

Paper Title: Hinduism and Science

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Abstract:

In Hinduism there are five salient features: (1) God – *isvara*, (2) Soul – *jiva*, (3) Time – *kala*, (4) Matter – *prakriti*, and (5) Action – *karma*. Of these the first four principles are eternal whereas the last feature is temporary. The distinction between God and *jiva*, the living entity is that God is infinite and the living being is infinitesimal. God is the Supreme Spirit and the living entity is the fundamental spiritual particle – *atman* or spiriton. God exists in three eternal aspects – the impersonal aspect, *Brahman*; the Supersoul feature, *Paramatma*; and the Supreme Personality, *Bhagavan*. Consciousness is the fundamental quality of both God and the living entity. God’s consciousness pervades everywhere, whereas the consciousness of the living entity is localized. The *paramatma* feature of God guides all the living beings and non-living things. *Paramatma* is the source of inspiration in all human actions and the source of scientific discoveries, artistic ability, poetic works, etc. Time is the impersonal and eternal aspect of God and has no beginning or end. In modern science time begins with the Big-Bang. In Hindu cosmology and cosmogony, creation and dissolution go on in periodic cycles like the changes of seasons. According to Hinduism, the present universe began 15.5522×10^{13} years ago and will end in 15.5518×10^{13} years. Thus the Hindu model of the universe is 10^4 times older than that predicted by the Big Bang model. The visible universe is one of the innumerable universes and there are 8.4×10^6 species of life in this universe. Biodiversity is due to different levels of consciousness and consciousness evolves which is known as the transmigration of the soul.

Vedanta, the scientific and theological doctrine of Hinduism, explains that in principle there is no conflict between science and religion. In fact, the two fields are complementary. This is because of the understanding that the domain of each realm is well-defined. In Hinduism there are two categories of knowledge – (i) *para vidya* - the spiritual knowledge and (ii) *apara vidya* - material knowledge. Scientific knowledge is the realm of *apara vidya*. Spiritual knowledge - knowledge of God and life - belongs to *para vidya*. Hinduism points out that scientific knowledge can lead to spiritual knowledge.

God possesses three primary energies. These are (i) the internal, (ii) the marginal and (iii) the external energies. The manifestation of the internal energy of the Lord is the inconceivable variegated spiritual world, *cit-jagat*. The manifestation of the marginal energy of the Lord comprises the *jivas*, the living entities. And the manifestation of the external energy of the Lord is the Cosmos, the physical world. Science is concerned for the welfare of physical existence and religion is concerned for the wellbeing of the soul including morality and ethics of life. *Karma* is physical or psychological action performed

by a living entity. If one does good action, that leads to happy life. If one does bad action, that leads to unhappy life. It is like Newton's third law of motion.

Biography:

T. D. Singh (1937-): An extraordinary combination of a scientist, a spiritualist, an active promoter of world peace, an interfaith leader, an educationist, a poet, a singer, and a cultural ambassador. He is well-known for his pioneering efforts for more than thirty years to interface between science and religion. He received his Ph.D. in Physical Organic Chemistry from the University of California, Irvine in 1974. He has organized three International conferences on science and religion (1986, 1990, and 1997) where a galaxy of prominent scientists and religious leaders including several Nobel Laureates participated. He also organized "Second International Congress on Life and its Origin: Exploration from Science and Various Spiritual and Religious Traditions" in Rome, Italy from November 12-15, 2004. The conference was appreciated by the President of Italy and the Mayor of Rome. He has authored and edited several books related to science and religion like *Seven Nobel Laureates on Science and Spirituality (2004)*. His most recent publication, *Towards a Culture of Harmony and Peace* (has a section dedicated to science and religion) has contributions from as many as nine Nobel Laureates in Peace and Science apart from that of the President, and the Prime Minister of India.

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Paper Text:

HINDUISM AND SCIENCE

1. Introduction

“The most beautiful and deepest experience a man can have is the sense of the mysterious. It is the underlying principle of religion as well as all serious endeavor in art and science.”

– Albert Einstein

The essence of Hinduism is contained in the Vedanta, the scientific and theological doctrine of Hinduism, and in the timeless wisdom of the Vedas. Its “Bible” is the *Bhagavadgita*, the divine song of God. Its scientific and intellectual contents have attracted the attention of some of the world’s finest scientific and philosophical minds, such as Erwin Schrödinger, Robert Oppenheimer, Albert Einstein, and Aldous Huxley. It speaks of billions of years of history, creation of the universe, medicinal science, metallurgy, space travel, embryology, art, music, etc. It is no exaggeration to say that there is almost no branch of knowledge that is left untouched in the Vedas.

There are five core features in Hinduism: (1) God – *Isvara*, (2) Soul – *Jiva*, (3) Time – *Kala*, (4) Matter – *Prakriti*, and (5) Action – *Karma*. Of these the first four principles are eternal whereas the last feature is temporary. Based on these principles, Hinduism provides a deep knowledge and understanding of life and the universe. In its pure form, Hinduism is also known as *Sanatana Dharma* or the eternal function of the living entity. One of the unique features of Hinduism is that it provides a very vivid and broad description of God and His energies.

This paper outlines the Vedantic worldview in reference to many of modern science’s perspectives including the subjects of mind, consciousness, embryology, epistemology and cosmology.

2. Nature of Life and Matter

According to Vedanta, there is another reality in nature different from matter. It is the fundamental spiritual particle (called *atman* in Vedantic terminology), which the author has coined as “spiriton.” It is a transcendental particle and is ontologically different from matter. It has a conscious property and has free will contrary to material particles like electrons. It is only by the presence of the spiriton that matter appears animated. In Vedanta this seemingly animated matter is referred to as embodied life.

2.1 Spiritual Particle ‘Spiriton’ and Consciousness

“... all knowledge relates to the spirit, or more properly, exists in it, and that is the sole reason for our interest in any field of knowledge whatsoever.”¹

– Erwin Schrödinger

According to Vedanta, every life form has *atma* or spiriton, within it. In other words not only do human beings possess a spiriton, but so do all microorganisms, insects, aquatics, plants, reptiles, birds, and so on. In this regard, Vedanta is unique and different from the

¹ W. Moore, *Schrödinger: Life and Thought*, 1989, Cambridge University Press, p. 429.

scientific and theological views of many other world traditions. The *Bhagavadgita* (verse 15.7), states: *mamaivamso jivaloke jivabhutah sanatanah*, which means that all spiritons are eternal conscious particles of the Supreme Lord. The fundamental qualities of the spiritual particle, or spiriton are of the same nature as the Supreme Lord's and are as follows: *sat* (eternal existence), *cit* (full cognition), *ananda* (blissfulness), *sveccha* (free will) and *cetana* (consciousness).

Vedanta explains that matter, however complex, will never generate life or its inherent symptom, consciousness. There are two categories of consciousness, universal and individual. God's consciousness is universal (all pervasive) whereas the spiriton's consciousness is individual (localized) and always remains so but both are ontologically non physical in nature.

2.2 The Law of Karma, Free Will and The Three Modes of Material Nature

Vedanta states that the material nature is broadly divided into three modes (*gunas*)—*sattva* (goodness), *rajas* (passion) and *tamas* (ignorance). In order to accommodate the different desires of the living entities (spiritons), the material nature, by the will of the Lord, manifests a variety of forms through the mixing of the three modes of nature. All embodied spiritons—human beings, animals, birds, plants, etc., are influenced to different degrees by the three modes of material nature.² Any activity that the spiriton performs under the influence of the three modes of material nature, either psychologically or physically is known in Sanskrit as *karma* - action.

