

Parallels
between
Science & Religion
and
Philosophy & Science
— A Critical Review —

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CHAPTER - I

Do Principles of Physics Prove Monism in Religion?

-- Science and Religion reviewed --

It has become almost a fashion for those who write and speak on Religion or Philosophy to quote certain reputed scientists and to give some parallels from Science, especially Physics, in an attempt to make religious views easily acceptable to scientists and rationalists. It is also becoming a favourite choice, or even a pastime, of an increasing number of scientists, especially those who had an exposure to the oriental thought, to give parallels from ancient mythology, mysticism or religious concepts of the cosmos and consciousness, either with the avowed object of widening the field of that science or showing the overlapping areas between the two fields, or, sometimes, even for the dubious purpose of covering up the blurred, nebulous or mystic nature of their scientific concepts.

One would not normally have any objection to all these practices, except the last, if these speakers or authors gave parallels from either of the two fields—Science and Religion--without overstretching their meaning or implication to suit their purpose or if they built only such view-points or such interpretations on any scientific theory as were only logical conclusion of the theory itself and were not unmatching and forced constructions on, or clever manipulations of, the theory. *But one feels an inner compulsion to say that, of late, there has been an increasing tendency to quote such thoughts from Religion and such concepts from Science as do not really prove what is intended to be proved.* It shows the crude attempt of the author or the speaker, in his or her zeal to make his or her views readily acceptable to a wider spectrum of people, to match certain religious thoughts with scientific concepts when in fact the two do not match, or, if they do match, both of them too are

not yet accepted by many competent and ingenuous religious and scientific thinkers.

The writer of this small book has only elementary knowledge in the field of science and is a mere ordinary student of religion and philosophy and has absolutely no claim to any erudition or in-depth understanding of many advanced theories of science and formulations of mathematics and deep and profound religious concepts. He considers himself only a lay person who has his own interest in both the fields so as to widen his horizon of understanding and he applies only commonsense to comprehend what the writers or speakers in anyone of these fields write or say. He would not have, therefore, ventured to enter a field which even the angels are afraid to tread but he thought that it would be better if even a feeble voice is raised or view is recorded to point out that certain scientific theories which are being oft-quoted to support a religious dogma do not in fact support it. The author may be wrong in what he has expressed in the following pages and would, in that case, beg an apology from the more knowledgeable readers, but the chances are that he is right and he would be satisfied if he has done a service.

An outline of history of scientific concepts about the building blocks of the universe

It would be appropriate if we first trace an outline of the history of scientific concepts about the building blocks of the universe, for, the views of authors of Science and Religion generally draw their support from these. *After we have refreshed our memory with the development in scientific concepts, or replacement of one concept or theory by another, we will enter into the real discussion as to what conclusions can or cannot be drawn from it and, at that point, it would be convenient to give instances of how the latest scientific concepts are being used or misused to support certain religious ideas. For the sake of brevity, we will make a quick journey into the 20th century Physics, beginning from the last phase of the 19th century:*

As is well-known, the chief concern of Newtonian physics was the properties of Matter and understanding of different forms

of energy. But, at the end of the nineteenth century, questions began to be raised about the nature of matter.

In 1897, J.J. Thompson discovered the Electron. In 1900, Max Planck made the discovery that heat is absorbed or emitted in definite *quanta* or packets. In 1905, Philipp Lenard discovered the *photoelectric effects*, i.e. the emission of electrons from a metal plate when light strikes it. Now Einstein combined the ideas of Lenard and Planck and propounded *The Photon theory*. In this theory, he applied the Quantum concept to all forms of electromagnetic radiation. In 1911, Rutherford suggested the planetary model of the atom, in which electrons fastly moved in orbits around a nucleus consisting of protons. *In 1913, Neils Bohr applied the Quantum Theory to the atomic structure by regarding the electron's orbits as representing different levels of quantum energy. In 1919, Rutherford discovered proton. Near-about this time, Wolfgang Pauli enunciated his '*exclusion principle*'. According to this, every electron has a unique place in the orbit.

Now, according to the above discoveries, scientists thought that the atom, with electrons rotating around its nucleus, was the building block of the universe. But, in 1924, the French physicist Louis de Broglie formulated an equation which showed that not only, waves behave as particles as Einstein had said in his Photon Theory, but particles also behave as waves. This equation of Broglie gave the wave-lengths for atoms, molecules, electrons and even bigger things, like automobiles. According to this equation, the smaller the mass, the greater was the wave-length of a particle and its *vice versa* also was true. So, according to Broglie's discovery, *we now had the electrons, not as hard particles, moving*

* It was later, in 1938, that James Chadwick discovered that the nucleus consisted of not only protons but also neutrons. Heisenberg gave the following formula for his 'mental experiment', with gamma rays, for knowing the electron: $\Delta Q \Delta x \geq h$ where Q is the uncertainty about the velocity of the electron, P is the uncertainty about its position in space and h is Planck's constant (6.63×10^{-27} erg. sec.) According to the formula, if Q, i.e., Uncertainty about the velocity, is 0, which means if the velocity is known perfectly well, then P, i.e. the uncertainty about its position must be infinite. If h had been zero, then we could simultaneously know, with certainty, the position and the velocity of the electron, but h being fixed, we cannot know the position and velocity both with certainty and simultaneously.

around the nucleus but electrons were now nebulous or blurred waves running round the nucleus.

In 1925, Erwin Schrodinger hypothesised that the waves of electrons also could be quantized. At this point, Max Born, a German Scientist, hypothesised that electron waves are only ‘*probability waves*’ and that the entire electron picture is ‘*a purely abstract concept into which we cannot enter.*’ Then Paul Dirac applied the *Theory of Relativity* to quantum phenomenon and formulated *the field concept of electron*. During that period was born a new branch of physics, known as ‘*Particle Physics*’.

Heisenberg’s Uncertainty Principle

Now, before we say anything further about *Particle Physics* and other related concepts, let us, first, mention briefly *Heisenberg’s Principle of Indeterminacy* or ‘*Uncertainty Principle.*’ In 1927, Werner Heisenberg explained that not only is the electron picture a blurred one as Max Born or Schrodinger or Paul Dirac had said but electron itself is unknowable through any possible scientific experiment. For, in order to know an electron, we must know (i) where it is and (ii) what its velocity is. He thought that this places an unsurmountable difficulty in our way, for *both* these cannot be known *together*. Heisenberg explained this difficulty by means of ‘*Thought experiment*’ or what he termed, in German language, a ‘*Gedanken experiment*’ which is as follows:

Heisenberg explained that, in order to see something, we have to use light, having wave-length smaller than the thing. So, in order to spot out an electron, which is extraordinarily small, we would require *gamma rays* because these have the shortest wave-length. Now, Einstein had already shown in his study of *photo-electric effect* that the electrons are knocked out whenever ultraviolet rays meet them. *So, when a super-microscope is set to detect the fast-moving electron in its orbit around the nucleus, the powerful gamma rays from the microscope, while illumining the electron, would violently knock out the electron from its orbit and would bring about change in its direction and speed. Heisenberg said that this change in direction and momentum would be*

uncontrollable and unpredictable. So, he said that the real nature of electron would remain shrouded in uncertainty. Also, Heisenberg said that the electrons do not exist as individual entities but as an ‘*electron cloud*’, ***so the nature of an individual electron cannot be known; we can have only statistical averages of a vast number of electrons taken together. He, finally, concluded that we cannot observe the subatomic world without altering it and we cannot give its objective description.***

Indeterminism

The other implication, derived from Heisenberg’s Principle of Uncertainty was that the cause-and-effect relationship does not apply to the Quantum or the subatomic world.

In this context, it must be noted that Einstein could never accept that incertitude regarding our knowledge of the electron and its movement as final. He argued that if we can know a baseball, or an automobile or a projectile, we can also know an electron. As a response to the Uncertainty Principle, he often said: "God does not play dice".

*Einstein also opposed the idea of indeterminism. Along with his two associates, Podolsky and Rosen, he formulated a mathematical paradox, known as **EPR paradox**, through which he tried to prove that **quantum indeterminism was false**. Einstein thought that there must be a ‘**hidden variable**’ which is responsible for this uncertainty. Einstein believed that, as a rule, **there cannot be any indeterminacy in the realm of physics**. Though, until his death, he could not find such ‘**hidden variable**’, he, however, did not give up his opposition to the Principle of Uncertainty or Indeterminacy.*

Heisenberg’s Principle of Uncertainty shook the physicists as it was an unexpected discovery. Upto then, it had been thought that Physics is an ‘*exact science*’ and that things happen in a definite way according to the law of cause and effect. Einstein, Max Born, Neils Bohr, Wolfgang Pauli, Schroedinger and many other quantum physicists had a conference at Copenhagen where Neils Bohr gave his Concept of Complementarity. Most of the scientists accepted this interpretation of the quantum phenomena but Einstein refused

to accept the *Principle of Uncertainty* as final.

We have discussed one aspect of the development of concepts about ‘the building blocks’ of the universe from the time of J.J.Thompson till the Heisenberg’s Principle of Uncertainty. Earlier, we had postponed mentioning the other side of developments or a new branch of physics, known as **Particle Physics**. We will now mention it briefly.

Particle Physics and related developments

Einstein had propounded that mass of a particle increases with its velocity. Scientists now hypothetically calculated the ‘rest-mass’ of an electron. They concluded that the mass of an electron would increase, as its speed would increase, and it could be even 11,800 times of its ‘rest-mass’ as happens in accelerators.

