

THE RELATIONSHIP BETWEEN RELIGION AND SCIENCE: THE HINDU PERSPECTIVE¹

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In a short article like this, it is impossible to deal with most of the Vedantic concepts, and the accumulated modern scientific data which have supported - and continue to support - them as valid truths with regard to the mystery of creation. It is hoped that this brief exposition will encourage seekers of truth to pursue their curiosity further into a journey that reveals the ultimate purpose of life.

It seems to us, and to all who care to know, that the conclusions of modern science are the very conclusions the Vedanta reached [centuries] ago; only in modern science they are written in the language of matter. Thus there is another claim of Vedanta upon modern western minds, its rationality, the wonderful rationalism of Vedanta.

(Vivekananda 1977)

From as early as the Vedic times some 5 000 - 6 000 years ago, the *rishis* (or seers) investigated the nature of reality. Their findings were not proposed theories by individuals, but the tapping into an ever-existent, eternal transcendent truth that guides the entire cosmic evolution. These *rishis* investigated the nature of truth through a process of controlled introspection, in a spirit of pure objectivity. They recognised very early that the validity of their knowledge had to be based on eliminating personal preference and prejudice, allowing their supramental experience to transcend both orthodox religiosity and traditional beliefs. A single individual claiming revelations which were unsubstantiated or unverifiable by other spiritually evolved seekers was discarded. Speaking about Vedanta, Romain Rolland, the French philosopher says,

The true Vedantic spirit does not start out with a system of preconceived ideas. It possesses absolute liberty and unrivalled courage among religions with regard to the facts to be observed and the diverse hypotheses it has laid down for their co-ordination. Never having been hampered by a priestly order, each man has been entirely free to search wherever he pleased for the spiritual explanation of the spectacle of the universe.

And so it must be, for religious enquiry, in a true spirit of 'scientific research', can only proliferate comfortably in a free thinking atmosphere - unhindered and uninhibited by theocratic or bureaucratic prohibitions, with threats and implementation of social castration or even capital punishment. All viewpoints have a place in Hinduism, for they represent different ideas and conceptions depending on the spiritual evolution of its votaries.

The remarkable discoveries of the *rishis* are referred to as *Shrutis*. Sri Ramakrishna Paramahansa, the celebrated nineteenth-century saint from Calcutta, who had no secular education, demonstrated personally that the God experience could be attained by following a disciplined spiritual pathway using *any* religion as the springboard - be it Hinduism, Buddhism, Christianity or Islam, all of which he practised at different times of his life. He

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proclaimed '*Yato mat tato path*' ('as many religions, so many pathways'), and thereby re-established the ancient Rig Vedic dictum, '*Ekam sat, vipra bahudha vadanti*' ('Truth, or God, is One, but wise people call it by various names'.)

This, then, must surely represent the beginnings of a 'scientific method' - one that was to be learnt by pure scientists in the centuries to come. Says Swami Vivekananda (1977), one of the most prominent exponents of Vedanta philosophy in the West, and a foremost disciple of Sri Ramakrishna, 'The Hindu religion does not consist in struggles and attempts to believe a certain doctrine or dogma, but in realising - not in believing, but in being and becoming.'

Hinduism (or more correctly, *Sanatana Dharma*, or Eternal Religion) is not based on revelations to an individual prophet or messenger, but on revelations to numerous *rishis* that transcended the mortal self. They discovered that reality basically functions at two levels of experience:

- The relative, cosmic, or phenomenal level;
- The absolute, acosmic, or transcendental level.

At the phenomenal level one perceives the universe of diversity and is aware of one's own individual ego, whereas at the transcendental level the differences merge into an inexplicable nondual consciousness. Both of these levels of experience are considered to be real from their respective standpoints, though what is perceived at one level may apparently be negated at the other. The perceived diversity is invested with life, and consciousness - both in the sentient and in the insentient manifestations. Swami Jitmananda says that the distinction between the living and the inanimate ceases to exist for a human being who has attained to the ultimate vision of reality. The *rishis* experience is that even the world of the 'inanimate' has within it dormant feelings of sorrow and joy - and this testifies to this highest state of mystic realisation. In the world of scientific discovery, especially in the twentieth century, this ancient truth is being recognised and supported in many different ways, through many kinds of experiments with inanimate metals, and the mute world of plant life. In 1899, Sir JC Bose, an Indian physicist, began a comparative study of both the inanimate (like metals) and the animals. He found that metals become less sensitive if continuously used, but return to normal after a period of rest. The discovery of 'metal fatigue' led him from the domain of physics to physiology, which convinced him of the parallels between inanimate metals and living plants and humans, and of a fundamental unity in the apparent diversity of nature. On 10 May 1901 he addressed the Royal Institution, and a month later the Royal Society, both in London, concerning his discoveries,

