
We, in the modern world, are like that great statue, The Thinker, by Rodin, pondering on the results of our technology and science, focusing our attention on many divergent areas such as nuclear reactors, ecological disasters, genetic engineering, and drug addiction. Modern social and environmental problems such as these may be responsible in the advanced countries of the world for a certain growing distrust of science and technology; but science, with its passion for truth and mindful of human welfare, will always remain one of our noblest pursuits.

Is our age devoid of another truth — the truth of religion? Religion and philosophy, as embodied in the tradition of India going back to the *Upanishads*, her first philosophical treatises, are but the continuation of the scientific search for truth at the sense-data level raised to the higher aesthetic, spiritual and value systems levels of experience. Can there be a rapprochement between these two great areas of human concern?

Science and religion are becoming evermore important in the modern age. They are the two great disciplines which, in the light of Indian wisdom, can, when relied on separately, be counterproductive in the long run, but when combined harmoniously, become an all-round expression of human genius and make for total fulfillment. Unfortunately, the relationships between the two during the last few centuries, be it in the West or wherever Western influence has been felt, has not been a very happy one.

In the twentieth century, however, a new approach is becoming evident with representative thinkers among scientists and religious people beginning to discern an interrelation between them. They are slowly veering round to the point of view that science and religion can, indeed, embrace each other without detriment to the cause for which each stands and works for the good of humanity. It is being realized more and more by both factions that there are elements in science that religion can adopt in order to fortify itself, and elements in religion that can deepen and strengthen science.

Our purpose is to touch upon some of the sources of the traditional discord between science and religion and the significance of the points of contact between them, and to discuss the methods and results of both

disciplines against the background and in the light of the unity and totality of human knowledge, together with a synthetic and synoptic approach by the philosophical tradition of India.

RELATIONSHIP OF SCIENCE AND RELIGION: A NEW APPROACH

When we study science closely in the way the great scientists have applied themselves to its pursuit, we find two aspects to this discipline. The first is pure science, that is, science that tries earnestly to understand nature through dispassionate inquiry; and the second is applied science, in which truth discovered by pure science is translated, as it were, into technical inventions for the enhancement and enrichment of human life.

The result is the great saga of modern discoveries and inventions resulting in our worldwide technological civilization: our extraordinary age of nuclear science, space travel, and genetic codes. What is the nature of that movement of thought that produced these remarkable results? What is the special feature of modern scientific thought that has rendered thought so explosive and revolutionary? An answer to these questions will help us to reassess the role of the other great human disciplines of our age, such as religion, ethics, politics, art, and economics.

From a historical perspective, what distinguishes our modern world from other periods of history is the stress on science. Science is in the forefront as an architect of our world. So by modern thought is meant scientific thought. The aim of science is to study nature and human experience objectively as Karl Pearson stated in his *Grammar of Science*:

The classification of facts, the recognition of their sequence and relative significance, is the function of science, and the habit of forming a judgment upon these facts unbiased by personal feeling is characteristic of what may be termed the scientific frame of mind.¹

The sum total of achievements in the theoretical and practical fields in the various departments of scientific inquiry in physics and chemistry, mathematics and astronomy, biology, and psychology, as well as in their various subsidiary branches, constitute an impressive record of human achievement. Compared with it, the achievements of the past in the same fields pale into insignificance. Science, objective, impersonal, and verifiable is not confined to any particular body of facts. In the words of one of the great biologists, J. Arthur Thomson, in his *Introduction to Science*:

Science is not wrapped up with any particular body of facts; it is characterised as an intellectual attitude. It is not tied down to any particular methods of inquiry; it is simply sincere critical thought, which admits conclusions only when these are based on evidence. We may get a good

lesson in scientific method from a businessman meeting some new practical problem, from a lawyer sifting evidence, or from a statesman framing a constructive bill.²

Objectivity and precision, both as to thought and its verbal formulation, are two important characteristics of the scientific method. Any study possessing these characteristics will be scientific, whatever the field of study. Science as such is, therefore, not linked to any particular order of facts, but is an investigation applied to various classes of phenomena. Starting with the study of the separate fields of natural phenomena, these branches tend, in their advanced development, to transcend their boundaries and to merge into one overriding scientific search, the search for the meaning of total experience. In this expansive context, the idea of a science of religion, that is, the science of the facts, pertaining to our inner spiritual world as upheld in ancient Indian thought and expounded in the last century by Swami Vivekananda, likewise becomes a scientific study of far-reaching significance.

The driving force behind the unique modern scientific achievements is the spirit of free inquiry. The mind that questions and questions with a serious intent and purpose, that tests and verifies the answer it gets, has a dynamic quality about it that enables it to forge ahead in the world of thought and phenomena to be studied. The freedom to question can unsettle every untested dogma and comfortable belief, whether scientific or religious. In the field of religion, it has been doing away with magic and superstition, all of which have been wrongly associated with it and thus were contributing to the vulgarization of this great discipline. Science is indeed verifiable knowledge following its own methodology.