The mass of a sub-atomic particle is presented in terms of a unit of energy, known as *electron-volt*. The *rest-mass* of an electron is 0.51 million electron-volts. The rest mass of proton is nearly 2000 times the mass of an electron. *A particle which has zero rest mass is known as a ‘massless’ particle. Photon is arbitrarily (remember, arbitrarily) called a ‘massless particle’ even though it has some mass due to its motion. Otherwise, there is nothing which is absolutely massless.*

Particle Physicists have divided all sub-atomic particles, according to their masses, into three main categories. Light-weight particles are Leptons; medium weight particles are **Mesons** and heavy-weight particles are **Baryons**. **Photons** do not belong to this frame-work. Upto now the Particle physicists have mentioned the existence of about 200 sub-atomic particles. Some of these have been discovered, others have only been theorised and are **arbitrarily** known as ‘**massless particles**’. Most of the particles have an incredibly short life and size. For example, a positive electron lasts only 10^{-8} seconds. In their experiments on high-energy particles, physicists have come across particles which live only a few *particle-second* where a *particle-second* is 10^{-23} second or 0.00000 00000 00000 00000 00000 second. At the end of this incredibly small period, they change into other particles. *The particle that lives for the shortest period is called ‘Resonance’*. *Since its existence*

is extremely short, some like to call this as 'an event' rather than 'an object'.

When known particles collide with very high velocity, sometimes nearing that of light, new particles are formed. The collision or interaction of sub-atomic particle results in '*annihilation*' of the original particles and the '*creation*' of new sub-atomic particles. This unceasing process of '*destruction*' and '*creation*' goes on at the outer-space. So small and so short-lived are particles at the microphysical or sub-atomic level that a sub-atomic or micro-physical particle *cannot be observed twice*, as Schroedinger said. Heisenberg, in his Principle of Uncertainty asserts that a sub-atomic particle cannot be observed *even once*.

Quarks and Holons, etc.

— Two schools of Physicists —

There are two schools of physicists to-day. One of these continues to seek a material substratum and building blocks of the universe. They believe that all the known particles are composed of a few different types of particles, called *Quarks*. These hypothetical particles are supposed to have 1/3 unit of electrical charge.

The other school of scientists is following what is known as the '*Scattering-Matrix*' or *Matrix theory* which was originally propounded by Heisenberg. One version of this theory, developed by Geoffrey Chew, Chairman of the Physics Department at Berkely, is known as the *Bootstrap theory*. The Bootstrap theory suggests that, as one end of the bootstrap is connected with the other so are 'events' or 'particles' at the sub-atomic level connected inextricably with other events. *The followers of Scattering Matrix and The Bootstrap theories say that, in the sub-atomic world, no particle is an independent entity. They say that the sub-atomic particles are, infact, not 'things' but 'events' inter-connected with other events. Or, they are "dynamic patterns of interconnected energy".* Sir James Jeans also said: "Events and not particles constitute the objective reality".

In order to describe the fact that, at the subatomic level, the particles are inextricably connected with others and with the rest

of the universe, Arthur Koestler coined a new word, '*holon*'. The word is supposed to imply that *a particle reflects the whole*. **Another physicist, David Bohm, has propounded another theory of matter in which he has used this concept of holon. According to this theory, the movement of a single particle is connected with the entire universe and, therefore, the movement of any particle is a 'holo-movement'.**

Another physicist, John Wheeler, speaks of the 'quantum interconnectedness' by saying the entire material universe is a '*Quantum foam*' in which every particle is connected with every other particle.

Matter or Energy is not unreal or mere illusion

We have mentioned earlier that the modern view of physicists is that the particles at the sub-atomic level are blurred, cloud-like, foam-like and their individual position and momentum cannot simultaneously be known with certainty. **To describe matter or energy at that level, certain terms such as '*massless*', '*event*', etc. have been *arbitrarily* used. These have not to be taken literally, for there cannot be any particle, however small, which is absolutely massless, especially if we keep in mind that increase in velocity increases the mass and that there can be no event without the particles, even though they be smallest in size and exist for an incredibly or incalculably small time, nor can there be any foam without particles. What was intended to be conveyed initially and originally was that, at the sub-atomic level, electrons or other particles cannot be studied individually, for they exist in quanta or packets and for a very short time.** This fact was described by some physicists by saying that the electron or sub-atomic particles are '*unreal*'. This term '*unreal*' also was used *arbitrarily* to connote that the individual existence of sub-atomic particles was untraceable and momentary, for, as the author Gary Zukav*, has said in his book, *The Dancing Wu Li Masters*, "in the light of the quantum theory, elementary particles are no longer real in the sense as objects of daily life, trees or stones". This does not, however, mean that the electrons, sub-atomic particles, matter and energy do not exist and are merely an illusion as Adi Shankaracharya had said in his

*Page 216 of this book

commentary on *Vedanta*. It is not *Mithya*. But some Scientists, such as Fritjof Capra and some religious leaders, such as Vivekananda and other monks of Ramakrishna Mutt or Mission, or other monists, have interpreted Quantum Theory to imply that matter is *unreal* or that *it does not in fact exist* but is mere *ilusion*.

On the other hand, we find that all scientists from J.J.Thompson who discovered electron in 1897 to the physicist John Wheeler and David Bohm, who pointed out that every particle is linked with another as in '*Quantum foam*,' or that there is an '*implicate order*' and *connectedness*, have said, in one or the other terms that **there are small particles** of matter. Of course, the 1911 planetary model of atom as given by Rutherford, has changed and been changing after Max Planck said that heat is emitted or absorbed in *Quanta* and Neils Bohr applied Quantum Theory to atomic structure and Broglie said, in 1924, that not only do waves behave as particles but particles also as waves. **So, Matter has not completely evaporated out of existence; it is there either as energy or as matter; it exists either as waves or as particles. One cannot say that Matter and Energy are 'unreal' or an illusion and, therefore, the world or the universe does not exist. One cannot give the anology of the rope and the snake and say that the universe is mithya. Schroedinger, Max Born and Paul Dirac who said that the electrons exist as waves—standing waves or 'probability' waves—or that there is an electron-field did not and could not deny that the particles did exist by saying in a round-about way that waves exist on the other hand as particles and particles exist as waves, they only emphasised that both the concepts are complementary.**

*Further, the Particle Physicists have again brought the existence of **particles** on the centre of the stage. They have even coined terms for the particle of time as 'Chronon' (which is of the order of 10^{-21} second) and the atom of space as 'Hodon' which has a radius of 10^{-23} cm. Even 'Resonance' is a particle that is most short-lived. We may give to it the arbitrary name 'event' because it lasts for a very very short time. But that is another matter. In no case does it mean that Matter or Energy does not exist or that it is mere illusion'.*

One may ask: 'If there are no particles, then what is it that collides to create new particles? The Particle physicists have been

talking of *Quarks* which shows that they have not yet given up their search for the *ultimate* building blocks of the universe. Even the *Scattering Matrix theory* or the *Bootstraps theory* have not given up the notion of particles. What they have said is that, in the sub-atomic world, no particle has an *independent* existence but they are *interconnected* with others. Which means that *they are there and others also are there*, otherwise the phrase '*interconnected with others*' would be meaningless. Even so would the concepts of '*holon*' and '*Quantum Foam*' imply? It would therefore, be wrong to contend, on the basis of theories propounded by these scientists that the existence of the world is not a reality but an *illusion*. What we can say is that, at the *ultimate level*, we have only sub-atomic particles which are so small in size and are so short-lived and inter-connected that, in our present state of knowledge and with the scientific instruments as we have to-day, we cannot study them *individually* with any certainty.

The words "*in our present state of knowledge*" and "with the instruments we have to-day", in this context, are necessary here because, tomorrow we may discover a method and devise instruments which enable us to study them. Even Heisenberg, who gave us the *Principle of Uncertainty*, had not performed any experiment with any scientific instruments and with gamma rays and a powerful microscope. He had done only a '*mental experiment*'—a '*Gedanken experiment*' as he called it. He had followed Einstein's advice who had told him that it is the theory which determines the form and nature of experiment. *So, it is possible that, in the years to come, we may have a new theory that enables us to have a new mental experiment (Gedanken) and a new mathematical formula that enables us to know better about the electrons and other sub-atomic particles.* Also, we have to learn what the word 'understanding' really means. In fact, in 1922, when Heisenberg was walking with Neils Bohr, along slopes of Hain mountain, in Germany, one afternoon, he put many questions to Neils Bohr, one of which was; "If the inner structure of an atom is as closed to descriptive accounts, as you say, if we really lack a language for dealing with it, how can we ever hope to understand atoms?" After deep thought for a moment, Neils Bohr said; "*I*

think we may yet be able to do so. But in the process we may have to learn what the word 'understanding' really means". Neils Bohr did not say that we cannot understand the inner structure of atom nor did he say that there is no such entity as matter even though he agreed that the classical concept of atom now no longer held good. This is what Einstein also thought. He refused to believe that there would always be uncertainty in knowing the electrons or sub-atomic particles and he also refused to agree to the other part of the Principle of Indeterminacy, namely that there is no cause and effect relationship in the sub-atomic world.

Earlier, Laplace (1749-1827) also had said it emphatically that things do happen and must happen in a '*deterministic*' and '*certain*' way. Other scientists also, until Heisenberg enunciated his principle, believed that if we know the position of its parts at one particular instant, we would be able to specify the whole thing or event. Laplace had expressed his deterministic view in the following words:

"We ought then to regard the present state of the universe as the effect of its antecedent state and the cause of the state that is to follow. An intelligence knowing at any given instant of time all forces acting in nature, as well as the momentary positions of all things of which the universe consists, would be able to comprehend the motions of the largest bodies of the world and those of the smallest atoms in one single formula provided it was sufficiently powerful to subject all data to analysis; to it nothing would be uncertain; both future and past would be present before its eyes."

Law of Cause & Effect at the sub-atmoic level

It would indeed be wrong to contend that Heisenberg's Principle of Uncertainty has demolished the pillar of causality. If the gamma rays would knock the electron out of its orbit and we cannot know the direction it would take and the speed it would have, we need to acquire more knowledge as to how to control and predict its course. At present we do not have that knowledge and technical ability to do that. But it would be wrong to say that, *for all times*, we would not be able to have that ability *nor would it be proper to say that the law of cause and effect ceases to work*

at the subatomic level. If we could devise the means to know the impact of the gamma rays, we should be able to take into account all the factors and then lay down finally as to what causes would lead to what results. Einstein was, therefore, justified to say that the principle of Uncertainty was not acceptable as final.

