

MANTHAN

(Sanskrit Meaning – The Churning; Pron. 'Th'- as in Thor)

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MANTHAN

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PREFACE

GENESIS OF AN ALTERNATE MODEL

Curiosity is integral to study of any subject. Curiosity pricks our conscience and guides us towards truth. Finding answers maybe easier than asking the right questions. Ask the right questions and truth will seek you instead. One such question was....

- How does Gravity get the top job of running the universe despite being the weakest force?

Scrape the surface and you will have few more jewels.

- Gravity is supposed to be property of mass. But why should one mass attract the other?
- How do two masses/ planets communicate with third mass / planet?
- Why do Photons/ electrons behave spookily in Two-Slit Experiment?
- How can Gravity be the saviour in both when the Universe was static and Expanding?
- Gravity being property of Mass, how did early universe manage without gravity?
- Gravity is a weak force, yet is cause of star's plasma, planet's molten core. HOW?
- Can Infinity, Dark Matter, Dark Energy be explained without resorting to unknowns?
- How does light Travel? Straight line, Wave or expanding spherical bubble?

Present explanations put forth by classical model of universe are seen falling short. At best, classical model relies on unknown (Dark Matter, Dark Energy) to explain the unexplainable. At worst, classical model simply brushes away some unknowns (Infinity; Nothingness; Soul; Existence) as philosophical and unscientific. At times classical model has comically suggested Photon's behaviour as spooky in 2 Slit experiment.

To begin with, MANTHAN's intention was to find answers to the vagaries of the universe. Paradoxes that kept the scientific community grappling. Intention was not to present an alternate model for universe. But how can you expect different result with same processes?

We now had two basic areas to address. 1) How masses behave? & 2) How Universe formed?

- 1) **How masses behave?** There is no denying the fact that a force exists between two masses. But why should it be one of attraction? Why can't it be push force instead of pull force? Gravity, being a pull force lays the entire responsibility of cause on mass itself. Whereas Push force will relieve the masses from this burden. So, which is that external force acting on the mass? There is nothing but the two masses and the SPACE itself. Exactly!! Why can't this external force be the push force of space? 'SPACITY'.
- 2) **How Universe formed?** If gravity cannot be the reason for galaxy/ star/ planet formation, neither can SPACITY be. Because both are equally weak. Such a formation needs a violent force. How can 'hot' and 'static' nebular gases yield a violent force? But isn't being ionised a sufficient condition to create a violent force? Just like in the case of lightning. An ideal candidate to bring about star formation.

In this journey, equally interesting was the yield of unexpected. Galaxy formation; spiral arms; Bars; Ansa; Light travel; Dark Energy; Soul; infinity; nothingness; Galactic Cycle. Just the way it was during mythological SAMUDRA MANTHAN. Where good and evil forces encountered unexpected yields during their search for elixir of life.

Two decades ago, I created a folder to store my thoughts related to universe. Little did I know the folder name MANTHAN, would turn out so prophetic.

MANTHAN in Sanskrit means "The Churning". HAPPY READING...

PRESENT

CLASSICAL MODEL OF UNIVERSE

FOUR FORCES

Primarily there are four forces that govern the universe. Electro-magnetic Force, Strong Nuclear Force, Weak Nuclear Force and Gravitational Force. Of these, gravitational force is the weakest force.

CYCLE OF UNIVERSE

The universe originated from an extremely hot infinitesimally small point. The space expanded at a speed faster than the speed of light itself, thus forming a horizon for the visible universe. Universe eventually may either wither away or fall back into a crunch with gravity winning over the expansion forces.

MATTER & LIFE

God particle is portrayed to be the most basic building block of matter. Lighter molecules like Hydrogen were formed at the beginning of universe. Heavier and complex matters were formed during the formation of star. Stars form and die in various forms and many a time, the reason to seed future stars. Classical model does not recognise soul as a basis for existence of life. Life can manifest in extreme conditions.

DARK ENERGY

The universe has been expanding as evidenced in red shifting of every galaxy observed in the sky. The underlying force that is causing the universe to expand is attributed to Dark Energy. An energy that cannot be seen, felt or measured. Hence Dark.

GRAVITY

Gravity is the glue that holds the universe. Gravity is the force between two masses, governed by Newton's Laws/ Einstein's equation. Gravity is the reason how nebular gases coalesced to form galaxies, star systems, planets, and moon. Space and Time are interlinked and form a fabric that gives birth to gravity.

DARK MATTER

Stars in the periphery of galaxy should have travelled slower as gravity weakens due to increased distance from center of the galaxy. Evidence to the contrary is attributed to Dark Matter. with Galaxy behaving like a solid disc. So, there should be more matter that holds the galaxy together. A matter that cannot be seen, felt or measured. Hence Dark.

QUANTUM PHYSICS

Gravity is too weak to manifest itself at the quantum level. Subatomic mechanics are governed by Quantum science. Classical model is still struggling to come up with a common unifying theory that can reconcile gravity and quantum mechanics

LIGHT TRAVEL

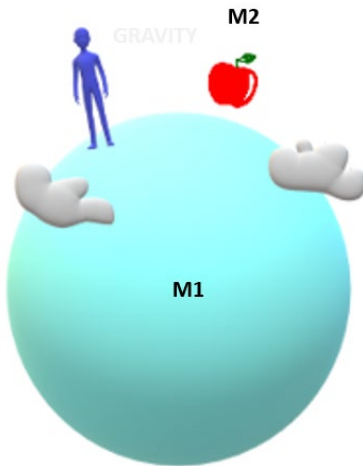
Jury is still out on whether Light travels in a straight line or as a wave or a combination of both. Photon's behaviour in Two-Slit Experiment is still in realms of spookiness.

ZERO & INFINITY

Classical Model treats Nothingness and Infinity more as philosophy than science.

SPACITY

GRAVITY



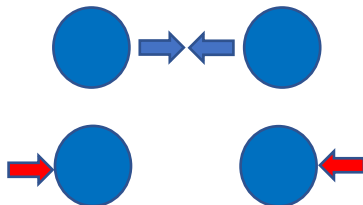
Gravity is the central pole around which the construct of Universe is built. But the concept of Gravity seems to have many anomalies. Enough to warrant a reconsideration of the existence of gravity itself. *(Anomalies are addressed in later chapter "contradictions")*

There is no denying the fact that a force exists between two masses. The evidence to support this force is overwhelming. Apples falling to the ground, moon orbiting, us walking on ground etc.

But is Gravity the cause for masses coming together? Why should one mass attract another mass? In the same breath we also should ask, what else if not Gravity? If Gravity were not the cause, what could that alternate force be?

Gravity being intrinsic to the mass, the alternate force must be external to the mass. That alternate force should create the same effect of masses coming towards each other. Same as in the case of Gravity.

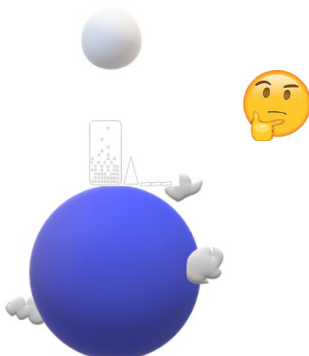
SPACITY



With Gravity being a PULL force, the alternate force must be a PUSH force. If mass creates a force of attraction, what would generate a PUSH force? Other than masses, there is nothing but space around!! There exactly lies the answer. SPACE itself is the cause of that alternate external force. *(The reasons behind SPACE generating this force are addressed in later chapter "SPACITY - Why?")*

Let us call this phenomenon 'SPACITY'.

SPACE



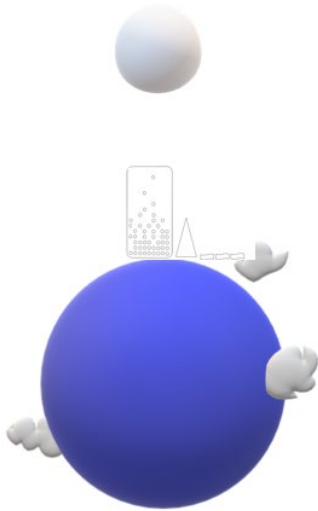
To push the masses together, space should have the capacity to generate a force. Force acting on a unit area is defined as Pressure. If Force is denoted by Kg or Newton, the pressure is denoted as Kg/Sqm or N/Sqm.

SPACE should then have positive pressure. But we know the OUTER SPACE is empty space. Vacuum. Absolute Zero Pressure!!

If that were to be the case, the concept of SPACITY would be a non-starter. So, it is important for us to prove that OUTER SPACE is not Absolute Zero Pressure. Even if it has no matter whatsoever. To accomplish that, we may have to revisit the concept of Space Pressure and Pressure itself.

VACUUM ≠ ZERO PRESSURE

SPACE PRESSURE

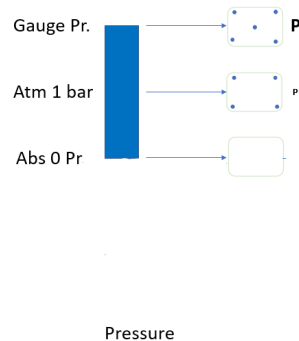


We consider the air to be at 1 atmospheric bar pressure on the surface of the earth. In layman terms it is the weight of the air column acting on our head. Air column that is thousands of miles tall. Cumulative weight of all the air molecules in that column yield a pressure of 1 atm bar on surface of planet earth.

However, pressure is not the same in this column. It is the highest on the surface of planet. As you rise higher in this column and move away from surface of planet earth, the pressure decreases. The density of air molecules reduces as you rise up the height, thereby reducing the effective cumulative weight on your head.

When you move sufficiently away from the surface of planet earth you encounter OUTER SPACE. At this height there are no air molecules. Not just air molecules but no other matter as such. This would then be considered as a perfect vacuum. And our task now is to prove that this vacuum has positive pressure.

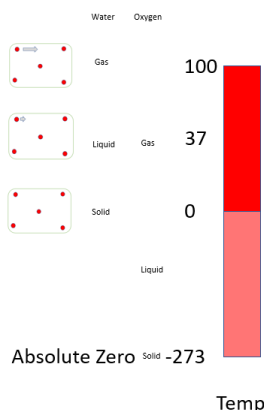
PRESSURE



At 1 atm. bar, let us consider there are 4 (Four) air molecules in a unit volume. You add air molecules to this unit volume, the pressure of the system rises. Conversely if you remove the air molecules from this unit volume or jar, the system pressure inside the jar reduces. If you continue reducing the number of molecules and reach empty jar after removing all air molecules from the jar, the system pressure of the jar is said to be Zero. And in case of pressure scale Zero pressure is absolute zero pressure. You cannot go below zero air molecules in the Jar.

We now have the task of proving this vacuum to have positive pressure. To understand the Absolute Zero Pressure, we need to study the Temperature scale.

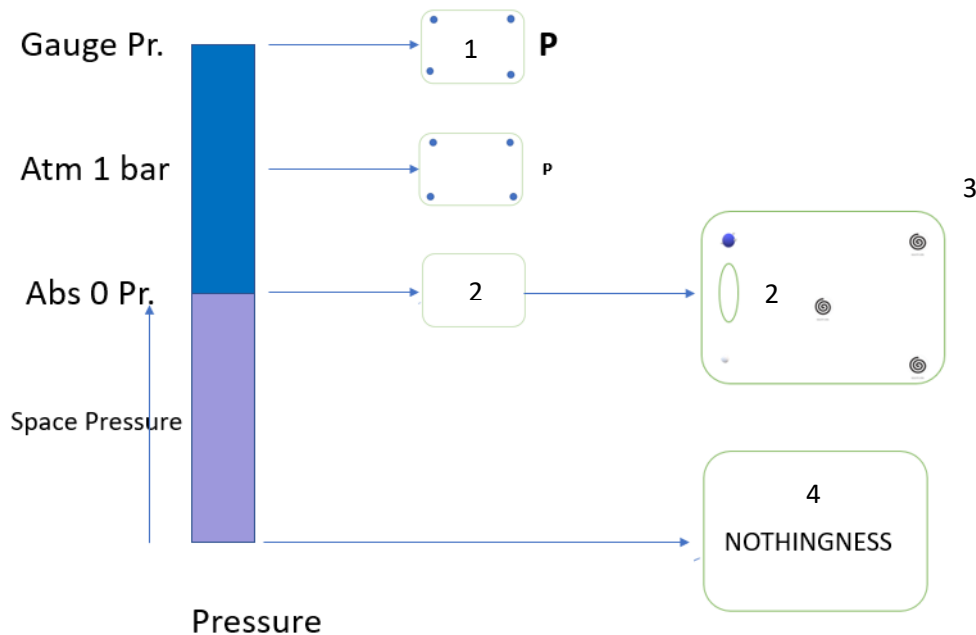
TEMPERATURE



Temperature scale has water's state as solid, liquid, gas as its basis. At Zero degrees the water exists in solid state, below 100 deg c as liquid and as gas beyond 100 deg c. But when you consider any other molecule, oxygen for example. At room temperature oxygen exists as gas and to achieve liquid state you need to cool Oxygen to below zero-degree c. This shows that Zero Degree is not Absolute Zero Degree Temp. Absolute Zero temperature is a state where every molecule in the universe exists in solid state. A temperature where every molecule is frigid and has no mobility.

So, it is important for us to find out if we can stretch the zero pressure of pressure scale further down below.

ABS. ZERO PRESSURE



At stage 1, we had Jar full of molecules and hence at positive pressure 'P'. When you kept removing air molecules and reached stage 2, we had the jar empty. As empty as the space in OUTER SPACE. No air molecules, just absolute vacuum. Absolute zero pressure.

Now increase the horizon of this vacuum '2'. You will encounter moon, then planet earth. Increase the horizon of vacuum still farther and you will come across Milky Way and possibly few more galaxies Thereafter. Now this is our new Jar containing a few galaxies separated by absolute space.

Does this jar at stage 3 look like the one at stage 2? Not at all. In fact, it looks more like Jar at Stage 1. Jar where the system has positive pressure.

So just the way we do not consider the intermolecular space between air molecules in Jar 1 as vacuum and rightly consider the entire system of Jar 1 as positive pressure, we also should not consider the Jar 3 that denotes OUTER SPACE as absolute zero pressure.

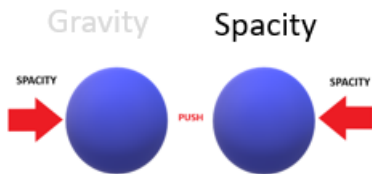
If you really want to consider OUTER SPACE as Absolute Zero pressure, just the way you emptied the Jar at stage 1 and reached the stage 2 where the Jar was empty, similarly you need to remove galaxy after galaxy from Jar at Stage 3 and reach a stage 4 where there is no mass in the universe. Stage 4 in effect is the stage of NOTHINGNESS.

Thus, as long as there is mass in the universe there is Absolute Positive Pressure. So it is wrong to consider OUTER SPACE as Absolute Zero Pressure. True Absolute Zero Pressure is the stage of NOTHINGNESS.

PROOF OF SPACITY

Matter in Universe

Density Pressure Force
Kg/ Cum Kg/ Sqm Kg



As long as there is mass in the universe there is density. Density being Kg/ Cum leads to positive pressure (Kg/ Sqm). Where there is positive pressure, force is not far behind.

This is that alternate force external to the mass, generated by space that we were in search of. So, when you have an external force that is acting on masses resulting in measured value of masses coming together, Gravity cannot exist. Because when spacity assumes the cause of motion, gravity is summarily replaced.

One may ask how would a force that is acting on all sides of a mass end up moving it. It will be answered in 'Mandate of Space' when we study how SPACITY unravels itself as S1, S2, S3. A mix of Holding Pressure S1 and Moving Pressures S2 and S3.

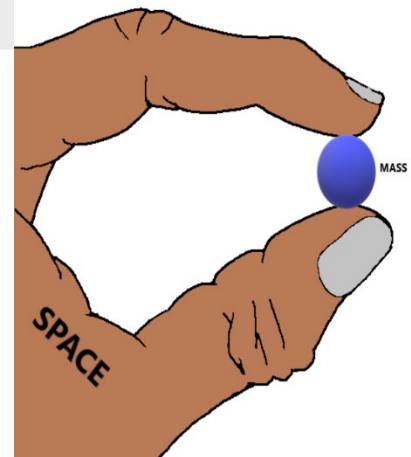
But for now, let us limit ourselves to S1, the positive pressure that acts on all sides of the mass.

So, the next time when you see a Mass....



