Article

Big Bang or Big Bloom: A Darshna of Vaidik Cosmology

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Abstract

The question of where we come from, what for and why has always captured the imagination of humanity since our origins. Many philosophies have attempted to explain this puzzle. Modern science is looking for a solution to this puzzle in form of 'A Theory of Everything'. Georges Lemaître's concept of the universe starting from a primaeval atom resulted later on in the more popular version of the Big Bang theory. The solutions of Einstein's theory of general relativity and astronomical observations such as redshift gave the indications of an expanding cosmos. The conceptualisation of the Primaeval atom theory is logically incorrect. The initial estimate about the age of the cosmos was just about 2 billion years which has been later revised to 13.8-14 billion years. The shape and size of the cosmos need some more in-depth insights as these are beyond the limits of scientific instruments. The Big Bang theory is not the perfect candidate for a theory about the origin of the cosmos.

Big Bloom is a metaphorical term representing growth, development, beauty, reason, purpose and a source of the Cosmos. Brahma and some of the other deities Laxmi and Saraswati are depicted sitting on a bloomed lotus and Bhagwan Vishnu is considered a preserver of the cosmos with a chakra revolving around his finger. These depictions are Upma (analogy) as to how the Cosmos may have evolved through a gradual process following the principle of Mahat (Mass). The Cosmos is built to perfection with interdependent systems acting in harmony and without any wastage. The Vaidik view of time and space, cosmic intent and intelligence, as an observer in quantum uncertainty and the 'will' as a source of quantum vacuum fluctuations. A Darshan (perspective) of Cosmology, which is logical and beyond the conceptualisation of present-day science and offers us 'A Theory of Every Being'.

Keywords: Big Bang, galaxy, age of universe, philosophy, ancient wisdom, Vedas, Rig Veda, gravity, dark matter, dark energy, cosmology, quantum Physics.

1. Introduction

Stephen Hawking said in 1996 in his book "The Nature of Space and Time", "all I'm concerned with is that the theory should predict the results of measurements". Hawking along with Leonard Mlodinow mention in their book 'The Grand Design,' in which they say, "What is the nature of reality? Where did all this come from? Did the universe need a creator? Traditionally, these are questions for philosophy but philosophy is dead." Scientists have become the bearers of the torch of discovery in our quest for knowledge." Scientists are experts of observable reality whereas

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philosophers are experts of reality behind observable reality. One needs mathematics to form the conclusion and the other needs intuition.

We live in a world with differing viewpoints. The rules of sciences and mathematics are common for all but the underlying philosophy, perspective and thinking are not. Scientists are still not exposed to or versed with eastern philosophies and more particularly Vaidik philosophy except for some like Ervin Schrodinger, Tesla etc. Sri Krishna in Gita mentions Char and Achar Jagat (conscious and non-conscious Cosmos). In Sanskrit the words define themselves and Jagat means spread of Knowledge.

Plato's philosophy is known as Platonism and a modified Platonic view as Neo-Platonism affirms the existence of abstract objects, which are asserted to exist in a third realm distinct from both the sense-driven external world and the internal world of consciousness. This can apply to properties, types, propositions, meanings, numbers, sets, truth values, and so on. Plato believed in the notion of spirit, an essence within all things, manifest in man as the soul, but also an extension of God, a force at work in Nature, guiding the universe[1].

Leucippus of Miletus (5th century BCE) is thought to have originated the atomic philosophy. His famous disciple Democritus[2] was born in c. 460 BCE and he was an ancient Greek philosopher, who gave the idea of philosophical atomism and of the atomic theory of the universe. Democritus asserted that space had an equal right with reality, or Being, and should be to be considered existent. In this void is an infinite space in which an infinite number of atoms make up the 'Beings'. Atoms are eternal and indivisible; absolutely small, so small that their size cannot be diminished (hence the name *atomon*, or "indivisible"); and incompressible, and fill the space they occupy. They are homogeneous differing in shape, arrangement, position, and magnitude. The atoms of water and iron are the same, but those of water, being smooth and round and therefore unable to hook onto one another, roll over and over like small globes, whereas those of iron, being rough, jagged, and uneven, cling together and form a solid body.

Since these atoms are eternal nothing comes into being or perishes and the compounds made out of the atoms may increase or decrease, a concept of birth and death. Democritus viewed motion as fixed and "necessary" laws of a purely mechanical system. The motion of the atoms was in all directions—it was a sort of "vibration"; hence there resulted in collisions and, in particular, a whirling movement, whereby similar atoms were brought together and united to form larger bodies and worlds. This happened not as the result of any purpose or design but rather by normal manifestation of the nature of the atoms. Atoms and voids are infinite in number and extent, and motion has always existed, there must always have been an infinite number of worlds, all consisting of similar atoms in various stages of growth and decay.

His ethical system, founded on a practical basis, posited an ultimate good ("cheerfulness") that was "a state in which the soul lives peacefully and tranquilly, undisturbed by fear or superstition or any other feeling." He believed in 'Good' and the concept of 'Soul'. His ideas reflect a version of the ideas of Maharishi Kanad (and his Anutava).

[1] Isaac Newton: The Last Sorcerer- White, Michael
[2] https://www.britannica.com/biography/Democritus

The Aristotelian notion of minima naturalia, and microstructures of matter in the explanation of chemical changes in Aristotle's Meteorology also reflected atomism. In Descartes's philosophy there appeared to be no continuing need for God. Mathematics was central to his method of inquiry, and he connected the previously separate fields of geometry and algebra into analytic geometry. Descartes never intended this interpretation and was himself a devout Christian, but to Dr Henry More, and later to Newton, the mechanisms and ideas portrayed in Descartes's Discourse on the Method and Principles of Philosophy could easily be interpreted as atheistic. In More's universe, the matter was guided by spirit, manipulated by God entirely at his discretion.

Newton rejected Descartes' mechanical theory as a concept that denied the omnipotence of the Creator. He was able to accept Pierre Gassendi's Christianised atomism, but even this was with reservations. In the 'Quaestiones' he wrote: "Of Atoms - It remains therefore that the first matter must be atoms and that matter may be so small as to be indiscernible. "The excellent Dr Henry More in his book of the soul's immortality has proved this beyond all controversy, yet I shall use one argument to show that it cannot be divisible in infinitum & that is this: Nothing can be divided into more parts than it can be constituted of. But matter (i.e. finite) cannot be constituted of infinite parts."

Slowly the scientific world became comfortable with the version of reality explained by mathematics. Mathematics is a tool which helps us understand reality analytically, logically and without prejudice. However, it is only helpful if the employed mathematical methodologies are correct. The most used form of mathematics in science is 'Calculus' and if it is less accurate or not absolute then the results we achieve using mathematics are also not accurate.

From the most ancient Vaidik philosophy to the Platonic view, some commonality in the perspectives exists and that is the presence of intelligence in the cosmos. in Vaidik philosophy it is known as Brahaman and in the platonic view, it is Nous and the universal mind. A view of the soul being an interpreter and as a part of the universal mind is completely ignored by scientists so much so that Georges Lemaître a Belgian catholic priest and scientist postulated the primaeval atom theory, he completely bypassed this view despite his theistic views. His theory of saying the world originated in the Big Bang and without mentioning God also angered Pope Pius XII.

Pope Pius XII was interested in science he gave a talk to the Pontifical Academy of Sciences, which is the Vatican's Science Academy in 1951. He didn't mention Lemaître's contribution and said that present-day science has associated with creation. And therefore, he says creation took place and therefore, there is a creator, and therefore, God exists.

One of the reasons science stepping away from theology is because the latter was full of untenable ideas that not only hid truth but also presented an illogical perspective.

2. Thought Process behind the Big Bang Theory

Lemaître's thought process is reflected in his following statements,

"I think that everyone who believes in a supreme being supporting every being and every acting, believes also that God is essentially hidden and may be glad to see how present physics provides a veil hiding the creation."

"Any preexistence of the universe has a metaphysical character. Physically, everything happens as if the theoretical zero was really a beginning."