In the Vedantic tradition there is the concept of a natural 'Law of *Karma*.' The law of *karma* is similar to the rules of action and reaction in Newton's Law. All spiritons are engaged in different activities within this cosmic manifestation. From time immemorial the spiritons are enjoying or suffering the fruits of their activities according to the law of *karma*. The results of the law of *karma* are singular and pointed and there cannot be any error in them. The answer to the question, 'why bad things happen to good people?' is '*karma*'. The law of *karma* remains although an individual may not remember the action that has caused the current reaction. The wheels of *karma* are driven by the free will and desire of the embodied spiritons.

It is difficult to deny that we all have free will although it cannot be detected in a laboratory. Professor Charles Townes, Nobel Laureate in Physics says, "Many scientists will say, 'I can't believe in religion.' On the other hand, if you ask them, do you think you have some free will, almost every scientist instinctively thinks so. He has free will. He can choose some things. He can decide to go this way or that way. There is, in fact, no room for free will in present scientific laws and yet almost every scientist essentially assumes he has it."³ In regards to modern science's inability to explain free will which Vedanta describes as a fundamental quality of the individual spiriton or life, Roger Penrose, the world renowned mathematician from Oxford University, has expressed, "The issue of 'responsibility' raises deep philosophical questions concerning the ultimate causes of our behavior. ... Is the matter of 'responsibility' merely one of the convenience of terminology, or is there actually something else – a 'self' lying beyond all such

² A. C. Bhaktivedanta Swami, *Bhagavad-Gita As It Is*, Bhaktivedanta Book Trust, Bombay, 1997, Ch.14.

³ *Thoughts on Synthesis of Science and Religion*, eds. T. D. Singh and S. Bandyopadhyay, Bhaktivedanta Institute, Kolkata, 2001, p.103.

influences – which exerts a control over our actions? The legal issue of ‘responsibility’ seems to imply that there is, indeed, within each of us, some kind of an independent ‘self’ with its own responsibilities – and, by implications, rights – whose actions are not attributable to inheritance, environment, or chance. If it is other than a mere convenience of language that we speak as though there were such an independent ‘self’, then there must be an ingredient missing from our present-day physical understandings. The discovery of such an ingredient would surely profoundly alter our scientific outlook. ... it will tell us to broaden our view as to the very nature of what a ‘cause’ might be. A ‘cause’ could be something that cannot be computed in practice or in principle. ... when a ‘cause’ is the effect of our conscious actions, then it must be something very subtle, certainly beyond computation, beyond chaos, and also beyond any purely random influences. Whether such a concept of ‘cause’ could lead us any closer to an understanding of the profound issue of our free wills is a matter for the future.”⁴

Free will is a quality of the life particle or spiriton and by exercising free will an individual performs actions and is implicated in various reactions according to the law of *karma*. The use of free will either appropriately or inappropriately will decide the course of life’s journey. In the human form of life, free will is fully manifest and the chain of *karma* can be cut off by choosing the appropriate action, the spiritual action. Therefore, *karma* is not eternal.

Vedanta describes that all other forms of life below the level of human consciousness cannot escape the chain of *karma* under normal circumstances. Therefore, Vedanta emphasizes the importance of the human form of life.

The human race has an obligation to protect and guide not only mankind but also all lower forms of life. We can either destroy ourselves and other life forms or we can act in a way that uplifts and benefits the world, thus making a meaningful use of our human form of life. If a person uses his or her free will for destroying innocent lives, he or she will be regarded as ‘committing crimes against creation’ and be subject to the law of *karma*.

2.3 Biodiversity and Evolution of Consciousness

According to modern biology, biodiversity is due to a genetic variation caused by the process of occasional chance mutation. However, according to Vedanta, the law of *karma* and the three modes of material nature — *sattva*, *rajas* and *tamas* — are responsible for biodiversity as well as for diversity in terms of levels of intelligence, degree of development of mind and consciousness of the embodied being within the same species. Furthermore, the Vedas state that biodiversity is a process to accommodate the various states of consciousness in different life forms. There is a gradual evolution of consciousness through various species of life according to the subtle laws of *karma*. These life forms are said to number 8.4×10^6 and include – microorganisms, insects, plants, aquatics, birds, reptiles, animals, humanoids and human beings.⁵ According to the conscious evolutionary cosmic time scale, one gets the human form of life after passing through millions of varieties of life forms.

⁴ Roger Penrose, *Shadows of the Mind*, Vintage, 1994, p. 36.

⁵ Referred in *Brahma-vaivarta Purana* and *Padma Purana*.

Vedanta further explains that many life forms manifest simultaneously. In other words, genetic variation is already within a cosmic plan. Nobel Laureate Werner Arber's observation that genetic mutation is not due to error or mistake is in line with the Vedantic conception. He says, "Evolution does not occur on the basis of errors, accidents or the action of selfish genetic elements. Rather, the evolution genes must have been fine-tuned for their functions to provide and to replenish a wide diversity of life forms. . . ."⁶ Both of these viewpoints support that biological forms are already within the cosmic plan and are opposite of Darwin's concept of biological evolution. In fact Darwin's theory of evolution has many loopholes. Stephen Jay Gould, a prominent evolutionist from Harvard University writes, "The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology . . . In any local area, a species does not arise gradually by the steady transformation of its ancestors, it appears all at once and fully formed."⁷ It is not that natural selection and random mutation are the cause of biodiversity. According to Hinduism, the spiriton continually transmigrates from one life form to the next until it reaches the human form where consciousness is fully developed and has a chance to reestablish its pure divinity of existence (see section 10 on 'Spiritual Evolution'). This conception is beyond the scope of modern biological science. Thus, the Vedic doctrine of evolution of consciousness concept is contrary to the Darwinian evolutionary theory. It is the consciousness that evolves, not the bodies, in the Vedantic tradition.

Darwin's mistake was that he could not conceive of an eternal existence of consciousness. Thus, Vedanta does not accept Darwin's theory of evolution. Under normal circumstances, the consciousness of the spiriton evolves linearly as well as step-wise. As previously referenced, the *Brahma Vaivarta Purana* affirms, *asitim caturas caiva laksams tan jiva-jatisu bhramadbhiih purusaih prapyam manusyam janma-paryayat*, meaning one gets the human form of life after having changed 8.0×10^6 other forms of life. The *Padma Purana* gives a detailed statement regarding the different forms of life as follows:

*jalaja nava-laksani sthavara laksa-vimsati
krimayo rudra-sankhyakah paksinam dasa-laksanam
trimsal-laksani pasavah catur-laksani manusah*

Translation: There are 8,400,000 forms of life. There are 900,000 forms of life in the water, and 2,000,000 forms of trees and other plants. Then, there are 1,100,000 species of small living beings, insects and reptiles, and 1,000,000 species of birds. Finally, there are 3,000,000 varieties of beasts and 400,000 human species.

As stated earlier, biological forms impose a limitation on the development of consciousness. Therefore, different degrees of consciousness are expressed through different bodies. Vedanta divides the degrees of consciousness into five broad categories: *acchadita* (covered), *sankucita* (shrunken), *mukulita* (budding), *vikasita* (blooming) and *purnavikasita* (fully bloomed).⁸

⁶ T. D. Singh & W. Arber, "Dialogue on Life and its Origin", *Savijnanam – Scientific Exploration for a Spiritual Paradigm*, Vol.1 Kolkata, 2002, p.12.

