was critical to the success or failure of the *yagas* or rituals. The end result is that the history and origin of Vedas could not be established. Historians have estimated the birth of Vedas according to what fits their individual theory. As a result there are as many dates as there are historians, which do not help matters much.

Vedic Mathematics came out of the closet, so to say, in the middle twentieth century, thanks to the efforts of **Sri Jagatguru Swami Sri Bharati Krsna Tirthaji Maharaja**. His contribution to the understanding of Vedic mathematics as it stands today is phenomenal. In fact, the 16 Sutra he has culled from the enormous depth of the Vedas is unimaginable. There is a debate among the scholars if it is at all possible to extract these Sutras from the Vedas.

Controversies abound in this speculation. According to some Vedic experts, there is no mention of these Sutras in any of the Vedic texts. Some have even

gone to the extent to say that it is all a figment of imagination and a decoy used by Tirthaji Maharaj. Now why should a spiritual person give credit to the Vedas for a work conceptualized by himself is not understood. The non believers contend that this may have been done to elevate the importance of this style of mathematics by claiming it to be of divine origin. To some this argument seems to make sense. On the other hand there are Vedic scholars who straightaway dismiss these arguments as blasphemy. They say that Vedic knowledge is not only gained from a reading of the text but by spiritually gaining access to the knowledge. They claim that knowledge is multi dimensional and intuition plays an important part. It is not possible for a materialistic western thinking to fathom the intricacies of Hindu culture and thought.

There is no doubt in anyone's mind that mathematics evolved in ancient India not separately but as a tool. Sutra by itself means a thread used to measure the size and proportion of sacrificial alters. Later Indian mind ventured out to the skies and planetary positions assumed great importance; this eventually led to development of mathematics. Circular orbits of planets possibly resulted in the dire need of 'pi', without which no planetary position could be predicted with accuracy. The science of geometry took center stage and assumed astronomic proportions.

It is claimed that Vedic Mathematics can not only solve complex equations but also solve differential equations and integration. The skeptics claim that it can only do so for specific cases and Vedic mathematics cannot be applied in a general case. The fact that asymptotes occur even in advanced modern mathematics is ignored by all.

The fact remains that the methods postulated by the sixteen sutras can lead to solutions of even complex arithmetic using plain memory, without recourse to a pen or paper. This by itself should impart a sense of wonder to this ancient art.

Modern day children cannot even add two digits without the help of calculators. No one wants to spend time learning the multiplication tables. Where has this led to? The United States of America is no longer the front state in research and development. American universities are overflowing with Asian students who fare much better than the locals. The government is crying hoarse about the lack of native talent. If simple techniques of Vedic mathematics could be taught to school children, maths can become fun. Complex theories can be dealt with at a later stage. Vedic mathematics is not a new tool. It is ancient and time tested. It is time we realize its importance and apply it sincerely to solve our problems both literally and factually.

FURTHER READING

I. WHAT ARE THE VEDAS?

The *Vedas* are the sacred literature of Hinduism. They are a paean to the Gods and consist of a collection of verses, hymns and the procedural guidelines for conduct of a variety of religious ceremonies and rituals. They are, in fact, the oldest surviving scriptures that are still in use.

The word *Veda* signifies “wisdom” or “knowledge” and in the context of the Hindu religion, generally refers to “sacred knowledge or wisdom of the Hindu religious scriptures”. The word *Veda* derives from the root *vid-* in Sanskrit meaning “to know”. This, in turn, is thought to derive from reconstructed Proto-Indo-European (the hypothetical common precursor of the Indo-European languages) root “weid-“, which means “see” or “know”.

Briefly, there are four Vedas, collectively known as ‘**Samhita**’, which comprise the main body of the Hindu scriptures; the **Rig-Veda**; the **Yajur -Veda**; the **Sama-Veda**; and the **Atharva-Veda**. These, along with other related texts, are discussed further below.

Hinduism, as it is known today, appears to have its roots in the Aryan religion of the Vedic age (though a differing school of thought attributes the origin to be the earlier Indus civilization). Hence a brief discussion on the early history of the Indian sub-continent is necessary for a proper appreciation of the evolution of the Hindu religion and the genesis of the *Vedas*.

Indian civilization is one of the earliest civilizations in the world. Starting with the earliest recorded Indus Valley civilization (variously dated to be from c. 2250 BC to c. 2500 BC) of which very little is known, the sub-continent has been subjected to repeated migration or invasion by peoples of diverse cultures. One such influx was that of the Indo-Europeans who are believed to have arrived sometime between 2000 BC and 1600 BC. They were nomadic warlike tribes from Euro-Asia who overran Persia and eventually entered northern India and brought their own social mores and religion with them. They considered themselves superior to the conquered indigenous peoples and called themselves the 'noble ones' or 'Aryans' (or 'Aryas' in Sanskrit) derived from the Indo-European root word 'ar' meaning 'noble'. The Aryan religion had many warlike Gods and had a major focus on various sacrifices to these Gods. This reflected in the Vedic religion that developed in India with the advent of these Indo-European conquerors. The Rig Veda (the oldest of the Vedas), for instance, is a collection of hymns praising the Gods, of whom the God *Indra* is portrayed as a warlike conquering God. The Yajur-Veda on the other hand relates to sacrificial rites and comprises of verses containing specific sacrificial formulas. The Vedas are derived from the collective beliefs of various ancient Aryan tribes and form, along with other Vedic texts, the very foundations of Hinduism.

Another notable aspect of the Vedic Age, which affected the way the Vedas were interpreted and implemented, was the early Aryan social structure. During the early Rig-Vedic period there was a simple two-class structure of nobles and commoners. By the end of the era this had evolved into a rigid system of four 'castes' called the *Chaturvarnas*, or 'Four colors'. Hierarchically the '*Brahman*' (priest) was at the top, followed by the '*Kshatria*' (noble or warrior), '*Vashiya*' (Merchant and trades-people) and lastly the vast majority, the '*Sudra*' (servants). This aspect deserves mention because of the later day controversies and social strains arising from the perceived superiority of the Brahmins. This led to a

gradual reformation of the Vedic philosophies by enlightened thinkers and, in extreme cases, even led to repudiation of the Vedas-based Hindu value system and formation of new religions such as Buddhism and Jainism.

The dating of the Vedas is a controversial issue. As per the noted Indologist, Max Müller, the earliest parts of the texts were probably written between c. 1500 BC to c. 1200 BC. However, it is believed that the Vedas were composed millenniums earlier and passed on orally, through generations of Brahmin priests till being finally written down in Sanskrit.

The Vedas, according to strict Hindu interpretation, have not been composed by man but have been revealed. Hence they are described as *apaurusheya* (not man made). Further, since the hymns have either been revealed or heard, they are considered to be the shrüti (heard) literature of Hinduism. As per the Hindu tradition, the knowledge of the Vedas was received by the seven ancient *Rishis* (Sages) known as the *Saptarshis* (Sanskrit 'sapta': seven).