I have shown you this evening autographic records of the history of stress and strain in the living and the non-living. How similar are the writings! So similar indeed that you cannot tell one apart from the other. Among such phenomena, how can we draw a line of demarcation and say, here the physical ends, and there the physiological begins? Such absolute barriers do not exist.

It was when I came upon the mute witness of these self-made records, and perceived in them one phase of a pervading unity that bears within it all things - the mote that quivers in ripples of light, the teeming life upon our earth, and the radiant suns that shine above us - *it was then that I understood, for the first time, a little of that message proclaimed by my ancestors on the banks of the [river] Ganges thirty centuries ago: 'They who see but One in all the changing manifoldness of this universe, unto them belongs Eternal Truth - unto none else, unto none else'.*

Swami Ranganathananda (1987) refers to Western reaction to Bose's scientific revelations and quotes the 'usually reserved' *Times of London*: 'While we in England were still steeped in the rude empiricism of barbaric life, the subtle Easterner had swept the universe into a synthesis and had seen the *one* in all its changing manifestations.'

The presence of consciousness in sentient and insentient objects is further supported by Max Born's *Probability Waves* which confirm the fundamental unpredictability and the weirdness of the subatomic world. It is this weirdness that suggests that matter is conscious!

In the Vedas, reality experienced at the transcendental level is called *Brahman*. This term denotes a nondual pure consciousness which pervades the universe and within which the world of phenomena exists. Brahman is described as the first principle - from it all things, at the time of evolution, derive, by it all are supported, and into it, at the time of involution, all finally disappear. This concept of the universe arising out of a minute, or even zero volume, is gradually being accepted. Cambridge physicist Dr Stephen Hawking says in the *New York Times Magazine* (23.01.83), 'We are not sure whether it came from absolute zero size but we know that it must have been very small indeed.' This idea is supported further by cosmologists Allan H Guth of the Massachusetts Institute of Technology and Richard Gott of Princeton University, and by astrophysicist Jayant Narlikar.

According to the nondualistic (or monistic) Vedanta philosophy, Brahman is identical with the human self, known as the Atman (or the individual soul). The *Chandogya Upanishad* (VI.12.3) proclaims this being of the nature of pure consciousness, as the very self of man and the universe when the teacher tells his son: 'That being which is atom-like (subtle essence), this whole manifested universe has this as its self. That is the truth; He is the Atman; and that thou art! ...' The word Brahman denotes an entity whose greatness, powers, or expansion no one can measure. It is therefore infinite. The word Atman signifies the consciousness in man which experiences gross objects during the waking state (*jagrit avastha*), subtle objects during the dream state (*swapna avastha*), and bliss arising from absence of the duality of subject and object in dreamless sleep (*sushupti avastha*). The Upanishads speak of the transcendental Brahman as devoid of qualifying attributes and indicative marks, and the phenomenal Brahman as endowed with them. The attributeless Brahman is called the supreme or unconditioned Brahman, and the other as the inferior or conditioned Brahman. This conditioned Brahman is described as that whose body is spirit, whose form is light, whose thoughts are true and good, and so on. There is no conflict between the two Brahman - each is true from its respective viewpoint. This is akin to our experience of a dream during which the experience is absolutely real - even associated with the flight-fight reactions resulting from a stimulation of the sympathetic nervous system. On awakening, we become aware of another state, the wakeful state, and we now realise that the other was but a dream experience. This realisation of that experience being a dream experience is retrospective. Both states cannot be experienced simultaneously - and both are experienced as real during their respective states.

