CHAPTER II

ORIGIN AND EVOLUTION
OF THE UNIVERSE
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There are several scientific theories which describe the initial state, origin and evolution of the universe. Two of these theories have drawn greater attention of the present day scholars. These theories are:

i) Relativistic theories and
ii) Steady-State theory

The concept of the universe based on these theories is discussed below:

Relativistic Theories

Early state of the Universe

The basis of this class of theories is the General Theory of Relativity proposed by Albert Einstein in 1917. This is the best theory of gravitation in the field of cosmology. This theory shows that the physical universe which we observe to-day, at a certain initial instant was compressed into an infinitely small volume of space and that at a particular instant, the entire universe suddenly took on a finite size. The galaxies which are rushing apart at present were closer together at the initial instant. In fact, galaxies, the stars, the atoms or atom-nuclea had no separate existence. All the matter of the universe was concentrated into a 'gigantic nucleus'.
or 'primeval atom' of hyperdense material. The matter was subjective to enormous temperatures and pressures. Such an agglomeration of elementary atomic particles could only be extremely unstable. The scholars call this phase of the universe as 'the pre-stellar phase' or 'the early universe'.

Such pre-stellar phase of the universe was first postulated by Abbe G.Lemaître as early as in 1932 whose hypothesis of the 'primeval atom' constituted the most far reaching 'cosmogonic theory' and the most comprehensive cosmology.

2.1.2 Origin and Evolution of the Universe.

The origin of the universe is completely mysterious. It originated from the 'primeval atom'. The primeval atom was like a fire ball. Actually the cosmic fire ball was the whole universe. Measured by astronomical concepts the 'bomb of explosion' must have been a cloud of about the size of our solar system.

According to scientists between five to twenty thousand million Years ago, the primeval atom exploded instantaneously with prodigious violence.

1. Discovery of the Universe: p.229
2. ibid: p.227
3. ibid: p.228
4. The Human Mystery: p.31
5. A synthesis of Evolutionary Theory: p.168-169
and the early universe started expanding rapidly. After the first explosion, the universe was filled with spiral nebulae different from one another in size and shape and having a somewhat irregular distribution in space.

According to A.G. Lemaitre owing to great density of matter, the force of gravitation was strong and after three or four thousand years of the initial explosion, the expansion of the universe was slowed down by the force of gravitation but not entirely to a standstill. During this slowing down phase of the universe, the galaxies, stars, sun and planets were formed from an immense aggregation of gas and dust. As the expanding motion continued and the mean density of matter steadily decreased, cosmic repulsion finally pre-dominated over the universal attraction and the world entered into its present phase of expansion. The beginning of the universe is therefore, inherent in the relativistic theories. Supporters of this theory are of the view that the universe is still expanding uniformly and isotropically that is, the same in all directions. George Gamow gave this the name 'big-bang theory' of the origin of the universe.

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1. Discovery of the Universe : p. 229
2. Cosmological Theory : p. v (pre-face)
3. op. cit. 1 : p. 230
4. The First Three Minutes : p. 43
From the above analysis, it appears that the 'gravitational instability' is the main cause of the structure of the universe. On the basis of this hypothesis of origin of the universe, we can draw up the chronological order of origin in the following order:

- Chaos (pre-stellar phase of the universe)
- Nebulae (explosive phase of the universe)
- Universe (slowing down phase of the expanding universe)

In fact, the cosmogonic hypothesis of 'primeval atom' postulated by the scholars of the relativistic theories in the real sense of the word does not represent the 'primeval seed' from which the primeval atom of the universe originated but it merely specifies the chaotic state of the universe which existed a few thousand million years ago from which present day universe evolved in due course of time.
In complete contrast to the relativistic theories stands the Steady-State Theory put forward in 1948 by T. Gold, H. Bondi and F. Hoyles. According to this theory, 'the universe is uniform in space, unchanging in time when viewed on a sufficiently large scale but it is not unchanging in detail. The universe is much the same at all times and that it never had a beginning'.

The most striking feature of this theory is the process of continual creation. Each individual galaxy ages owing to depletion of its material resources. However, aging of the individual members does not imply that the universe as a whole is aging. Individual galaxies age and move apart from each other owing to expansion. In the increasing spaces between them, new created matter 'out of nothing' condenses to form new galaxies, so that the average distance remains the same. Condensation is the process of birth of a galaxy, expansion of regions hard to see is the process of deaths and growing up comes in between. Although each galaxy ages in this manner, a birds-eye view of the system will always reveal the same picture just as in the case of our population.

1. The Universe at Large : p. 41
2. ibid : p. 43
2.1.5 Differences between Relativistic and Steady-State Theories.

i) According to evolutionary theories, all the galaxies were formed more or less at the same time and that no new galaxies are forming now.

The Steady-State Theory supposes that new galaxies are being born all the time as the old galaxies get farther and farther away from each other, the new ones form in the spaces between them.

ii) The evolutionary theories declare that the universe had a beginning and it was compressed into a primeval atom at an initial instant.

According to Steady-State Theory, the universe was the same all the times and it had never been a beginning.

Conclusion

No doubt, the Relativistic and Steady-State Theories are the popular theories but none of them has been regarded as the final and authentic theory by the scientists. The problem about the origin of the universe still remains unresolved in so far as the scientific research is concerned. Many scientists have criticised these theories on one ground or the other. Arthur Eddington said, "the theory of the expanding universe is in some respects
The First Three Minutes

The solar system is our own controlled by the sun. The sun has a family of nine members called planets which are all relatively to be made obsolete by the startling new discoveries and unexpected methods of exploration of the universe. Nevertheless it is the impression of most of the scientists that we do not actually observe galaxies rushing away from us. It is the impression that I feel almost an indication that any appearance to this it contains elements apparently so incredible that I feel almost an indignation that any one should believe it except myself. It is the impression of most of the scientists that we do not actually observe galaxies rushing away from us. It is the impression that I feel almost an indication that any appearance to this it contains elements apparently so incredible that I feel almost an indignation that any one should believe it except myself.
revolve around it. They are:

Mercury, Venus, Earth, Mars,
Jupiter, Saturn, Uranus, Neptune
and Pluto

The word 'planet' originates from the Greek word 'planetes' which means wanderer since their positions relative to the fixed stars constantly changing.

Numerous theories have been put forward by the scientists, mathematicians, philosophers etc. on scientific lines from time to time about the origin of the planets. Some of them are discussed below:

2.1.8 The Nebular Hypothesis of Laplace

The first theory of the origin of planets was proposed by the German philosopher Immanuel Kant and elaborated by the French Mathematician and astronomer Pierre Simon Marquis de Laplace. Laplace's 'nebular hypothesis' about the origin of the solar system was first published in 1796. It is also called the 'Kant-Laplace nebular hypothesis'. According to this hypothesis, the solar system arose from the condensation of a primordial nebula, a cloud of gas and dust. In their view, the sun and the planets were formed roughly at the same time from the identical nebula. Contracting under the influence of...
gravitational forces, the cloud began to rotate more and more rapidly owing to the conservation of angular momentum. As a result of the large centrifugal forces generated by this rapid rotation, matter was thrown out from the periphery of the contracting nebula forming an equatorial belt of gas and dust. As the contraction continued, the nebula shed successive rings of matter. The rings were thought to have condensed at a later time to form the planets.

George Louis Leclerc Comte de Buffon in 1750 expressed the view that the planets were forcibly torn from the sun by some sort of cosmic accident.

2.1.9 Hypothesis of tidal disruption

T. C. Chamberlin, Geologist and F. A. Moulton astronomer at the beginning of the present century assumed that the sun travelled along until it almost collided with another star. Then as the two stars passed within a few million miles of one another each was partly torn asunder by tidal forces generated by their mutual attraction. As the passing star receded rapidly into space with its retinue of fragments, the

1. Intelligent Life in the Universe: p. 162
2. The Story of the Earth: p. 3-4
pieces torn from the sun fell back into elliptical orbits about it and out of these fragments, born of a stellar catastrophe, the solar system evolved.

2.1.10

**The dust-cloud hypothesis**

In 1944 C.F. Von Weizsacker developed a new theory based on the premise that our solar system evolved from a dust cloud. According to him the sun was formally surrounded by a disc shaped nebula agitated by turbulent vortices. Accretion took place in the zones between larger eddies and gradually the planets were built up.

2.1.11

**Theory of passing star**

Sir James Jeans (1876-1946) believed that the original material from which the planets were formed was ejected by the sun after the sun had already reached its present form. The ejection was caused by the near collision of a passing star. The gravitational tidal forces of the interloper star drew out a filament of material from the surface layers of the sun. The filament remained within the gravitational influence of the sun as the interloper passed. After a period of time, the ejected material condensed and became the planets.

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1. The Earth : p. 117-118
2. ibid : p. 121
3. Intelligent Life in the Universe : p. 165
2.1.12 **Theory of Binary star**

Lyttleton and Hoyle were of the view that the sun used to be a binary star and that the companion underwent a supernova explosion, the recoil led to the final parting of the two bodies and the last stages of the outburst ejected material which was retained by the sun and led to the formation of planets.