However, there are monks who are making use of the Principle of Indeterminacy to cover up the inadequacy of their doctrine of *Maya*. They say that Brahm—the *ultimate Intelligent Principle*—came under the influence of *Maya*. When we ask them what were the causes that led Brahm to come under the effect of *Maya*, they say: there was no cause or we cannot describe it (*Anirvachaniya*—unspeakable). When we ask them what is *Maya*?, then also they say that the nature of *Maya* is indescribable—that too is *anirvachaniya*. We ask them: “What is Brahm?” They say it is unknowable”. Thus, they quote Heisenberg’s Principle of Uncertainty in their support. About Heisenberg also it is known that he had met Tagore and that he was aware that Indian monists also had similar views. Fritjof Capra also has acquaintance with Indian mysticism and has met many Indian monists. Such scientists also have taken mental sustenance and support from the monists. However, the truth is that quoting Heisenberg does not justify the conclusions that have been drawn by the two sections.

Is the World an Illusion?

‘Indeterminacy’ and ‘Causation’ re-discussed

In the first chapter of this book, one of the points that was explained was that, on the basis of Quantum Physics, the sub-atomic particles—the Leptons, Mesons, Baryons, Photons, etc.—are not real things as trees or stones are because they exist as quanta or clouds or packets of energy for incredibly short time (some even for 10th second or less), have very little *rest-mass* (photons are, hypothetically, called ‘massless’) and because of their such a short existence, some have liked to call them as ‘*Resonance*’ or as ‘*event*’ rather than a particle. For example, Fritjof Capra has said, in his writings, that a sub-atomic particle *is an entity* but is neither a particle nor an object; it is just “a dynamic pattern of energy”. Sir James Jeans has said that “*Events and not particles constitute the objective reality*”. But it was pointed out, in that context, that the word ‘*massless*’ used for *photons* is **arbitrary** and is not literally true because no particle is *absolutely* without mass. Similarly, we must understand that the word ‘*real*’ or ‘*unreal*’, used in this context, is *arbitrary* too. In truth, the sub-atomic particles do exist even though they exist for an almost immeasurably short time and exist *in packets and not individually* as trees or stones and they change their individuality in an unimaginably short time into another one by colliding with other sub-atomic particles. **It would be wrong to say that sub-atomic particles do not exist or that they are merely an *illusion* or that they are *unreal* in the *literal* sense of these words.**

Moreover, the fact that each sub-atomic particle or each wave or cloud is interconnected with others and with the rest of the universe does not mean that each one of them does not exist or does not exist individually because the very word ‘*connected*’ or ‘*inter-connected*’ implies *plurality of existence*. The word

‘Quanta’ also implies plurality. However small and light these sub-atomic particles may be and however short-lived their existence may be, there can be no denial of the fact that there is a plurality of existence at the sub-atomic level also so that we classify those particles into different categories in respect of rest mass, etc. as ‘Leptons, Mesons, Baryons, Photons, etc. and we reckon their existence as ‘*events*’ or ‘*holons*’ even though these be interconnected events or holons. **Matter, at the sub-atomic level, is energy wherefore we talk of the rest-mass in terms of electron-volts¹ but the energy exists as unimaginably small particles. Even Schroedinger, who was awarded Nobel Prize in 1926 for his wave equation, did not deny the existence of sub-atomic particles though he built a bridge between the two existing theories.**

Infinitesimal ‘points’ of energy constitute

Matter or Prakriti

So, what we could say, on the basis of Quantum Physics, is that ‘atoms’ are not the building blocks of the universe as it was thought once upon a time but that Matter, at its subtle level, is constituted of ‘massless’ and ‘momentary’ sub-atomic particles where ‘massless’ and ‘momentary’ are only *arbitrary* words. Let us remember, in this context, that even *Quarks*, which have been hypothesised as the material substratum of the universe are ‘particles’ even though this hypothetical particle is considered to have 1/3 unit of electrical charge. **The very notion that Quarks are of six varieties, called ‘up’, ‘down’, ‘strange’, ‘charmed’, ‘bottom’ and ‘top’ implies that the material substratum of the universe is not a mere illusion and that it is made up of almost infinitesimally small particles; let us call them ‘points of energy’.** The Matter, as a whole, is called ‘*Prakriti*’, and *Prakriti* has various patterns of energy—some visible to our naked eyes and others invisible or imperceptible to our senses. It can also be said that what appear as different elements or as different forms of Matter are basically all ‘energy’ which is constituted of infinitesimally small (in size and mass), short lived particles. It would, however, be wrong to say that there are no ‘particles’ because the very fact that we take their

1. An electron has rest mass of 0.51 million electron-volts.

statistical averages and we consider them as *Quanta* means that there are particles even though we do not, at present, have any instruments and means to observe them individually without influencing them by our very presence.

The ultimate fact, therefore, remains that we cannot totally deny the existence of *individuality* and *multiplicity* nor, for that reason, can we say that all what appears in this world is illusion as the appearance of snake in a rope is an illusion, for, in this analogy, the snake infact does not exist whereas in truth all these material entities do exist even though their existence is momentary. Infact, the analogy of the snake and the rope itself implies the existence of two different yet similar entities, for else there would be no scope for illusion.

Wrong use of parallels

However, we find that, in religion, monists have been using Physics in support of their belief that there is only one reality and that all else is *illusion*. For example, even before Quantum Physics came into existence, Vivekananda made the following statement, in 1893, at the Parliament of Religions in Chicago:

*“Science has proved to me that physical individuality is a delusion, that really my body is one continuously changing body in an unbroken ocean of matter and Advaita (Monism) is the necessary conclusion with my other-counterpart, soul.”*² (Italics by the author).

Now, there is no denying the fact that the body is constantly changing and is in an almost unbroken ocean of matter but the very truth that the soul is its ‘counterpart’, means that the body also is *real though transitory*. How can then it be called a ‘*delusion*’? Without its existence, even the above quoted statement could not have been made nor could we have read it. Also, where and when has science proved, as Vivekananda has claimed, that physical body is a *delusion* or *illusion*? On the other hand, Science, considering body as a *reality*, has given its anatomy and physiology and also knowledge to keep it in a healthy state. Also, Science has explained the cause-and-effect relationship in regard to the body and has explained what it is constituted of ultimately. But, even

2. The Complete Works of Swami Vivekananda, Advaita Ashram, Calcutta, 1977, Vol.1, page 14.

then, taking the clue from Vivekananda and some others, Monist monks and many other learned Monists now use Quantum Physics to support *Monism* and to say that the body is a *delusion*.

The faulty Principle of Indeterminacy and philosophers' comments on it

The second point to which the author drew the attention of readers in the first chapter of this book was that many Monists use Heisenberg's Principle of Uncertainty or Indeterminacy in order to prove that there is no such thing as Cause and Effect in this world. They use this argument when, to cover the weakness of their belief, they are confronted with difficult questions such as: "Why the soul or *Jiva* came under the effect of *Maya* if it is non-different from *Brahm*?" For example, Vivekananda said the following about cause and effect relationship, for the same reason, before Heisenberg had stated his famous Principle:

"Cause and Effect are Maya, and we shall soon grow to understand that all we see is disconnected as the child's fairy tales now seem to us. There is no such thing as cause and effect as we shall come to know of it. Then if you can lower your intellect to let any allegory pass through your mind without questioning about connection.³"

After Vivekananda and since the time of Heisenberg, many Monists have been quoting Heisenberg's Principle of Indeterminacy even though that Principle itself had not been accepted by many scientists and philosophers - Einstein being one of those scientists.

The author had earlier mentioned, in the first chapter of this book, that Einstein did not consider the Principle of Indeterminacy as correct or as final. But it would be of interest to the readers to know that philosophers such as Alfred North Whitehead also criticized Heisenberg's this Principle. He also criticized Schrodinger, Wigner, Wheeler and others who had supported Heisenberg. Karl. R. Popper, another well-known philosopher who has written profusely on philosophy of science, also has commented

3. Complete Works of Swami Vivekananda, Vol.7, page 88

on this. He has said: **Heisenberg himself “tries to give a causal explanation why causal explanations are impossible.”**⁴

Is it a crazy Principle?

Isn't it really strange that scientists themselves are striking at the root of science, for, infact, all sciences explain *the cause and effect* relationship between the precedent and the antecedent and, so, if cause and effect do not exist but are *Maya*, then are we not going crazy? Are we not cutting the branch on which we are sitting? Infact the scientists themselves have admitted, even though when they were in a lighter mood, that this Principle is a crazy one. We will give here an instance:

It is said that scientist, Wolfgang Pauli, had gone to Puplin Laboratory in Columbia University to lecture on Heisenberg's theory. The scientist, Neils Bohr, also was among the audience. When the lecture was over, Neils Bohr shouted thus at Pauli: The theory cannot be correct because “it is not crazy enough”. Pauli answered humorously: “It is crazy enough”.

Even though scientists feel at heart that it is a crazy Principle, yet, despite its untenability, this principle is being used as support by scientists and Monists alike. For example, this is what Swami Vivekananda has said in regard to the Cause-and-Effect relationship on an occasion different from the one on which he made the statement, we have quoted earlier:

So with our intellect, in our desire to solve the mysteries of the universe, we cannot stop our questioning: we feel we must know and cannot believe that *no knowledge is to be gained*. A few steps and there arises the wall of beginningless and endless time which we cannot surmount. A few steps, and there appears a wall, a boundless space which cannot be surmounted, and the whole is irrevocably bound by **the walls of causes and effects. We cannot go beyond them. Yet we struggle and still have to struggle. And this is Maya**⁵ (Italics by the author).

4. Quoted from Philosophical Implications of Contemporary Physics by Milic Capek, D.Ven Nostrand Co., Princeton, 1961, page 297.

5. Complete works of Swami Vivekananda, Vol.2, page 119.

Causes do exist even though they are known to the Supreme Being

Now, we agree that it is correct to say that, at a certain stage, our intellect may fail to know *the cause and effect* relationship but it **does not mean that cause and effect relationship does not exist.** `Also, since there is 'boundless space' and there are 'endless cycles' of time, **this may be one of the causes why there may be no need to go further into any causes and events because these may repeat, after a cycle is over, but, nonetheless, there are causes and effects and to deny their existence would be to deny all logic and philosophy and to strike the death-knell of science.** There may be causes and effects that are known only to a Supreme Being which fact would establish the logical necessity of believing in a Supreme Being and which fact would establish the logical necessity of the advent of that Supreme Being as the God-Sermonizer of Shrimad Bhagwad Gita⁶ points out in the first person.