It is not a mass in isolation, but a mass that is held in place by SPACE

MANTHANI

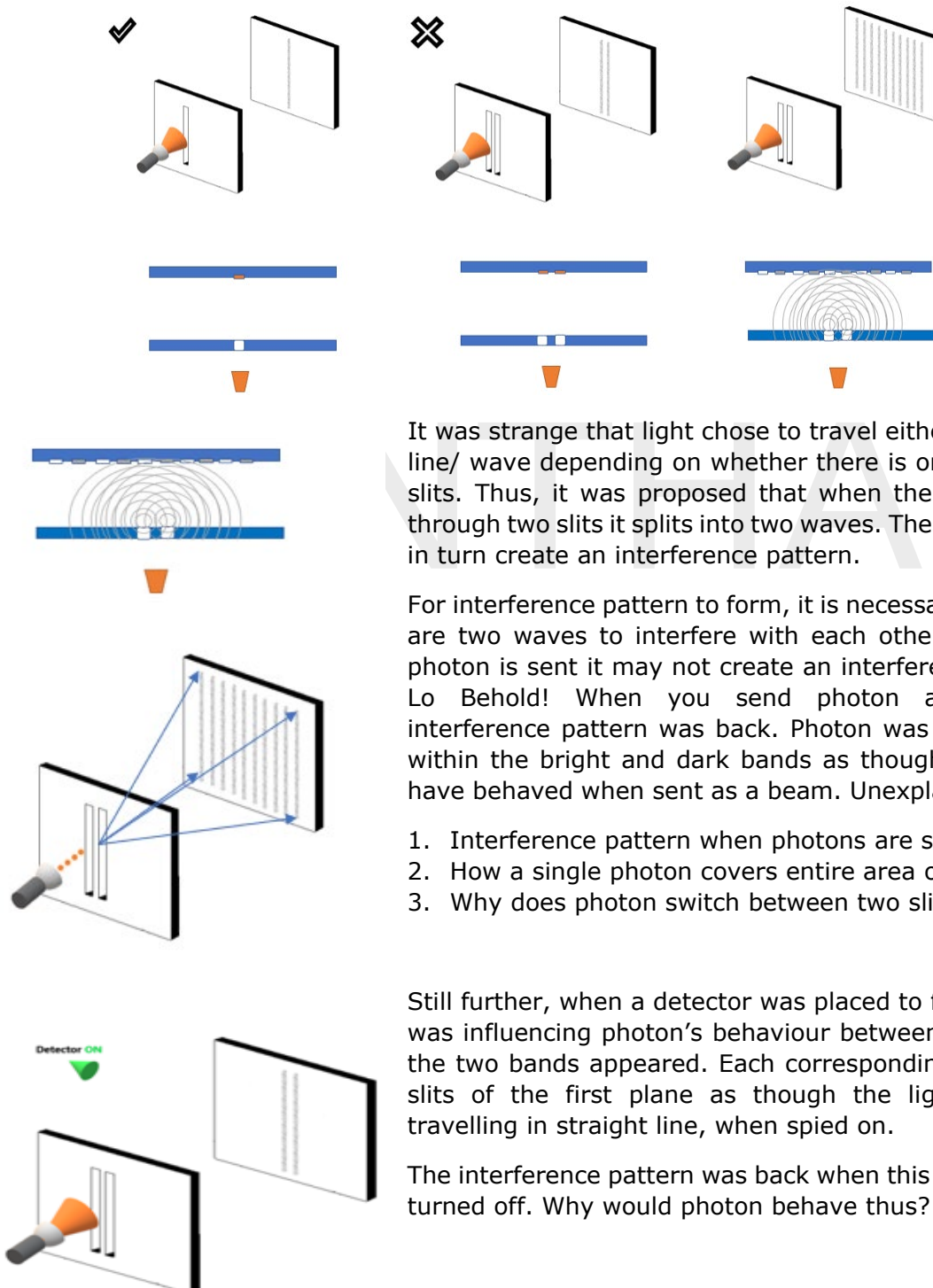


But do we see action of SPACE on MASS manifesting itself in real life or is it just a figment of imagination?

Fortunately for us, the observations of 2 SLIT EXPERIMENT help us 'see' through this action. Literally!! as this experiment is all about how a Photon behaves when you pass it through two slits.

SPACITY & 2 SLIT EXPERIMENT

2 Slit experiment is all about behaviour of photon when it is made to pass through two slits. it was widely believed that light travels in straight line. So, it was natural for it to create a bright band when passed through a slit. So far so good. But when the same beam of light was flashed on two adjacent slits it created an interference pattern instead of two bright bands. An alternating pattern of bright and dark strips.



It was strange that light chose to travel either as straight line/ wave depending on whether there is one slit or two slits. Thus, it was proposed that when the light travels through two slits it splits into two waves. These two waves in turn create an interference pattern.

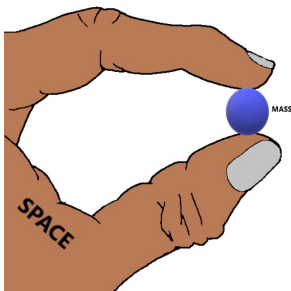
For interference pattern to form, it is necessary that there are two waves to interfere with each other. If a single photon is sent it may not create an interference pattern. Lo Behold! When you send photon after photon interference pattern was back. Photon was found to fall within the bright and dark bands as though they would have behaved when sent as a beam. Unexplained facts...

1. Interference pattern when photons are sent alone.
2. How a single photon covers entire area on plain 2?
3. Why does photon switch between two slits?

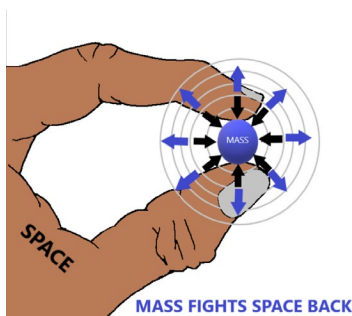
Still further, when a detector was placed to find out what was influencing photon's behaviour between two planes, the two bands appeared. Each corresponding to the two slits of the first plane as though the light now was travelling in straight line, when spied on.

The interference pattern was back when this detector was turned off. Why would photon behave thus?

PHOTON'S ENERGY SPHERE

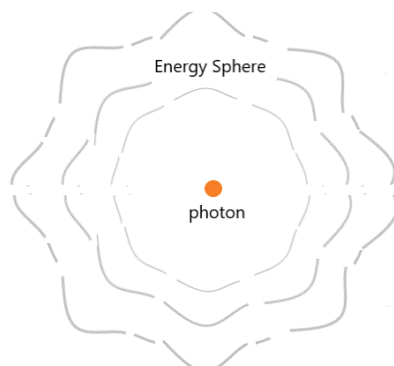


In **PROOF OF SPACITY**, we inferred that vacuum in outer space has positive pressure. And this positive pressure acts on every mass in the universe, however small or big.



As per Newton's laws of motion there is an equal and opposite reaction to every action. So, in reaction to space pressure acting on surface of the mass, the mass will react in an outwardly direction.

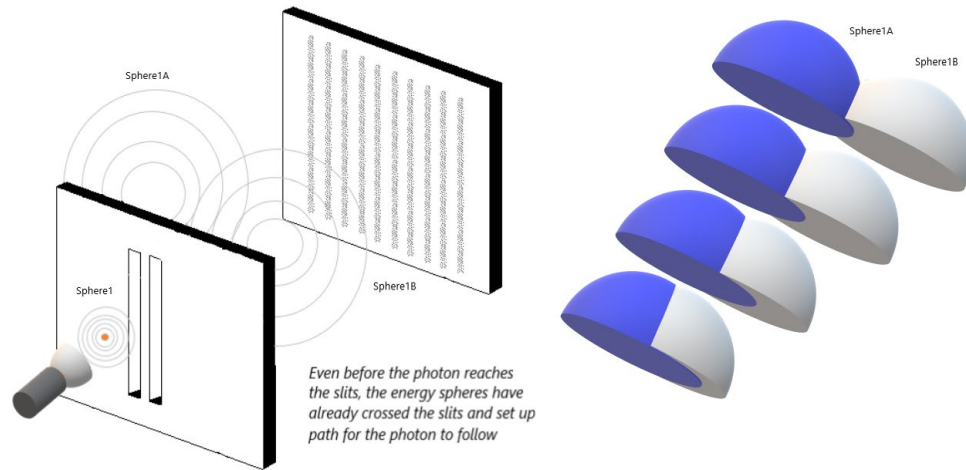
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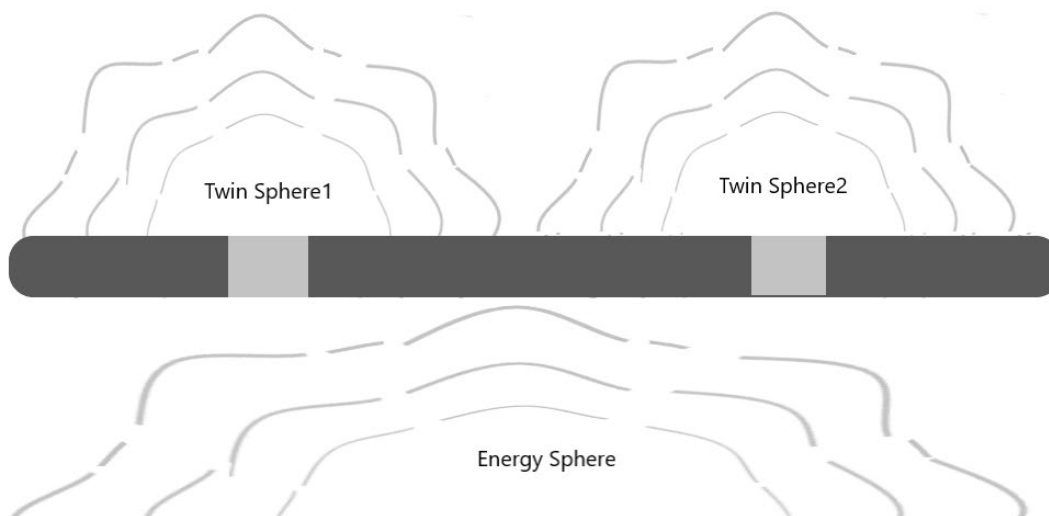
Accordingly, each photon will be generating a continuous wave of energy. This means that every photon is always moving with a sphere of energy that is propagating outwards and ahead of it.

This energy sphere is unique to each photon. As though a unique signature. When two photons travel together their energy spheres do not interfere with each other, unless they owe their allegiance to same parent photon.

PHOTON & SPACITY

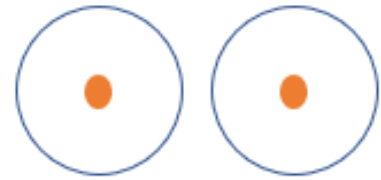


SINGLE PHOTON CASE: Let us consider simplest case of one photon. Photon thanks to spacity, is moving with an energy sphere of its own. This energy sphere will cross the slits much before the photon does. Now when single energy sphere crosses the two slits, it generates twin energy spheres. Since these energy spheres owe their allegiance to same parent photon and are twins, they interfere with each other. This leads to a pattern of highs and lows on the surface of these interfering spheres. Now the photon must just choose a path of least resistance among a plethora of highs/lows paths till it falls on second plane. Since this path is spread on the surface of these spheres, photon manages to reach length and breadth of the second plane. So, Photons do not create interference pattern. They just follow the path set by the twin energy spheres. This is how a single photon becomes the reason for formation of interference pattern.

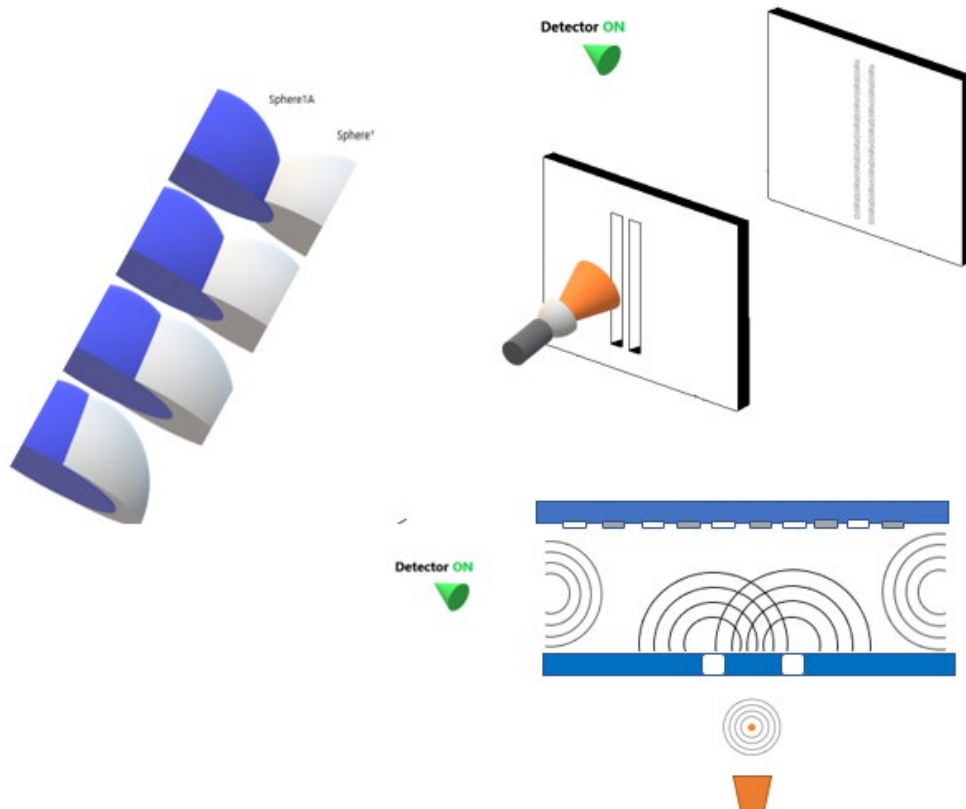


photon

MULTIPLE PHOTONS CASE Now let us consider two photons moving together. Each photon has energy sphere of its own. But these energy spheres having different parents do not interfere with each other. If they were to interfere with each other, we would have seen interference pattern everywhere we look in the room.



Thus, when a beam flashed on two slits, each constituent photon behaves independent of each other. Each photon creates their own twin energy spheres, who in turn interfere with each other and set the path ready for their respective parent photon to choose from.



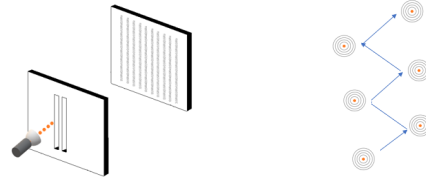
Why does the interference pattern disappear when a detector is placed? By the very nature of the detector, it spreads a grid of waves of its own between the two planes. Thus, we have the pair of twin energy spheres coming out of the slits being 'boxed-in' from either side because of this grid. The interference pattern of twin energy spheres does not have clear path as their bandwidth is limited on either side by the grid of waves created by detector. So, the photon is made to choose a path of least resistance that is limited within that narrow width. Hence, we see the light travelling as though in a straight line.

When the detector is switched off the 'boxing in' effect is eliminated, and the interference pattern returns.

The only thing that remains to be answered is **Why does photon switch between two slits.** This will be addressed in section **LIGHT TRAVELS AS A BUBBLE.**

LIGHT TRAVELS AS A BUBBLE

In this section we shall try to seek answer for photon switching between two slits. When you move the first plane marginally forward or backwards, the photon is seen to switch between the slots. Our intention is to derive from this occurrence an observation that light may in fact be travelling as a spherical bubble.

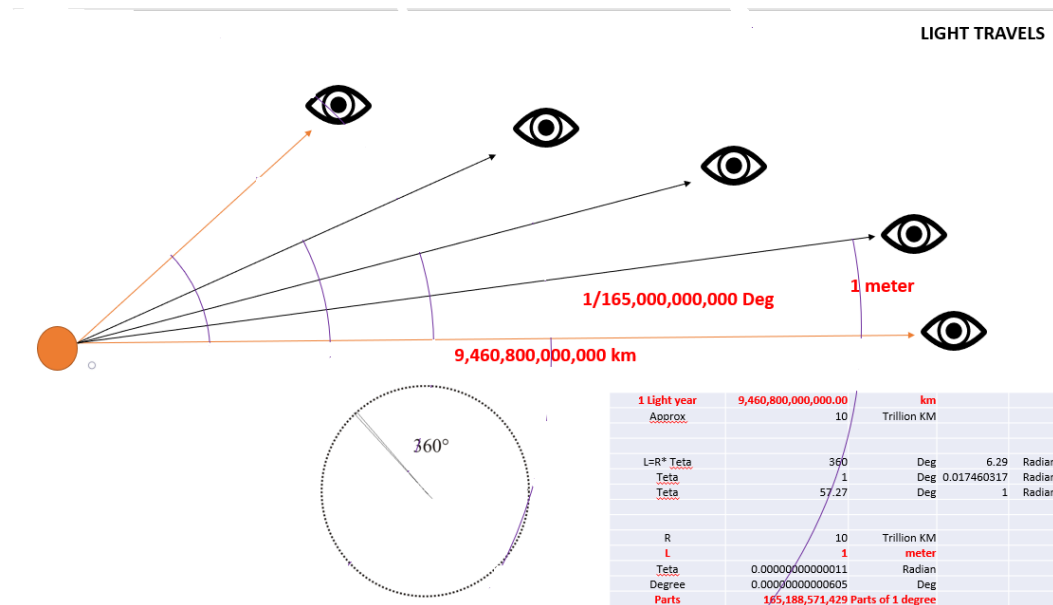


Basis: To understand the challenges faced by light, we need to be aware of the following.

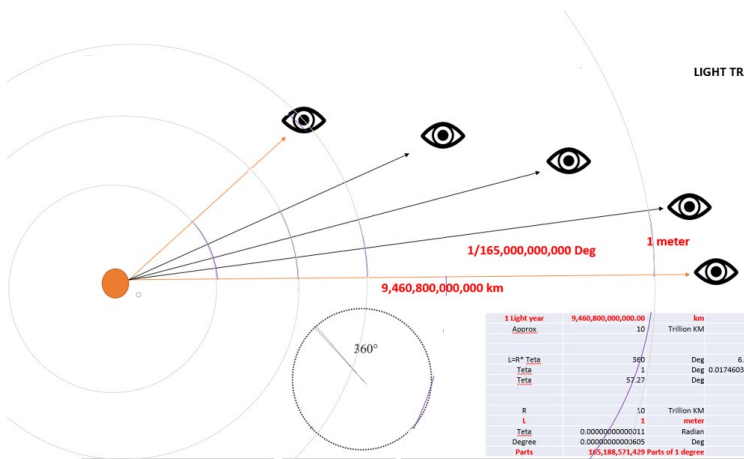
1. Light is mandated to travel to every nook and corner of the universe.
2. In doing so it should select a way that consumes the least energy.

Present Theory: Classical model of Universe suggests that the light travels as a straight line or a wave or a combination of both. In both the cases the light does reach every nook and corner of the universe, but does it consume the least energy? Let us study the mechanics involved.

For a star to be seen by two observers standing one meter apart and stationed 1 light year away, the light source has to send the light rays with a resolution of 165 Billionth of a degree. The farthest we have been able to see through a telescope is a star that is 5 billion light year away. Even for a spacing of 1 mm at the telescope, the light source will have to generate light rays at an astronomical resolution of 825 Trillion Billionth of a degree. This is only one visible plane, while light source will have to generate much finer resolution along every point on the sphere that universe is. That surely is not a smart way to conserve energy. Thus, this method does not meet the second criteria.



But is there a better way than sending the rays that reaches every nook and corner and it does not demand so much energy? Let us study the same figure and see that the clue to a smarter way of achieving the dual objective lies in the same figure.

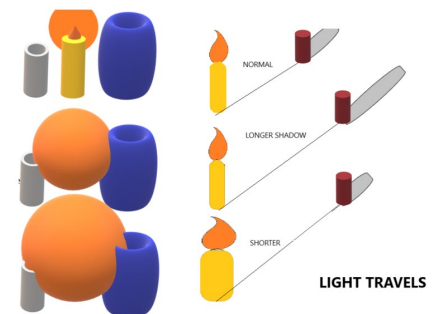


The most energy consuming part of making the light reach every nook and corner of the universe is the task of creating fine resolutions at astronomical distances. If we look at the figure once again, we will realise that instead of sending the rays as line if we could send it as an arc then all issues related to resolution will vanish. However, an arc in 2 dimensions only reaches one dimension. To reach every nook and corner in every direction this arc will have to be a sphere. That is why it is suggested that if light were to travel as a spherical bubble it would meet both the criteria.

