
India's Rejuvenation: Swami Vivekananda's Vision

SWAMI ATMAPRIYANANDA

1. Preamble

Swami Vivekananda envisioned a rejuvenated India: '... a wonderful, glorious, future India will come. I am sure it is coming—a greater India than ever was. ... Arise, awake and see her seated here on her eternal throne, rejuvenated, more glorious than she ever was—this motherland of ours.'¹ Seeing the degeneration and degradation all around—moral and spiritual poverty, value erosion, corruption, selfish aggrandizement, unabashed dishonesty, glorification of muscle and money power and lack of indigenous cultural moorings, one naturally heaves a deep sigh and wonders if Swamiji was carried away by his innate predilection for oriental hyperbole. When will such a glorious India come, if at all? Or is it mere wishful thinking?

We believe that Swamiji was not only a prophet and a seer—one who could *see* into the future, a *trikāḷajñā* rishi (a sage who had first-hand knowledge of the past, present and future); he was also a scientific visionary, one who had made a thorough, in-depth and scientific study of world history with special reference to India. His capacious and luminous mind could move at will over the entire gamut of world culture and civilizations, world religions and thought currents. But in all this, the special reference point was always India. Mother India was the Goddess of his adoration and anything concerning her stirred him always to an impassioned eulogy of her past glory. Then would follow a tearful description of her present state of utter degradation and helpless prostration before the glamorous West. The fitting finale would be a prophetic envisioning of India's glorious future, when his sonorous voice would animate extraordinary pictures

of her rejuvenation. Sister Christine's remarkable reminiscences are worthy of recollection here:

Our love for India came to birth, I think, when we first heard him say the word, 'India', in that marvellous voice of his. It seems incredible that so much could have been put into one small word of five letters. There was love, passion, pride, longing, adoration, tragedy, chivalry, *heimweh*, and again love. Whole volumes could not have produced such a feeling in others. It had the magic power of creating love in those who heard it. Ever after, India became the land of heart's desire. Everything concerning her became of interest—became living—her people, her history, architecture, her manners and customs, her rivers, mountains, plains, her culture, her great spiritual concepts, her scriptures. And so began a new life, a life of study, of meditation. The centre of interest was shifted.²

When Swamiji spoke of India, it was not nationalism or patriotism of the narrow type—*my* country, right or wrong. From his deep study of world history and the rise and fall of world civilizations, Swamiji understood the role that India was destined to play in the comity of nations. His profound insight revealed to him that in the great economy of God, India had been assigned the specific and particular task of *spiritualizing humankind*. In order that India may deliver this great gift of spirituality, perform this all-important task, the vitality of the race ought to be preserved: a vigorous, powerful India, 'rejuvenated, more glorious than she ever was', should emerge. In his first public lecture at Colombo, soon after his triumphal return from the West, Swamiji articulated his vision, born of meditative insight:

Thus, everyone born into this world has a bent,

a direction towards which he must go, through which he must live, and what is true of the individual is equally true of the race. Each race, similarly, has a peculiar bent, each race has a peculiar *raison d'être*, each race has a peculiar mission to fulfil in the life of the world. Each race has to make its own result, to fulfil its own mission. Political greatness or military power is never the mission of our race; it never was, and, mark my words, it never will be. But there has been the other mission given to us, which is to conserve, to preserve, to accumulate, as it were, into a dynamo, all the spiritual energy of the race, and that concentrated energy is to pour forth in a deluge on the world, whenever circumstances are propitious. ... India's gift to the world is the light spiritual.

This was why Swamiji felt so emphatically that a new India, rejuvenated and fully awakened to her spiritual responsibility, was an urgent necessity. For Swamiji believed that India and India alone could discharge this vitally important responsibility: 'to conserve, to preserve, to accumulate, as it were, into a dynamo, all the spiritual energy of the race', for the good of the world (*jagat-hitāya*), 'for the good of the many, for the happiness of the many' (*bahujana hitāya, bahujana sukhāya*), as Buddha said.