Influence of Monists on Physicists

However, it is a pity that instead of agreeing that this limitation of human intellect leads one to believe in the advent of God, many scientists, Monists and philosophers say that *one cannot know the ultimate truth* and that the cause and effect relationship is unreal and non-existent after a stage. Even Neils Bohr has said that there is **“The necessity of a final renunciation of the classical idea of causality and radical revision of our attitude towards the problem of physical reality...”** The reason is that **Heisenberg, Neils Bohr and Fritjof Capra, all have had the influence of the Monists on them. Fritjof Capra has admitted this in all his publications. He has also said the same about Heisenberg. These are his words:**

“I had several discussions with him (Heisenberg). I lived in England then, and I visited him several times in Munich and showed him the whole manuscript chapter by chapter (Tao of Physics).

6. In Shrimad Bhagwad Gita, it has been explained how and when the original yoga had been lost and how and when the deities (devatas) lost paradise, how and when Great Destruction of this world will occur and why He, the Supreme Being, has adopted a corporeal medium at the present time of ennui of Religion or the Moral Laws. He has said that this knowledge is possessed by Him alone and not by any human being or any deva (deity).

He was very interested and very open, and he told me something that I think is not known publicly, because he never published it. He said that he was *well aware of these parallels (with Eastern Mysticism)*. While he was working on Quantum Theory, he went to India to lecture and he was a guest of Tagore. **He talked a lot with Tagore about Indian philosophy. Heisenberg told me that these talks had helped him a lot with his work in physics because they showed him that all these new ideas in Quantum Theory were in fact were not all that crazy. He realised there was, infact, a whole culture that subscribed to very similar ideas. Heisenberg said that this was a great help for him.** (Neils Bohr had a similar experience when he went to China”.^{6(a)} *(Italics and antics added.)*)

It is clear from the above that Heisenberg, Neils Bohr, Schroedinger, Winger and many others were influenced by the *Advaita* (monistic) thought. Schroedinger and others have referred to the Upanishads in their statements. They got support and sustenance from Monism to make their nebulous theories or views get more credibility. So, they sought support for their theories of physics from Mysticism, and Mystics, in turn, referred to these theories of physics to get support for their mystic thoughts. These physicists were, perhaps, not aware that there are dualistic interpretations also of the Upanishads and that the Bhagwad Gita also is an Upanishad. Or, if they knew the dualistic interpretations of the Upanishads and the Gita, they put it aside, for these interpretations which, ontologically, spoke of two or three eternal realities—Matter, Souls and God—were not of much use to them in order to make their mystical theories of physics find acceptability. Thus, Mysticism now rose high in the eyes of these physicists and, through them, in the eyes of other intellectuals who read them so that it now became almost a fashion for the intellectuals to make a show of their awareness of these parallels. Fritjof Capra admits this when he says:

6(a).The Holographic/Paradigm and other Essays: Exploring the leading edge of Science, Shambhala Publications, 1982, pages 217 and 218.

7. The Holographic/Paradigm/and other Essays: Exploring the leading edge of Science, Shambhala Publications, 1982, Pages 217 and 218.

“Mysticism is thought of in the scientific community as something very vague, describing something fuzzy, nebulous, and highly unscientific. Now to see one’s cherished theories compared with highly unscientific activity is threatening to physicists... **But, ultimately, they regarded it as a great intellectual and cultural enrichment of their lives.**”⁷ (Italics added)

Thus, some physicists and mystics have been drawing intellectual support from each other’s thoughts and giving parallels which infact were themselves fuzzy.

Other wrong conclusions

Now, having elaborated some of statements made in the first chapter of the book, it is time that we mention other parallels or conclusions. In the author’s effort to elaborate, there has been some repetition but it was, perhaps, necessary to refresh the mind of the reader as to what has already been discussed. It would be appropriate now to take up the thread further.

Consciousness

One conclusion of Heisenberg’s views was that the act of observation by the scientist alters the condition of the quantum particles that are observed. Einstein said, in 1933, that the discovery of a ‘*hidden variable*’ would account for it. Later, in 1961, Eugene Wigner, a Nobel physicist, proposed that it is the ‘consciousness of the scientist which is itself the hidden variable⁸ that decides the outcome of the event. Wigner, therefore, emphasised that it is impossible to give a description of quantum mechanical processes “*without the explicit reference to the ‘consciousness’*”⁹ of the observing scientist. Some other scientists also now thought that, at the sub-atomic level, we cannot know *objective truth* because the objective reality there is inextericably affected by the *subjective consciousness* of the scientist.

The above finding should have been interpreted to mean that it is at the sub-atomic level that the soul, consciousness or Mind acts

8. Michael Talbot, *Mysticism and the New Physics*, Bantam Books, New York, 1981, Page 33.

9. *Ibid*, page 34.

on Matter and influences it, but, instead, some scientists, who had been under the influence of Monism, interpreted it to say that, ultimately, there is no difference between Mind and Matter or that there is only one reality, namely the *Consciousness*, and that matter is only ‘*unreal*’ or it is only a creation of consciousness. For example this is what Schroedinger said:

“Attempt to resolve the dualism of mind and matter was also attempted in the west, but the attempt was carried always on the material plane and, therefore, it failed... It is odd that it has usually been done on material basis... but this is no good. *If we decide to have only one sphere, it has to be the psychic one since that exists anyway*”.¹⁰ (Italics by the author).

Is the world of Matter unreal and is there only one reality?

As we have already stated in Chapter-I of this book, some other scientists also had spoken of interconnectedness of sub-atomic particles. For example, the propounders and followers of the *Scattering Matrix* and the *Bootstrap* theories had said that the quantum particles do not have independent existence. Arthur Koestler, who had given the concept of holon, and John Wheeler, who talked of *quantum interconnectedness* as ‘*Quantum foam*’, and David Bohm who, using the concept of holon, had propounded that the movement of a single quantum particle was connected with the entire universe—all of them, had also stated that every particle is connected with another particle. Physicists, like James Jeans had said that sub-atomic particles were infact more like ‘*events*’ rather than ‘*things*’. What was meant by all these views put together was that the universe is one whole and that, ultimately, what appears as solid, liquid or gaseous Matter is constituted of only ‘interconnected sub-atomic particles of energy’. **But one is amazed when one finds that an altogether untenable interpretation was built on quantum physics by many of these physicists. Some of them said that *Consciousness and Matter* are not two but one single entity whereas others said that *Consciousness* creates *Matter* and,**

10. Erwin Schroedinger: *My view of the World*, Cambridge University Press, London, 1964, pages 62 and 63.

therefore, Consciousness is the only reality. They said that the world of Matter or Physical energy is *unreal*; it is a mere *illusion*. They did not explain how they arrived at this conclusion. Since they had now no more belief in the *cause and effect relationship*, they, perhaps, therefore, thought that there was no need for them to give any reason for their belief. They had now come to believe that, for discovering a scientific theory or for arriving at a metaphysical truth what was required was ‘*an intuitive leap*’ or ‘*a quantum jump*’ in thought and so they leapt or ‘jumped’ to this conclusion even though it was invalid.

Why some physicists supported the Monistic thought even by giving wrong arguments?

It seems that, in their earnestness to come to a ‘*unified theory*’ (to which we will come later), they jumped to this conclusion, however irrational it was, for they now believed that, at the ultimate level, the ‘causality’ was non-existent. Even where they gave any reason for their belief, it was not sustainable. For example, following is what Erwin Schroedinger said:

“Consciousness is never experienced in the plural, only in the singular..... How does the idea of plurality (so emphatically opposed by the Upanishad writers) arise at all?

‘Consciousness finds itself intimately connected with, and dependent on, the physical state of a limited region of matter, the body...Now there is a great plurality of similar bodies. Hence the pluralization of consciousness or mind seems a very suggestive hypothesis. Probably all simple, ingenuous people, as well as the great majority of Western philosophers, have accepted it...The only possible alternative is simply to keep the immediate experience that consciousness is singular, of which the plural is unknown, that there is only one thing and that, what seems to be a plurality, is merely a series of different aspects of this one thing produced by a deception (the Indian *Mâyâ*)—the same illusion is produced in a gallery of mirrors, and in the same way Gaurishankar and Mt. Everest turned to be the same peak seen from different valleys.¹¹”

11. Erwin Schrodinger: *What is life*, Cambridge University Press. London, 1948.

Earlier, we had quoted Schroedinger from his work, titled “My view of the world and Mind and Matter” wherein, talking about Mind and Matter, he had said that. “*If we decide to have only one sphere, it has to be the psychic one since that exists anyway*”.

From the above two quotations, the influence of Monists on him is very clear especially from what is given within brackets in the first quote. Also, notice the words “*if we decide to have only one sphere*” in the first quotation. How can we *decide* to have ‘one sphere’ before we find that there is evidence in favour of it. The ‘psychic one’, no doubt, exists as Schroedinger says but the question is: “What leads us to believe that the material one does not exist?”^{11(a)}

Similarly, to say, as has been said in the second quotation, that consciousness is singular and merely bodies are plural, is a wrong argument. Consciousness is only a self-quality of the soul. The word, ‘soul’, denotes a non-physical *entity* and it does have its plural form as ‘*souls*’. Words that denote quality generally do not have their plural forms. For example, ‘Contentment’ is a divine quality of a living person. ‘Contentment’ does not have a plural form; it is only singular. But that does not mean that there is no plurality of persons and that if a number of persons have contentment, we should consider them as only *one* person.

Again, even though all souls have consciousness, the plurality of bodies, admitted by Schrodinger, shows that there is something in the consciousness of every soul that differentiates it from all the rest so that, for that reason, every soul has a different body, healthy or diseased, beautiful or ugly and so on. We say that every soul (or Mind) has different *Karmas* and *karmic* account. The question is “Why everyone have different *Karmas* and when did these begin and under what conditions?” If we go into these questions, we will come to the conclusion that every soul has different tendencies or *sanskaras*. Why did they acquire different tendencies and *sanskaras*? The reason is that every soul has different inherent potentialities wherefore they do different *karmas*.