The explosive character of modern scientific thought by its impact of a rapid succession of verified knowledge on an intractable fund of dogmas, assumptions, beliefs, magical practices, miracles and superstitions, all of which had gone untested, did not go unnoticed. The exponents of those vagaries of religion in the West sought to stifle scientific inquiry, first at its inception and then at every stage of its progress. But the walls of the *bastille* of ignorance and prejudice fell one by one before the onrushing waves of scientific inquiry and illumination, illustrating the great saying of the *Mundaka Upanishad* [III.1.6]: *Satyameva jayate, nanrtam* — "Truth alone triumphs, not untruth."

Unfortunately the forces of prejudice and blind belief against science and its spirit of inquiry came from religion, and that reason, which is the life breath of science, was viewed as the death knell of religion. By the end of the last century, science had acquired its high prestige and author-

ity, while religion was being discredited, first as a grievous error, and later as a harmless illusion.

The end of the nineteenth century saw for many the eclipse of religion in the West. Nevertheless, there was an uneasy feeling in the hearts of many thinkers that something of deep value to humanity and to civilization had been cast away. Consequently they attempted a reassessment of the meaning and scope of religion with a view to bringing it into accord with the spirit and temper of science. In this great task of reconstructing the mental life of modern humanity by bridging the gulf between faith and reason on the basis of a unified view of human nature and a more adequate conception of spiritual life, the contribution of Indian thought is unique and lasting.

Tracing the recurring conflicts of science and religion in the West to the absence of a broad rational and experiential approach, Swami Vivekananda said, after attending the Parliament of Religions in Chicago in 1893, and after having met some of the foremost thinkers in the West:

We all know the theories of the cosmos according to the modern astronomers and physicists, and at the same time we all know how woefully they undermine the theology of Europe; how these scientific discoveries that are made act as a bomb thrown at its stronghold; and we know how theologians have in all times attempted to put down these researches.³

When religion refuses to invoke the aid of reason, it weakens itself. Alluding to this in the course of a lecture on *Reason and Religion*, delivered in England in 1896, which we still find timely, Swami Vivekananda said:

The foundations have been all undermined, and modern man, whatever he may say in public, knows in the privacy of his heart that he can no more "believe." Believing certain things because an organised body of priests tells him to believe, believing because it is written in certain books, believing because his people like him to believe, the modern man knows to be impossible for him. There are, of course, a number of people who seem to acquiesce in the so-called popular faith, but we also know for certain that they do not think. Their idea of belief may be better translated as "not-thinking-carelessness!"⁴

And, pleading for the application of reason in the field of religion, he continued:

. . . Is religion to justify itself by the discoveries of reason through which every other science justifies itself? Are the same methods of investigation, which we apply to science and knowledge outside, to be applied to the science of religion? In my opinion, this must be so; and I am also of opinion that the sooner it is done the better. If a religion is destroyed

by such investigations, it was then all the time useless, unworthy, superstition; and the sooner it goes the better. I am thoroughly convinced that its destruction would be the best thing that could happen. All that is dross will be taken off, no doubt, but the essential parts of religion will emerge triumphant out of this investigation. Not only will it be made scientific—as scientific, at least, as any of the conclusions of physics or chemistry—but it will have greater strength, because physics or chemistry has no internal mandate to vouch for its truth which religion has.⁵

A study of the *Upanishads* reveals that the subject of religion was approached in ancient India in an impersonal and dispassionate manner. The aim of the study was neither to hug pleasing fancies and illusions nor to idolize tribal passions and prejudices but to get at the truth.

While lecturing throughout the Western world, as well as in India, Swami Vivekananda expounded this scientific approach as upheld in Indian thought. In his lecture on *Religion and Science*, he says:

Experience is the only source of knowledge. In the world, religion is the only science where there is no surety, because it is not taught as a science of experience. This should not be. There is always, however, a small group of men who teach religion from experience. They are called mystics, and these mystics in every religion speak the same tongue and teach the same truth. This is the real science of religion. As mathematics in every part of the world does not differ, so the mystics do not differ. They are all similarly constituted and similarly situated. Their experience is the same; and this becomes law. . . .

Religion deals with the truths of the metaphysical world, just as chemistry and the other natural sciences deal with the truths of the physical world. The book one must read to learn chemistry is the book of nature. The book from which to learn religion is your own mind and heart. The sage is often ignorant of physical science, because he reads the wrong book—the book within; and the scientist is too often ignorant of religion, because he, too, reads the wrong book—the book without.⁶

The Indian thinkers discovered in their investigations that there are two fields in which people live and function: one, the external world, the other, the internal one. The study of only one does not exhaust the whole range of experience, nor will the study of the one from the standpoint of the other lead to satisfactory results. But the study of one *in the light of the conclusions from the study of the other* is helpful and relevant.

