



VIMS-5

Vedanta and Science

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Introduction: If we look back into the European history we will find that there has never been a real friendship between religion and science. It may be said that the scientific revolution, as we know it today, began with the publication in 1543 of the heliocentric theory (i.e. revolution of planets round the sun) by the Polish astronomer Copernicus. Since then science has gone through a rather turbulent period to come to its present state.

In those days Church leaders, especially those of the Vatican, viewed science with suspicion and regarded it as a threat to the survival of religion. Considering the nature of society as it existed then and the perception of God's role for the salvation of man, it was not unnatural for them to hold such a conviction. They were a very powerful group of men. They had a strong hold on the society. In consequence, anyone who dared to publish his scientific work or ideas had to endure harsh criticism, insult and even harassment. Galileo, in order to save his neck, had to submit to the Vatican. Even when in 1623 one of his long time friends became Pope the Vatican's injunction on him was not fully lifted (1). Another case that comes to my mind is that of Darwin. It is known how much insult, anguish and pain he had to go through to establish the 'Theory of Evolution' (2).

Since the publication of heliocentric theory we have come a long way in terms of religious tolerance, albeit the existence of a few pockets of resistance. The Vatican after a long protracted fight against the theory of evolution has finally succumb to the reality of nature and declared its acceptance of the theory in 2000. Today almost all religious leaders, irrespective of who they are and where they are from, accept without any question the validity of science and its right to exist. They now happily use the appliances of science to explain about God and His message. But the same principle, the same consensus, does not hold good for scientists' acceptance of religion or God. The boot is now on the other foot.

Science and its objectives: The Chambers Twentieth Century Dictionary of English defines science as the knowledge ascertained by observation and experiment, critically tested, systematised and brought under general principles. According to The New Encyclopaedia Britannica, science is any of various intellectual activities concerned with the physical world and its phenomena and entailing unbiased observations and systematic experimentation. In general, a science involves a pursuit of knowledge covering general truths or the operations of fundamental laws (3).

The two definitions given above are very close in their concept. However, the definition of the encyclopaedia comes closer to the scientific community's view of science. At its advent science was perceived to be 'Natural Philosophy'. In other words, it was considered as the philosophy capable of explaining the mysteries and truths that lay hidden in nature. The origin and sustenance of each and every phenomenon that nature exhibits are scientific. For example, the emis-



sion of light from the interior of the sun, the flow of wind, the formation of cloud, growth of plants through the process of photosynthesis, the working of human body, the function of eyes and ears and indeed every phenomenon we observe daily in nature is scientific. Nature is a perfectly ordered and disciplined entity. The laws of physics, chemistry and other subjects are the laws of nature to sustain the order and perfection inherent in it since the beginning of time. These laws enable us to unravel the mysteries of nature. Therefore, science may also be perceived as the quest to unravel the mystery and truth that nature exhibits.

What is Vedanta? Vedanta is normally understood to be the philosophy of the Vedas. It is viewed to be the pinnacle of all Vedic teachings. In one of his lectures Swami Vivekananda said, "The mass of writing called the Vedas is not the utterance of persons. Its date has never been fixed, can never be fixed, and, according to us, the Vedas are eternal. There is one salient point I want you to remember, that all the other religions of the world claim their authority as being delivered by a Personal God or a number of personal beings, angels, or special messengers of God, unto certain persons, while the claim of the Hindus is that the Vedas do not owe their authority to anybody. They are themselves the authority being eternal – the knowledge of God. They were never written, never created. They have existed throughout time (4)".

To explain further why Vedanta is eternal and scientific he went on to explain to his audience, "They (Hindus) hold that the Vedas are without beginning and without end. It may sound ludicrous to this audience, how a book can be without beginning and end. But by the Vedas no books are meant. They mean the accumulated treasury of spiritual laws discovered by different persons in different times. Just as the law of gravitation existed before its discovery and would exist if all humanity forgot it, so is it with the laws that govern the spiritual world. The moral, ethical and spiritual relations between soul and soul and between individual spirits and the Father of all spirits were there before their discovery and would remain even if we forgot them (5)".