2.1.13 **Theory of broken gaseous nebula**

In 1951 G.P. Kuiper assumed that our solar system originated from a broken gaseous nebula into several large, rotating gaseous masses, one for each of the planets.

2.1.14 **Conclusion**

Besides the above mentioned theories, there are so many other theories put forward by astronomers, physicists, geologists etc. on the subject but none has been considered complete or final. They have been discarded one after the other by the scientists on different grounds. The problem formulating a satisfactory theory of the origin of the solar system cannot be regarded as

1. The Story of the Earth : p. 13
2. The Earth : p. 122
yet solved. But on the basis of various theories, it can safely be said that the planets were formed from some sufficiently dense gas and dust medium which originally surrounded the sun.

2.1.15

**Age of planets**

Our galaxy is about ten to fifteen thousand million years old. The age of the planets is reckoned somewhere in the region of 4.7 million years by the scientists.

2.1.16

**The creation of matter**

All objects (inanimate and animate) in the universe are composed of matter. Every substance of matter consists of molecules. The molecules are the hard discrete particles of a substance. The smaller units into which a molecule is broken are called atoms. For example, each molecule of water consists of two atoms of hydrogen (H) and one atom of oxygen (O); this is expressed in its chemical formula H₂O. All the innumerable substances which occur on earth can be analysed into their constituent atoms. To-day we know that all the matter consists of more than 2¹⁰² elements.

1. Cosmic Evolution: p. 89
2. Modern Physics: p. 4 (introduction)
Analysis of all known terrestrial substances shows that common substances are being formed out of the combinations of about 14 different atoms. They are:

Hydrogen (H), Carbon (C), Nitrogen (N), Oxygen (O), Sodium (Na), Magnesium (Mg), Aluminium (Al), Silicon (Si), Phosphorus (P), Sulphur (S), Chlorine (Cl), Potassium (K), Calcium (Ca) and Iron (Fe).

The whole earth, with its endless diversity of substances, is found to be a building built of standard bricks. And of these only a few types, about 14 occur at all abundantly in the structure, the others appearing but rarely.

The studies of meteorites, terrestrial rocks and oceans, solar winds and rocks brought back from the moon by Apollo Missions reveal that:

Hydrogen is the most abundant cosmic element followed by helium. In the solar system their relative abundances are:

- Hydrogen: 90%
- Helium: 8%
- Carbon, Nitrogen and Oxygen: 1.8%
- All other elements: 0.2%

put together.

The 'big-bang' and the 'Steady-State' theories are generally considered as the two main sources which describe the initial as well as creation state of matter of the universe respectively.

1. The Universe Around Us: p. 101-102
2. Modern Physics: p. 268
According to the 'big-bang theory', all the mass of the universe was initially confined to a small and extremely dense sphere in the shape of a fire-ball. The fire-ball having all the matter of the universe cannot have existed forever as science does not believe in the eternity of things. Therefore, the matter must have originated at a particular instant in the past. Travelling as far back in time as we can from the state of fire-ball, brings us not to the creation of matter but to its edge.

The 'Steady-State theory' states that the matter is being continuously created to fill the emptiness caused by the recession of galaxies due to expansion of the universe. This theory, therefore, suggests that the matter of the universe is created 'out of nothing'. It is an established fact of the scientific research that 'something cannot be created out of nothing'. Therefore, this theory also does not solve the problem of creation of matter.

In view of the above facts, it may be concluded that the solution of the problem 'as to how the matter originated in the universe' is beyond the reach of science.
As has been stated earlier, the supporters of Steady-State theory do not envisage beginning of the universe. It is the protagonists of the theory of expanding universe who are of the view that the universe originated at a particular instant in the past. They have not arrived at a definite conclusion so far rather they have put forward conflicting views in this regard. Some scientists are of the view that the age of the universe must be less than 20,000 million years. Others say expansion of the universe must have begun between 10,000 and 20,000 million years ago. It has also been stated that the age of the universe is 8.8 to 19.4 billion years. Others say that the big-bang occurred about 19 billion years ago according to the present estimates. By continuous slowing of the expansion rate by gravitational pull, this figure has to be reduced to 10 to 12 billion years. From Einstein's General Theory of Relativity and assuming with Wheeler an actual time of 10 billion years from the big-bang and the present recessional

1. The First Three Minutes : p. 26
2. ibid : p. 43
3. Cosmic Evolution : p. 221
4. The Human Mistry : p. 13
speed giving 20 billion years, it can be concluded that the total life time of the universe will be 59 billion years of which 10 billion years have already passed.

From the above facts, it can very well be concluded that there is no general agreement among the scientists on the issue of age of the universe.

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1. The Human Mystery : p. 31
2.2.1 Pre-creation state of the Universe

The following vedic / upanishadic hymns clearly describe the pre-creation state of the universe:

"Then was neither non-existent nor existent. There was no realm of air, no sky beyond it. What covered in and where? and what gave shelter? Was water there, unfathomed depth of water? Death was not then, nor was there aught immortal, no sign was there, the days and nights divider. That One thing, breathless, breathed by its own nature, apart from it was nothing whatsoever. Darkness was there, at first concealed in darkness this All was indiscriminated chaos. All that existed then was void and formless."

(1)

"In the beginning the world was Soul alone in the form of a Purusha."

(2)

"The Self verily was ( all ) this One only in the beginning."

(3)

"There was nothing whatsoever here in the beginning. By death (darkness) indeed was this covered or by hunger, for hunger is death."

(4)

"In the beginning this (world) was non-existent."

(5)

From the above hymns, we find that the pre-creation state of the universe was a state of utter

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1. R. V. X. 129. 1-3
2. B. U. 5.1
3. A. U. 1.1
4. B. U. 1.2.1
5. C. U. III.19.1
darkness and indiscriminate chaos. There was nothing whatsoever in existence i.e. no realm of air, no sky, no water, death, life, sun, days, nights etc. In such a void and formless state, only the Absolute Lord abided. He has been called by the names of Purusha, Self, Being, Non-Being, Atman etc.

It may be stated here that the 'indiscriminated chaos' has been identified with the 'undistinguishable water' by most of the vedic scholars. We find that the sage of Rig Veda hymn X.129 in the first stanza of this hymn was very much in doubt whether there existed water in the pre-creation state of the universe? But he seems to have dispelled his doubt in the next stanza when he says that 'besides the Absolute Lord, there was nothing in existence whatsoever then', which includes water also. Thus to identify the 'indiscriminated chaos' with the 'undistinguishable waters' is against the spirit of the hymn.

2.2.2 Origin of the Universe
The Creator
According to the vedic / upanishdic thought, the universe is not eternal but had a beginning. It is also not self-existent. It was created by the Absolute Lord.

1. The Teachings of the Vedas : p.117-118
2.2.3 Vedic doctrine of Monotheism

From the study of vedic hymns, we find that various acts of creation of the universe have been assigned to various gods such as Maruts, Indra, Agni, Visvadevas, Visvakarma, Varuna etc.:

"The Maruts have made heaven and earth, increase and grow in sacrifices they delight, the strong and wild." (1)

"He (Indra) who fixed fast and firm the earth that staggered and set at rest the agitated mountains." (2)

"He (Agni) who made all that lives, who passes all in might, who orders service to the gods." (3)

"Tvastar the God, the omniform creator, begets and feeds mentioned in various manner. His verily, are all these living creatures. Great is the God's Supreme and sole dominion." (4)

"Who (Varuna) measured out the ancient seat, who pillard both the worlds apart as the unborn supported heaven." (5)

"Visvadevas thy with their might have stayed heaven and earth and prithvi, the Lord of Light, the firmament, the lustrous spheres." (6)

"Visvakarma seeing all, producing the earth, with mighty power disclosed the heavens." (7)

1. R.V. : 1. 85. 1
2. R.V. : 2. 12. 2
3. R.V. : 3. 16. 4
4. R.V. : 3. 55. 19
5. R.V. : 8. 41. 10
6. R.V. : 10. 65. 4
7. R.V. : 10. 81. 2
The above vedic hymns show that the vedic religion is polytheist. Each god seems to be supreme in his own place. But this is not true. The evidence contained in the vedic hymns itself advocates the doctrine of 'monotheism'. There is one and only one intelligent being as author of the universe though He is represented under various names. Views of some of the vedic scholars in this respect are given below:

Aurbindo Ghosh is of the view that vedas advocate 'monotheism'.

H.H. Wilson states that there can be no doubt that the fundamental doctrine of the vedas is 'monotheism'.

M. Adolphe Pictel is of the view that the religion of the undivided Aryans is 'monotheism' more or less vaguely defined.

Vedic hymns expressing the vedic concept as 'monotheism' are given below:

"Aditi is the heaven, Aditi is mid-air, Aditi is the mother and the sire and son, Aditi is all Gods, Aditi five-classed men, Aditi all that hath been born and shall be born."  