However, we need to address the following critical issues.

CONTINUITY: If light travels as bubble, there will not be continuity between consecutive bubbles. If the gap between two bubbles is more, the source will be flickering. But this problem is well taken care of by the speed of light itself. At 300,000 km/sec it will seem as though the bubbles are arriving one immediately after the other and the light source would seem continuous. This is as though your shutter speeds match the speed of light then you can see the bubbles travelling as independent spheres, else it will be continuous.

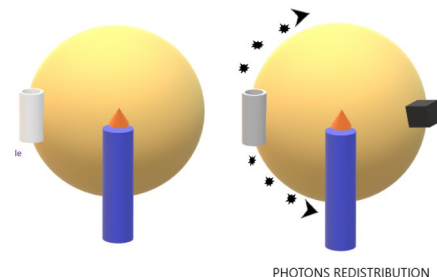
SHADOWS: When the first bubble crosses the obstruction, there is a tear created in the surface of the bubble corresponding to the size of obstruction. Now the sphere will have to repair this tear on its own. The only way a sphere can repair tear is by thinning itself. This would be done by redistributing the photons from the boundaries of the tear. The first bubble of course cannot repair the tear immediately and it needs time proportional to the size of the tear, luminosity of the light source and the obstruction itself. Thus, the shadow's length is defined by these factors and the edges of the shadows can never be crisp/ sharp.



REFLECTION: In the case of the bubble, it is as though the bubble on falling on a surface will bounce inside out, thus creating the reflection. While refraction the entire bubble shifts the line of motion and behaves as though angle of incidence is changed when it passes through different media.

PHOTON SWITCH: Being a part of a spherical surface, it is photon's nature to be ready for a repair job. When the bubble is moving, any small obstruction can make the photon to move within a limited band width. Therefore, it is switching between slots.

PROOF: This can easily be checked in controlled laboratory conditions. Place a good reflector on one side of a light source and measure its brightness. Now place a good absorber on the other side at a distance lesser than the reflector. If the reflector gets duller, then that is the proof that light travels as a bubble. If light were travelling in straight line, the brightness would not have changed.



SPACITY: WHY?

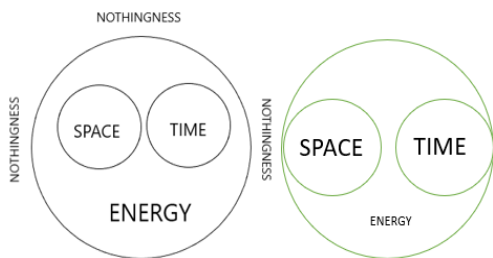
We never ask why Gravity exists. Gravity is supposed to be intrinsic property of mass. But why should one mass attract another or for that matter, why should mass bend space? Whereas let us get a bit harsh on spacity and ask why spacity exists rather than just assume it to be the property of space. Why should space bring masses together? In fact, it will be helping our cause as this discussion would throw up S1, S2 and S3.



To understand this, we should study how space behaves in presence of all other elements of universe. So, what are the basic elements of the universe?



Just the way you need Money, Land and Time to build a beautiful home, in the same way you need Energy, Space and Time to build universe.



Among these, Energy seems to be the first among equals. Just the way Land and Time are dependent on Money, Space and Time too are dependent on Energy. Take out energy from the equation and space, time disappear. As depicted in the Venn diagram. Energy-Space-Time together make up UNIVERSE (Existence). Anything beyond that would be NOTHINGNESS. As though Universe exists in cocoon of Nothingness. As time progresses Space increases at the expense of Energy, though the total energy of system remains constant.

Now let us study how space interacts with other elements of universe.

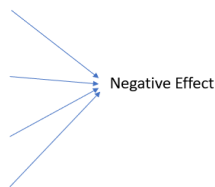
Energy: No form of energy can sustain itself in space. It dissipates.

Mass : Every mass in space eventually slows down.

Life : We have not yet come across a life that can feed on space and survive in space.

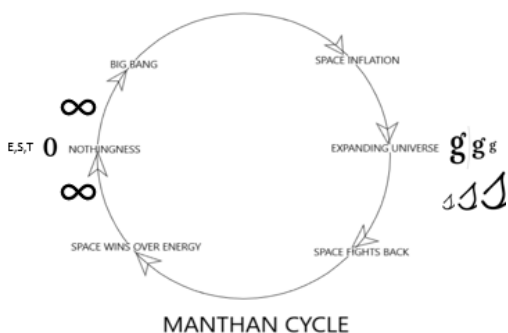
Time : Space affects time indirectly. In presence of massive mass time does slow down.

Energy	+	Space	=	Dies
Matter	+	Space	=	Slows Down
Life	+	Space	=	Dies
Time	+	Space	=	Slows Down



There seems to be an eternal tussle between Space and all forms of Energy. Mass being just another form of Energy, space acts on mass also.

But Why?

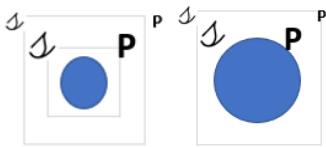
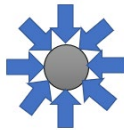


Hubble's observations suggest BIG BANG to be the start. Infinite energy escaped NOTHINGNESS and Universe has been expanding ever since. For a cyclical Universe, the energy must be restored to its infinite levels and brought to NOTHINGNESS. In an expanding Universe, masses move beyond the influence of one another. Conversely, an increasing Spacity can restore the energy levels to infinite levels by pulling all the mass to a point of zero volume. This is from where the SPACITY derives its mandate of acting on all masses and bring them together for an eventual galactic compression at NOTHINGNESS.

SPACITY: HOW?

Space now has the mandate to act on mass and bring them together. But how does Space go about exercising this mandate? Obviously, it will depend on the various combination that mass/ system of masses finds itself in.

There are primarily three combinations **Single (S1): Dual (S2): Multiple (S3)**



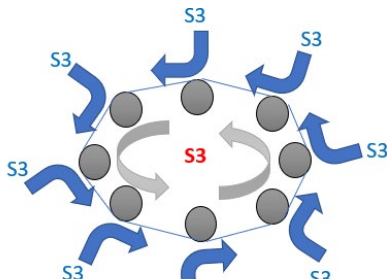
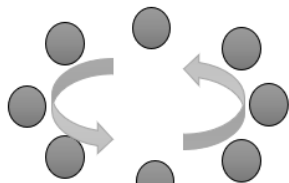
'S1' is the force that acts on **ONE** unit of mass. It is an independent, stand-alone force. One unit of mass can be a molecule/ pebble/ planet/ star/ Galaxy etc. S1 depends solely on mass of the body that it is acting on.

S1 is a holding pressure owing its genesis to the density. Thus, the magnitude of S1 is highest on the surface of the mass. As you move away from the surface of the mass S1 reduces inversely in a proportion to the cube of the distance.



'S2' is the force that acts between **TWO** masses. Like between two molecules/ pebbles/ planets/ stars / galaxies etc. Intent of S2 is to bring the masses together so that it can be acted on as a single mass of unit.

S2 the spacity acting between two masses is pretty much the same as gravity, except for its direction. The magnitude of S2 is the same as gravity. It is affected both by mass and distance separating them. Farther the mass, lesser is the influence.



'S3' is the force that acts on **THREE** or more masses/ system of masses. Like a force acting on a group of molecules/ asteroids/ Kuiper belt objects/ stars/ Galaxies etc. S3 depends solely on mass of the system it is acting on.

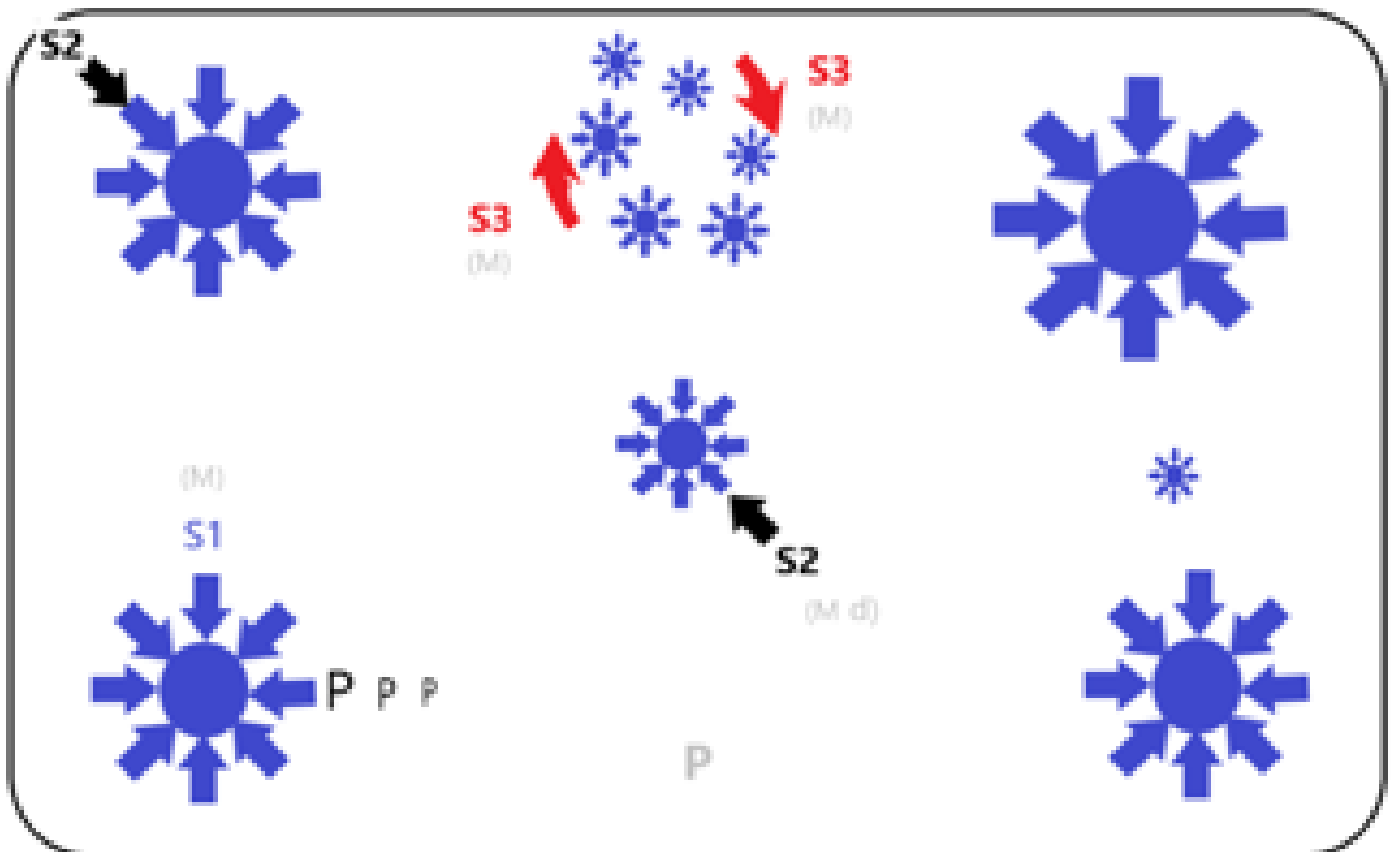
S3 is not the force that creates the motion but appears only when the system is already in motion. This force is a shepherding force since it must shepherd its flock and prevent them leaving the system. S3 acts along the general direction of motion of masses, else it will help constituent masses leave the system.

S3 acts on the system irrespective of shape (Elliptical/ Circular), Size (Equal / Unequal masses), number (1,2, many)

What is important to note is that in a system S1, S2, S3 do not act in isolation. They always act in tandem and in all permutations and combinations. A possible scenario of this is shown in the next image. A mass can defy the mandate of spacity provided it has the energy to spend.

SUMMARY OF S1, S2, S3

- S1** Holding Pressure.
Acts on every mass in the universe.
Does not impart any kinetic Energy to the mass it is acting on.
Directly proportional to the mass of the body it is acting on, a strong force.
Strongest on the surface of the mass, reduces as you move away from surface.
- S2** Moving Pressure.
Acts on every pair of mass in the universe.
Imparts kinetic Energy to the pair of mass it is acting on.
Affected by mass of the body and the distance separating them, weak force.
Strongest when distance is zero, reduces as distance increases.
- S3** Moving Pressure.
Acts on every system of masses already in motion.
Imparts kinetic Energy to the system of masses it is acting on.
Directly proportional to the mass of the system it is acting on, a strong force.



SPACITY: HOW MUCH?

Holding Pressure S1

We know the mass and surface area of Earth. So, isn't it possible to calculate the Holding Pressure of Spacity S1? If calculated, we will see that the pressure would be nearly a million bar. How do we survive such astronomical pressure? The highest pressure experienced on planet earth is at the bottom of the deepest sea trench. The pressure there is around 1000 Bar and we find it difficult to survive with the best of Scuba equipment at our disposal.

Surviving 1 Million Bar

We are not introducing any new pressure. We have been living with it ever since the formation of planet Earth.

Such astronomical pressure should have hurtled us at unimaginable speeds. But it will not. Because it is a holding pressure, and it acts on all sides.

This at least should have crushed us. But it cannot. Because of the porous nature of the mass. Much of a molecule is all space. The matter occupies only a miniscule 0.01% of the atom's size. In the pressure calculation Kg/ sqm, the surface area of earth is not peripheral surface area. If numerator denotes weight of earth the surface area should also be relatable to all mass that makes up earth.

If mass is that porous how does it move them then? Because in solid state all molecules are mechanically connected. You move one molecule, other also moves.

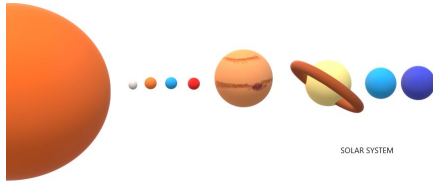
Moving Pressure S2

This is a doppelganger of gravity. The magnitude can be calculated same way as in classical model. Either by Newton's method or Einstein's General theory of relativity.

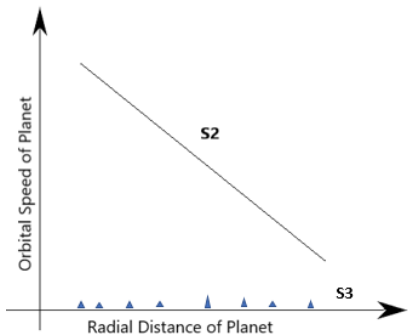
Moving Pressure S3

This is equivalent to a magnitude relatable to Dark Matter. As can be seen in future sections, it is because of S3 that MANTHAN does not require Dark Matter to explain why stars move faster when they are on the periphery of galaxy than those inside.

SPACITY: SOLAR SYSTEM



We now shall apply the concept of Spacity to Solar System and Milky Way. Two of the celestial systems that we call home. These two systems are characterised by their respective velocity curve. This curve depicts the variation in speed of constituent bodies of the system. Planets in case of Solar system and Stars in Milky Way.



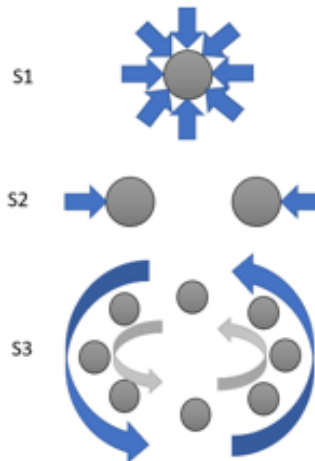
Let us consider Solar System to start with. In solar system, the planets orbit around Sun at different speeds. As you move away from Sun, the orbital speed of the planets decreases. This follows the classical model's principle of Gravity. Farther the mass, lesser is the influence. We now need to find out if Spacity too can explain the behaviour of planets in this system.

MANTHAN

Holding Pressure
Does not affect speed

Principal Force (M,m,d)
Sun 1000
Planets 1

Minimal Effect (m)
Sun 1000
Planet 1

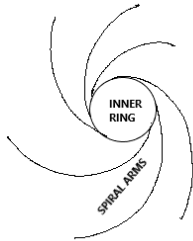


The effect of S1 can be discounted for this discussion as it is all about Velocity and S1 being a Holding Pressure, does not impart any Kinetic Energy.

Of the remaining forces, S2 assumes dominance because it has Sun as its Primary Force. The speed of the secondary force is primarily influenced by the distance separating the Primary and Secondary Mass. As you move away from Sun, the speed of the planets drops.

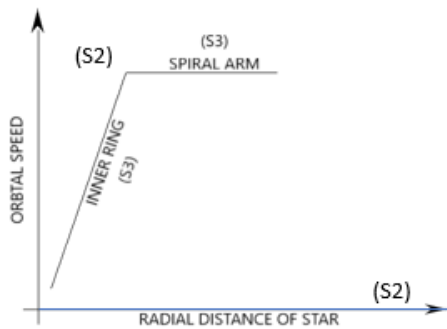
The effect of S3 on the system is present but minimal. Primarily because S3 is dependent on the cumulative mass of the system in the circumference that it is acting on. Since each planet has only one circumferential mass, you may see a peak of S3 at respective orbits as you move away from Sun. Compared to S2, the magnitude of S3 is very minimal. The magnitude of S3 however small is proportional to the mass of the respective planet in a particular orbit.

SPACITY: MILKY WAY



Milky Way:

Having applied the Spacity to Solar system, let us move on to Milky Way, a relatively complicated system. Milky Way is made up of inner ring where the stars are densely packed. Whereas in Spiral Arms the stars are sparsely distributed. Milky Way has a super massive black hole at the center.