"We may speak of this event as a beginning. I do not say a creation. Physically it is a beginning in the sense that if something happened before, it has no observable influence on the behaviour of our universe."

He spoke about determinism and whether the universe is pre-determined in some way. And he says that the *"beginning of the universe is simple, indivisible, indifferentiable," that's his primaeval atom. "The world differentiates as it evolves. It does not consist in spinning out. It does not consist in the decoding of a recording."* The future is not recorded in the universe. He says instead, "It consists of a song, each note of which is new and unpredictable. The world made itself and made itself randomly"

He adopted the idea of a materialization process of the radiation, but he did not consider the fact that cosmic rays can serve again as a source of elementary particles. He arrived at the following conclusion: "One could admit that the light was the original state of the matter and that all the matter condensed in stars was formed by the process proposed by Millikan" (Lemaıˆtre 1930, p. 180). This was an idea reflected in Bible. This strange and hypothetical idea is what led him progressively on the path to the prehistory of big bang theory, namely the latter hides the quantum contributions to the gravitation Primeval Atom Hypothesis.

3. Evolution of the Big Bang Theory

In 1912, American astronomer Vesto Slipher conducted a series of observations of spiral galaxies (which were believed to be nebulae) and measured their Doppler Redshift. In almost all cases, the spiral galaxies were observed to be moving away from our own.

In 1915, the idea of an expanding universe started from the possible solutions to Einstien's General theory of relativity which was based on a static universe. General relativity is part of the framework of the Big Bang theory. Einstein's equations can be generalized by adding a term called the cosmological constant. When this, space itself acts as a source of gravity. Einstein originally introduced this term in his pioneering 1917 paper on cosmology, because it held that the universe was static, and the additional term was required for constructing static model universes within the framework of general relativity.

The solution to Einstein's equations for general relativity was first given by the Russian mathematician Friedmann in 1922, in Friedmann equations. Contrary to Einstein's solution of the Cosmological Constant, Friedmann's work showed that the universe was likely in a state of expansion.

In 1924, Edwin Hubble's measurement of the great distance to the nearest spiral nebula showed that these systems were indeed other galaxies. At the same time, Hubble began developing a series of distance indicators using the 100-inch (2.5 m) Hooker telescope at Mount Wilson Observatory. And by 1929, Hubble discovered a correlation between distance and recession velocity – which is now known as Hubble's law.

in 1927, Georges Lemaitre, derived the same results as Friedmann's equations and proposed that the inferred recession of the galaxies was due to the expansion of the universe. In 1931, he took this further, suggesting that the current expansion of the Universe meant that if we go back in time, the smaller the Universe would be. At some point in the past, the entire mass of the universe would have been concentrated into a single point from which the universe originated. Lemaˆıtre adapted this hypothesis in the context of an expanding universe where the wavelength of electromagnetic waves is stretched by the cosmological expansion.

In 1965, two radio astronomers-- two radio engineers, Penzias and Wilson picked up the signal with a radio telescope that they built in New Jersey and within six to eight months astronomers realized (or assumed) that this was the echo of the Big Bang, cosmic microwave background radiation. By the time they did, Lemaitre was on his deathbed dying of cancer. He was informed by friends a few days before his death that astronomers had agreed that this was the confirmation of the Big Bang.

When it became apparent that the universe is not static, but expanding, Einstein discarded the cosmological constant. Since the 90s, however, astronomical evidence indicating an accelerating expansion consistent with a cosmological constant – or, equivalently, with a particular and ubiquitous kind of dark energy – has steadily been accumulating.

The discovery and confirmation of cosmic microwave background radiation in 1965 secured the Big Bang as the best theory of the origin and evolution of the universe. From the late 60s to the 1990s, astronomers and cosmologists made an even better case for the Big Bang by resolving theoretical problems it raised. These included papers submitted by Stephen Hawking and other physicists that showed that singularities were an inevitable initial condition of general relativity and a Big Bang model of cosmology. In 1981, physicist Alan Guth theorized a period of rapid cosmic expansion (Inflation Epoch) that resolved some other theoretical problems.

4. The Big Bang Theory

This is the prevailing cosmological description of the development of the Cosmos. Lemaître's idea of the universe starting from the primaeval atom evolved with time to include sudden inflation and then slowing down and came to be known as Big Bang which is the widely accepted theory.

Under this theory, space and time emerged together 13.799±0.021 billion years ago with a fixed amount of energy and matter that has become less dense as the Universe expanded. After an initial accelerated expansion at around 10^{-32} seconds and the separation of the four known fundamental forces, the Universe gradually cooled and continued to expand, allowing the first subatomic particles and simple atoms to form.

Before the big bang, scientists believed the entire vastness of the observable universe, including all of its matter and radiation, was condensed in an infinitesimally small singularity, a point of infinite denseness and heat. This nearly incomprehensible state is theorised to have existed for just a fraction of the first second. Dark matter gradually gathered, forming a foam-like structure of filaments and voids under the influence of gravity. Giant clouds of hydrogen and helium were gradually drawn to the places where dark matter was most dense, forming the first galaxies, stars, and everything else seen today.

Another theory is known as the conformal cyclic cosmology" which postulates that the universe goes through infinite cycles where the Big Bang is the birth of a new universe. According to the Nobel Laureate Roger Penrose, Big Bang was not the start of our universe rather it was the end of the previous one. There was something before the Big Bang and that something is what we will have in our future. This is the kind of explanation which is more pertinent as a transformation of a galaxy and compressive and expansive cycles of a galaxy which are explained in Vaidik philosophy as the life cycle of Brahma.

5. A logical Evaluation

Lemaître' reflected the thoughts about the metaphysical source or a beginning like that from zero. He regarded his primaeval atom as a natural beginning to the cosmos as he put it, distinct from this creation out of nothing "**Ex Nihilo Creatio"**. The church rejected this gnostic philosophical concept and believed in **"Ex Nihilo Nihil Fit"** or "Nothing Comes from Nothing" is a famous quote by the pre-Socratic philosopher Parmenides. Parmenides held that the multiplicity of existing things, their changing forms and motion, are but an appearance of a single eternal reality ("Being"), thus giving rise to the Parmenidean principle that "all is one." From this concept of Being, he went on to say that all claims of change or non-Being are illogical. This is how the church believes 'God is One' or the concept of one God against the only preferred god of the Jews.

To satisfy this incorrectly perceived premise of logic. Lemaître' introduced the primaeval atom. He regarded the creation as something as a philosophical question that cannot be settled by physical or astronomical considerations in complete contradiction.

His model reflected a logical incongruity. How can an infinite universe exist inside a finite atom? **The Argument from Finite Size is one of Zeno's paradoxes**[3]. The first argument purports to show that if many things exist then they must have no size at all. Second, from this Zeno argues,

[3] https://stanford.io/3YZr1X7

it follows that they do not exist at all; since the result of joining (or removing) a size-less object to anything is no change at all, and then he concludes that the thing added (or removed) is literally nothing.

The Big Bang Theory used general relativity as its cosmological model. One of the aspects of general relativity is that it assumes the model of the universe to be constructed along very simple lines, the structure of the cosmos should be approximately the same, regardless of an observer's location or direction of observation: homogeneous and isotropic.

What Lemaître realized in reading de Sitter's solution, was that de Sitter had violated one of the assumptions which are must in the universe models, which is there's no special place in the universe. It is assumed that the universe is homogeneous and isotropic and every place is just the same as every other. Like the surface of a balloon as the universe without any centre. As per Lemaitre, de Sitter had made a mistake essentially, and Lemaitre found that when he transformed coordinates in the de Sitter model, he came up with a universe that had no centre and was expanding.

The assumption of a homogeneous and isotropic universe without a centre may not be true. Such a comparatively simple universe was used for the ease of mathematical solutions and lack of experimental data. The cosmos may have varying densities and any geometrical shape without a centre defies the laws of mathematics hence it is unscientific.