1. The Teachings of the Vedas: p. 107
2. ibid: p. 107
3. ibid: p. 107
4. R. V. I. 89.10
"They call Him Indra, Mitra, Varuna, Agni and He is heavenly nobly-winged Garutman. To what is One, sages give many a title: they call it Agni, Yama, Matarisvan."

From the above evidence of vedic hymns, there remains no doubt about the fundamental doctrine of 'monotheism' in the vedas. Thus there is only one Supreme Being, who Himself is the creator of the Universe.

2.2.4 Upanishdic doctrine of emanation of the universe.

On examination of upanishdic hymns, one group of scholars is of the view that the Absolute Lord did not create the universe but He has transformed Himself into it. S. Radhakrishnan states that no doubt, the upanishads refer to the early vedic cosmological speculations (which includes the creation of the universe by the Absolute Lord) but these are not the real interest of the upanishads. The scholars of this group base their concept on the following phrases appearing in the hymns of the upanishads:

1. R.V. I. 164. 46 : For further details:
   R.V. 1.164.6, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.1.11, 3.54.8, 6.45.16, 10.114.5, 10.129.3

2. Principal Upanishads : p. 82
The scholars are of the view that the words 'arose', 'born', 'proceed', 'emerge', 'issue forth' etc. suggest emanation and not creation. A few relevant hymns from the Upanishads are given below:

"The world comes from or born from Brahman and return to Brahman, whatever exists owes its existence to Brahman." (2)

"Being thought, May I be many, May I grow forth. It sent forth fire..." (3)

"From this Self verily ether arose, from ether air..." (4)

"The universe proceeds from God." (5)

"As a spider sends forth and draws in (its thread), as herbs grow on the earth, as the hair (grows) on the head and body of a living person, so from the imperishable arises here the universe." (6)

"As from a blazing fire, sparks of like form issue forth by the thousands, even so, O beloved many kinds of beings issue forth from the immutable and they return thither to." (7)

On the basis of such like hymns, the scholars have come to the conclusion that the Absolute Lord did not create the universe but became it. It is the self-projection of the Supreme Lord. The universe is the manifested state of Brahma or Brahma manifests itself.

1. Principal Upanishads : p. 542(n)
2. T.U. III & B.U.III.8
3. C.U. VI.2,3
4. T.U. 2.1.1
5. Svet.U. 1.4
6. Mundaka U. 1.1.7
7. Ibid II.1.1
9. Ibid : p. 90
2.2.5 Upanishadic doctrine of creation of the Universe.

On the other hand, Samkara, Ramanuj, the learned interpreters of upnishads and other scholars believe that the universe is the handiwork of the Supreme Lord:

"He willed, He thought and He created. Tapas is the creative power...Samkara." (1)

"Brahma is considered as the creator...Ramanuj." (2)

"The whole world proceeds from the imperishable Brahma. The actual creator is Isvara, the personal God who is acting through His power of maya." (3)

Isvara and Sakti are regarded as the parents of the universe:

"O father-mother, this world of ours was created by the compassion of your joint protectorship to the end that by your mutual help, your joint design may fulfil itself." (4)

"I think of the mother of all the worlds, who creates the universe of real-unreal nature." (5)

The Brahm Sutra refers to the creation of the world as an act of lila, play, the joy of the poet eternally young.

1. Principal Upnishads: p. 548
2. Wisdom of Upnishads: p. 4
3. op. cit. 1: p. 734
4. ibid: p. 734
5. ibid: p. 734
6. ibid: p. 86
Besides above views of the learned scholars, the following hymns of the upnishads can be quoted as evidence to the effect that the Absolute Lord had Himself created the universe but He did not became it:

"The Self, verily, was all (this) one only in the beginning. Nothing else whatever winked. He thought, 'let me now create the worlds and He created these worlds."

(1)

"the God...having created the Lords, the great-self, exercise his Lordship over-all."

(2)

"Who (God ) having begun with works associated with the three qualities, distributes all existents."

(3)

"Prajapati ( the creator ) was desirous of progeny. He performed austerity and thereafter produced matter and life thinking that together they would bring forth creatures."

(4)

"There is the One Lord, besides whom there is no second, who creates all the worlds and rules with His powers."  

(5)

The upnishads also refer to the origin of all the living things from different sources which suggest creation but not emanation:

"Now of these (living ) beings there are only three origins, those born from egg, born from a living being and born from a sprout."

(6)

1. A. U. 1.1-2
2. Svet.U. 5.3
3. Svet.U. 6.4
4. Prasna U.1.4
5. Svet.U.III.2-3 & Vi.1.12
6. C.Ü. VI.3.1
The internal evidence of the upnishads, therefore, clearly states that the Absolute Lord created the universe by His might and it did not emanate of its own from Him. In whatever way the upnishdic scholars interpret the hymns, one thing is clear that the universe owes its origin to the Absolute Lord.....He is the root cause of the Universe.

2.2.6 Desire as the primal seed

The universe came into existence only when the Absolute Lord desired to create it:

" Prajapati (the Lord of creation) verily was desirous of offspring. He performed austerity (to create)." (1)

" The Self verily, was all this(world), One only in the beginning. Nothing else whatsoever winked. He thought (desired) let me now create the worlds. " (2)

" Thereafter rose 'desire' in the beginning. Desire is the primal seed and germ of the spirit." (3)

The Absolute Lord is behind the desire. It is, therefore, not eternal. It has its origin in the creator, the Absolute Lord. It has no independent

1. Prasna U. 1.4
2. A. U. 11.6
3. R.V. X.129.4
existence of its own. It merely expresses the mental state of the cosmic mind. As and when the Supreme Lord desired to create, He created the universe. It is in this context stated that 'desire is the primal seed and germ of the spirit'. The principle cause of the universe is the Supreme Lord and not the 'desire'.

2.2.7 The creation of matter

It is an established vedic view that except the Absolute Lord nothing existed whatsoever (including matter) prior to the creation of the universe. Therefore, the matter of the universe is not eternal but a created thing.

As to the material from which the Supreme Lord created the universe, a vedic seer poses the question:

"What was the tree, what wood in sooth, produced it, from which they fashioned out the earth and the heaven?" (1)

The answer to this question is given in the Taittiriya Brahman as under:

"Brahman was the wood and the tree (the material of the world )." (2)

1. R.V. 10.31.7 & 10.81.4
2. Tat. Br. 2, 8, 9, 6
Prasna Upanishad says:

"Prajapati (the Lord of creation) verily, was desirous of offspring. He performed
austerity. Having performed austerity, He
produced the pair matter and life; thinking that they would produce creatures for
him variously."

From the above humn, it is inferred that the Supreme
Lord before executing the creation work, created the
matter of the universe 'out of Himself'.

Some ignorant people say that the universe
as well as matter has come 'out of nothing'. This is
quite absurd. The Absolute Lord is the source of
the world. He is the Lord of creation. He can never
be termed as 'nothing' but He is ever-existent. He
is not like a thing to be created by a creator but
He is self-extent. Samkara argues that the Supreme
Brahman who is conceived as the source of the
universe must be regarded as existent. We cannot
conceive of the world as produced from nothing. The
world effect must have an existent cause. Thus the
vedic knowledge emphatically declares that 'something
cannot be created out of nothing'.

Some vedic scholars say that water was born
earlier than other elements, some say it was air and
others refer to fire. Individually, they were also the cause of origin of other elements. Such ideas of the scholars are based on the following hymns:

"Fire was the first to evolve from the primal reality and that from fire came water and from the water the earth. " (1)

"From this self, verily, ether arose, from ether air, from air fire, from fire water, from water the earth, from the earth herbs, from herbs food, from food the person." (2)

"From the subtle elements rose ether, from ether air, from air fire, from the fire the water and from water the earth." (3)

In fact, it is the Absolute Lord who created the matter (i.e. air, water, fire, earth and ether). The upanishad says:

"From Him (Brahman) are born life, mind, all the sense organs, ether, air, light, water and earth, the supporter of all." (3A)

"Life-breath (air) springs from the Self. Ether from the Self. Heat (fire) from the Self. Water from the Self. Indeed all this world from the Self." (4)

"As small sparks come forth from the fire, even so from the Self come all worlds (which includes matter)." (5)

1. C. U. :VI.2.3-4
2. T. U. :II.1.1
3. Subala U. I.1 : 3A.Mundaka U.II.1.3
4. C. U. :VII.26.1
5. B. U. :II.1.20
In whom (Purusha) the parts (16 parts which includes air, fire, water, ether & earth) are well established as spokes in the centre of the wheel.  

He created life, faith, ether, light, water, earth, sense organ, mind, food, vital vigour, austerity, hymns, works, worlds and name (these are considered as the 16 parts of the cosmic Purusha).  

From the above hymns we find that all the elements of matter have their origin in the Brahman. Therefore, none of them could be the cause of the origin of other elements.

Samkara suggests that the seer has no eye to the order of creation (i.e. of elements) for it is only interested in making out that all effects are derived from Being.  

