



“Understanding The Ancient Concept Of evolution (Srishti Utpati) :In Light Of Big Bang Theory”

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Abstract-

The energy making up everything in the cosmos we see today was squeezed inside an inconceivably small space – far tinier than a grain of sand, or even an atom. Then, this unimaginably hot and dense cauldron – for whatever reason – ballooned at a terrifying rate and lead to the formation of universe¹⁴. *Ayurveda* the science of treatment and well being talks about concepts of human body, diagnoses, treatment in quotation and in detail. It is not just the school of medicine but also gave the scientific concepts like the origin of universe (*srishti*) mentioned by *acharyas*, the distance between the earth and sun as mentioned in *Hanuman chaalisa*¹. When the modern science was not knowing evolution *ayurvedic acharays* gave these concepts. Many references are there in *ayurveda* regarding the evolution major one being *Samudra Manthan* which was done by the good and the evil souls leading to the production of everything present on earth and the *Srishti utpatti karma* (process of evolution) mentioned by *Acharyas*. Creation of universe from a single giant particle via process of big bang theory has been told likewise in *Vedas* reference of creation of universe from a single source called the golden egg is there. The concept of evolution at that time was given in quotation form having deeper meaning that has not been understood completely by us and hence only the modern concept of creation of universe is known to all. So here an attempt has been made to study and elaborate different concept of creation/evolution of universe (*srishti utpatti*) as mentioned by *Acharyas* to unfold there deeper meaning.

Keywords:- Srishti utpatti, evolution, vedas, Ayurveda, Big bang theory

INTRODUCTION:-

Srishti has been said to be evolved or produced². Srishti utpatti has two words within it srishti³ referring to entire universe comprising all living and nonliving things while utpatti² means the process of evolution. So above definition clearly states that by srishti utpatti scholars wanted to throw light on how the process of evolution of universe took place with slowly occurring changes and formation of all different kind of living and non living things.