The thermodynamic arrow of time implies that entropy always goes up. a measure of disorder in the Universe must always increase **in any closed system**. This law is often misinterpreted taking the universe as a closed system. The Universe looks so organized and ordered with solar systems, galaxies and intricate cosmic structures. The entropy may increase in a closed system but the intelligence in the Cosmos acts against the entropy and organizes it.

There are many unanswered Questions such as where did that primaeval atom come from, and how long did it exist? What caused its instability and explosion? All such questions are hidden behind one word ‘Singularity’ which simply means ignorance. Many other questions such as why against the how? Why are the rays forever? Why are the consumables in the universe not perishing?

6. Timeline of the Big Bang

The estimates of time for the initial accelerated expansion at around 10^{-32} seconds don’t describe the time of 10^{-32} seconds of which reference frame (from the point of view of the observer). It is obvious that they are talking about our current reference frame of the earth but that would be the most inaccurate conclusion. The timings in the Big Bang have been described from a reference frame on the event horizon where even a second is like thousands of years measured in the earth’s reference frame.

The wavelength of light stretches out just by the expansion of space and it is known as redshift. Lemaitre knew that in his model, the velocity of a receding galaxy is going to be proportional to

the distance away from us is linearly proportional. He published this relationship in 1927, but this speed-distance relationship that the speed of the galaxy is just equal to the distance to the galaxy times the proportionality constant was first arrived and published by Edwin Hubble, That proportionality constant gives us the age of the Cosmos. Smaller the number, the greater the age of the universe. So these early numbers implied a universe that was not all that old, about 2 billion years old.

The above facts sound impractical but these facts are true when seen in the light of the following explanation. The ages of individual stars in the Milky Way can be estimated by measuring the abundance of long-lived radioactive elements such as thorium-232 and uranium-238, then comparing the results to estimates of their original abundance, a technique called nucleo-cosmo-chronology. These yield values of about 12.5 ± 3 billion years for CS 31082-001 and 13.8 ± 4 billion years for BD +17° 3248. We must observe that this period is calculated from the formation of heavier radioactive elements such as thorium-232 and uranium-238 which were probably the last ones to form.

The duration of the formation of the elements from the beginning of the Big Bang has not been taken into account. So the entire process is like someone plants a mango tree and it takes five years to grow up and then mangoes form. By looking at the fruits, if we determine that the age of the mango tree is three months, then it wouldn't be a correct conclusion. Therefore, the Milky Way is not 12-14 billion years old. The current logic in the calculation of the age of the universe is wrong and that's why astronomers keep running into substances that are, as per them, older than the universe itself. There was no Big Bang either because the formation of even our part of the universe was a gradual process.
The theory of relativity explains how time dilation takes place when the moving observer nears the speed of light. In 1905, Albert Einstein postulated that the speed of light C with respect to any inertial frame is a constant and is independent of the motion of the light source. Time is relative to the observer's frame of reference. It depends on the observer's motion and strength of gravity. For instance, one could argue that time here on earth runs faster (due to lesser gravity) than in space because gravity slows the passage of time.

The Milky Way galaxy has a supermassive black hole at its centre, 26,000 light-years from the Solar System, in a region called Sagittarius A*. It has a radius of 22 million kilometres and a mass of more than four million times that of the Sun. It can completely stretch out space-time. Emma Osborne, an astrophysicist at the University of Southampton, told an audience at New Scientist Live: "Anything mass will stretch space-time. And the heavier something is, or the more mass it has, the more it will stretch space-time, "If you were to stand just outside the event horizon of Sagittarius A*, and you stood there for one minute, 700 years would pass because time passes so much slower in the gravitational field there than it does on Earth."

We must assume that before the expansion, this black hole was much bigger and was containing the mass of the entire Milky Way. Sagittarius A* is emitting radiation even at present (those will reach us after 26000 years). The rate could vary but even at the beginning, it may be emitting radiations slowly and that should not be seen as an explosion. Two prime factors lead to such a conclusion, first is Sagittarius A* still present at the centre of our galaxy and not exhausted as happens with any substance during an explosion, nothing should have remained at the centre.

7. Concepts of Eternality, Infinity and Shunya

Eternality. It is logical to interpret that 'Everything has a Beginning'. The Vedas talk about the beginning of the Cosmos at a certain point in time., and if there is a beginning then the world is non-eternal. It doesn't mean that it is not an infinite series like that one mathematics, a set of natural numbers, real numbers etc. However, the world may appear eternal from another perspective. Let's assume a time of human life span, many wise people say that this world will carry on, even if we are not there, from that perspective the world is eternal.

Infinity. Infinity is a concept of mathematics which is as per the power of the interpreter. It depends on how long you can realize the finite, if the finite is outside the power of interpretation then it can be treated as infinite. Infinity is a mathematical reality. The symbol of infinity ∞ is a 0 with a twist. To a fish, the ocean is infinite, to a tadpole the lake may be infinite and to humans the cosmos is infinite. The Law of conservation of energy is possible only with a finite expense. Finiteness ensures that energy is conserved and does not get diluted by infinity. Brihadaranyaka Upanishad aphorism states the following.

ॐ पूर्णमदः पूर्णमिदं पूर्णात् पूर्णमुदच्यते। पूर्णस्य पूर्णमादाय पूर्णमेवावशिष्यते॥

It is infinite, and this (cosmos) is infinite, the infinity leads to infinity. If the infinity of the Cosmos is moved out of him (infinite) he remains infinite.

Shunya. The concept of Shunya was given to the world by Vedic Scriptures such as the Upanishads. It denotes the beginning of the potentiality before the manifestation. If zero is one end of a series infinity is the other. It also has properties similar to infinity. At the root of every dimension, there can be zero of that dimension hiding in it the infinity of another dimension. E.g. where matter ends, we find the energy (and quantum vacuum fluctuations) and if we remove energy, there is space, and time and then remains the unfathomable infinite consciousness.

8. Jagat

Jagat or the cosmos is Consciousness based. The name Jagat contains its definition. J is the root for the word Janam (Gyan) or knowledge, it denotes that Cosmos is the movement or spread of knowledge. Consciousness has thinking capability and this supreme consciousness which is termed Poorna (Complete, infinite) has a uniqueness of existence beyond the known dimensions (Parbrahama), Nirguna (without attributes) Alakshya (unattainable, unknowable) through the normal existence and Paramatma (Supreme self). This consciousness is an extremely superior superset of human consciousness yet both may have some common attributes and capabilities and by extrapolating such attributes we can conjecture about the attributes of the Supreme being. One of the main attributes of consciousness is the thinking process which could be usually divided into two broad categories of Sat and Asat.

Sat means what is feasible, lasting, sustainable, possible of existence, logical, true etc and Asat is imaginary, infeasible, and incapable of logical and mathematical evaluation. Asat disappears in reiterative cycles of refinement of thought. If it is persisting and put in action then it is, incoherent and unfeasible, unrhythmic. So it mostly retains its existence in the thought realm.

This existence is beyond the effect of cosmic time, it is beyond the cosmos. Time may be inferred here by the sequence of thoughts and decisions and not by relative movement. The absolute unmeasurable time of causality, one process leading to another and it is completely unrelated to cosmic time. The Nāsadīya Sūkta, also known as the Hymn of Creation, is the 129th hymn of the 10th mandala of the Rigveda.

नासदासीन नो सदासीत तदानीं नासीद रजो नो वयोमापरो यत|
किमावरीवः कुह कस्य शर्मन्नम्भः किमासीद गहनं ग□ीरम||

At that time, there was no Asat or Sat: there was no realm of time, no space. What was it covered with, and where? what gave shelter? Were the unfathomed waters there?

Only the Sat has the capability of existing in a physical sense and all Bhuta (existence), Dravyas (fluids, analogue energy), Tattvas (things or non-intelligent beings), and Padartha (manifested stanzas). The quality of a soul (cognition centre) is to differentiate and choose Sat for its information processing.

ॐ असम्भवस्तु सतोऽनुपपत्त□ॐ ॥ २.३.९॥ The Sat does not originate from impossible.

