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Synthesis of Vedic and Scientific Cosmology

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Cosmology is defined as the science of the large-scale structure of the universe. The vaedika (vedic) cosmology is a philosophical theory regarding the cycle of creation from consciousness to matter and from matter to consciousness. It deals with the creation of the cosmic mind, the microvita and origin-evolution-future of matter, unit mind and life. There is an important input from the Tantra to the vaedika cosmology (Sarkar 1987). The scientific cosmology is the developing inter-disciplinary science regarding origin-evolution-future of matter and life. Astronomy, Physics, Mathematics, Chemistry and Biology provide important input to the scientific cosmology (Harrison 1981).

1. Vaedika Cosmology

Infinite supreme consciousness is the absolute (ultimate) reality (Aetareya Upanishada 1.1.1, Taettiriya Upanishada 2.1, Shvetashvatara Upanishada 1.2). This supreme entity is the composite of the cognitive principle and the operative principle (Shvetashvatara Upanishada 6.8, Ananda Sutrama 1.1). The operative principle is the characteristic of and subservient to the will of the cognitive principle, and continually influences and qualifies the cognitive principle (Shvetashvatara Upanishada 4.10, Ananda Sutram 1.2).

The operative principle consists of three binding principles-sentient, mutative and static. Generally all the three principles operate together in varying proportions. The operative principle functions according to a particular system known as nature. Thus nature is a set of rules or laws. It follows a general course but any deviation from the general course is also accepted as a law of nature (Sarkar 1982).

The supreme entity is infinite and its supreme state is the unqualified cognitive principle. Owing to the influence of the operative principle, some portion of it becomes qualified cognitive principle. The qualified cognitive principle is controller of the three binding principles of the operative principle (Brahadaranyaka Upanishada 2.2).

The supreme entity has created the universe as the thought projection of its cosmic mind under the qualifying influence of the operative principle. The universe is rotating around its own nucleus and the nucleus of the universe is also moving. In the cosmological order, every entity is moving around the cosmic nucleus and always the path is to some extent elliptical (Shvetashvatara Upanishada 1.6, Tripadvibhutinayana Upanishada 1.6.3, Ananda Sutrama 1.4). The movement goes on until the moving entity becomes one with the cosmic nucleus (Aetareya Upanishada 3.4, Shvetashvatara Upanishada 1.7-8, 3.7.4.14). The cosmic nucleus is linked to each entity individually and to all entities collectively (Ananda Sutrama 2.10).

The cosmic cycle of creation goes on eternally clockwise with two forces (i.e. centrifugal and centripetal) of the operative principle at work (Ananda Sutrama 1.3). The centrifugal force has spirituo- psychic and psycho-physical influence on the entities; the centripetal force has physico-psychic and psycho-spiritual influence on the entities (Anandamurti 1996, 1997). Thus the cosmic cycle of creation consists of centrifugal and centripetal phases.

In the centrifugal phase the cosmic mind, the microvita and matter are created. The qualified cognitive principle projected itself as the universe on being influenced by the operative principle in accordance with its will (Rgveda 10.129.4, Chhandogya Upanishada 6.2.3, Prashna Upanishada 6.3, Aetareya Upanishada 1.11.2.7, Taettiriya Upanishada 2.6, Ananda Sutrama 2.12). This presupposes the existence of (cosmic) mind for the performance of action (Chhandogya Upanishada 7.14-15, Ananda Sutrama 2.21, 3.2). In the first stage, influence of the sentient principle creates a pure subjective feeling of existence and the metamorphosed state is known as the cosmic intelligence. In the next stage, mutative principle influences some portion of the cosmic intelligence and consequently second subjective feeling of doership is developed and the state is known as the cosmic ego. Lastly the cosmic ego is influenced by the static principle which produces the objective feeling of result of action and the metamorphosed state is known as the cosmic mindstuff. The combination of cosmic intelligence, cosmic ego and cosmic mindstuff is known as cosmic mind (Chhandogya Upanishada 7.13-15). The cosmic mind consists of seven strata known as Satyaloka, Taptaroka, Janarloka, Maharloka, Svarloka, Bhuvarloka and Bhurloka i.e. physical universe (Rgveda 1.22.16-21, 10.90, 14-15, Brahadaranyaka Upanishada 1.5, Ananda Sutrama 3.2).