Dr. S. Radhakrishnan is of the view that the reference in all such passages is not to the elements, as such, but to the presiding divinities. This view point is clear from the following verses:

That indeed is Agni (fire), that is Adity (the sun) that is Vayu (wind) and that is the moon. That indeed is the Pure. That is Brahman. That is waters. That is Prajapati.  

Out of thirty-three gods as postulated by the seers eight are vasus which are:

1. Prasna U: VI.6
2. ibid: VI.4
3. Principal Upanishads: p. 449
4. ibid: p. 449
5. Mundaka U. II.1.3
2.2.8 The Knower

The vedic seers have tried to unfold the mystery of the nature of the universe. To the extent that there is one Absolute Lord, the creator, they are successful but as regards mode of creation, they have not been able to solve this riddle. Different conceptions have been put forward by them according to their wisdom. But none of them could be considered as authentic. In fact, no body knows how the Absolute Lord created the universe. It is the Absolute Lord who Himself knows how he created the universe.

The Rig Veda says:-

"Father who made us he who, as Disposer knoweth all races and things existing. Even He alone, the Dieties name-giver—him other beings seek for information." (1)

"The entire mystery of creation is known only to God." (2)

On the basis of above evidence of the Rig Veda, there remains no doubt to concede the fact that the vedic seers did not know how the Absolute Lord created the universe. The theories put forward by them in this connection can be divided into various heads such as:

Maya (power), word, semen, penance, golden-egg, sacrificial Purusha etc.

1. R.V. : 10.82.3
2. R.V. : 10.129.7
Creation through Maya (Power)

The Svetasvatara Upanishad describes God as 'mayin', the wonder working powerful being, who creates by his powers. The Taitreya Upanishad also says:

"With the help of His own maya(power),
the Lord creates the universe."

(2)

The power is inherent in His nature. The Upanishad says:-

"The self-power of the Divine is hidden in its own qualities."

(3)

Thus this power or sakti is contained in the Supreme Lord as oil in oil-seeds. It is not independent of Him. According to Narda this power is eternal, primeval and ever-lasting. He further says that nothing is able to stir without its aid. In the Rig Veda it has been stated that 'by the great power of warmth was born that unit'. This hymn suggests that through the power of tapas or the fervour of austerity, the one evolved into determinate self-conscious being.

1. Principal Upanishads: p. 83
2. T. U.: 11.6
3. Svet. U.: 1.3
4. op. cit. 1: p. 710(n)
5. ibid: p. 83
6. R.V.: 10.129.3
7. op. cit. 1: p. 35
2.2.10  

**Creation through word**

The vedas / upanishads are of the view that the Absolute Lord the heavenly builder and artificier created the off-springs what he spoke by the speech or what word he uttered that it became:

"The earth of the sacred word bhuh was born of the lifted foot and the directions or the middle region were born of the sacred word bhuvalah. " (1)

"The word is the creator of the universe, the powerful one, for by the word is all this made. " (2)

"In the beginning was only the Lord of the universe. His word was with him. This word was His second. He contemplated. He said, " I will deliver this word so that one will produce and bring into being all this world. " (3)

"Prajapati spoke 'rasmih ' or the 'ray ' and produced the sun. " (4)

"Prajapati spoke the three great words bhu, bhuvah and swah and these were the earth, middle region and heaven. "(5)

2.2.11  

**Creation through penance**

Some of the vedic/ upanishadic seers are of the view that when the Absolute Lord desired to create the universe, He practised penance:

"The creator practised penance and created all this whatever is here."(6)

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1. R.V. 10.72.4
2. The Teachings of the Vedas : p.118
3. Tandya Brahman : 20,14,2
4. The Story of Creation : p.143
5. Jaimini Br. 1.101
6. Upnishadic Challenge to Science: p.155
2.2.12 Creation through semen

One view is that the universe originated through the semen of the Absolute Lord:

"From the semen of Prajapati what became shining at first, that became the yonder sun." (2)

"Waters were the wives of Varuna (a form of Agnih). Agnih set his heart upon them. They were roaming for union. His semen fell that became the earth." (3)

2.2.13 Creation through golden-egg

It has also been stated in the vedas/upanishads that the Absolute Lord created the universe through the golden-egg as:

"...in the beginning a golden-egg was born. The year indeed was not then in existence. This golden-egg floated in a circle for as long as the space of a year. After that in a year's time, the Purusha was born (the egg got converted into the form of a man? he was Prajapati the protector of the progeny)" (4)

1. Indian Cosmological Ideas: p. 26
2. The story of creation: p. 143
3. Ibid: p. 133
4. Ibid: p. 106
The Purana says that God first created the waters which are called Nara and released his seed into them. The seed grew into a golden-egg from which Brahma was born of his own accord and so He is called Swayambhu. Brahma divided the egg into two halves of heaven and earth. " (1)

In the beginning, this (world) was non-existent. It grew and turned into an egg. " (2)

The Prajapati impregnates the water and becomes manifest in them in the form of a golden-egg or germ (Hiranayagarbha) from which the whole universe sprang. " (3)

2.2.14 Creation through sacrificial Purusha.

In Rig Veda, the gods are represented as having fashioned the universe from the dismembered limbs of Purusha, the primeval male. When they sacrificed him, moon was born from the mind and sun from his eye. Mid-region was born from his navel and sky from his head. Earth was born from his feet and from his ear the regions were born. (4)

Origin of the celestial bodies

The Vayu Purana says that the celestial bodies were born out of the sun as:

"Stars, 27 Nakshatras, moon and the planets all those should be known as born of the sun. " (5)

1. Brahma Purana : I.1.38
2. C. U. III.19,1
3. R.V. 10.121.1
4. R.V. X.90.13-14
5. Vayu Purana :50.99 & 53.28
This idea of Vayu Purana fully conforms with the prevalent scientific view of origin of planets.

2.2.16

**Origin of earth and heaven**

We find various accounts of creation of earth and heaven in the vedas/ upanishads as:

"Apah were certainly such as had every thing dissolved in them. Prajapati assuming the shape of a boar dived near (only a small distance below). As big as his snout was, so much clay it brought out. That became the earth."

(1)

"Apah certainly were (allied with) specially arranged agni parmanus, that what was the sarah of the apah, solidified that became the earth."

(2)

A seer in Rig Veda poses the question which of the two, heaven and earth is the first and which is the latter?

The answer is given in the Yajur Veda according to which of all the worlds bhumi is the first.

According to Rig Veda, the chronological order of creation is as follows:

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R. V. i 1.185.1
Yaj. V. 37.4
R. V. 10.72
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1. The Story of Creation: p. 130
2. ibid: p. 130
3. R.V.: 1.185.1
4. Yaj. V. 37.4
5. R.V. 10.72
The earth has also been stated to born earlier than the sun as:

"Earth sprang from the production power, the regions from the earth were born. "

(1)

"Then ye brought surya forward who was lying hidden in the sea. "

(2)

2.2.17 Conclusion

From the above facts of the vedic texts, it is found that there are conflicting views about the mode with which the Absolute Lord created the universe. Earth has been stated to be born of word, golden-germ, semen of Varuna, feet of the Purusha and water. At one place moon is said to have been born from the mind of the Purusha and at another place it has been said to be originated from sun. As regards sun, one vedic seer says that it was born from the eye of the Purusha whereas another vedic seer says that it was born from the head of the Prajapati. It has also been stated that it originated through word of God. In the vedic view the earth was born before the sun whereas the scientific view is that the earth was born much later than the sun and it originated from the sun. Thus, we may conclude that the vedic seers did not know as to how the Absolute Lord created the universe.

1. R.V. : 10.72.4
2. R.V. : 10.72.7
According to the vedic view, the universe had a beginning. Initially, heaven and earth were joined in one i.e. the universe was in a compressed state in the form of a mundane egg:

"The two great meeting bowls hath he united, each of the pair is laden with his treasurer." (1)

"When the united pair were rent asunder all the Gods complained. The Gods to the Nasatyas cried, Bring these together once again." (2)

At a particular instant, the Absolute Lord with his might divided the egg into two halves. The lower portion became the earth and the upper portion became the heaven:

"In the beginning, this (world) was non-existent. It became existent. It grew. It turned into an egg. It lay for a year. It burst open. Then came out of the egg shell two parts, one of silver, the other of gold. That which was of silver is this earth; that which was of gold is the sky." (3)

In the beginning, the expansion of the universe was very slow. The three worlds were well-nigh contiguous to one another, then the heavenly

1. R.V. : 3.55.20
2. R.V. :10.24.5 : For further details:
   R.V. : 1.159.4, 3.54.7
world could certainly be touched. The following hymns clear this viewpoint:

"The sun was previously in the region of the earth and the gods pushed it up to the heavenly regions." (1)

"The sun was within the arms length from the earth and could be touched, so close it was." (2)

"The sun was first here, close to the earth and was roasting the earth by its heat." (3)

Subsequently, the earth, the middle region and the heaven started expanding on all sides till they assumed their complete form. The expansion of the universe was by means of vayu, agni, power of god, rta., eternal law etc.:

"The separation was effected by vayu." (4)

"Come oh Agni, to separate and make these worlds expand." (5)