Referring to this approach in the course of a lecture on *Cosmology*, Swami Vivekananda has this comment:

There are two worlds: the microcosm and the macrocosm, the internal and the external. We get truth from both of these by means of experi-

ence. The truth gathered from internal experience is psychology, metaphysics, and religion; from external experience, the physical sciences. Now, a perfect truth should be in harmony with experiences in both these worlds. The microcosm must bear testimony to the macrocosm, and the macrocosm to the microcosm; physical truth must have its counterpart in the internal world, and the internal world must have its verification outside.⁷

Similarly, the sages and thinkers of ancient India said: Here is the physical life of men and women, and here is the physical universe that environs them. Let us study both in a scientific spirit. But let us also study human being-in-depth, its nature as revealed by consciousness, by thoughts, by emotions, by ego, and by the sense of selfhood. These, too, constitute a vast group of phenomena that needs to be investigated. Every advance in this field is bound to advance our knowledge about the mystery of the external world. For, to quote mathematics-astronomer Sir Arthur Eddington from his *Philosophy of Physical Science*:

We have discovered that it is actually an aid in the search for knowledge to understand the nature of the knowledge which we seek.⁸

THE UPANISHADS AND THE SPIRIT OF CRITICAL INQUIRY IN INDIA

Ever since the time of the *Upanishads*, which goes back long before the Christian era, India has tenaciously held to a view of religion that makes it a high adventure of the spirit, a life endeavor to realize and grasp the hidden meaning of existence. Faith in India did not mean a cozy belief in which to find comfort, but a torch by which to set the soul on fire with a longing for spiritual realization. In the absence of this longing and struggle, the belief of the faithful does not differ from the unbelief of the faithless.

Belief with most people is simply another name for mental laziness. Religious earnestness with people of this class means, especially when organized under a militant church or a theocratic state, either the pursuit of aggressive proselytism or *jehads* and crusades. They cannot understand the meaning of that earnestness that proceeds from an inner spiritual hunger. No dogma or creed or frenzied acts can satisfy this hunger of a religious heart. Its only bread is spiritual realization. Religion is a matter of inner experience, a getting in touch with spiritual facts of the supersensory levels of experience, not a matter of belief, dogma or conformity.

Because of the strength of the spirit of the *Upanishads*, no all-powerful church, therefore, arose in India to organize the faithful on the basis of dogma and creed, claiming divine authority for its opinions and judgments. No such authority could thrive where religion was expounded as a quest and not a conformity. A spiritual view of religion, as different

from a creedal or dogmatic one, compels the religious not only to cultivate a spirit of toleration, questioning, and inquiry within their own sphere of religion, but to foster it also in every department of life.

Bhagavad Gita [VI. 44.] declares that a spirit of inquiry into the meaning of religion takes an aspirant beyond the authority of the words of the scripture and the mandate of tradition. One becomes an experimenter, instead of remaining a mere believer. Indian religious thought emphasizes experiment (*sadhana*) as the dynamic element in religion. It counsels recourse to inquiry (*jijnasa*) for the formulation of its views, be it inquiry into the nature of Brahman, that is, God as the One Self of all, or inquiry into *dharma*, social ethics, and personal morality.

This sublime attitude in religion and thought is the fruit of the unified view of the mental life of humanity that India learned from her *Upanishads*, which she then has assimilated into her mind and mood by a universal acceptance of all forms of faith; she shows due regard for all knowledge, whether sacred or secular.

Science in the modern age has lengthened our intellectual tether, but this has only helped to bring into sharper focus the mystery of the unknown and the significance of the higher knowledge or wisdom (*paravidya*) of which the *Upanishads* speak. In the words of J. Arthur Thompson: "At the end of his intellectual tether, man has never ceased to become religious."⁹

It is no wonder, therefore, that in the post-WWII period, several scientists have been forced to overstep the limits of their particular branches of science and write books of a philosophical nature, and thus tackle the problem of the unknown at close range in a mood of humility and reverence, illustrating the dictum of Indian wisdom: *vidya dadati vinayam*—knowledge bestows humility—and the saying of Samuel Coleridge quoted by J. Arthur Thompson: "All knowledge begins and ends with wonder; but the first wonder is the child of ignorance; the second wonder is the parent of adoration."¹⁰

Dogmatism and overconfidence, which stifle the spirit of free inquiry, are as much enemies of true science as of true religion. Should there be only a few scientists who would, by taking a narrow view of the scope and function of science, prefer to cry a halt to advancing knowledge, that would imply a danger to science and unified knowledge, just as it had spelled danger to religion before. A greater devotion to the spirit of free inquiry and a broader conception of the aim and temper of science is our only safeguard against such a pitfall.

If the nineteenth century was the century of conflict and division, the twentieth century bids fair to become the century of reconciliation and union as a result of a sincere effort on the part of both science and religion

to reassess itself and understand one another. The humility of twentieth-century science, for the most part, presents a sharp and welcome contrast to the attitude of its nineteenth century counterpart. It has realized that the spirit of free inquiry on which it has thrived may find expression in fields beyond its own narrow departments, and that it is this spirit, unbiased by personal attachments and aversions, that makes a study scientific, not the mere subject matter of that study.

This wider view of science as a discipline and a temper enables us to class as scientific the study of facts of the inner world, which religion has set itself to inquire.

This has been India's approach to religion. It was the absence of this approach that has made religion in the West less and less equipped to meet the challenge of advancing knowledge.

LIMITATIONS OF PHYSICAL SCIENCE

When we go deeper into the nature and scope of physical science, its limitations become apparent. To illustrate: two branches of science, physics inclusive of astronomy, and biology inclusive of behavioristic psychology, have given us a vast body of knowledge regarding the nature of the universe and of our human nature. Up to the end of the nineteenth century and even into the early twentieth century through the 1920s, there were those like Joseph Needham and his book, *Man a Machine*, who proclaimed unabashedly that materialism and mechanism reigned supreme in the universe.