While the Vedas, par se, are four: the *Rig-Veda*; the *Yajur-Veda*; the *Sama-Veda*; and the *Atharva-Veda*, they have to be studied along with certain other related Vedic texts, for their full meaning to be appreciated. The study of the Vedic texts, explained below, have traditionally been through different theological schools or branches (Sanskrit: *Śākhās*) and multiple recensions (critical revisions) are available for each of the Vedas. Thus, Vedic texts comprise of the four *Vedas*, each consisting of four related parts: The *Samhitas* (along with recensions); the *Brahmanas*; the *Aranyakas*; and the *Upanishads*.

The Vedic texts are organized in two parts; the ceremonial aspect of performing rituals (*Karmakanda*) and the philosophical content (*Gnyankanda*). The *Karmakanda* comprise the *Samhitas* (hymns) and the *Brahmanas*

(commentaries), while the *Gnyankanda* incorporates the knowledge embodied in the Aranyakas and the Upanishads. A brief explanation of the four parts of the Vedas is given below:

The Samhitas:

The word Samhita means 'collection' in Sanskrit. These are primarily hymns, chants and mantras and are the main textual portion of the Vedas. The four Vedic Samhitas are the *Rig-Veda*; the *Yajur-Veda*; the *Sama-Veda*; and the *Atharva-Veda*. Quite often, the Samhita portion is referred to as the Veda i.e. the Rig-Veda Samhita is called the Rig-Veda (as in the paragraph above). Each of the Samhitas has several recensions.

The Brahmanas:

These are explanatory text in prose for the rituals embodied in the hymns and poems in the Samhitas, particularly the sacrificial rituals. They serve as guides for the Brahman priests to understand and carry out the rituals properly. The text may either be partly incorporated in the Samhita (and partly separate) or may be totally separate. Each of the Samhitas or its recensions may have one or more corresponding Brahmanas. In effect, they are ritualistic teachings related to the Samhitas.

The Aranyakas:

The word 'Aranyaka' literally translates to 'forest text' in Sanskrit. They incorporate theological discussions on the ritualistic aspects of the Vedas. They deal not with the rituals par se, but with the philosophical aspects of important rites and are effectively the concluding portion of the Brahmanas. The Aranyakas

were not meant for the lay people but for ascetics who, having practiced meditation and self-control in the forests, had achieved higher levels of knowledge.

The Upanishads:

These are philosophical works and deal with spiritual and mystical aspects of the Vedas, such as the *Brahman* (the absolute reality), the *Atman* (the soul), the meaning of true knowledge etc. There are as many Upanishads related to each of the Vedas as there are recensions, though some are more authoritative than others. Some of them are mere disjointed meta-physical truths; some are narratives while others are in a conversational form. The Upanishads collectively constitute the final or end part of the Vedas and are also known as *Vedanta* (Sanskrit 'anta': end). They form the basis of the Vedanta school of Hindu philosophy.

There are conflicting opinions on the sequential order of the *Veda Samhitas*. While it is accepted that the *Rig-Veda* was the first Samhita, it is believed that the *Atharva-Veda* was not originally a part of the Samhitas, but was eventually adopted at a later stage. The generally accepted view is that the *Yajur – Veda* and the *Sama-Veda* are the second and third *Samhitas*, respectively, with the later adopted Atharva-Veda being the fourth and last.

The Rig-Veda

The *Rig-Veda* is the oldest of the Samhitas and all the other Vedas, to a greater or lesser extent, are based on it. The Rig-Veda is a collection of Vedic Sanskrit hymns or '*sūktas*', dedicated to the praise of Rig-Vedic Gods and deities. The hymns were recited aloud (to the Gods) by a special Rig-Vedic priest called a

Hotri. There are 1028 hymns in the Rig-Veda comprising 10,600 verses organized into 10 books or '*mandalas*'. The verses and books were composed by different *Rishis* (Sages), based on revelation of the divine truths, over a period of more than 500 years. Accordingly, the verses in the Rig-Veda are traditionally attributed to particular *Rishis*. The 10 mandalas are neither equal in length or age, nor have they been written in chronological sequence. The 6 mandals from the 2nd to the 7th are short and each are thought to have been written by the family of a specific *Rishi*. They are considered to be the oldest. The 1st and the 10th mandals, on the other hand, are the latest and the longest. The Rig-Veda is believed to have had a number of versions or recensions (21 according to some scholars) of which only two, from the *Shakala* and the *Bhaskala Shakas*, have survived."

The Yajur-Veda

The *Yajur-Veda* is the second of the Veda Samhitas and contains liturgical texts describing the rites and sacrifices supporting the chants and hymns of the Rig-Veda. The focus of the Yajur-Veda is ritualistic. The chanting of the Yajur-Veda mantras and implementation of its sacrificial rituals were done by special *Adhvaryu* priests. There are two major Samhitas of the Yajur-Veda; the *Shukla* (White) Yajur-Veda and the *Krishna* (Black) Yajur-Veda, the latter being the older of the two. The focus of the Shukla Yajur-Veda is more on the form and arrangement of worship (*yajna*). The Krishna Yajur-Veda, while including the verses necessary for worship, includes more of explanatory commentary in prose on the ritualistic aspects.

The Sama-Veda

The *Sama-Veda* Samhita consists of hymns, which are to be chanted in musical tones or sung and not merely recited. The chanting of the Sama-Veda hymns were done by special Vedic *Udgatri* priests (Sanskrit 'udgai': 'to sing' or 'to chant'). The hymns are mostly from the Rig-Veda, either whole or in part, but with a rearranged sequence to suit the particular religious rituals at which they were meant to be used (only a very small proportion of the hymns are its own). The chanting (singing) was as per melodies based on the seven musical notes (*swaras*) and the songs were called *Samaganas* (Sanskrit 'gana': song). Only one recension of the Sama-Veda; the *Kauthuma Shakha* has survived intact (a second *Jaiminiya Shakha* is available only partially). The Sama-Veda is generally considered to be the most important Samhita after the Rig-Veda.

The *Atharva-Veda*

The *Atharva-Veda* Samhita is believed to be named after a *Rishi* named '*Atharvan*'. It has 760 hymns, a small number of which are in prose. A few of the hymns (about one seventh) are common with the Rig-Veda. The hymns and incantations in the Atharva-Veda Samhita are oriented more towards spells for good health and long life, protection against demons and diseases etc and unlike the other Samhitas, less towards sacrifice. The seed mantra '*Om*' first appears in this Samhita. The Atharva-Veda is believed to have been composed during the early Vedic period and some of the hymns appear to be older than the Rig-Veda. In spite of this, the Atharva-Veda was not accepted initially by the Vedic Brahmans (though eventually assimilated as the fourth Samhita) since it deviated from the other Vedas. The reason may be that the Atharva-Veda scriptures may have originated from the pre-Aryan culture of the indigenous peoples. The Atharva-Veda is believed to have had a number of recensions (nine according to some scholars) of which only two survive; the *Paippalāda Shakha* and the *Śaunaka Shakha*.