"Indra hath evermore possessed surpassing power, he forced far from each other, heavens and earth apart." (6)

"Ye (Visvedevas) raised the sun to heaven by everlasting law and spread broad earth, the mother, out on every side." (7)

1. Taittiriya Samhita: VII.3.10
2. Shat. Br.: 1.4.1.22
3. Ja!mini Brahmana: 1.87
4. op. cit. 1: 3.413
5. op. cit. 1: 51.15
6. R.V.: 10.113.5, 10.89.1, 3.46.3, 6.17.7, 1.103.2
7. R.V.: 10.62.3 & 5.1.7
The expanding universe was unfirm and unsteadied. When as per the divine plan, it reached its final position, the Absolute Lord made it stable. Hence no further expansion of the universe. The Rig Veda says:

"The earth hath spread herself in all her fullness." (1)

"Visvakarma, the father of the eye, the wise in sport created both these worlds submerged in fatness. Then when the eastern ends were firmly fastened." (2)

"As this earth, the great, bore these fruits and trees. Earth attains its full size—when the earth attained its full size, it was called 'the great'." (3)

Age of the Universe

As regards age of the universe is concerned, a vedic seer has emphatically declared that it is beyond mind's conception to know the time of the origin of the universe. Even the gods do not know as they were born later than the origin of the universe:

"Who verily knows and who can here declare it, when it was born and whence comes this creation? The Gods are later than this worlds production. Who knows then whence it first came into being?" (4)

1. R. V. : 2.11.7
2. R. V. :10.82.1
3. R. V. :10.60.9 & 10.111.5
4. R. V. :10.129.6
No direct account of the pre-creation state of the universe has been given in the Holy Bible. The opening stanzas of first chapter of the Book of Genesis give the account of the first stage of the creation state. These stanzas are as follows:-

"When God began to create the heaven and the earth." (1)

"The earth was a desolate waste with darkness, covering the abyss and a tempestuous wind raging over the surface of waters." (2)

In order to determine the pre-creation state of the universe, we have to examine these stanzas minutely.

By the phrase 'when God began to create the heaven and the earth' it implies that before their creation, they did not exist at all. The phrase "then the earth was a desolate waste with darkness, covering the abyss' suggests that before its creation earth was invisible and without form. By the phrase "when God began to create' it also implies that God was there before the creation state. It may be stated here that Christianity believes in the eternity of God.

1. The Bible : 1.1
2. ibid : 1.2
3. The Bible and the World : p.7
Eternity implies a substance existing eternally which is ever the same and because of its perfection it never undergoes any alteration. Eternity must be predicted only of God, because the idea of eternity has been abstracted only from God. Time, on the other hand, must be predicted of the material world, by saying that the world exists in time, or is subject to time, because the idea of time has been abstracted from the world. What is eternal is not in time and what is subject to time is not eternal. Eternity, however, is the cause of time and time depends on eternity and cannot be conceived without it.

The phrase 'a tempestuous wind raging over the surface of waters' suggests that the air and water were in existence in the beginning of the creation process and are material things. Therefore, these are not eternal. They might have been created by the Lord at a particular instant before commencement of the six days creation work. Therefore, they belong to the first stage of the creation state and not to the pre-creation state of the universe.

Thus in the pre-creation state of the universe there was no sun, moon, planets, earth, heaven, stars, atmosphere, air, water, fire, creatures etc. but it was the state of utter darkness. Alone the Lord existed then.

1. The Bible & the World : p. 7
It may be mentioned that in six days creation story, there is no reference to the creation of matter at all.

As to the source of origin of matter is concerned, the Bible says :

"So the word became flesh and blood." (1)

In the Bible the 'word' is identified with 'God' as :

"What God was, the word was." (2)

From the above verses of the Bible, it implies that the Lord Himself became the matter with His omnipotent power. This idea fully conforms with the vedic view that 'the God Himself was the tree and the wood out of which He fashioned the universe'.

2.3.4 Stages of creation

The Bible says that the God created the universe in six days. The 'six days' mentioned in the creation story has no linkage with the physical days born on account of the creation of the sun on the fourth day. It has been stated in the Bible that the Lord's one day is equal to one thousand years of our own. The relevant statement runs as follows :

"With the Lord One day is as a thousand years and a thousand years as one day." (3)

1. The Bible : John 1.14
2. Ibid : John 1.1-2
3. Ibid : Peter II.3.8-9
From this statement of the Holy Bible, it can be inferred that the Lord completed the creation work of the whole universe in 6000 years. However, the creation period of 6000 years calculated on the basis of the biblical statement does not conform with the period of million million years as speculated by the scientists. It seems that 'creation in six days' mentioned by the Saint narrating the creation story does not refer to the Lord's six days but he has divided the creation work of the universe of the Lord into six stages.

The biblical account of six days creation is discussed below:

2.3.5 First day's creation

On the first day, God created the light. This light was not the physical light which the sun, moon and stars shed as they were not in existence then but it was the 'divine light'. This divine light is the source of all life that exists in the universe. It is through this light, the sun, moon and stars are able to shine. In fact, the divine light is the vital force of the universe. If it is withdrawn from the universe, there will remain nothing but utter darkness. Before creation of the 1. The Bible : 1.3-5
light, matter was already in existence. Therefore, in order to create the universe, spirit was required to be created. Thus the Lord created the light which is identified with the spirit of the universe and subsequently, He created the whole universe.

2.3.6 Second day's creation

On the second day, God created the firmament (without its hosts such as stars, sun and moon). The Bible says:

"The God said:
   Let there be a firmament in the middle of waters to divide the waters in two. And so it was, God made the firmament, dividing the waters that were below the firmament from those that were above it, and God called the firmament sky." (1)

2.3.7 Third day's creation

On the third day, God created the earth along with its hosts such as vegetation, seed-bearing plants and fruit trees. The Bible says:

"Then God said:
   Let the waters below the sky be gathered into one place so that the dry land may appear. And so it was, God called the dry land earth and the gathered waters seas, God saw that it was good.

1. The Bible: 1.6-8
Then God said:
Let the earth produce vegetation, seed-bearing plants and the various kinds of fruit trees that bear fruit containing their seed;
And so it was, The earth brought forth vegetation, the various kinds of seed bearing plants and the various kinds of trees that bear fruit containing their seed. " (1)

2.3.8

Fourth day's creation

On the fourth day, God created sun, moon and stars in the firmament, the sources of physical light in the universe and originators of days and nights. The Bible says :

" Then God said :
Let there be luminaries in the firmament of the sky to separate day from the night, let them serve for signs, for fixed times and for days and years and let them serve as luminaries in the firmament of the sky to shed light on the earth.

And so it was. God made the two great luminaries, the greater luminary to rule the day and the smaller one to rule the night and the stars also. God set them in the firmament of the sky to shed light on the earth, to rule by day and by night and to separate the light from the darkness. " (2).

1. The Bible : 1. 9-13
2. ibid : 1.14-19
There is no reason to question the propriety of even a single statement of the Bible but the idea of creation of sun, moon and stars on the fourth day does not seem to be as rational as it should be. The biblical statement 'when the God began to create the heaven and the earth' itself suggests that the Lord will create the heaven along with its hosts i.e. stars, sun, moon earlier than the earth and its hosts. But the creation story tells us that the Lord created the firmament (heaven) without its hosts on the second day whereas He created the earth along with its hosts (plant life) on the third day. As a rational Being, the Lord should have created the sun, moon and stars along with the firmament on the second day.

If considered on astronomical and botanical grounds, the creation of stars, sun, moon after creation of the earth along with plant life, looks totally unscientific. Astronomy says that the earth was born much later than the stars and the sun. The scientific research has established the fact that life on earth originated thousand million years after its creation. Under the natural law the developed plant life on earth as mentioned in the creation story can...
never be possible without the light / heat of the sun as the plants take their food from the earth as well as the sun. The laws of nature ever remain the same and can never change with the passage of time.

Under these circumstances, creation of stars, sun and moon on the fourth day does not seem to be justified at all. However, there is no ambiguity about the creation statement of the stars, sun and moon appearing in the Bible. But the order in which these biblical statements have been placed seem to be faulty which could be due to the negligence on the part of the composer or the printer of the first translated text of the Bible. If we place the creation work of the fourth day on the third day and third day's work on the fourth day, then the creation of stars, sun, moon, earth and plant life in due order is fully justified in view of the scientific grounds.

2.3.9 Fifth day's creation

On the fifth day, God created the sea creatures and the birds. The Bible says:

"Let the waters teem with shoals of living creatures and let birds fly over the earth across the firmament of the sky."

The Bible: 1.20-23
2.3.10  **Sixth day's creation**

On the sixth day, the Lord created the animals. The Bible says:

"Let the earth bring forth various kinds of living creatures, the various kinds of domestic animals, reptiles and wild beasts of the earth. Let us make man in our own image."  

1. The Bible : 1.24-26

2.3.11  **Mode of creation**

As regards mode of creation of the universe is concerned, the Bible says:

"In the beginning the word existed. The word was with God and the word was divine. It was he that was with God in the beginning. Every thing came into existence through him and apart from him, nothing came to be."  