REVIEW OF CREATION OF UNIVERSE IN VEDAS AND UPNISHADS-

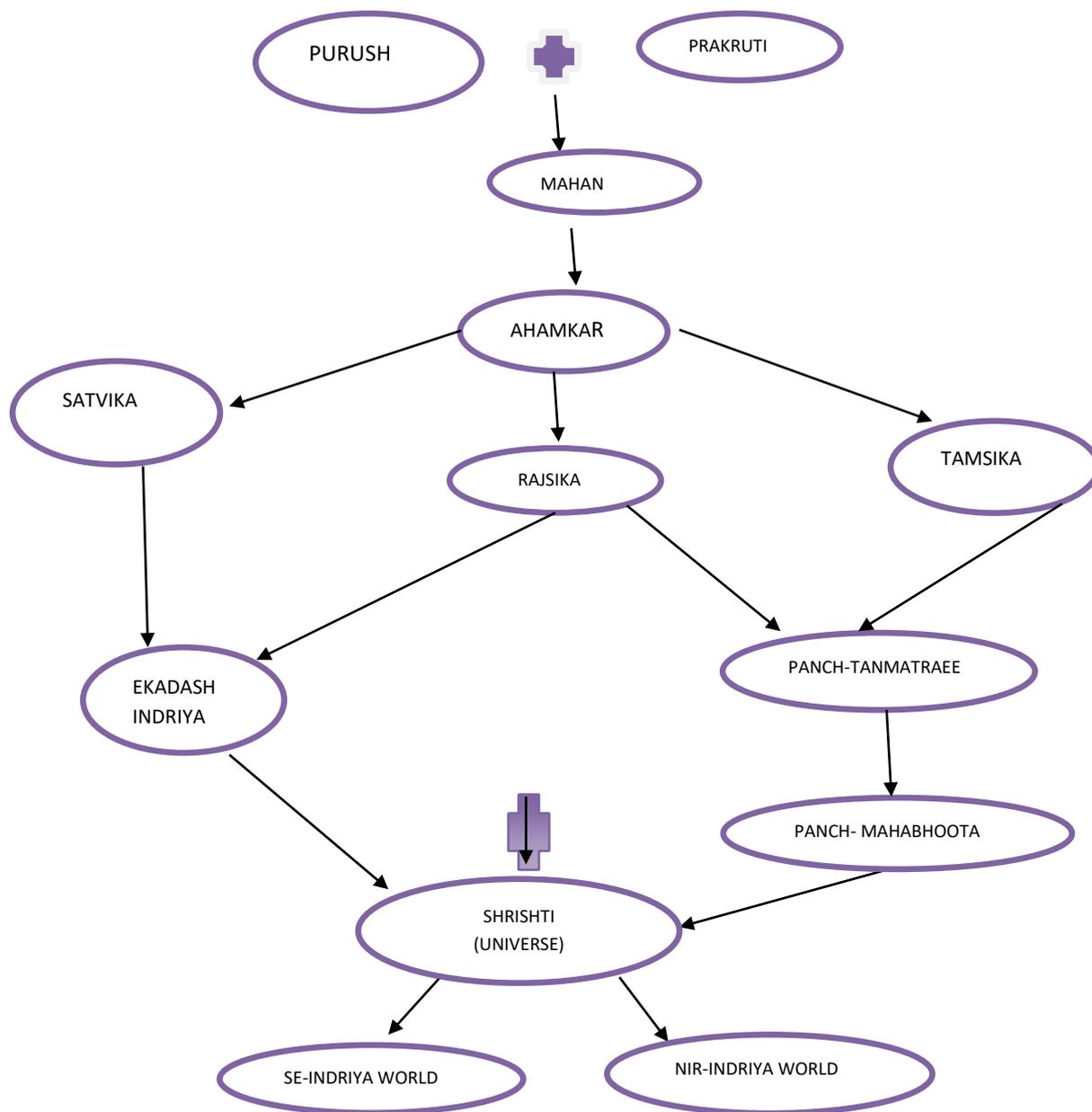
Srishti utpatti has been described in vedas ,upnishadas, puranas. In Vedic philosophy and Bhagvat purana *HIRANYAGARBHA*⁴ has been told as the source of creation of universe. *HIRANYAGARBHA* literally means the Golden Womb or Golden Egg. In Rigveda also there is description of Hiranyagarbha sukta , suggesting a single creator deity identified as Prajapati(ruler). The concept of Golden Womb is first mentioned in the Vishvakarman Sukta⁵ which picturised the Prieval Womb as being rested upon the navel of Vishvakarmana the supreme cosmic creator ,that ONE wherein abide all things existing. THE UPNISHADAS⁴ calls it the soul of the Universe or Brahma and elaborate that Hiranyagarbbha floated around in emptiness and the darkness of the non-existence for about a year and then broke into two halves which formed the Svarga and the Prthvi. In classical Puranic Hinduism⁴, Hiranyagarbha is the term used for creator in the Vedanta. In Manu Smrti⁴ also Hiranyagarbha is called Brahma because it is said he was born from a golden egg. In MATSYA Purana⁴ gives an account of initial creation. After Mahapralaya, the great dissolution of universe ,there was darkness everywhere everything was in state of sleep there was nothing, either moving or static. Then Svayambhu, self manifested Being arose, which is a form beyond senses and it created Primordial waters and established the seeds of creation into it. The seed then turned into golden womb/Hirayanagarb and then Svayambhu himself entered in the egg. The Isvara Upanisad⁴ says that the Universe is pervaded by Isvara ,who is both within and without it. The Vedanta Sutra further states that Brahma is that from Whom this Universe proceeds ,in whom it subsids and to whom ,in the end ,it

returns. Hiranyagarbha Sukta of the Rigveda declares that God manifested Himself in the beginning as the Creator of the Universe , comprising all things , within himself the whole of creation ,animating it as the Supreme Intelligence. Thus we have seen that the description of creation was available in Vedas and Upnishads and and older Indian text way before modern science explained it . The base theory in all is same i.e the universe has evolved from a single structure and the process of evolution occurred over a large period of time.