Velocity Curve:

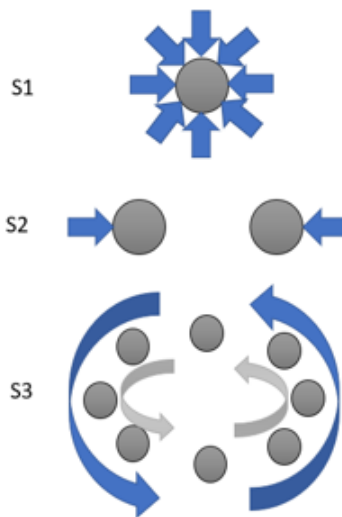
Since our focus is on speed of stars in the Milky-Way, let us analyse Velocity Curve. Stars in the Inner Ring are seen to travel faster as you move away from the center of the galaxy while those in Spiral Arms are seen to move at constant speed. This is as depicted in the velocity curve shown. Concept of Spacity should be able to explain this anomaly, seemingly contradictory.

VELOCITY CURVE

Holding Pressure
Does not affect speed

Minimal Effect (M,m,d)
SMBH 1
Stars 100,000

Principal Force (M)
SMBH 1
Stars 100,000



Spacity:

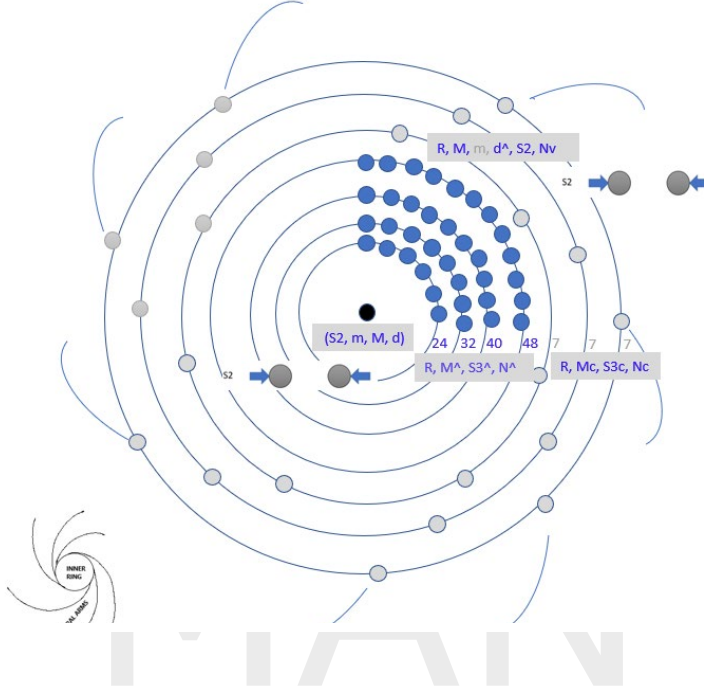
S1 Since we are limiting our discussion to speed, we can safely discount S1 for a consideration. S1 being a holding pressure, it does not impart any kinetic Energy.

S2 While the blackhole may weigh as much as 40 million Suns, rest of the stars making up Milky Way weigh up to 400 Billion Suns. Thus, the mass ratio of blackholes to stars in Milky Way is about 1:100,000. So, effect of Blackhole on stars of the galaxy is minimal. Even if you consider only a sector of stars, the ratio under consideration will still be 1:25000. And if you want to consider 40 million suns vs one star, even then single star as a secondary mass is offset by a primary mass of 100,000 stars acting on it.

S3/ S2 S3 does largely affect the way stars behave in Inner Ring and Spiral Arm but what is also important is effect of S2 with Inner ring as Primary mass and Spiral Arms as Secondary Mass.

MASS DISTRIBUTION Let us analyse the mass distribution in the Galaxy as it is central to the discussion. The blue dots indicate stars in the inner ring, while grey dots represent stars in the spiral arms. As can be observed the cumulative mass of stars in respective circumference increases as you move away from the center of Galaxy 24,32,40,48...While the cumulative mass of stars in spiral arms is constant 7,7,7.

GALAXY MASS DISTRIBUTION



INNER RING

As you move away from center, the cumulative mass corresponding to respective circumference also increases. 24,32,40,48... As a corollary $S3$ which is directly proportional to the mass that it is acting on also increases. So $S3$ which is acting in the general direction of the moving mass, speeds up the stars. Thus, we see the part of the velocity curve corresponding to Inner Ring as slanting with constant slope.

SPIRAL ARM

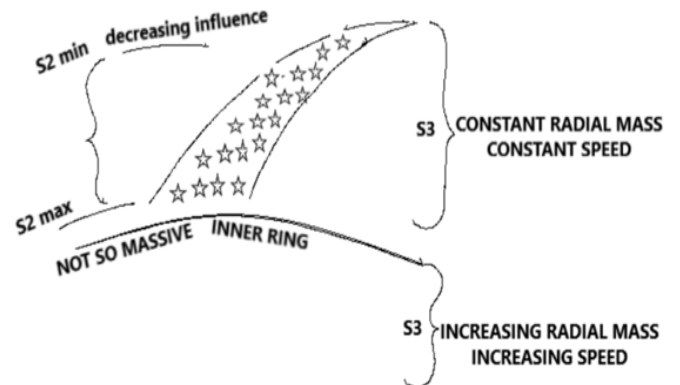
The cumulative mass of stars at specific circumferences remains constant. 7,7,7...This is irrespective of the radial distance. With mass remaining constant, $S3$ and by extension speed also remains constant. That is how Spiral Arm section of the velocity curve has a horizontal line.

INNER RING & SPIRAL ARM

The influence of Primary mass (Inner Ring) wanes on secondary mass (stars in spiral arms) as you move away from the inner ring periphery. Thus, the cumulative effect of constant $S3$ and waning $S2$ does not add the required zing to the stars and it makes them fall back as compared to the stars in the Inner Ring. This falling back eventually leads to spiral arms.

JUNCTION

Why doesn't the speed of stars at the junction of Inner ring and Spiral Arm fall suddenly as expected? Why instead they seem to maintain the same speed as stars in periphery of Inner Ring? The answer lies in the effect of the $S2$ factor. The pair of Inner Ring and Spiral arms act like primary and secondary masses. Inner Ring's influence on stars in Spiral Arm is highest on stars nearest to it. This makes stars adjacent to inner ring move at a speed that is almost the same as the one in the spiral arm. Therefore, the speed of these stars does not fall as expected. The basic speed of all stars in the spiral arm are the same as that of Stars in the periphery of Inner Ring.



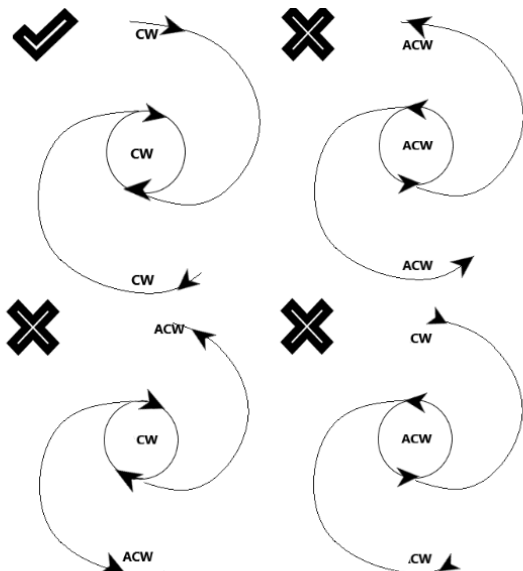
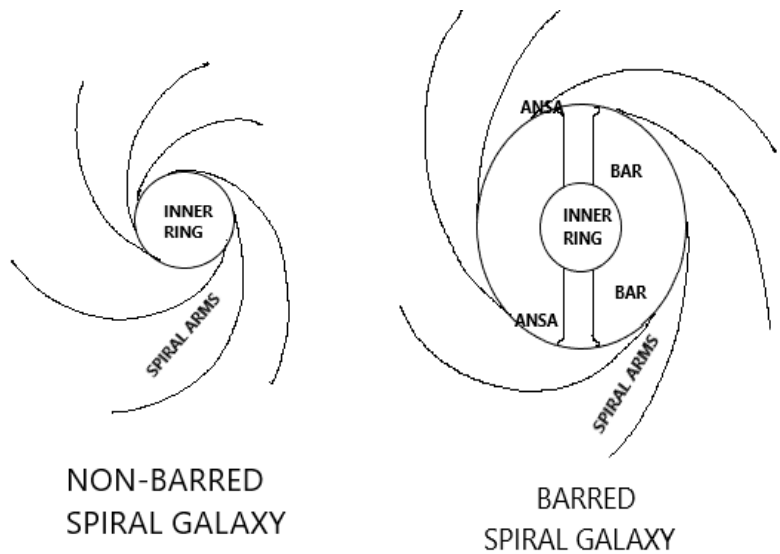
SPACITY: GALAXY FORMATION

There are very many types of galaxies in the universe. To name a few, Spiral, Barred Spiral, Elliptical, and Irregular types. Of these, majority of the galaxies that we come across are of Spiral type. Approximately 80% of them. The structure does not get any complicated than in a spiral galaxy, especially a barred spiral galaxy.

Spiral Galaxy has **a)** an *inner ring* that has stars that are densely packed and **b)** *Spiral arms* with sparsely populated stars

Apart from Inner Ring and Spiral Arms what differentiates **Barred Spiral Galaxy** is an *intermediate region* with peculiar structures known as Bars and Ansaes.

Bars are band of stars that are packed in rectangular shape as though an extension to the inner ring region on either side. While **Ansaes** are formed at the junction of Bars and Spiral Arms. As though there has been a stampede of stars.



Gravity and Classical Model of universe to explain the formation of such typical systems. So, let us see if MANTHAN can. To understand the formation of these structures it is essential to figure out the principle behind direction of rotation of a spiral galaxy. With stars distributed in Inner Ring and Spiral Arms there are four possibilities of directions in which they can move.

Inner Ring CW	: Spiral Arm CW
Inner Ring ACW	: Spiral Arm ACW
Inner Ring CW	: Spiral Arm ACW
Inner Ring ACW	: Spiral Arm CW

To find out which selections are possible we need to apply two basic principles. The Galaxy is a single block of stars with every section of them moving in same direction. From this we can derive that,

- Stars in inner ring Spiral arm move in same direction
- Stars in spiral arm cannot be leaving the system

When we apply these two principles to all the possibilities the only feasible outcome is that of **Inner Ring CW: Spiral Arm CW**. Having solved the paradox of Spiral Arms, let us concentrate on Barred Spiral Galaxy with its peculiar structures of Bars and Ansaes.

SPACITY: BARRED SPIRAL GALAXY

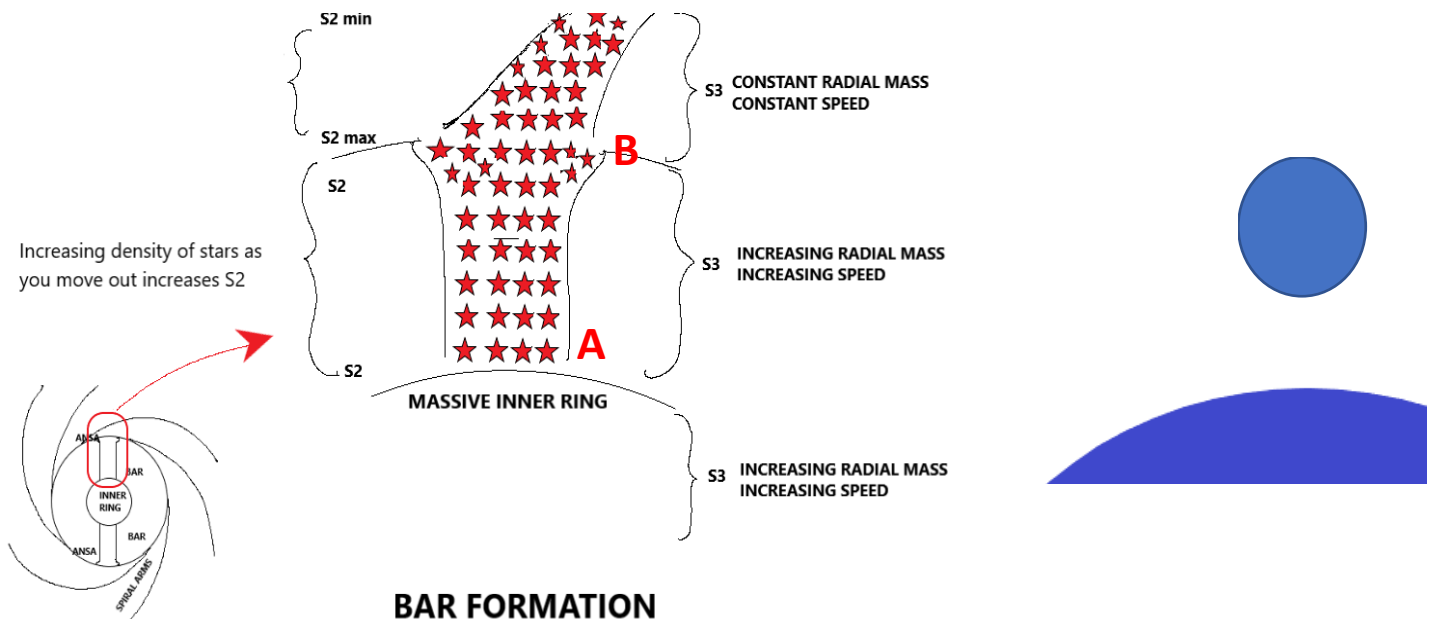
We have already studied the play of Spacity Forces in Inner Ring and Spiral arms of a Spiral Galaxy. Their nature remains the same in corresponding sections of a Barred Spiral Galaxy. What is special is the Intermediate Ring Section that comprises Bars and Ansa. We shall now apply the play of Spacity Forces in this section.

PLAY OF SPACITY FORCES: If constant cumulative circumferential mass at respective radii is the reason for formation of spiral arms, then why is it that stars in the Bars do not fall back? Here too the cumulative circumferential mass is remaining constant and the stars should have lost their Zing and should have fallen back as one moves away towards periphery. If left to themselves the stars in the intermediate rings also would have behaved like those in Spiral Arm. What stops them from behaving thus are two factors generating from one phenomenon of ANSAE.

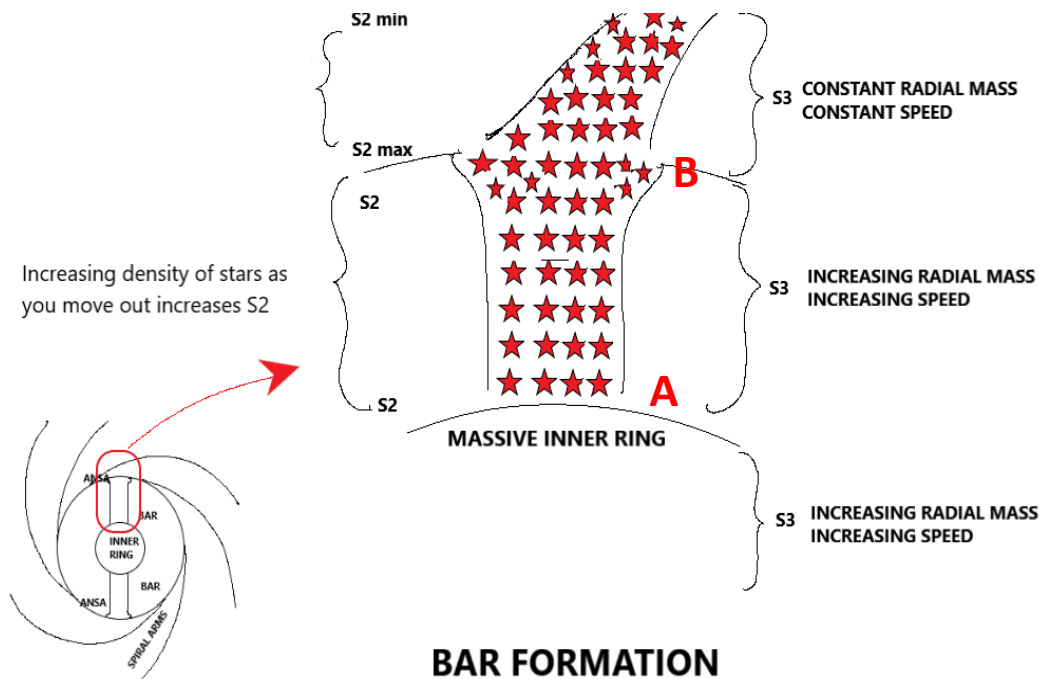
S2 The stampede of stars at the junction **B**, creates another seemingly massive mass ANSAE. This acts as a primary mass and has a reverse effect of increasing S2 on the stars in the BARS as you move towards ANSAE at B. This increasing S2 adds extra Zing to the stars in BARS and help them from not falling back due to increasing distance from center.

S3 The stampede of stars at ANSAE creates a backlash which increases the density of stars in the vicinity. Closer you are to ANSAE at B, denser the region with stars. This in a way has an effect of increasing S3 because it is directly proportional to the cumulative circumferential mass at respective radii. This increasing S3 adds extra Zing to the stars in BARS and help them from not falling back due to increasing distance from center.

Thus, the cumulative effect of Increasing S2 & S3 acts as a compensating factor and arrests the stars from falling back by adding Zing to the stars. Thus, they move as though they are a part of the Inner Ring.



But Why Do **BARS** & **ANSAE** form in the first place?



There are two principles that govern the formation of Bars and Ansaes.

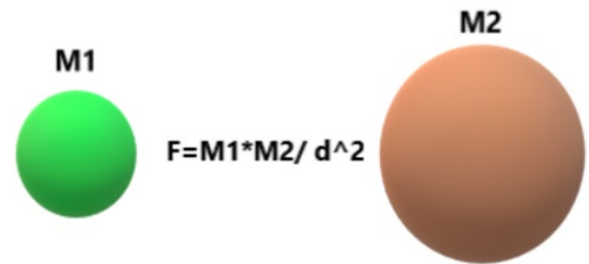
1. All sections of a Galaxy start forming together
2. Gyroscopic forces act on any and every rotating structure.

BARS Galaxy being a rotating structure is subject to gyroscopic forces. These gyroscopic forces act on every section of Galaxy. However, their effect varies depending on absence or presence of balance in that section. Inner ring with densely packed stars, has an intrinsic in-built balance. Thus, Gyroscopic Forces have least effect. Similarly, Spiral Arms are not affected much as they have the freedom to seek balance, being on the edge. It is the stars in the intermediate area that are affected the most by Gyroscopic forces. Now the stars in the bar may seem densely packed but turn the clock backwards a few million years and you would see that all those stars now in the bars would be dispersed within the intermediate ring to begin with. Thus, the stars intermediate ring that are relatively sparsely packed, are distributed irregularly, and are boxed in on all sides will be perfect candidate for the gyroscopic forces to act on. Gyroscopic Forces in their motive of seeking balance create a rocking effect on the galactic disc of Galaxy. Naturally, the rocking would happen along an axis where the imbalance is the least. The gyroscopic forces thus create an axis along which stars are forced to align themselves with. This in effect will lead to all the stars choosing one of the sides and creating a thickly populated BARS.

