

## PHYSICS : An Integral Part of Vedic Wisdom

– Dr. S.R. Verma

Human consciousness as we see it today is the result of billions of year of evolution on this planet earth. When we look the world civilization, Vedas are recognized to be the most ancient and the oldest scriptures available to mankind. We have, *Brahmanas*, *Aranyakas*, *Upanishads* and *Brahma-sutras*, which give us an intellectual guide and key to understand the philosophy of Vedas. We have the *Puranas*, we have the epics, the *Ramayana* and the *Mahabharata*. Vedas stands for the direct experience of Reality through meditation and purity of mind.

The Vedas are full of worshipful prayers addressed to nature, glorifying the gift of nature. *Purusa suktam* of Rig Veda praises Nature, cows and animals and *Nasadiya suktam* of Rigveda discuss evolution of universe. In the *Prithvi suktam* of Atharvaveda, all the components of Nature are invoked. Literally, the Vedic *samihatas* are not the books of Physics, Chemistry and other discipline of science. But the existence of a strong scientific nucleus cannot be denied in the Vedic literature. In the age of science and technology, the scientific interpretation of Vedas is the most urgent need of hour. The term Vedic science is gradually gaining popularity across the world during the last few decades and it is generally used to mean the science hidden in the Vedic literature.

In the ancient stage of civilization, philosophy, science and culture began in an intertwined manner. In fact the sciences in Vedic time were not categorized in the same pattern as we do now. Vedic sciences are based upon the ancient traditions of gaining knowledge through exploration of consciousness. Our great seers, *rishis*, sages devoted their life for truth and converted their bodies as laboratories and performed experiment on themselves. Not only that the study and cultivation of sciences in India was a part of search for Truth and Reality. The seers deposited all their knowledge and wisdom in Vedas.

To unlock the doors of the treasure-house of this knowledge and wisdom, a bunch of keys were provided in the form of *SHADANGAS* namely, (i) *Siksha*, (ii) *Kalpam*, (iii) *Jyotisham*, (iv) *Vyakaranam*, (v) *Niruktam*, (vi) *Chandas*. Without the aid of these six keys, it is difficult to unlock the doors of Vedic treasure. In spite of these keys, we require an addition effects to decipher scientific facts hidden in Vedic literature.

The *Rishis* and seers used mystical and symbolic language. The words used in Vedas have multiple meanings namely, (i) the plain meaning, (ii) symbolic meaning, (iii) Research meaning, (iv) Concreted meaning, (v) Contextual meaning, (vi) scientific meaning, and (vii) spiritual meaning.

In interpreting Vedic verses, one has to take into account the *Rishis*, the *Devta* of the verse as well as the context where in the verse occurs. Such an approach would be a step in the right direction. Here, I put some examples to support the ideas that seed of scientific facts lie in Vedas.

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1. *Rtasya deva anuvrata guh* – Rigveda, 1.65.2  
All the physical forces of the Universe follows the course of eternal law.
2. *Sushumanh suryarashmi chandramali* – Yajurveda, 18.40.  
The Sushymna rays of the sun illuminate the moon.
3. *Vishpatim Saptattram* – Rigveda, 1.164.1  
The Sun has seven kinds of rays.
4. *Mitravarunam dhiyam ghritchim sadhanta* – Rigveda, 1.2.7  
Mitra and Varuna heated and mixed together complete the demonstration of composition of water.
5. *Ayam somo ashvasya retah* – Yajurveda, 23.2  
Electricity is the powerful seed of fire.  
Vedic language is marked by an extreme economy of expression.

In ancient times India occupied an esteemed and elevated position among its contemporaries in the world. Physics and philosophy are complementary. The broad philosophical conception of atomic structure of matter back to ancient India. Philosophical heritage of India is extremely rich. Physics and philosophy are complementary. In ancient India, efforts were made to obtain a rational interpretation of the physical world. Scientific theories are found in the literature of various schools of the Indian philosophy. These are divided in two broad classes. *Vedic darshan* and *Avedic darshan*. The *Vedic darshans* namely *Nyaya*, *Vausheshika*, *Sankhya*, *Yoga*, *Mimamsa* and *Vedanta* had taken their concrete shape by the time of Buddha. The prominent heterodox (*Avedic*) *darshans* are Jaina, Buddhist, Tantra and Charvaka. All the *Vedic* as well as the *avedic* schools searched for the reality, but each one of them developed its own view of the reality. We find that range of the theories begins with understanding the smallest form of matter in terms of *paramanus* and it goes up to the dissolution of matter in the Absolute Unity. Ancient thinkers reached a very interesting conclusion that it is the nature of reality to express itself both as unity and diversity.