The urgency of this message cannot be felt more poignantly at any time than now, when the whole world is in a state of panic and anxiety. No amount of scientific and technological advancement has been able to remove the terrifying, frightful monsters of insecurity and fear, terror and trepidation from the hearts of warring nations. Years ahead of the World Wars, Swamiji predicted that the whole of the Western world was sitting on a volcano, which needed to be quenched by the waters of Indian spirituality:

Up, India, and conquer the world with your spirituality! Ay, as has been declared on this soil first, love must conquer hatred, hatred cannot conquer itself. Materialism and all its miseries can never be conquered by materialism. Armies when they attempt to conquer armies only multiply and make brutes of humanity. Spirituality

must conquer the West. Slowly they are finding out that what they want is spirituality to preserve them as nations. They are waiting for it, they are eager for it. Where is the supply to come from? Where are the men ready to go out to every country in the world with the messages of the great sages of India? Where are the men who are ready to sacrifice everything, so that this message shall reach every corner of the world? Such heroic souls are wanted to help the spread of truth. Such heroic workers are wanted to go abroad and help to disseminate the great truths of Vedanta. The world wants it; without it the world will be destroyed. The whole of the Western world is on a volcano, which may burst tomorrow, go to pieces tomorrow. They have searched every corner of the world and have found no respite. They have drunk deep of the cup of pleasure and found it vanity. Now is the time to work so that India's spiritual ideas may penetrate deep into the West. ... We must go out, we must conquer the world through our spirituality and philosophy. There is no other alternative, we must do it or die. The only condition of national life, of awakened and vigorous national life, is the conquest of the world by Indian thought.

At the same time we must not forget that what I mean by the conquest of the world by spiritual thought is the sending out of life-giving principles, not the hundreds of superstitions that we have been hugging to our breasts for centuries. These have to be weeded out even on this soil, and thrown aside, so that they may die forever. (277-8)

This, then, is the background of Swamiji's constant emphasis on the rejuvenation of India. This was his favourite theme and he would return to it again and again. It moved him, on the one hand, to heights of eloquence as seen in the passages above; and, on the other, stirred him to the inmost depths of his sensitive soul, crying with impatient longing for the early rise of an awakened India, *prabuddha bhārata*. For he felt that if such an India failed to rise, then all spirituality and high moral values would vanish from off the face of the earth. 'Such a thing can never be,' he said:

Shall India die? Then from the world all spiritu-

ality will be extinct, all moral perfection will be extinct, all sweet-souled sympathy for religion will be extinct, all ideality will be extinct; and in its place will reign the duality of lust and luxury as the male and female deities, with money as

its priest, fraud, force, and competition its ceremonies, and the human soul its sacrifice. Such a thing can never be. (4.348)

2. Scientific Rejuvenation

2.1 The Inner versus Outer Sciences—Lopsided Growth?

As we have seen above, Swamiji was eager to wipe out all the encrustations that had accumulated over the ages in the pure and scientific religion of Vedanta, which our Indian rishis and thinkers had propounded. He wanted to propagate a scientific, rational and dynamic system, impersonal in nature, and therefore acceptable to modern minds. He rediscovered the ancient theme of our rishis, that the physical, mental and spiritual sciences form one coherent whole. The spiritual science, the science through which the Infinite and the Absolute, the Imperishable (*akṣara*) is realized was called *parā vidyā*, while the study of the physical and mental sciences were classified as *aparā vidyā*. The classification of knowledge into *parā* and *aparā* did not indicate their superiority or inferiority. At best it indicated a sense of priority and at the worst a hint that the *aparā vidyā* need not (and perhaps should not) absorb too much of one's attention, for it does not deserve to be pursued with avidity, being ephemeral in nature. On the other hand, a pursuit of the *parā vidyā* confers immortality, eternal Freedom and Bliss. However, the *parā vidyā* and the *aparā vidyā* formed one collective and coherent whole, with the same deity Sarasvati presiding over both. In fact, the *Bhagavadgita* categorically states that complete knowledge consists in the knowledge of the outer as well as the inner: *Kṣetra-kṣhetrajñāyor-jñānam yat-tat jñānam matam mama*.⁴ *Kṣetra* refers to the outer, literally, 'the field of manifestation of the Spirit'; and *kṣetrajña* refers to the indwelling Spirit, literally, 'the Knower of this *kṣetra*'. Swamiji, therefore, wanted that India should make advances