In the nineteenth century, knowledge of the physical world was not thorough enough, and scientists were looking, as it were, only at the surface of things. But, along with the discovery of radioactivity, atomic fission and the like, there came the realization that severe limitations are placed on our knowledge regarding the nature of the external world. Science admits today that it deals only with the appearance of things and not with the reality behind these appearances. Some of the greatest of modern physicists tell us that what science has revealed of the world around us is only the outer aspect of things. Behind this observable universe, there is an unobservable, inferential universe, and there is the observer who cannot be left out. And all science is a continuing search from the observable to the unobservable.

This is a great confession as to the limitations of science and its methods. Science is dealing with phenomena revealed by the senses or by apparatuses helpful to the senses. But these senses reveal very little, and what they do reveal only tells us that there are realities behind the sense world that determine and control it. Physics mainly restricts itself to the

understanding of the observable part of the universe and to harnessing energies. A similar situation is obtained in biology.

In the last century, it was absolutely certain about its pronouncements. By studying the different aspects of the phenomena of life, it arrived at the theory of evolution. From it some biologists drew certain conclusions influenced by the mechanistic materialism of contemporary physics, and thus were directly led to a form of materialism that equated people and animals, and likened both to a machine.

Scientists now tell us that these were not happy titles that Charles Darwin chose for his famous books: *The Origin of Species* and *The Descent of Man*. Sir Julian Huxley has suggested that they could have been more appropriately titled: *The Evolution of Organisms* and *The Ascent of Man*.¹¹ But, then, these books appeared at a time when a fierce controversy was going on between science and the entrenched Christian dogma of supernaturalism, which speaks of humanity as a special creation of an extra-cosmic God.

Physics with its thoroughgoing materialism and mechanistic determinism, and biology with its newly discovered evolutionary theory, being dominated by the general materialistic outlook of science, helped to shatter the faith of the nineteenth century in religion and spiritual values, which now became stigmatized in the West as anti-science.

The limitations of physical science, having been admitted by many modern scientists, proceed from the adjective *physical*; but science itself is not limited similarly. Reality may be studied, but not exhausted, by the physical sciences, whose limitations are due to their dependence entirely on sense-data. These limitations have been pointed out by Sir Arthur Eddington:

Let us suppose that an ichthyologist is exploring the life of the ocean. He casts a net into the water and brings up a fishy assortment. Surveying his catch, he proceeds, in the usual manner of a scientist, to systematise what it reveals. He arrives at two generalisations:

1. No sea-creature is less than two inches long.
2. All sea-creatures have gills.

These are both true of his catch, and he assumes tentatively that they will remain true however often he repeats it. His generalization is perfectly true of the class of creatures he is talking about—a selected class perhaps, but he would not be interested in making generalisations about any other class.¹²

Earlier, Eddington said:

I am not among those who think that, in the search for truth, all aspects of human experience are to be ignored, save those which are followed up in physical science. But I find no disharmony between a philosophy which embraces the wider significance of human experience and the specialised philosophy of physical science, even though the latter relates to a system of thought of recent growth whose stability is yet to be tested.¹³

After terming materialism an intruder in his book *Methods and Results*, Thomas Huxley, the collaborator of Darwin, repudiates materialism as a philosophy of life:

. . . If we find that the ascertainment of the order of nature, is facilitated by using one terminology or set of symbols, rather than another, it is our clear duty to use the former; and no harm can accrue, so long as we bear in mind that we are dealing with terms and symbols. . . .

But the man of science who, forgetting the limits of philosophical inquiry, slides from these formulae and symbols into what is commonly understood by materialism, seems to me to place himself on a level with the mathematician who should mistake the x's and y's with which he works his problems for real entities – and with this further disadvantage, as compared with the mathematician, that the blunders of the latter are of no practical consequence, while the errors of systematic materialism may paralyse the energies and destroy the beauty of life.¹⁴

Fortunately, a new breeze seems to be blowing in the scientific world. In contrast to materialism and the mechanistic approach of earlier scientists there is now a diametrically opposite point of view as set forth by Willis Harman: "Consciousness is not the end-product of material evolution; rather, consciousness was here first!" and, "The idea of matter emerging out of consciousness seems quite foreign to the Western mind . . ."¹⁵

Now there are concepts like Rupert Sheldrake's morphic resonance and in cosmology the ten dimensional universe. Leaps of the imagination that would have staggered even the scientists of the Nineteenth century.

THE MYSTERY OF THE UNIVERSE AND THE MYSTERY OF HUMAN NATURE

The universe was a mystery to primitive humanity; it has not ceased to be so for civilized humanity even in this twentieth century. We find scientists like the late Sir James Jeans writing books on the scientific view of the universe with such titles as *The Mysterious Universe*. And in the micro-universe of nature, mysterious still at the present time, we find scientists like Rupert Sheldrake putting forth a hypothesis of formative causation. If, after all these marvelous scientific discoveries, scientists still treat nature as profoundly mysterious and if, in spite of all the vast knowledge that has been gained, they feel that they have only scratched the surface

of nature and are still far from the heart of the problem of the universe, we have to pause and ask the question as framed by Shankaracharya: *Tatah kim tatah kim?*—"what next what next?"

