CHAPTER V

CONCLUSION

A study of the interface between Vedic thoughts and Modern Physics with reference to Creation of the Universe will resume to its findings in this chapter and provide for the conclusion of the proposed research work. The hypothesis of the proposal of this research work that the discoveries on the creation of the Universe advocated by two separate schools of thought are parallel to each other and has attained sustainable and well established justification.

The interrelation between the Vedic exegesis and modern trends in Physics on the creation of the Universe has been taken into account and found that the Vedic expositions and scientific findings are close to each other and on the same line. So both Philosophy and Science are the result of this intellectual process. The question of the creation of the Universe has been experimented in laboratories, observatories; but one finding has been refuted by another finding and perhaps goal is yet to be achieved.
The deliberation of Vedic seers on the creation of the Universe as reflected in the texts of the Rgveda, the Atharva Veda, the Brāhmaṇas, the Upaniṣads and the contributions of Vaiṣeṣika Philosophy on elements (padārtha) have been thoroughly studied and taken into consideration.

The Vedic Seers present several cosmogonies in explaining the creation of the Universe. There are four essential types of cosmogonies that seem to have fascinated the Vedic poets and theologians.

The first cosmogony relates to the celebrated hymn of the Rgveda X.121, the god imagined as Hiranyagarbha (the Golden Embryo) hovers over the Waters; Hiranyabarbha enters the waters and fecundates them. This gave birth to Agni (the god of fire).

The second cosmogony can be found in a hymn, the Puruṣa sūkta (RV.X.90). Puruṣa is represented at once as cosmic totality. Creation is the result of a cosmic sacrifice. The gods sacrifice Puruṣa. The hymn clearly states that Puruṣa precedes and surpasses the creation though the cosmos, life, and men proceed from his own body.
The third cosmogony, being the most famous hymn of the Rgveda, Nāsadīya hymn (RV.X.129), is presented as metaphysics. The question is asked, how Being could have come out of non-Being, since, in the beginning, "neither non-Being existed nor Being."

Finally there is the creation by a divine being, the Universal Artisan, Viśvakarman (RV.X.81 and X.82) forms the world like a craftsman. This mythical motif is connected by the Vedic poets with the theme of the creation-sacrifice.

Besides the above Vedic cosmogonies the Upaniṣads and Brāhmaṇas have also taken into consideration.

Chhāndogya Upaniṣad (VI.2.1-3) says, 'Before creation, the universe was existent and this entire Universe comes out of Brahman and will return to Brahman, verily, all is Brahman.' The Chhāndogya Upaniṣad says that Prakṛti is the source of the universe and from this uncreated Prakṛti, Agni was produced and from Agni, Apaḥ i.e. water and from water, solids i.e. earth were produced. It (Prakṛti) was non existent as Universe in its gross physical and visible form but existed in essence. It was not 'nothing'. It is said that 'nothing' or naught is true reality. In Sanskrit, ether, the invisible substance, space and point is also called 'Shunya' but things invisible exist in it. Point makes lines, circles,
squares, earth and mountains and other objects of shape. These are formed out of a Point or Nebulā. Thus Shunya does not mean nothing but a point or Nebula.

The Taittirīya Upaniṣad (TU.III.2.1; II.1.3) says that Ātmanaḥ Ākāśhaḥ Sambhūtaḥ i.e ether is the cause of Universe and Universe came out of ether. In the beginning all this was unmanifested. From that emerged the manifested. The Brahman created itself by itself. Therefore it is called the self creator (TU.II.7.1).

The Brhadāraṇyaka Upaniṣad says that in the beginning there was ‘nothing’. The universe was enveloped by death alone. He produced mind. He moved about worshipping himself. As he was worshipping himself, water was produced (BU.I.2.1). What was there as froth of water hardened and it became earth, the cosmic egg, embryonic state of the Universe (BU.I.2.2). Brhadāraṇyaka Upaniṣad (BU.I.4.1) says, “It was all spirit.”