The Vedic *shrūti* literature, as explained, comprises the four components *Samhitas*, *Brahmanas*, *Aranakyas* and the *Upanishads*. There is also a mass of other Vedic texts of human origin (as opposed to the revealed *shrūti* literature) known as '*smṛiti*' (Sanskrit '*smṛiti*': 'the remembered') literature. The *Vedanga* (Sanskrit '*anga*': 'limb') literature, literally meaning 'Limbs of the Vedas', is one such example. These are six Veda-related technical subjects who help in the correct implementation of the Vedic mantras and rituals. These are *Shiksha* (Phonetics); *Chhanda* (Meter); *Vyakarana* (Grammar); *Nirukta* (Etymology); *Jyotisha* (Astrology); and *Kalpa* (Ritual).

Vedic literature also had the term '*Upaveda*' (literally 'subordinate Vedas') for certain technical literature. The *Upavedas* are not directly related to the Vedas but were recommended study. Examples of *Upavedas* are *Āyurveda* (the study of medicine), *Sthāpthyaveda* (Architecture and mechanics) etc.

A notable aspect of the Vedic period is the advancement in mathematics. There are references in early Vedic literature (believed to date from 3500 BC to 500 BC) of individual Sanskrit names for the powers of 10 up to a trillion and even more. Examples are: *Kankara* (10^{13}), *Kotippakoti* (10^{21}) etc. The Yajur-Veda even discusses the concept of 'Infinity' (*purna*) in mathematics and, in effect, states that "When *purna* is subtracted from *purna*, the remainder is still *purna*."

II. HOW THE VEDAS COME INTO EXISTENCE?

This is like asking when did man come into existence, or when did the universe come into existence? To determine its exact origin is difficult, as it's difficult to determine who discovered or made the Vedas.

Many thousands of years ago, humans inhabited certain pockets on earth. While today, our children are handed down information from elders, peers, books and of course the internet, our ancestors were spoon-fed with nothing. They experimented with life and learnt one truth-that it was run by some other power and that power although seems elusive, can be accessible and that there is some order, some rule that governs lives on earth!

Vedas however, have a mention in the Bhagavatha Puranas, it is stated that the Vedas came into existence from the origin of Shakti or female Goddess, encompassing all wisdom. It is said that when Lord Brahma or the creator was resting in the lotus on the navel of Lord Vishnu, he got the seed of the Vedas was sown. The hidden meanings of the Vedas are found in the Bhagvata Purana. Studying the Bhagvata texts alone is equivalent to studying the Vedas.

According to Mata Amritanandamayi a revered spiritual Guru in India, when the British ruled India, they had burnt many of our manuscripts. Although, many translations have been made by English authors of the Vedas, certain words and passages have been misconstrued and thus what exists of the Vedas today is the filtered form, with many of its true meanings and essence still missing.

As it happened with the Egyptians and the people of the Middle East, where the Roman Catholic rulers destroyed their manuscripts, as it happened with the Chinese, where the emperor destroyed valuable and priceless information, in India too, with several invasions, priceless wisdom was lost and with it the fate of the people too was subject to upheavals.

Some unscrupulous Indian scholars too are to be blamed for selling the texts to foreigners. These self-claimed scholars pretended to understand the complex

meanings contained in the Vedas, wherein in reality, they had misinterpreted the texts.

The irony is that Muller and other Germans translated the Vedas and Indians without the knowledge of Sanskrit; depend heavily on these German and English translations to understand our own teachings! Perhaps it has to do with the fact that we are more open to the teachings of the western world, although today, many retired men and some young enthusiasts are delving deep into the Vedas for insights.

Nevertheless, the answer is that the Vedas do not have a textual origin. They were conveyed by the Gods to the sages of yore to help mankind during the different stages of life, as well as during the different epochs.

If you ask a devout Christian how the Ten Commandments originate, it's a fact that Moses pronounced the commandments, as the way he was informed by the Lord. Prophet Mohammed declared the preaching of the Quran and thus the Vedas too are supposed to have been passed by the Lord to a few chosen Sages.

However, what we are left with of the Vedas is only a miniscule part of the texts, as with repeated invasions and plundering, the cream of the Vedas has been lost. The rest of what was left during the British rule was misinterpreted by unscrupulous people, who sold it to the foreigners. However, whatever is still left is sufficient to guide mankind even in this chaotic stage.

If you ask yourself, you will be amazed to know that the essence of the Vedas can be found in your mind. The whole universe is contained within you and the answers to the most difficult queries are also contained within you. When a baby

is born, it is nourished and when he enters school, his mind is nourished with what is good and what is bad. After this basic training of the good and the evil, an adult has to simply delve deep and bring forth the answers from the repertoire of his basic understanding of his elder's wisdom. Upon further delving, and separating the grain from the chaff, the seeker almost always finds the right answer, devoid of any external influence. However, a wise seeker knows how to apply this truth to any problem.

Most of what we know is not the truth. It is what others, society, our ancestors and guides have told us that make us work. The real truth is buried deep into your own psyche and is the reflection of the Vedas, as Vedas in Sanskrit means wisdom, divine wisdom. In reality, what we have been taught by elders, books and society is only knowledge. Only the wise mind can discern the truth or the wisdom! Knowledge can be found everywhere, but what to pick and how to apply is wisdom-the essence of the Vedas.

Action and consequence; reaping and sowing; how to avoid the harsh consequences are all born out of some order. This order saves one from chaos and this essentially is the Vedas. Perhaps this is how the Vedas originated, with a purpose to help mankind attain bliss and liberation, to find the Divine in himself and in others!

III. TYPES OF VEDAS AND SIGNIFICANCE

What are the Vedas and how they came into existence have been discussed in the earlier chapters. It has been seen very briefly that the Vedas; the ancient *shruti* scriptures of the Hindu religion, actually comprise of four separate Vedas, each having four parts. These are, to recapitulate, the *Rig-Veda*, the *Yajur-Veda*,

the *Sama-Veda* and the *Atharva-Veda*. The four parts of each Veda are the *Samhitas*, the *Brahmanas*, the *Aranyakas* and the *Upanishads*. A brief discussion of the milieu in which the Vedas were composed is necessary to understand the different Vedas and their significance.