Cosmic mindstuff emanates microvita which are the entities coming within the realm of both physical and psychic expression, and physically smaller than subatomic particles and subtler than ectoplasm in the psychic realm. Microvita originate in the centrifugal phase and express their qualities from the beginning throughout the whole centripetal phase. They have many functions to perform as the direct link of the cosmic nucleus to its creation. (Yajinavalkya Smrti, Sarkar 1991).

With the gradual increased degree of crudifying influence of the static principle on the cosmic mindstuff, the physical universe with matter in the primordial vacuum state (space) is created. The matter evolves to other four states i.e. gaseous, plasma, liquid and solid (Tripadvibhutinayana Upanishada 1.6.3, Chhandogya Upanishada 6.2, Taettiriya Upanishada 2.1, Ananda Sutrama 1.8). After the creation of the solid state, two opposing forces develop as a result of the external pressure of the static principle. The collective name of these forces is energy (Ananda Sutrama 1.10). In the internal clash of these forces, there are two possibilities. If the resultant force happens to be internal, a nucleus is formed within the solid body thereby its structural solidarity is maintained. The energies active in the body are collectively called vital energy (Ananda Sutrama 1.11). If the resultant force happens to be external, more pressure exerted by the static principle creates a tremendous reaction resulting in structural dissociation known as material explosion.



(Ananda Sutrama 1.9) . Due to this process, matter of the physical structure gets dissociated into some or all of the five states and comes again in the centrifugal phase. This process of retracing back in the centrifugal phase is known as negative centrifugal phase (Rgveda 1.140, 5.2).

In the centripetal phase, unit minds originate, evolve and dissolve back into the supreme consciousness with the evolution of life. In this phase, due to external pressure of the static principle over the composite solid structure, two opposing forces are created within the structure. Because of clash and cohesion between these forces, some portion of the composite structure gets pulverized. When this pulverized portion becomes subtler than space (i.e. a part of the cosmic mindstuff) then unit mindstuff (ectoplasm) is created out of matter. With the dominating influence of the mutative principle, unit ego evolves out of the unit mindstuff. The dominating sentient principle creates unit intelligence out of the unit ego. The combination of these three is known as unit mind. (Ananda Sutrama 1.12-15)

When unit mind controls vital energy under congenial atmosphere in the composite structure then life (protoplasmic cell) gets expressed out of matter (Sarkar 1959). Every living entity has a mind consisting of five layers known as conscious mind, subconscious mind, supramental mind, subliminal mind and super conscious mind. (Ananda Sutrama 3.1)

In the initial stage of mental creation, living entities work according to the will of the cosmic ego and the momentum acquired from the cosmic mind as result of its applied will, acts within the unit mind and supplies requisite force for its movement in the centripetal phase. This leads to the evolution of complex metazoic structures such as plants, animals and finally human beings with their corresponding physical and mental evolution. (Rgveda 10.90.8-10, 10.129.5, Chhandogya Upanishada 6.3, Shvetashvatara Upanishada 5.5). Actions yield reactions in potential form known as reactive momenta which make subject to the cycle of birth and death. Human mind can choose any direction according to its desire; it may move even towards physicality. This degradation of mind is called as negative centripetal phase. By pursuit of suitable intuitional practices for mental evolution, human mind is expanded and dissolved into the cosmic mind and finally into the cognitive principle. Thus it completes a full round of the cosmic cycle of creation. (Brahadaranyaka Upanishada 4.4, 4.4.3-5 Shvetashvatara Upanishada 5.7, 5.11-12, 6.3, 1.8.10, 3.7, 4.14, Aitareya Upanishada 3.4, Ananda Sutrama 1.21-22).