REVIEW THE CONCEPT OF CREATION OF UNIVERSE AS MENTIONED IN AYURVEDIC TEXT-

The major contribution in the concept of creation of universe is made by Sankhya and Vaisheshika darshan (philosphy). While describing srishti utpatti scholars of Ayurved particularly Sushrut follows the concept given by Sankhya darshan while Acharya Charaka follows Vaisheshika darshan . The main difference between the two philosophies we see is that Sankhya tolds that there are two Primary principles (Tattav/basic constituents) Purusa and Prakrti (inherited tendency) and the creation is a manifestation/evolution of the constituents of Prakrti due to the action of Purusa’s Conciousnes. While Vaisheshik darshan explained the cause of creation as Parmanu samyoga (combining of different factors in a particular ratio).As mentioned by Acharya Charaka the final product of srishti utpatti was the human with all bodily parts mainly indicating the development of human being during the process of evolution of universe , and according to Acharya Sushruta the final product is the universe along with all living and non living things indicating the process of evolution of universe as whole . So here we will discuss in detail the concept given by Acharya Sushruta relating to evolution of universe.

Sequence of SRISHTI UTPATTI according to Sankhya/ acharya sushruta is as follows⁵ :-



Acharya Sushruta has clearly mentioned the production of Sindriya and nirindriya srishti as the final product indicating creation of universe having both living and nonliving things in it which is as similar to the process of evolution.

While talking about the factors responsible for the process of srishti utpatti different scholars gave different opinions as there exists many theories regarding the causative factors of origin of Universe. Acharya Dalhana in his commentary over Sushruta samhita mentioned all the 6 factors mentioned by different scholars as the cause of origin of srishti⁶.

The different factors given are- Savbhav, Ishwara, Kala, Yadichha, Niyati, Parinaam.

Swabhaav (inherited tendency)- Accepted by the swabhaavadi scholars states that the cause of origin of universe was the Basic, inherent tendency or need of production. So it can be understood as the basic tendency/need of anything to come into existence. **ISHWARA** (supreme power)- another factor accepted and given by the Yogis, vedanti, and the Ishwarwadi scholars. According to which Ishwara (God) is the one responsible for the creation of universe. It is believed that Ishwara is someone present from eternal and has no end, it is the basic source of energy required for formation and functioning of everything. **KAALA** (time period)- 3rd factors discussed by some scholars indicating the cause to be favorable time or the environment for the event of srishti utpatti to happen. **YADICHHA** (abrupt incidence)- given and accepted by some according to which the utpatti of srishti was a sudden event as any event occurring naturally and suddenly is considered as the Yadichha **NIYATI** (subtle changes leading to final product)- the concept given by the Mimamsa philosophers as a causative factor for srishti utpatti. Changes are an inevitable phenomenon and these changes lead to the production of final products. According to the Philosophers the present process of evolution or srishti utpatti is the result of long series of past and present events. **PARINAAM** (final result)- Philosophers of Guna parinaamvad and Nastik darshana gave this concept. The concept is similar to the concept of Mimamsa philosophers. According to these the utpatti of srishti is the final product of the changes that were occurring from the long back.

This is all that has been told about the causative factor responsible for the origin of Srishti in Ayurved.

PURUSH² (basic constituent) –the one /anything where all the process regarding origin of anything is taking place

PRAKRUTI² (energy source)- Prakruti is the creative, primordial and active form that plays the main role in the creation of the Universe. Prakruti remains avyakta (unseen) till its time of manifestation. Once it manifests, Prakruti takes an active creative role in the formation of the Universe. Hence the root source in the creation of the Universe is said to be prakruti. Prakruti is a desire, it is an energy that has ability to differentiate and create. Prakruti cannot exist without Purusha because it's a source of energy that requires a structure to exist.