in all these sciences—and more particularly in the sphere of physical sciences, which had been neglected for ages thanks to an excessive and perhaps lopsided preoccupation with the mental and spiritual sciences. Even the study of mental science was largely eclipsed by that of spiritual science, for the latter exercised an overwhelming influence on the development of the former; investigations into the mind were carried out insofar as they proved helpful in the in-depth understanding of the secrets of the spiritual realm. These inner sciences—mental and spiritual—being more fascinating to the contemplative Indian mind, the outer sciences—physical sciences—suffered quite a bit of neglect. The best brains of the country came to be engaged in researches into the inner sciences. Various schools of thought emerged, and debates and discussions—what we now call symposia, colloquia, seminars and conferences—proliferated among these schools; so much so that illumining results emerged and were clearly documented. The Upanishads are glorious examples of such documentation. Commentaries (*bhāṣyas*) on these texts came to be written; glosses (*ṭikās*) were written to explain these commentaries; and explanatory notes (*ṭippanīs*) were added to these glosses. There was such an upsurge that mental and spiritual wisdom became an integral part of the national psyche. Even the so-called illiterate person with no formal education could dilate with ease and deep understanding on many of these inner scientific discoveries. But all this flurry of activities was at a goodly price: the utter neglect of the outer, physical, sciences. Explaining this absorption of the entire race with things spiritual and therefore very subtle, Swamiji said:

There is no end to the power a man can obtain. This is the peculiarity of the Indian mind, that when anything interests it, it gets absorbed in it and other things are neglected. You know how many sciences had their origin in India. Mathematics began there. You are even today counting 1,2,3, etc. to zero, after Sanskrit figures, and you all know that algebra also originated in India, and that gravitation was known to the Indian thousands of years before Newton was born.

You see the peculiarity. At a certain period of Indian history, this one subject of man and his mind absorbed all their interest. And it was so enticing, because it seemed the easiest way to achieve their ends. Now, the Indian mind became so thoroughly persuaded that the mind could do anything and everything according to law, that its powers became the great object of study. Charms, magic, and other powers, and all that were nothing extraordinary, but a regularly taught science, just as the physical sciences they had taught before that. Such a conviction in these things came upon the race that physical sciences nearly died out. It was the one thing that came before them. Different sects of Yogis began to make all sorts of experiments. ...

The whole idea was to get at the basis, to reach the fine parts of the thing. And some of them really showed most marvellous powers. ... It is the extreme belief of the race. What power is there in the hand or the sword? The power is all in the spirit.

If this is true, it is temptation enough for the mind to exert its highest. But as with every other science it is very difficult to make any great achievement, so also with this, nay much more. Yet most people think that these powers can be easily gained. How many are the years you take to make a fortune? Think of that! First, how many years do you take to learn electrical science or engineering? And then you have to work all the rest of your life.⁵

While appreciating and applauding the inner scientific discoveries—advances in the mental and spiritual sciences—Swamiji realized that the time was come to correct this lopsided growth. Ignorance of the physical sciences engendered any number of superstitions, which in turn adversely affected the pristine conclusions of the mental and spiri-

tual sciences.

Further, Swamiji understood and felt that the Indian mind was rich in scientific temper and outlook. If only this temper was brought to bear upon the physical sciences, India would make a profound advance in these outer sciences too, as much as in the inner sciences of mind and the spirit. Indian minds leading the computer software development technology all the world over is a case in point.

2.2 The Guiding Scientific Principles of Indian Thought and Their Rejuvenated Application

Swamiji identified certain distinctive characteristics of Indian scientific thought that enabled the Indian mind to investigate into the inner sciences; he was convinced that these selfsame scientific principles, when applied to the outer sciences, could unravel many a mystery of the universe—both in the microscopic realm of the atom and the nucleus as well as in the macroscopic domain of the outer space, massive planets and so on. Swamiji envisaged a rejuvenated application of these principles—hitherto used by Indian spiritual scientists (rishis) only in the inner scientific realm—to investigations in the physical sciences also. Since the passing away of Swamiji, these principles have indeed been successfully applied in the physical sciences.

We shall now discuss some of these principles and in fact show specifically how the physical sciences—twentieth-century ‘new physics’, in particular—have, in fact, made breathtaking discoveries through the application of these principles. All of them, however, are subsumed in the principle of unity, that there is an underlying unity in the midst of the apparent diversity, which may be considered as nothing but manifestations of the fundamental Unity.