Knowledge is subjectivisation of external objectivity. In other words, it is a particular psychic projection coming within the three factors of relativity i. e. space, time and person. Any action which originates in the mind, finds its external manifestations with the help of organs. The organs receive the inference of wave emanated by the object. The unit ego has the capacity to perform actions and the mindstuff has the capacity to take the form of whatever the unit ego wants or does. When the unit ego wants to do something through the medium of inferences, the unit mindstuff, on the impact of the inferences, takes the form of the object emanating the inferences and the unit ego perceives it (Ananda Sutrama 2.16-19, 2.22-24). There are positive and

negative tendencies in the mind. Generally when positive tendencies are predominant in the mind, we can see, touch, smell, hear or taste something. If the mind is occupied with negative tendencies, we can not perceive anything. That is why the so-called physical reality which emanates pulsative vibrations is distorted by ambiguity. The entity beyond the pulsative movement is the absolute reality which flows in a straight line and pervades everything in the universe. The knowledge of the absolute reality is the real (supreme or ultimate) knowledge. (Sarkar 1988, Anandamurti 1996B).

2. Scientific Cosmology

It deals with physical universe which includes everything physical and excludes all that is non-physical. Theories and experiments are complimentary to the progress in this science which advances with the help of models propounded by different scientists. The cosmological models are based on current knowledge of different disciplines involved and have some sort of speculative input. (Harrison 1981B)

Nowadays quasi steady state cosmology and big bang cosmology are the main rival theories. According to quasi steady state cosmology, the physical universe has no beginning and no end. Matter in the physical universe is created not all at once in a single explosion but in mini creation events around dense massive objects distributed throughout the physical universe at all times. The physical universe oscillates on time scales of 40-50 billion years as it expands on a still larger time scale of thousand billion years. Matter is created out of an energy reservoir called as C-field (C stands for creation). The creation induces local expansion of space which blows the created matter outwards with tremendous energy. Thus there is effectively a mini explosion without a singularity. There are several such mini creation events or mini bangs going off all over the physical universe. The combined effect of these events is to generate a large-scale expansion of the physical universe. (Arp et al 1990, 1992, Hoyle et al 1993).

According to big bang cosmology, the physical universe originated through an explosion (big bang) from a point of infinite density, temperature and pressure, and the matter in the physical universe was created all at once in the form of space-time. The physical universe is expanding from the impetus of this original explosion. (Gamow 1948, Silk 1980, Davies 1985). The big bang created an immense force field from which distilled the four fundamental forces (weak nuclear force, strong force, electro-magnetic force, gravitational force) reckoned to be operational in the physical universe. The early physical universe was very complex with a series of concurrent interactive events taking place. The mass of the physical universe was very much confined and the four fundamental forces may have been united in a massive force-field. (Davies 1985, Harrison 1981C).

With the help of contemporary knowledge of various disciplines, a glimpse of evolution of physical universe can be speculated. The secrets foretelling the design of physical universe are supposed to lie in the realm of quantum cosmology (Lemaitre 1951, De Witt 1983, Halliwell 1991). In view of contemporary speculation, the events in the early physical universe can be described in various eras (Gamow 1948, Harrison 1981C).



There exists well defined varieties of material structures (planets, stars, galaxies, clusters etc.) in the physical universe. In the formation of the structures, chaos (Jones & Peebles 1972, Parker 1996) and dark matter (Begelman & Rees 1995) play an important role.

It has been surmised that increasing entropy is taking the physical universe towards a final end i.e. another singularity known as big crunch. In a particular case, a singularity can be regarded as an edge of space and / or time only instead of an edge to the physical universe. (Wheeler 1968, Penrose 1972, Hawking 1977, Thorne 1994).

According to the quantum theory, the observer is an important ingredient in any act of observation and in a sense, creates the observed object by the very act of observation (Born 1956, Wigner 1962, Herbert 1987). Without the observer there is no awareness of the physical universe (Wolf 1981). Non-local communication between objects has been proved in quantum experiments (Aspect et al 1982). This process is unmediated, unmitigated and immediate (Herbert 1987). This communication occurs through a quantum mechanism known as phase entanglement (Schrodinger 1935). The entire physical universe is one vast and interconnected entity (Gribbin 1984).