⁷ Stephen Jay Gould, "Evolution's Erratic Pace", *Natural History*, vol. 86, May 1977, p.14.

⁸ Srila Bhaktivinoda Thakura, *Jaiva-Dharma*.

Trees and plants, for example, are almost inert. They fall into the category of ‘covered consciousness.’ When we observe them carefully, we see that they have a limited or covered consciousness. The famous scientist Jagadish Chandra Bose reported that plants do have consciousness.⁹ Other living entities, such as worms, insects, and other animals are in ‘shrunk consciousness.’ They are not as covered as plants, but their consciousness is not fully developed either.

Human beings have ‘budding consciousness.’ A bud appears shrunk, but it has the potential to bloom into a flower. Human consciousness has a similar potential. Thus, human beings have the innate ability to develop their consciousness to an almost unlimited extent, up to the point of knowing the Absolute Truth - God. Other species do not have this special ability. That is why Vedanta emphasizes that *brahmajignasa*, inquiry into the *Brahman*, God, is specifically meant for the human form of life. When one begins to sincerely inquire about *Brahman*, one’s bud-like spiritual consciousness begins to bloom and as a result of this blossoming of consciousness one practices regulated spiritual discipline and evolves further and further. Finally, one attains complete transcendental realization, God consciousness – *saccidananda* - the ‘fully bloomed’ state of consciousness.

2.4 A Glimpse of Embryology

It is very interesting to note that there is a significant description about the science of embryology in Vedantic literatures. *Srimad Bhagavatam*, Third Canto mentions a brief description of human embryology. *Garbhopnishad*, one of the ancient Upanishads, also serves as a brief treatise on embryology. These are very relevant to modern science and technology.

According to Vedanta the manifestation of life begins from the moment of conception. Life first enters the semen of the male and is injected into a womb of a woman.¹⁰ Dr. Jerome Lejeune,¹¹ known as "The Father of Modern Genetics," also said, "Life is present from the moment of conception" before the Louisiana Legislature's House Committee on the Administration of Criminal Justice on June 7, 1990. He explained that within three to seven days after fertilization we can determine if the new human being is a boy or a girl. "At no time," Dr. Lejeune said, "is the human being a blob of protoplasm. As far as your nature is concerned, I see no difference between the early person that you were at conception and the late person which you are now. You were, and are, a human being." He pointed out that each human being is unique – different from the mother – from the moment of conception.¹²

A man’s semen contains millions of cells called sperm cells (about 10^7 /ml). Each sperm cell is an actively motile, free-swimming and elongated cell from 60-75 μ in length. F.M.

⁹ "... In many other ways we are able to find that the plant has a heart that beats continuously as long as life remains." [Cf. Dibakarsen and Ajoy Kumar Chakraborty, *J. C. Bose Speaks*, Puthipatra, Calcutta, 2000, pp.153, 195-200.]

¹⁰ *Aitareya Upanisad* 2.1.1, *Aitareya Brahmana* 2.5.1 and *Srimad Bhagavatam* 3.31.1

¹¹ Dr. Lejeune of Paris, France discovered the genetic cause of Down Syndrome, receiving the Kennedy Prize for the discovery and, in addition, received the Memorial Allen Award Medal, the world's highest award for work in the field of Genetics. He died on April 3, 1994.

¹² <http://www.prolife.com/FETALDEV.html>

Burnet remarked about this sperm cell as “It is intimidating thought that there is more information on organic chemical synthesis packed into the head of a spermatozoon than in all the 200 volumes of the Journal of Biochemical Chemistry.”¹³ According to vedic literatures, spiritual particle, spiriton (soul) enters this sperm cell which then fertilizes the ovum, the female gamete, to form a single cell called zygote. The various stages of development of embryo in the womb of the mother are described in *Srimad Bhagavatam* 3.31.2-4, 3.31.10, 3.31.22-23:

“On the first night, the sperm and ovum mix (to form zygote), and on the fifth night the mixture ferments into a bubble (blastocyst). On the tenth night it develops into a form like a plum, and after that, it gradually turns into a lump of flesh.”

“In the course of a month, a head is formed, and at the end of two months the hands, feet and other limbs take shape. By the end of three months, the nails, fingers, toes, body hair, bones and skin appear, as do the organ of generation and the other apertures in the eyes, nostrils, ears, mouth and anus.

“Within four months from the date of conception, the seven essential ingredients of the body, namely chyle, blood, flesh, fat, bone, marrow and semen, come into existence. At the end of five months, hunger and thirst make themselves felt, and at the end of six months, the fetus, enclosed by the amnion, begins to move on the right side of the abdomen.

“Deriving its nutrition from the food and drink taken by the mother, the fetus grows and remains in that abominable residence of stools and urine, which is the breeding place of all kinds of worms.

“Placed within the amnion and covered outside by the intestines, the child remains lying on one side of the abdomen, his head turned towards his belly and his back and neck arched like a bow.

“Thus endowed with the development of consciousness from the seventh month after his conception, the child is tossed downward by the airs that press the embryo during the weeks preceding delivery. Like the worms born of the same filthy abdominal cavity, he cannot remain in one place.

“Lord Kapila continued: The ten-month-old living entity has these desires even while in the womb. But while he thus extols the Lord, the wind that helps parturition propels him forth with his face turned downward so that he may be born. Pushed downward all of a sudden by the wind, the child comes out with great trouble, head downward, breathless and deprived of memory due to severe agony.”¹⁴

In the *Markandeya Purana* it is said that in the intestine of the mother the umbilical cord, which is known as *apyayani*, joins the mother to the abdomen of the child, and through this passage the child within the womb accepts the mother’s assimilated foodstuff. In this way the child is fed by the mother’s intestine within the womb and grows from day to day. The role of the umbilical cord is also mentioned as - “The *dhamanis* in the foetus

¹³ S.M. Bhatnagar, M.L. Kothari, L. A. Mehta & M. Natarajan, *Essential of Human Embryology* (2000), Chennai, pp.8-10.

¹⁴ A. C. Bhaktivedanta Swami Prabhupada, *Srimad Bhagavatam* (1987), Mumbai, Canto 3, pp.707-709, 712, 714, 733-734.

take their rise from the umbilical cord, thus bringing nourishment from the mother. The embryo is held at the navel. It grows without taking food, that is, there is no effort made on the part of the embryo to take food and no food is specially served to it. The food in its final form is assimilated automatically and directly into the system of the embryo. The child is nourished of its own accord as it were. The mother is not conscious of the nourishment given to the young one below her heart."¹⁵

There are also the restrictions and precautions to be taken by the pregnant mother mentioned in the *smṛiti* scriptures of Vedic literature. From the very day of begetting a child there is a purificatory process of *garbhadhana-samskara*. *Garbhadhana* Ceremony is a vedic ceremony of purification to be performed by parents before conceiving a child. It is said in *Caraka Samhita* that the mental condition of a child depends upon:¹⁶

- (a) the mental status of his parents at the time he is conceived
- (b) the sounds heard repeatedly by pregnant woman¹⁷
- (c) the actions performed by the embryo in his previous life and
- (d) the frequent desires for a particular type of mental faculty by the progeny in his previous life.

Therefore, before begetting a child, one has to sanctify his perplexed mind. If the mind of the father is not sober, the semen discharged will not be very good. By performing this Garbhadana ceremony, both the husband and wife become completely pure and sanctified and a good child will be produced. (For example, Rig veda X. 186 mentions two mantras to be repeated by bridegroom before conception).