Therefore, the 'divine word' is the mode of creation.

2.3.12  **Concept of the expanding universe**

The concept of the expanding universe has not been fully developed in the Bible. The following statement of the Bible suggests that initially the universe was in a compressed state and later on it expanded to its present state:

"God made the firmament, dividing the waters that were below the firmament from those that were above it."  

1. The Bible : 1.24-26
2. ibid : John 1.1-4
3. ibid : 1.6-8
The Christian world had a beginning. It did not exist always. It must have begun a finite time ago. The Bible says:

"There were heavens and earth long ago created by god's word." (1)

How long ago? The Bible does not undertake to offer an answer to this question.

1. The Bible : Peter II 3.5
2.4.1 Pre-creation state of the universe

As in the Bible, we do not too find any specific statement in the Holy Quran which could throw light on the pre-creation state of the universe. However, on the basis of creation statements which we have in the Quran, we can very well visualise that state. The things which we observe today in the universe, such as sun, moon, stars, earth, inanimate and animate were not in existence then. That state was of total void and utter darkness. Only Allah existed then. Allah is one. He is self-existent:

"Your God is one God, there is no God but He." (1)

"He is Allah, the single, Allah the Self-existent and Besought of all. He begets not, nor is He begotten." (2)

2.4.2 The Creator

Allah is omnipotent. He is the sole creator of the universe. He creates as His will and what pleases to Him:

"Allah is the creator of all things. He is the One, and the whole of creation is under His complete control. Are there any partners of Allah who have created the like of His creation so that the two creations appear alike." (3)

1. Quran : 2.164
2. ibid : 112.2-4
3. ibid : 13.17
"Allah is the creator of all things and He is Guardian over all. To Him belongs the keys of the heavens and the earth." (1)

"He is Allah, the Creator, the maker, the fashioner." (2)

"Allah has power to do all that He wills." (3)

2.4.3

The creation of matter

In order to create the universe, Allah first of all created the matter. The matter (having five elements of water, fire, air, ether and earth) was in the shape of a solid mass in the beginning.

The quran says:

"Do not the disbelievers realise that the heavens and earth was a solid mass, then we split them asunder." (4)

It can safely be argued that as there existed nothing in the pre-creation state of the universe, Allah created the matter 'out of nothing'. It may be mentioned that it is the law of nature that nothing could be created out of nothing. Law of nature ever remains the same. The Quran says:

"But thou will never find any change in the way (law) of Allah." (5)

1. Quran : 39.63-64
2. ibid : 59.25 : For further details:
   ibid : 15.87, 21.34, 25.3, 31.11
3. ibid : 29.20-21: For further details:
   ibid : 22.15, 22.19, 85.17
4. ibid : 21.31-32
5. ibid : 35.44
The matter is not eternal as is Allah but a created thing by Allah. Thus it has its origin in the Allah. The Allah is the cause and the matter is its effect.

2.4.4 Stages of creation of the universe

After creating the matter, Allah created the heavens and earth and all between them in six periods.

The word 'periods' mentioned in the Quran refers to the creation stages:

"Allah is He who has created the heavens and the earth and that which is between the two in six periods."

(1)

"Your Lord is Allah who created the heavens and the earth in six periods. He has created the sun, the moon and the stars."

(2)

"Ask them: Do you disbelieve in Him Who created the earth in two periods i.e. stages and set up equals to Him? He is the Lord of the worlds. He placed in the earth firm mountains, rising above its surface, and blessed it with abundance, and provided therein nurture for its dwellers in proper measure, equally for all seekers, in four periods. Then He turned to the earth, submit ye to my command, willingly or unwillingly. They said: We have submitted willingly. He arranged them in seven heavens, in two periods, and He invested each heaven with capacity to discharge its function. We adorned the lowest heaven with lights for protection."

(3)

1. Quran : 32.5, 11.8, 50.39
2. ibid : 7.55
3. ibid : 41.10-12
It has been stated in the Quran that heaven was in the form of mist in the beginning. It was this mist which gradually solidified and attained the present position of the celestial bodies such as stars, sun, moon etc. The scientific research has also come to the conclusion that the planets, sun, moon and stars are the solidified states of gas-es.

2.4.5

Mode of creation

Allah created the universe through the Divine Word 'Kun' which was with him. As and when he spoke the word 'kun' concerning a thing, that thing emerged in the universe:

"Allah is indeed the Supreme Creator, the All-knowing. His power is such that when He intends a thing He says concerning it, "Be(kun), and it is." (2)

Thus 'speech' or 'word' is the mode of creation.'

2.4.6

Concept of the expanding universe

The Quran presents the idea of an expanding universe. Initially, the universe was a solid mass. Heaven and earth were joined in one. As per the divine will the solid mass expanded and attained the form of heaven and earth. The Quran says:

"The heavens and the earth were a solid mass, then we split them asunder." (3)

1. Quran : 41-10-12
2. ibid : 36.82, 2,118
3. ibid : 21.31
In the beginning the expansion was very slow. The earth and heaven were very close to each other and were of small size. Later on, they were expanded to their perfection. The Quran says: -

"We have built the heavens as a manifestation of several of our tributes and surely, we go on expanding the universe. We have spread out the earth like a bed." (1)

"Are you harder to create the sky? He (Allah) made it and He has raised its height and fashioned it flawless. He has made its night dark and its morn bright. He created the earth along with it." (2)

The idea of gradual expansion of the universe as mentioned in Quran is in conformity with the scientific view proposed by the supporters of the evolutionary theories. However, according to Quran, the universe in which we live is complete and flawless. Hence no further expansion of the universe as is envisaged by the scientists.

2.4.7 **Age of the universe**

As regards age of the universe is concerned, Quran does not give any answer to this question. It

1. Quran :51,48-49
2. ibid :79,28-29
is beyond human mind's conception. Even the angels do not know the time of creation as they do not have full knowledge of the things of the universe. The Quran says:

"Holy are Thou; No knowledge have we save that which Thou hast taught us. Thou alone art the All-Knowing." (1)

It is Allah only who has detailed knowledge of every thing in the universe. He only knows the secrets of the heavens and the earth. The Quran says:

"I know the secrets of the heavens and of the earth." (2)

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1. Quran : 2.33
2. ibid : 2.34
Nanak Bani View

2.5.1 Pre-creation state of the universe.

Guru Nanak has described the pre-creation state of the universe as a wondrous state in which the Absolute Lord remained self-absorbed:

"As for the beginning one can only think and talk in terms of wonder. The profound Lord then did dwell within His Ownself." (1)

He is of the view that the knowledge of that state of the universe is beyond mind's conception. It is the Absolute Lord who alone knows that state:

"Through thirty-six yugas the world was enveloped by chaos. The creator Lord Himself alone knows that state." (2)

However, Guru Nanak has tried to describe that state in his bani. According to him that was the state of utter darkness. Then was a total void. That was a chaotic state. The earth, sky, day, night, moon, sun, mines of creation, speech, air, water, life, death, continents, under-worlds, heaven, hell, time etc. were not in existence except the Absolute Lord who was in seedless trance then. (3)

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1. G.C.S. : p. 940
2. ibid : p. 1061
3. ibid : p. 1035
Such a state remained for thirty-six yugas before the origin of the universe:

"For countless ages, there was utter darkness; there was no earth and no sky but the Infinite Lord's will alone was pervasive; there was neither day or night nor moon nor sun but the Lord alone sat in profound trance; neither there were mines of creation, nor speech, nor air nor water; neither creation, nor destruction, nor coming nor going; there were no continents, nor underworlds, nor seven oceans, nor rivers, nor the flowing of water; then there was no higher, middle and lower plane; neither there was hell, nor heaven, nor death nor time."

"Then there was neither the sky, nor the underworld nor the three worlds; then there was one absolute Lord alone and nothing was yet created."

"For good many ages, there was all darkness and the infinite and immeasurable Lord was seated in trance; the Lord sat all alone in inky darkness and the world of strife was not in existence then. This wise passed the thirty-six ages."