AVYAKT² (unmanifested)- Avyakta has been defined as the one whose presence is not manifested but it has the bhava (essence) of presence so anything that carries the sources of producing various things in itself but in unmanifested form, the form that cannot be seen at that very moment like water is in the air but we can only see when it solidifies to form dew so till the formation of dew it remains in avyakt form. The source of production can only be known when it is formed. It has Satva, Raja, Tamaha in equilibrium state. It has prakruti and purush but in separated form and that is why it remains unmanifested as prakruti needs purush to manifest itself in actively related form. This is Achetna when mixed with chetna leads to the origin of 5mahabhoots. In Ayurveda we also call it as sukshma purusha.

MAHAT/BUDDHI²-(self-awareness)

Mahat or the budhi formed by avyakta is also trigunatamkam but they are not in equilibrium. Budhi is generally considered as the decision making power and due to it vrayapakta (large area it covers) it is also known as mahat. Budhi is defined as the self-awareness with no power of differentiation. Thus it can be defined as the knowledge of self existence or sense

AHAMKAR² (sense of individuality)- The term as explained by acharyas show the bhava of Prithaktav i.e sense of being a different individual, different from others. So by Ahamkar Acharyas explained the developmental process of differentiation. After the existence need of improvement for survival emerged that led to the development of differentiation causing the development of different kinds of cells/organs/species. As Acharyas told this development and differentiation took place according to the different kind of satvas (consciousness) that Aatma had. Those having satvik satva along with the rajas satva will lead to formation of saindriya i.e organic/living component of universe while the combination of rajas and tamas satva will cause formation of inorganic/nonliving component of the universe. So budhi when gets the bhava of differentiation and attains the sense of individuality/self is known as Ahamkar. So its ahmkar only that caused the formation of both organic and inorganic substance like soil, water, plants, amoebas and other species according to the conscious it attains/gets.

SATVA, RAJA, TAMAHA² (consciousness)- They are three kinds of consciousness explained by the Acharya. These are present in all the 3 avyakta, mahat and ahmkar but they were not well manifested but after the development of ahmkar (sense of differentiation) these three show themselves differently. Combination of these along with sense of differentiation leads to the formation of SAINDRIYAS AND NIRINDRIYA World according to the combination. These bhava are carried by Aatma.

Satva: Satva is the energy of the cognition. It's the path of light and knowledge. It is positivity that one has. The consciousness of an individual that guides you towards light, to remain positive and to remain focused and happy

Rajah: Rajah is the active form of energy (kinetic energy). Raja guna is the movement of precipitants, the time force that moves satva & raja.

Tamas: It is the material matter. Tamas is related with darkness and inertia and the energy that makes us feel angry, annoyed and unhappy and unsatisfied.

PANCHTANMATRA/ PANCHSUKSHAMBHOOT²- Tanmatra is a Sanskrit word meaning "Subtle essence". Tanmatras or the 5 subtle essences give rise to the 5 great elements. Formed by differentiation with help of raja and tamha helps to form five great elements. Each great element is a combination of all 5 tanmatras but shows predominance of one tanmatra. So these have guna (qualities) and karma (functions) similar to that of panchmahabhootas.

PANCHMAHABHOOT²- All the acharyas while discussing composition of all living and non living material said all those to be composed of 5 mahabhoots only. Wherein the pruthvi (earth) component provides the structure and shape, Jala (water) is an indicative of the state or form of that substance, air provides the space in which the substance is present, Agni (heat) is any reaction taking place be it physical, chemical or biological, Akaash (sky/space) can be understood as the space present within the cells of the substance. So living or non-living both are composed of panchmahabhoot .

EKADASH INDRIYA²- Acharya sushruta specifically told the origin of both living and non living materials while explaining the creation of universe. The nonliving or the nirindriya world consist of panchmahabhoot only without senses so after the formation of panchmahabhoot various kind of nonliving structures came to existence with time. For the origin of living world the formation of senses was required and done by combing of Satva, raja and tamha with panchmahabhoot leading to the formation of saindriya/living world. Indriyas as told by Acharyas are 11 among which 5 are gyanan /senses, panchkarma /functional entity of body and 11th is Manah i.e the seat of consciousness. So this is how universe having all living and nonliving substance was originated according to acharya sushruta.