2.2.1 The Generalization Principle

Swamiji discovered a remarkable characteristic of the Indian mind in its capacity to

generalize—that is, to draw generalized conclusions from particulars. Swamiji in fact called such a mind 'courageous and wonderfully bold'; in being able to make an intuitive leap from the particular to the general, definitely and boldly. Elaborating his thesis, Swamiji said in his 'Jnana Yoga' lectures:

Coming to the principles, we find these Vedic thinkers very courageous and wonderfully bold in propounding large and generalized theories. Their solution of the mystery of the universe, from the external world, was as satisfactory as it could be. The detailed workings of modern science do not bring the question one step nearer to solution, because the principles have failed. If the theory of ether failed in ancient times to give a solution of the mystery of the universe, working out the details of that ether theory would not bring us much nearer to the truth. If the theory of all-pervading life failed as a theory of this universe, it would not mean anything more if worked out in detail, for the details do not change the principle of the universe. What I mean is that in their inquiry into the principle, the Hindu thinkers were as bold, and in some cases, much bolder than the moderns. They made some of the grandest generalizations that have yet been reached, and some still remain as theories, which modern science has yet to get even as theories. For instance, they not only arrived at the ether theory, but went beyond and classified mind also as a still more rarefied ether. Beyond that again, they found a still more rarefied ether. Yet that was no solution, it did not solve the problem. No amount of knowledge of the external world could solve the problem. 'But,' says the scientist, 'we are just beginning to know a little: wait a few thousand years and we shall get the solution.' 'No,' says the Vedantist, for he has proved beyond all doubt that the mind is limited, that it cannot go beyond certain limits—beyond time, space, and causation. As no man can jump out of his own self, so no man can go beyond the limits that have been put upon him by the laws of time and space. Every attempt to solve the laws of causation, time, and space would be futile, because the very attempt would have to be made by taking for granted the existence of these three. What does the statement of the exist-

tence of the world mean, then? 'This world has no existence.' What is meant by that? It means that it has no absolute existence. It exists only in relation to my mind, to your mind, and to the mind of everyone else. We see this world with the five senses but if we had another sense, we would see in it something more. If we had yet another sense, it would appear as something still different. It has, therefore, no real existence; it has no unchangeable, immovable, infinite existence. Nor can it be called non-existence, seeing that it exists, and we have to work in and through it. It is a mixture of existence and non-existence. (2.90-1)

Within a few years of Swamiji's passing away, Einstein's relativity theory, basing itself on the famous Michelson-Morley experiment, dealt a deathblow to the ether theory. Our common-sense conceptions of space and time underwent a radical change. Einstein successfully applied the Equality Principle to discover the now famous principle of special relativity theory that there is no preferential frame in nature so that all laws of physical phenomena must be invariant when referred to different frames of reference. This Equality Principle is a particular application of a more general principle, namely the Symmetry Principle. There is an underlying symmetry in nature, which gives rise to the following string of characteristics: symmetry → impartiality → impersonality → equality (*samatva*). In its application to investigation into the nature of matter, the Symmetry Principle has led to some startling discoveries, which we will discuss presently. It is worthwhile to note here that the Generalization Principle and the Symmetry Principle are related to another important principle, namely the Unification Principle.

2.2.2 The Unification Principle

The Generalization Principle is about trying to see the particular as a special case of the general. One simple example that school physics would give you is that of the neutron and the proton. These are the well-known constituents of an atomic nucleus. The neutron, as the

name implies, is neutral while the proton is positively charged. Interestingly, both of them are almost of the same mass. Taking this sameness as the key to generalization, we could say that these two particles are just two manifestations—two different charge states—of a single particle called the ‘nucleon’. A nucleon, then, can exist in two charge states: in its positive charge state, it is called a proton and in its neutral state, the same particle is a neutron. Two is thus reduced to one—rather, the two particles are *unified* into one. This can be viewed in terms of the Symmetry Principle as follows: there is an underlying symmetry into which these two particles could be subsumed and the manifestation as two particles is simply that the same nucleon exists in two different charge states. We could then enlarge this concept to accommodate more particles (with a common key, like mass in the case of the proton and the neutron) and subsume them into a larger symmetry. Since this symmetry is quite different from the kind of symmetry we ordinarily see in space, we could call it some kind of *internal symmetry*. Such symmetric schemes are well known in elementary particle classification. Larger and larger unifications have been attempted over the years by developing super-symmetric schemes. The hope is that ultimately *all* particles could perhaps be considered as the manifestation of *one* particle.