Says Sir James Jeans in his *The New Background of Science*:

Physical science set out to study a world of matter and radiation, and finds that it cannot describe or picture the nature of either, even to itself. Photons, electrons, and protons have become about as meaningless to the physicist as x , y , and z are to a child on its first day of learning algebra. The most we hope for at the moment is to discover ways of manipulating x , y , z without knowing what they are, with the result that the advance of knowledge is at present reduced to what Einstein has described as extracting one incomprehensible from another incomprehensible.¹⁶

Even while confronted by, and engaged in tackling, the mystery of the external universe, modern science has become impressed with a deeper mystery, the mystery of human nature, the challenge of its inner world. The physical dimension poses no challenge to a science that has achieved revolutionary advances in anatomy and physiology, neurology and microbiology, medicine and behavioristic psychology. But these disciplines point to a mysterious depth in our being, which reveals a new dimension to nature herself, namely, her *within*, over and above her *without*. Earlier scientists like Alexis Carrel in his *Man the Unknown*, and in recent years neurologists like Grey Walter and Wilder Penfield in his mind-brain studies published as *The Mystery of the Mind* have turned their attention to this great mystery.

We in our human nature reveal dimensions that cannot be reduced to the merely physical, the merely material. These latter are our "notself" aspects that enter into the constitution of our body, which obviously is just a speck of dust in that vast world of the not-self. But there is in us also something transcendent that cannot be so reduced. It is the "Self." ". . . the nature of the Self is Pure Consciousness."¹⁷ That is our primary inalienable aspect. And if science is to progress further, it must choose for investigation this field of the mystery within us that towers over science's former concern, the mystery of the external universe.

This is a vast field of study—the field of humanity's self-awareness, the field of consciousness, ego, humanity being *subject*, not *object*. Science will find here a vaster, more fascinating and rewarding research than in external nature. Already scientists in the West are slowly turning their attention to this great mystery, that of human being-in-depth.

Men and women as creators of science and technology, culture and civilization, are today also the only possible destroyers of civilization.

Everything about human nature is a mystery. As Lincoln Barnett writes in his study of Einstein's contribution to modern scientific thought:

In the evolution of scientific thought, one fact has become impressively clear; there is no mystery of the physical world which does not point to a mystery beyond itself. All highroads of the intellect, all byways of theory and conjecture, lead ultimately to an abyss that human ingenuity can never span. For man is enchained by the very condition of his being, his finiteness and involvement in nature. The further he extends his horizons, the more vividly he recognizes the fact that as the physicist Niels Bohr puts it, "We are both spectators and actors in the great drama of existence." *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. He comprehends but little of his organic processes and even less of his unique capacity to perceive the world around him, to reason and to dream. Least of all does he understand his noblest and most mysterious faculty: the ability to transcend himself and perceive himself in the act of perception.¹⁸ (italics added)

This thought was similarly expressed by the mathematician-mystic Blaise Pascal in his *Pensees* [348]: "In space, the universe engulfs me and reduces me to a pinpoint. But through thought, I understand that universe."

Pleading for the viewing of humanity in its depths on the part of modern science, the eminent paleontologist Teilhard de Chardin says:

When studied narrowly in himself . . . man is a tiny, even a shrinking creature. His over-pronounced individuality conceals from our eyes the whole to which he belongs . . . our minds incline to break nature up into pieces and to forget both its deep inter-relations and its measureless horizons. We incline to all that is bad in anthropocentrism. And it is this that leads scientists to refuse to consider man as an object of scientific scrutiny except through his body.

The time has come to realise that an interpretation of the universe — even a positivist one — remains unsatisfying unless it covers the interior as well as the exterior of things; mind as well as matter. The true physics is that which will, one day, achieve the inclusion of man in his wholeness in a coherent picture of the world.¹⁹

The *Upanishads* of India discerned the finite aspect as but the outer crust or layer of the infinite and immortal person within. In our finiteness, we interact with the finite world of myriad changes around us. In this, one is a *speck of dust* in the vast immensity of space in which "the universe engulfs me and reduces me to a pinpoint," in the profound words of Pascal quoted above. But in our infinite dimension as the imperishable 'Self,' we can understand the universe and also transcend it. The dimensions of this,

our inner aspect and, through us, of our environing universe, are slowly dawning on modern scientific thought.

Asking the significant question: "Up to now has science ever troubled to look at the world other than from without?"²⁰ de Chardin proceeds to explain:

In the eyes of the physicist, nothing exists legitimately . . . except the without of things. The same intellectual attitude is still permissible in the bacteriologists, whose cultures (apart from substantial difficulties) are treated as laboratory reagents. But it is still more difficult in the realm of plants. It tends to become a gamble in the case of a biologist studying the behavior of insects or coelenterates. It seems entirely futile with regard to the vertebrates. Finally, it breaks down completely with man, in whom the existence of a within can no longer be evaded, because it is the object of a direct intuition and the substance of all knowledge.²¹

Most people, Indians included, did not know that India, ages ago, developed the higher part of what Julian Huxley has termed a "science of human possibilities." In the *Upanishads* and *Bhagavad Gita*, India fostered, and continues to do so to the present, the science of human being-in-depth or *adhyatma-vidya*. In the systems of Vedanta and Yoga, India cultivated the science and technique of a comprehensive spirituality encompassing action as well as contemplation. Indian philosophy sees no conflict between physical science and this science of spirituality, between the "known" physical aspect and the "unknown" inner spiritual person.