ANSAE Since every section of Galaxy start forming simultaneously, the spiral arms have already started forming at Junction B and have created a physical barrier. Imagine if there were no spiral arms or that they had formed much farther than B, then the BARS would have been longer than they are now. But since the physical barrier has already been created there is a stampede of stars in the intermediate rings at junction B leading to ANSAE. A place where there is a cumulation of stars forced to be packed in a restricted area.

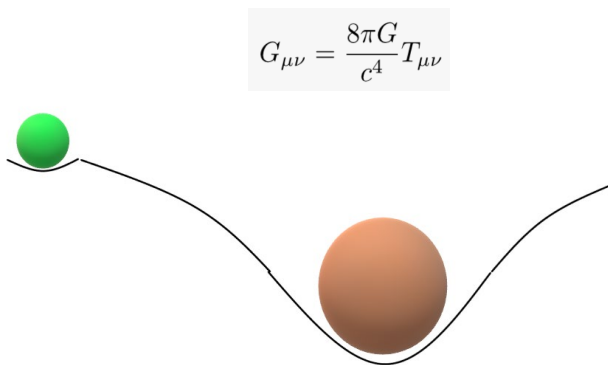
CONTRADICTIONS: PRESENT THEORIES

Classical Model of Universe began with **NEWTON'S Law of Universal Gravitation**. As per this law the Gravity was defined as force of attraction between two masses. The magnitude was directly proportion to the two masses under consideration and inversely proportional to the distances separating them. This was a good approximation of the way masses behaved around us, including the planets of the solar system.



However, it could not satisfactorily explain

- 1) How masses or planets could communicate with each other. Especially when the third mass is introduced. This theory summarily discounted the presence of 'Space'.
- 2) The weird deviation in Mercury's orbit.



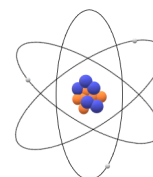
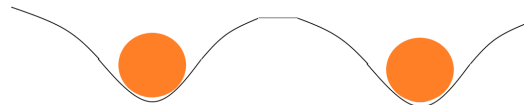
The infirmities were laid to rest by **EINSTEIN'S Theory of General Relativity**. This theory rightly introduced Space into the equation by suggesting that Massive masses like Earth, Moon, Sun, Galaxy bend space time around them. This bent space in turn guides the motion of smaller masses around it. Gravity is suggested to be the effect of this gradient created by the tango of Mass and Space. Einstein's theory has stood the test of time.

However, this theory too has aberrations.

1) Concept of Gradient is central to General Theory of relativity. To have Gradient you need unequal masses. What if there are massive masses that are exact replica of each other? They would bend space identically and create same gradient. If such identical masses were to approach each other, each should be blind to the other and glide by as though other did not exist. Such a situation of identical masses never exists in Real Universe. But the theory should be applicable in all situations. If not at galactic levels, equal masses are norm in molecular levels.

2) Bending of Space Time is proposed in presence of Massive Masses. Only Massive masses. It fails to address the situations where the masses are not massive. Atoms for example.

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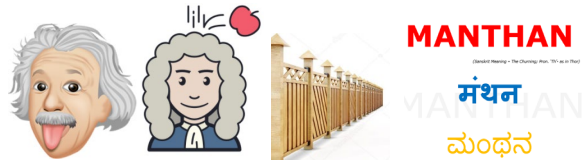


ATOMIC LEVEL



CONTRADICTIONS EXPLAINED: SPACITY

Why have a theory that is based on SPACE when EINSTEIN has already fixed aberrations in NEWTON's law by introducing SPACE? However radically different the two streams are, both are on the same side of the fence.



They could be simplified as

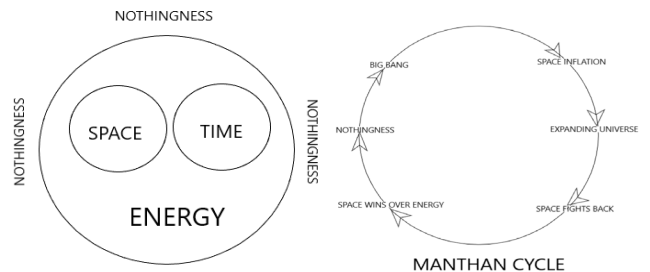
Both are trying to justify the existence of gravity as a force. Whereas MANTHAN is on the other side of fence by attributing SPACITY as the underlying force that holds the universe instead of GRAVITY.

Larger the Mass, Stronger the Influence
Farther the Mass. Weaker is the Influence



Let us review if SPACITY can address the four aberrations in Classical Model of Universe.

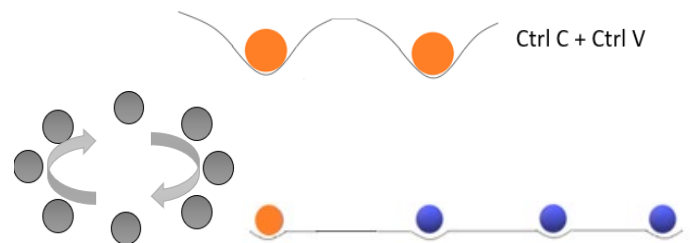
1) **How masses or planets communicate with each other?** The cyclical nature of the universe mandates the Space to bring the Energy that escaped NOTHINGNESS at BIG BANG, back to NOTHINGNESS. Thus, follows an eternal tussle between Space and Energy. Mass being just another form of energy, it is also acted upon by SPACITY. Thus, the mandate of SPACITY ensures communication between masses.



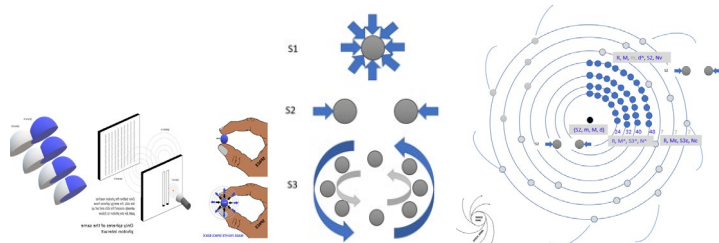
2) **The weird deviation in Mercury's orbit.** The magnitude of SPACITY being the same as that measured value of gravity. Thus, you can arrive at the magnitude of SPACITY just the way you measure GRAVITY by Einstein's Theory of General Relativity.

$$G_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu} \quad \mathbf{G = M1 * M2 / d^2}$$

3) **Massive masses that are exact replica of each other.** SPACITY does not need a gradient for communication, Mandate of Space establishes communication. Thus, SPACITY acts on the masses even if they are Twin masses, masses in Static or in Motion, Massive Mass at center, Not so massive mass at center or No Central Mass at all.



4) **A theory that can be applied both at Molecular and Galactic levels.** Theory of SPACITY is at home in Atomic and Galactic levels. Application of SPACITY to Double-Slit-Experiment & Galaxy proves this.



CONTRADICTIONS: DARK MATTER

DARK MATTER owes its genesis to velocity curve of the galactic bodies. Velocity curve as name suggests is all about the speeds of the celestial objects like Planets and stars.

Classical Model of Universe relies on the Gravity principle as detailed below.

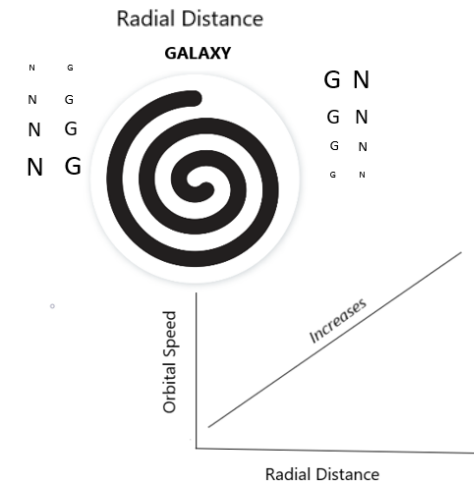
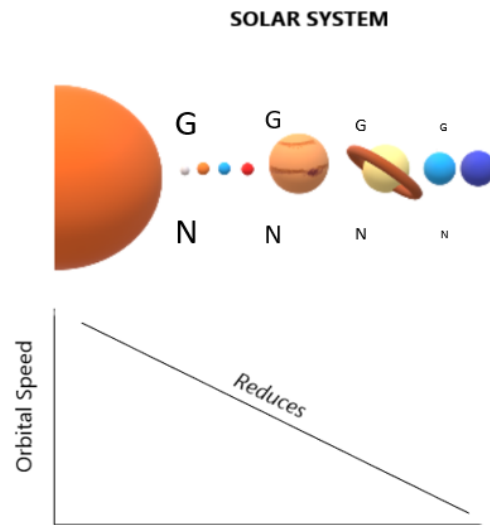
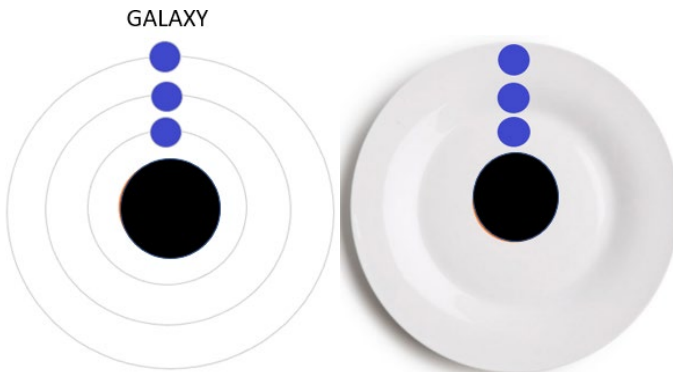
Larger the Mass, Stronger the Influence

Farther the Mass, Weaker is the Influence

When this principle was applied to the planets of the **SOLAR SYSTEM**, it was naturally found that the orbital speeds of the planets reduced as their distance from the sun increased. Farther the mass, weaker the influence.

Having applied the principle of gravity (influence) to our home Star, scientists wanted to extend the same to our home galaxy, **MILKY WAY**. It was expected that the stars in the galaxy would behave in the same way as planets did in the SOLAR SYSTEM. So farther the star from the center of the MILKYWAY, slower should be its orbital speed.

But what was observed was the exact opposite. stars on the periphery of the MILKYWAY were found to be orbiting at a faster speed than those near the center of the MILKY WAY. So, the farther a star was from the blackhole, they were found to be zipping at faster orbital speed. This did not fit the present classical theories.



It was as though an unknown force was pushing the stars to orbit faster. A force that gets fiercer farther you go from the center. This made the entire gamut of stars move as though they were one single block. As though galaxy was one big dinner plate. But dinner plate has interconnected mass whereas a Galaxy has lot of empty space! The nearest star other than Sun, Alpha Centauri is 40 Trillion Km away.

The theories were working right, but the Universe was not! So, the Universe needed to be fixed. The missing mass from the dinner plate had to be accounted for. Mass that was there but could not be seen, felt or measured. Very Dark Indeed! DARK MATTER. So, the Universe was fixed. Maybe the theories needed to be fixed, but it was easier to fix the Universe!

CONTRADICTIONS: DARK MATTER

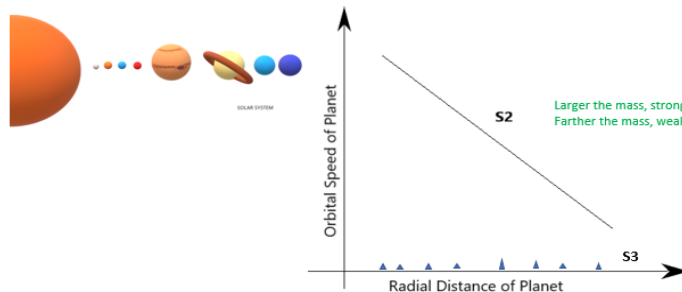
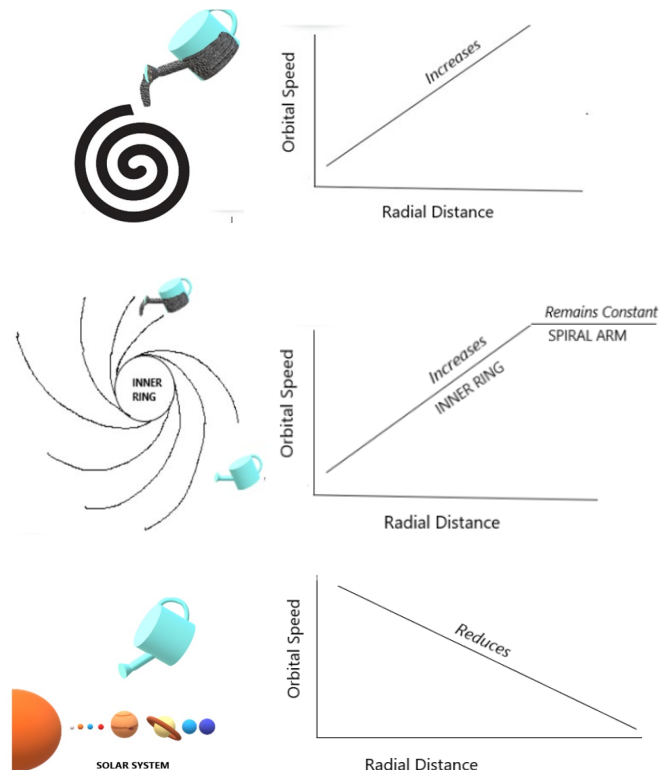
We had stars in the MILKY WAY speeding up as they move away from the center and it was fixed by introducing DARK MATTER. An invisible mass that holds the galaxy like a homogenous block and makes the stars move faster and faster as you move away from the center. So, Velocity Curve is fixed.

But this fix about velocity curve is not comprehensive. The fix is only limited to Inner Ring of the Galaxy. If the DARK MATTER were to be the reason for increase of speed it should have had similar effect on stars in Spiral Arms also. Stars in the Spiral Arms do neither speed up nor do they slow down as expected. Unexpectedly the speed of stars in Spiral Arms remains constant.

If it has skipped our attention, the DARK MATTER does not affect the planets in the solar system. GALAXY is made up of nothing but stars. DARK MATTER can push the stars to orbit faster but will not have the same effect on its constituent parts, the planets. So, the planets slow down.

If Gravity is the underlying principle that runs the Universe, then it should apply uniformly. If Gravity cannot be applied uniformly and an alternate concept like DARK MATTER is employed, at least that concept should be applied uniformly. But that is not what we see happening. DARK MATTER is selectively applied to stars in the Inner Ring only. Nowhere else.

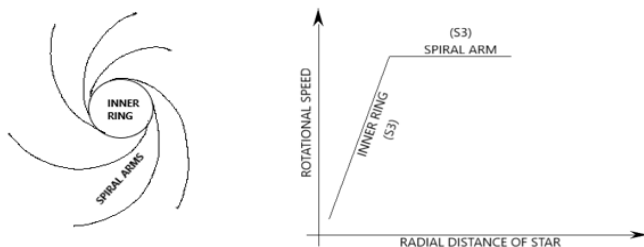
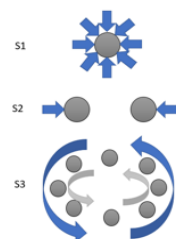
But SPACITY explains every aspect of Universe (Please refer to earlier sections)



Holding Pressure
Does not affect speed

Principal Force (M,m,d)
Sun 1000
Planets 1

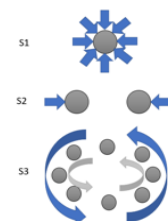
Minimal Effect (m)
Sun 1000
Planet 1



Holding Pressure
Does not affect speed

Minimal Effect (M,m,d)
SMBH 1
Stars 100,000

Principal Force (M)
SMBH 1
Stars 100,000

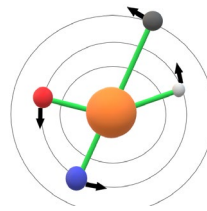


VELOCITY CURVE

CONTRADICTIONS: CENTRALITY

The classical Model of Universe is inalienably based on Concept of Centrality. This has two parts.

1. There is a Massive Mass at the center with smaller masses orbiting it. What happens when central mass ceases to exist?
2. The masses in the system must be unequal in nature. What happens if they are equal?



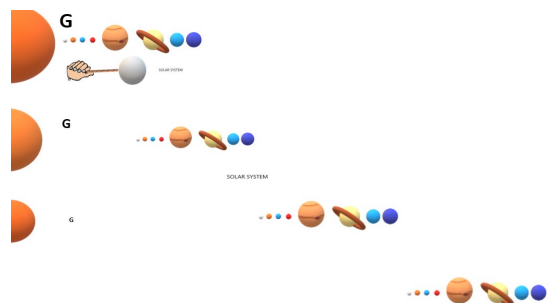
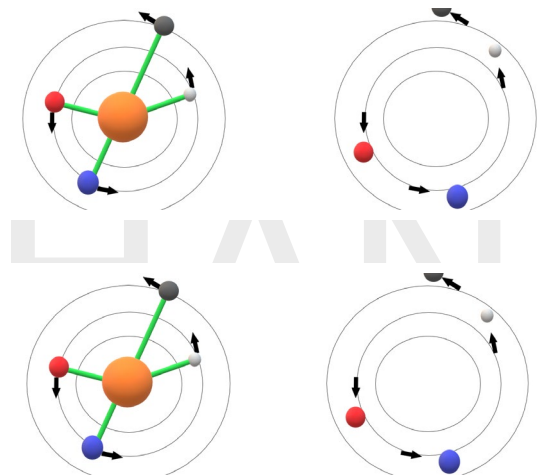
1. What happens if Sun ceases to exist?

Sun's Influence/ Gravity holds the planets in orbit. When you remove the Sun, the influence/ gravity vanishes. If there is no central mass there will not be any bending of space, thus planets are free from influence of the gradient. The planets should be thrown into open space in a direction that is tangential to their original orbit.

Or will they? Let us cheat the system a bit.

Instead of vanishing the Sun instantly let us do it gradually. Let us reduce the mass of Sun by 1% only. Since the influence (Gravity) is directly proportional to the mass and distance, *New Sun* should wield lesser influence on the planets. So, the planets would move a bit outward, but still orbiting the *New Sun*.