The Vedas, particularly the *Rig-Veda Samhita* which is the oldest of the four Vedas is believed to be from the period when the earliest Indo-European tribes (who later called themselves 'Aryans') were migrating into India. The *Rig-Veda* (and subsequently the other Vedas), after being handed down orally through generations of Vedic sages and priests, started being written down, over a long period of time, by various *Rishis*. While controversy on the dating remains, a generally held view is that the Vedas were written between c. 1500 BC to around c. 450 BC.

The Indo-Europeans, being nomadic warlike peoples at the time of the influx into India, had a simple concept of the universe. The heavens were the abode of the gods and the souls of the righteous; the intervening region (*antariksa*) between heaven and earth i.e. the sky and clouds, was the home of demi-gods; while demons and the souls of the wicked were consigned to the darkness of the 'house of clay' below the earth. The Gods defended the righteous and the order (*arta*) of the universe which the demons tried to disturb by practicing *anrta* (Sanskrit 'an': 'dis-'; 'arta': 'order'). The gods were generally related to warlike figures or to the forces of nature. *Indra*, the warlike king of the heavens and the god of thunder and rain, is the most frequently mentioned God in the *Rig-Veda*. Among the important gods related to nature can be cited *Agni*, the God of fire, *Rudra*, the Storm God and curiously, *Soma* (the draught of immortality); an intoxicating drink which was drunk during sacrificial rituals.

The Aryans believed that persons who followed the righteous path and propitiated the Gods by performing proper rituals would enjoy happiness forever after death. Rituals, particularly ones involving the sacrifice, were therefore an important aspect of Vedic religion.

The Rig-Veda

The 1028 hymns in the *Rig-Veda* are *mantras* (incantations) of praise to propitiate the Aryan gods in accordance with Vedic belief. The hymns are dedicated to a pantheon of thirty-three Vedic gods. The Rig-Veda, in practical terms, has only one surviving recension, the *Shakala Shakha* (there is also a nearly identical recension, the *Bāskala Shaka*, but there are controversies about its originality vis-à-vis the Rig-Veda, since some of the hymns in this recension appear to be related to the *Atharva-Veda*). There are two *Brahmanas* linked to the Rig-Veda. These are the *Aitareya* and the *Kaushitiki* (or *Sankhayana*) *Brahmanas*. The related *Aranyakas* are the *Aitareya* (which forms a part of the *Brahmana*) and *Sankhayana* (*Kaushitiki*); while the *Upanishads* are the *Aitareya*, *Kaushitiki* (actually the third and final chapter of the *Kaushitiki Aranyakas*) and *Bhaskala*.

The significance of the Rig-Veda lies in the fact that it is a veritable well of knowledge that is relevant in day to day life; the knowledge, for leading a full and satisfying life with the help of yoga, meditation and rituals. It describes (in the related *Aitareya Upanishads*) the concepts of *Atman* (the inner self); the quality of *Brahman* (the Self); and contains (in the *Upanishads*) the important Vedantic *Mahavakya* or philosophical expression “*Prajanam Brahma*” or ‘Knowledge is Brahman’. There is also stress on the need for a spirit of oneness and unity for the survival of mankind. Another aspect of significance of the Rig-Veda is the foundation it lays for various scientific disciplines. For instance, it mentions

Ayurveda, the ancient form of medicine (subsequently elaborated in the Atharva-Veda). The hymns of the Rishi Dirghatamas (Rig-Veda I.140-164) lay down the foundations of astrology by describing a zodiac of 360 degrees and its related sub-divisions like 12, 24, 36, 48 etc (a *Chakra* or wheel in the sky with 360 spokes).

On another plane, the Rig-Veda gives an insight into the life of the Indo-Europeans (Aryans) of the time; a nomadic people with horse-drawn chariots and bronze weapons living in the *Sapta-Sidhu* (now Punjab) region. It also provides a background for the gradual changes that occurred in the Vedic religion since the early Vedic period; the induction of a pantheon of new gods like *Vishnu*, *Shiva* and *Shakti* (who are popular deities of the Hindu tradition) and relegation to lesser importance of Rig-Vedic gods like *Brahma*, *Varuna* and *Indra* by the time that the oral *Shruti* tradition was committed to written Sanskrit.

The Yajur-Veda

The mantras (*yajurs*) of the Yajur-Veda relate to the worship of God; to Vedic rituals related to worship; and to sacrifices. Of the two recensions of the *Yajur-Veda* already discussed, the older *Krishna* (Black) *Yajur-Veda* has forty-four *adhyayas* (chapters) with 651 *anuvakas* (sections) each while the *Shukla* (White) *Yajur-Veda* has forty *adhyayas* with 303 *anuvakas*. The *Shukla Yajur-Veda* itself has two almost identical recensions; the *Vajasaneyi Madhyaandiniya* and the *Vajasaneyi Kanva*. The *Shukla Yajur-Veda* has the well-known *Shatapatha Brahmana* (with 'Shata' or '100' chapters). The 14th chapter of the *Brahmana* is the *Aranyakas*, while the 40th and final chapter is the *Isha Upanishad* (the other Upanishad related to the *Shukla Yajur-Veda* is the *Brihadaranyaka Upanishad*).

The Krishna Yajur-Veda has four recensions; the *Taittiriya*, the *Maitrayani*, the *Charaka-katha* and the *Kapisthala-katha Samhitas*. Of these, the *Taittiriya Samhita* is the best known. The *Taittiriya Brahmana*, the *Taittiriya Aranyakas* and the *Taittiriya Upanishad* are related to this version. The Yajur-Veda lays down the various incantations (*yajurs*) to be chanted by the Yajur-Vedic *Adhvaryu* priests at the time of sacrifice.

The mantras for the sacrificial rituals are meant to inspire humans to action and, therefore, the Yajur-Veda is sometimes referred to as the '*Karma-Veda*' (Sanskrit '*Karma*': 'Deeds'). Some of the more well-known Vedic sacrificial rituals for which mantras are contained in the *Yajur-Vedas* are the *Ashvamedha Yajna* (horse sacrifice) and the *Rajasuya Yajna* (a sacrifice performed by the ancient kings of India).

Spoken mantras (and the energy-based vibrations associated with them) are an important aspect of Vedic (and classical Hindu) worship. It is believed that the intent of the mantra and the vibrations associated with its incantation, influence the result. Thus, while there is an intrinsic meaning to the mantra, the final effect is in its incantation. The significance of the *Yajur-Veda* is, therefore, in its stress on the ritualistic aspects of the worship and proper incantation of the mantras. The *Yajur-Veda* is, however, not only about the rituals of worship. One of its most significant aspects is that it seeks to open the mind to the inner consciousness to appreciate and understand life and existence. For instance, its *Rudra Adhyaya* (or *Satarudriya*) hymn is to an all-pervading God *Rudra-Shiva*, present in all things animate and inanimate (as opposed to an extra-cosmic being).