When the sense-perceived world is regarded as real, the conditioned Brahman is regarded as its omnipotent, omniscient creator, preserver and destroyer, and becomes the object of worship in a dualistic relationship, either in an anthropomorphic form, an anthropopsychic form, or both. He is then referred to in Christianity as the Father in Heaven, as Allah of Islam, as Jehovah of Judaism, and as Ishvara of Hinduism. But when the world is not perceived to exist, as for instance in deep meditation, then one experiences Brahman as the unconditioned absolute - in this state there is no creator, creation or its creatures, and one loses one's individuality in the experience of the totality of the unconditioned Brahman.

The timelessness of the unconditioned Brahman is indicated by the statement that it is free from the limitations of past, present, and future. It is described as being eternal - without beginning or end - for, we know, all things that have a beginning must have an end.

Brahman is described as 'it' because it is not of male or female gender. On the contrary, the conditioned Brahman is frequently referred to as 'he' in dominantly patriarchal societies, but also as 'she' by others.

In order to prevent a nihilistic conclusion of the unconditioned Brahman, which is formless, attributeless, indescribable, nonmatter - that state is described in Sanskrit as *Sat-Chit-Ananda* (or existence-knowledge-bliss absolute). More simply, and for purposes of description, 'it' is referred to as absolute consciousness, or absolute existence.

The Atman, or the individual soul, functions in the sphere of the sensory world through the contact of the five senses and the mind with the objects of sensory perception. When these five senses and the mind are brought under 'control' such that the outgoing tendencies of these senses are totally subjugated, then the Atman ultimately appears to go back into its primordial state of unconditioned Brahman.

How does the entity called God create the universe? Vedanta speaks not of creation, but more appropriately of projection. The highly subtle unconditioned Brahman becomes progressively more manifest by materialising itself into states that are more gross. It is the one substance which manifests as different levels of reality, and mind and matter are created from the same substance. Vivekananda interprets this as follows: 'Mind at a very low rate of vibration is what is known as matter. Matter at a high rate of vibration is what is known as mind. Both are the same substance.' Commenting on Wheeler's concept of super-space and Jack Sarfatti's own interpretation of unified field theory, Michael Talbot (1980) writes, 'Mind and matter are different vibrations or ripples in the same pond'. He also thinks that, 'the fields which govern consciousness (mind) and those which govern matter' are 'part of a continuum, a spectrum of fields within fields'.

What is the nature of this unconditioned Brahman? As we said earlier, it is without describable attributes, because, in that state of oneness, where is there the other to describe that state? Sri Ramakrishna describes this experience of oneness most appropriately. He tells of a salt doll that wished to fathom the vast and mighty ocean, and descended into the waters to do that. It started dissolving in the process until it ultimately became indistinguishable from the water of the ocean.

But we can reflect upon it perhaps as a state of immense energy. This energy of pluripotent potential becomes the manifest world. The *Bṛhadāranyaka Upanishad* clearly expresses it (II.1.20):

Just as a spider (produces out of itself and) moves about in its own web, just as from a fire minute sparks fly about, exactly so, verily, from this Atman have come forth all (physical, biophysical and psychophysical) energies, all worlds, all gods, all beings. Its Upanishadic ('mystic' name) is Truth of truth. The vital force is truth; this (Atman) is the Truth of those (energies).

The spider acts both as the efficient cause and as the material cause of its creation. Sankaracharya, one of the world's greatest philosophers, says in his commentary on the *Chandogya Upanishad* (VI. 12. 2): 'It is from that which is (invisible and) atom-like and which is of the nature of *sat* (pure being), that the whole (visible) gross universe of effects, characterised by name and form has come.' But is there any scientific validity for such suppositions - suppositions that were made when 'science' as the Western world understands it was not even conceived as science? Over 2 500 years later Albert Einstein showed the

interconvertible relationship between energy and matter in his equation, $E = MC^2$. We know, furthermore, from the basic laws of physics that energy can be neither created, nor destroyed - but it can be transformed. The *rishis* who stated thousands of years ago that energy can manifest the physical world get an endorsement from modern physics.

The *rishis* discovered a all-powerful energy, which, as a result of it being very subtle (*sukshma*), is both unmanifest and undifferentiated. This is the state of the unconditioned Brahman discussed earlier - and is a state of potential energy. When this energy projects itself into a 'lower' state of vibration, it becomes differentiated, but remains unmanifest, and the energy is now in a form of kinetic energy. This is referred to as the conditioned Brahman alluded to earlier, and is described as the Ishvara, Father, Allah, Jehovah. The 'condition' of this state is goodness - an attribute from which these forms do not deviate, and a quality they attempt to maintain. In this state, the conditioned Brahman is endowed with the trinity of attributes that make him a creator, sustainer and destroyer.