Now keep reducing the mass of the *New Sun* slowly and you will observe that the planets would gradually move outwards but continue orbiting the *New Sun*. Now bring the mass of the sun to 1% of the original mass and you will see that all the planets are still moving in orbits albeit in bigger diameters. So, the system does survive the absence of central massive mass.



There is another possibility that when the mass of the Sun crosses the mass of the Jupiter, Jupiter may become the new Sun. Jupiter should then stop orbiting and drive all the planets including the new Sun around it. But since Jupiter is far smaller in size as compared to the original Sun, (1000:1 Sun: All Planets) the Jupiter may not be able to have similar influence like that of Original Sun. So many planets would be lost to outer space. Or depending on the relative position of Planets, they may still come within the influence range of new Jupiter.

In either case, the System survives without the Central Mass. Why?

CONTRADICTIONS: CENTRALITY

2. What happens if the Sun and Planets are of the same mass?

In the systems of the Universe be it Solar system or Galaxies, we observe that massive mass assumes the pole position at the center. The necessary condition for this is that the central mass should be **comparatively massive**. In effect, whoever is the most massive gets to become the Sun. If there are only two masses in the system, the less massive mass orbits the more massive mass. If Brown mass is massive the green mass is the planet. If Green mass is massive it gets to become the Sun. The Brown mass will now be the planet. But what if both Green and Brown mass are of exact same size. Twins! Would both get to become Suns?

They should not. They should be blind to each other and just glide by. But we know they don't. They will come together. Why?

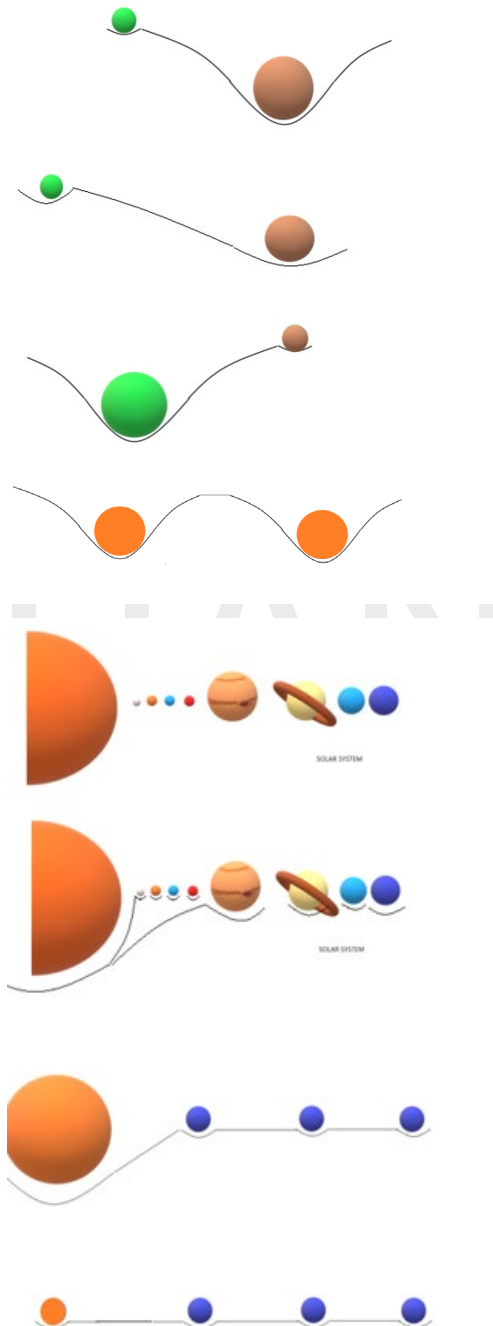
Alternately, let us continue with the experiment of reducing the Size of the Sun, but with a twist. Let us increase the size of all non-Jupiter planets. We will observe that hold of Sun on the system is loosening and the size of the system is increasing. But the system is still in existence.

Now stop this task at a stage when Sun becomes the size of Jupiter and all other planets assume the size of Jupiter.

What would happen to the system? Going by the Space gradient, each mass can bend the space around it to the same extent as all other masses. Each Mass should be free of any influence from any other mass. At the same time, no mass can influence any other mass. Masses under no influence should be lost in space.

But what we saw happening is completely different. Just before reaching that equal state the system continued to exist, with masses going around in circles.

Why does the system continue to exist even if there is no central mass or when all the masses are equal in size? Is SPACITY able to explain these contradictions?



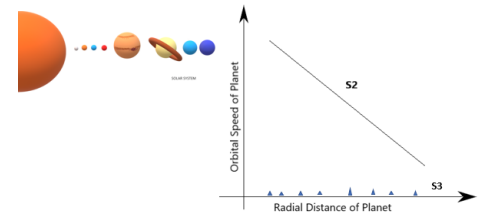
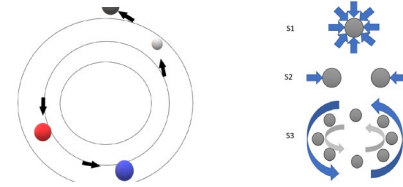
CENTRALITY EXPLAINED: CENTRALITY

The two questions to address are:

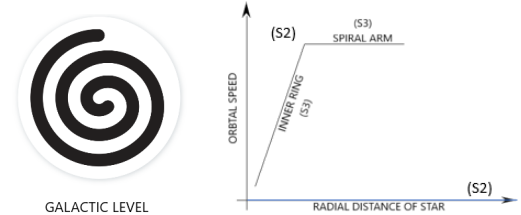
1. How does the system continue exist even after the central mass ceases to exist?

When the central mass is reduced, the effect of S2 is also reduced. This is explained by the increasing diameter of the respective orbit.

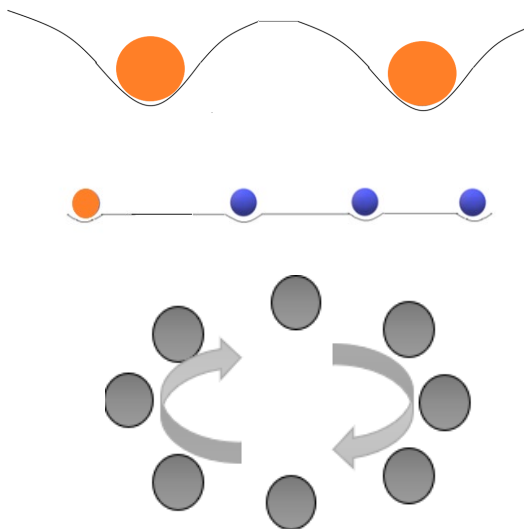
But when the central mass is removed the spacity force S2 ceases to exist. S2 is dependent on the masses that it is acting on and the distance that separates them. But space force S3 is still in action. S3 is the space force that is directly proportional to the cumulative circumferential mass at respective orbital radii. So, the planets manage to keep moving in orbits. Jupiter may have a better chance at retaining most planets by biding its time and let planets move closer and then let S2 kick in.



Whereas in case of MILKY WAY, the effect of S2 on the Velocity curve is very minimal. So, when the blackhole is removed there will be very minimal effect. That is because in MILKY WAY Space force S3 is the principal force and the stars are in motion because of S3. Maybe the MILKYWAY will fluff up a bit. But life will go on as though nothing much has happened.



2. How does the system continue to exist if all masses in the system are of equal mass?



The mandate of Spacity is to act on all masses irrespective of whether they are equal or unequal masses.

With Spacity, masses do not need gradient to communicate with each other. Be it Space Force S2 or S3 they will act on masses regardless of whether they are replica of each other, whether they are moving or static, moving in circular path or elliptical path. The Spacity will act nevertheless as per its mandate.

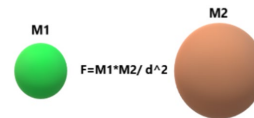
Thus, the system continues to exist even if the constituent masses are equal in nature.

CONTRADICTIONS: PLANETS COMMUNICATE

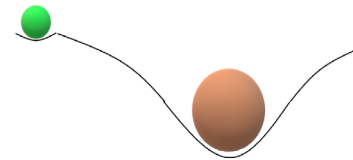
Solar System is a very stable system. This stability however is very fickle. You disturb the stack of masses, the stability will vanish. You either add or remove a planet from the system and chaos ensues. This shows that masses communicate with each other. But how do they communicate?



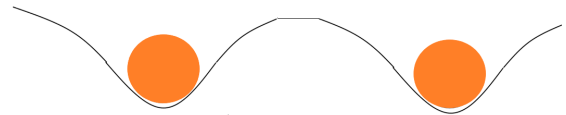
Newton's laws of gravity had an intrinsic flaw in them. The law completely discounted the presence of space. The laws found it difficult to explain their behaviour when a third mass is introduced.



Einstein's Theory of General Relativity addressed this issue by introducing the concept of Space-Time. Massive masses bend space-time around them, the resultant gradient guides the motion of other smaller masses around the massive mass. Thus, the gradient facilitates communication between planets.



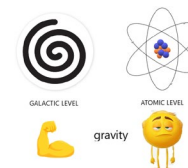
But the flaw in this is that Gradient is a must for masses to communicate. What happens when two identically similar masses approach each other? Being identical they bend the space around them to the same extent. The resultant gradient will also be the same. Would these two masses not be blind to each other and as per the law just glide by?



How would masses communicate in a system which has all equal masses. Would they not roll off the surface of space fabric?

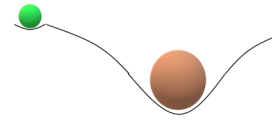


Such a situation of equal masses never arises in real life. At least not at the galactic level. But at Molecular level equal masses are the norm!

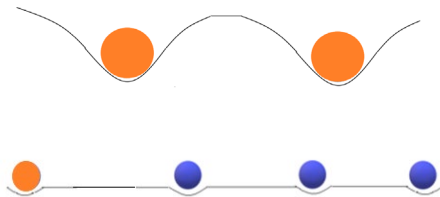


CONTRADICTIONS EXPLAINED: PLANETS COMMUNICATE

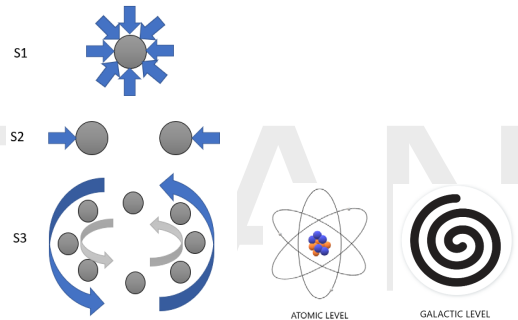
Spacity does not need a gradient to communicate. Mandate of space establishes communication between masses.



Spacity is at home with all situations. Be it Twin masses, many equal masses, massive mass at center, not so massive mass at center, no mass at the center at all.



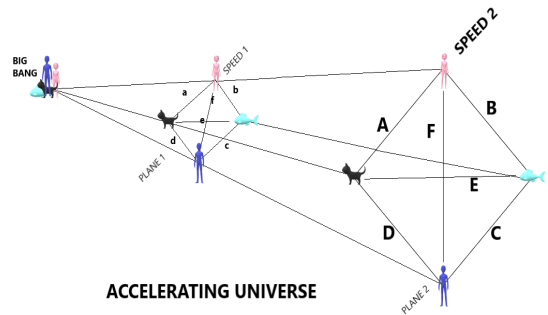
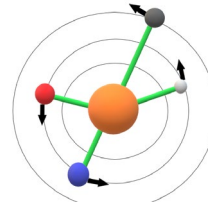
Spacity has a mandate to act on Energy in all its form. Mass being one form of Energy is also acted upon by space. Space acts on masses based on the condition it finds the mass in. Whether it is single, dual, static, in motion, in a system etc. Molecular or at Galactic Level. Two bodies never exist in absolute isolation. Every measured value between two masses, already has a component of universe's effect on them, built in.



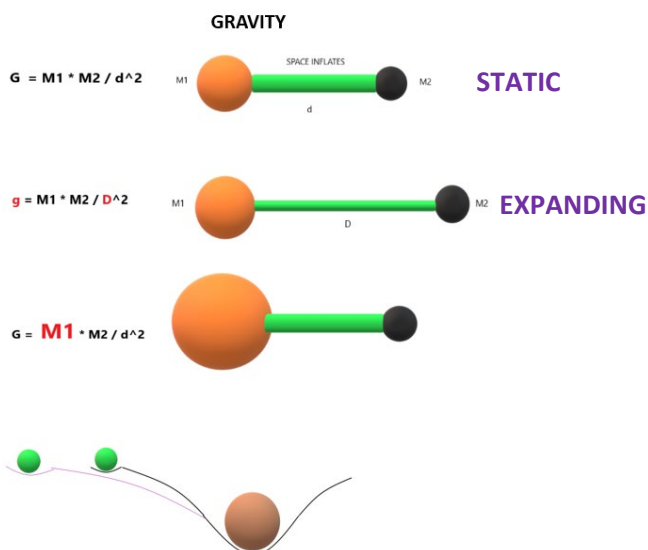
CONTRADICTIONS: EXPANDING UNIVERSE

Universe was perceived to be static to begin with. And the glue holding the universe was gravity. Not just the planets in the solar system and stars in the galaxy but the entire construct of universe was held in place by the force of gravity.

Hubble's observations however showed that the universe was not just expanding but was also accelerating. Every Galaxy was moving away from each other. Leading to the theory of BIG BANG when it all started. The universe expanded initially at a much faster speed than it is now. This was as though the space between the galaxies itself was inflating. To explain this in layman terms an expanding balloon is often used with Galaxies marked on the surface of the balloon.

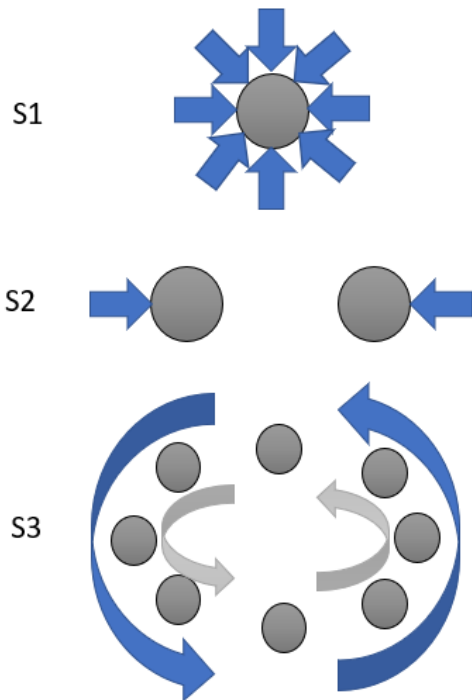
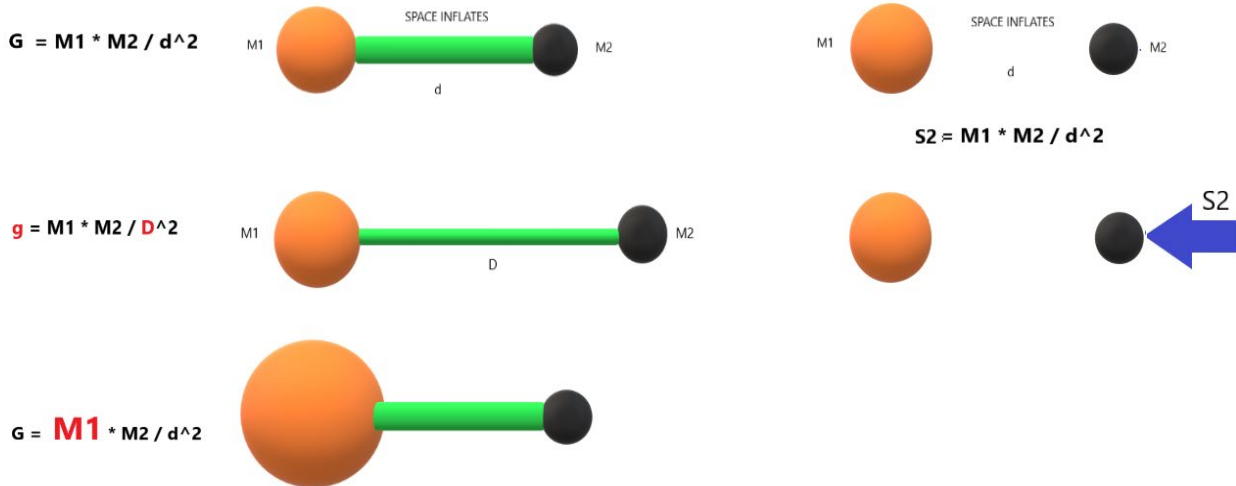


The inflating space is increasing the distance between the galaxies, but it is not leaving the solar system and the galaxies intact. Gravity was again said to be the force that is stopping the space from shredding the Solar systems and galaxies. Let us see how this is contradictory.



Assume the Universe is static. The Sun's gravity is holding planets in orbit. Now let the Space expand. When expanding space can move the galaxies apart, it sure can move the planet. Now the gravity has to restore planet to its original place. Only way to do that is by increasing Sun's mass. The contradiction stays even when space bending gradient is considered. When space inflation moves the planet, the gradient gets gentler. To restore it to original position the gradient has to get steeper. That is possible only when Sun's size increases. This gets worse when we consider a space that is continually expanding. The solar system would not survive an hour if gravity were to be the one resisting inflation.

CONTRADICTIONS EXPLAINED: EXPANDING UNIVERSE



Gravity and Spacity can not exist together. Now that we are considering the behaviour of space expansion with respect to the Space inflation, gravity shall be considered as not existing. So Spacity exists irrespective of whether the universe is static or accelerating. Now when the planet has assumed a particular orbit it is because of the Space Force S2. For the constituent mass to move against this force S2, it has to spend energy.

So long as this mass (Planet) does not spend energy it can not move away from the Sun. Thus, the spacity ensures that the planets or the stars move away when the space is expanding.

CONTRADICTIONS: PRE-MATTER

These two formulae pretty much define what is the backbone of classical model of universe. The pendulum of what gravity is has swung between these two formulae. What is common to these two? Mass! Since gravity is a property of mass, it can not exist without it. No mass, no Gravity. No mass, no bending of space time, no gradient.

But there is more to Universe than just mass. To begin with when Universe got off the blocks at BIG BANG, there was just pure infinite Energy. No Mass whatsoever. Mass only arrived later.