Unlike the philosophy of other religions Vedanta, the philosophy of Sanatana Dharma, is not a set of beliefs or a number of religious dogmas. Beliefs and dogmas, by their very nature, are static and fundamentally flawed. Beliefs, being what they are, naturally act against advance of knowledge and even freedom of thought and expression. They cannot explain the huge diversity that exists in the human race and indeed in everything that constitute nature. They are natural hindrance to scientific investigation and quest for finding the truth the universe represents. On the contrary Vedanta is exactly the opposite of what religion stands for, i.e. to understand and unravel what nature and the universe are all about.

Vedanta – the evolution of philosophy: The main characteristic of Vedanta is that it represents evolution of philosophy. The ancient saints and seers were people of great ability and vision. Unlike Prophets and Messiahs of other religions they never claimed to have spoken to God nor did they say angels and God's messengers brought His message to them for propagation. They were astounded with the complexity on the one hand and beauty on the other of nature. In those days they did not have any means for scientific investigation of their observations. The only way they could appreciate,

understand and indeed experience the mystery of nature was through meditation and contemplation. As is now known to the world, Vedanta or Upanishads are the mass of writings on their discoveries and views. Therefore, the literature of Vedanta progressively grew with time. It is this evolution of knowledge about the universe and its creation/origin that makes it so unique in the history of mankind. It is also a quest for finding the truth the universe represents. Although science and Vedanta are now moving forward in separate ways, their objectives are almost identical, i.e. the pursuit of discovering the Truth behind the creation of the universe.

As Swami Vivekananda said Vedanta is also the 'voice of freedom'. Religious dictums such as 'thou shall do it' and 'thou shall believe it' had never any place in Vedanta philosophy. The Vedic saints and seers, the authors of Vedanta, were freedom loving people. Meditation and contemplation alone did not satisfy their mind. They used to have free discussion and debate among themselves and with their disciples. It is only through freedom of speech and freedom of discussion and debate can the truth hidden in the mystery of creation be established.

Why Vedanta is eternal: The age of the universe as given by modern cosmological theories is not an accurate prediction. Nevertheless, there is no doubt that the universe has come into being billions of years ago. The law that holds all the components of the universe together is the Law of Gravitation. This law came into existence when the universe came into being. It is an eternal law, for it will continue to exist for ever. Indeed, all laws of science such as the laws of conservation of energy and matter, the laws of thermodynamics and the laws of nuclear and chemical reactions, like the law of gravitation, are eternal laws. They explain the working and sustenance of nature. They will always be there in nature.

The teachings of Vedanta has a direct correlation with this scientific truth, for the main objective of Vedanta, as has already been pointed out, is to unravel and explain from philosophical point of view the mystery and truth lay hidden in nature. It is this characteristic that endows Vedanta with eternal life. The Einstein mass-energy relation $E = m.c^2$ has a direct bearing to the correlation between Vedanta and science. This equation is as much a spiritual truth as it is a scientific reality. It states very clearly that the universe is made up of two entities – E, the invisible energy and m, the visible matter. Although in the physical sense they appear to be different; in reality, however, they are one and the same and hence energy can be converted into matter and vice versa. It may be said while science deals with matter, Vedanta is concerned with the invisible spiritual aspects of the universe. That the laws of science and the teachings of Vedanta are complementary and interdependent can be illustrated with an example.

A human being has two distinct yet interdependent features, the physical body and the invisible entities of mind, conscience, intelligence and emotion. The former is matter while the latter represents the characteristics of energy. In the absence of body there is no direct evidence of the invisible entities while without them the body is nothing but a corpse. Energy represents drive and action. It is the representation of life and consciousness. Thus, the abstract entities have a greater significance than the visible body.

If there is anything in the world that is divine and eternal it



is Sanatana Dharma and its philosophy Vedanta. The American Historians Richard L. Greaves, Robert Zaller, Philip V. Cannistraro and Rhoads Murphy while writing about Ancient India said, "India's civilization is the oldest in continuous existence (6)". Indeed, it is the only civilization that has stood the test of time and survived all military invasions and missionary onslaughts against it. The other ancient civilizations such as Mesopotemian, Egyptian, Greek, Aztec and indeed some others were great and glorious in their own right. None of them are now in existence. They are either disappeared in course of time or destroyed by new religious movements. The religions that supported these civilizations were based on untenable beliefs and dogmas. This is where one can see the difference between the philosophy of Vedanta and beliefs of other religions.