A similar attempt has been made in regard to forces or interactions found in nature. We now know that nature admits of four types of interactions: weak, electromagnetic, strong and gravitational. While the first three have applications in the micro-world, gravitational force is felt predominantly only in the macro-world. Now, the human mind seeks a generalization, a unification, by asking the following question: Is it possible to subsume all these forces into a single force and consider these different forces as manifestations of that one force? Encouragingly, we have come a fairly long way: we have been able to unify the first three—weak, electromagnetic and strong.

These are called the Grand Unified Theories (GUTs). Unfortunately, there is this loner: the gravitational force, which still eludes our unification attempt. As we said earlier, whereas the first three are quantum mechanics-dependent, owing allegiance to the Uncertainty Principle, gravity is a ‘classical’ theory—a different species altogether! Supergravity theories that came up were at one time believed to be the right answer to the unification of gravity with other forces, but they have not proved satisfactory. Attempts at quantum gravity theories are under way, but the problem appears very complex. But for nearly two decades, the so-called String Theory has held sway, in which the basic objects are not particles, but strings that have length but no other dimension.

Defining the goal of science, Swamiji said more than a hundred years ago: ‘The end and aim of all science is to find the unity, the One out of which the manifold is being manufactured, that One existing as many.’ (1.133)

And again:

Science is nothing but the finding of unity. As soon as science would reach perfect unity, it would stop from further progress, because it would reach the goal. Thus Chemistry could not progress farther when it would discover one element out of which all others could be made. Physics would stop when it would be able to fulfil its services in discovering one energy of which all the others are but manifestations, and the science of religion becomes perfect when it would discover Him who is the one life in a universe of death, Him who is the constant basis of an ever-changing world. (1.14)

In modern times, physicists are vigorously pursuing the very same idea to find a Unified Theory. Einstein attempted it years ago, but in vain. This Theory of Everything (ToE) is the Holy Grail of physics in this century. In the words of Stephen Hawking, ‘The eventual goal of science is to provide a single theory that describes the whole universe. ... And our goal is nothing less than a complete description of the universe we live in.’⁶

2.2.3 The Symmetry Principle

The Symmetry Principle, based once again on the principle of unity, has contributed considerably to the revolution of our concept of matter at the beginning of the twentieth century. Quantum mechanics owes its origin to this principle. The relativity theory and quantum mechanics together wrought a thought revolution unmatched in its profundity and power.

We would consider two remarkable applications of this principle: (a) wave-matter symmetry, leading to the development of quantum mechanics or wave mechanics, and (b) microcosm-macrocosm unity, which is the basis of many a discovery—for example, the discovery of the Rutherford atom model (with planetary electrons) and the General Theory of Relativity as the theory of gravitation based on Mach's principle, leading to radical changes in our concepts of space and matter and their interrelation.

2.2.3 (a) Wave-particle Dualism and the Development of Wave/Quantum Mechanics

The dawn of the twentieth century saw the birth of a remarkable theory that revolutionized our concept of matter and radiation. Max Planck propounded the Quantum Theory of Radiation, according to which radiation occurs not as waves, but in discrete energy packets (which are like particles) called 'quanta'. The energy content of each quantum, however, is proportional to the frequency of the radiation—the particle concept is thus wedded to the wave concept. The quantum theory was applied with remarkable success to a large number of phenomena like photoelectric effect, Compton effect and Bohr atom model. Thus quantum theory came to be established on a firm footing as *the* theory of radiation. Now, these two, namely matter and radiation, being the two fundamental manifestations of nature, the Symmetry Principle (and the concepts arising therefrom (symmetry → impartiality → impersonality → equality) immedi-

ately forces us to the following conclusion: *If radiation has a particle aspect as a quantum, it should naturally follow that matter should have a wave aspect.*

Arguing from this principle, de Broglie enunciated his startling theory of 'matter-waves', which says that a moving particle behaves as a wave, with a definite wavelength derivable from the particle momentum—once again wedding the wave concept (wavelength) with the particle concept (momentum).

Several questions immediately came up: What is the nature of this wave? How is this wave to be interpreted? What is its physical significance? Two great physicists, Schrödinger and Heisenberg, started from two points of view and then formulated a mechanics of these waves, called wave mechanics and quantum mechanics, respectively. These two were found to be identical except for the language. It is now well established that all physical phenomena in the micro-world (of the atom, nucleus, sub-nuclear particles and so on) are governed by quantum mechanics. Soon, Dirac and others made successful attempts to wed this to relativity; relativistic quantum mechanics was thus born.