तपाम्यहमहं वर्षं निगृह्णाम्युत्सृजामि च।
अमृतं चैव मृत्युश्च सदसच्चाहमर्जुन।। 9.19 ***।।***

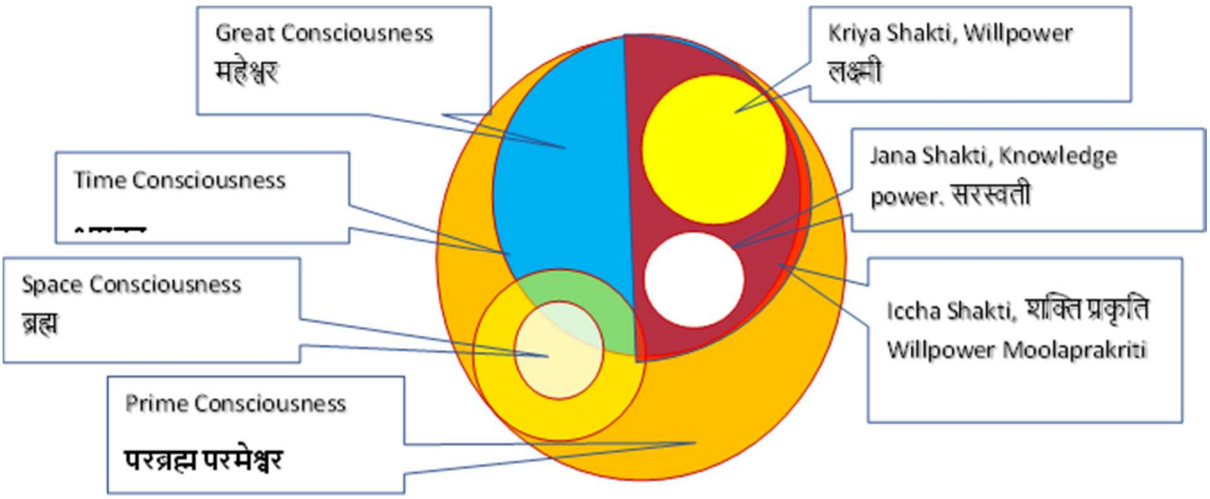
I generate heat, I evaporate water and make it rain. I am immortality as well as death, O Arjuna. I am Sat, as also Asat.

Before the process began, Paramatma decided to create a system. The decoding of aim is a directed thought process and an action that is not spontaneous but it originates from the will. The will is also a thought process chain that reiterates itself gaining more force as it proceeds. However, a source point of motivation is required as a thought seed from which springs a tree of the will along with its aims and objectives. The purpose of this system can be inferred as Leela (play) but since this play is non without a purpose it helps in the generation, refinement, engagement, entertainment or amusement of its consciousness. In Vedas Paramatma is compared to a farmer who sows the seeds and then reaps the harvest, Paramatma too sows the seeds of consciousness in the form of Jeev Atma and allows them to grow. With this purpose, he willed the cosmos into action.

तत्सर्वशक्ति बीजजडप्रकृतिवासनाया व्यक्त□ावः ।
प्रणवशब्दः दिककालाणोऽपि तस्य रूपाणि ॥ ३ ॥

That omnipotent source (seed) has created nature. Aum transforms in Space, time and matter etc. The cosmos is known as Jagat, spread pf Janam (Gyan or knowledge, thought, Sat) and the entire concept of cosmos is information or software-based. The Jagat can be categorised into two broad categories Char and Achar. The Char are the ones who are conscious and Achar are the ones who are non-conscious (nature). The representational aspect of the consciousness dedicated to the project is sown below

The dimensions of Energy, time, space, intelligence, and Matter. are PanchMahabhuta apart from Parameshwar (Supreme Consciousness) from the Cosmos.



Prakriti- (Pra + Kriti) Creation of Pra, also described as moolaprakriti in the Sankhya. The software programs decide the thought and a part of it channelizes the thought process. the process of channelling this thought into a new dimension of energy requires control (Rajas), Intelligence (Sat) and generation power (Tamas).

Shiva represents the main aspect of this will and is a major part of Parameshvara known as Maheshvara. He is half shakti (power of thought, tamas) and Half Shiva (Consciousness). Vishnu is Raj who controls that energy by sequencing it and Brahma is Sat, who shapes that energy

intelligently. Brahama is shown on a lotus rising from Vishnu's naval metaphorically depicting the time-space is interwoven and it is time that controls the space.

Quantum Vacuum Fluctuations. The software engine of Brahman is deployed in two ways of Akasha (space) and Chitta (Intelligence) by the energy which consists of Icchashakti (Mool Prakriti, Kali, Shakti), Kriyashakti (action, Laxmi) and Janamshakti or Gyanashakti (Intelligent force, Saraswati). These energies create vrittis (energy spirals) and by doing that many times over these form the **quantum vacuum fluctuations.**

जन्माद्यस्य यतः ॐ ॥ १.१.२॥ It is the source from which all are derived (born)

आकाशस्तल्लिङ्गात् ॐ ॥ १.१.२२॥ Sat is mark of Akasa (Brahaman).

Brahman is omniscient. The abodes of Bhu Loka and Dyu Loka are due to their own words (vibrations). It is to be achieved by the liberated because ether is no inference (guess, Anumanam) of these words or of Prana's body (spirits). The difference is described and the process and one is stable and the other is not. The vast is also with the Prana and still has attributes (properties).

ॐ अक्षरमम्बरान्तधृत ॐ ॥ १.३.१०॥ The akshara (consonants) are basis of space.

ॐ सा च प्रशासनात् ॐ ॥ १.३.११॥ and that from the command (of Akshar).

ॐ अन्य विव्यावृत्तश्च ॐ ॥ १.३.१२॥ other forces make up vrittis (wave spirals)

By seeing this action is described and so small akasha (space) is created.

ॐ गतिशब्दाभ्यां तथा हि दृष्टं लिङ्गं च ॐ ॥ १.३.१५॥ The speed of the vibrations (words) is seen and is also a mark of it.

9. Space

Time and space both are perceived as fluids. Space is inert and shapes the flow whereas time is responsible for action and movement.

ॐ धृतश्च महिम्नोऽस्यास्मिन्नुपलब्ध ॐ ॥ १.३.१६॥ by the support (of thinking, intellect) of space this greatness in this (asmin) is present (available). And this is proven (by inference).

सदनित्यं द्रव्यवत् कार्य कारणं सामान्यविशषवदिति द्रव्यगुणकर्मणामविशषः॥१।१।८॥

Sat (innate mathematics) is the general and special cause and also the further effect of any containing substance on the resultant attribute, action and substance.

ॐ ब्रह्मविदाप्नोति परम्। तदेषाऽभ्युक्ता।सत्यं ज्ञानमनन्तं ब्रह्म। **Tettriya Upnishad**

Brahman is Truth, Brahman is Knowledge, Brahman is the Infinite

10. Time

Time is non-linear and it is perceived only through movement. We perceive time through light whether it is the observation of the Sun during the day or stars in the night sky so it may appear to us in the same way light gets influenced. If we perceive time through an atomic clock which measures the vibrations then if these vibrations get affected, our perception of time will also get affected.

Bhagwan (Bhag + wan), Bha Ga means movement of light. Bhagavan is a preserver of the cosmos and represents time. Vishnu is the consciousness and Laxmi is the enabler by providing energy. Since energy is a priory of time and space it is forever.

नित्येवभावादनित्येषु भावात् कारणे कालाख्येति ॥२॥२६॥

Time exists in non-eternal substances (particles etc) and it does not apply to eternal substances (waves).