That creator now 'creates' its creatures - the diverse worlds of man, animal, insect, and the inanimate. Since the inherent attribute of the conditioned state (the creator) is limited to goodness, that which it creates will be inherently good. We, thus, devolve to another 'lower' state, which is both manifest and conditioned.

The conditioned Brahman can also be known under the aspect of providence. Under his supervision good and evil produce their respective results. This does not mean that God is the creator of good and evil. As a man departs from God he sees good and evil, just as one sees day and night when one is separated from the sun, which itself is all light. Nor is God affected by good and evil, which function only in the relative world. The Lord is like the light with whose help a good man performs righteous action and a wicked man unrighteous action; the light itself is unattached, though without it no action can be performed. Man reaps the result of his own actions. He uses the light of God for good or evil ends, according to his inner tendencies created by his inmost desires. The law of karma, which states that 'as you sow, so shall you reap', preserves the order in the world, and is reminiscent of Newton's third law of thermodynamics. God is the 'administrator' of the law of karma.

But why does man perform good or evil? Vedanta says that he has forgotten his true nature, which is existence-knowledge-bliss. He therefore seeks these outside himself, using means both fair and foul, and thus becomes subject to the law of karma. All actions, good or evil, produce parallel impressions which are stored in the subconscious mind. The sum total of the difference between the good and bad impressions will, at the time of death, determine his next birth. If the balance is positive, he is born under favourable circumstances. If negative, he will be born under unfavourable circumstances. This explains, for example, why some children are born healthy, while others are born maimed and unhealthy. God is not responsible for human circumstances - humans are. Humans are their own saviour - and they atone for their own actions. Once we enter the game of life, we play by the rules we have made. Accumulated good impressions will bring joy and happiness, and vice versa. Talbot (1980) accepts the Upanishadic idea to explain the unity of matter and consciousness, 'Matter is condensed energy, but it is the condensed energy of consciousness itself. As is written in the *Mundaka Upanishad*, "By energyism Consciousness is massed; from that Matter is born and from Matter, Life and Mind and the worlds".' Talbot (1980) finally sums up this reduction of matter into consciousness:

Most importantly, the new physics is offering us a scientific basis for religion. This is something new in the history of western civilisation, and its impact will certainly be felt in every aspect of our lives. But a word of caution: the religion offered by the new physics is not a religion of values or absolute principles. It offers us no strict delineation of heavens

or hells. It is religion based on the psychology of human consciousness indeed, on the psychology of the entire universe as a conscious force acting upon itself. In this new religion, we will not find the rules of the games so long sought after by philosophers and theologians. What we will find is a glimpse into ourselves, a bit of cosmic hide-and-seek in which we realise that no rules as such can be found. We make the rules. We play the game.

The views expressed by Talbot are not at variance with Vedanta.

If the law of karma rewards good with favour, and bad with punishment, both of which have to be experienced, is this then an eternal cycle from which there is no escape? No, says Vedanta. By recognising one's true nature through a disciplined enquiry of the self, one can break the bonds of karma - and one can realise one's original identity - and conclude the game of hide-and-seek. There are many means to God - or self-realisation. The means of self-realisation are described by Lord Krishna in the *Srimad Bhagavad Gita* as being threefold:

- The pathway of Karma Yoga (i.e. of selfless action)
- The pathway of Bhakti Yoga (i.e. of extreme devotion to God)
- The pathway of Jñana Yoga (i.e. of knowledge of the higher self).

One can use predominantly one of these pathways, or one can use a synthesis of the three, depending on one's temperament. Vedanta describes Nature, or *prakriti* (pra = divergent, kriti = creation), as being endowed with three types of main temperaments (or *gunas*), and everything in the universe can be allocated a position within the range of these three attributes. It describes those of a *sattvic* temperament - those who are quiet, humble, serene, truthful, and compassionate. Those with a *rajasic* temperament are active, restless, ambitious, glory-seeking. Those with a *tamasic* temperament are lazy, inert, slothful, destructive. One notices that elements of all three *gunas* are found in humans, the predominance of one or the other determining their characters, whereas other forms of animate and inanimate life may have predominantly one or two of the attributes. A rock is considered to be in a state of *tamas*.