"For aeons of years He created the chaos and abided in it seated in Himself."
Origin of the universe

The creator

It is the law of nature that every thing has some basis behind its origin. So far as the universe as a whole is concerned, the Absolute Lord is the doer and the cause. Guru Nanak says :

"The Primal Purusha, the Creator Lord is the only doer and the cause." (1)

The omnipotent and unapproachable Lord has Himself created the universe. There is no other creator but only one God. Guru Nanak says :

"There is but one God. True is His name and creative His personality." (2)

"The Supreme Being creates all beings. And also day and night. And the woods, glades and the three worlds, and water. And the four Vedas, the four sources of creation. And the nine divisions of the earth, islands, and all the spheres. Lo from the one word they were created." (3)

"Nay, there is no other creator but one only God." (4)

Guru Nanak has said that the Absolute Lord (non-creative) was in seedless trance i.e. in an inactive/state before creation of the universe. Now the question arises as to how He created the universe

in such a state? Guru Nanak is of the view that in

1. G.G.S. : p. 1385
2. ibid : p. 1
3. ibid : p. 1003
4. ibid : p. 839 : for further details : p. 842, 949, 1032, 37
order to create the universe, the Absolute Lord from His inactive (Nirguna) state became active (Sarguna):

"From formless, the Lord assumed the Immaculate form and from attributeless He became with attributes." (1)

As such, He is called 'Nirguna Brahma' and 'Sarguna Brahma'. From this statement one may think that Nanak Bani postulates two Gods i.e. Nirguna and Sarguna. But this is not true. Gurbani has clarified that Nirguna and Sarguna Brahma are not two different Gods but these are two different states i.e. non-creative and creative states of the one Absolute Lord as:

"He is the Absolute; He the Related One, Who, by His power has bewitched." (2)

The issue as to how the Nirguna Brahma became Sarguna Brahma also needs to be clarified. Nanak Bani teaches us that the Absolute Lord is beyond the reach of senses. He is indefinable and unknowable. He was not established by any one. But He is self-existent. But no body knows as to how He became existent. It is the Absolute Lord who

1. G.G.S. : P. 940
2. ibid : P. 287 & 290 (M.5)
alone knows His Ownself:

"O Nanak, call Him Great.
He Himself knows His Ownself." (1)

Similarly, the Absolute Lord alone knows as to how He became Sarguna from Nirguna. However, we can imagine that He became 'Sarguna' from 'Nirguna' with His own power, which is inherent in Him as fire is inherent in wood.

2.5.3 Absolute Lord as eternal

The universe has a beginning whereas the Absolute Lord is beyond time and is eternal. Guru Nanak says:

"True in the prime, true in the beginning of ages, true He is even now and true He, verily shall be, O Nanak." (2)

"The greater alone is seen to be eternal.
All others continue coming and going." (3)

"Eternal only is the deathless God." (4)

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1. G.G.S. : p. 5
2. Ibid : p. 1
3. Ibid : p. 54
4. Ibid : p. 1076 : For further details: p. 6, 24, 437
2.5.4 Absolute Lord as Self-existent

The Absolute Lord is not only eternal but He is also self-existent as He has got no father and mother. He created Himself His ownself:

"That pure One is all in all Himself, He is neither established nor created by any one." (1)

"The Lord of Himself created His ownself and assumed He Himself the Name." (2)

"When the Lord created Himself, then there was not another." (3)

2.5.5 Absolute Lord creates at His own will

The Absolute Lord is not bound by any authority or regulation to create the universe. He is free to do so. He creates at His Will. Nanak Bani says:

"At His will the Lord creates the universe." (4)

"When He so willed then He created the world." (5)

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1. G.G.S. : p. 2
2. ibid : p. 439
3. ibid : p. 509
4. ibid : p. 292
5. ibid : p. 1036; For further details: p. 150, 1059, 786, 1037, 1043
According to Guru Nanak the universe is made of five elements which are:

"water, fire, air, dust and sky"

Nanak Bani says:

"The water, fire, air, dust and the sky (are the five elements). In that house of five elements abides the mortal." (1)

"Of the five elements, thou created the world of form, let any one try his hand with the sixth if he may." (2)

"Accomplishing the universe of the elements, the true Lord Himself has created the universe." (3)

Thus according to Nanak Bani, matter of the universe consists of five elements. However, according to scientists, the five elements referred to in Nanak bani are not elements in the present sense of the word. They are combinations formed out of about 102 elements known to the scientists to-day. They are of the view that:

"Water" can be interpreted as a condensed form of matter because it contains hydrogen which is the most abundant element in nature.

"Fire" can be interpreted as indicative of heat which is the form of energy.
"Air" is associated with pressure ingredients. There would be no seasons and climates if pressure ingredients do not exist.

"Dust" is the same as plasma which is the fourth state of matter. It consists of charged particles.

"Sky" is the term used in common language but here it means space which exists between various solar systems comprising a galaxy or between various galaxies that constitute the universe.

As regards creation of matter is concerned, Guru Nanak is of the view that the Absolute Lord created the matter from His ownself as:

"From His Absolute-self, He has created the air and water." (1)

"From the Absolute Lord have become manifest the five elements." (2)

It may be submitted here that there is a verse in Nanak Bani which suggests, as the Gurbani scholars interpret it, that from the Absolute Lord was born air, from air was born water and from water the three worlds i.e. the universe. The relevant hymn is as follows:-

"Sachhe Te pawna bhaeey, pawney te jal hoey;
Jal te tribhuvan sajeey ghat ghat jot samoey." (Punjabi version)(3)

1. G.G.S. : p. 1037
2. ibid : p. 1038
3. ibid : p. 19
"From the true One came the wind(air), from the wind(air) came the water. From the water sprang the three worlds and He, the Lord pervaded all."

(1)

The esteemed Gurbani scholars have not been able to interpret this verse in its true sense. Their interpretation of the words 'pawna' and 'pawney' as 'wind(air)' and 'jall' as 'water' is not only ambiguous but unscientific too so far as this verse of Nanak bani is concerned. There is no denying the fact that the great Gurus have used symbolic language to explain the eternal truths in Gurbani. The words so used give ordinary as well as particular meanings. Similar is the case of words 'pawna ', pawney and jall '.

According to Guru Nanak a living being is made of body (union of five elements of air, fire, water, earth and ether), Soul and breath:

"The Soul and body (of five elements) belong to Him. It is He who has infused breath in us." (2)

"The body (of five elements) is in the power of breath." (3)

In both the above mentioned verses 'sah' (breath) and 'pawne' (breath) are independent of 'air' one of the five elements constituting the body of jiva.

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1. Hymns of Guru Nanak : p. 56
2. G.G.S. : p. 1011
   ibid : p. 63
'Sah' or 'pawne' is the breath (prana) of the individual as well as of the cosmos 'as a whole'.

Nanak Bani further says :-

"Everywhere the Lord has staged the play of breath in the beings (body of five elements and Soul);
Withdrawning His might, He makes the beings fall." (1)

It may also be submitted that at the time of death of an individual, the Soul and breath(prana) leave the body behind. In Sidh Ghost, a Sidha asks Guru Nanak:

"Where does the breath(prana) reside?" (2)

Guru Nanak gives the answer as under :-

"This breath is seated in its place in the home of navel region." (3)

The navel region is a particular place in the body of five elements where 'breath' is seated.

The Sidha further asks Guru Nanak:

"When there was no support of the navel lotus, in which home, the breath did stay then?" (4)

Here the Sidha means to say that when the body of five elements did not exist, then where the breath resided.

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1. G.G.S. : P. 1033
2. ibid : P. 945
3. ibid : P. 945
4. ibid : P. 946
Guru Nanak has clarified the position as under :-

"When there was no support of the navel lotus, the breath then stayed in its own home imbued with the Lords love." (1)

The Sidha also asked Guru Nanak:

"What is the origin of life?" (2)

Guru Nanak replies:

"The breath is the origin of life." (3)

From the above facts of Gurbani, it is quite clear that 'pawna' means 'prana or breath' and not air in its ordinary sense. Without prana or 'breath, the microcosm as well as the macrocosm made of air, water, fire, earth and ether cannot exist. The Absolute Lord, therefore, first of all created the 'prana' of the universe. The true interpretation of the phrase 'sachhe te pawna bheya' is that 'from the Absolute Lord originated the prana' of the universe and not air or wind one of the five elements of matter. The wind or air is one of the five elements of matter. Guru Nanak has stated that all the five elements of matter originated from the Absolute Lord. How then the air can be the cause of origin of other elements such as water? So

1. G.G.S. : p. 946
2. ibid : p. 942
3. ibid : p. 942
birth to 'water'. Even otherwise, none of the five elements of matter can exist independent of the others in the atmosphere except in the air-tight test-tubes of the scientists.

Before interpreting the connected phrase 'pawne te jall hoey', I would like to interpret the next phrase 'jall te tribhuvan sajeya' on the basis of the following Gurbani statements though already referred to above:

"Accomplishing union of elements, the true Lord Himself has created the creation." (1)

"Of the five elements, thou created the world of form, let anyone try his hand with the sixth if he may." (2)

If the phrase 'jall te tribhuvan sajeya' suggests that the Absolute Lord created the three worlds (universe) from water, the other two verses suggest that the Absolute Lord created the universe from the matter consisting of five elements such as water, air, fire, earth and ether. Water is one of the five elements of matter. Would it mean that Gurbani contains contradictory statements in its lap. Certainly not! Gurbani is the true word of God revealed to

1. G.G.S. : p. 839
2. ibid : p. 736
the great Gurus by the Almighty. It is the limitation of the human mind which is unable to understand the true nature of Gurbani. Guru Nanak has not used the word 'water' in its ordinary sense but he has used it in the sense of 'matter' as a whole of the universe consisting of five elements. When we interpret the phrase 'jall te tribhuvan sajeya as 'the God created the three worlds (universe) from the matter consisting of five elements' the interpretation not only looks logical but also scientifically true.