Dharma and Science: The Vedas are the origin of the concept of Dharma. The parallel concept that is perceived to convey the same meaning is usually taken as 'religion'. This view is wrong, for conceptually they are entirely different. Religion is a man made phenomenon and that is why different religions, although they may have some common ground, teach different beliefs. Every initiator of religion, call him Prophet, Messiah or what you will, leaves behind his impression of the Divine. And his teachings are influenced by his tradition, culture and history. This is the reason why religious beliefs and dogmas are different. The followers of a particular religion may claim that their religion was given to their Prophet or Messiah by God; however, they can never prove such a belief. It is more a blind faith rather than a rational view of the divine plan.

If there is anything divine it is Dharma. It is what nature is all about. It there is anything preordained to work in a particular way it is Dharma. In explaining Dharma or more appropriately Bharata Dharma in his book Sakti and Sakta Sir John Woodroffe said, "Bharata Dharma holds that the world is an Order or Cosmos. It is not a chaos of things and beings thrown haphazardly together, in which there is no binding relation or rule. The world-order is DHARMA, which is that by which the universe is upheld (*Dharyate*). Without Dharma it would fall to pieces and dissolve into nothingness. But this is not possible, for though there is Disorder (*Adahrma*), it exists, and can exist only locally, for a time, and in particular parts of the whole. Order however will and, from the nature of things, *must* ultimately assert itself. And this is the meaning of the saying that Righteousness or Dharma prevails. This is the nature of things, for Dharma is not a law imposed from without by the Ukase of some Celestial Czar. It is the nature of things; that which constitutes them what they are (*Svalaksana dharanat dharma*). It is the expression of their true being and can only cease to be when they themselves cease to be (7)".

Nature exhibits a perfect order. Each and every element of nature is engaged in its work for its survival in the way preordained for it. In other words, all of them are performing their Dharma. Therefore, **Dharma is the principle of the working and sustenance of nature.** It may be interpreted as the science of how nature is made up of and practically functions. As the law of gravitation is eternal so is this principle. *Dharma is not a set of beliefs or a number of dogmas. It represents the truth of nature, the truth of the universe. Man will come and*

go. Creatures will born and die. But the nature of Nature will be there for ever. Dharma came into existence when nature came into being. It will cease to exist only when nature will cease to be.

The Law of Karma: It is one of the main teachings of Vedanta. Order and discipline are not self-sustaining entities. Order cannot be sustained without rules and regulations. There must be a law to uphold the order that pervades through nature. **The law that maintains that order is the Law of Karma.** *If there is any law divine in its origin it is this law.* If the concept of creation of the universe is to be believed then the creator must have had a plan for its ordered existence. He could not have put all the bits and pieces of the universe together and left them alone. He could not have thought that He had done His job and now the universe will look after itself. That would be an arbitrary and reckless act. He must have had an idea of how the order in the universe and its nature will be sustained. *The unwritten and ever-pervading law that maintains that order and would continue to do so is the Law of Karma.*

Prof. Raynor C. Johnson, a distinguished physicist and a former Professor of Balliol College, University of Oxford, while explaining the law of karma said, "In our Western world we are all familiar with the law of cause and effect. If certain things concur, then certain other things always happen. The first group is called the cause of the second happening, and the latter is called the effect of the first. The observations of scientists have been largely directed to linking things together in such chains of cause and effect. It is analysis of these kinds of data which had led to Natural Law. All this is familiar to everyone: the physical world is ruled by law (8)". There is a direct correlation between the law of karma and laws of science. Although the law of karma cannot be directly verified experimentally, the objective of both is the same which is to sustain the order in nature.

To explain the law further Prof. Johnson continued, "When we come to consider Man himself, who, in the simplest terms must be considered a synthesis of body, mind and soul, we seem to be uncertain of the rule of law on these higher levels of ourselves. Some people talk as though these higher levels were the domain of caprice or chance: this is nonsense, for the Law of cause and effect runs through all levels on which time operates. It is called in Eastern philosophy the law of Karma, and it amounts to this: so far as human beings are concerned there is no such things as chance or accident, but everything that happens to them fits into the pattern of cause and effect. Each living person at some time has set going his own pattern of causation and is meeting the consequences (9)". The law of cause and effect is almost similar to the third law of Newtonian mechanics namely the law of action and reaction. If there is an action, there will always be a reaction. Similarly, effect will follow action. It may not be possible to conduct experiment on this law; however, it can certainly be verified, as in the case of the theory of evolution, through perception and observation.