11(a).Erwin Schrodinger: *What is life*, Cambridge University Press. London, 1948.

So the souls are plural. They also are infinitesimally small ‘points’ of light, and are of conscient nature, and are thus intrinsically different from the *quantum particles* which are non-conscient. How can one say that one is interchangeable into another? If we say that both are the same ultimately, then what difference remains between ‘*materialism*’ and ‘*spiritualism*’? To believe that Matter and souls are one is to believe that there is inconscient and conscient Matter only. It is just another brand of Materialism.

But let us remember that even this would imply that there are two *kinds* of Matter—Inconscient and Conscient. So, duality still remains to be there. What have we then gained from the attempt at unification? Ah, after *causalty* has become a *causality*, one can just jump at the conclusion that there is no difference between Souls and Matter! Yes, without a jump onto irrationality, one cannot say that Matter and Souls are one and the same. However best one may try one cannot explain souls in terms of laws of Matter because the souls are *non-physical* and *non-material*. This is what Max Planck also said in one of his interviews.

J.W.N.Sullivan had once interviewed Max Planck on this subject. This interview was published on 25th January, 1931 in the *Observer*. Sullivan asked Max Planck: “Do you think that consciousness can be explained in terms of matter and its Laws?” Max Planck said: “No.” Max Planck has said that he regards consciousness as fundamental. He stated: “I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing postulates consciousness”.¹²

Now, it would, no doubt, be logical to say that consciousness is the fundamental or the primary reality, in the sense that if there were no consciousness, one would not even be aware of the existence of Matter. Also, one would be right if one said *in this sense* that Matter is ‘*derived*’ from consciousness. **This would not however mean that consciousness is changeable into Matter, for the two are *intrinsically* different. One is conscient and *non-physical* whereas the other is *non-conscient* and *physical*. For this, reason,**

12. James Jeans: Philosophical aspects of Modern Science, George Allen and Unwin, 1932, page 12.

Einstein also believed that the two are different.

Further, it would also be wrong to refer to the Upanishads in general, as Schroedinger and Wigner have done, to say that the Upanishads substantiate the view that Matter and souls are non-different. He who believes thus betrays his ignorance of the fact that the same or different Upanishads have also been quoted to support dualism.

But, as has been said earlier, many physicists, without going deeper into other systems, have been influenced by Monists of Shankaracharya's school and, in their hurry to arrive at only one reality because of their wish to have a *Unified Theory*, (which, as we have said earlier, we will discuss later), have supported Monism. We had quoted from Schroedinger's and Wigner's works earlier in support of our this contention. Now, let us quote from the work of another Scientist, Amaury de Reincourt. In his work, titled '*The Eye of Shiva*', he says:

“Can a connection between the scientific and mystical frames of reference be established over and beyond a certain metaphysical parallelism? The answer lies in the fact that Indian mysticism, at least as far as its leading representatives are concerned, has evolved as much in the past hundred years as the science of physics itself, in a direction that points towards an inevitable convergence of the two. *From its modern awakening with Sri Ramakrishna and Swami Vivekananda, Eastern mysticism has begun to adopt its revelations to the entirely different cultural framework provided by science and technology, without in anyway sacrificing what is valid in its traditional understanding of the phenomenon itself.*”¹³ (Italics added).

The above clearly shows how the two—mystics or Monists and the Physicists—have influenced each other. Both accepted the influence of the other because it helped them to do away with causality (Cause and Effect relationship) and this freed them from the botheration of establishing the validity of their Principle of Indeterminacy or of the Inexplicability (Anirvachaniyat) of the causation of *Brahm* changing into *Jivas* as is one of their fundamental concepts and also because both wanted to land at Monism—one

13. Amaury de Reincourt: *The Eye of Shiva*, William Marrow & Co. Inc., 1981 pages 13-14.

calling it *Advaita* and the other calling the *Unified Theory*. We would have had no objection to this if they gave any valid reason for this but the sad truth is that not only do they give no reason but also they say that there is no need to give the cause or the reason for, ultimately, there is none,—there is no cause.

A big blow to spiritualism struck by Monists

Let us see what Swami Vivekananda and Swami Ramakrishna say on this point. Says Vivekananda:

“Modern science has really made the foundations of religion strong. That the whole universe is one is scientifically demonstrable. **What the metaphysicians call ‘being’, the physicists call ‘matter’, but there is no real fight between the two: both are one. Though an atom is invisible, unthinkable yet in it are the real power and potency of the universe. That is what the Vedantist says of Atman.**”¹⁴... I

Again, he says on another occasion,—while comparing *Sankhya* and *Advaita Vedanta*:

“The idea of the *Advaitists* is to generalise the whole *universe* into one... that it is **one Being**, manifesting itself in all these various forms. They admit that what the *Sankhya* calls *Nature* exists, but they that **Nature is God!** Further *Vedanta* “Believes that there is one soul which appears as many; and we build on the *Sankhya* analysis!”¹⁵...II

Elasewhere, Vivekananda says again:

“According to the Advaitist proper, the followers of Shankaracharya, the whole **universe** is the apparent evolution of **God. God is the material cause of this universe, but not really, only apparently.** The celebrated illustration used is that of the rope and the snake, where the rope appeared to be the snake, but was not really so. The rope did not really change into snake. **Even so, this whole universe as it exists is that Being.** It is unchanged, and all the changes we see in it are only apparent. These changes are caused

14. The Complete Works of Swami Vivekananda, Advaita Ashram, 1973, Vol.3, page 269.

15. The Complete Works of Swami Vivekananda.

by *Desh*, *Kala*, and *Nimitta* (Space, time and causation) or, according to higher psychological generalisation, by *Nama* and *Rupa* (name and form). It is only by name and form that one thing is differentiated from another... Again, the Vedantists say, it is not that there is something as *phenomenon* and something as *noumenon*. The rope is changed into the snake apparently only; and when the delusion ceases, the snake vanishes¹⁶...III

Let us ponder over what has been said in the Statements I, II and III above, taking them one by one.

Observations on the above statements

1. How can one claim that what the metaphysician calls '*being*' is what the physicists call '*Matter*'? How is one justified to say that science can demonstrate this or even scientifically establish this? The claim that science has demonstrated this concept of religion is preposterous. Science has established that all elements of Matter are basically one same energy and, in that specific sense, all material things are, ultimately, constituted of the same basic material (sub-atomic particles). But it is undeniable that, at no single point of time, even all sub-atomic particles are identical in terms of rest-mass or duration of existence, etc. That apart, no principle, law, tested theory or demonstrable experiment of science had established, upto the time of Swami Vivekananda, or even afterwards, that Consciousness and Matter are the same 'stuff' or that they are interchangeable. What has been said is that, at the subatomic level, they *influence* each other. Which fact proves that the two are different, for one has the motive and also the *moving* power whereas the other does not have the *motive* or purpose at all.

II. It is alright to say that the idea of the Advaitists is to generalise the whole universe into one but how can one bring the *conscient souls* and the *Supreme Being* also into the ambit of this generalisation when they are *intrinsically* and *eternally different*? How can we make a forced or an artificial and unjustifiable unification? How can we say without any valid proof, evidence or

16. The Complete Works of Swami Vivekananda, Vol.1 page 363.

explanation that *Nature* is *God*? Is it not Materialism in disguise? Does it not mean negation of God, i.e. denial of the existence of a Supreme Being in an indirect way?

Further, it can be seen that it is not much different from Buddhism, for Buddhists also do not believe in the existence of a Supreme Being. Indeed, it is well-known that Shankaracharya resuscitated *Advaita Vedanta* in order to defeat the Buddhist intellectuals, for the latter also had similar belief. Vivekananda, in his speeches, has said many times that Buddha preached nothing but Vedanta in a simple way. So, it means that **Advaita Vedanta also is not a theistic philosophy** nor has it been supported by valid reasoning as the analogy of the rope and the snake would suggest.

III. In the third statement again, Vivekananda has said that the whole universe is an *apparent evolution of God* and that **God is the material cause** of the universe. This confirms the view that **Monism is Materialism** with ethics though it bears the label of Spiritualism. It is wrong to say that things are differentiated on the basis of qualities and potentialities also. Souls and Matter and also souls and God are different because of their intrinsic qualities and potentialities.

The above comments would make it amply clear that not only Monism and Principle of Indeterminacy are based on false and weak logic but also on inadequate and unsatisfying reason and both have forcibly extended their attempt of unification of material forces to the domain or the realm of Consciousness and have taken support from each other by giving unjustifiable parallels.

Are Matter and God non-different?

-- Parallels between Science & Religion Re-examined--

In the second chapter of this book, it was pointed out that, even at the sub-atomic level, very small particles do exist, however hazy they may appear to be and whether they be called ‘*Quarks*’, ‘*Leptons*’ or whatever else.

Einstein and Planck were awarded Nobel Prizes precisely for this finding

In this context, we should remember that, in 1905, Einstein also, using Planck’s quantum hypothesis, had said, in his paper, that light consisted of packets of small *energy-particles*. Einstein was awarded Nobel Prize precisely for his this hypothesis. At that time, most physicists, including Planck himself, thought that light was a *wave-like phenomenon*. But Einstein denied that light was continuous electro-magnetic wave and, instead, claimed that *light quanta* was constituted of *particles*. Einstein considered space-time as continuum but he considered Light and Matter as constituted of *particles*. Scientists originally resisted to his this idea and, therefore, Einstein had to wait until 1915 when his equation was experimentally checked by Millikan, the American experimentalist, and was finally confirmed in 1923-24, by Compton and others who performed the experiments on scattering of photons from electrons. And, this view of Einstein that light is constituted of *particles (photons)* holds true even to-day. It would, therefore, be wrong to say that sub-atomic particles are *not real* particles.