Apropos de Chardin came to the same conclusion:

It is impossible to deny that, deep within ourselves, an "interior" appears at the heart of beings, as it were seen through a rent. This is enough to ensure that, in one degree or another, this "interior" should obtrude itself as existing everywhere in nature from all time. Since the stuff of the universe has an inner aspect at one point of itself, there is necessarily a *double aspect to its structure*, . . . in every region of space and time—in the same way, for instance, as it is granular: *coextensive with their Without, there is a Within to things*.²²

It is high time that we today, particularly teachers and students, re-orient our critical attention, interest and inquiry, and direct the searchlight of investigation into this fascinating and rewarding aspect of India's ancient spiritual tradition, into the mystery of this inner dimension of nature revealed in nature's unique product, namely, ourselves. If we do not acquire this strength of spirituality, we will have to depend more and more on external sources such as medical means for stabilizing ourselves. For clinical

purposes such occasional external dependence is understandable. But to make it the normal pattern of human life is to drain life of all spiritual values. Although molecular biology is in itself a new science, it can be used for good or for not-so-good purposes. For humanity to surrender its human destiny to biological engineering techniques as the only way to stabilize human life brings it into great danger – that of converting human society into an animal farm.

That such dismal possibilities are before us due to a wholesale dependence on physical science and technology, is revealed in such books with grim titles as *The Biological Time Bomb*, by G. Ratray Taylor. The science that will do so will cease to be science and become nescience!

As we advance in our inquiry and research into the aspect of the human tradition referred to above, we will increasingly get a grip on the human situation through the reformulation and implementation of educational goals and processes. In this way, a happy synthesis of physical science with the science of spirituality will be achieved, resulting in total human enrichment, internal as well as external, qualitative as well as quantitative.

Says the renowned neurologist, Sir Charles Sherrington, in his book, *Man on His Nature*:

Today, Nature looms larger than ever and includes more fully than ever ourselves. It is, if you will, a machine, but it is a partly mentalised machine and in virtue of including ourselves, it is a machine with human qualities of mind. It is a running stream of energy – mental and physical – and unlike man-made machines, it is actuated by emotions, fears, and hopes, dislikes, and loves.²³

KINSHIP BETWEEN VEDANTA AND MODERN SCIENCE

Swami Vivekananda has shown that religion, as developed in India in her Vedanta, and modern science, are close to each other in spirit, temper, and objectives. Both are spiritual disciplines. Even in the cosmology of the physical universe, in the theory of the unity of cause and effect, in the unity and conservation of matter and energy, and in the concept of evolution, cosmic, and organic, the two reveal many points of contact. Unlike the super-naturalistic theologies of the West, the fundamental cosmological position of both Vedanta and modern science is what Swami Vivekananda calls "the postulate (of the ultimate reality) of a self-evolving cause."

Vedanta calls this ultimate reality "Brahman," which is a universal spiritual principle. The *Taittiriya Upanishad* [III. 1.] defines Brahman as a majestic utterance that will be welcomed by every scientific thinker:

Wherefrom all these entities are born, by which, being born, they abide; into which, at the time of dissolution, they enter—seek to know That; That is Brahman.

To the modern scientist that self-evolving cause is a material reality, the background material or cosmic dust, as astrophysicist Fred Hoyle terms it. To the Vedanta, which views it also in the light of the consciousness revealed in its evolutionary product, namely, our human nature, it is a universal spiritual principle, the *chit akasha*.

In his very recent book, even the title of which is significant in this context, *The Intelligent Universe*, Fred Hoyle deplors the “strange aspect of science that, until now, it has kept consciousness firmly out of any discussions of the material world,” and adds that “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.”²⁴

The emphasis is that, against nineteenth-century materialism, some scientists have now begun to acknowledge a spiritual dimension to human experience. This is welcome from the point of view of spiritual truth, which, however, stands on its own strength.

In her fascinating book: *Dialogues with Scientists and Sages: the Search for Unity*, Renée Weber raises this question and gives us answers from physicists like David Bohm and biologists like Rupert Sheldrake:

Do we live in a meaningless universe where molecules blindly spin along through chance, as mechanics claim? Or is matter alive and—at least minimally—conscious, a participant in the “dance” of meaning, as both Bohm and Sheldrake suggest? The latter view may be the more appealing, but it is unproven.

Again, to Weber’s question: “What is matter? What is a field? What is meaning?” [p. 105]

To which Bohm answers:

It has been commonly accepted, especially in the West, that the mental and the physical are quite different but somehow related, but the theory of their relationship has never been satisfactorily developed. I suggest that they are not actually separated, that the mental and the physical are two aspects, like the form and content of something which is only separable in thought, not in reality. Meaning is the bridge between the two aspects. I’d like to mention DNA as an activity of meaning. DNA is said to constitute a code or language. It’s read by the RNA. According to the content, the RNA reads various segments of the DNA and takes out the meaning, which is to construct various proteins. The whole language of geneticists is such that they’re tacitly recognizing the role of information and meaning.