Śatapatha Brāhmaṇ (ŚB.XI.1) says, “It was all God and by His own will, the Great God transferred Himself into multiform universe.” It has been described, “Verily this whole Universe is God; all other things are nothing but God.” It is evident that every definition proceeds from effect to cause. God is the efficient cause, the cause of all causes and also a material cause. God is the primary
efficient cause. He governs all and creates the Universe, sustains it and dissolves it. It also states that in the beginning there was only the Creator. From him the water was formed; from the heated water the foam was formed. The waters are the foundations of this entire universe (ŚB.VI.8.2.4; XIV.3.2.13).

The Aitareya Upaniṣad (AU.I.1.1; I.1.2) states in the beginning there was but the absolute self alone. There was nothing whatsoever. He created these worlds. The supreme Ātman has manifested itself as the objective Universe from the one side and subjective individuals on the other side, in which process, factors which are effects of God's creation become causes of individual's perception by a reversal of the process.

Praśna Upaniṣad (PU.III.8; VI.4) states that God is the Supreme Prajāpati or Creator, in which are blended both the matter and energy of the Universe.

Mundaka Upaniṣad states that Universe is created from Brahma as spider produces webs and takes it back within its body (MU.I.1.7) and from him (Brahman) originate vital force, mind, all senses, space, air, water and water that support everything (MU.II.1.3).
There are some major gods in Ṛgveda such as Indra, Agni, Varuṇa, Soma and Bṛhaspati and goddess Vāc which are also assigned as creator of the Universe in scattered references. They are also credited with cosmocratic deeds.

In Atharva Veda there is a mantra (AV.17.1.19) which says, “There is sat in asat, there is sat in bhūta, bhūta is reborn in bhaviṣya, and bhaviṣya is in bhūta. In kāla there are gati, nivṛtti and sthiti.”

AV 17.1.19

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\begin{align*}
\text{asati sat pratiṣṭhitāṁ satī bhūtaṁ pratiṣṭhitāṁ} \\
\text{bhūtaṁ ha bhavyaṁ āhītaṁ bhavyaṁ bhūte pratiṣṭhitāṁ.}
\end{align*}
\]

This is the sutra or formula, which explains the relation between time, space and sthiti. This proves the truth that in non-existence there is existence. Modern science also supports the integration of ether, time and space. Once this is grasped, one can be sure that a thing can come from nothing. Contemporary scientists know that the Universe is controlled by rules. Whether these rules are eternal (sanātana) or not can be understood on the basis of what was the ‘sthiti’ before ‘Brahmāṇḍa’ and what it will be in future. Some scientists think that the
planets are moving away from one another. But there was a time when they were quite closer. And it means that when the planets began to move away from one another, the time-space relation also started. This was the 'Utpatti' of 'Brahmāṇḍa'.

There are many theories regarding creation of the Universe in modern science. The 20th century cosmology has witnessed various scientific theories on the creation of the Universe viz. Big bang theory, Steady state theory, Oscillating Universe theory, Quantum theory of the Universe, String theory etc.

The two assertions of materialists that the Universe exists in infinite time and everything in this Universe is merely the result of chance and not the product of any intentional design, plan or vision have been utterly refuted by the discoveries of 20th century Scientists.

The big bang theory does not explain what existed before the big bang. String theory explains the origin of the Big Bang Universe. According to this theory, it needs additional 6 dimensions beyond the four dimensional existence of the relativistic universe to define the quantum primordial singularity. In the beginning, the universe was completely empty. However, this 10 dimensional Universe was not stable. The original 10
dimensional space-time finally "cracked" into two pieces, a four and a six dimensional universe. The universe made the "quantum leap" to another universe in which six of the 10 dimensions curled up into a tiny ball, allowing the remaining four dimensional Universe to inflate at enormous rates. The four dimensional universe expanded rapidly, eventually creating the Big Bang, while the six dimensional universe wrapped itself into a ball and collapsed down to infinitesimal size. This explains the origin of the Big Bang.