We must also remember in this context that even Planck was awarded Nobel Prize for his that work in Quantum Physics which established the fact that the world of nature is not a continuum but is constituted of particles. His work implied that the forms of matter do not blend into one another in a smooth,

continuous way even though they appear to do so, but, on the other hand, the matter is discrete. No doubt, 'the discreteness' of certain physical entities, especially of sub-atomic particles is so small that *it is* not perceptible to our naked eyes, and, for that reason, the world of nature wrongly appears to be smooth and one continuous whole yet, actually *it is* discrete. Infact, Planck specified the amount of discreteness by a number '*h*' which is known as '*Planck's Constant*'. This fact about discreteness and this Constant¹ '*h*' also is accepted even to-day. How can, then, one say that sub-atomic particles are '*illusory*' or '*a myth*'? No doubt, it is true that we cannot see the sub-atomic particles individually, for they form a cloud or a field and it is also true that at present, we have no way of experimenting on them, yet, in the light of the fact established by Einstein and Planck, this also is an established fact that Nature is not a continuum but is constituted of particles and sub-atomic particles.

Wave-Particle Duality

It is recorded history that, later, in 1924, the French physicist, Louis de Broglie, formulated a simple equation which showed that not only do waves behave as particles (as the photon theory of Einstein had stated) but particles also behave as waves. Broglie even determined the wave-lengths of electrons, atoms, molecules and also bigger things, like base-balls. This idea of Broglie now meant that the electron, revolving around its nucleus in an atom, was a *fuzzy wave* also besides being a *particle*. But scientists now began to stress more upon the words '**fuzzy wave**', pushing, unjustifiably, into the backyard, the fact that light was also of the nature of sub-atomic *particles* as Einstein had already established. Since the sub-atomic particles are too small to be observed and since the distance between any two sub-atomic particles is too small, it is only natural that they would be like a cloud and the discreteness also among them would be too minute. This, however, does not obliterate or deny the fact that they are particles and there is discreteness which goes on becoming smaller and smaller

1. Planck's Constant '*h*' = 6.62×10^{-14} J.S.

as the particles become more and more smaller. Further, since the particles vibrate and move like fields or waves, it is only natural that their picture will be hazy or fuzzy also; but how does even this deny the fact that the sub-atomic particles are discrete particles-cum-waves even though they are unobservable as yet? The particle-wave duality is now an established fact and to deny it is to deny the truth.

The cause of confusion

We all know that Schrodinger hypothesised, in 1925, that the waves of electrons could be quantized. However, many scientists were still confused as to how light could have dual nature—of particles and of waves, and it was at that time that Max Born hypothesised that electrons are ‘*not-real*’ but are ‘*probability waves*’. He said that the electron picture is purely abstract. Perhaps, it is these kinds of statements or use of these kinds of metaphors, such as ‘*unreal*,’ ‘*abstract*’ ‘*probability wave*’ etc., that have made confusion worse confounded and have provided some scientists and spiritualists with a chance to say that electrons or sub-atomic particles are ‘*unreal*’ or ‘*illusory*’ or ‘*existent* as well as non-existent’. We have already said in chapter II of this book that, at the Salvey Congress, held at Copenhegan, in which Max Born, Wolfgang Pauli, Schroedinger and Neils Bohr participated, the concept of complementarity, as suggested by Neils Bohr, was adopted. **Didn’t that mean that light is of the nature of particles as well as waves? Why were then the use of the words and phrases ‘unreal’, ‘illusory’, etc. allowed to be used or were misinterpreted?**

It was clear enough that the light was of **dual nature** and that there was **discreteness** in the forms of matter even at the sub-atomic level. From that stand, how did some scientists and some spiritualists, jump to the conclusion that photons or electrons are *conscious*? How could Max Born’s concept of ‘*probability wave*’, or Koestler’s or David Bohm’s concept of holon, or John Wheeler’s concept of *quantum* connectedness give rise to the speculation by some scientists or spiritualists that Matter or sub-atomic particles are *conscious*? Perhaps the attempt of the physicists to

have a Unified-Field Theory unduly gave rise to this speculation. There is some evidence that suggests this.

Unified-field theory

Albert Einstein, who had enunciated the particle-nature of light and matter, was, perhaps, the first who thought of the unified-field theory. He wanted to formulate a theory that could explain that all the forces of nature are, in reality, various manifestations of one same force. Though some attempts towards unification of some forces had already been made, no one, except Einstein had yet thought of unifying all the forces.

In 1864, Maxwell had established the fact that electricity and magnetism are not two separate forces but are two aspects of the same force. So, it was called *The Electro-Magnetic Force*. Besides that, one also deals, in physics, with forces which bind the nuclear particles strongly together in the nucleus. These are called *The Strong Interaction Forces*. In addition to these, there also exist the forces that are responsible for the emission of nuclear particles from radio-active elements. These are called *The Weak Interaction Forces*. In the 1960s, Abdus Salam, Steven Weinberg and Sheldon L. Glashaw formulated a theory that brought about the unification of *the Electro-magnetic* and the *Weak Interaction Forces*. They called all these forces together as '*The Electro-weak*' forces. They were awarded the Nobel Prize for this in 1979. Physicist A.R. Polyakov of USSR and physicist Gerald Hooft of Netherland suggested that a superior force that can bind the *Electro-weak* and the *Strong Interaction Forces* does exist. Their this idea pre-supposed the existence of a strange kind of object, called *The magnetic monopole*. In February, 1982, a physicist named Blas Cabrera of Stanford University, California, claimed to have detected the existence of *magnetic monopole*. So, the physicists think that they have almost done the unification of the three forces, and the fourth one that is left is *The Force of Gravitation*. Physicists are now dreaming of a *Super-unified-field theory* or *Super-unified Quantum theory*. But, in the meantime, some other physicists have detected the existence of an *Anti-Gravity-Force* that is about 1/

10,000 of the force of Gravity and is opposed to Gravity.² Perhaps, they will now have to integrate that force also in the same theory. Attempts for unification are going on. And, as Stephen Hawking, the famous astrophysicist at Cambridge, says the super-unification of the forces of the universe “is the most out-standing problem in theoretical physics at the present time”.³ He says: “It seems very reasonable to suppose that there may be some unifying principles, so that all laws are part of some bigger law from which all laws can be derived”.⁴

Attempt of Monists to unify matter and God

As physicists have been trying to have unification of forces of nature, religionists have been trying to have unification of matter and God or the world and God. It would be appropriate to quote what Swami Vivekananda said in 1893, at the Parliament of Religions, held in Chicago.

“Science is nothing but the finding of unity. As soon as Science would reach perfect unity, it would stop further progress because it would reach the goal. Thus Chemistry could not progress further 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 others are but manifestations. And the science of religion would become 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, one who is the only Soul of which all souls are but delusive manifestations. Thus is it through multiplicity and duality that the ultimate unity is reached. Religion can go no further. This is the goal of all science.*⁵

From this, it is clear that the attempt at unification of forces in the world of physics have been extended to metaphysics or religion or *vice versa*. But this attempt to unify the Matter, Souls and God into one same entity is *forced, artificial, arbitrary and irrational* because it has not been explained why they should be considered as

2. Times of India, New Delhi, dated 21 August, 1989 Magazine section, page.

3. Times Magazine, New York, dated 23 January, 1983, page 64.

4. Ibid, page 53

5. Complete Works of Swami Vivekananda, Calcutta Vol.1, pp 14-15.

one. To say that all forms of Matter, or all forces of Nature, are basically one same form or force is one thing but to say that Matter and God are one same thing is another, for all forms of Matter, or all forces of Nature, are devoid of *consciousness* whereas God and souls are *conscient*. But Vivekananda stresses, without giving any valid reason, that *Matter and Mind or the World and God* are basically *one same*. We quote him again on the subject:

“...Just as a physicist, when he pushes his knowledge to its limits, finds it melting away into metaphysics, so a metaphysician will find that what he calls ‘*mind*’ and ‘*matter*’ are but *apparent distinctions*, the reality being *one*.⁶ (*Italics added*)

Again, in 1895, at Thousand Island Park in New York States, Swami Vivekananda said that the ‘*being*’ (soul) and ‘*matter*’ are one. We quote here from his speech:

“Modern Science has really made the foundations of religion strong. That the whole universe is one is scientifically, demonstrable. What the meta-physics call ‘*being*’, the physicists call ‘*matter*’, but there is no real fight between the two, for both are one. Though an atom is invisible, unthinkable, yet in it are the real power and potency of the universe. That is what the Vedantist says of *Atman*”.⁷ (*Italics added*)

This attempt of the Monists is unjustifiable

It is thus clear that Monism or *Advait Vedanta* is an attempt at unification of all the three—Matter, Souls and God—as Physics is attempting to unify various forces of Matter. But there is a lot of difference between the former and the latter. The latter, i.e. the scientists, have established the fact that Electricity and Magnetism or the Strong Interaction force and the Weak Interaction forces are actually manifestations of the same energy. A difference in wave-length or any such other distinction is a different thing altogether but difference in Souls and God, and more especially between Matter and souls is a basic, inherent, intrinsic or unchangeable one. **Various forms of Matter can be changed from one into another without any intrinsic difference or without any difference in fundamental nature, but in the case of Matter and souls,**

6. Ibid, Vol.1, page 131.

7. The Complete Works of Swami Vivekananda, Calcutta, Vol.7, page 50.

the difference is fundamental, unvanishing and immutable. Souls cannot be changed into Matter nor can Matter be changed into souls. This difference cannot be obliterated, for matter never loses its ‘materials nature’ or call it ‘materiality’ if you may. Nor does the soul lose its consciousness absolutely and take on itself the materiality. The assumption that matter and souls are the same forms of energy can neither be justified on grounds of sound logic nor on the basis of cause-and-effect relationship nor can it be demonstrated. It is strange that by invoking the help of The Principle of Uncertainty, it is said by the Monists that logic does not work here nor can any experiment be performed nor the relationship of cause and effect work here. How can then one person convince another of the validity of the belief that Matter and Souls, or Mind and Matter, are of the same essence and same nature?