Reincarnation and science: There is a huge diversity in the human race. The diversity in the plant and animal kingdoms is even greater. There appears to be an inbuilt injustice and unfairness in the world. Some people live for a hundred years while some others die an immature death. Some are very bril-



liant while others cannot properly read and write. "If the bodies of babies born into the world are vehicles of newly-created souls who are beginning their first and only incarnate life, why are some of them so badly handicapped from the start? At a defenceless stage some of them are subject to cruelty, neglect and callousness which physically or psychologically warp them from the start. Other babies are given wonderful opportunities and many gifts, including the boon of loving and understanding parents. It is obvious that babies cannot embody newly-created souls without imputing callous indifference or favouritism to their Creator. This is unthinkable (10)".

Reincarnation is fundamental to any understanding of life, especially to the understanding of diversity that exists in the world. There are religions preaching that man has only one life. It naturally leads to the conclusion that God creates man with different abilities and different life span. Teaching such as this is not only invalid in its concept it is completely devoid of common sense. So far reincarnation is the only concept offered to man to explain the apparent injustice or favour that appears to be always there in the human society. In simple terms the concept of reincarnation is that "there is a centre of individual consciousness which is immortal (we may call it the 'soul') and this makes a series of contacts with the physical world, creating physical bodies to do so. It is reasonable to suppose that what the soul has done once it can do it again and again, in the interests of its own growth and development. Each time it builds a new personality perhaps in quite a different environment and period of history, and it distils after death from each of these transient personalities some wisdom and experience which it stores within itself (11)".

Therefore, the concept of reincarnation has been adopted to explain the preordained facts of nature. To explain how transmigration of soul may take place the Bhagavad Gita has declared,

Sariram yad avaapnoti yac ca'py utkraamati'svarah

Ghritvai'taani samyaati vaayur gandhaan ivaa'sayaat (12). *When the Self enters and leaves a physical body, it takes along all its attributes (senses and mind) just as wind carries scent (of a flower) from one place to another. But, how does the Self exist in the body? How does it work? As electricity lights a bulb and works a television, so does the Self functions in a physical body. The Kena Upanishad has explained it in a practical way. It said, "Shrotrasva Shrotram manaso mano yadvaachha vacham sa u praanasva praanah. Chakshushva chakshvuratimoochva dhiraah pretya asmaat lokaat amritaah bhavanti - It (the Self) is ear of the ear, the eye of the eye, and the word of the words, the mind of the mind, and the life of the life. Those who follow wisdom pass beyond and, on leaving this world, become immortal (13)".* The human body is made up of many individual parts. The transplantation surgery has proved that such a concept is genuine and correct. All of them function in a scientific way. The cause that enables them to work in that way is the same invisible Self.

Perhaps the most important characteristic that reincarnation shares with science is that there is a correlation between reincarnation and the theory of evolution. The main objective of both of them is to explain the increase in diversity that man has been witnessing on the earth over many thousands

of years. This has been taking place despite the disappearance of many species.

Evolution or reincarnation: The theory of evolution had a profound effect not only on biology but also on many other fields, especially religion. Reincarnation is based on the concept that the entity Self survives the death of physical body. Most religions are not normally concerned with explaining where the Self comes from and where it would be after death. Reference 13 (BG XV - 8) has given an insight into how transmigration of the Self could happen. It is this transmigration that causes the diversity in the human race. A founder of the transcendentalist movement in America, the Boston clergyman James Freeman Clarke devoted a chapter of his book 'Ten Great Religions' to 'The Soul and Its Transmigration in All Religions'. The following is what he said.

"That man has come up to his present state of development by passing through lower forms is the popular doctrine of science today. What is called evolution teaches that we have reached our present state by a very long and gradual ascent from the lowest animal organizations. It is true that Darwinian theory takes no notice of the evolution of the soul, but only of the body. But it appears to me that a combination of the two views would remove many difficulties which still attach to the theory of natural selection and the survival of the fittest.