Life as such cannot be explained by or reduced to laws of physics. The manifest difference between animate and inanimate systems lies in the attainment of particular threshold of complexity where new self-organizing principle can spontaneously come into play. According to panspermia theory, life in a primitive form is propagated by celestial messengers e.g. comets, asteroids, meteors etc. from one celestial system to another thriving wherever it gets congenial environment (Arrhenius 1908). Evidence for cometary panspermia has grown steadily over the past few years (Hoyle and Wickramasinghe 2000, et al 2001, Harris et al 2002). There is evidence of the survival of living organisms under extreme conditions of temperature and pressure (Basu 2000). Bio-chemical theory of origin of life maintains that self-replicating molecular system formed naturally with an abundance of prebiotic organic chemicals such as amino acids and chemical bases necessary for the manifestation of proteins, D.N.A., R.N.A. on the early Earth, and a variety of suitable conditions lasting over long time. Once such systems are created, these evolve into cells and more complex organisms by means of natural selection. (Watson and Crick 1953, Crick et al 1961, Watson 1968, Orgel 1973, Oro et al 1974). However origin and evolution of protoplasmic cell is yet unknown. According to the theory of natural selection, nature selects species in accordance with its fitness for the environment in which it exists. It allows fit species to reproduce in greater number and transmit their superior qualities to the next generation. The cumulative effects of these qualities over several generations results in the origin of new species. Transformations in the species are explained by the Neo-Darwinism which incorporates random mutations, genetic variations, genetic drift and genetic flow along with natural selection. Regarding evolution of species, viruses play an important role. Friendly viruses help the development of species that are conducive to the evolutionary march and inimical viruses destroy individuals which fall out of this march. (Hoyle 1984, Davis

1988, Dyson 1988). Existence of extra-terrestrial life is quite possible from a cosmological viewpoint (Shklovski and Sagan 1966, Carter 1974).

3. Implications of the Synthesis

An intensive synthesis of vedika and scientific cosmology is suggestive of the following –

1. Infinite supreme consciousness is the ultimate reality which is composite of the cognitive principle and operative principle. It expresses itself as the cosmic mind, microvita, matter, individual minds and various forms of life. Every entity of the universe is composed of consciousness.

2. The cosmic cycle of creation consists of centrifugal and centripetal phases. In both the phases, the cosmic nucleus maintains association with creation by the media of the microvita. In the first phase the cosmic mind, the microvita and matter are created from the supreme consciousness. In the second phase, individual minds and various forms of life are created, and individual minds return to the supreme consciousness after further evolutionary development. The cosmic cycle of creation goes on eternally. From the cosmic mind, matter evolves in one region of the physical universe simultaneously with the evolution of individual minds and life in other regions so that the physical universe as a whole never ceases to exist.

3. The physical universe originated from a point and exists in some portion of the cosmic mindstuff. The big bang indicating eruption of matter in vacuum state and thus the physical universe from its source is a naked singularity. God (cosmic nucleus)'s will to create the universe worked as a cause of momentum which in turn caused the big bang and further creation to occur. Though the physical universe is very vast and still expanding due to expansion of space, it is finite.

After the emanation of the microvita from the cosmic mindstuff, matter originates in vacuum state and evolves to gaseous, plasma, liquid and solid states. The microvita give structures and shapes to the evolved states of matter, and thus facilitate the formation of various physical structures in different states ranging from microscopic elementary particles to macroscopic astronomical systems. At each level of the evolution of the physical universe, structures are shaped and maintained by the cosmic vital energy controlled by microvita at the nuclei of various structures. The cosmic vital energy under the direction of the cosmic mind, through the microvita, guides the evolution to stars which in supernovae get the composite structure dissociated and matter recedes back to other states and comes again in centrifugal phase. Finally the stars are formed with planets where the chemical preconditions for protoplasmic life could develop.

Matter in astronomical structures can evolve up to black hole stage. Inside the black hole, space-time will display a foam-like structure full of tunnels or bridges. Thus the concept of continuous space-time is threatened. Singularity at the centre of black hole tears open the space-time and enters the realm of its source i.e. the cosmic mindstuff. However the remaining space-time as well as astronomical structures exist in the physical universe which survives be-



cause further creation of matter from the cosmic mindstuff goes on.