Brahman, thus, has different levels of conditioning - from the unmanifest unconditioned state, to the unmanifest conditioned state, to the manifested conditioned states at various levels. To comprehend this more fully, let us imagine a large collection of water, as in a dam. Let us see this as a vast amount of energy - a potential for, for example, quenching the thirst of an individual, transporting logs to low-lying areas, irrigating the fields, and channelling through exit gates that would turn the turbines to form electricity. This state could be described as being unconditioned and unmanifest. Once the potential energy is converted to stored electricity in a powerhouse, the energy becomes conditioned (to perform the work of electricity, but now not to quench thirst), but is still unmanifest. The electrical energy is sent by cables to the plug-point in your home. The plug-point can be used for running a heater, the same plug-point for running a cooler, or a lamp-shade, or a power drill - all diverse expressions of one form of energy - electricity! Here we see the conditioned and manifest state of that energy. It is the formless that projects Itself as the world of names and forms. Vedanta stands firmly on the truth that, 'All that exists is Brahman' (*sarvam khalu idam brahma*), or 'One must see everything enveloped in the ultimate reality' (*ishavasyam idam sarvam*).

Sri Ramakrishna also emphasised that God is both immanent and transcendent. This experience of his echoed the famous verses from the *Srimad Bhagavatam* (I.ii.11) which reveal this *tattvam*, or supreme truth (differentiated from *matam*, or personal preference or opinion) of the all-comprehending unity:

Knowers of *tattvam* declare that it is one and the same non-dual pure Consciousness that is spoken of as Brahman, or the impersonal Absolute (by the philosophers), as *Paramatman*,

or the supreme Self (by the mystics), and as *Bhagavan*, or the all-loving God (by the devotees).

The Vedantic concept therefore appears to suggest a 'cosmic ecosystem' - where energy and matter appear to cohabit in an eternal pool of existence - going through cycles of evolution and involution, very much like the ocean full of water, which under some circumstances begins to solidify and form ice-bbergs, and under others melts back into water, and then under hot conditions, turns into visible steam, and then into 'unmanifest' vapour, which again condenses at higher altitudes to form clouds, whence it finally returns to the ocean in the form of rain. The modern cosmological theories of the 'Big Bang' creation and of the 'Heat Death' destruction of universal matter suggest an interesting scientific counterpart.

According to Swami Jitatmananda, the Vedantic idea of the solidarity of existence is the only answer to science-religion conflict and the multiplicity of sectarian Gods. Amuary De Reincoirt in his book *The Eye of Shiva* (1981) quotes two passages - one from Sri Ramakrishna's teachings:

Sri Ramakrishna gives us a pungent pictorial image of the problem as seen from the eastern standpoint: Think of a vast ocean filled with waters on all sides. A jar is immersed in it. There is water both inside and outside the jar, but the water does not become one unless the jar is broken. What is the jar? It is I-consciousness (ego); when 'I' disappears, what is, remains.

The other quotation is from Nobel Prize winner physicist Erwin Schrodinger (1964) affirming monism:

The multiplicity [of the phenomenal universe] is only apparent. This is the doctrine of the Upanishads and not the Upanishads only. The mystical experience of the union with God regularly leads to this view, unless strong prejudices stand in the way, and therefore, more easily in the east than in the west.

Schrodinger (1964) further states that 'Consciousness is the singular of which the plural is unknown'. Plurality becomes apparent in the phenomenal world.

But pure being and the phenomenal universe are yet not perceived to coexist, mainly because when the one is seen, the other disappears, like in our dream analogy. The two cannot coexist simultaneously. The problem of the relationship between the two cannot be completely understood because we try to understand this relationship with our limited intellect which is operating from the domain of the relative. A fish that swims in the water is unaware of the water in which it is suspended, and with which it is in intimate contact. However, if it momentarily jumps out of the water, it gets a glimpse of the surface of the ocean. It cannot experience the other without being out of the one. If we want to experience the world of the transcendent, we have to likewise 'get out' of the world of the senses. We will then intuitively see the light by which all else is seen. When man as the individual soul (*jivataman*) intuitively realises his true nature, he 'becomes' the cosmic soul (*Paramatman*) - that which he has always been, but which he had forgotten in the materialistic and sensate world of self-gratification.