The modern doctrine of evolution of bodily organisms is not complete, unless we unite with it the idea of a corresponding evolution of the spiritual monad, from which every organic form derives its unity. Evolution has a satisfactory meaning only when we admit that the soul is developed and educated by passing through many bodies. If we were to believe in evolution, let us have the assistance of the soul itself in this development of new species (14)".

In the human race there is a huge spectrum of ability and wisdom. They are abstract entities. But the theory of evolution deals with matter only. The body of a man works only under the command of abstract entities such as mind, intellect, wisdom and ability. In their absence the body does not function. So long as evolution of these entities is not accepted the theory of evolution cannot be complete. No body has ever seen a leopard changing its spots or a bird changing into another bird. Evolution takes place only the future generations. If the nature of future generation is different from the previous one it could only be due to evolution of the entities that define the personality of a being or a creature. Therefore, reincarnation or the transmigration of the Self is a better way of explaining evolution than the Darwin's view of natural selection.

Moksha and Science: It is one of the most important teachings of Vedanta. According to Sivaya Subramuniswami "Moksha is release from transmigration, *samsaara*, the round of births and deaths, which occurs after *karma* has been resolved and *nirvikalpa samaadhi* - realisation of the Self, *Paraasiva* - has been attained (15)". The essence of this definition is that it represents a cyclical phenomenon, a phenomenon preordained in nature. A scientific equivalent is the evaporation of water molecule from the oceans and its subsequent migration through nature taking different names, shapes and sizes until it finally returns to its source, the ocean. Like the laws of science it may be perceived as an eternal



process, for it will continue to function in the world so long as the sun's energy will sustain life on earth.

All cyclical processes justify the laws of conservation of energy, conservation of mass and other similar laws that demonstrate conservation. Moksha represents exactly the same principle. After death the physical body reverts back to the five elements (*kshiti, op, tez, marut and vyom*) of nature, the elements with which the body was constituted in the first place while the Self (Soul) continues in its journey seeking perfection, undergoing transformation and transition, until the state of Paraasiva is attained and it is ready to return home. Return home it always does. It is simply a matter of time. In the process the totality of both matter and 'the aspect that endows life to matter' is always conserved.

Ecology in Vedanta: Ecology refers to the study of ecosystems in which the living organisms and their intimate environment are inseparably interrelated and interacted with each other. The environment on earth came into existence when it itself came into being. Since that beginning the environment has been evolving and has always been clean. With the advance of science and technology giving rise to man's standard of living and the growth of modern industry the state of the environment is now worse than ever.

Today's industrial world operates largely with a frontier mentality. It is a human centred view that claims that man has every right to dominate over nature. The University of California historian Prof. Lynn White has argued that the ecological problems have been created because of the Judeo-Christian view of the world. It asserts, "God created men in His own image.....God blessed them and said to them: Be Fruitful and increase in number; fill the earth and subdue it. Rule over the fish of the sea and the birds of the air and over every living creature that moves on the ground (16)".

Unlike other religions, the Vedic approach to ecology is a holistic one. The Rig Veda has warned, "Do not destroy trees, for they are the source of life". In his book *Earth in Balance* Al Gore, the former Vice-President of the USA, has said the Vedas of Hinduism consider the protection of the environment a duty of every human being (17). Indeed, the essence of Vedic philosophy is 'to lead one's life in harmony and equilibrium with nature'. There is no better or higher principle to respect and conserve the environment than this. In the Vedas there are many hymns in praise of nature and the earth.

"All creatures, born from you, move around upon you. You carry all that has legs, two three or four. To You, O Earth belong all the human races, those mortals upon whom the rising sun sheds the immortal splendour of its rays (18).

"Mother of plants and begetter of all things, firm far-flung Earth, sustained by Heavenly law, kindly and pleasant is she. May we ever dwell on, passing to and fro (19).