कारणे कालः॥७।१।२५॥ कारणेन कालः ॥५॥२।२६

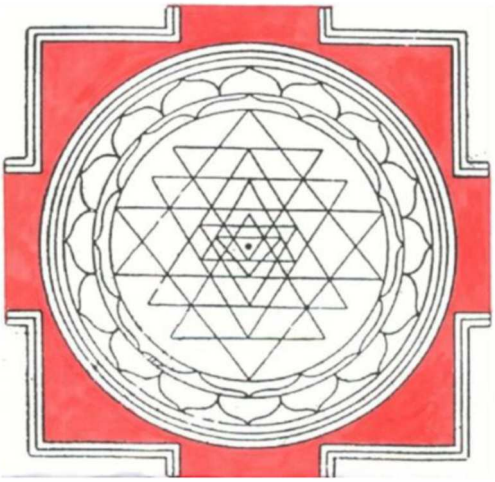
The reason is time and the time is the cause (for further events).

Let's consider a river which originates in hills and comes down to the plains. The channel of the river is uneven and becomes wider as it comes to the plains. The flow is rapid where the river is narrow and the slope is steeper. We can compare the flow of water in this river with the flow of time. The space changes affect the speed of time. As the flowing water creates its channel, time creates space. Also if due to an avalanche, melting of snow or cloudburst etc the amount of water increases the flow will increase. For a fish in mountains the life is always fast compared to a fish in the plains or the one in a reservoir.

As humans, we experience time and perceive it. A boring activity makes it appear longer and an interesting one makes it appear shorter. It depends on the engagement of the mind in experiencing our surrounding environment. In Samadhi where the mind becomes devoid of experiences, all senses including the sense of time stops.

11. The Big Bloom

A Bloom refers to a natural process of evolution indicating the source, a design, a process and the outcome. As the Jagat starts from Shunya and has been represented in ancient philosophy in many ways. The orientation of a person to his purpose Purushartha (Purushartha, Purusha, Consciousness) was of prime importance so it was made compulsory and the first thing. Yantra representation of Cosmic evolution with Bindu representing Consciousness or Shiva in centre 3 Shakits overlapping each other and creating multiple patterns.



Yajna ceremonies too represented cosmic evolution. The oblations and Karmakkand were to align thoughts and follow the sequence. As per Vaishesika Darshan

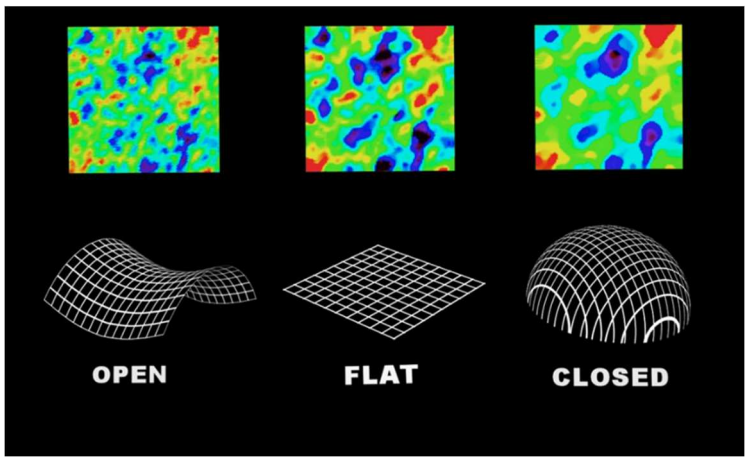
12. The Origin of Cosmos

Since the origin started from a Bindu, the cosmos has a centre. From the centre, it is most natural that energy radiated in all directions through the path laid by space (Brahma) and sequenced by time (Vishnu). The universal design has its reflections on nature. It is evident from the way light or any radiation spreads. Sanskrit words are meaningful, appropriate and concise.

The word 'Brahma' means expansion (Br) and 'Amha' (am, Aum sound). This means the program which took care of the expansion of the initial ever-expanding vibration. He also formatted the 3D space. The space-time fabric is one of the Maya (techniques, illusion) of Brahma. The Brahmand is suffixed with 'and' meaning spheroid. The word 'Brahmand' means an expanding spheroid. The one word describes it all. Since the beginning took place from a sustained, purposeful thought of consciousness and it is continuous, extending to the surface of a seemingly infinite sphere. Even now 'the vibration' may be generated in the same manner it

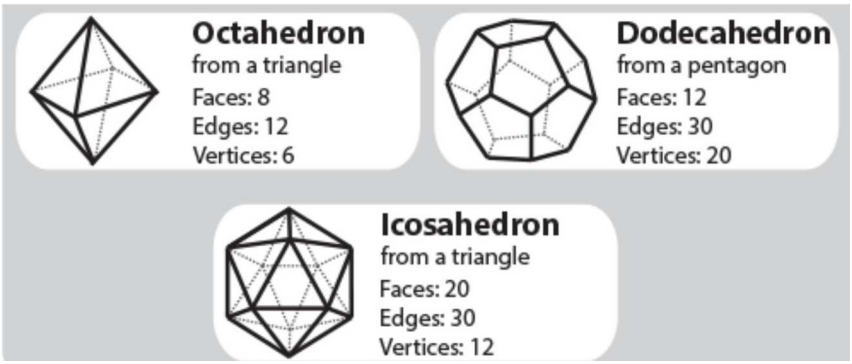
started the universe in the beginning and therefore the universe is continuously forming and hence, also expanding.

From this phenomenon, it is clear the space of space is spherical. Everything within the Universe is nearly spherical, it is a natural principle. The spherical design is close-ended and ensures that energy doesn't spread out and get lost in an open-ended manner. Energy is forever and it is also continuously created at the centre of the universe. The cosmos has expanded gradually to the present finite size and may expand further. The formatting of space ensures the energy doesn't get radiated, therefore the border of the universe is where energy flow may be along the circumference or inwards. This explains how the initial expansion of the cosmos may have been faster than the speed of light, but this expansion of space-time itself was at a stage before light came into existence.

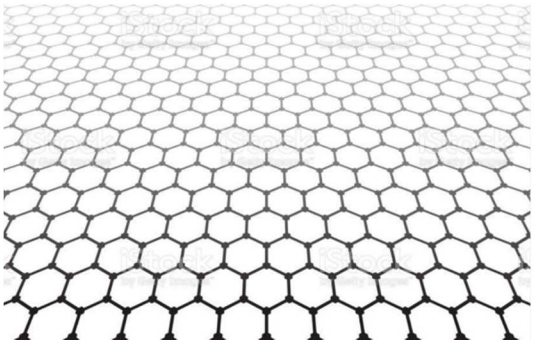


13. The shape of Space Channels

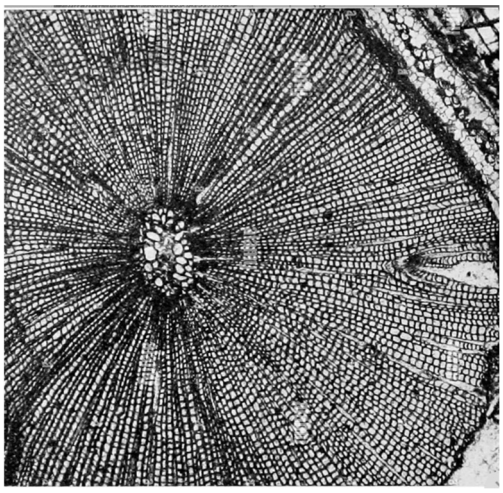
The space is not empty, it has been formatted for energy flow. It has to be defined as space by the consciousness of Brahman. Due to this reason, it is space as well as the intellect of the Cosmos in which digital information energy also moves. The energy flows through defined channels with ease of moment in various directions as facilitated by time energy (decided by time consciousness), it can get moved across, get trapped in closed structures or create another kind of mixed temporary structures, Some of these structures are described as Ghata (Pot, spherical), Pata (wire mesh, cloth-like 2D) and Kunnnda (well with the floor, tunnel without a floor). Individual space sectors or modules are 3-D in nature. The basic shape of space may be the cause of quantum nature.

