

Vedanta and Science

By Swami Tathagatananda

Vedanta is a product of the fearless quest for Truth by pure-souled mystics in ancient India. Through a dispassionate, critical, impersonal study, their earnest and passionate mood in the search for Truth in nature and inner life gave birth to an enduring religious value: a limitless, all-comprehending spirituality of irresistible appeal.

The impersonal approach of Vedanta makes it universal in spirit. Through its living treasures of rationality and spirituality, Hinduism is vital from the age of the Upanishads to the present day. Vedantic truths have been tested, re-tested and amplified by a galaxy of succeeding sages who gave posterity the invaluable legacy of a dynamic scientific tradition in the field of religion. It is now known that ancient India's splendid record of scientific development in mathematics, astronomy, physics, chemistry, metallurgy, medicine and plastic surgery, cosmology, grammar and linguistics, town planning, environmental hygiene, shipbuilding and navigation is based on this tradition.

Hinduism has had no fear of science. The Vedantic revitalization of critical questioning and rational thinking actually encourages science. This perfectly harmonious co-existence of science and religion accounts for the simultaneous development of the physical sciences and the science of religion. Swami Vivekananda confirmed the need for both:

I do not mean that those who want to search after truth through external nature are wrong, or that those who want to search after truth through internal nature are higher. These are the two modes of procedure. Both of them must live; both of them must be studied; and in the end we shall find that they meet.

Swamiji refers to the "high spiritual flights of the Vedanta philosophy of which the latest discoveries of science seem to be like echoes." And again:

If you go below the surface, you find that Unity between man and man, between races and races, high and low, rich and poor, gods and men, and men and animals. If you go deep enough, all will be seen as only variations of the One, and he who has attained to this conception of Oneness has no delusion.

It is generally understood that the philosophy of Vedanta and science represent two distinct fields of enquiry. Hinduism accepts the Supreme Truth, which is all-comprehensive and always subjective, it is never objective. Science, on the other hand,

accepts the objective world to be real and claims that the secrets of nature can be known through the senses, mind and intellect. Swami Vivekananda, the embodiment of Vedanta philosophy, emphatically says that the follower of Vedanta seeks to understand the heart of things, the very kernel—life itself. The Vedantin seeks the “why” of things and leaves the “how” to others. He also says that however eminent science may be it is not interested in discovering Truth. Existence itself must be studied in order to get at the *raison d'être* of life. Science, being practical however, lies within the spiritual field and cannot be neglected. The two fields combined will harmoniously contribute to a better world. In the conclusion of his *Brief History of Time* Stephen Hawking writes that for many years scientists were preoccupied with “what” the universe is, not “why” it is.

The philosophy of Vedanta and science differ in their methodology as well. Scientific inquiry depends upon the senses, mind, intellect, and critical reasoning whereas the Vedantin enters the inner world through intuitive wisdom. Moreover, scientific knowledge always remains partial. Regarding nineteenth-century scientific reason, physicist Werner Heisenberg says:

Matter was the primary reality. The progress of science was pictured as a crusade of conquest into the material world. Utility was the watchword of the time. . . . This frame was so narrow and rigid that it was difficult to find a place in it for many concepts of our language that had always belonged to the very substance, for instance, the concepts of mind, of the human soul, or of life.

Vedantic philosophical knowledge is always complete and comprehensive.

Though science prolongs life, philosophy deepens it. Science has breadth but lacks depth; conversely, religion is profound but lacks breadth. This difficult problem is reconciled in Vedanta. As both a profound philosophy and science of religion, it escapes the weaknesses of science and credo religions.

The Upanishads speak of two types of knowledge: higher and lower. That is higher knowledge by which the imperishable Absolute is realized. Lower knowledge informs us of everything except the attainment of Self-Realization. This points to two mighty ideological forces before us: scientific materialism and religious provincialism. Scientific materialism is concerned with the finite realm of phenomena and provides a mechanistic and materialistic interpretation of existence; it does not provide us with any insight about the higher realities, what to speak of Transcendental Reality.