Again, on a different plane, the *Yajur-Veda* throws light on the gradual penetration of the Aryan peoples eastwards into India by referring to the river Ganges and its region (The early Vedic age, represented by the *Rig-Veda*, had

references to the *Sapta-Sindhu* i.e. the Indus and the *Saraswati* rivers). The *Yajur-Veda* also gives a detailed insight not only of the religious life of the peoples of the time but also of their highly developed social structures (the caste system) and their intellectual prowess. The *Yajur-Veda* has the earliest documented references to the use of large numbers (upto a trillion) in mathematics and the concept of numerical 'infinity', referred to earlier.

The Sama-Veda

The musical chants (*samans*) of the *Sama-Veda* are meant for sacrificial rituals involving *Soma* ceremonies. They are almost fully (except for a very few) drawn from the *Rig-Veda*, particularly from the eight and ninth *mandalas*. It is believed that originally there were 1000 *Shakhas* and consequently, 1000 *recensions* of this Veda. However reference is available for only 13 *Shakhas*, and only three survive (one, the *Kauthuma*, intact as earlier stated, and two, the *Jaiminiya* and the *Ranāyana*, partially). According to some scholars, the *Ranāyana Samhita* is too fragmented to be of any significant use. The *Sama-Veda* has 1875 hymns divided into two broad groups: the *Puravachika* (650 mantras) and the *Uttarachika* (1225 mantras). The *Puravachika* is further divided into four *kandas* (sections) called the *Agneya*, *Aindra*, *Pavamana* and the *Aranya kandas*, while the *Uttarachika* has 21 sections. The *Sama-Veda* has seven *Brahmanas* of which the *Tandava* and the *Samavidhana Brahmanas* are generally better known. The *Sama-Veda* has two related *Upanishads*, the *Chandogya* and the *Kena*. The text of the *Chandogya Upanishads* (so called because of its metrical chanting) forms the *Aranyaka* of the *Sama-Veda*. The chanting notations (based on the seven musical *swaras*) of the *Sama-Veda* are much more elaborate than the notations for the same chants in the *Rig-Veda*, and lend them an unique quality of spirituality and the rapture of devotion.

The significance of the Sama-Veda lies in the intricacy and meter of its poetry. The hymns when properly chanted lead to tranquility of mind. The hymns are more religious and philosophical than those of the ritualistic Rig-Veda and Yajur-Veda Hymns. The Sama-Veda, in the related Chandogya Upanishad texts, elaborates on the importance of the *Guru* (teacher) in man's quest for self realization. The Sama-Veda shows that music is one of several ways to spirituality. On another plane, the *Sama-Veda* chants, based on the seven musical notes (*swaras*), indicate that they are the precursors of Indian classical music, even though the concepts of *raga* (melody) and the *tala* (rhythm) had not been developed at the time.

The Atharva-Veda

While belonging to the corpus of the core Vedic *shruti* literature, the *Atharva-Veda* was accepted as a *Veda Samhita* much later than the other three and deviates in many ways (for instance, in the magic spells that it contains, such as *Tantra*) from the other three *Veda Samhitas*. This may be due to, as explained earlier, its probable non-Aryan origin. Even the *Gayatri Mantra* (the Vedic invocation to the Goddess *Gayatri*, to illuminate the Intelligence) of the *Atharva-Veda* is different from *Gayatri Mantra* common to the other three Vedas. The hymns in the *Atharva-Veda* are in a much simpler language than those of the *Rig-Veda* (and consequently of the Yajur and the Sama Vedas). They are also of a more diverse nature.

As mentioned earlier, the Atharva-Veda has two surviving recensions: the *Paippalāda Shakha* and the *Śaunaka Shakha*. The only *Brahmana* text of this *Veda Samhita* is the famous *Gopatha Brahmana*. This *Brahmana* has two parts: the *Purvardha* (first half) which comprises lectures and dissertations, and the *Uttarardha* (second half) which contains critiques on various rituals. The *Atharva-Veda* does not have any surviving *Aranyakas* but has a number of related

Upanishads (35 or more as per some scholars), of which the *Mundak*, *Mandukya* and *Prasna Upanishads* are well known.

An interesting sidelight of the later adoption of the *Atharva-Veda* is the addition of a fourth priest, a Brahman (to oversee the correct performance of the *yajna* rites and chant hymns from the *Atharva-Veda*), at the *Yajna* ceremonies (early Vedic *Yajnas* had only three priests: The *Hotri* chanting *Rig-Vedic* Mantras; the *Adhvaryu* priest the *Yajurs*; and *Udgatri* the *Samans*).

The significance of the *Atharva-Veda* lies in the simplicity of the language of many of its hymns which made it accessible to the common man (the *Rig-Veda*, for instance, was meant to be read and understood by the priestly caste). The *Atharva-Veda* contains a wealth of practical knowledge on diverse subjects, such as religion, yoga, the human physiology, different types of ailments, etc. It gives an insight into the social mores of the then extant Aryan society by dealing with several regular and special rites; such as marriage and funeral rites and special *Vrātya* rituals (performed by individuals adopting an ascetic way of life). The *Atharva-Veda* depicts a surprisingly advanced level of knowledge in fields as diverse as medicine, warfare etc. It is the earliest text dealing with medicine and identifies germs as causing illness and medicines for killing a variety of germs. One of the *Upa-Vedas* (subsidiary Vedas) of the *Atharva-Veda* is *Ayurveda* (the science of life and health). Some of the hymns refer to the military practices and the related *Kshatriya* rites. The picture that emerges is again, surprisingly advanced, with description of the use of smoke screens, germ warfare etc. The first reference to iron (*shyāma Ayās* or literally 'black metal' in Sanskrit) is available in the *Atharva-Veda* indicating that the literature is from the Iron Age, say, and 1200 BC to around 1000 BC.

The *Atharva-Veda* is also very significant in terms of the contributions that it made to the evolution of Aryan philosophical thought. One of the notable hymns

is to the Goddess Earth (the *Prithvi Suktam*). Elements of Hinduism, such as tolerance and co-existence, are also evident in the *Atharva-Veda*. It also lays the foundation for the evolution of the god *Rudra* into *Siva*, one of the Hindu Trinity, in later theology.

As per Vedic philosophy, the four Vedas and their four individual parts are loosely meant for the four stages of man's life (though it does not preclude study of the *Vedas* at any stage of life). The *Mantra Samhitas* are meant to be studied in the *Brahmacharin* (celibate Vedic student up to 25 years in age) stage; the *Brahmanas* which explain the Vedic rituals are supposed to be suitable for the *Grihastha* (Householder in the age group 25 to 50 years); the *Aranyakas* which provide theological explanation of the mantras and the rituals, are meant for those (age 50 to 75 years) who are *Vanaprasthas* or Hermits, preparing to renounce the material world; and the *Upanishads*, containing the sublime distilled truths of the Vedas, are supposed to be useful for the *Sannyasins* (monks in the age 75 to 100 years, who have completely renounced the material world).