When man progresses through spiritual evolution, he ultimately overcomes the lure of the materialistic world, gathers within himself the tendency of the outgoing senses, and becomes absorbed in the formless self once again. The liberation of man, or *moksha*, is the final liberation of the spirit from its sense-driven mind and its multitude of desires. This is a state of realisation in which he rejects even the heavens which promise to provide nonstop sense gratification. He no longer sees the 'without', but attains final rest in the 'within'.

Many believe that philosophy and theology are juxtaposed in a timeless tug-of-war of individual survival, with an additional threat being posed by modern science. There is no such paranoia in Hinduism, where philosophy and theology are one and the same, and where the arrival of challenges in the form of scientific enquiry is welcome, for they serve only to confirm spiritual truths. Vedanta holds that *satya me vijayate* (truth alone triumphs). 'The Vedantic testament is that whether it is physical science or the science of religion, faith and reason need to co-operate with each other, and that they never conflict with each other, if the search is for truth and human fulfilment. The more you strengthen your reason, the better for your religious life' says Swami Ranganathananda (1982). Professor of physics at Berkely University, Fritjof Capra (1973), expresses the following view, 'The basic elements of the Eastern world-view are also those of the world-view emerging from modern physics' and that, 'Eastern thought, and more generally mystical thought, provide a consistent and relevant philosophical background to the theories of contemporary science.' Capra says further, '... the models and images of modern physics [have] become akin to those of Eastern philosophy.'

Vedanta emphasises not the physical evolution of man as propounded by Darwin, but a spiritual evolution of man. It therefore accepts a diversity of religious opinion dependent on the spiritual progress of each seeker. However, it must be understood that such diversity occurs within the wider framework of an acceptance of the ultimate truth.

Can God be brought into the view of the physical scientist's microscope for direct scrutiny? If this were possible, then God would have to be a finite physical object, limited in time and space. Mathematical models have already conclusively shown that time and space are only relative states, and not real. All religions share in common the perception that God has no anthropomorphic form. He is conceptualised as an unseen energy. But Vedanta goes one step beyond, and defines a further unmanifest ultimate reality - the cause behind all causes. Its interpretation of the statement that 'God made man in his image' is that God's nature is one of spirit, and hence we are spiritual beings with the limiting adjunct being the body-mind complex. Vivekananda echoes the truth of Vedanta when he says that 'each man is potentially divine'.

The conflict between religion and science begins when the scientist who is familiar with the physical scientific method attempts to study that which is infinite and absolute from the realm of the relative. He has no comprehension of the spiritual method which is necessary to experience God. The scientist, in general, refuses to accept that which cannot be proved by hard evidence. Jitatananda writes that physicists who refused to accept nonsensory data as proof of something existing somewhere were, with the development of quantum physics, forced to accept the presence of subatomic reality which is absolutely beyond all sense perception! No one has seen an electron even once, not to speak of twice, said Schrodinger (1964).

Is science necessary for religion? or is religion necessary for science? I believe that neither does religion need science, nor science religion - it is in fact the human race which needs both. Einstein says, 'Science without religion is lame, religion without science is blind.' The finite mind can grasp only finite reality. The infinite reality can be realised only by the infinite mind. Purifying the mind, according to Vedanta, means eliminating its sensate limitations and its egoistic distortions. Almost 2 400 years ago Patanjali recompiled and reformulated ancient truths enunciated in the Upanishads in a treatise called 'Patanjali's Yoga Sutras' which describes the eightfold method. The approach of the author is 'scientific', and is not religion-specific - any ardent seeker may use the guidelines to achieve his/her objective.

Sri Ramakrishna expresses a profound truth when he says that 'pure mind, pure reason, and pure self, are one and the same Truth'. Almost a century later Einstein said, 'But the creative

principle resides in mathematics. In a certain sense, therefore, I hold it true that pure thought can grasp reality as the ancients dreamed.'