The description of the hymns of Nāsadiya Sūkta (RV.X.129) runs almost parallel with the Big bang description of the universe step by step. Modern science is yet to delve in the state of existence before big bang. However the first two stanzas of the hymn describe the state of primordial existence. Here the Vedic seer has gone a step ahead of the modern science. Vedic seer states that the primordial existence had measured less than the Plank length of $10^{-33}$ cm and before an event of less than plank time of $10^{-43}$sec.

The perception of the ultimate truth leading to the unique phenomenon of Creation of Universe could not be expressed without giving analogies. The Vedic seer gave the analogy of unfathomable depths of water – gahanam
gabhīraṁ while expressing the primordial state of matter. In order to clarify that there existed no time, the statement made is – na ratryāḥ ahna āśīt i.e. there existed neither night nor day. The primordial turbulence is described as salilaṃ. The hymns to Hiraṇyagarbha (RV.X.121.7,8), Viśvākarma (RV.X.82.5,6), Atharva Veda (AV.XIII.6) and Śatapatha Brāhmaṇa (ŚB.XIV.3.2.13) we find it said that the waters of the sea contained the first or primordial Universal germ.

If we look at the creation of the universe in the light of Vedic philosophy as in the Nāsadiya hymn, there is the shadow of the big bang theory – “There was no sat and no asat, no ākāśha, only something gahana gabhīra.” What was it? Whether it was water or something like that or not, there was no death, no amṛta, no day nor night, only apraketasalila. Then for apraketasalila, tadeka (supreme power) has controlled his mental energy and given birth to Kāma.

Atharva Veda (AV.19.5.21) states: ‘May be this was the sphota. May be this was the biggest bang’. The second theory i.e. Steady State theory holds that time and space is always the same thing. In Atharva Veda, Ucchista Sūkta, there is this imagination of ‘pūrṇasṛṣṭi from pūrṇa brahma’. This pūrṇasṛṣṭi control the earth like axel of the wheel (AV. 11.4.4).
The third theory i.e. Oscillating Universe theory that the Universe grows from a point and starts decreasing: that is, Prasārana and Sankochana. In Mundaka Upaniṣad there is this imagination that spider produces webs and takes it back within its body (MU.I.1.7).

Vedic seers believe that there was someone who had created the universe from Vacuum (shunya) and in Upaniṣad it is stated that Vacuum does not mean nothingness. They said that the word creation must not be used in the sense of making ‘something out of nothing’ but rather as making ‘something shapely out of shapeless’.

Big bang theory states that the whole Universe was confined to a single point mass that had zero volume and the whole Universe was created from this zero volume Primeval atom i.e. the point mass which is very much similar to the notion of the ‘One’ (Puruṣa/Tadeka) of Veda. It must be taken into for granted that all qualities, which are to be seen in the created product, must be found, at least in a subtle form. Every cause has an effect and vice-versa. Though the Vedic seers have said that the effect sometimes is blended with the cause or it is lost in the cause but as we all know that there can not exist
without the material. The Chhāndogya Upaniṣad and Gītā support this observation.

The very hymn of creation of universe i.e. Nāsadiya Śūkta describes the vision of the Universe as it existed before its creation. In this poem an attempt is made by the poet to describe the nature of the Ultimate Reality, and it is beautifully explained by Yogi Kṛṣṇa Prem. It says that in the beginning, the ‘One’ without a second polarized itself or expanded itself to become ‘Many’. The manifestation of a Cosmos depends on the polarization of the One, the Parabrahman, into the transcendental Subject, the shānta ātman, and the transcendental Object, the mula prakṛti. So, far beyond all thought or imagination is that ‘One’, Parabrahman, the causeless Cause or the First Cause of the Western thought. Since it cannot be known as an object of knowledge, therefore, “It” is only to be conceived as Darkness. Since it is unknown, therefore, it is called darkness and in that darkness was buried the potentiality of all existence and by the power of ‘tapas’, literally, heat or self-limitation arose the Ātman or the Unitary Consciousness.