So in Hinduism, there are systems from the very beginning of the birth of human life for begetting good population. To take care of the child is the primary duty of the parents because if such care is taken, society will be filled with good population to maintain peace and prosperity of the human race.

2.5 Inquiry and Uniqueness of Human Life

The unexamined life is not worth living.

– Socrates

In Hinduism, inquiry, *jignasa*, is the fundamental duty of human life. Everyone inquires about something or the other. In the course of life, one experiences different phases like old age, disease and many kinds of sufferings. Therefore, we want to find out the solution to these problems. Every research work is a kind of inquiry. Srila Prabhupada says that unless a person is awakened to the position of questioning his sufferings, he is not to be considered a perfect human being. Humanity begins when this sort of inquiry is awakened in one's mind. Therefore, inquiry forms the most important process of

¹⁵ B.N. Seal, *The positive sciences of ancient Hindus*, Motilal Banarsidass, Delhi, Varanasi, Patna, 1958.

¹⁶ R. K. Sharma and Bhagwan Dash, *Caraka Samhita*, Varanasi, 1992, Vol II, Verse 4.8.16, pp.470-471.

¹⁷ Experiments by some of the leading scientists to study the hearing capabilities of fetuses confirmed that human babies have the ability to recognize voices and even poems that they first heard before they were born. DeCasper, A. and Fifer, W., "Of human bonding: Newborns prefer their mother's voice", *Science* (1980), 208, 1174-1176; DeCasper, A., Lecanuet, J-P., Busnel, M-C., Granier-Deferre, C., and Mangeais, R., "Fetal reactions to recurrent maternal speech", *Infant Behavior and Development* (1994), 17(2), 159-164; Moon, C., Cooper, R. P. and Fifer, W. P., "Two-day-olds prefer their native language", *Infant Behavior and Development* (1993), 16(4), 495-500.

acquiring knowledge. We want to know about things that are beyond what we can see conventionally. We invent electron microscope, telescope, etc., to satisfy our curiosity. But this is not enough. Our senses and extended senses are still very limited.

Can a bird inquire about the meaning of its existence? Innocent and ordinary living beings like birds and animals inquire only of bodily needs. They inquire, ‘where is water?’, ‘where is food?’, ‘where is shelter?’ and so on. However, they do not have the capacity to inquire about the deeper purpose and meaning of life. But in the human form of life, one is endowed with the unique ability to inquire beyond these bodily needs. This is the special and unique qualification of the human form of life. When a child is growing up, he inquires from his parents about many things around him, such as ‘What is this?’, ‘what is that?’ etc. In this way, the child gathers knowledge from his parents. Since the conscious intelligence is fully developed, human beings can make different levels of inquiry including the deeper questions about life. The most important inquiry of human life should be to find out about the Absolute Truth, *jivasya tattvajignasa*.

Srimadbhagavatam (1.2.10) states:

*kamasya nendriyapritirlabho jiveta yavata
jivasya tattvajignasa nartho yasceha karmabhih*

Translation: “Life’s desires should never be directed toward sense gratification. One should desire only a healthy life, or self-preservation, since a human being is meant for inquiry about the Absolute Truth. Nothing else should be the goal for one’s works.”

The ability to inquire about the ultimate truth of life makes the human being uniquely different from all other forms of life. Thus Vedanta emphasizes that the primary subject matter of the human form of life is to inquire about the science of Absolute Truth, God.

The *Katha Upanisad* (1.3.14) in a very strongly and carefully worded tone makes a clarion call to all human beings in the following sloka:

*uttistha jagrataprapya varan nibodhata
ksurasya dhara nisita duratyaya
durgam pathas tat kavayo vadanti*

Translation: Arise! Awake! Please try to understand the boon that you now have in this human form of life. The path of spiritual realization is very difficult; it is sharp like a razor’s edge, difficult to tread and hard to cross, so say the learned sages.

‘Who am I?’, ‘what is the Supreme Absolute Truth?’, ‘what is the origin of life?’, ‘what is existence?’, and ‘what will be the fate of the human soul when the body dies?’ are some of the basic questions that a human being can inquire.

Presently, scientific inquiry without spiritual knowledge is one-sided. All forms of human inquiry should be utilized in search for Absolute Truth, God. Hence, the purpose of all sciences should be to inquire about the nature of God. A physicist should inquire: what is the real source of the laws of nature? A chemist can inquire: who is the Supreme Chemist behind all the wonderful molecules, DNA, chlorophyll, proteins, etc.? Vedanta explains that if we do research far enough, we will find that the ultimate source is God. Thus, Vedanta cautions that intelligent people should not be misled by the temporary and incomplete pronouncements of atheistic scientists who try to remove God from

everything. This will be the proper use of the modern scientific knowledge. When one realizes the Absolute Truth through such an inquiry, he will understand the actual basis of reality. And then, his duty is to glorify the Supreme Lord through the scientific understanding. This is the secret and the real platform of happiness. This is what Narada Muni, the foremost transcendentalist instructed his disciple, Vyasadeva, the literary incarnation of the Supreme Lord in the *Bhagavata Purana*, the natural commentary on the *Vedantasutra*.¹⁸

Albert Einstein once remarked, “The important thing is not to stop questioning. Curiosity has its own reason for existing. One cannot help but in awe when he contemplates the mysteries of eternity, of life, of the marvelous structure of reality. It is enough if one tries merely to comprehend a little of this mystery everyday.”¹⁹

In the human form of life, the consciousness (*cetana*), intelligence (*buddhi*), mind (*manas*), senses (*indriyas*) are fully developed. Thus, human being is totally equipped to make the deepest *jignasa* (inquiry), the spiritual inquiry. A similar message echoes in the statement of Albert Einstein who states that knowing the plan of God is most important and the rest are details.²⁰ By this inquiry, *sambandha*, the relationship between the individual self and God will be established and the pure spiritual knowledge of the self will be understood. *Isa Upanisad* further declares, *isavasyamidam sarvam*, everything belongs to the Supreme Lord. Therefore, everything should be used, including the works of the scientists and all the leaders of the world in the service of the Supreme Lord. In a nutshell, this is the view of Vedanta regarding the prime duty of humanity.

3. Hindu Epistemology

“Our science – Greek science – is based on objectification. ... But I do believe that this is precisely the point where our present way of thinking does need to be amended, perhaps by a bit of blood-transfusion from Eastern thought.”

– Erwin Schrödinger

The vast area of philosophical enquiry known as epistemology is an enquiry into knowledge and many authors also call it as the theory of knowledge. In scientific approach to knowledge, an empirical logic based on experiments, observations and inferences is fundamental. In Vedanta this process is called *aroha-pantha* or *jnana marga*, ascending path/process or the bottom-up process. But this process has its own limitations. This scientific process can, at the most, indicate about the existence of God. It cannot lead to the deeper knowledge of God. This is because of the fact that our senses have four inherent limitations. Hence, scientific knowledge based on one’s intellect and sense perception is incomplete and the spiritual knowledge provides the deeper knowledge for the existence of God.

Vedanta recognizes the scriptures as the authority and the deciding factor for the complete knowledge of God. Just like the words of the mother are the authority in regard to our question about the true identity of the father, similarly, according to Vedanta the scriptures are the authority for the proof of God’s existence. This Vedantic process is

¹⁸ *Srimad-Bhagavatam*, Canto 1, Ch. 5, Verse 21, *Ibid*.

¹⁹ In Donald O. Bolander, *Instant Quotation Dictionary*, 1979.