Another aspect is that while there are differences between the Vedas and each Veda focuses on a different aspect of worship, the essential teaching of all the Vedas is the same. They all strive, in the ultimate analysis, to provide different paths (in terms of knowledge and rituals) to attain the *Brahman*, the Supreme; through prayer and *mantras* of the *Rig-Veda*; rituals of the *Yajur-Veda*; through musical renderings of the *Sama-Vedic* hymns; or through *tantra* or other rituals of the *Atharva-Veda*. The Vedas accept that there are different forms of the same supreme God and different paths to reach the Supreme. This is the bedrock of Hinduism, the *Sanatan Dharma* or Eternal Law.

IV. DISTINCTION BETWEEN VEDAS

Vedas are bestowed upon mankind only to make life simpler in a chaotic world, and the wisdom contained in the Vedas is more useful in today's world, where nothing but chaos, poverty, corruption and pain exist.

During the Vedic era, nothing but order prevailed and today during the deteriorating times or Kali Yug, with nothing but misery prevailing, the Vedas are a rare blessing from none other than divine powers. As explained earlier, Hinduism or Sanathana Dharma is nothing but a way of life. Unlike many other faiths, Hinduism has never espoused that we relinquish our desires; nor are humans portrayed as helpless creatures, subject to winds of fate. On the contrary, Hinduism does accept human desires as natural. However, Hinduism is of the view that it is attachment and the enslavement to these desires that lead to misery. Moderation has always been the keyword of Hindu philosophy.

The hidden secrets of the Vedas are a test where humans can use free will. The Vedas has knowledge ranging from Mathematics, medicine, music, astrology, Vastu Shastra, et al, the use of which has been created only to help man help himself. However, the catchword here is the abandonment of ego! The realization of Vedic knowledge is to help man to become aware of his own ignorance and what he needs to illuminate himself and his herd with. A true seeker realizes truth; that he is just an instrument through which the Universal energy has conspired to carry a plan!

A young and enthusiastic doctor seems overjoyed and triumphant by a diagnosis he makes while treating a patient or after finding a cure for a deadly disease. However, it is only when he conducts complicated brain and heart surgery, when he begins to place his trust in a higher power, in the probability of life and death,

of his success and failure. The knowledge of Vedas in reality subdues the human spirit and he begins to realize the infinity of other powers, even as he realizes his own power!

There are four distinct Vedas, even as there are four different Hindu castes. This is not to declare one is superior to the other. The distinction is only for the sake of convenience. Can a surgeon also be an engineer? Can a banker also be a pilot? Just as the busy banker appreciates the pilot's expertise and places his trust on the latter during a flight, each Veda is segregated according to its contents and the practitioner of one finds recourse in the other's content. Today, a Brahmin observing a certain Veda is supposed to perform rituals etc pertaining to that sect alone. For example, a Brahmin who is the follower of Samaveda engages in rituals ordained in his texts and the Yajurvedi follows his Veda.

Thus, the purpose of life on earth for man, is to understand his true essence, his powers, utilize these powers to create a better world, and most importantly realize that he alone is not the strongest or the best, but each individual is bestowed with uniqueness and in accepting and realizing this truth only, does man learn his limitations, as he learns his strengths. He sees the divine in every body, including animals, and birds, trees and plants, and other forms of nature like the heavenly bodies, the rain, Mother earth and even thunder and lightning!

In what way do the Vedas help man?

As mentioned earlier, each Veda has a prescribed path and following this path alone will lead to salvation. Salvation here need not mean rising above to meet God. Salvation can mean liberation from the cycle of birth and death or it can also mean detachment towards anything that is material, despite enjoying materialism!

Apart from instructing man how to propitiate nature, the Vedas has a prescribed path instructing how man should conduct himself at different stages of his life. During childhood or Bhramacharya, children were sent to school, where they lived with a tutor under whose tutelage they learnt the Vedas, about archery, defense, mathematics, music, astrology etc. After this, around puberty, man is allowed to enter Grihastashram or family life, marry and have children, earn a livelihood in an honest manner. This stage is between the ages of 25 and 50 years, where man and his wife fulfill all their duties and obligations. After this stage, according to the Vedic way of life, from the ages of 50 to 75, man is supposed to enter Vanaprasthanam, where he should renounce the world, materialism. This was a way of keeping the older generation dignified without interfering in the lives of the younger generation, yet guiding the latter whenever necessary. The older generation thus had the opportunity to become more detached and spend time in introspection and meditate upon the Lord. Thus, there was no room for possessiveness, attachment, longings, control and politics, on the part of the older generation. After the age of 75, when man has meditated on the ultimate Truth, he becomes a Sanyasi renouncing all material comforts and when death arrives, he is at peace with himself, devoid of longings, of regrets and worldly attachments. When one fulfills all duties correctly, especially towards one's own children and elders, one is at peace in the knowledge that one's children are also leading rightful lives prescribed in the Vedas.

If we compare the situation today, we realize that with the younger generation still at crossroads, the elders are a miserable lot, regretting wistfully about a life wasted. Some elders do not reach the maturity stage too and even at a ripe old age fight for supremacy and complicate the next generation's life, instead of being a beacon of light!

Rig Veda

Containing 1028 hymns dedicated to 33 different nature Gods like the Rain God, Fire God (Agni), storm God etc, it is the oldest Veda. These hymns are in praise of the various nature Gods. Propitiating deities is said to bring in abundance. There are hymns and incantations praying for normal and timely rainfall, good harvest, etc. Man knew the power of nature and that he is completely at the mercy of nature. As man realized he had to harness nature's bounties and utilize them effectively, his respect for nature and her bounties grew manifold. These prayers and hymns are a way of teaching man that he is but a cog in the wheel of this vast universe, that we are interdependent on each other and that we cannot exist alone and that we strengthen ourselves only by strengthening others, including sacred inanimate objects. The Rig Veda teaches the sacredness that the Universe and even the inanimate objects possess!

Yajur Veda

Where the Rig Veda contains hymns and praises to nature, the Yajur Veda prescribes rituals to engage in, in order to propitiate and carry on the process. Yajur Veda is more ritualistic and describes in detail the sacrificial offerings that need to be made to the Gods. Just as the simple ritual of kneeling before the altar in a church and exchanging wedding rings unifies us with God or with another significant individual, rituals help the mind and body in numerous ways. The simple act of breaking a coconut and offering it to the Gods, essentially signifies the breaking of the hard ego and submitting our inner vulnerabilities to a Higher power!

The act of plucking of fruits and flowers from plants should be done so after respectfully seeking the permission of the plant. And when our grandmothers

advised us against plucking flowers after dusk, they'd say that the plant is asleep. If you thoroughly analyze the reason you'd find several reasons. In the absence of sunlight, you could end up plucking a bud instead, or prick your fingers with a thorn, have a creepy snake crawl around your leg, and yes, plants are living, so you might end up waking the plant!