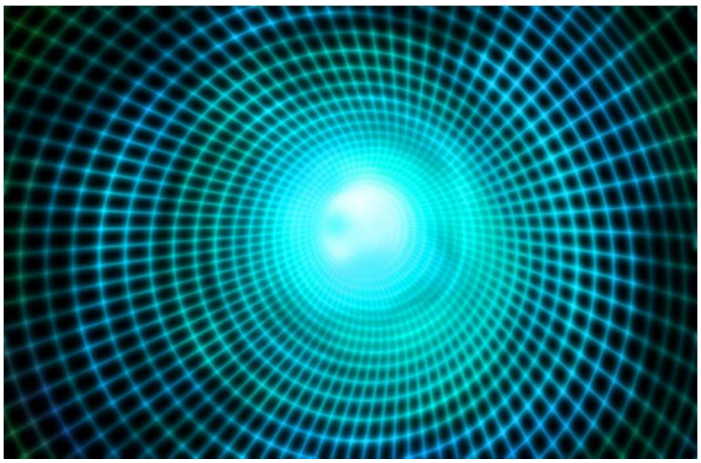


A hexagonal pattern is shown as an example for ease of understanding.

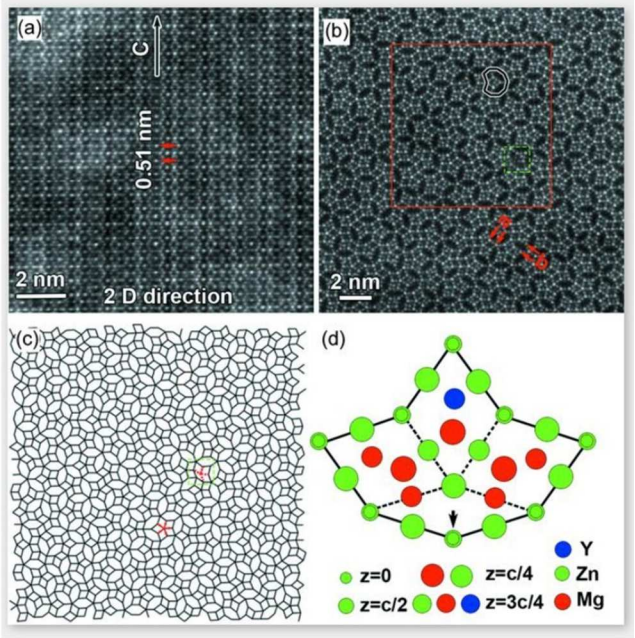


The circular formatting is visible in many forms. The orbital patterns of the planets, the shape of galaxies, the shape of flowers and many more. The natural shape of plant tissue is shown below.





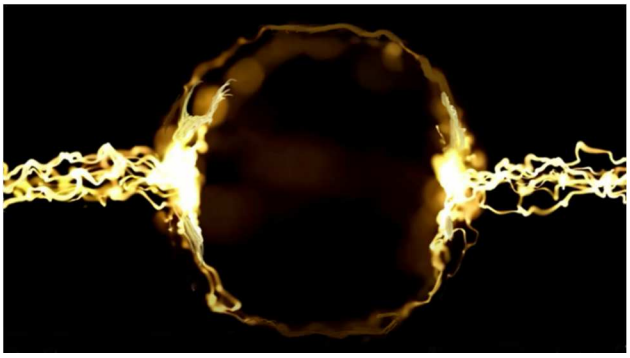
A decagonal quasicrystal with rhombic and hexagonal tiles decorated with icosahedral structural units is seen in the atomic structures shown below. Atomic resolution HAADF-STEM images were taken along (a) the 2D direction and (b) the tenfold axis. (c) A schematic of the tiling for the region is shown in (b). (d) The atomic structure model for the boat tile is indicated in (b) and (c). Image Credits[4]

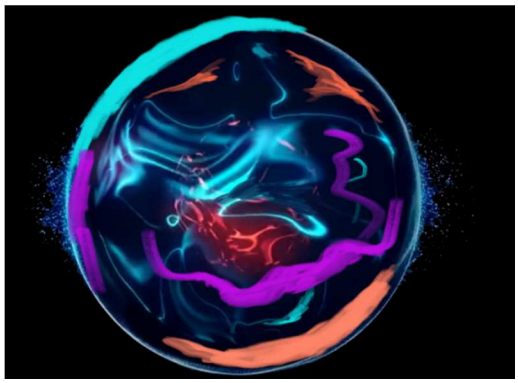


[4] https://journals.iucr.org/m/issues/2020/03/00/gq5012/

The energy of the wave is innate in Moolaprakriti. The energy flow interactions are caused by time while moving through the space channels. Space is inert but time provides the energy for the movement of space to make the interactions possible. This energy is known as action energy (Kriya Shakti).

The interacting energies may combine to form different unstable and stable particles.





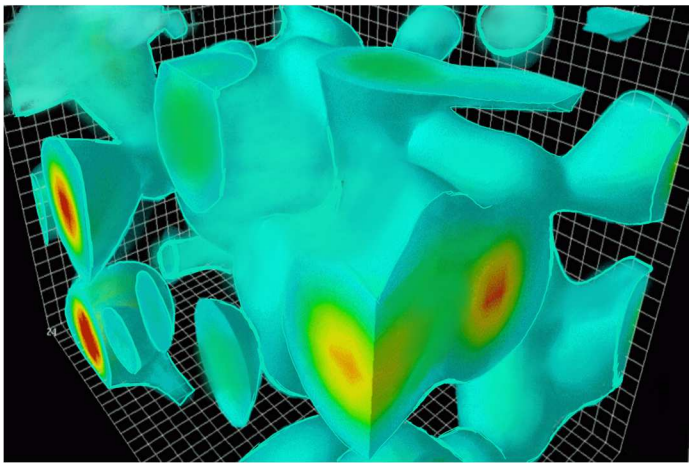
At some time when the wave rhythms (Pada, musical verses) start forming meaningful notes. Such notes may result in forming quarks or Baryonic matter and are known as Padartha.

14. Mahat

The formation of matter (heavier from lighter) is according to the principle of Mahat. Brahman becomes the playground of both intelligent and intelligence-driven energies. Mathematics is a play of energy, numeral 0 indicates the root i.e. consciousness and 1-9 are Shaktis with each digit representing a different potential or amplitude.

Moolaprakriti thought force is associated with numbers. The integers denote various forms and combinations of Moolaprakriti. An infinite series of repetitive patterns in nature exists (presently

incorrectly known as the Fibonacci Sequence) of the addition of the previous two forming the next number. The alphabets represent modifications of the primal energy (Moolaprakriti) with consciousness and their resultant words and language. This force translates into the vibrations of a certain frequency and carries that significance in shaping the root sub-atomic particles which are building blocks of matter. The influence of thought vibrations can be illustrated. Such cosmic language is known as Para. Para means remote or beyond and this belongs to Paramesvara. It contains Ashar and Kshar (non-continuous, discreet, measures, consonants and Kshar, Svar, changeable, vowels). Like that in language, these vowels bind the consonants in a word. Akshar is the root of intelligence, mind, and self and it helps in passively shaping the Mahat. The form, sound and colour (Varna) and its alphabet are not only the Akshar (letters) but also contain the numbers. This language may represent the coding of Quantum Vacuum Fluctuations.



The frequency and complexity of quantum vacuum fluctuations display how much processing of such energy has taken place before it reached this subtle level. This energy from the Mool Prakriti is instantaneous thought energy. As the waveform becomes laden with attributes of frequency, beats, amplitude, phase etc the speed gets reduced.

The idea of creation from nothingness to expanding spheroid (Brahman) starts from the integration of initial vibration Aum (Pranav Shabda) with time, forming space and non-manifesting wavelet strings. These wavelet strings further integrate into time and space using many combinations and permutations of conjunctions and disjunctions creating forces and the wavelets, strings, waves, rays, unstable elementary particles, quarks and so on.

आकाशात् तु विकुर्वाणात् सर्वगन्धवहः शुचिः।
बलवाञ् जायत□वायुः स वै स्पर्श-गुणो मतः॥ १-७६

But from the ether (space), changing itself, springs the pure, powerful wavelets, the vehicle of all perfumes; that is held to possess the quality of touch (exertion of force, a cause).

Next from wavelets modifying (by combining in various permutations and combinations), proceeds the brilliant light, which illuminates and dispels darkness; is declared to possess the quality of colour (visibility).