A parochial view of religion based on creed or dogma becomes the source of disharmony and bloodshed. The Vedantic view states that “religion is the manifestation of the Divinity already in man.” With Hinduism and dogmatic religious provincialism poles apart, a spiritual view of religion was to be adopted by the dogmatic religions would enable them to incorporate Vedantic spiritual insights. Society will then see an ever-greater flowering of true religion as dynamic spirituality.

The Knower behind our mind is Consciousness. Viewed through the narrow window of senses, mind, and intellect, limitless Consciousness appears to be limited, gross, and subtle. When consciousness is raised beyond time and space, beyond name and form, we experience the Supreme Truth, the inner essence of all being. Then the world appears as “multi-dimensional reality.”

Science and dogmatic religion do not give us a real concept of man and the universe. The conflict between two apparently irreconcilable worldviews—the material worldview held by science and the spiritual worldview held by religion—has been creating problems in life. One observer notes:

As the world described by science expands geometrically and grows more complex by the hour, we shrink proportionately in our own eyes. Our personal and collective lives have come to seem inconsequential, infinitely expendable, a cosmic side show, where cherished human values, aims and ideals are mocked by nature's blind juggernaut and sheer inhuman purposes.

Nobel physicist Steven Weinberg puts it more precisely: “The more the universe seems comprehensible, the more it seems pointless.” Sir James Jeans also says, “The advance of knowledge is at present reduced to what Einstein has described as extracting one incomprehensible from another incomprehensible.”

Reflecting this dilemma, Nobel neurophysiologist Sir John Eccles rightly ponders in his book *The Human Psyche*:

Man has lost his way ideologically in this age. . . . Science has gone too far in breaking down man's belief in his spiritual greatness . . . and has given him the belief that he is merely an insignificant animal that has arisen by chance and necessity on an insignificant planet lost in the great cosmic immensity.

Science does not take note of the consciousness of the observer, as if the observer were not there. Science is objective, positivistic, and deterministic. Its assumptions of logical empiricism will never give a clue about mind or consciousness. For many years quiet revolutions in scientific thinking have been challenging man's reliance on his empirical knowledge of the universe and mechanistic worldview. Modern physicists state that the universe is an integrated and self-energizing system where everything is interrelated and interpenetrated. Mind plays a significant role in the formulation of laws, Karl Pearson pointed out in 1900: “There is more meaning in the statement that man gives laws to nature than the converse that nature gives laws to man.” Albert Einstein wrote:

Physical concepts are free creations of the human mind, and are not, however it may seem, uniquely determined by the external world. . . . He (conditioned mind) will never be able to compare his picture with the real mechanism and he cannot even imagine the possibility of the meaning of such a comparison.

In the conclusion to his *Space, Time, and Gravitation* Sir Arthur Eddington suggests the intricate and difficult problem confronting physicists in their emerging study of the mystery that lies within the observer:

All through the physical world runs that unknown content, which must surely be the stuff of our consciousness. Here is a hint of aspects deep within the world of physics, and yet unattainable by the methods of physics. [Italics added]

Many interesting and fundamental discoveries have broadened our scientific horizon. There is gradual general acceptance among some eminent scientists, that everything being a manifestation of Consciousness, Consciousness is fundamental. Since Werner Heisenberg's discovery of the "Uncertainty Principle" in 1927, physicists have been thinking about the mind. In the study of nature, for example, scientists have discarded the utility of a purely human angle of vision because they no longer regard nature as entirely distinct from the observer. As Heisenberg put it, ". . . the change in the concept of reality manifesting itself in quantum theory is not simply a continuation of the past; it seems to be a real break in the structure of modern science."

Modern scientists believe that the subjective mind and objective matter are interrelated, interpenetrated and inseparable—the observer cannot be excluded from his observation. Philosopher-scientists Sir Arthur Eddington, Sir James Jeans, Max Planck, Albert Einstein, Erwin Schrödinger, Niels Bohr, and Werner Heisenberg boldly included the observer in the observable and considered this to be a necessary advance in their method of scientific reasoning. In the following six decades, this developing philosophical trend has resulted in such books as Fritjof Capra's *The Tao of Physics*.

Physicists John Wheeler, Sir James Jeans and others establish the identity of an observer-participator in the quantum drama. Observation causes change in things observed. The emerging consensus is that epistemology must become an integral part of every scientific theory.