Yoga and the act of sitting on the floor with the thighs pressed to the ground quicken digestion and thus sitting on the ground level is a ritual practiced by Indians, Chinese and Japanese. Thus information on Yoga, Pranayama (breathing techniques), etc are covered in the Vedas.

While chairs and dining tables have replaced mattresses, it is wise to let our children get acquainted with age old practices and the Vedic way of life.

Circumambulating the sanctum sanctorum is still observed piously by the devout Hindu. It has been a practice since time immemorial, as the deity in the sanctum sanctorum is regarded as the centre of man's universe, his focal point. Thus, the act of circumambulating is akin to showing that our world revolves around this focal point and that we are submitting our all to this centre.

SAMA VEDA

Today, airport lounges, discothèques, spas, subliminal hypnotist's clinics, hospitals, hotels, meditation centers, and even corporate sectors reverberate with soft music. Since eons, music has been a therapy soothing frayed nerves, normalizing blood pressure, curing depression, rejuvenating the spirit and inspiring everyone. Even plants and animals are supposed to respond and grow listening to good music.

Hymns contained in the Sama Veda are hymns set to tunes and music. The vibration of a chant set in a tune can open blocked energy channels in the body and uplift the spirit and balance any imbalances in the human body. Indian Ragas are supposed to heal and even symptoms in disorders like asthma, diabetes, Alzheimer's and Parkinson's are known to have reduced when the patient is subject to different Ragas (tunes).

In spite of chanting 'Our Father', just the tune of 'Silent Night' played in piano is sufficient to transport the listener to a cheerful world! This is the power of music. Prayers and rituals when accompanied by songs do have a powerful effect on not only the senses, but also on nature! The Raga Megh Malhar or Amritavarshini when sung correctly, definitely usher in the showers! The much famed singer Tansen one of the nine gems in Emperor Akbar's court is known to have sung the Raga Deepak and illuminated the unlit lamps with flame!

There are Ragas for inducing sleep and curing insomnia and hypertension too. All these Ragas have their base in SamaVeda. Sama Veda most certainly vouches for the ability of music to attain salvation. Music is a medium through which we become spiritual humans and attain salvation, oneness with the Divine. Just the practice of music alone is enough to reach God. The passion involved in rendering a number correctly and aesthetically after having mastered the tune and rhythm makes the singer one with God even if it is for a few hours! Even an accomplished dancer needs a tune in the background to assist him in his steps! Sama Veda is certainly the precursor of classical music.

ATHARVA VEDA

Man's ultimate goal is to discover the divine in himself, in others, as well as in all living creatures and also on the inanimate objects found in nature. Hinduism has

never derided legitimate desires. Appropriate desires at the appropriate stages of life are considered natural; and proper outlets are also provided for man and woman to fulfill their desires. This fulfillment of desires is also a path to reach self-actualization and salvation. Hinduism believes that when man is at ease with himself, he is at ease with the universe.

Ever felt how wonderful the world is, when you are in love with someone and when your feelings are reciprocated? Just a telephone call from your lover is sufficient to make you generous to a road side beggar! Suddenly the world becomes a colorful, beautiful picturesque place and you want to make and leave the world a better place when you love and are loved! Motherhood transforms a woman into a caring mother not only towards her own children, but also towards all helpless creatures. History is replete with surrogate mothers feeding and nurturing other's children. Cows are known to feed pups! Such is the power of the powerful emotion we call love!

Atharva Veda contains incantations and spells which man can use to win the approval of superiors, for prosperity, health and well-being, for knowledge and wisdom, for longevity and also to attract the member of the opposite sex, or to salvage a rocky relationship.

Even today, people who have gone as far as the jaws of death and escaped are known to have donated blood and money to less fortunate victims and have support lives. People who have been saved from the brink of death are known to spend quality time with children and spouse and suddenly the focus of life shifts from materialism to philanthropy. Life becomes a thanksgiving process.

Apart from containing knowledge on the aforementioned matters, Atharva Veda encapsulates knowledge even on physiology, Yoga, ailments, warfare, marriage rituals, rituals on obsequies, birth rituals etc.

The essence of each Veda is the same and the goal too is same- to bring man to discover the divine in himself and in others, yet reminding him of his limitations, along with his strengths. One may wonder wouldn't a man versatile with such profound knowledge become vain? On the contrary, being at the mercy of so many influences in nature, he becomes humble and realizes the strength and power of nature.

He realizes the value of life, recognizes his own strengths and limitations, realizes that there are others who are more powerful than him and learns to harness the power of nature. He also learns to cohabit with other human beings and animals in peace and bring out the best in everyone. Ultimate truth is that there is a supernatural force that controls the universe and that only by playing the game according to the rules can he achieve harmony. He realizes the gravity of Karma and action.

The Vedas teach the way to lead one's life, right actions will lead to right consequences.

And when man reaches a stage of fulfillment, he ceases to want more and grows to give more, contribute more! This alone is the essence of each Veda!

V. WHAT IS VEDIC WAY OF LIFE?

Veda which essentially means knowledge or wisdom is a term that takes the reader, the listener as well as the writer to the ancient land of India and her way of life. While for the world, Hinduism is an ancient religion, for the spiritually elevated Hindu, Hinduism is not a religion, but a way of life. Sanatana Darma is what Hinduism is all about. 'Dharma', as explained by a Westerner Stephen Knap, is that which upholds or sustains. He explains that Dharma is a not only a force that sustains but also that which is sustained. We are born into this world to fulfill certain obligations-both personal and spiritual. Thus, every life has a mission, a purpose. The achievement of this purpose and the means by which 'this purpose' is achieved is what is called 'Dharma'.

Psychologist Abraham Maslow has propounded the theory of Self-actualization and has proved that sustenance is the basic need of any living being on earth, quite akin to Darwin's theory of 'Survival of the Fittest'. However, Maslow's Self-actualization theory is exclusively applicable to humans, whose needs go beyond the need to just survive! As mentioned earlier, the basic survival need of any living creature is food, but man is the only living being, who after satisfying hunger goes onto think of protection-protection from the elements through proper clothing and shelter. Once this need too is taken care of, man finds ways and means of finding channels for creative expression of his talents. In the days of yore, the cavemen hunted for their food, invented tools, stitched layers of leaves together to cover and protect themselves and built shelters with whatever was available in nature. The early man always found others like himself and preferred to cohabit with other humans. Once a village or colony was developed, he realized the power of sound and thus arose music; realized the combination of sound vibration and rhythm and from there was born dance! He realized that his

hands were a powerful tool, as his other sense organs and thus he began to paint natural themes, and he soon became 'house proud' and began to exhibit his talents in his abode.