4. Every entity (animate or inanimate) possesses mind whether it is expressed or not. Life is a coordination existing between the individual mind and its physical body that allows the mind to continue its evolutionary journey while maintaining adjustment with physical universe. Vital energy maintains that adjustment with the guidance of microvita. Life exists as long as a particular parallelism between the waves of mind and body is maintained. When the psycho-physical parallelism between them is lost due to a serious defect in the mind or body and the mind separates from the body, death occurs. If the evolutionary journey of the mind is not complete, it finds another suitable physical structure with which it develops a new psycho-physical parallelism known as birth and the evolution of mind continues in association with a new physical body.

Living entities have their different physical structures according to their different psychic propensities to maintain psycho-physical parallelism. Physical structure depends on environmental conditions including fundamental physical constants and particle mass too.

Microvita is the fundamental self-organizing entity in the universe and virus is the crudest category of microvita. Microvita organise energy into vital energy. Microvita are attracted to the chemical building blocks of life when proper physical and chemical environment exist to attract them, and further expression of their potentiality requires the addition of new vitality brought by microvita. Thus microvita bring the information necessary for recognizing and selecting particular amino acids or nucleotides into position so that they join a growing chain of chemical building blocks in the proper order to make a biologically active protein or nucleic acid. In this way the DNA, RNA and proteins necessary to form even the simplest replicating structure that can evolve to life are created stagewise by microvita. Having formed the DNA, RNA and protein components, other microvita by the further action of vital energy, organize them together so that a simple self-replicating protoplasmic structure (cell) is created.

Some microvita could add genetic information to living structures where there is already genetic information in the form of DNA. This could create a new species. The difference between one species and other closely related species depends only on the difference in microvita within the DNA. Microvita attracted to an organism by the action of its self-controlling faculties could create the RNA needed for a species transformation. These new microvita would remain in the newly created RNA. The RNA would be packaged in the microvital coat. The microvital packaging ensures that the RNA will get the widest possible distribution to target cells and species members because of the reproductive capability of the microvita in a cell and the ability of the microvita to spread efficiently among species members. A particular microvita could carry RNA which by reverse transcription would modify the DNA of the target cells of species members. When this modified DNA starts functioning in all the affected target cells, a member of the first species would metamorphose its physical structure in a way needed to alter its longings in the desired way. If the

microvital DNA can be inserted into reproductive cells so that the changes become hereditary then a new species or a genetic variety of the old species would have been created.

With evolution of mind, species get more complex physical bodies to keep pace with psychic propensities. In other words biological transformation is associated with psychic metamorphosis and vice versa. Thus evolution is bio-psychic. The cycle of birth and death continues until the mind reaches its final evolutionary goal i.e. the supreme consciousness.

5. The physical universe is a macroscopic quantum system and observer of this system is the cosmic nucleus who is not outside of the physical universe but is rather its source and witnesses its every entity and event mentally.

Mind is the basic instrument which perceives space and time with help of sensory organs. The ultimate nature of the universe can be known through the systematic observation of the human mind which works as an instrument to probe and propound theories about it. Its power of resolution can be increased by means of intuitional (psycho-spiritual) practices. Role of mind will be important in formulation of quantum theory of gravity to describe very early physical universe.

6. In the physical universe, matter in manifest condition is governed by the physical laws but it, in unmanifest condition doesn't obey any physical law. There are points (of singularity) where known physical laws breakdown. In unmanifest condition matter is not physical and cannot be perceived by the physical sensory organs or any instrument. Therefore it cannot be described in terms of physical laws. To describe the universe in a better way, non-physical laws are needed to be figured out.

7. Microvita is a new holistic paradigm. Microvita are link between the cosmic mind and the physical universe. It is necessary to understand deeply the microvita and their relationships to matter, mind and life in view of the cosmic cycle of creation. There are several areas which would be affected by the microvita and scientific research must be started soon.

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