This threw us back to the fundamental question: What then is a particle? In place of talking about a particle, one then talked about *fields*. These fields were then *quantized* to find the particle—a recovery, as it were. Very recently, physicists started talking about *strings* rather than particles. Thus the excitement about what a particle is in the first place, continues unabated in all its fury! On the application level, these matter-waves were found to undergo diffraction and so on like any other physical waves, leading to the invention of electron microscopes with staggeringly high enlarging capabilities. Medical science could progress by leaps and bounds thanks to these instruments. The guiding principle of all this exercise, however, is the Symmetry Principle.

2.2.3 (b) The Microcosm-Macrocosm Unity

One of the earliest principles of the ancient Indian rishis in their attempt to probe nature's mystery was the microcosm-macrocosm unity. By applying the projection principle, projecting microcosm on macrocosm, they were able to formulate their theories about the cosmic phenomena. This, once again, is the well-known psychological principle of projecting from the known to the unknown: the microcosm is within our grasp, and since microcosm and macrocosm are built on the same plan, projecting the former on the latter could unravel the secrets of the macrocosm. Several examples could be cited.

Nature of the cosmic Person: What is the nature of the supreme, cosmic Person? This is a question that has been engaging the attention of thinking individuals since time immemorial. The projection principle was applied successfully by our ancient rishis to answer this question: projection from the individual (relatively more known) to the cosmic (unknown). You study the individual, the micro-person; analyse him thoroughly; then project, aspect by aspect, to the macro-level. You then have a picture (or, more correctly, model) of the cosmic Person.

In analysing the individual person, our ancient rishis discovered three levels: the gross, the subtle and the causal. The micro-aspect of each of these levels was then related to the three states of waking, dream and deep (dreamless) sleep. The corresponding macro-aspects were then obtained by the micro-macro projection principle. An important case in point: projection of the macrocosmic Virāt, Hiranyagarbha and Īsvara from the microcosmic *viśva*, *taijasa* and *prājña*, corresponding respectively to the gross (waking), subtle (dream) and causal (deep sleep) levels.

The famous 'Purusha Sukta' gives a vivid description of this cosmic Person, whose body is the macrocosmic counterpart of the individual body, whose mind is the macro-mind (cosmic Mind)—in short, whose consciousness is

the cosmic Consciousness.

In Vedanta, the micro-macro equation has come to be applied only at the highest spiritual level. The other two levels, the physical and mental, have found very little application. Perhaps for the first time in the modern age, Swamiji wanted a revival of this equation *even at the physical and mental levels*. Thus, apart from the spiritual monism which Advaita Vedanta propounded, Swamiji spoke about two other kinds of monism: monism at the physical level and monism at the mental level. In his famous 'Paper on Hinduism' at the Parliament of Religions in Chicago in 1893, he called these two levels of monism as 'materialistic monism' and 'philosophical monism'.⁷ This revival of physical as well as mental oneness has profound implications for modern society. In fact, physics had shown clearly the reality of physical oneness and Swamiji was aware of this. Very soon after Swamiji's passing away, Einstein propounded his Special Relativity Theory, followed by the General Relativity Theory. The latter theory was also a theory of gravitation. In formulating this theory, Einstein drew great inspiration from the philosophical thought of the German philosopher Ernst Mach. In his autobiographical sketch, Einstein mentioned that his reading of Mach's philosophical writings decisively furthered the critical reasoning required for the relativity theory. He further said that his whole direction of thinking was along the lines of Mach's thought, so that if one considered Mach to be a precursor of the General Relativity Theory, one would be perfectly justified. Mach's thoughts reflect nothing but the physical monism that Swamiji spoke about. In fact, Swamiji forcefully described this in his lecture on 'The Mission of the Vedanta':