Even today, for children as well a fully grown adult, creative expression of an inherent talent gives man a unique pleasure. Humans have realized that their unique talents earn them the respect of fellow humans and so each is compelled to answer a higher call. Appreciation draws others to man, and giving praise maintains people closer to him, strengthening bonds. When man became aware of his own emotions and through that awareness was born the sensitivity to other's emotions. He started loving others and wanted to be loved in return. In short, he craved for a sense of belongingness. No man through eons has ever lived in isolation! Today, corporate companies have clubs that encourage employees to interact and compete in a healthy way.

The last need of man is Self-actualization. After all other needs are met, man finds ways of being centered. Today, in corporate companies, we often find the head honcho mentoring his followers. He collects his followers only through his deeds and by motivating others, just as a mother guides her daughter into a new home and just like a father mentors his sons about investments, a trade etc. Maslow talks about Homeostatis or equilibrium that is crucial to humankind. The Hindu philosophy of Sanatana Dharma essentially talks about man, his true nature and about this equilibrium.

Happiness and bliss is actually the ultimate goal of mankind. Even a family that mourns eventually either shifts to another locality where the memories of their loved ones do not linger or they seek solace in a group, in their jobs, in religion, in service or sometimes through self-destructive means. The ultimate goal of mankind is not the fulfillment of all his desires, but the maintenance of bliss.

To achieve a goal, there are many methods. When man very earnestly wants something, he attempts to attain it by hook or by crook! But, how far will he go by adopting a crooked path is questionable. A fully functioning human will never be at peace with himself in a crooked path. This is where the profound insight of the Vedas comes!

As mentioned earlier, Hinduism means a way of life-the practice of Sanatana Dharma, which is found in nothing but the Vedas. Right from proper conduct to duties towards self and community, to channelizing emotions and desires in socially befitting ways, the Vedas has a prescription for everything under the sun!

Following the Vedic path obliterates disharmony in one's personality, thereby annihilating disharmony in society. Quoting Lao Tzu , "When there's peace in the heart, there's peace at home, in society and ultimately in the world!" And what better way than to lead a life prescribed in the Vedas!

The Vedas are a treasured treatise, which encompass everything from branches of medicine, surgery, quantum Physics, Economics, Vastu Shastra, Astrology, Yoga, Politics to Music and Mathematics. The Vedas spell order, in an otherwise chaotic life. Following the dictates of this order alone is sufficient in harmonizing life, harnessing creative energy and achieving complete bliss. Nature works in order of seasons. The sun has been rising each morning and setting every evening without fail and the moon appears full every month unflinchingly. Even in Norway-the land of the midnight sun, the sun does appear every 6 months and disappears the next 6 months. Understanding the nature of change and constancy and adjusting our needs accordingly is what is advised in the Vedas. To get along with a person, one needs to understand his true nature.

If only present politicians and world leaders take time to read and understand the priceless insights of the Vedas, the world will never be plagued by poverty and war!

In ancient India, Brahmins were given the onerous responsibility of guiding society, guiding even the kings and ministers. Children at age five were sent to a Gurukul (school), where under the tutelage of able teachers, they would learn the art of living and the sciences of life. Brahmacharya or celibacy was observed during the student life and upon returning to their parents, a marriage was conducted, whereupon the couple led an austere life, devoid of confusion, varied opinions etc. One rule prevailed and people followed the rule of the Vedas.

The Vedas being divided into 4 groups, contains hymns praising nature-the Fire God, the Sun, the water God or rain, forest God, rituals done to propitiate nature, to harness energies etc.

The oldest Veda-Rig Veda contains verses in praise of Nature Gods, the Sama Veda is famous for poetry, music and sound vibrations and how these impact sensations and ultimately our deeds. Yajur Veda is more ritualistic; talking about sacrifices to be offered and rituals to be conducted to achieve various means, without harming any life and Atharva Veda is full of incantations, summoning nature to act in accordance to human will, akin to magic and spells! It is more materialistic and caters to individual desires like how to attract one's lover, how to enhance wealth etc.

Unlike dictates of other faiths, Hinduism never shuns materialism. 'Artha' or the right to earn one's livelihood is certainly favored, but avarice and craving for comforts are discouraged, for greed leads to unrest, corruption, the fall of the ego and ultimately to destruction of the self and society. Quoting Mahatma Gandhi,

“There’s enough in the world to fulfill everyone’s need, but not everyone’s greed.”
The Vedas prescribes the right way of earning wealth.

‘Kama’ or the gratification of legitimate desires is not discouraged, but lusting after the object of love leads to obsession and loss of self-esteem and the seeker never achieves self-actualization.

The ultimate human goal is being in a state of bliss, for this alone is God realization. Ever seen a passionate musician rendering a number? She renders with utmost passion, having mastered the tune and finding joy in rendering it to the world, she realizes God. This is true liberation! And the Vedas help mankind to achieve this bliss and remain in a state of bliss.

Finding the God within, and not just seeking a God outside, recognizing and honoring the God in every other soul, fulfilling obligations of life dutifully, without any regard for the results, revering everything in nature is in reality a Vedic way of life. By studying the Vedas, man learnt to be in control of himself. A disciplined man leads not only others, but even natural forces are to his bidding!

While other world faiths maintain that man is a base being, a helpless sinner, Hinduism upholds the belief that man is essentially divine, he has the power to elevate himself to higher purposes, but for this he got to understand his true nature, annihilate his ego, recognize the divine in all living things and in nature, accept that there are others and other forces stronger than him and take the help of forces present in the Universe.

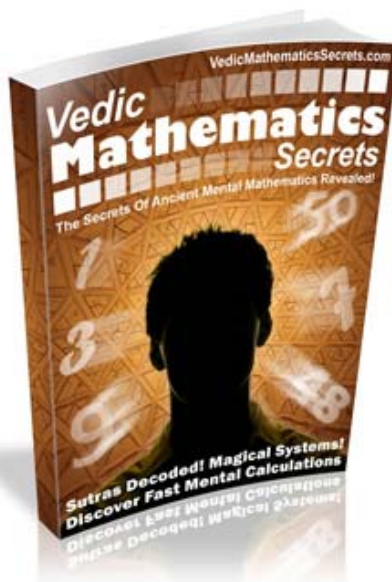
Another distinct feature of the Vedas is that even women-Sulbha, Gargi and others had composed the Vedas, which shows that in ancient India, women were seated in a high pedestal and were learned! Although, the status of women in the

post-Vedic period has been tumultuous, women were treated as equals and there was no such thing as 'male dominated bastion'. Women certainly had a say in everything and were accorded great respect. Thus, the knowledge of the Vedas, will open many eyes and the world will start treating women with due respect.

“Vedas are truly a divine gift bestowed upon mankind and leading a Vedic way of life certainly can assure peace, peace in the heart, as well as peace in the world.”

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