VEDANTA AND EPISTEMOLOGY: SCIENTISTS ON THE SUBJECT OF CONSCIOUSNESS

Epistemology refers to the science or philosophy of knowledge. It may be defined as that science which inquires into nature, its conditions and factors and the limits and validity of knowledge. The irreducible epistemological fact is that Consciousness is prior to every form of existence. But for Consciousness, nothing can be experienced or denied. In Swami Vivekananda's words, "It is through the Self all knowledge comes." The Universal Soul is apparently divided into numerous souls. "Whatever we know," Swamiji says, "we have to know in and through Him. He is the Essence of our own Self. He is the Essence of this ego, this I, and we cannot know anything excepting in and through that I. Therefore, you have to know everything in and through the Brahman." Vedanta stresses the perceiver's responsibility for the enquiry of Truth through the principal instrument of

knowledge, the mind. Advaita Vedanta admits of six methods of valid knowledge: perception, inference, verbal testimony, comparison, postulation and non-apprehension.

Pure Consciousness is the Sole Entity; all else is mere forms. Things appear to exist because of the radiance of the underlying Consciousness. It is through Consciousness that the subject knows. It is through Consciousness that the object becomes known to the subject. Knower, knowledge and that which is known all come to light through the light of Consciousness. Sentient beings alone perceive. To insentient objects like the ocean nothing is revealed. Even the resplendent sun knows not any thing.

The human being is essentially spiritual and was therefore naturally called Homo Spiritualis by the eminent physicist Heinz R. Pagels. “Man is thus his own greatest mystery. He does not understand the vast veiled universe into which he has been cast for the reason that he does not understand himself,” wrote Lincoln Barnett, the gifted journalist.

Science is confronted today with the mystery of man, his mind and his consciousness, which is the deepest mystery of all. Physicists are confronted with the problem of understanding consciousness through the datum of the observer. “The observer and his consciousness are an integral part of this unity . . . it was impossible to formulate the laws [of quantum theory] in a fully consistent way without reference to consciousness,” said Nobel laureate Eugene Paul Wigner.

In 1931, Nobel laureate and father of physics Max Planck said, “Consciousness I regard as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing postulates consciousness.” Wolfgang Pauli, another Nobel laureate physicist, similarly states—in terms virtually in accord with Vedanta philosophy—“From an inner centre the psyche seems to move outward, in the sense of an extraversion, into the physical world . . .”

Austrian nuclear physicist Erwin Schrödinger reflected on the nature of consciousness in a lecture he gave at Cambridge University:

Consciousness is never experienced in the plural, only in the singular. . . . consciousness is a singular of which the plural is unknown; that there is only one thing and that, what seems to be a plurality, is merely a series of different aspects of this one thing, produced by a deception (the Indian Maya).”

Thus in reviewing the concept of consciousness science has unconsciously stepped into mysticism! Nobel Prize-winning Ilya Prigogine, noting that theological arguments “made the speculations of modern science socially credible and acceptable,” establishes the point of view that, “Remarkably enough, in the present-day revival of interest in mysticism, the direction of the argument [about the origins of modern science] appears reversed. It is now science that appears to lend credibility to mystical affirmation.”

This does not mean that the study of physics is becoming obsolete. The inclusion of mystical ideas in quantum theory has only enriched that study, according to Wigner, who accepts the convergence of physics and mysticism and appreciates it as a “higher understanding.” In 1964 Wigner’s vision was:

There are many signs . . . that a more profound understanding [of observation and cognition] is a not too distant future step. At any rate it should be the next decisive breakthrough toward a more integrated understanding of the world, after which we shall not have to treat physical phenomena and phenomena of the mind in such a way that we forget about the tools used for the consideration of one when thinking about the problems of the other.

Erich Jantsch writes:

The Vedic concept of the correspondence between atman, the true essence of self (or reality within), and brahman, the true essence of reality without, is perhaps the most cogent expression of such an identity, though ultimately in terms of structure. . . . Thus the process of searching and activating self-images of man is the real re-ligio . . . , the linking backward to our own origins in which brahman and atman become one.