The contradiction is unresolved by the Monists

There is thus a great contradiction which the Monists are unable to resolve satisfactorily. On the one hand, Vivekananda says that ‘*Nature is God*’, and he explains this saying that *God evolves into Nature*’ and, on the other hand, he says that *God is immutable* and cannot change and that this change of God into Nature is *not real* but is only apparent. So, he has not been able to resolve the contradiction in his two standpoints--one that the change is only apparent and illusory. We quote Vivekananda again on these points: Here, he says that ‘*Nature is God*’:

“The idea of the Advaitists is to generalise the whole universe into one... That it is One Being, manifesting itself in all these various forms. They admit that what the Samkhya calls Nature, exists, but say that Nature is God”.⁸ (*Italics added*)

It is clear from the above that Vivekananda has said that *Nature exists*. He has not said that Nature is *an illusion* or that it is merely *apparent*.. If that be so then all Sciences also are an illusion. Further, he has stated that one Being *is* manifesting itself in all these forms. So, this manifestation *is real* manifestation; it is not an illusion. Furthermore, he has taken the stand that ‘*Nature*

8. Complete Works of Vivekananda, Vol.5 page 10.

is God; even though he has not explained how. Obviously, there is contradiction in his various statements and the ideas he has stated are the ideas of *Naturalism* and not *Spirituality*.

The Monists' view that the world is apparent transformation of God is unsustainable

In this context, it must be borne in mind that Swami Vivekananda believed in the Monism, propounded by Adi Shankaracharya. Shankaracharya did not believe in *the real transformation*⁹ of God or Brahm into the form of the world. He believed in *the apparent transformation*¹⁰ of God or Brahm into the form of multiplicity of things or the world. Vivekananda has himself explained Shankaracharya's concept of 'apparent transformation' thus:

“According to the Advaitists' proper, the followers of Shankaracharya, the whole universe is *the apparent* evolution of God. God is *the material cause* of the universe, but not *really, only apparently*. The celebrated illustration used is that of the rope and the snake, where the rope appeared to be the snake, but was not really so. The rope did not really change into the snake. Even so, the whole universe, as it exists, is that *Being*. It is unchanged, and all the changes we see in it are only *apparent*. These changes are caused by Desha, Kala and Nimitta (space, time and causation) or, according to a higher psychological generalisation, Nama and Rupa (name and form). It is only by name and form that one thing is differentiated from another...Again, the Vedantists say it is not that there is something as phenomenon and something as noumenon. The rope is changed into the snake *apparently* only, and when the delusion ceases, the snake vanishes.¹¹

It is clear from the above that Shankaracharya does not believe that the world *exists* or the Nature *exists*. He thinks that it is only *our delusion* which gives us the feeling that it exists; otherwise it is *an illusion*. So, if this be accepted, then all Sciences or Laws also are illusory.

9. This is called *Parinama Vada*.

10. This is called *Vivarta Vada*.

11. The Complete Works of Swami Vivekananda, Vol.2, page 135-136.

Secondly, the analogy of the rope and the snake is logically defective in so far as both the rope and the snake do exist in the world. If one of these were, in truth, never existent, the phenomenon of illusion would never take place. If a snake does not exist and a person has, therefore, never seen it, he can never see the snake in the rope by mistake. Only when the snake has a real existence can a person commit the mistake of considering the rope as the snake. So, we would have to accept that the world is one reality and God or Brahm is another reality and then only we can talk of the illusion or the mistake of considering the world as God or God as the world.

Thirdly, the above-mentioned, illusion or delusion takes places if there is semi-darkness or the observer's eyesight is weak. If there is sufficient illumination and an observer's eye-sight is normal, there is hardly any chance of his mistaking the rope for the snake. Similarly, if the souls, or the beings, are perfect and knowledgeable as God is then the question of delusion or illusion should not and could not arise at all. How the perfectly illumined God became subject to delusion?—the Monists are not able to explain it satisfactorily. Not only that, they are not able to explain how God became Nature or the World.

Wrong parallel cited by Monists

The Monists are not able to explain how God or Brahm totally gave up its divinity, Knowledge or Consciousness? How the immutable became mutable? **Since the Monists cannot say that God is mutable, therefore, they say that the transformation is not real but is only apparent. But, in the case of the forces of Nature or Matter, the scientists say that the transformation is real or factual; it is not apparent or illusory. So, the analogy of the snake and the rope is not befitting and the attempt at unification of God, souls and Matter is only arbitrary. The parallel of the unified-field theory, cited as an analogy by the Monists is only a contrived one and, in fact, goes against them.**

There is no denying the fact that the things of the world are transitory or momentary. They are changing every moment. But this change is *factual* and real and their momentary existence also,

for that moment, *is real*. There are so many sub-atomic particles and even if we thought that one of these kinds, say the *Quarks*, are the ultimate or the original form of energy, we know that even that is momentary. But it does not mean that it has only *illusory* existence or that it does not exist. Moreover, even the *Quarks*, or whatever be the ultimate or original form of Matter or Nature, are **not** conscious. So, we cannot say that ‘*the Being*’ and ‘*the Matter*’ are the same. Certainly, we cannot.

Wrong Parallels cited by the Scientists

Not only have religionists given wrong parallels from the field of physics in support of their religious ideology, scientists like Fritjof Capra, the author of *The Tao of Physics*, Amavry de Reincourt, the author of *The Eye of Shiva*, Gary Zukav, the author of *The Dancing Wu Li Masters*, etc., have, it seems, given wrong parallels from religion or mythology to impress upon their readers this particular kind of kinship between Religion and Science. As was said in the first chapter of this book, their intention was to make Religion appear scientific to the Western people, especially to the scientists. One cannot deny that these scientists are religious-minded people and their motive seems to have been to draw people’s attention to religion. But, while these good points are there, we must not be obscurantists; we must say that some of the parallels they have given from religion do not infact support the scientific theories or that those parallels themselves are defective. As an example of this, we quote Fritjiof Capra from his book, *The Tao of Physics*.

“The dance of Shiva is the dancing universe; the ceaseless flow of energy going through an infinite variety of patterns that melt into one another”.¹² (*Italics added*)

He says further : “For the modern phycists, then Shiva’s dance is the dance of sub-atomic matter. As in Hindu Mythology, it is continual dance of creation and destruction involving the whole cosmos; The basis of all existence and of all natural phenomena... The bubble-chamber photographs of interacting particles, which

12.Fritjof Capra, *The Tao of Physics*, Fontina/Collins, page 258.

bear testimony to the continual rhythm of creation and destruction in the universe, are visual images of the dance of Shiva... The metaphor of the cosmic dance thus unified ancient mythology, religious art, and modern physics. It is indeed, as Coomaraswamy has said, poetry, but nonetheless, science.¹³ (*Italics added*)

While reading the above, it must be kept in mind that Fritjof Capra has stated, in big and bold letters, on a page that precedes the inner title of that book that his book is “*An Exploration of the Parallels between Modern Physics and Eastern Mysticism*”.

Now, the use of the metaphor, “The Dance of Shiva”, for ‘*The dance of sub-atomic particles*’, **in order to express the idea in a poetic simile is one thing but to compare the two on ideological basis is another. To say that the dance of particles is the dance of Shiva is not to unify ancient mythology with modern physics as has been claimed but it confuses the two. Physics and Philosophy are two serious subjects and, in order to create interest of different categories of readers, one may use certain metaphors from the other disciplines but it would be wrong to erase the line of distinction between two different entities or reality. Shiva is not the same as sub-atomic particles of Matter are. To pose some kind of identity between the two is to take the path of obscurantism or to identify two different realities--different not in level but in nature, in essence, in qualities, in functions, and in relationship with the rest of the cosmos.** One has the right and the freedom to explore the parallels between modern physics and eastern mysticism but if the parallels chosen are not correct then the result would be misunderstanding rather than understanding. With great regard to these eminent scientists for their profound knowledge of science and for their love of ancient eastern wisdom and, besides, for their noble motive to establish rapport between science and religion, one feels an urge to say humbly that it is better to do without parallels than use parallels or metaphors that have altogether different meaning.

13.Ibid, page 259.

Can Matter and Consciousness be converted into each other?

In Chapter-III of this book, it was explained that the Monists in religion or metaphysics have wrongly been giving certain examples to serve as parallels and, likewise, certain Monists in Physics also have wrongly been citing some examples from Metaphysics or Mysticism to serve as parallels. The inner inconsistency in the views of both was pointed out and it was shown that the Monists in Metaphysics and Physics have not been able to resolve the contradictions inherent in their views.

In the present chapter, an attempt will be made to show how certain propositions formulated, statements made, or arguments given by some scientists were either misconceived or misinterpreted or misused by some religious thinkers and *vice versa*.

Schroedinger's arguments or statements

In his book, '*What is life*', Schroedinger has made the following argument or statement to support Monism in religion:

“Consciousness is never experienced in the plural, only in the singular... How does the idea of plurality (so emphatically opposed by the Upanishad-writers arise at all?

Consciousness finds itself intimately connected with, and dependent on, the physical state of a limited region of matter—the body. Now, there is a great plurality of similar bodies. Hence, the pluralization of consciousness or minds seems a very suggestive hypothesis. Probably all simple, ingenuous people, as well as the great majority of western philosophers, have accepted it. The only possible alternative is simply to keep the immediate experience that consciousness is a singular of which the plural is unknown, that there is only one thing and that, what seems to be a plurality, is merely a series of different aspects of this one thing produced

by a deception (The Indian Mâyâ). The same illusion is produced in a gallery of mirrors, and in the same way Gaurishanker and Mt. Everest turned out to be the same peak, seen from different valleys”.¹

Elsewhere, Schrodinger has said the same thing in similar words:

“In the world, there is no kind of framework within which we find consciousness in the plural. This is simply something we construct because of the temporal plurality of the individuals. But it is a false construction. The only solution to this conflict, in so far as any is available to us at all, lies in the ancient wisdom of the Upanishads”.²

Now let us examine the above argument in support of Monism given by Schroedinger. In the first para, he says: “Consciousness is never experienced in the *plural*, only in the *singular*”. The error, committed here, is that Schroedinger is taking ‘Consciousness’ and ‘conscious entities as one and the same whereas the fact is that these are two different categories. To illustrate this point, an example may be given of ‘fragrance’ and flowers. ‘Fragrance’, in general sense, is *one or singular* but the fragrant flowers--roses, jasmine, lotus, etc. etc. are different and *many or plural*. Each one of these varieties has ‘fragrance’—in *singular*—but each one of the flowers is also different from others. **If, therefore, we keep in mind that ‘consciousness’ finds manifestation in the forms of thoughts, desires, emotions, memory, judgement, etc. and these differ from one to the other individual, then we wouldn’t say that souls are not plural. Schroedinger has, therefore, been wrong in identifying ‘souls’ with ‘consciousness’ and, there too, he has lost sight of the fact that even ‘consciousness’ as manifested in each individual case, is not the same and, therefore, not singular.** Even if, for certain reasons, consciousness were considered as one, singular, the souls who have this quality are in plural wherefore their conscious and sub-conscious mind and their nature and actions

1. Erwin Schroedinger: What is Life, Cambridge University Press, London, 1948.

2. Erwin Schroedinger: My View of the World, Cambridge University Press, London, Chapter 4.

and also their sufferings and joys are different in quality, quantity, degree, timing, etc.