Maharshi Kanada propounded *Vaisesika Darsana*. *Vaisesika* philosophy developed *Paramanu Veda* (Atomic theory) based on the natural scientific views of the ancient Indians. *Vaisesika* defines the size of an atom. According to this theory, an atom itself does not have any chemical property; it cannot be perceived. The smallest particle then can be seen directly by naked eye be *transanu*, and only then the properties (smell, taste, colour etc.) are perceived. Thus, the sixtieth part of *transanu* will give the *Kriyaksetra* (range of action of *paramanu* (atom)). There is a verse that puts the size of atom.

*Jalantargate bhano yat suksmam drsyate rajah*  
*Tasya sasthitamo bhagah parmanuh prakirititah*

The sixtieth part of the smallest dust particle (rajah) seen in sun beam.

This may be compared with the Tyndall effect. According to Tyndall effect, a beam of light entering a dark room lights up the dust particles (colloidal particle) which are seen floating in the air. Similarly, when a strong beam of light is concentrated on a colloidal solution, the path of the beam is illuminated by light and becomes visible when observed from the side. The Tyndall effect shows that size of colloidal particle ranges from  $0.2 \times 10^{-4}$  cm to  $1 \times 10^{-7}$  cm. The one sixtieth part of smallest dust particle will be  $1 \times 10^{-8}$  cm. The size of atom  $\approx 10^{-8}$ ; *anguliparimanam* =  $05 \text{ \AA} = 0.5 \times 10^{-8}$ . This prove that the size of atom computed on the basis of *Vaisesika* is of the same order of

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magnitude as that of an atom ( $1 \times 10^{-8}$  cm) in Physics. This also proves that the range of action of the atoms (*paramanu*) of *Vaisesika* bearing the properties of chemical changes as well as the order of their size are the same as that of Bohr atom.

According to *Vaisesika darshan*, each *paramanu* is qualitatively very different from all others, possessing *vishesha* literally meaning unique specification. There are as many varieties of *vishesha* as there are *paramanus* themselves. In fact, this concept gave its name *Vaisesika darshan*.

The Vedas stands for the direct experience of Reality through meditation and purity of mind. Vedas uncover the knowledge of total potential of natural laws and human awareness. The very first verse of Rigveda start to say –

*OM Agnimeele Purohitam Ygnasya Deva Ritwijam*

Agni is meant to convey the oblation offered through it. Fire place to the gods. Here Agni also used for all form of energy.

Recent scientific discoveries seem to validate the concept of Vedas. Physicists and cosmologists are close to proving that science and Vedas seem to be saying the same thing. Cosmology is very important field for both science and spirituality. In fact, cosmology can be regarded as one of the meeting points between science and spirituality.

Vedic seers had an intellectual urge to know how the universe came into existence. In fact, there are several *sukta* in *Rigveda* which provide us knowledge of force of gravitation, birth of star and origin of the universe. Among the various *suktas* of Rig, Yajur, Sama and Atharva *samhitas* such as *Ucchistha Brahma Sukta*, *Nasadiya sukta*, *Purusha sukta*, *Hiranyagarbha sukta*, the *Nasadiya sukta* of Rig Veda has been most popular among scholars. *Nasadiya sukta* makes its own contribution to our understanding of the origin of the Universe.

The *Rsi* says that there was neither *sat* nor *asat* at the time of the creation of Universe. There was no space, nothing else were present. Then what covered on? Where? Actually author of *Nasadiya sukta* is going to say that '*sat*' and '*asat*' both existed together. He is going to uphold the concept of singularity at the time of Big Bang. Singularity is a point where space and time simply disappear. At singularity normal concepts of space and time breakdown. You cannot figure out when and where something is going to happen if you do not have a clear background of time and space. We certainly cannot use science to tell us what existed before Big Bang. It shows that singularity was neither *sat* or *asat* as mentioned in *Nasadiya sukta* of Rig Veda.

Thus, we can see that whatever cosmologist with all their modern equipments say today about the origin and fate of the universe, their seeds are already present in *Nasadiya Sukta* of Rigveda. Indian *Jyotirvignam* is always Heliocentric based, it is as old as the Rigveda. The following citations from the Rigveda attest this fact.

*fe=k nk/kkj i=fFkohe|r |keA fe=% d"Vh* – Rigveda, 3.5.51

which mean the Sun holds the earth and the celestial region. The Sun is the attracting power of all heavenly bodies.

*nkn?k i fFkohefHkrk e ;|k%* – Yajurveda, 1.8.2

The Sun holds the Earth from all side with his power.

Astronomy is one of the six Vedangas of Vedas. The construction of altars and the performance of ritual, kalpa, had an astronomical basis and we also find valuable

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astronomical information in the sulbha sutras which are part of the Kalpasutra. Two old names of astronomy are Jyotisa, 'the science of light' and nakasatra vidya, the science of stars. Astronomy and its role in Vedic culture is itself is a major field of knowledge. Right now I am not focusing on that.