The refreshing view of Willis Harman is that, “Consciousness is not the end-product of material evolution; rather, consciousness was here first!” He adds, “The idea of matter emerging out of consciousness seems quite foreign to the Western mind”

The kinship between Vedanta and modern science is based on Swami Vivekananda’s teaching of “the postulate of a self-evolving cause.” Astrophysicist Fred Hoyle understands it as the background material or “cosmic dust.” Hoyle confirms the view in his book, *The Intelligent Universe*, that it is the “strange aspect of science, that, until now, it has kept consciousness firmly out of any discussions of the material world, yet it is with our consciousness that we think and make observations, and it seems surprising that there should be no interaction between the world of mind and matter.” Scientists are thus acknowledging the spiritual aspect of the human experience.

As a means to resolving the serious crises of modern civilization, the study of the nature of consciousness becomes more significant than the increasingly technological changes we observe taking place in the outer world. John White wrote emphatically on this issue:

Political action, social work, this ism, that ology, are all incomplete, futile actions unless accompanied by a new and elevated mode of awareness. The ultimate action, then, is no action at all except to change consciousness. In other words, the true revolution is revelation.

Scientists from many disciplines are gradually becoming aware of the evolution of a higher level of consciousness that is transcendent. The Committee on Science and Technology to the United States House of Representatives has advised more research on “the physics of consciousness.” The opinion of many physicists is the echo of Swami

Vivekananda's idea that "physics is bound on both sides by metaphysics," as in David Bohm, for example. He writes in *Causality and Chance in Modern Physics*, "Scientific research moves towards the Absolute by studying the relative in its inexhaustible multiplicity and diversity." Homo Spiritualis wants to know the spirit behind all matter.

As modern physicists have discovered, they must deal with the question of consciousness while observing atomic phenomena, which according to quantum theory are links in a sequence of processes that end in the consciousness of the observer. In *The Tao of Physics* Fritjof Capra gives his opinion: "If physicists really want to include the nature of human consciousness in their results of research, a study of Eastern ideas may well provide them with stimulating new viewpoints."

Apart from physicists, many other scientists trained in diverse fields are focusing on the study of an independent evolution of consciousness. Eminent Nobel laureate physiologist Alexis Carrel says, "The world of matter is too narrow for our thinking. Man is a material being, but belongs also to another world which extends beyond space and time." Karl Pribram, a neurosurgeon researching the brain, found that each brain cell is a miniature of the entire brain: "The brain is a hologram," he says, and "any piece of the hologram will reconstruct the entire image." Marking the deeper question of what was behind it all, he shared his ideas about Consciousness in a special session with five Nobel laureates. In 1977, he predicted that the concept of a holistic universe and a holistic worldview would become the core of future science.

Neurologist Sir Charles Sherrington, winner of the Nobel Prize, writes in the introduction to the *Physical Basis of Mind*, edited by Peter Laslett:

Knowledge of the physical basis of mind is making great strides in these days. . . . Mind, meaning by that thoughts, memory, feelings, and so on, is difficult to bring into the class of physical things. Physiology, a natural science, tends to be silent about all outside the physical. And so the study of the physical basis of mind suffers from falling between two stools.

Harvard University's Professor Emeritus George Wald, winner of the Nobel Prize for his research in the biochemistry of vision, came upon the truth of the superiority of mind over matter intuitively. This is what he had to say about the mind-brain-consciousness relation:

Though consciousness is the essential condition for all science, science cannot deal with it. . . . Consciousness itself lies outside the parameters of space and time that would make it accessible to science. That realization carries an enormous consequence. Consciousness cannot be located. But more. It has no location.

Scientists who talk about consciousness do not yet have a proper idea of it. First, it is necessary to grasp the immense sweep of the Reality conveyed by Vedanta. The concept of Reality in Hinduism is vastly different from the concept of an extra-cosmic God claimed by the monotheistic religions. We may here recall that Pure Consciousness, the

Ultimate Reality known as Brahman in Vedanta, is non-dual, non-relational, non-compound, unitary, universal and prior to every form of existence. It is the datum, the starting point of all experiences. It is self-existent as well as self-luminous. None can measure its greatness, power or expansion.