वायोर् अपि विकुर्वाणाद् विरोचिष्णु तमोनुदम्।
ज्योतिर् उत्पद्यत□□ास्वत् तद् रूप-गुणम् उच्यत□॥ १-७७

The entire process is the formation of the universe is autonomously barring some intelligent interference. This principle is known as 'Mahat' (great principle or a principle which leads from small, unmanifested things to great things). Mahat is the mathematics behind the magic numbers and wave geometry for the formation of space, energy and matter forms.

The Categories or Padartha

पृथिव्यापस्तेजो वायुराकाशं कालो दिगात्मा मन इति द्रव्याणि ॥११५॥

Padartha can be classified into six categories, Dravya, Guṇa (quality), Karma (activity), Sāmānya (generality), Viśeṣa (particular or special leftover) and samavāya (inherence). The first three categories are defined as Artha (which can be perceived) and they have real objective existence. The last three categories are defined as Budhyapekṣam (product of intellectual inference) and they are logical categories.

1. Dravya (substance): The substances are nine in number. These are, Pṛithvī (Planets), Apa (radiation, fluids), Tejas (fire, stars), Vāyu (air), ākaśa (sky), kāla (time), Dik (space), ātman (self) and manas (mind). The first five are called bhūtas, the substances having some specific qualities so that they could be perceived by one or the other external senses.

2. Guṇa (quality): There are 17 Guṇas (qualities) for both living and non-living, to which Praśastapāda added another seven. Guṇa (quality) cannot exist independently. The Guṇas (qualities) are, rūpa (colour), Rasa (taste), Gandha (smell), Sparśa (touch), Saṁkhyā (number), Parimāṇa (quantity), Pṛthaktva (individuality), Saṁyoga (conjunction/ accompaniments), Vibhāga (disjunction), Paratva (remoteness, beyond or hidden), Aparatva (available), BBuddhi (Intellect), Sukha (pleasure), Duḥkha (pain), Icchā (desire), Dveṣa (aversion) and Prayatna (effort). To these Praśastapāda added Gurutva (heaviness), Dravatva (fluidity), Sneha (viscosity), Dharma (adherence properties), Adharma (non-adherence to properties), śabda (sound) and saṁkāsra (faculty).

3. Karma (activity): The karmas (activities) belong to the substances. But while qualities are a permanent feature of a substance, an activity is a transient one, only when the interactions take place.

4. Sāmānya (generality): Since there is a plurality of substances, there will be relations among them. When a property is found common to many substances, it is called sāmānya.

5. Viśeṣa (particularity): Employing viśeṣa, we can perceive substances as different from one another. In the course of progression, some unique leftovers which may not combine further may specials.

6. Samavāya (inherence): The relation between the cause and the effect and also between the substances that are inseparable, standing to one another in the relation of the container and the contained. The relation of samavāya is not perceivable but only inferable from the inseparable connection of the substances.

Reverse Order of Mahat Sequence is possible

ॐ विपर्ययप्रा तु क्रमोऽत उपपद्यत□च ॐ ॥२.३.१४॥ and the reverse order of these actions is also feasible. Nuclear fission is a prime example of it. The huge amount of energy released from fission. The nuclear fission and fusion processes surprised everyone. Equation $E=MC^2$ represents the process only because the particles are made from that energy and when these break up this energy becomes available in its original form.

15. Time Consciousness affecting the Quantum Uncertainty

Quantum mechanics states that energy, momentum, angular momentum, and other quantities of a bound system are restricted to discrete values (quantization), and objects have characteristics of both particles and waves (wave-particle duality). Space channel and their shapes may be the reason for the quantisation.

The electron acting as a wave or particle or a quark becoming a top quark, down quark or a charm quark etc, has an uncertainty which can be affected by an observer. But how the observer affects that and which way the event will turn up is uncertain. The Copenhagen interpretation consisting of views of Niels Bohr, Werner Heisenberg and other physicists states the probabilistic nature of quantum mechanics is not a temporary feature but is instead a final renunciation of the classical idea of "causality". The logic of causality is perennial and axiomatic. The permanent observer to the event here is intelligence contained in space and time energy shaping up the motion. Braham Sutras state the following.

ॐ अन्तरा विज्ञानमनसी क्रमप्रा तल्लिङ्गादिति चप्ताविशष्टात् ॐ ॥ २.३.१५॥ intervening mind and science (knowing in special way) in particular order that is mark of general consciousness.

ॐ चराचरव्यपाश्रयस्तु स्यात् तद्व्यपदश्तो □ाक्तः तद्भाव□ावित्वात् ॐ ॥ २.३.१६॥ It is spread in conscious and non-conscious, depending on the forces, the expression of light transforms. The aphorism talks about the intelligence spread in space which may be part of the quantum vacuum fluctuations and the unified field. Therefore, in the famous cat experiment of Schrodinger, the cat will live or die as per the action of the cosmic observer.

16. Role of Dark Stars (Black Holes), Stars and Light in Shaping Matter

Matter can be invisible only if it does not interact with light in terms of emission, reflection, refraction etc. The photons hold zero mass and anything that holds mass less than zero would not qualify as matter in a classical sense. Dark matter is a substance that is pre-matter. Only 4.6% of the universe's energy comprises the visible baryonic matter that constitutes stars, planets, and living beings. The rest is thought to be made up of dark energy (68%) and dark matter (27%).

The Standard Model of Physics talks about fundamental particles The nucleus (protons and neutrons) contains almost all the mass of the atom, while the electrons are responsible for the chemical properties of the atom. These are further made up of 6 types of quarks, 6 types of leptons and 5 categories of many different types of Bosons (force interaction particles).

Neutrinos are likely the most abundant particles in the universe and may be more common than photons, the basic unit of light. Neutrinos are a type of leptons, which are also fermions, and together with quarks make up matter. The difference between leptons and quarks is that leptons exist on their own, whereas quarks combine to form baryons. A neutrino is an exponentially small particle with no electrical charge. As other particles traverse galactic and extra-galactic distances, they can become deflected, scattered, or even stopped altogether by matter, gravitational and magnetic fields. Neutrinos can pass through all of these uninhibited, which makes them excellent sources of information from the far reaches of the galaxy.

These subatomic particles are not stable and particles such as leptons and baryons decay by either the strong force or weak force (except for the proton). Neutrons have a mean life of approx 881 seconds. The life of Proton is {16.7 billion yottayears (1034 yr)}. The μ and τ muons, as well as their antiparticles, decay by the weak force. Neutrinos (and antineutrinos) do not decay, but a related phenomenon of neutrino oscillations is thought to exist even in vacuums. The electron {66,000 yottayears (6.6 × 1028 yr)} and its antiparticle, the positron, are theoretically stable due to charge conservation. These particles are made up of energy and they come to life depending on wave interaction. These are caused essentially by a collapsed wave function or a quantum excitation of a field or just an entangled vibrating string.

17. Role of Dark Stars or Black Holes

The presence of a black hole can be inferred through its interaction with other matter and with electromagnetic radiation such as visible light. Black holes are considered objects whose gravitational fields are too strong for light to escape. This understanding is bound to change with the correct understanding of the force of gravity. Every formation of the cosmos has a definite objective.

The nucleus of an atom is about 10-15 m in size, this means it is about 10-5 (or 1/100,000) of the size of the whole atom. A good comparison of the nucleus to the atom is like an apple whereas the nearest electron will be approx. 3 km away. This is what explains the density of the Black holes, that they cannot be made up of normal matter with electrons orbiting around but are made up of solid nuclear particles and their pre-matter forms kept together by the stronger nuclear force.

The pre-matter is a product of the Black Holes as the matter is produced by Stars. The force which may attract and attach photons may be a different kind of fundamental force other than gravity. The Black holes are not holes but essentially Dark stars or black stars.
The Black holes may churn out the fundamental particles such as protons and neutrinos, which after interaction with other particles or wave functions may lead to the creation of the basic element hydrogen. The external accretion disk forming quasars may be the input-output mechanism. The galaxies have originated from their central Black Holes which may act in cycles of expansion and contraction over huge time scales. These black holes also exert forces which are natural but which may also contain intelligent control mechanisms. More about the central black holes of the milky way is discussed in the last section.