Secondly, Schroedinger has said that plurality of souls has been “so emphatically opposed by the Upanishad-writers...” This also is untrue. Schrodinger seems to be unaware of the fact that many Upanishads have emphasised the plurality of souls and, infact there have been many philosophers and followers of Upanishads who read the message of plurality in the Upanishads. Arya Samaj school of thought is one such school.

Thirdly, Schroedinger suggests that, since “consciousness finds itself connected with, and dependent on the body” and there is a great plurality of similar bodies”, that is why people consider consciousness (souls) as plural. Here again Schrodinger forgets the point that the difference between one and the other body also is due to the different *Karmic* accounts and *Samskaras* of different souls and that also leads to the conclusion that bodies are plural because souls are plural.

Fourthly, Schroedinger asserts that “What seems to be a plurality, is merely a series of different aspects of this one thing produced by a deception (the Indian *Mâyâ*)—the same illusion is produced in a gallery of mirrors...” This example of the gallery of mirrors is, obviously, inappropriate. Bodies are not an illusion nor is the manifestation of consciousness an illusion. These are not like images in different mirrors but souls are self-aware real entities. Bodies, and the sufferings or happiness through the bodies, is the result of one’s actions. It would, therefore, be as wrong to call these illusions as it would be wrong to call the trees and the fruits that grow out of seeds as an illusion.

Schroedinger has further given the example of Gaurishankar, which appears differently from different valleys. This again is a wrong parallel. When we look at two different individuals, we do not always look from different angles. We may look at them from the same angle also often times but may still find them very different in their desires, judgement, emotions, memory, *samskâras*, etc. So, they are really different in respect of their consciousness and this difference is not illusory.

Strange logic

Difficulties arise when one has made up one's mind before going into the merits of a case. This is the difficulty we face when we interact with Schroedinger. Schroedinger seems to have almost made up his mind in regard to the singularity of souls, i.e., in regard to Monism. Having committed himself to Monism, he now gives even faulty arguments to support his belief. We give an example:

Commenting on the attempt to resolve the dualism of Mind and Matter, Schroedinger says: "It is odd that it has usually been done on material basis... But, this is no good. if we *decide to have only one sphere*, it has to be the *psychic one since that exists anyway*"³. Just ponder over his these words: "If we *decide to have only one sphere*, it has to be the *psychic one since that exists anyway*". Is this not putting the cart before the horse? Instead of first deciding that there is *only one sphere*, we have first to see whether there really is only one sphere or there are *two spheres* but Schroedinger's rhetoric suggests that *we first decide* that there is only one sphere and should, then, go into the merits of the case as to whether there is one sphere or there are two spheres! Strange logic!!

Schroedinger should have realised that the *psychic* is called '*psychic*' in relation to the '*material*'. If there did not exist any material or non-psychic entity, why should the former be called '*psychic*'? So, the naming of a category as '*psychic*' itself shows that it is in contrast to another category of things that are *non-psychic* or *material*. If the psychic exists, the somatic or the physical also exists. In other words, if the Soul or the Mind exists, the body also exists. The body is not an illusion. It is not a mirage. It is not an '*Indian Mâyâ*'. In the Upanishads, the body has been compared to the chariot and the soul to the charioteer. But, as was pointed out in chapter-III of this book, certain class of scientists and religionists were fond of Unified Theory or Monism and, so, they wanted to rush to give parallels, each from the area of the other's study, to support their idea of Material Monism (Unified Theory) or Spiritual Monism (*Advaitism*) even though these parallels did not fit.

3. Erwin Schoedinger: My View of the World, Cambridge Press University, London, 1964, PP.62, 63.

Consciousness and Matter cannot be converted one into the other

In the First chapter of this book, a mention was made of the Geoffrey Chew's Bootstrap Theory and Arthur Koestler's 'Holon' concept of matter. It was also mentioned that David Bohm has used the concept of *holon* in his theory of Matter. He called it— '*An implicate order*'. The scientists have felt that the inclusion of consciousness as a factor in determining external reality, as Geoffrey Chew has suggested, is an indispensable necessity. Similarly, scientists, such as Fritjof Capra, have asserted that consciousness is an essential feature of David Bohm's Holon Theory according to which the movement of one single particle is connected with the movement of the entire universe.⁴

Now, if all these assertions mean that it is necessary to understand that, besides Matter, Consciousness also exists as a primary reality, then it is alright. If it further means that, in order to understand the universe, it is essential to understand Consciousness also, then that also is alright. But, if by making the above statements one means to say that Consciousness and Matter are inter-convertible or that *souls* and *Matter* are one and the same entity, one changeable into the other even as the Monists say, then their these assertions are without any foundations. They are *mere* assumptions, unsupported by logic or science.

However, it has been noticed that many scientists or religionists jump with happiness just at the mention of the names of these scientists and say: "Look, even they have said that Consciousness is an essential aspect of the universe". It's true, they have said this and they are great scientists. But, what some of them have said is meant to draw attention to this that Consciousness as an entity or factor has so far been neglected in scientific study and that it is essential to take it into account if we do not want to block our way to further understanding of natural phenomena. If, on the other hand, someone says, that these statements also mean that Consciousness and Matter are different forms of one same reality, then one says this without having established any firm foundation. Therefore, it has been said in the very beginning of this chapter that many statements or arguments

4. Frotjoff Capra: Turning Point, Simon Scherster, 1962, P.96.

of scientists are being misinterpreted or misused or are without any logical or scientific validity.

Let us have another example. Max Planck has said: "Consciousness, I regard as fundamental. I regard Matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing postulates consciousness".⁵

Now, one can interpret this as if it means that 'Matter is derivative of Consciousness' and therefore, the two are, non-different, i.e. Matter and consciousness are two sides of the same coin. But, infact, the statement has been made not to convey this meaning. On the other hand, what it means to connote is that the existence of all things is known only because of the existence of consciousness. So, consciousness is a fundamental reality. In order to substantiate that this latter and not the former meaning is correct, the reader may refer to the fact that Max Planck had been interviewed by J.W.N. Sullivan and this was published on 25th January, 1931 in *The Observer*. The question put to Planck was, "Do you think that consciousness can be explained in terms of matter and its laws?" Max Planck answered: "No". So his statement quoted earlier is in this context. If this context is kept in mind, one will not misinterpret or misuse the statement to support Monism.

This is, however not to deny that there are some scientists who really mean that Matter and Soul are various forms of one same reality. But, as we have said it earlier also, their stand does not rest on firm ground and the parallels they give only mismatch, or these, infact, go against them, or are unrealistic. There are also inner contradictions in their statements.

In fact those who think that Matter and Souls or Consciousness evolve from one another, raise more questions than they solve. The only gain they seem to have is that they are able to reduce two realities into one. But, in turn, they have to face such like questions as: "How the inconscient matter attains consciousness? Or, "how a conscient particle loses its consciousness and becomes an inconscient material entity...?" "By saying that souls and Matter are one, they raise a plethora of problems which they fail to resolve. The simple truth is that Matter

5. See *Philosophical Aspects of Modern Science* by James Jeans, George Allen and Unwin, 1932, P.12.

and Souls are two different entities. Of course, one influences the other. But, they influence each other not because of one changing into the other.

In this context, it would be of interest to refer to what Wigner has said in this regard. As we have said earlier, in Chapter-I of this book, Heisenberg had said that the observation by the scientist alters the condition of the quantum particle. Heisenberg had founded '*The Uncertainty Principle*' or *The Principle of Indeterminacy*' which said that uncertainty remains about our findings when we observe the quantum particles. Heisenberg had finally stated that this uncertainty or indeterminacy would always remain and that it cannot be eliminated. Einstein, who did not believe that indeterminacy would always remain in Physics, reacted to this by saying that there must be a "*hidden variable*" somewhere which is responsible for this uncertainty. Later, in 1961, Nobel Physicist, Wigner, said that it is the consciousness of the observing scientists which is itself the hidden variable.⁶ Wigner asserted that it was impossible to give an accurate and certain description of quantum processes 'without explicit reference to consciousness'.⁷

Now, if by the above statement, Wigner meant that the consciousness of the observer is a material energy which affects the observed particles, he would be wrong because consciousness is not a form of material energy. Consciousness of the observing scientist most probably affects the quantum particles but in another way. Consciousness or thought (which is one form of manifestation of consciousness), itself is non-physical and non-material, but, it works through the brain. Its own field interacts with the electromagnetic field of the brain waves at a very subtle level, perhaps, at the level of photons. It is those brain's waves whose voltage can be measured and field can be determined that affect the quantum particles.

*In any case, let us be clear in our mind that Matter and Souls (or Consciousness) interact or influence each other but they are not convertible into each other. It would, therefore, be wrong to pick and choose certain statements of scientists and to quote these in support of Monism. It would also be wrong to use mis-matching parallels from either of these fields to support the other.

6. See *Mysticism and the New Physics* by Michael Talbot, Bantam Book, New York, 1971, P.33.

7. *Ibid*, P.34.