Faith - not 'blind' faith but one based on reason - is necessary in order to gain the 'experience'. Swami Ranganathananda (1982) says that even though a truth established by scientific logic and scripture is accepted to be such, even then, in the case of truths which are extremely subtle there may be difficulty of comprehension - in the absence of a deeper faith - in those minds that are attached, through natural propensities, to external sense objects. When faith is present, there is the possibility of the mind calmly settling down on the truth that is sought after, in the wake of which will arise the grasp of its meaning. This can also well fit an approach to the comprehension of the 'field' concept in modern physics according to Swami Ranganathananda. The field is that into which particles appear and from which they disappear. It is subtle and beyond sensory experience; and in being no-thing, it is also everything. To quote Fritjof Capra (1973):

The field theories of modern physics force us to abandon the classical distinction between material particles and the void ... In quantum field theory, this field is seen as the basis of all particles and of their mutual interaction ...

The vacuum is far from empty. On the contrary, it contains an unlimited number of particles which come into being and vanish without end.

Here, then, is the closest parallel to the void of Eastern mysticism in modern physics. Like the Eastern void, the 'physical vacuum' - as it is called in field theory - is not a state of mere nothingness, but contains the potentiality for all forms of the particle world. These forms, in turn, are not independent physical entities but merely transient manifestations of the underlying void ... The discovery of the dynamic quality of the vacuum is seen by many physicists as one of the most important findings of modern physics.

In its ignorance of the reality, the human mind interprets that which is gross, and that which is apprehended through its senses as real, or being - and that which is not apprehended by it through its senses as unreal, or nonbeing. The ignoramus fails to realise that the ultimate truth is not an object of sensory perception, but a subject of intuitive apprehension.

Gross matter can be reduced progressively into the realm of particle physics; and living matter into the biological realm of genetics, with respect to determining the nature of life and of man. But what when we arrive at the very precipice of scientific thought - at an ultimate state when matter has to become nonmatter? We know the basic physical principle that matter cannot be destroyed - but we do know that it can be transformed. Does such transformation from the physical 'merge' into the so-called meta-physical, and to its ultimate state? The *Mundaka Upanishad* says, 'Just as a spider projects its own web and then reabsorbs it into its own body, so also that One reality projects this varied universe and then absorbs it back into Itself.'

Religions are ideologies harboured by those who have some sort of belief in a higher source of power. The institutionalisation of such beliefs within various sects has led not to the emancipation of the spirit which the individual seeks, but rather to its bondage. Instead of these sects becoming God-loving, they have fallen to becoming God-fearing. Religious ceremonies, fasts, charity, practice, et cetera, have become routines to keep them out of a hell created for disobedient creatures. The God created by men of limited spiritual vision has led to a concept of an arrogant god, demanding humility, a jealous god demanding nonenvy, a punitive god demanding mercy and forgiveness, a paradoxical god commanding you to give up physical sensual pleasures on earth such that they may be enjoyed in abundance in heaven - a God of paradox indeed. And this God demands unquestioned allegiance. Such beliefs are the ones that

find opposition from scientific data. Any religion that denies scientific truths, according to Vivekananda, will suffer the consequence of falling into the category of dogmas, rituals and superstitions. A reconciliation between the two is imperative.

The Western scientist tries to define the finite details of gross matter. Behind the so-called mass of matter physicists discovered molecules; behind molecules, atoms; behind the atoms, electrons moving around a nucleus. When the electron was found unpredictable by any experiment (according to Heisenberg's uncertainty principle) physicists turned their attention to the nucleus, which was broken. Within this they found protons, neutrons, mesons, leptons, hadrons and hundreds of subatomic particles which live only two to three particle seconds ($=10^{-23}$ second). It was soon found that these subatomic particles are really not particles but objects or events in the various processes of subatomic phenomena, as Fritjof Capra explains it. Research further revealed that the hadrons are composed of six types of 'quarks', and a new branch of physics called quantum chromodynamics has developed. The important question being asked is, 'Are these quarks the rock bottom of matter?' Nearly three-quarters of a century earlier, Vivekananda had anticipated this very idea when he said in London in 1895, 'It is possible that what we call matter does not exist at all. It is only a certain state of force. Solidity, hardness or any other state of matter can be proved to be the result of motion.' This is the opinion not of a physicist, but of a seeker, who could, through his intuitive experience, enter the carefully-guarded domain of Mother Nature herself.