²⁰ R. Clarck, *The Life and Times of Einstein*, The World Publishing Co., New York, 1971, p.19.

called *avaroha-pantha* in sanskrit language. This means that real knowledge should be received by the *parampara*, descending process or top-down approach.

In nutshell, Vedantic epistemology stresses the acquisition of knowledge mainly from three different ways: *pratyaksa* (sense perception), *anumana* (inference) and *sabda* (revealed knowledge). These terminologies are briefly explained below. Srila Jiva Goswami, an erudite philosopher of the sixteenth century India, has elaborately presented the vedantic epistemology in his treatise *Tattva Sandarbha*²¹. As it will be evident below, the Vedantic epistemology justifies the necessity for a synthesis of *avaroha-pantha* --- the top-down process and *aroha-pantha* --- the bottom-up or scientific approach to the complete knowledge of God.

3.1 Pratyaksa (direct perception)

According to Vedanta, knowledge gained directly with the help of the senses is known as *pratyaksa*. The gross senses are the eyes (vision), ears (sound), nose (smell), skin (touch) and tongue (taste). In addition, mind is regarded as the subtle and sixth sense and one can also acquire knowledge with the help of the mind. The role of *pratyaksa* is certainly important in acquiring knowledge in Vedantic approach. However, because of the physical limitations of the senses, knowledge gained through *pratyaksa* may not be complete. For example, a blind man and a mad man have limitations to acquire knowledge through their eyes and mind, respectively. However, a normal man whose senses are all in a proper condition can acquire knowledge using all his senses and can have a better knowledge than that of a blind or a mad man. Under ordinary circumstances, knowledge gained from *pratyaksa* has four limitations. Thus the bottom-up approach will be unable to have the complete knowledge of God. However, in the Vedantic tradition a spiritual seeker is trained to perfect one's senses by undertaking a very rigorous spiritual discipline and the senses and the mind can be totally purified and at that stage one can receive the knowledge of the Ultimate Reality through *pratyaksa*. At this point the material senses are completely transformed into spiritual senses.

3.2 Anumana (inference)

Although the sense capability of ordinary human beings is limited, the quest for scientific knowledge in Vedantic tradition is to know the absolute reality which is beyond the domain of material senses. *Anumana* means inference about an unknown object based on its relationship with another object that is conceivable through the senses. For example, a stream of alpha particles which have electric charge would leave a trail of ions as it passes through the gas in a cloud chamber. When water vapor condenses on these ions, the track of alpha particle becomes visible as a line of water droplets. Thus, although we can't see the alpha particles, we can infer them from the trail of water droplets condensed on the ions. *Anumana* involves logic. Logic constitutes the development of a set of arguments that can represent an observed phenomenon in nature. Since the sense perception is limited, logic, therefore, also has limitations and cannot be referred to be the absolute answer for an observed phenomenon.

²¹ *Tattva-sandarbha* by Srila Jiva Goswami along with commentary by Srila Baladeva Vidyabhusan, translated into Bengali by Sri Ram Narayan Vidyaratna, Sanskrit Pustak Bhandar, Kolkata.

3.3 Limitations of *Pratyaksa* and *Anumana*

As stated before there are four limitations of the senses. Srila Jiva Goswami has discussed these limitations in the *Sat Sandarbha* as follows: (a) **Bhrama**: The senses including the mind often malfunction under various circumstances and are thus illusioned, for example, a mirage seen in the deserts. (b) **Pramada**: This means that the senses may misguide a person and he is liable to commit mistakes. Due to the limitations in our intellectual conception we sometimes wrongly interpret the sense observations. Therefore, in this world everyone is liable to commit mistake. Thus the popular saying, “To err is human.” (c) **Karanapatava**: It means that our senses are very limited and can perceive only a very limited portion of reality. For example, we do not hear sounds which have frequency below 20 Hertz and over 20,000 Hertz. Similarly, we cannot detect electromagnetic radiations in the ultra-violet or infra-red range. (d) **Vipralipsa**: It refers to the cheating propensity. Honesty is the virtue of human life. However, sometimes one is overcome by pride, false ego and arrogance and one’s senses are polluted by the lower material modes of nature and one becomes dishonest and the cheating propensity dominates a person at that time. According to Vedanta this cheating propensity is a symptom of the lack of spiritual knowledge.

Logic cannot provide a final proof of anything. This is further supported by the statement – one should not use logic to understand what is inconceivable. (*Mahabharata, Bhishma Parva* 5.22). Hence it can be concluded that a scientific and logical study will always be incomplete. An argument is the famous Gödel’s Incompleteness Theorem. This theorem states that if ‘A’ is a mathematical system which involves the natural numbers 0,1,2,3,... then there are questions in ‘A’ which cannot be answered using the axioms of ‘A’. In order to answer a question of this kind, one could expand the set of axioms by adding a new one. But the new system will again be subject to Gödel’s theorem and there will be other questions that cannot be answered. Thus, Gödel’s theorem ensures that there will always remain unanswered questions. In other words, scientific knowledge will always remain incomplete and cannot fathom the depths of Ultimate Reality or God. Hence, we should seriously consider the role of metaphysical conception beyond logic and sense perception in understanding transcendental knowledge and God. In this regard, Max Planck stated, “... the fundamental and indispensable postulates of every genuinely productive science are not based on pure logic but rather on the metaphysical hypothesis – which no rules of logic can refute – there exists an outer world which is entirely independent of ourselves. It is only through the immediate dictate of our consciousness that we know that this world exists.”²² Freeman Dyson also expressed, “God may have more qualities than we humans are capable of imagining. If we could enlarge our senses and our emotions beyond the human range, we would experience a very different God... My conception of God is not weakened by my not knowing whether the physical universe is open or closed, finite or infinite, simple or multiple. God for me is a mystery, and will remain a mystery after we know the answers to these questions. All that we know about Him is that He works on a scale far beyond the limits of our understanding.”

²² Max Planck, *Where Science is Going?*, 1932, p. 138.

3.4 *Sabda* (Revealed Knowledge) and the Top-Down Process

In Vedantic epistemology *sabda* is the most important in receiving a valid knowledge and the other two epistemic elements, *pratyaksa* and *anumana* are to assist the *sabda pramana*. A revealed knowledge is transmitted from the Supreme Authority, God, to the bonafide and sincere recipients. The qualification of the recipient is that he should be a completely surrendered soul to the Supreme Lord and he should be eligible to receive the transcendental mercy of the Lord. As mentioned earlier this process is also called a top-down approach in receiving knowledge (*avaroha-pantha*). A simple example is to make an investigation about the true answer to the question, “Who is the father of child A?” In a scientific or the bottom-up process, one can make an extensive research work by matching the DNA profile of several candidates with that of the child. However, it will be extremely difficult to find a real answer by this process. Most likely, needless to say, a real answer may never be found by this approach. This is because the real person may not be tested for a variety of causes. So, the easiest and most reliable approach will be to simply ask the genuine mother, and her answer will be the final verdict. The fact is that a genuine mother will never tell a lie to her loving child. If somebody wants to confirm this answer scientifically, a DNA test can still be done. In this way, the matter is resolved. This process implies a genuine faith the child has in the words of the mother. According to Vedanta, this genuine faith is a deep spiritual quality of life.