The epistemological enquiry in the West has been pursued mainly towards the object. The West leans upon the senses. The role of direct intuitive knowledge has not been accepted, though Henri Bergson, known for his anti-rationalism, advocated intuition as the means to grasp Reality and made that method popular in the West. According to Bergson, intellectual knowledge is concerned with what is external, relative, static and abstract. Intuitive knowledge is concerned with what is internal, absolute, dynamic, concrete and organic.

Higher spiritual truths can be obtained only through meditation and by raising our human consciousness to higher and higher levels until it loses itself in spirit. Speaking on the preparation for the higher life, Swami Vivekananda said, “The greatest thing is meditation. It is the nearest approach to spiritual life—the mind meditating. It is the one moment in our daily life that we are not material—the Soul thinking of Itself, free from all matter—this marvelous touch of the Soul.” Deep meditation enables us to see the Light within through intuition. This Light within the heart is not a physical radiance but a fraction of the effulgent light of Pure Consciousness: “the Light of all lights, the Light by which the whole universe is lighted.” It is beautifully expressed in the Gospel of St. John as “the true Light, which lighteth every man that cometh into the world.”

THE SUPREMACY OF INTUITIVE KNOWLEDGE AND REASON’S PLACE

Vedanta accepts reason as one of the valid means for understanding in a qualified way. Reason is not omnipotent in Vedanta, which accepts reason to the extent that it plays a helpful role at every stage in the interpretation of scriptural passages. It should be understood that intellectual study and reasoning must be accompanied by moral discipline before illumination can be experienced. Scriptural text is not valid when it contradicts reason. A hundred revealed texts declaring fire to be dark or cold will never make such statements valid. Revelation (Sruti), reason (Yukti) and Realization (Anubhuti), we have seen, must harmonize to give full conviction of the Truth. Though God is beyond the reach of reason, the idea of His existence is not irrational; He certainly can be approached by a rational mind. The limitation of reason is this: reason can only give us inferential knowledge that is indecisive and indefinite. We affirm and discover the Supreme Wisdom by immediate direct spiritual experience and afterwards interpret it in terms of logic. Swami Vivekananda remarked on the limitations of reason:

The field of reason, or of the conscious workings of the mind, is narrow and limited. There is a little circle within which human reason must move. It cannot go beyond. Every attempt to go beyond is impossible, yet it is beyond this circle of reason that there lies all

that humanity holds most dear. All these questions, whether there is an immortal soul, whether there is a God, whether there is any supreme intelligence guiding this universe or not, are beyond the field of reason. Reason can never answer these questions. What does reason say? It says, "I am agnostic, I do not know either yea or nay." Yet these questions are so important to us. Without a proper answer to them, human life will be purposeless. All our ethical theories, all our moral attitudes, all that is good and great in human nature, have been molded upon answers that have come from beyond the circle. It is very important, therefore, that we should have answers to these questions.

Vedantic Truths—the ultimate unity of existence, the immortal self of man and the attainment of total freedom from bondage that is liberation—are super-sensuous and supernatural. But, they are not irrational. They satisfy our rational mind.

THE ROLE OF INTUITION

Dr. Radhakrishnan observes that

we have to pass beyond thought, beyond the clash of oppositions, beyond the antinomies that confront us when we work with the limited categories of abstract thinking, if we are to reach the real where man's existence and divine being coincide. It is when thought becomes perfected in intuition that we catch the vision of the real. The mystics the world over have emphasized this fact . . . According to the Upanishads there is a higher power which enables us to grasp this central spiritual reality. Spiritual things require to be spiritually discerned. The yoga method is a practical discipline pointing out the road to this realization. Man has the faculty of divine insight or mystic intuition, by which he transcends the distinctions of intellect and solves the riddles of reason. The chosen spirits scale the highest peak of thought and intuit the reality.

Intuition is transcendent wisdom and is to be distinguished from intellectual understanding, from which it differs entirely. In religious intuition, spiritual idealism is fully realized. Intellect, emotion and will are but the fragmentary aspects of intuition, which is their totality. It is purity of mind that gives us the intuitive faculty. "We discover by intuition and explain by logic." The intuitive knowledge we find in the direct revelation of Truth gives us delight in our immediate union with the thing itself. Intuitive knowledge is Reality. Enlightenment and peace of mind become possible only through intuitive knowledge. That is why Indian culture gives tremendous emphasis to intuitive knowledge without denouncing the role of reason in the quest of Truth.