REVIEW OF CONCEPT AS TOLD BY MODERN SCIENCE-

Talking about the process of evolution in a gist as told by modern literature evolution was a long process and explained as BIG BANG THEORY. Friedmann found that relativity naturally describes a cosmos that is either expanding or shrinking. One possibility he considered was that everything we observe today expanded from a single infinitely dense point¹⁶. In short, the Big Bang hypothesis states that all of the current and past matter in the Universe came into existence at the same time, roughly 13.8 billion years ago. At this time, all matter was compacted into a very small ball with infinite density and intense heat called a Singularity.⁹ In it, the energy making up everything in the cosmos we see today was squeezed inside an inconceivably small space – far tinier than a grain of sand, or even an atom.¹⁴ While the majority of the astronomical community accepts the theory, there are some theorists who have alternative explanations besides the Big Bang¹⁰ — such as eternal inflation or an oscillating universe. The entire process of evolution was divided into different parts having basically divided into 2 Phase⁷-

1-Radiation era

2-Matter era

Radiation era further has been divided into different epoch according to the events taking place in that time-

A-Plank epoch- the time before which the current physical theories do not have predictive values. The time in which no matter was present only a single source of energy or the particle and the strong forces were present like gravitational force, strong nuclear force and weak electromagnetic forces. The time assumed to be dominated by quantum effects of gravity.

B-Grand unified epoch- during this time forces of nature unified and there were now strong nuclear and electromagnetic forces left.

C-Inflationary epoch- now the cosmic inflation expands space rapid and fast. Environment was very hot, had electrons ,quacks, anti quacks.

D- Electron weak epoch- the universe is super cooled and the strong interaction becomes distinct from the Electroweak interaction.

E-Quack epoch- the forces of standard model have separated but energies are too high for quarks to coalesce into hadrons, instead forming a quark-gluon plasma. These are the highest energies.

F-Hadron epoch- at this time quarks are bound into hadrons. A slight matter –antimatter-asymmetry from the earlier phases (baryon asymmetry) results in an elimination of anti-hadrons. Gradual cooling of universe took place and universe cooled enough for quacks to bind together to form neutrons.

G-A- Nuclear epoch neutrinos cease interacting with baryonic matter. The spherical volume of space which will become observable universe was around 10 light years in radius .the neutrons combined to form nuclei and 1st chemical substance was formed known as helium.

B- Lepton Epoch- leptons and anti-leptons remain in thermal equilibrium

Matter has 3 phases mainly which are-

A-Atomic phase- temperature cooled enough for electrons to attach to neutrons and protons via recombination process and formed Hydrogen

B- Galactic phase- Hydrogen and Helium formed small pockets for atoms to collect which later formed Galaxies.

C- Stellar phase- in galaxies formation of stars started to take place causing tremendous changes, heat with in the stars along with Hydrogen and Helium caused formation of all others element of universe and later on those element become building block of Plants, Life and everything present in universe.