"Western civilization considers human life to be sacred, but Hindus have gone much further and said that not only human life but all life is sacred. Therefore, all life forms, not just human beings, must be revered and respected (20)". In the western mind nature is about survival of the fittest. There is a struggle for survival and only the fittest will survive. So, nature is fitted with claw and teeth so that the survival battle can be successfully carried out. But Vedanta has declared "Sarvam khalidam Brahma -God dwells in every beings". Recent research indicates that 'the reverence for life and the

quest for non-violent solutions that mark the consistent Indian stress on the great chain of being and the oneness of creation has emerged by Harappan times (21)". The holistic approach of seeing God being the dweller in every creature and the natural respect for nature is the highest and best ecological principle.

Science in Ancient Bharat: It is known throughout the world that ancient and classical India had a deep respect for learning and education. To quote the American historians Greaves et al again, "From the modern perspective, classical India seems especially noteworthy for its scientific achievements. Mathematics had by Gupta times been brought to a high level of sophistication, including a rudimentary algebra and a numeration system using nine digits and a zero, far more efficient than the cumbersome Roman numerals. The Arabs, who transmitted it to the West, called mathematics 'the Indian Art'. Later European science would have been impossible without it. Medieval Indian mathematics after Harsha's time developed the concepts of negative and positive quantities, worked out square and cube roots, solved quadratic and other equations, understood the mathematical implications of zero and infinity, worked out the value of pi to nine decimal places, and made important steps in trigonometry, sine functions, spherical geometry, and calculus. Earlier Indian scientists anticipated the classical Greeks in developing an atomic theory of elements, basic to twentieth-century Western sciences, by the sixth century B.C. Traditional Indian medicine had a very extensive pharmacopoeia and used a variety of herbal remedies and drugs discovered and used only much later in the West. Physicians appear to have understood the function of the spinal cord and the nervous system, and successful surgery included caesarean section, complicated bone setting, plastic surgery, and the repair of damaged limbs. Vaccination against small pox was first used in Gupta India well over 1000 years before it was tried in the West. Doctors are highly respected, and the textbook of the famous physician Caraka in the late first century AD includes a passage reminiscent of Hippocrates, the classical Greek physician (22)".

Ancient India was not only reputed for excellence in fundamental sciences, it was also quite advanced in applied sciences such as engineering, especially in civil engineering. The record of Greaves et al states, "Perhaps the most remarkable thing about this (Indian) civilization was the planned layout of its cities, including wells, a piped water supply, bathrooms, and waste pipes or drains in nearly every house. There is no parallel for such planning anywhere in the ancient world, and indeed one must leap into the nineteenth century in the western Europe and north America to find such achievements on a similar scale (23)".

Unlike in the West and elsewhere in the world, there has never been a conflict between the teachings of Vedas and science, for the Vedas are books of knowledge. Knowledge is both spiritual and secular. And it is this view that has given Vedanta a unique place in the history of religion. While the Vedas proper concern themselves with the ultimate Reality, each of them contains a number of Upa-Vedas or subsidiary Vedas containing, in varying degrees, scientific knowledge helpful to mankind, knowledge such as Raashi Vidya (Mathematics), Bhoota Vidya (Physics), Nakshatra-Vidya (As-



tronomy) and indeed a number of other scientific disciplines. **Quantum mechanics and relativity in Vedanta:** When Vedanta was established science was not as advanced or sophisticated as it is today. One does not know how much science is likely to advance in the future. Quantum mechanics and the theory of relativity could turn out to be the culmination of modern science. Vedic seers and saints, the authors of Vedanta, never claimed to have discovered these subjects. They were deeply engaged in speculating about the mystery and complexity of nature and the universe and their working. They did not have any means to verify their speculations in a practical way, although they might have intuitive experience of their speculations. Therefore, while considering if there is any evidence of the theory of relativity and quantum mechanics in Vedanta one has to bear this point in mind. The way forward is to see whether Vedic speculations and assertions may in some way be interpreted with ideas and concepts of these subjects.

The Einstein equation, $E = mc^2$, for mass energy equivalence may be a good beginning in this respect. It states that the universe is constituted of two entities, energy E and matter m and they are one and the same. Hence, one may be transformed into another and vice versa. Although they are one and the same, under no circumstances in any particular event will both of them appear. The invocation of *Isopanishad*, **Purnamadah Purnamidam Purnaam Purnam Udachchate**, represents the same truth. Brahman and the universe are the two realities, the latter being a projection of the former. Brahman is not a 'Being' that is normally characterised by matter. Like energy Brahman is invisible and all energy. Energy stands alone in the equation, for it is Brahman from which the universe emerged.