Scientists, generally, accept the role of intuition. Heinz R. Pagels wrote:

Einstein moved away from the position of strict positivism . . . It was as much Einstein's own success with the general theory of relativity and the method of thought he used to arrive at it that convinced him of the limitations of the strict positivist method. If Einstein had remained a positivist, I doubt that he would have discovered general relativity . . . A

great deal of creative work in physics proceeds by this method, which places intuition at the very first step, a nonrational but verifiable aspect of scientific creativity.

Einstein wrote that “every attempt at a logical deduction of the basic concepts and postulates of mechanics, from elementary experience is doomed to failure,” adding that “the supreme task of the physical science is to arrive at those universal elementary laws from which the cosmos can be built up by pure deduction.” He also wrote, “Here is no logical path to these laws; only intuition resting on sympathetic understanding of experience can reach them.”

Japan’s Nobel laureate in physics, Hideki Yukawa, discussed the superior role of intuition over logic or experiments: “It seems as if present-day physicists have lost the gift of foresight inherited from their forerunners. . . . abstraction cannot work by itself, but has to be accompanied by intuition.” As Yukawa explains:

A thorough-going rationalism eludes them (the Oriental and the Chinese) . . . In particular, the development of physics since the beginning of the twentieth century has taken this kind of course. In this kind of course nothing can be done by logic alone. The only course is to perceive the whole intuitively and see through what is correct . . . the fact remains that in order to synthesize contradictions it is necessary first to survey the whole with intuition . . . In short, by supplementing what he (the scientist) already has with his imagination, he produces an integral whole. If he succeeds in the attempt, the contradictions will be resolved . . . for us the scientists, the power of imagination is an important ingredient.

Swami Vivekananda summarized the role of intuition, the basic methodology of Vedanta:

Religion is above reason, supernatural. Faith is not belief, it is the grasp on the ultimate, an illumination . . . Stick to your reason until you reach something higher; and you will know it to be higher, because it will not jar with reason . . . All religion is going beyond reason, but reason is the only guide to get there. Instinct is like ice, reason is the water, and inspiration is the subtlest form of vapor, one follows the other.

SYNTHESIS OF VEDANTA AND SCIENCE

Science today is becoming more subjective. Matter is being completely eliminated that we may find “mind reigning supreme and alone.” The datum of consciousness from observers now emerges as the profoundest mystery at the farthest reach of modern science. Scientists are beginning to acknowledge the spiritual dimension of human experience. It is hoped that in the future, science will also recognize and appreciate the Supreme Reality known as Brahman, behind everything.

Even if scientists with a philosophic bent of mind consider the unity of existence in their study of consciousness, they still must tackle the problem of unifying the observed with

the observer. Fritjof Capra offers the concept of Brahman in Vedanta as a more comprehensive framework of the reality of the universe, than the concept of nature offered by the physicists:

The conception of physical things and phenomena as transient manifestations of an underlying fundamental entity is not only a basic element of quantum field theory, but also a basic element of the Eastern world view. Like Einstein, the Eastern mystics consider this underlying entity as the only reality: all its phenomenal manifestations are seen as transitory and illusory. This reality of the Eastern mystic cannot be identified with the quantum field of the physicist, because it is seen as the essence of all phenomena in this world and, consequently, is beyond all concepts and ideas. The quantum field, on the other hand, is a well defined concept which only accounts for some of the physical phenomena. Nevertheless, the intuition behind the physicist's interpretation of the subatomic world in terms of the quantum field is closely paralleled by that of the Eastern mystic who interprets his or her experience of the world in terms of an ultimate underlying reality. Subsequent to the emergence of the field concept, physicists have attempted to unify the various fields into a single fundamental field, which would incorporate all physical phenomena. Einstein, in particular, spent the last years of his life searching for such a unified field. The Brahman of the Hindus, like the Dharmakaya of the Buddhists and the Tao of the Taoists, can be seen, perhaps, as the ultimate unified field from which spring not only the phenomena studied in physics, but all other phenomena as well.

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