I shall now very briefly mention about some of the works stated to have been propounded by our great Rishis, Seers and Sages.

- (1) Bharadwaja Rishi : Author of Amshu Bodhini – In this, he described about the planetary motion, the influence of other interferences on their motion, light, heat, sound, telephony, construction of aeroplanes, electricity and its applications. He is also author of Brihadyantra Saavaswami. Described the aeroplanes and about electricity. Author of Akasha Thantram 7 types of Akasha, the classification of the stars in the Akasha, the interactions of various energies in the Akasha, types of fires, lights, the orbits of the planets, the earths, rivers, etc., are described.
- (2) Angiro Maharshi : Author of generation of clouds – In this he described the changes in the clouds, generations of the life of many species, changes in solar energy, relationship between the solar radiation and the cloud formation the origin or generation of the Navaratnams. How the solar radiation is responsible for them are described.
- (3) Shaktyayana Maharshi : Author of the nature of vapour – In this he described 84,000 vapours, their layers, their influence on the earth and plantation, 84,00,000 medicines, instruments to detect these vapours etc.
- (4) Sage Narada : Author of (1) different fires. He described about 128 types of fires, colours, quantities and usefulness measurement of heat, the differences in heat quantities are described. (2) Author of different types of smokes – describe how different types of smokes. that are generated from different matter, can be collected by certain mirrors. Then how these smokes can be tested by using certain acids, in order to understand the poisonous nature or usefulness of smokes. The applications of these for the growth protection of the body mind and intellect, have been explained.
- (5) Aswalayana Maharshi : (1) Author of nature of water – In this, the differences in types of water, their usefulness, the results of baths in different waters, the characteristic features of different waters etc., are described. (2) Author of Agatatwalahari – In this he dealt with agriculture and methods of cultivation of the plant kingdom etc. are described.
- (6) Vashishta Maharshi : Author of Prapancha Lahari – atomic theory is proved – the cause of the creation – is it dependent on the atomic energy or in the supernatural, Paramatma shakti. This topic is well discussed.
- (7) Vyasa Maharshi : The author of Brahmanda saram – in this also the above topics are described.
- (8) Parasara Maharshi : Author of the Andakaustabam – in this also the cause of the creation is discussed. In addition, the life species. and their descriptions are given. The atomic theory is also explained.
- (9) Vivaranacharyulu : Author of Lokasangraham. He had described about 1714 languages, life species, food habits, their origins, religions, about the different information in the world.

- (10) Bhodayana Maharshi : Author of Dhatu Sarvaswau. In this different elements, their generations, mines, method extraction of metals from mines, description of poisons, antidotes, for the poisons. Sulphur generation, mercury, preparation of ashes etc. are described.
- (11) Atri Maharshi : Author of Namaratha Kalpam – In this 84,00,000 of shakthis (energies) their names, how they can be generated the meaning of the words etc., are described.
- (12) Bhoja Maharshi : Author of Samarangana Sutradharam – In this he described different types of machines, construction of aeroplanes, methods of preparation of sirens, how the music, dance, war, protection of the kingdom etc. can be performed by the dolls, is well described.

### **Science is a method, not an Area**

Science is essentially a method of study – the method of rational study. And the significant point to note is that this method of science can be applied to any area of study. To limit it to one particular area would be unscientific. However, there would be variations in applying the scientific method, depending upon the demand of the particular area which is investigated.

The ancient Indians were quite aware of the great value of the method of scientific enquiry. They applied this method to every field of study, and their study 'Vignana' which literally means 'special knowledge'; virtually it means science. Modern sophisticated research facilities were not available in those times, but surprisingly in ancient time seers had developed their own way of scientific investigation.

### **Spiritualism, Modern Science and Philosophy**

Spiritualism, modern science and philosophy – these three words at one place might appear to many a highly unrelated – but they are as much related to each other as the three corners of an equilateral triangle without anyone of the corners, the identity of triangle itself (i.e. Humanity) would not be there.

Here, I wish to honour the Indian names, of Aryabhata, Varahamihira, Bhaskaracharya, Charaka, Sushruta and our great Vedic seers and others often a question is asked as to why Indian science began to decline from the thirteenth century onwards and various answers are being propounded. All these different answers may be right, but in my view, the chief reason was the rapid disconnection that occurred at that period in respect of the earlier harmony of intuitive pursuit, philosophical pursuit and scientific pursuit.

In this reference I strongly feel that the Indian scientific heritage had its roots in the Vedic tradition. Buddhistic tradition and Jaina tradition. I feel that these roots need to be further explored for welfare of mankind.

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