Weber:

When we say “the RNA reads the DNA,” is that the standard term?

Sheldrake:

Yes, the DNA is transcribed into the RNA and the RNA is then translated into protein. [p. 109]

Further into the conversation, Renée Weber asks: “This dance of meaning in many dimensions is your idea of the meaning-field?”

Bohm:

It’s some kind of field, isn’t it, because it is not located everywhere and it doesn’t manifest itself locally.

Weber:

It transcends the finite entities in it and explains them.

Bohm:

Yes. To come back to the quantum field again, the information field, you could almost say the electrons are the difference between participation and interaction. If there’s a common view of meaning, the electrons are participating in a common activity or common dance, whereas the mechanical view is that they are just interacting, pushing at each other . . . [p. 116]

And again a bit further, Renée Weber probes with: “How does Rupert view this?” [p. 117]

Sheldrake:

The field builds up the entities. What I am saying is similar to what David is saying. The field organizes the energy. The field and the energy can’t really be separated. You can’t have energy in a completely free-floating form. Both are important. The energy gives a kind of actuality or activity to something. The field gives it its organization. The two are related.²⁵

Vedanta views that field of universal energy as the field of pure Consciousness. Referring to this spiritual kinship between modern science and Vedanta, Swami Vivekananda said at Chicago at the Parliament Religions in 1893:

Manifestation, and not creation, is the word of science today, and the Hindu is only glad that what he has been cherishing in his bosom for ages is going to be taught in more forcible language, and with further light, from the latest conclusions of science.²⁶

Although modern scientific thought does not yet have, like Vedanta, a recognized place for any spiritual reality or principle, several scientists of the twentieth century, including biologists like Teilhard de Chardin and Julian Huxley, as pointed out earlier, as well as David Bohm, Rupert Sheldrake, Fritjof Capra and others recently, have endeavored to soften the materialism of physical science and to find a place for spiritual experience in the scientific world picture. Even Thomas Huxley had termed materialism *an intruder*. In our century, this protest has come from great physicists also. Sir James Jeans found that the final picture of the universe emerging from twentieth-century physical science was one in which the notion of matter was completely eliminated, "mind reigning supreme and alone."²⁷ Astrophysicist Robert Andrews Millikan considered materialism "a philosophy of unintelligence."

Now that twentieth-century physics is turning to some degree its face away from thoroughgoing materialism, twentieth-century biology is not far behind it in this orientation. The whole of modern scientific thought is in the throes of a silent spiritual revolution. With the emergence of the challenge of mind and consciousness, there is need to develop what Sir James Jeans termed "a new background of science:

The old philosophy ceased to work at the end of the nineteenth century, and the twentieth-century physicist is hammering out a new philosophy for himself. Its essence is that he no longer sees nature as something entirely distinct from himself. Sometimes it is what he himself creates or selects or abstracts; sometimes it is what he destroys. . . .

Thus the history of physical science in the twentieth-century is one of a progressive emancipation from the purely human angle of vision.²⁸

Teilhard de Chardin and Julian Huxley have found the spiritual character of the world-stuff successively revealed in the course of organic evolution. Biology, in its theory of evolution, they held, reveals what de Chardin calls a "within of nature," over and above and different from the "without of nature" revealed by physics and astronomy. Vedanta terms the "within" the "*pratyak rupa*" and the "without" the "*parak rupa*," both being of one and the same nature.

When the significance of this "within" of things is recognized in modern science, the scientific "background material" will undergo a spiritual orientation and thus come closer to Brahman, the "background reality" of the Vedanta. The synthesis of the knowledge of the "within" and the "without" is philosophy; and it is what India achieved in her Vedanta ages ago as *samyak-jnana*, comprehensive or perfect knowledge of total Reality. Reality itself does not know any distinctions between a "within" and

a "without." These distinctions are made by the human mind for the convenience of study and research and the exigencies of daily life.

Just as the different branches of the physical sciences are but different approaches to the study of one and the same reality, and just as all such branches of study ultimately tend to mingle and merge into a grand science of the physical universe, into a unified science of the without of nature, so the science of the "within" and the science of the "without" mingle and merge in a science of Brahman, the total Reality. This is how Vedanta views *Brahma-vidya*, the science of Brahman—the term Brahman standing for the totality of Reality, physical and nonphysical. The *Mundaka Upanishad* [I. 1,1] defines "*Brahmavidya* as the basis of every science." Says Sri Krishna in the *Bhagavad Gita* [XIII. 2]:

The knowledge of the observed (*Kshetra*)—the not-self, and of the observer (*Kshetrajna*)—the knower of the not-self, is true knowledge, according to Me.