The discoveries of Vedanta antedated science by thousands of years. They are also based on research, the laboratory of the rishi being his mind. He searched within, just as the westerner searched without. He defined the objects of senses; then discovered the mind behind the senses; he fathomed the intellect behind the mind, and learnt of man's discriminatory abilities; he next searched for that which gave the mind the power to move, and arrived at the subtle principle of 'prana' (or 'vital force') - and in search of its source found the Brahman, the substratum of all names and forms. He saw the Atman, or individual soul, in oneness with the 'conditioned Brahman' or the universal cosmic soul, and finally the ultimate: The unconditioned Brahman. In discovering the Atman, and its sameness with Brahman, he discovered immortality.

Swami Jitatananda's preface to his book *Holistic science and vedanta* provides an excellent summary of the important scientific discoveries and their impact on Vedantic thought. I have taken the liberty of using it to paraphrase my concluding remarks. Since the beginning of recorded history centuries ago, Vedanta has discovered the unity of all existence. It is only since the beginning of this century that modern science has attempted to unravel the mysteries of Mother Nature, totally jeopardising in the process the earlier notions it had about the universe, and its constituent sentient and insentient beings. The strict barriers of mind-matter diversity are progressively being eradicated by the modern scientific revelations of the concept of relativity and the advent of quantum physics, as are the attitudes to scientific positivism. Heisenberg's discovery of the uncertainty principle has demolished the earlier notion of strict cause and effect machine-like deterministic relation of Laplace and Newton in the world of subatomic particles. The consciousness of the observer has been inextricably connected with the act of observation of the so-called detached observer. Every picture of the subatomic world is a picture of omnijjective reality, where the subjective and the objective have been interconnected. Schrodinger's (1964) discovery of wave equation has confirmed the idea, earlier anticipated by Max Planck, that it is consciousness which is creating external reality. And this consciousness in the ultimate analysis is, according to Schrodinger, one and singular. The 'plurality of consciousness', according to Schrodinger, is '[the Indian] Maya' (or 'that which it is not'). Max Born's discovery of probability waves, Sir JC Bose's experiments, and

the work of Cleen Backster point to another new idea that so-called inorganic matter also behaves like organic life, having consciousness. The steady-state universe cherished by Einstein has today been replaced by an expanding and contracting universe which has its origin from 'a point of singularity', 'the event-horizon' where time and space cease to exist. The grand unification theory (GUT) proposed by Einstein and further confirmed by the later discoveries of Nobel Prize winners Abdul Salam, Sheldon Glashaw, and Steven Weinberg are pointing to a fundamental unity of all physical forces in the universe. The successful experiment of Bell's Theorem by David Bohm and others has proved that our universe is fundamentally interconnected and inseparable. Each subatomic particle is a 'holon', according to Arthur Koestler, which is connected to every other particle in the universe, proving what Vivekananda had already said at the turn of the century. Every movement is a 'holo-movement' as every movement is related to every other movement in the universe.

I believe that even beyond the frontiers of our advanced knowledge, nature (or the *Vedantic Prakriti*) sits in comfort, beckoning us to go forward to comprehend it - nay, to experience it. To quote Albert Einstein (*I Believe*, Unwin Books, 1962),

The most beautiful thing we can experience is the mysterious. It is the source of all true art and science. He who can no longer pause to wonder and stand wrapt in awe, is as good as dead: his eyes are closed. The insight into the mystery of life, coupled though it be with fear, has also given rise to religion. To know that what is impenetrable to us really exists, manifesting itself as the highest wisdom and the most radiant beauty which our dull faculties can comprehend only in their primitive forms - this knowledge, this feeling, is at the centre of true religiousness. In this sense, and in this sense only, I belong to the ranks of devoutly religious men.

Vivekananda said prophetically that one day 'science and religion would meet and shake hands'. I believe that the two branches of knowledge - one of matter, and the other of spirit - have progressed towards the penumbra of the ultimate - that hand-in-hand, in a spirit of mutual trust and cooperation, they can march forward to the experience of the beginning of creation. The scientific confirmation of the Vedantic concepts does not mean that it is Hinduism only that is being validated, but that it validates all pathways that are in earnest search of the ultimate truth.

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