In *avaroha-panthah* (top-down approach) or descending process of Vedantic tradition, God is the ultimate source of everything, and the divine consciousness flows downward from God to every living being. In scientific discoveries and other artistic and poetic works and spiritual works of total sacrifice and renunciation, many sincere individuals receive knowledge through inspiration from a guiding source. This type of knowledge can also be regarded as some kind of revealed knowledge. In this way, knowledge is also directly transmitted by the Supreme Authority to the sincere seekers of truth. Lord Sri Krsna states in the *Bhagavadgita* (15.5):

*sarvasya caham hridi sannivisto
mattah smritir jnanam apohanam ca
vedais ca sarvair aham eva vedyo
vedanta-krid veda-vid eva caham*

“I am seated in everyone’s heart, and from Me come remembrance, knowledge, and forgetfulness. By all the Vedas, I am to be known. Indeed, I am the compiler of Vedanta, and I am the knower of the Vedas.”

There are three fundamental principles in realizing the revealed knowledge. Firstly, every revealed knowledge should be accepted as a divine axiom. All the aphorisms of the *Vedantasutra* can be regarded as divine axioms. Secondly, the genuine scriptures should be understood as they are and they should not be interpreted in any way to suit the motives of any particular individual or group. The author would like to mention that it is because of the misinterpretation of scriptures and over-intoxication by the materialistic concept of religion that people kill each other in the name of religion and God. Thirdly, in the Vedantic tradition, a mood of true humility is essential in receiving divine knowledge of God. In this regard, we also see many great scientists who show symptoms of utter humility. For example, we often quote what Sir Isaac Newton had once remarked,

“I am still collecting pebbles on the sea shore, while the vast ocean of undiscovered truth lies before me.”

4. Time and Space

The concept of time and space is extremely important in both science and Vedanta. In Vedanta, *Kala*, time is eternal. It is the impersonal aspect of the Supreme Lord. In the *Bhagavadgita* Lord Krishna says, *kalo 'smi loka-ksaya-krit pravriddho* — “Time I am, the great destroyer of the world.”²³ This was the verse uttered by Robert Oppenheimer at the first test of the atom bomb in Los Alamos, New Mexico, USA on July 16, 1945. In the *Srimadbhagavatam* sage Maitreya²⁴ explains that eternal time is the primeval source of the interactions of the three modes of material nature. It is unchangeable and has no limit, and it functions as the instrument of the Supreme Lord for His manifest activities in the material creation.²⁵

When the living entity comes in contact with material nature and under the control and purview of eternal time, many different activities called *Karma* are created. Real time is measured in terms of its covering a certain space of atoms, and space is calculated in terms of atoms.²⁶ Thus time and space are closely connected in Vedantic cosmology and *Kala* – time is the root cause of all events and drives all activities in the material universe.

Srila Prabhupada writes in his commentary of the *Srimadbhagavatam*, “Metaphysically, time is distinguished as absolute and real. Absolute time is continuous and is unaffected by the speed or the slowness of material things. Real time is astronomically and mathematically calculated in relation to speed, change and life of a particular object. Factually, however, time has nothing to do with the relativities of things; rather, everything is shaped and calculated in terms of facility offered by time. Time is the basic measurement of the activity of our senses, by which we calculate past, present and future; but in factual calculation, time has no beginning and no end.”²⁷

5. Two States of Matter and Generation of Matter from Spirit

It is to be noted that in Hinduism the fundamental cosmic ingredients are in two states – inactive and active. The unmanifest, inactive and primordial total substance is called *pradhana*. At the time of creation, *pradhana* is activated by the Supreme Lord, and matter becomes manifest, which is called *prakriti*. Both matter and spirit are eternal. However, at the time of creation, which goes on in cosmic cycles like the change of seasons, the unmanifest sum-total of matter is activated by the Supreme Spirit and the cosmic energy begins to manifest. This is called the temporary manifestation of material energy. This material energy is then transformed by the presence of a conscious spiritual entity. In other words, matter as such is inactive but gets animated by the presence of the spirit, just like a live bird. The bird can fly because *jiva* or *atman*, the spiritual spark,

²³ *Bhagavadgita As It Is, Ibid.*, Ch. 11, Verse 32, pp.576-577.

²⁴ The great sage who spoke the *Srimadbhagavatam*. A great devotee of the Lord and scholar of the theory of elements (*Sankhya*) in Vedanta. He was spiritual master of Vidura and a great religious authority.

²⁵ A.C. Bhaktivedanta Swami Srila Prabhupada, *Srimadbhagavatam*, Canto 3, Ch. 10 Verse 11, Bhaktivedanta Book Trust, Bombay, 1987, p.442.

²⁶ *Ibid.*, Canto 3, Ch. 11, Verse 4, pp.461-462.

²⁷ *Ibid.*, Canto 3, Ch. 10, Verse 11, Purport, p.442.

“spiriton”, is within. However, because of the arrangement of nature, the body has a limited time period. When the spirit leaves the body, the body becomes dead and inert again. When the entire universe is wound up the material components return again to the unmanifest form, which is eternal. That is the distinction between spirit and matter. The Supreme Spiritual Being is the primeval source of both matter and spirit. The spirit however is transcendental and beyond sense perception, and according to Vedanta the Supreme Lord or the Supreme Spirit is behind the cosmic creation.

6. Explanation of God in Hinduism

Hinduism is monotheistic. There have been many streams in Hinduism and many of them propound many aspects of God. This generally arises due to the misconceptions about the nature of personal aspect of God being steeped in pantheism or anthropomorphism.

From the Vedantic perspective however, the Personality aspect of God is most important. This does not imply that the concept is anthropomorphic. It is not that we give a human shape or characteristic to a god or anything whimsically. Rather it is the revelation of God Himself. A divine maxim is found in the *Srimadbhagavatam* (S.B. 3:26:49) stating that the cause exists certainly in its effect as well. Following this argument, since we all experience very clearly that all developed living beings have individual personality, it is certainly conceivable that the Supreme source of all must also possess personality. According to Vedanta, this material creation emanates from God. *Taittiriya Upanisad* declares:

*yato va imani bhutani jayante yena jatani jivanti
yat prayanti abhisamvanti tad vijignasasva tad brahma*

“The Absolute Truth or *Brahman* or God is that from which the cosmic manifestation has emanated, by which it is maintained and into which it merges after annihilation.”²⁸ Similarly, Chandogya Upanisad declares: *sarva khalv idam brahma* – “Brahman, the Supreme, is present in everything.”²⁹ Hence according to Vedanta this material nature is not working blindly. It is working under the control of the Supreme Lord.

6.1 Three Aspects of God

According to Vedanta, there are three aspects of Absolute Truth or God. All these aspects form the foundation of Supreme Reality. These are:

*vadanti tattattvavidastattvam yajjnanamadvyayam
brahmeti paramatmeti bhagavaniti sabdyate*

Translation: Learned transcendentalists who know the Absolute Truth call this nondual substance *Brahman* (the Attributeless Absolute), *Paramatma* (the Indwelling Supersoul), or *Bhagavan* (the Supreme Lord Himself).³⁰

(i) *Brahman* or *Brahmajyoti* - Impersonal Effulgence of the Lord

²⁸ D. S. Sarma, *The Upanishads: An anthology*, Bombay, 1989, p.101.

²⁹ Sri Bhakti Prajnan Yati Maharaj, *Twelve Essential Upanishads*, Vol. 1, Calcutta, 2000, p.541.

³⁰ *Srimadbhagavatam, Ibid.*, Canto 1, Ch. 2 Verse 11, p.103.