DISCUSSION

The giant particle from blast from which the origin of evolution is supposed to occur as called purush by acharya sushruta is similar to the Giant particle explosion of which caused the evolution of universe. The giant particle was a great source of energy it had all the power to produce because from that only all other living and non living things has been supposed to be formed so the source of energy it had was like the prakruti of the purush that helps the purush to do everything .During evolutionary time as told in Plank epoch at the beginning when there was nothing but only a source of energy called particle that busted to create all the other things. Since the particle had power to produce everything so it can be taken as the Avyakt for the evolutionary time. Mahat/Budhi is the knowledge , it's the sense of existence along with sense of environment of the surrounding. The giant particle having everything in it but it wasn't reactive to the changes happening around it earlier but with the time , changes in surrounding became so much dominant that it causes the particle to react to those changes. These changes to respond the environment is what can be considered as the Mahat/buddhi. These reactions to the surrounding formed the base of future explosion. So we can compare that time to Grand unified epoch. Further in Inflationary Electron and Quack epoch different particles were being formed but due to non suitable environment they were not able to combine together. The singular particle that existed divided into infinite particles which later on got differentiated according to many external factors like temperature. In the first moments after the Big Bang, the universe was extremely hot and dense. As the universe cooled, conditions became just right to give rise to the building blocks of matter – the quarks and electrons of which we are all made¹⁶. Division and differentiation was there at every level of evolution. During the phase of physical evolution particles differentiated into neutrons and protons , during chemical evolution differentiation lead to the formation of different kind of elements while during biological evolution formed different species. Changes occurring at this point were similar to those as told for the Ahmkar, ie the development of the bhaav of aham or the development of process of differentiation. This differentiation and development took place according to the different kind of satavas that aatma had. As acharays have said the Satva, raja and tama to be the supporting factors for differentiation and development, during evolution there were many such supporting factors required out of those major one is environmental factors that helped the process of evolution. At different phase of evolution there was presence of different levels of temperature, pressures , humidity etc. evolution is an ongoing process and it always require special kind of environment to evolve . The changes here are similar to the changes in Hadron epoch ie the universe cooled creating suitable environment and Physical evolution came to near end. As according to acharyas Tanmatras or the 5 subtle essences gave rise to the 5 great elements that formed everything in the universe . Likewise during physical phase of evolution the neutron and protons formed but they weren't able to form anything. later on during next phase after further cooling this combination of neutron proton and electron formed the very first element called helium which later on provided the base for formation of other atoms. So we see that the changes started here are changes that took place during chemical evolution as told in Lepton and Nuclear epoch. From panchtanmatras formed the pancmahabhoota and all the living and non living are said to be composed of 5mahabhoots only. As described in Atomic and Galactic phase during evolution when neutrons and protons got combined and formation of helium took place which was further followed by the addition of electrons and formation of all other necessary and basic elements and molecule of nature required for the development of both living and non living world. As there was formation of hydrogen , carbon, oxygen, Nitrogen, and so on. These later on formed water molecule by combination of hydrogen and oxygen, created environmental oxygen , carbon-dioxide, nitrogen in combination with other formed proteins which are building blocks for all living spices and also created a suitable composition of air to exists and survive. And these are also the basic elements required for the formation of everything present in universe. As told by acharyas the formation of non living things took place from panchmahaboota only while development of living spices required formation of Ekadash indriyas with help of satva raja and tamha. So technically this can be taken as the biological phase of evolution which is the last and the longest one ie the Stellar phase. During the 2nd last phase of evolution the environment became suitable for life the temperature was normal, air was breathable, water came into existence so all of this lead to the formation of last phase of evolution ie the phase still going on. Since water and air was there and temperature was adequate so it formed the very 1st and basic form of life the single cellular organism like amoebas ,various fungus etc. Later according to the need and the change in environment because of the power of adaptability two cellular protozoa's and other spices developed. This way step by step slowly formed the multicellular super-specialised human with all the 5senses, brain and conscious . As we have seen all the co-relation and the references for the same so we can hereby say that evolution of universe and srishti utpatti has great correlation that requires detailed study. And by just a quote named srishti utpatti Acharya sushruta gave the entire concept of evolution of universe.

CONCLUSION-

From above discussion we can say that the concept of srishti utpatti has been understood as very small till yet as it was given by acharyas only in sutra roop with many hidden concepts in it. The sutra given by acharya sushurta can be completely correlated to what has been told by modern day scientist regarding evolution

SRISHTI UTPATTI	EVOLUTIONARY EVENTS	EVOLUTIONARY STAGE
AVYAKAT	The big giant single particle present	Plank epoch
MAHAN	Reactivity to Events that started to take place inside singular particle	Grand unified epoch.
AMAHKAR	The process differentiation of particles formed after blast	Inflationary Electron and Quack epoch
SATVA RAJA TAMHA	Environmental factors	Hadron epoch
PANCH SUKSHMBHOOT	Atomic particles	Lepton and nuclear epoch
PANCH MAHABHOOT	The different molecules formed by combination of basic atoms	Atomic and galactic phase
EKADASH INDRIYA	The living things formed	Stellar phase
NIRINDRIYA	The non living things formed	

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