So how did Universe manage its early stage without gravity? Early stage is the most crucial stage in any entity's life cycle. If Universe didn't need gravity then, why would it need now?

Another popular formula from Classical Model of Universe that has caught the imagination of our generation. Einstein explained through this formula the latent energy trapped in mass. A kilogram of mass if converted into pure energy can yield over 1400 Hiroshimas. Pretty much any mass. Wood, stone, water etc. Uranium being the easiest to tip over the fence.

But this formula only explains one half of story. Conversion of mass into Energy. It does not talk about how pure energy was converted into Mass. This is what happened during Early Universe. Since Energy predates Mass, gravity would not have been there to convert pure energy into mass. Even if it were to at a later stage, gravity being the weakest of the forces that runs the universe never had the mojo in it to convert pure Energy into mass.

Is SPACITY able to answer these two questions?

1. Space Forces S1, S2, S3 are also derived from space action on mass, so how can it reconcile the Early Universe when there was no Mass?
2. If Classical Model of Universe could not explain the conversion of Energy into Mass, can MANTHAN the alternate model of Universe explain the conversion of Energy into Mass?

$$G_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu}$$

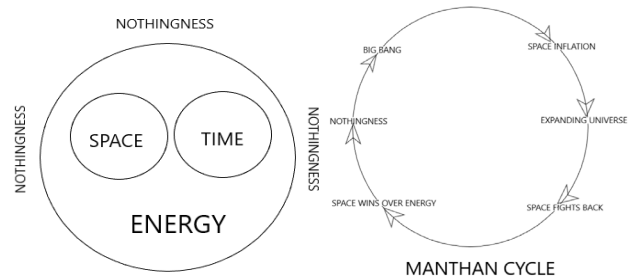
$$g = m_1 m_2 / d^2$$

$$E = M C^2$$

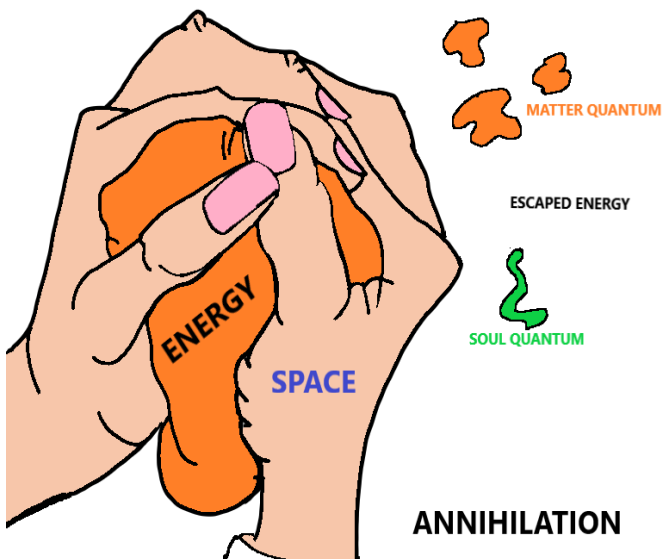


CONTRADICTIONS EXPLAINED: PRE-MATTER

Space forces S1, S2, S3 is only one facet of SPACITY. The genesis of SPACITY goes back to the origin of universe at BIG BANG itself. The tussle between Space and Energy starts when the Infinite Energy escapes NOTHINGNESS. The mandate of spacity is to act on every form of energy, mass being only one form of Energy. So, Space acts not just on Mass but also on Energy.



In fact, Space has left its indelible footprints on Early Universe. What we see now as Universe is the handiwork of Space action on Energy during Early Universe. What we now know as outer space is where Energy won the battle and escaped. Where we see the worldly universe of matter, is where Space won its battle with Energy and made the roads for the Universe as we see it. Thus, where we see Space now is where Energy won the tussle and wherever we see mass in the universe is where Space won the tussle.



How does space help form mass from pure Energy? Fact that Space has the mandate to act on Energy in all its forms, space is always trying to confine Energy and annihilate it. In this process Energy escapes to be acted upon by Space again. This action is endless till all energy is spent. The escaped quantum of energy is brought together by Space thereby willy-nilly giving rise to building blocks of mass. To begin with spacity does not have energy enough to form complex forms of matter. Thus, it stops at simple molecules of Hydrogen and Helium. The complex metals and heavy metals will have to wait till conducive environment is available when stars form.

This may also have led to formation of Life as such. The quantum of escaped pure energy that remained unaffected by Space may have been the building block of Life as we know. Soul Quantum. Life needs only soul quantum and a substrate to burst out into existence. Thus, we see life in most extreme conditions. Extremophiles!!

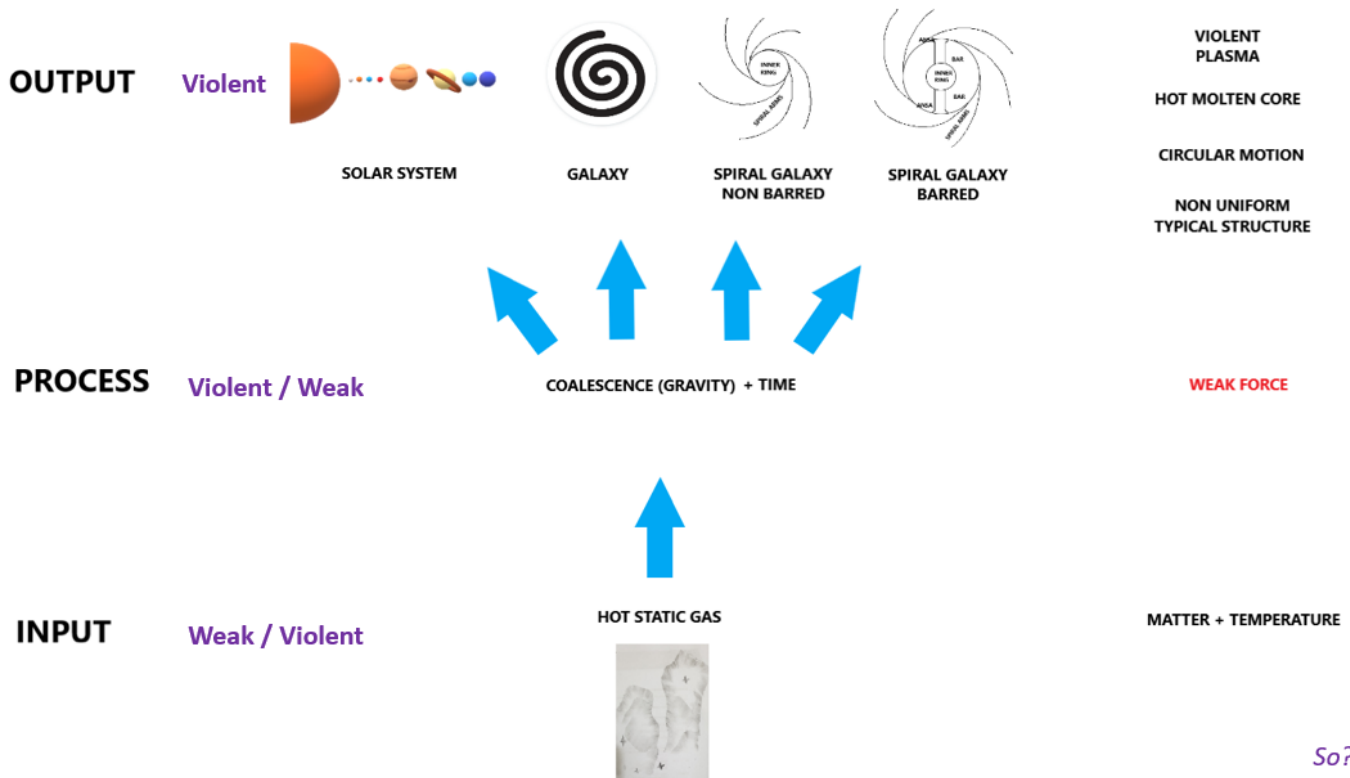
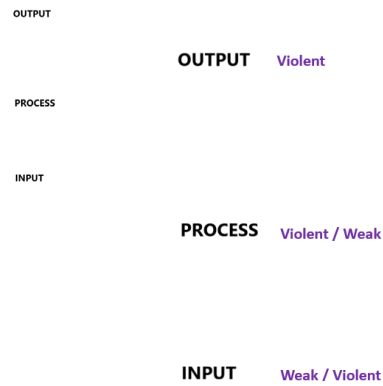
CONTRADICTIONS: POST-MATTER

Our intention is to disprove existence of Gravity. Gravity's relation with mass made it easy to dismiss it during Early Universe. But we need to disprove Gravity's relevance even when mass was formed. This will not be as easy as the Early Universe, because now Gravity has mass as its crutches.

Let us do a bit of Reverse Engineering. As an **output** we have universe that has planets with molten core, star with plasma core, galaxies with blackhole. All of these are primarily violent outputs. Violence as in Kinetic Energy. Any output needs an **input** and a **process** to transform it.

Let us study the nature of input and process that can yield a violent output like our universe. To have a violent output one needs to have either one of (Input & Process) to be violent or both (Input & Process) to be violent.

What do we have for an input? Hot static gas! After the early universe we just had hot static gas, bereft of any kinetic energy. A weak input. This would warrant a very violent Process. And what violent entity does the classical model suggest for process? Gravity!! The weakest force of the four forces. Gravity is so weak a force that 'strong reaction' forces in a drop of water equals the entire gravity of planet earth. So, it is conclusive that with weak input as hot static gas and weak force like gravity as process, we cannot achieve violent outputs like our universe. So, what can? Looks like even spacity and related forces can not create such a violent process. We will study that in the next section.



So?.

CONTRADICTIONS EXPLAINED: POST-MATTER

If gravity is too weak to convert a Hot static gas into violent universe, what else can? Spacity cannot either.

S1 is a holding pressure, thus no kinetic energy
S2 is a twin of gravity w.r.t magnitude, so weak
S3 exists only when mass moves, this is static gas.

ELECTROMAGNETIC FORCE So, Space related forces can not create the violent output that we are seeking. The option of forces that we have are strong interaction, Electromagnetic, weak interaction, and Gravity. Weak Interaction and Gravity are already off the block. Whereas strong interaction is the force that holds the atoms of a molecule. Strongest of the lot but by nature it can not impart kinetic energy. So, the only option left is Electromagnetic Force. Like the one we see in lightning. It is violent and it can impart kinetic energy to the mass.

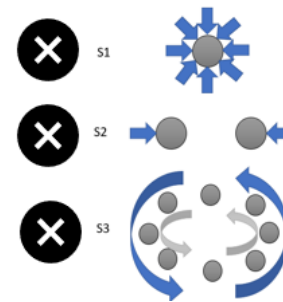
LIGHTENING Let us study if the environment is conducive enough to create lightnings. What we have is just hot static gas. But the gas is extremely hot. At that temperature, the gas is highly ionised. And Ions discharge! A perfect case for electric discharge to occur between the masses. This discharge in turn can impart kinetic energy to the static gas. But how does this lead to violent structures of the universe?

ARC The electric discharges could be either regular or irregular. Irregular discharges do not help much but regular discharges may have the tendency to accumulate. Like rope spun from thread which in turn is spun from yarns. These regular discharges will always have a curvature. Nothing in universe is straight. Straight line too is the circumference of a circle with infinite diameter. This arc will move the static gas in its general direction.

DISC The static gas is not a uniform structure. Thanks to the action of spacity on the hot static gas, the mass is clumped into varying density lumps. Generally spongy in nature. At times there is vast open space between two mass lumps. This gap acts like a boundary for the moving arc of discharge. When it nears this boundary, the discharge will obviously turn a curve as there is no mass in the front. At this stage we are observing the seeds of future galaxy being sown. The arc limited by boundaries at various places is forced to turn curves, eventually reaching the place where it originated. This would now become the basic platform for the galaxy to grow on. Centrifugal forces of the arc will flatten the nearby mass into a disc which will formalise the plain of the galaxy and its axis. That is how we see each galaxy having its own tilt. With mass is in motion S3 will also kick into action. S2 would have preceded it.

SIZE The radius of curvature of this arc will decide the type of future mass the discharge will create. Acute Radius creates a star, less acute creates a galaxy.

BLACKHOLE The circumferential disc of discharge would have left a large mass untouched at the center. This mass will end up having its own local electric discharge that is large yet acute. Thus, leading to an exceptionally large and unstable star, the future blackhole of Galaxy. That is the reason the existence of this enormous mass at the center of the galaxy does not have much effect on the rest of the galactic disc.



STRONG Interaction	1
ELECTROMAGNETIC	1/137
WEAK Interaction	1/10 ⁶
GRAVITY	1/10 ³⁹



CONTRADICTIONS: DARK ENERGY, CYCL UNIV, INFINITY

STATIC UNIVERSE: Initially, the universe was perceived to be static and MILKY WAY was all that was to the UNIVERSE. When Hubble gazed through the telescope, he realised that the fudgy structures in the night sky were farther than the farthest star observed in the MILKY WAY. Horizon of Universe was stretched beyond MILKY WAY. Additionally, the fudgy structures were independent galaxies themselves, much like our own MILKY WAY, teeming with billions of stars.

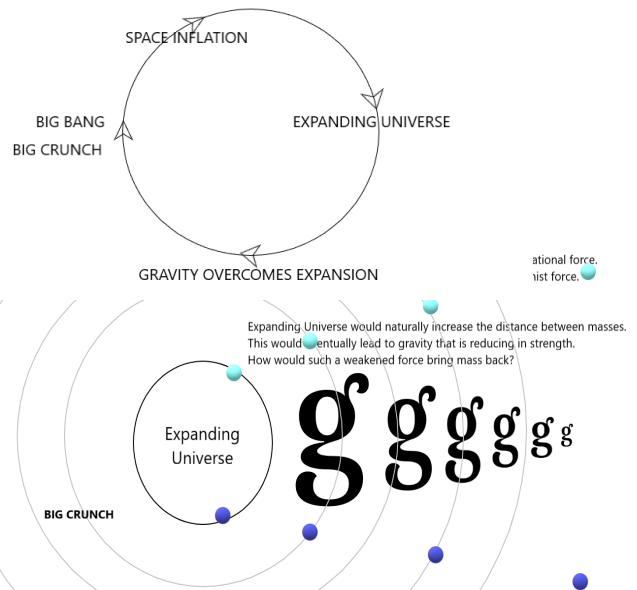
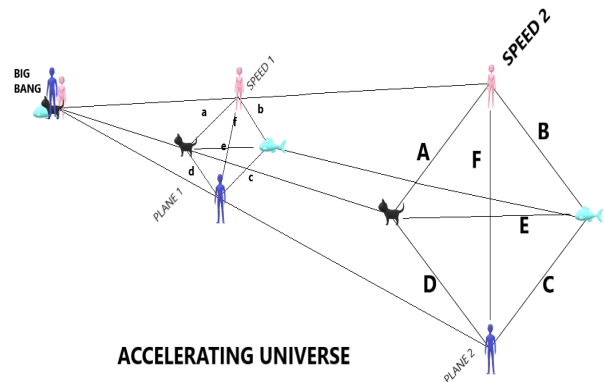
EXPANDING UNIVERSE: Hubble also observed that all these galaxies were red shifted. This meant every galaxy was moving away from each other. Thus, the UNIVERSE turned into an expanding universe rather than a static one.

ACCELERATING UNIVERSE: Hubble further observed that fainter was a galaxy, greater was its red shift. This suggested that farther the galaxy faster it was receding from us. Conclusion was that the UNIVERSE was not just expanding but it was accelerating. Since there was no explanation as to what force or energy was pushing all these galaxies away, it was termed as **DARK ENERGY**. An Energy that cannot be seen, measured but only observed in its effect.

CYCLICAL UNIVERSE: It was perceived that the gravity which holds the universe together would one day overcome these forces causing expansion and universe would end in a big crunch followed by another BIG BANG. Start of another life cycle. So, the Universe was said to be cyclical, without an end or beginning.

BIG CRUNCH/ DECAY? Assume there are only two masses in the Universe as shown in the image. The expanding universe will push these masses away from each other. After 14 billion years of moving away from each other, these masses will have moved so far away that each will not have any influence on the other. These two masses will be lost in space. So, the chances of a big crunch happening because of gravity is zero. With gravity the only end possible is one of decay once the all the masses move away from each other beyond one another's influence. Just a very cold and dark end to the universe.

INFINITY: Concept of Infinity remains unexplained. Physical entity should have edge.



CONTRADICTIONS EXPLAINED: DARK ENERGY, CYCL UNIV, INFINITY

DARK ENERGY: Energy, Space and Time form the basic constituents of the Universe. The Venn diagram indicates the existence. Anything outside this EXISTENCE is NOTHINGNESS. While EXISTENCE denotes positive pressure, NOTHINGNESS denotes Absolute Zero Pressure. Thus, it is not strange that positive pressure system of EXISTENCE is expanding into absolute Zero Pressure system of NOTHINGNESS.

CYCLICAL UNIVERSE: We had observed that with Gravity the only end that Universe can look forward to is a cold and dark one of eternal decay. MANTHAN is also based on the premise that UNIVERSE is cyclical. With total Energy of the EXISTENCE remaining same, Space unlike gravity increases in strength as time progresses. This leaves Spacity with a better chance staging a fight back and fulfil its mandate of putting energy back into NOTHINGNESS, from where it escaped in the first place during BIG BANG. By bringing Energy back into NOTHINGNESS, spacity restores Energy to its infinite levels, ready to escape from NOTHINGNESS again with a new BIG BANG. This kickstarts another cycle of UNIVERSE again.

INFINITY: Key to understanding INFINITY lies in understanding ZERO. In the context of universe, it will be easier to attribute INFINITY to EXISTENCE / UNIVERSE and ZERO to NOTHINGNESS. UNIVERSE exists in the cocoon of NOTHINGNESS. By nature, NOTHINGNESS is truly infinite. What does not exist cannot have an edge. This allows the UNIVERSE to expand into NOTHINGNESS eternally. By nature, UNIVERSE is always at positive pressure and being surrounded by NOTHINGNESS, UNIVERSE is made to expand eternally.