The other great idea that the world wants from us today, the thinking part of Europe, nay, the whole world—more, perhaps, the lower classes than the higher, more the masses than the cultured, more the ignorant than the educated, more the weak than the strong—is that eternal

grand idea of the spiritual oneness of the whole universe. I need not tell you today, men from Madras University, how the modern researches of the West have demonstrated through physical means the oneness and the solidarity of the whole universe; how, physically speaking, you and I, the sun, moon, and stars are but little waves or wavelets in the midst of an infinite ocean of matter; how Indian psychology demonstrated ages ago that, similarly, both body and mind are but mere names or little wavelets in the ocean of matter, the Samashti; and how, going one step further, it is also shown in the Vedanta that behind that idea of the unity of the whole show, the real Soul is one. There is but one Soul throughout the universe, all is but One Existence. This great idea of the real and basic solidarity of the whole universe has frightened many, even in this country. It even now finds sometimes more opponents than adherents. I tell you, nevertheless, that it is the one great life-giving idea which the world wants from us today, and which the mute masses of India want for their uplifting, for none can regenerate this land of ours without the practical application and effective operation of this ideal of the oneness of things. (3.188-9)

Swamiji's vision of microcosm-macrocosm unity: Swamiji had a vision of this micro-macro identity when he was meditating under a peepul tree in Almora. Arising from this profound meditative awareness, he recorded his experience in his diary. An English rendering of what he noted down in Bengali runs as follows:

In the beginning was the Word etc.

The microcosm and the macrocosm are built on the same plan. Just as the individual soul is encased in the living body, so is the universal Soul in the Living Prakriti [Nature]—the objective universe. Shivā [ie Kali] is embracing Shiva: this is not a fancy. This covering of the one [Soul] by the other [Nature] is analogous to the relation between an idea and the word expressing it: they are one and the same; and it is only by a mental abstraction that one can distinguish them. Thought is impossible without words. Therefore, in the beginning was the Word etc.

This dual aspect of the Universal Soul is eternal. So what we perceive or feel is this combination of the Eternally Formed and the Eternally Formless. (9.291)

This scientific principle of micro-macro projection that Swamiji actually *saw* in an intuitive vision, he was boldly applying even in the socio-politic realm. We refer to his statement quoted at the very beginning: 'Thus, everyone born into this world has a bent, a direction towards which he must go, through which he must live, and what is true of the individual is equally true of the race.'

Swamiji was here relying upon this scientific principle of projection, which has been responsible for many a path-breaking discovery in physical science. We see here two more examples.

Rutherford atom model: It is well known in the history of atomic physics how Rutherford arrived at his nuclear atom model. From large-angle scattering of alpha particles, he had come to a definite conclusion that the entire positive charge of the atom is concentrated in a very minute region inside it. This he called the 'nucleus'. The next question was, how are the negative charges distributed around the nucleus? When no amount of speculation worked, he applied, in a stroke of intuitive genius, the above micro-macro projection principle, albeit in the reverse order. He projected the sun onto the nucleus, and then the various planets revolving round the sun in elliptical orbits automatically got projected on to the negatively charged electrons. This projection gave him immediately the 'planetary electrons', with the electrons revolving round the nucleus very much like the planets round the sun. On application of Planck's quantum theory, the experimental match was immediate and more or less accurate. When the fine structure of spectral lines was discovered, Sommerfeld once again used the projection principle with success: these planetary electrons were revolving in elliptical orbits, and relativistic variation of their mass with velocity need-

ed to be applied. When the hyperfine structure of the spectral lines came up, the theory was further refined: once again the projection principle—look at the macrocosm and project backward to the microcosm. The concept of electron spin, like the internal rotation of the planets, was introduced and the experimental match obtained. Then came space quantization by the application of the same principle, and so on.

The projection principle is used above as an analogy to understand the unknown from the known. The other example is the nuclear structure. We briefly discuss it below.

Liquid drop model/Shell model of nucleus:

The answer to the question of what the nuclear structure was like came once again from an analogy: from the known to the unknown. Two models of the nucleus are well known: the liquid drop model and the shell model. The liquid drop model came from drawing the analogy of the liquid drop to the nucleus—each force in the liquid drop was correspondingly projected. From this, Weiszacker arrived at a formula called the ‘semi-empirical mass formula’. Interestingly, it was this formula that gave the precise reasoning and information about nuclear fission and the consequent release of enormous amounts of nuclear energy. This phenomenon of nuclear fission was used to manufacture atomic and nuclear bombs for destructive purposes on the one hand, and to make nuclear reactors for constructive purposes on the other. It is interesting how this simple principle of projection (analogy) could become responsible for the release of astounding amounts of nuclear energy due to fission. Such is the power of thought!