In the context of the above facts, now I will like to interpret the phrase 'pawney te jail hoey' which means matter originated from 'breath' or 'prana'. It has already been made clear that a living being is made of three elements such as Soul, Body (of matter) and Prana. Prana is, therefore, one of the three elements of a living being. How could one element be the cause of origin of the other two elements. Therefore, matter did not originate from prana. Indeed, it originated from the Absolute Lord.
Thus the word 'pawney' used in the verse under consideration neither means 'prana' nor 'air'. Guru Nanak has personified this word with the Absolute Lord. From the phrase 'pawney te jall hoey', therefore, means 'matter originated from the Absolute Lord'.

To sum up, the true interpretation of the verse:

"Sachhe Te pawna bhaeva, pawney te jall hoey; Jall te tribhuvan sajeya ghat ghat jot samaeoy."

is as under:

"From the Absolute Lord, originated prana and matter (five elements) and from matter the three worlds (the universe) and in every heart He infused His light."

Mode of creation

2.5.7

The Knower

Guru Nanak has categorically stated that except the Absolute Lord, no body knows how He had created the universe:

"None knows the mystery of the world." (1)

"He Who created, alone knows its mystery." (2)

"Thou, Who has made it understands it. It is all play of thine." (3)

1. G.G.S. : p. 937
2. G.G.S. : p. 788
3. ibid : p. 138
Guru Gobind Singh has also emphatically declared in his bani that 'none can tell how the Lord created the universe':

"Every one explains the creation process according to his intellect but no one can tell O Lord how you first created the universe." (1)

2.5.8 Creation through myriad ways

At the advent of Guru Nanak, different vedic/ upanishadic ideas about the mode of creation, which have been discussed earlier, were prevalent then. Each one of them was considered as authentic by respective scholars. But Guru Nanak categorically refuted all their claims and declared that the Absolute Lord created the universe in myriad ways:

"God has fashioned the world by diverse contrivances of various colours and kinds." (2)

"The Lord hath spread out in a myriad ways." (3)

"Millions has He made in millions of ways." (4)

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1. Dasam Granth : p.1387
2. G.G.S. : p. 6
3. ibid : p. 276
4. ibid : p. 276
Guru Nanak has stated in his bani that the Absolute Lord created the universe through His order, which is divine in nature. It is identified with the 'Law of Nature'. It is through this order, He created the universe:

"By the Lord's order, bodies are produced." (1)

"Thou O Lord created the world of myriads kinds in Thy Will." (2)

Not only the Absolute Lord creates through His order but every thing in the universe do its allotted deeds according to the divine order:

"In Lord's fear wind and breeze ever blow;
In Lord's fear flow lacs of rivers;
In Lord's fear, fire performs the forced labour;
In Lord's fear the earth is trampled under burden;
In Lord's fear the cloud moves head-long;
In Lord's fear the Dharamraj stands at His door;
In Lord's fear is the sun and in Lord's fear the moon;
They travel myriads of miles without an end;
In Lord's fear are the men of miracles, Bhudhas, the demigods and the yogis;
In Lord's fear is stretched the sky;
In Lord's fear are the warriors and the very powerful heroes;
In Lord's fear multitudes come and go;
The Lord has written the writ of His fear over the heads of all;
Nanak, the true formless Lord alone is fearless." (3)

1. G.G.S. : p. 1
2. ibid : p.786
3. ibid : p.464
Thus except the Absolute Lord every thing in the universe is bound by Law of Nature.

Guru Nanak is also of the view that no body has the power to narrate the nature of the divine order. It is, therefore, as mysterious as the Absolute Lord:

"His order cannot be narrated." (1)

"O Thou infinite unfathomable Lord, I know not how far-reaching is thy command." (2)

"How great is the Lord's command over them, all can be known not nor can the Lord's deeds be described." (3)

2,5,10 Creation through word

We also find verses in Nanak Bani according to which the Absolute Lord created the universe through 'word':

"With one word, Thou didst effect the worlds expansion and whereby lacs of rivers began to flow." (4)

"The Supreme Being creates all Beings; And also night and day. And the woods and glades. And the three worlds, four vedas, four sources of creation, nine divisions of the earth, islands and all the spheres. Lo from one word (of God) they were made born." (5)

1. G.G.S. : p. 1
2. ibid : p. 786
3. ibid : p. 1241
4. ibid : p. 3
5. ibid : p. 1003
"Through the word is the creation and dissolution (of the universe)."

From the above verses, the position of word can be determined as under:

Absolute Lord

Word

Universe

Thus the word was before origin of the universe and the word had its origin in the Absolute Lord. As to how the Absolute Lord created the universe through word, Nanak Bani does not give any answer as it has made it clear that 'no body knows as to how the Absolute Lord created the universe'. Therefore, the nature of the 'word' of Nanak Bani is absolutely different from which we find in the vedas/upanishads, the Bible and the Quran. According to these scriptures, the 'word' which the Absolute Lord spoke became the object of the universe.

1. G. G. S. : p. 117-M.3
2.5.11 Concept of the expanding universe

According to Nanak Bani, the universe in the beginning was in a compressed state. Earth and heaven were joined together and they were like two mill-stones. They were in the shape of an egg. By the 'might' of the Absolute Lord, they expanded to the present state. The following verses of Nanak Bani clears this viewpoint:

"Creating the two mill-stones of the earth and the sky, He has separated them." (1)

"Creating the universe, the Lord has extended it." (2)

"Separating the sky and the earth He has spread the canopy of the firmament." (3)

"Breaking the egg into two (heaven and earth) i.e. creating the spheres, the Lord has established them apart." (4)

On the basis of above facts, we may conclude that 'expansion' is the primary feature of the universe of Nanak Bani.

1. G.G.S.: p. 580
2. Ibid: p. 1038
3. Ibid: p. 1076
4. Ibid: p. 839
2.5.12  **Age of the universe**

Nanak Bani has emphatically declared that the time when the Absolute Lord created the universe is beyond mind's conception. Even the learned pandits, qazis, yogis, naths etc. do not know the time of creation. It is the Absolute Lord, the creator who alone knows as to when He created the universe. The following verses of Nanak Bani clears this viewpoint:

"What the time, what moment, what lunar day, what week day, what the season and what month when the world came into being?

The pandits find not the time even though it be mentioned in the Puranas texts.

Nor do the qazis, who scribe the writing of Quran know the time.

Neither the yogi nor any one else knows the lunar day, week day, season and month.

The creator, who creates the world, He Himself knows the time."

(1)

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1. G.G.S. : p. 4
The description of the pre-creation state of the universe in the Vedas and Nanak Bani is almost the same. They have clearly stated that 'except the Absolute Lord nothing whatsoever existed then'. Nanak Bani gives detailed account of non-existent things in that state as compared to the Vedas. The Bible and the Quran give no direct account but they are suggestive in this respect. Guru Nanak has also stated that the pre-creation state was a wondrous state and is indescribable. The idea of pre-creation state of the universe of the scriptures is almost in conformity with that of the supporters of the evolutionary theories. But Nanak Bani and other scriptures are totally against the Steady-State theory of the universe put forward by a group of scientists.

Nanak Bani and other scriptures believe that in the beginning the universe was a solid mass. According to Guru Nanak it was in the shape of an egg. Under the divine order, it expanded gradually to its present state. The scientists have also put forward similar views about the initial as well as expansion states of the universe. The fire-ball postulated by G. Lemaitre in 1932 can be equated with the 'solid mass in the shape of an egg' as described by Guru Nanak.
The basic difference between Nanak Bani and scientific view is that the former believes in the 'creator' who is behind the creation and expansion of the universe; whereas the latter believes that the 'matter' of its own evolved to the present state of the universe.

As regards creation of the matter is concerned, Nanak Bani has stated that the Absolute Lord created the matter of the universe 'out of Himself'. The scientists do not give any answer as to from where the initial fire-ball (the matter of the universe) originated.

So far as age of the universe is concerned, we find exaggerated statements put forward by the scientists. They are not unanimous on this issue. From their views we find that the universe originated between eight to twenty thousand million years ago. The views of the scientists look merely speculative. Their views do not solve the problem at all. Nanak Bani has clearly stated that 'a son cannot describe the birth of his father'. Similarly the earthly man can never be able to describe as to when the universe originated.

1. G.G.S.: p. 284 (M. 5)
Whatever may be the position of the scientific knowledge to-day but from the above analysis, it seems that the problems relating to the origin of the universe, origin of matter, age of the universe etc. are beyond the scope of scientific research. It seems that it will never be able to solve these problems unless it postulates a creator behind the universe as they believe in the creators of all other things.

Nanak Bani is very clear on these issues stating that the Absolute Lord created the universe. He Himself is the matter of the universe and no one knows as to how and when the Absolute Lord created the universe. It is the Absolute Lord who alone knows the mystery of the universe.

In nutshell, we may conclude that there is no originality in the views of the scientists about the pre-creation and expansion states of the universe put forward by them in the 20th century as these were already recorded in Nanak Bani about five centuries earlier.

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