The modern day Astronomers call this “darkness” as the dark matter and dark energy of the universe, and of which they have very little knowledge. As recently as
February 2003, scientists using NASA’s Wilkinson Microwave Anisotropy Probe (WMAP), during a sweeping 12-month observation of the entire sky, have captured the new cosmic portrait, capturing the afterglow of the big bang, called cosmic microwave background. The Wilkinson Microwave Anisotropy Probe team found that the universe is 13.7 billion years old and the contents of the universe include 4 percent atoms or the ordinary visible matter, 23 percent of an unknown dark matter and 73 percent of the mysterious dark energy. The measurements even shed light on the nature of the dark energy, which acts as a sort of an anti-gravity. This is what the Ṛgveda (RV.X.129) means when it says:

“The darkness is hidden in Darkness.”

The actual first impulse to creation, according to the Vedic texts, is forever hidden in that Darkness, and that is why even Buddha, the Enlightened One, when queried on this subject, remained silent and refused to go beyond desire. According to the Ṛgveda, the gods who were in the levels of manifested consciousness came into being later. In other words, consciousness cannot penetrate to its own root. The first impulse to creation, therefore, can only be called the Līlā the ‘divine spectacle’ or ‘divine sport’ of the Supreme. The ultimate root is,
however, even beyond ātman. Nor even for ātman can Brahman be an object of knowledge, for to know ‘It’ is to merge in ‘It’ and in that merging the separate “knower” comes to an end.

In the field of particle physics, it has been established by many scientific experiments that the Universe had a beginning in the remote past and it will have an eventual collapse in some remote future. In this context, the Second Law of Thermodynamics asserts that the processes occur in a certain direction but not in the reverse direction. The science of thermodynamics deals with “equilibrium states” and it declares that a system, which is in equilibrium, experiences no changes when it is isolated from its surroundings. Matter moves increasingly toward a state of disorganization or of increasing randomness, and Consciousness or Life moves towards increasingly complex forms of purposeful organization or decreasing randomness. These are known as what the Bhagavad-Gītā calls as the two cosmic tides of ‘pravṛtti’ and ‘nivṛtти’, symbolically known as the ‘path of night’ and the ‘path of light’ or the ‘path of action’ and the ‘path of reflection’ respectively. And, according to the Second Law of Thermodynamics, the Universe is slowly moving towards a state known as "heat death", that is, a
state of existence when all the stars and galaxies will have dissipated their energy in the form of heat and radiation and the whole Universe will attain one uniform temperature. This concept of Heat Death is very similar to the Vedic concept of ‘pralaya’ or dissolution of the Universe. In this state, the existence of the universe can be described as follows:

“All space will be at the same temperature. No energy can be used because all of it will be uniformly distributed throughout the cosmos. There will be no light, no life, no warmth - nothing but perpetual and irrevocable stagnation. Time itself will come to an end. For entropy is a measure of randomness. When all system and order in the universe have vanished, when randomness is at its maximum, and entropy cannot be increased, where there no longer is any sequence of cause and effect- in short, when the universe has run down, there will be no direction to time, there will be no time. And there is no way of avoiding this destiny.”