It is interesting to note that this projection principle was known to and used by the ancient Indian rishis ages ago. And Swamiji was keen to revive the scientific temper of our ancients and bring about a rejuvenated application of this temper.

2.2.3 (c) Symmetry and Conservation Principles

We could briefly mention here the crucial role played by what is known as the principle of conservation and discuss its relation to symmetry. Conservation of certain well-known physical quantities is the bedrock of science; conservation of mass-energy and conservation of linear and angular momentum are too well known. Now, there exists an intimate connection between symmetry and conservation (invariance) laws. This connection is embodied in what is known as Noether’s Theorem. In the micro-world—the sub-atomic realm of elementary particles—the charge (C) conservation, left-right (parity) symmetry (P) and time-reversal symmetry (T) have played a vital role in our understanding, leading to what is called the CPT theorem.

Swamiji has tried to apply the principle of conservation to socio-political situations and tried to derive some remarkable conclusions. The intimate connection between symmetry and conservation could be invoked to reinforce his theses and enunciate generalized theorems in the socio-political sphere. While a detailed discussion of this topic is beyond the scope of this paper, we mention this just to show how Swamiji wanted scientific principles to be applied to society as well: for all human existence forms one coherent whole.

3. Conclusion

The scientific rejuvenation in Swamiji’s vision of a rejuvenated India, therefore, is twofold: (1) the revivification of the fundamental scientific principles discovered by our

ancient rishis, and (2) the practical application of these principles to every department of human activity and every sphere of human endeavour—in one word, their application in

everyday life, for universal well-being.

Swamiji has identified some of these fundamental principles, like the ones mentioned above, the most fundamental, according him, being the *solidarity or oneness of the universe*. He called these 'life-giving principles'. It behoves us, then, to: (1) discover what these principles are (apart from the ones Swamiji himself mentions specifically); (2) reverentially contemplate them to find out how they could be applied to every department of human activity and to every sphere of human endeavour, for the welfare of the entire humankind; and (3) Test their effectiveness by actual application, individually and collectively.

If we, as a nation, apply ourselves to this noble task, realizing the power of thought in bringing about individual and collective welfare, social change and uplift, India could hope, in the not-too-distant future, to become a superpower—not for bullying other nations or for bulldozing them to accept our own ways of thinking or to dominate over them, but for establishing a reign of peace and blessedness. The great treasures in the form of 'life-giving principles' and powerful ideas that we have inherited from our forefathers in this blessed land should be spread broadcast all over the world. Swamiji's prophetic utterance in this context should fill us with fresh zeal and redoubled energy to accomplish this task:

For a complete civilization the world is waiting, waiting for the treasures to come out of India, waiting for the marvellous spiritual inheritance of the race, which, through decades of degradation and misery, the nation has still clutched to her breast. The world is waiting for that treasure; little do you know how much of hunger and of thirst there is outside of India for these wonderful treasures of our forefathers. We talk here, we quarrel with each other, we laugh at and we ridicule everything sacred, till it has become almost a national vice to ridicule every-

thing holy. Little do we understand the heart-pangs of millions waiting outside the walls, stretching forth their hands for a little sip of that nectar which our forefathers have preserved in this land of India. (3.317)

If only we could deeply share this agony that Swamiji felt, and awaken without delay to this enormous national responsibility, a rejuvenated India of Swamiji's dreams would become a reality. The entire world is waiting with bated breath, anxiety and panic writ large in its wrinkled forehead, for peace and blessedness. It is India, and only India, that can create such an atmosphere of peace and benediction. For it is from India that noble ideas, powerful thought currents, expressive of joy and immortality, have emanated since time immemorial: '... ideas after ideas have marched out from her, but every word has been spoken with a blessing behind it and peace before it.' (3.106)

May we endeavour tirelessly to actualize Swamiji's dream of a rejuvenated India; and may the entire world be deluged with the waves of love, peace and benediction flowing out from this rejuvenated, glorious India, as from an eternal spring. *

References

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3. CW, 3.108-9.
4. *Bhagavadgita*, 13.2.
5. CW, 2.20-2.
6. Stephen W Hawking, *A Brief History of Time* (London: Bantam, 1989), 10, 13.
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A man should be like his tea: his real strength appearing when he gets into hot water.

—*The Irish Digest*