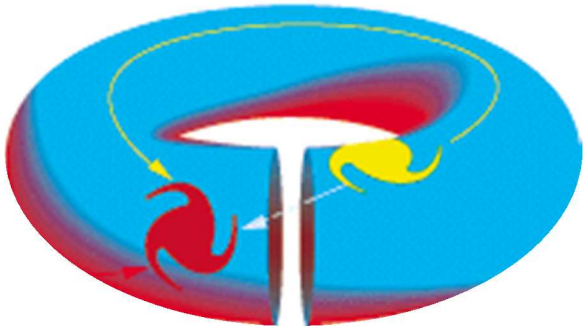
Role of Light. It is now clear that nothing gets wasted in the entire Cosmos, it either gets conserved or gets converted. Stars emit light which is like a waste product in the process of creation of heavier elements. Light comes out because photons have been a part of the manufacturing process in most subatomic particles. Experiments have shown that photons may act as a glue between molecular structures. Therefore it is logical to believe that photons may have played a great role in the manufacturing process of sub-atomic particles. Without light, the matter may not have been possible. The cosmos is a dark place, with so many stars emitting so much light and energy not being destroyed, it would've been lit up like a stadium. It only indicates that these photons are being used up as raw material in creating the Baryonic matter.

Role of Stars. The role of the stars is to create heavier elements from Hydrogen. Hydrogen is the most abundant element (73-74%) in the cosmos followed by Helium (23-25%), Oxygen, Carbon, Neon, Iron and Nitrogen. It is the first stable element and acts as fuel for the stars. The stars convert the lighter matter into heavier matter and the remaining matter of the fused nuclei may be responsible for the emission of energy. In 1895, Rowland studied the intensities of 39 elemental signatures in the solar spectrum. Leaving hydrogen and helium, the rest of the seen matter comprises less than 0.5% of the total cosmos. When the stars become too heavy they give birth to planets and again keep converting the hydrogen.

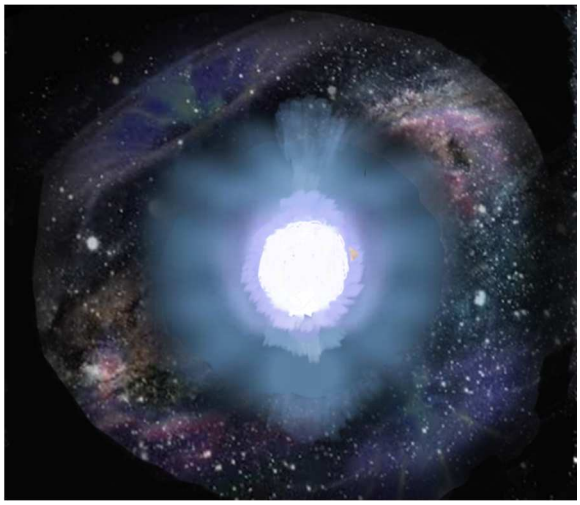
18. The Shape of Cosmos

The expanse of space-time may be logically spherical. The shape of the universe depends on its density. If the density is more than the critical density, the universe is closed and curves like a sphere. Based on the most recent Planck data, released in February 2015, our Cosmos is most

likely Flat. Infinitely finite, with an exact, critical amount of energy supplied by dark matter and dark energy. The local universe gives us a feeling of it being flat due to its extremely large size. The observable cosmos appears spherical too but is considered more flattish thane spherical with matter condensed in a thick disc. For example, if you magnify a galaxy and make every star system as big as a galaxy then this magnified galaxy may represent the Cosmos with a big hollow at the centre. This difference is because the Galaxies originate from their central black holes, unlike the Cosmos. like that of a galaxy due to the planets, stars and galaxies within it, they get condensed along the plane of movement of space-time making their shapes like a disc or a doughnut. Image Credits[5]



The reason for the huge in the centre is firstly the speed of thought waves (Moolaprakriti) is almost instantaneous. These waves use a huge space to combine and form patterns leading to quantum vacuum fluctuations and then the unified field which becomes the birthplace of some of the sub-atomic particles.



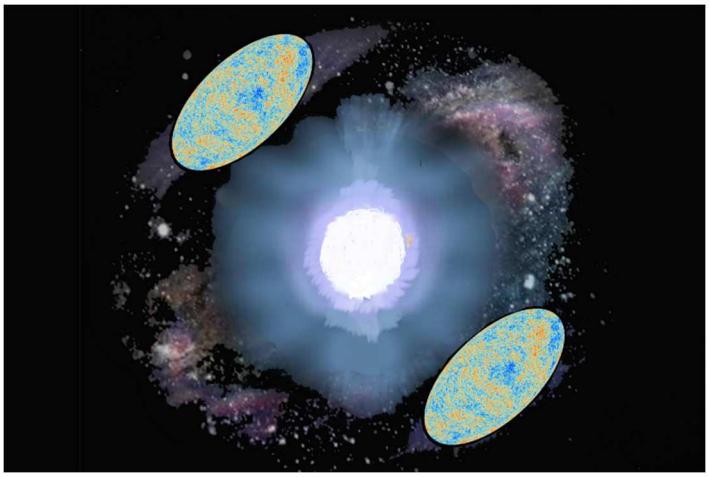
The size of the Cosmos may not have been as big in the beginning as it is present today. The reason for this is that Cosmos firstly may have been created after some trial and error, the quantity of energy radiated was finite. Therefore the expansion of space was also kept at the

[5] http://abyss.uoregon.edu/~js/cosmo/lectures/lec15.html

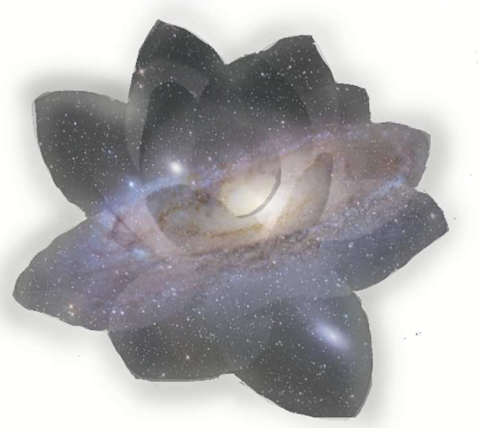
level where this energy can be utilized effectively. Since this energy was continuous and undesirable, the quantity increased the size may have been expanded.

Since space is moved by time and this movement is necessary for sustaining the motion and interaction of the particles, quantum field etc, this motion is ensured especially. The current width of the observable universe is about 92 billion light-years. Beyond that boundary, there may be a bunch of other random stars and galaxies. Even at present, the Universe appears to be expanding faster than the speed of light. That is because if we measure how fast the most distant galaxies appear to be moving away from us, that recession velocity exceeds the speed of light. It is a relative velocity and also because we are assuming that the universe is just about 14 billion years old.

If we overlap the present map of the observable cosmos then it may represent a limited cross-sectional sphere of the huge doughnut-shaped ring. At present, it is only a conjecture and theory depicting initiation. Later on, it may have been possible to position a huge Dark star at the centre to ensure entire galaxies are moving around it. The example picture containing two observable universes is placed below.



A special space at the centre and the growth of the Cosmos with a reason and in a planned manner indicates that the cosmos has bloomed into its full beauty.



19. Conclusion

Nature has the robust principle of Sat and simple design and reiterated and it may appear as complex. The cosmos cannot be perceived without a strong force at the centre which controls the motion of the galaxies. An estimate of the life span of the cosmos cannot be made just by estimating the life span of matter and ignoring the genesis of energy. A purpose-based assessment of the roles and functions of various cosmic formations can yield good insights into the purposeful perfect design of the cosmos. The concept of mechanistic cosmos is an incomplete understanding of the origin and nature of scientific and logical principles in the cosmos.