The impersonal effulgence of the Supreme Lord's transcendental body is *brahman* or *brahmajyoti* and it is beyond cause and effect. This is also evident from the *Sri Isopanisad* mantra:

*hiranmayena patrena satyasyapihitam mukham
tat tvam pusann apavrinu satya-dharmaya dristaye*

Translation: "O my Lord, sustainer of all that lives, Your real face is covered by Your dazzling effulgence. Kindly remove that covering and exhibit Yourself to Your pure devotee."³¹

Einstein's conception of a cosmic religion is very close to this idea of impersonal aspect of God or *brahmajyoti*. He said, "Try and penetrate with our limited means the secrets of nature and you will find that, behind all the discerning concatenations, there remains something subtle, intangible and inexplicable. Veneration for this force beyond anything that we can comprehend is my religion."³² He also stated, "My God created laws. . . . His universe is not ruled by wishful thinking, but by immutable laws."³³

(ii) Paramatma Feature – Inspiration and Guidance for all Living Beings

Paramatma is the partial expansion of the Supreme Person. This *Paramatma* feature of the Supreme Personality of Godhead is responsible for inspiration, discovery, creativity and for the movement of all living entities. In *Bhagavadgita*, the Lord says, "I am seated in everyone's heart, and from Me come remembrance, knowledge and forgetfulness."

Each and every living entity has been given a free will. *Paramatma* is responding and guiding each and every living entity in the universe according to the desires and activities of the individual living entities. In our day-to-day activities we can feel a seemingly inexplicable guidance, what is sometimes described as intuition or inspiration. This guidance is something more than mere algorithmic process. This happens often, when we are deeply contemplating on a problem. And solution comes like a flash without any connection to the line of thought that we have been contemplating. Many renowned scientists, mathematicians, artists, poets, etc., have reported their experience of inspiration. According to Vedanta this is an act of the Lord seated in the heart of everyone as *Paramatma*.

Otto Loewi, a German physiologist who won the Nobel prize in 1936 for his work on the chemical transmission of nerve impulses, had the idea that there might be a chemical transmission of the nervous impulse rather than an electrical one — which was the commonly held belief. But he was at a loss on how to prove it. He let the idea slip to the back of his mind until seventeen years later he had the following moment of inspiration. He recalled, "The night before Easter Sunday of that year I awoke, turned on the light, and jotted down a few notes on a tiny slip of paper. Then I fell asleep again. It occurred to me at 6 o'clock in the morning that during the night I had written down something most important, but I was unable to decipher the scrawl. The next night, at 3 o'clock, the idea returned. It was the design of an experiment to determine whether or not the

³¹ A.C. Bhaktivedanta Swami Srila Prabhupāda, *Sri Isopanisad*, Mantra 15, Bhaktivedanta Book Trust, Los Angeles, 1976, p.85.

³² H.G. Kessler, *The Diary of a Cosmopolitan*, p.322.

³³ W. Hermanns, *Einstein and the Poet – In Search of the Cosmic Man*, 1983, p.132.

hypothesis of chemical transmission that I had uttered 17 years ago was correct. I got up immediately, went to the laboratory, and performed a single experiment on a frog's heart according to the nocturnal design."³⁴ Loewi had proved his point. The result of the experiment became the foundation for the theory of chemical transmission of the nervous impulse. According to Vedanta such inspiration comes from *Paramatma*. In a similar manner, all the moment-to-moment activities of all living beings – from microorganisms to man are all guided by the *Paramatma* feature of the Supreme Lord.

iii) Bhagavan – The Supreme Personality of Godhead, the Object of Love

The *Srimadbhagavatam* describes Lord Sri Krishna as the Supreme origin of everything. All other forms of the Lord are subjective portions of Lord Krishna,³⁵ the Supreme Personality of Godhead. Lord Brahma, the first created cosmic living being defines *Isvara*, God, as the Supreme original Personality (*Adipurusa*). His transcendental body is made of three spiritual elements, *sat* (eternity), *cit* (knowledge) and *ananda* (bliss), *saccidanandavigraha*. He is the origin of everything, animate and inanimate, and is the cause of all causes. He is the Supreme Controller and the prime mover of all cosmic manifestation. He has Universal Consciousness and He is the well-wisher of every living being. He is beyond the perception of the material senses. However, His symptoms are visible in the effects (products) of His creation. He is Supreme Eternal among all eternals and Supreme Consciousness among all consciousness. He is realized by His devotees who have completely exhausted all the experiences of the material nature and is accomplished by the practice of the ninefold paths of *Bhaktiyoga*. This is the goal of *dvaita vedantis* or *vaisnava vendantis*.

There is a Big Vision behind this creation – to establish the transcendental connection between the ignorant living entity and the Supreme Lord, *Bhagavan*. This relationship is carried out through *bhakti*, the devotional yoga. The seed of *bhakti* is in all living entities but due to the covering of material desire it does not get fructified so easily. The material world is created by the Supreme Lord with this Big Vision to bring living entities to the platform of pure *bhakti* and ultimate happiness. The role and importance of *bhakti* in human life as well as in scientific research work is of paramount importance.

William D. Phillips, a Nobel Laureate physicist from the University of Maryland, USA, expresses remarkably, “Many subscribe to a belief in what is sometimes called ‘Einstein’s God’, an embodiment of the intelligence and order behind creation, but not a personality who cares about and interacts with the creation. ... My belief (is) in a personal God, a God who is both the creator of the universe and is intimately concerned with the welfare of the creatures of that universe. ‘Einstein’s God’ is not nearly enough for me. I believe in a God who wants good things for us, and who wants and expects us to care for our fellow creatures. I believe that God wants genuine, loving relationships with us, and wants us to have such relationships with each other.”³⁶ His statement supports the Vaisnava Vedantic view of God in Hinduism.

³⁴ Refer to <http://www.paperveins.org/dreamroom/scientists.shtml>

³⁵ Srila Bhaktisiddhanta Sarasvati Thakura, *Sri Brahma-Samhita*, BBT, 1989, pp.87-88.

³⁶ William D. Phillips, *Ordinary Faith, Ordinary Science*, paper presented at ‘Science and Spiritual Quest II’ conference in Paris, 2002.

6.2 God's Attributes

According to Vedanta, God has three kinds of internal potency or energy, namely, the (i) *Sandhini-sakti*, or existential potency, (ii) *Samvit-sakti*, or cognitive potency and the (iii) *Hladini-sakti* or pleasure potency. This is also confirmed in the *Visnu Purana* (1.12.69). In the *Bhagavata-sandarbha* (103) Srila Jiva Goswami explains these transcendental attributes of God elaborately. (CC Adi 4.60) The living beings are also endowed with these attributes in different degrees.

The Absolute Truth, God is the transcendental Reality (*cit-svarupa*) possessing all these attributes in full. The manifestation of these internal potencies or energies of the Lord is the inconceivable variegated spiritual world (*cit-jagat*), the manifestation of the marginal energy of the Lord comprises the living entities, and the manifestation of the external energy of the Lord is the material cosmos. (CC Adi 4.62 purport)

Thus Brahman, the Absolute Truth includes these four principles – the Supreme Godhead Himself, His internal energy, His marginal energy and His external energy.

The form of the Lord (*svayam-rupa*) and the expansions of His form (*vaibhava-prakasa*) are directly enjoyers of the internal energy in the spiritual world. The external manifestation, the material energy, provides the material bodies of all the conditioned living entities.

In order to manifest the physical universe God manifest Himself as three expansions called *purushaavatars*, namely Mahavisnu, Garbhodakshayi Visnu, and Khiroakshayi Visnu to fulfill the desires of every living being according to the karma of every being. Maha Visnu is the source of all physical universes and Garbhodakshayi Visnu enters in each universe and Khiroakshayi Visnu enters into each living being as *paramatma* and guides every living being from microorganisms to human beings to demigods. In this way the whole material world is run and maintained.