Dealing with the all-inclusiveness of this Vedantic thought as expounded by Swami Vivekananda, Romain Rolland has this to say in his *The Life of Vivekananda*:

But it is a matter of indifference to the calm pride of him who deems himself the stronger whether science accepts free Religion, in Vivekananda's sense of the term, or not; for his Religion accepts Science. It is vast enough to find a place at its table for all loyal seekers after truth.²⁹

In Swami Vivekananda's lecture on "The Absolute and Manifestation," delivered in London in 1896, we find this passage:

Do you not see whither science is tending? The Hindu nation proceeded through the study of the mind, through metaphysics and logic. The European nations start from external nature, and now they, too, are coming to the same results. We find that, searching through the mind, we at last come to that Oneness, that universal One, the internal Soul of everything, the essence and reality of everything. Through material science, we come to the same Oneness.³⁰

The *Srimad Bhagavatam* refers to this complementary character of physical science and the science of religion, with respect to human knowledge and fulfillment, in a profound utterance of Sri Krishna:

Generally, in the world, those who are efficient in the investigation of the truth of the external world or nature, uplift themselves by themselves from all sources of evil.

For a human being, particularly, one's *guru* (teacher) is one's own self; because one achieves one's welfare through (inquiring into) direct sense

experience and (inductive-deductive) inference based on the same. In this very human personality, also, wise ones, who have mastered the science and art of spirituality, clearly realize Me, (God, as the one universal Self of all) as the infinite reservoir of all energies.³¹

VEDANTIC VISION OF EVOLUTION

In the beginning, before evolution, what was this universe? This question can be found even in the *Vedas* and later in the *Upanishads*. According to Indian thought, in the beginning everything was pure existence and pure consciousness, existing without vibration, *anid avatam*, as described in the famous Hymn of Creation, the *Nasadiya Suktam*. Western students of Indian philosophy have been inspired by this famous hymn of the *Rig Veda* [X. 129.1], a bold speculation about the origin of life. The last line of the hymn is: "Who knows whence came this creation? Perhaps the gods above may know, but even they may not know, because they were posterior to creation—how could they know?" This great hymn describes what the universe might have been like before evolution: *tama asit, tamasa guhvamagre*—"Darkness covering darkness existed at the beginning."

The whole universe was in that concentrated form which, in later literature, is depicted as a point, or a *bindu*. Those who have studied the *chakras* of the Tantric tradition will find representations of a triangle, another triangle, then a circle, and so forth, and in the center is just a dot, a point. That *chakra* is a symbolic expression of the nature of evolution. The whole universe was in a single infinitesimal point, one single *bindu*. Out of that it exploded. The first explosion, which is still continuing, making for the expansion of the universe, is in the Big Bang theory.

Those sages used two words, which are very significant in science and in twentieth century cosmology: *sankocha, vakasa*—contraction, expansion. The expansion goes on for millions of years, then a counterprocess sets in, and there is contraction. The whole universe goes back to that point. The difference between the modern concept of cosmology and the ancient Indian one is in the nature of the primordial material. In modern cosmology it is a physical background "stuff." Vedanta says that background "stuff" was pure consciousness. Out of that this universe expanded and evolved, materialized into a physical manifestation, transforming itself in various layers of the subtle, less subtle, and finally into the concrete molecular world in which we live.

The word for nature in Sanskrit is *prakriti* with its two aspects, undifferentiated and evolving into the differentiated. Vedanta views the entire evolutionary process as progressive evolution of structure and form, and ever greater manifestation of the infinite Self within. It is evolution of

matter and manifestation of spirit. Twentieth-century biology has recognized in the first appearance of living organisms the emergence in a rudimentary form of the unique datum of *experience*, through the unique datum of awareness. The living cell, described by biology as *self-duplicating matter*, discloses the emergence of experience as a new value, which the immense cosmos never revealed in its billions of years of history.

This spiritual value of awareness "grows" as it were in richness and variety as we move up the evolutionary ladder, defining and enlarging progressively the datum of experience with its two poles of the experiencer and the experienced. The evolution of the nervous system discloses progressive development of awareness in depth and range, and consequent increase in the grip of the organism on its environment.

This awareness achieves a new and significant breakthrough with the appearance of humanity on the evolutionary scene. "Man is unique in more ways than one," said Julian Huxley. The field of awareness of all other organisms is, largely, the external environment and, to a small extent, also the interior of their bodies — the "without" of nature. Humanity alone has awareness of the Self, as the subject of experience, along with awareness of the not-self, as the object of experience, of both the "within" and the "without" of nature.

That is our uniqueness, according to twentieth-century biology and ancient Vedanta. Self-awareness, which neurology considers as the source of human dominance over all of nature, and which nature achieved through the evolution of the human cerebral system, is a new dimension of awareness with tremendous implications, says Indian philosophy, for our further evolutionary destiny as much as for the philosophy of our humanity and nature.

The Vedantic view of evolution and of humanity's uniqueness has been stated rather briefly in the *Srimad Bhagavatam* [XI. 9. 28]:

The divine One, having projected (evolved), with his own inherent power, various forms such as trees, reptiles, cattle, birds, insects and fish, was not satisfied at heart with forms such as these; He then projected the human form endowed with the capacity to realize Brahman (the universal divine Self of all), and became extremely pleased.

Evolution has revealed that the mystery of the universe stirs in us as the mystery of the Self. The mystery of the universe will ever remain a mystery until this mystery of the Self has been solved. Till then, all our conclusions about the real nature of the universe submitted by science, philosophy, theology, or logic will be speculative ventures yielding mere postulates and conjectures.