The ancient Indian concept of '*anu*' and '*paramaanu*' may be represented, in the language of modern physics, by atoms and subatomic particles respectively. In modern physics atom was originally believed to be the ultimate particle or the building block of the universe. The idea was if it can be discovered, the origin and the constitution of the universe would be understood. The search for atom has led to the discovery of 200 particles. The situation is now such that the quest is fast becoming one of a wild goose chase. Although many subatomic particles such as protons, neutrons, electrons, etc have been discovered; the quarks, however, have not been yet been found. Will they ever be discovered? That is anybody's guess. These particles whether they are leptons, mesons or baryons or any other are insentient particles. Without having the property of consciousness they cannot be the real building block of the universe.

The approach of Vedanta is a holistic one. The major difference between *Anu* and *Paramanu* on the one side and the particles of modern physics on the other is that the former may be viewed as 'conscious particles'. They represent both aspects of the universe, the energy E and the matter m . The universe cannot be understood unless both of them are taken together. This is why there are physicists who believe that incorporation of consciousness in theories of physics is an absolute necessity if the reality of the universe were to be fully understood.

Dancing Siva is an interesting symbol. In explaining this symbol Fritjof Capra said, "The Dance of Siva symbolises not

only the cosmic cycles of creation and destruction, but also the daily rhythm of birth and death which is seen in Indian mysticism as the basis of all existence. At the same time, Siva reminds us that the manifold forms in the world are *maya* – not fundamental, but illusory and ever-changing – as he keeps creating and dissolving them in the ceaseless flow of the dance (24)". In the words of Coomaraswamy, "Siva's dance in the clearest image of the activity of God which any art or religion can boast of (25)". In other words, "As the god is a personification of *Brahman*, his activity is that of *Brahman*'s myriad manifestations in the world. The dance of Siva is the *dancing universe*, the ceaseless flow of energy going through an infinite variety of patterns that melt into one another (26)". The world, indeed the whole universe, is always in a flux. The birth and death of stars, the continual emission of radiation from stars, and destruction and creation of particles in nuclear reactions are some of millions of changes taking place on a daily basis. Dancing of Siva is a symbolic representation of the universe's eternal dynamism.

The concept of *maya* has fascinated both philosophers and scientists alike. That which is not fundamental or not real is *maya*. The 'uncertainty principle' has never had experimental verification. Yet it has been used to prove many quantum mechanical phenomena. There are situations, for instance when the positions of electrons revolving in an atomic structure are considered they exhibit wave like behaviour. In reality, however, they are very tiny particles. The relativity of space and time may also be *maya*, for they are not absolute entities as they are in Newtonian classical physics.

The examples given above are only a few of many Vedic concepts that over the years drawn attention of many all over the world. There are other concepts and assertions that can be visualised in terms of the ideas of modern science, one of which is the Vedic view of creation and how it is related to the big-bang and steady state models proposed by astrophysicists. This has been thoroughly discussed in the paper '*Advaita Vedanta and the Modern Cosmology* (27)'. Considering both scientific and philosophical points of view it has shown how Advaita Vedanta has explained the cause of the big-bang, can synthesise the scientific theories of both steady state and big-bang models and provide a possible scenario of a cyclical universe that is more credible than what each of the scientific models stand for.

Conclusions: The general view that science and religion are incompatible does not apply to Vedanta, the philosophy of the Vedas. On the contrary not only do they complement each other, their basic objectives are the same, i.e. to unravel the mysteries of nature and explain how it works. This is why science flourished in Ancient Bharat and it earned so much fame in the whole world. While the laws of science describe how nature functions and sustains the order inherent in it through experimental verification, Vedanta goes beyond the realm of science and explains the very cause of such an order and how it is perpetually sustained from the philosophical point of view. Science deals with matter only but Vedanta embodies both matter and spirit. It is this holistic approach of Vedanta that makes it a unique philosophy and it is for this reason almost all its teachings such as Dharma, Karma, Reincarnation and Moksha are not only philosophically valid they are also scientifically credible.



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