Thus the cosmic creation and dissolution go on periodically according to the Big Vision of the Supreme Lord. The creation of this physical universe is the facility given to conditioned living beings by God in order to get liberated from false conception of life (materialism).

According to ancient vedic culture, religious principles are directly given by God to guide the human beings – *dharmam tu saksad bhagavat-pranitam* (*Srimadbhagavatam* 6.3.19) The essence of all religions consists of morality, ethics, humility and love of God. Spiritual or religious life is a must for every human being which provides moral codes of living in order to be released from the bondage of wordly life and will thus be qualified to return to the spiritual world. All these will be achieved by developing the *sambhadajnana*- the knowledge of relationship of individual being with God knowing that the living being is fully dependent on the mercy of Supreme Godhead as a conscious spiritual particle or spiriton of God, the sincere human being can transform himself to become a sincere servant of God. Thus the next step which is to adopt *abhidheya* – which culminates in unalloyed devotional service to the Supreme Lord – which consists of nine devotional activities: hearing, chanting, remembering, serving, worshipping, praying, obeying, maintaining friendship and surrendering everything - which will lead to

proyojna – attaining the highest goal of life, which is love of God. Further works in this connection will be presented elsewhere.

Thus by developing the understanding of God’s existence and by purifying one’s heart by devotional service to the Lord, an individual life, community, nations and the entire world can all live together in harmony and peace. A God-centered life is, therefore, the solution to all the problems of material struggle.

7. Universe – A Brief Overview of its Origin, Maintenance, and Dissolution

In this section, we will very briefly examine the Vedantic cosmology (please refer to author’s article in *Savijnanam-Scientific Exploration for a Spiritual Paradigm*, Journal of the Bhaktivedanta Institute, Vol. 2 for a more detailed description of Vedantic cosmology). Vedantic cosmology describes that the universe is maintained for a specific period before it is wound up. At the beginning of each cycle of creation of the universe, Lord Brahma, the first created cosmic living being is born. A day of Brahma is called a *kalpa* and one *kalpa* consists of a thousand cycles of four *yugas*, or ages, called *Satya*, *Treta*, *Dvapara* and *Kali*. The same number comprises one night of Brahma and he lives one hundred such years and then dies. *Satvayuga* lasts 1,728,000 years; *Tretayuga* lasts 1,296,000 years; *Dvaparayuga* lasts 864,000 years; and *Kaliyuga* lasts 432,000 years. Thus one hundred years of Lord Brahma equal 311 trillion and 40 billion earth years. According to Vedantic cosmology, our universe starts with the birth of Lord Brahma and he is at present a little more than 50 Brahma-years old.

Thus our present universe started about 155.522 trillion (155.522×10^{12}) years ago and will end in 155.518 trillion (155.518×10^{12}) years and just after that a new cycle of creation will begin again.³⁷ According to modern cosmologists, our universe began around thirteen to fifteen billion ($13-15 \times 10^9$) years ago. Thus in the Vedic time scale, the universe is an order of 10^4 times older than that reported by modern cosmologists.

During the life of each universe, according to the *karma* of the conscious living beings, some living forms will manifest in certain periods of the different kalpas and some may not. Also, at the end of each day of Brahma, a partial annihilation of the universe takes place, bringing catastrophes in which a whole group of living forms can disappear. At the end of the life of Lord Brahma, that is, at the end of each 311,040 billion years, a total or complete annihilation takes place. Thereafter, creation begins again. Thus, in the Vedantic account of cosmology, it is reasonable to assume that one will be unable to find a systematic account of universal or global history in fossil records. In the Vedantic model, the disappearance of the giant lizards, or dinosaurs, which is still a mystery to Western science, is not unreasonable.

8. Hinduism and Modern Issues such as Bioethics, Abortion and Euthanasia

Today the entire world is facing a great dilemma with regard to the values and ethics of human actions. We are faced with many questions in the fields of biotechnology and bioengineering. Vedanta has a lot to contribute in this direction. The biomedical issues like abortion and organ transplantation cannot be resolved unless we have a deeper understanding of life. As described above, according to Vedanta, material life begins at

³⁷ *Savijnanam – Scientific Exploration for a Spiritual Paradigm*, Kolkata, 2002, pp.70-71.

the moment of conception. Life is sacred and human life is very rarely obtained. Thus Vedanta does not encourage killing at any stage of life, starting from the moment of conception. Hence, the issues like abortion, etc., are easily resolved in Vedanta. Moreover, as mentioned above, the Vedic literature provides purificatory process of *garbhadhana-samskara* to obtain a good child and thus good population for peace and happiness of human race.

Vedanta proclaims that the problems of unrest, political, social, communal and even religious are all due to the lack of spiritual qualities among the people. It thus provides *varnasrama* system, the most scientific culture for attainment of spiritual life. This system consists of four divisions of occupation and four orders of human life for training and acquiring of spiritual qualities. The four orders of life as *brahmacari* (celibate student), *grihastha* (household life), *vanaprastha* (retired life) and *sannyasi* (renounced life) are to be followed by all, irrespective of the occupational division. Thus it will be very important to undertake scientific research how to have good children in the world.

Vedanta also mentions that everything belong to God and one must not encroach upon another's share.³⁸ This understanding can guide one to not involve in unnecessary killing certain groups of trees, animals, birds, fish, and so on beyond the limits of his quota for food or self-defense. This will protect us from ecological disasters and various other problems.

9. Synthesis of Science and Religion in Hinduism for Solving Difficult Issues

In Vedanta there has always been harmony between science and religion because their domains and relationships are clearly defined and understood. Science deals with external or material knowledge (*apara vidya*) — knowledge of matter and its particles, like atoms and quarks whereas true religion deals with internal or spiritual knowledge (*para vidya*) — knowledge of the spirit, or seer. The first one deals with the changing, temporary, and external reality whereas the later deals with the changeless, eternal, and transcendental reality. Both these categories of knowledge are important, complementary, and extremely useful.

In Hinduism the complimentary relationship between science and religion is quite close. As we can infer knowledge of an object from its shadow, so by *apara vidya*, or material knowledge or science, we can understand something about the existence of *para vidya*, or spiritual knowledge. One does not negate the other. From his experiences while studying the atom, Max Born, one of the founding fathers of quantum mechanics, proclaimed, “I saw in it [the atom] the key to the deepest secrets of nature, and it revealed to me the greatness of creation and the Creator.”³⁹ The author refers to this as a view of synthesis of science and religion. Thus it is conceivable that many unsolved issues in biology, physics, cosmology, etc., can be resolved by the synthesis of science and religion in Hinduism.

³⁸ *Isa Upanishad*, Text 1.

³⁹ Max Born, *My Life and My Views*, Charles Scribner's Sons, New York, 1968, p.88.

10. Concluding Remark:

The author has made a humble attempt in this article to present a glimpse of Hinduism. The Vedantic literature, which is the essence of Hinduism is extremely vast and has immense potential in providing deep insights for resolving many of the issues in various fields of science, such as life and consciousness studies, cosmology, etc. It also gives a broad view of the science of God and religion. It is interesting to note that almost 60 years ago Erwin Schrödinger, one of the pioneers of quantum mechanics had a serious interest in Vedanta. He used to read Vedantic literatures called the *Upanisads* and saw the need to bring in the Vedic concepts into modern science. Thus it may be quite worthwhile for scientists, students and scholars in general to investigate many of the concepts in the Vedantic literatures.