On further analysis, one might ask how could the Vedic sages know the nature of the Universe at the time of its origin, when they, themselves did not exist? It will not be out of place here to mention the experiences of Carl Sagan, the famous Astronomer of Cornell University
posed the same question during one of the episodes of the TV series "Cosmos" which was broadcast in the US during late Seventy's. He once took his show to South India and showed how the Vedic seers accurately calculated the age of the Universe without any radio-astronomy available to them. They discovered the cosmological truth not by scientific observations but through intuitive insight gained through the process of yoga, as explained in Yoga Sūtra of Patañjali, that is, 1) through the process of pratyāhāra, 2) through dhyāna-yoga and finally 3) through samādhi. Now, let us ask ourselves a question: what is Samādhi? In the yoga-sūtra, it is said that Samādhi is the process of withdrawing the senses into mind, the mind into intellect, and the intellect into Sat or Ātman, the pure consciousness, the substratum of the Universe. In other words, Samādhi is a state of reversal of creation, a return to the primordial or the "un-created" state. In this state the difference between 'this' and 'that' disappears and what remains is only the Absolute, the One without a second. The best description of Samādhi is given us in the Bṛhadāranyaka Upaniṣad, verse VI.5.15, and it says that in the state of Samādhi, there is no duality.
It is difficult for anyone to write about cosmos without invoking the name of a famous immigrant, the late Dr. S. Chandrashekhar of the University of Chicago who received Nobel Prize in 1983 for his contribution to the knowledge of the collapse and the death of stars. He has shown that the stars collapse as a result of their gravitational force and the collapse in-turn, triggers thermonuclear explosion inside them. In that process hydrogen is converted into helium, and in case of heavy stars, even helium is converted into carbon and oxygen and eventually to iron, an element, which releases no energy and the nuclear reaction stops there. Thus, this process of creation, from the Avyākta, the undifferentiated, or the unmanifest, the nirguṇa Brahman and of destruction, or of sṛṣṭi and pralaya, continues forever and without end.

To honour Dr. Chandrashekhar, NASA has named its new observatory as Chandra X-ray observatory, which is simply known as Chandra which was put in the elliptical earth orbit, varying in distance from 9,200 miles to 82,000 miles, in July 1999 to observe X-rays from high-energy regions of the universe. It can also be said about Saṃādhi that in that state the consciousness goes beyond the dominion of space and time. To express it in the
manner of the physicists, it is like saying that in this state a person can go beyond the event horizon of an astronomical black hole and return from it at will. We are also told that in his quest for perfection, Śwāmi Rāmakṛṣṇa Paramahaṁsa, the 19th century yogi and the monk of Dakshineshvara, used to go in and out of Samādhi at his own free will.

Coming back to the theme of the poem RV. X.129, the question arises: “How do we know this knower?” This question is asked, over and over, in almost all the scriptures. “Who knows this truth? He only knows or perhaps He knows not?” This is how the Rgveda ends its poem. This shows that the seer of the Rgveda even questions the highest knower or his knowledge. Thus the Vedic system of thought is not based on some blind faith but on scientific basis developed and known by what we call the dhyāna yoga or the knowledge developed through meditation or by the intuitive understanding of the seer. When that knowledge dawns, then the Great Being shines forth through every pore of our being as the blissful or the immortal. Thus, in the Rgveda, began the scientific inquiry not only for the outer worlds of prakṛti but also for the inner worlds of ātman, the unchanging substratum of the Universe, or the Universal constant as
we may call It. This Universal Constant proved too illusive even for Einstein when he declared: ‘God does not throw dice’ but after a lifetime of groping, he finally gave up trying to find the Universal constant for his “too- too static” a view of the Universe of names and forms, which the Vedic mystics had already figured out thousands of years before him, that this cosmos was nothing but a passing phantom show which veils from sight the true and the unchanging Eternal Reality that is forever unmanifest. However, the Bhagavad-Gītā gives us the nature of this Universal Constant in verse 2:24 when it says:

*The self can never be cleft,*

*Nor can one dry or make him wet,*

*He is never combustible,*

*Present everywhere but stable*

*Is eternal and changes never,*

*Remains always the same forever*

So the discoveries of 19th and 20th century scientists and the deliberations of Vedic seers of thousands of years back advocated by the two schools of thoughts on the creation of the universe run parallel and very close to each other.