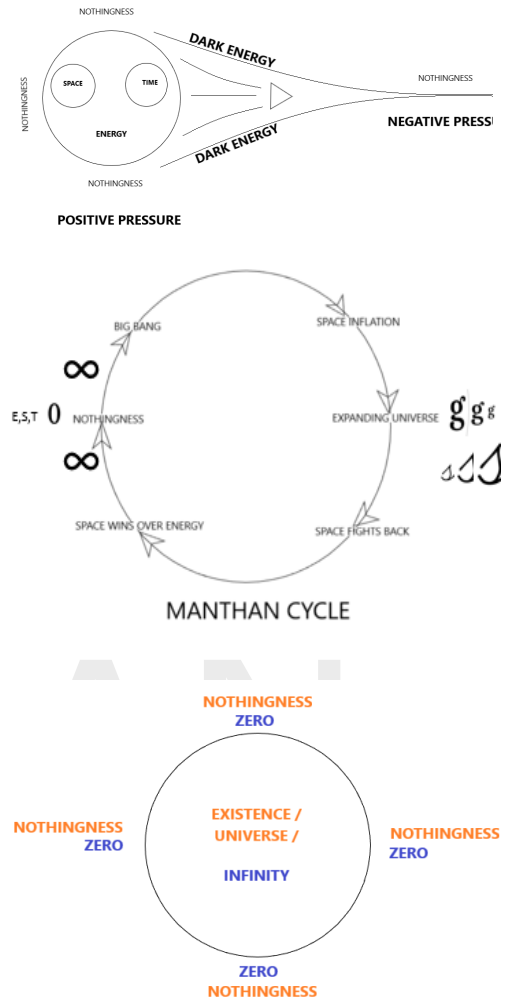
But why doesn't NOTHINGNESS annihilate UNIVERSE? Though NOTHINGNESS is permanent neighbour of UNIVERSE, passage to/from NOTHINGNESS is decided by ticket of INFINITY. That is why Energy can

- Exit NOTHINGNESS at BIG BANG because Energy is at Infinity.
- Enter NOTHINGNESS when Space restores it to Infinite levels by bringing volume to zero

Thus, though UNIVERSE is always side by side of NOTHINGNESS, it does not get consumed or annihilated till Energy reaches Infinite levels.

When Space restores Energy to Infinite levels by reducing volume to Zero, for an observer the Universe goes out of existence as it has entered NOTHINGNESS. Universe again escapes NOTHINGNESS as it is at Infinite levels. How long does UNIVERSE stay in NOTHINGNESS? How much ever time it takes, for the observer it seems immediate. Because time also has ceased to exist in NOTHINGNESS.

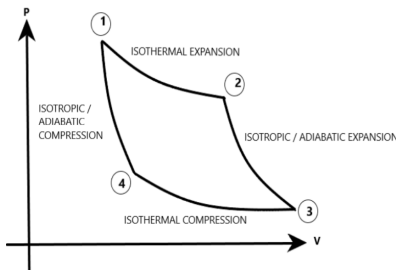
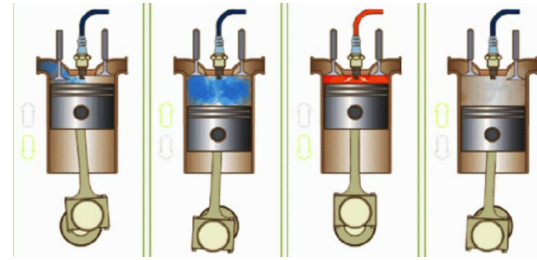
If the UNIVERSE is a cycle, where exactly are we now on that cycle?



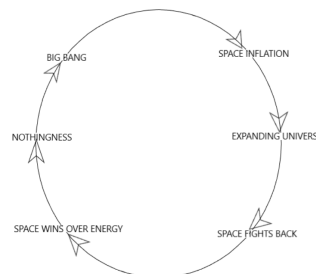
CONTRADICTIONS EXPLAINED: CARNOT CYCLE

It will help us to compare the UNIVERSE to a similar known system. A system that involves initial explosion, followed by expansion and compression to conclude the cycle to be followed by Explosion again. That sounds remarkably like an IC Engine.

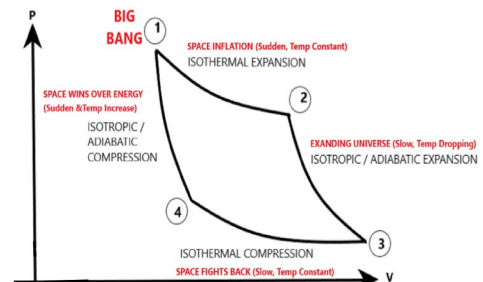
IC Engine is a Heat Engine that converts heat source to work. For this heat engine efficiency of process is critical to extract maximum work from the heat source. The work extracted related to the



CARNOT CYCLE - IDEAL HEAT ENGINE

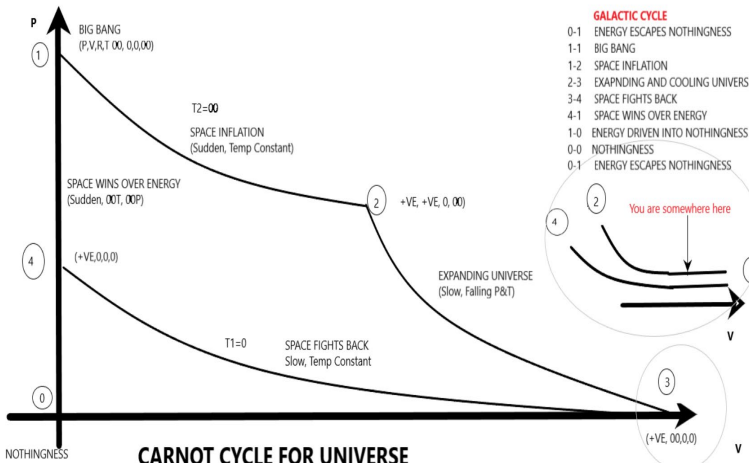


MANTHAN CYCLE



CARNOT CYCLE - MANTHAN MODEL

When the processes of the Universe are superimposed on the PV Diagram of the Heat Engine the similarities are stark. To understand where we are on this cycle, we need to correct this diagram as below. We surely are not on 1-2 (Iso Thermal Expansion has high temperature and very brief), 3-4 (Very low Temperature and very brief) or 4-1 (Zero Volume and Very Brief). So, the only part left on the cycle is 2-3 which is where the temperature is cooling, and pressure is reducing. But where exactly on 2-3? Calculations related to density/ pressure difference as shown indicate that we are on 2-3 stage where the pressure difference is almost zero. Which would mean the curve is parallel to the X Axis denoting the Volume. But where exactly on this parallel curve, cannot be said with certainty. What we can say for sure is that 3 is not infinity. Otherwise, the spacity will not have any energy left to bring the universe back. It will have to be somewhere halfway so that it has the energy to conclude stage 3-4 and restore infinite levels to Energy. The diagram also depicts the breaching of NOTHINGNESS by infinity both while entering (1-0) and exiting (0-1).



CARNOT CYCLE FOR UNIVERSE

p - Density V - Volume m - Mass

$$\text{Change in Density } p_2 - p_1 = \frac{m_2}{V_2} - \frac{m_1}{V_1}$$

$$\text{Since total n the universe does not change } m_2 = m_1 = M$$

$$\text{Change in Density } p_2 - p_1 = \frac{M}{V_2} - \frac{M}{V_1}$$

$$\text{Change in Density } p_2 - p_1 = M \left(\frac{V_1 - V_2}{V_1 V_2} \right)$$

$$\text{Absolute Change in Density } = M \left(\frac{V_2 - V_1}{V_1 V_2} \right)$$

After 13.8 Billion Years of expansion $V_2 - V_1 / V_1 V_2$ will be nearing zero

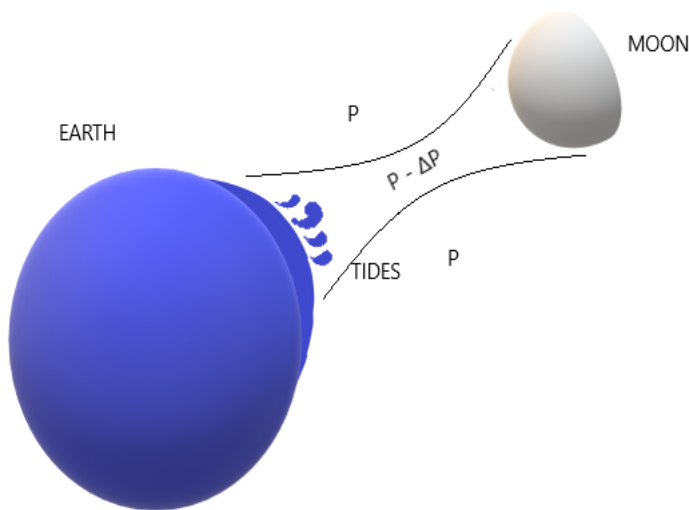
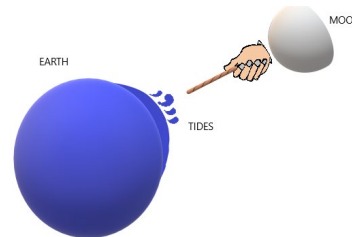
So we are on the CARNOT CYCLE where the pressure difference is near zero.

Which means we are on the part of 2-3 that is parallel to the X Axis

APPLICATION OF SPACITY: HIGH TIDES

Having applied SPACITY to various structures in the UNIVERSE, let us apply them to phenomenon around us. If Gravity does not exist, SPACITY should be able to explain phenomenon that are generally attributed to GRAVITY. Viz., High Tides.

High tides form right when moon passes over them and seem to be under the influence of moon's attractive force. If it were to be PUSH type of force, either these high tides would not have formed, or moon would have created a dent on the ocean along its path. Nothing like that is evidenced. So how does spacity explain High Tides formation?



Space pressure is a positive pressure. Space spends energy to maintain this level of pressure all over universe. Space pressure is constant all over the universe except in presence of mass. In the presence of mass, Space is called on to do more work and hence naturally weakened. This is where the space pressure drops by a fraction. Let us say if 'Ps' is universal space pressure, it is $(Ps - \Delta Ps)$ near a mass. Extent of drop is directly proportional to the size of the mass/ system of mass.

Now let us apply this drop of pressure to the Earth and Moon System. The spacity weakens a bit in keeping the moon in its orbit as it must spend energy. When spacity weakens, there is a drop in space pressure. Thus, there is a constant tube of lower 'space pressure' between Earth and Moon. So, a chunk of ocean water is sucked into this tube which we call as High tides. As the moon moves, this tube moves along with it and so do the tides.

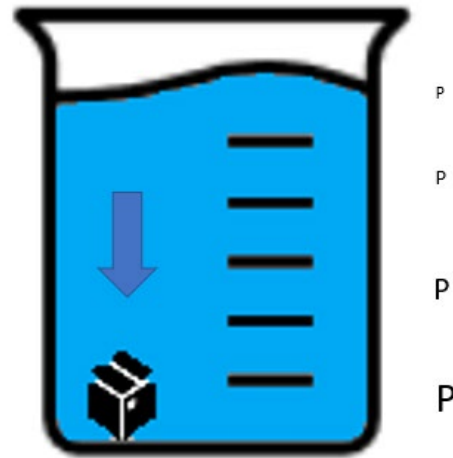
During full moon/ new moon the tides are highest because the drop in space pressure is also highest. Space has too much on its hands when Sun, Earth and Moon are in line.

APPLICATION OF SPACITY: SPACITY SINKS

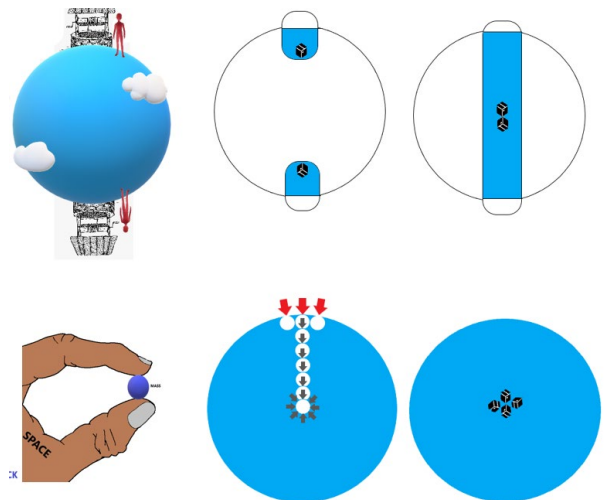
It is often said that “Thanks to Gravity, we are grounded on Earth”. So, if Gravity is not the reason for us to be grounded how does the Spacity explain us being grounded?

Standing on earth is something that we take for granted. So, to make it more discernible, let us replace the firm ground with water. Since one would sink, the effect is more real.

Let us take a beaker of water and drop a cube as shown. The cube sinks till it hits the bottom. Archimedes defined the principle of sinking. *If the weight of the body is more than the weight of the water displaced, the body sinks. Else it floats.* Our intention is to find out why does this sinking body keep sinking till it hits the bottom. The suggested reason is gravity. Another way to explain gravity is, as the height of water column above the body increases, the weight acting on the body keeps increasing. Thus, it sinks till it hits the bottom. We now must explain this sinking with the help of spacity.



Let us replace this beaker with a well and drop the cube. Cube sinks till it hits the bottom of well. Now consider another similar well on the other side of the earth. Drop a cube again. That too sinks till it hits its' bottom. Now increase the depth of these wells till they meet at the center of the earth. So now we have a single tube of water well that stretches from one side to the other. Cubes from respective side keep moving towards the center and stay arrested at the center. They become stationary. The cubes can not sink any further than the depth at the center else, it would look as though the cube is rising upwards for an observer on the other side. That would be against the principles of physics.



Now drill many wells in the earth, such that all you have is water body. Drop cubes from each well and you will observe that all the cubes sink to the center and stay stationary at the center. Above each cube there is a column of water that contains trillions of water molecules. For the sake of argument consider only 5 Molecules. We know that the molecules right above the cubes is being pushed down by the one immediately above it. Similarly, all the intermediate molecules. But why is the molecule on the top pushing down? It is because of the Space Pressure. The space initiates the push from the layer that gets percolated towards the center where the cubes rest. However big this body is, any change in the shape of the body will be conveyed immediately to all parts of the body because of the Space pressure.

APPLICATION OF SPACITY: BLACKHOLES

A blackhole in a Galaxy is not as important as Sun is to a Solar System. Sun forms 99.9% of the solar mass, with planets accounting for only 0.1% of the solar system mass. But when you consider the Milky Way the Super Massive Black hole accounts for only 0.001% of the Galaxy Mass. A total role reversal. This shows that Milky Way will survive even if you remove the Super Massive Blackhole from the center. Having proven that Blackhole is not central to the scheme of things, its genesis may be easier to decipher. It does not make a difference if the blackhole is formed along with the galaxy or after galaxy formed. We will consider both the cases.

Along with the galaxy

When the galaxy is forming on the periphery, The nebular gases at the center are likely to be left out. But it has its own capacity to create a super massive star at the center. Whose going Supernova will clear much of central gas and create a Super Massive Black Hole at the center. This shows that blackhole is not the initiator of galaxy formation.

After galaxy formed

Irrespective of whether there is an SMBH at the center, blackholes keep popping up both in the inner ring area and the spiral arm. When such a blackhole pops up around a swarm of stars how does the spacity act? Initially each blackhole may have the same mass as the parent star and it may move in the same path. But as it gathers mass, S3 acting on the cumulative mass, will not be able maintain the pace of the blackhole in sync with the stars. The blackhole can either slow down, slide in or out of the galaxy. Eventually the blackhole would slide in towards the center and join the existing SMBH at the center.

Sink

The space pressure at Black Hole is near the absolute zero, like that of nothingness. And this Absolute Zero pressure is surrounded by positive pressure. Then why wouldn't the entire galaxy not get flushed into the back hole like in a sink? If the galaxy were a static structure it sure would. Since the galaxy is already in motion because of its own inertia, spacity would follow the same. But if at all that 100000:1 ratio comes into effect, we will have a galactic clog for sure.

Shape

If blackholes were spherical in shape, it would have sucked in matter from every point on the spherical surface. Then the accretion would not be limited to disc only but to the entire spherical surface. The blackhole then would have looked like any other star. Lit from all sides. It would have looked black only when it has finished its meal. However, we know that it is not so. The matter is seen falling from side on only. The central part is black. So Blackholes are disc shaped or at best doughnut shaped.

Blackholes are classified by their weight in terms of sun's mass. So, the matter that is devoured by blackhole has not disappeared. It still is part of this universe. Only way to pack in in such small size is by rearranging the mass into pure energy. Thus, Blackhole is similar to the bosom of nothingness, except it does not have the capacity to hold infinite energy.

COMPARISON

CLASSICAL Vs MANTHAN

Attractive Force between matters is Gravity. The force exists but it is PUSH instead of PULL

Gravity is too weak to manifest itself at Quantum level. Spacity works both at Atomic and Galactic level

Photon acts spookily in Two Slit Experiment. Photon only follows the path created by interference pattern created by the energy sphere generated by spacity

Gravity is the reason for galaxy, star, moon formation. Ionisation is the reason which kickstarts electric discharge, like a violent lightning force. Gravity is too weak to create star plasma

Matters attract each other. Space pushes matter together, Matter is free from affecting each other

Massive Mass bends space, the resultant gradient guides smaller masses around. Does not explain situation when masses are equal and identical bending space equally. Spacity does explain.

Existing Model does not explain Type, Size, Density, Orientation of Galaxy. Arc of discharge decides which way the ionised gas will end up. Sharper arc leads to star while straighter arc leads to a galaxy

Newton's equation applies to two planets but does not explain how third planet affects. Space is the communicator. The force between two planets is arrived after the effect of the universe is already accounted for.

Accretion discs leads to planetary system because of gravity. Planets and moons are also formed due to ionisation, discharge, arc. Same as galaxy and star. Gravity is too weak to form molten core

Genesis of matter from pure energy is unexplained. Matter is the by-product of the tussle between space and energy. Depending on 'quantum' of energy escaping this tussle, various building blocks of matter are born.

EXISTING MODEL
OF UNIVERSE
Vs
MANTHAN -AN ALTERNATE
MODEL OF UNIVERSE

Life is a concoction of DNA, Flesh and bone. And needs favourable conditions to exist. Soul quantum is that part of pure energy which was unaffected by space. And can form life with matter. Does not need favourable conditions.

Light Travels as straight line, wave, or a combination of both. Light propagates as stream of expanding spheres. Each sphere independent of other. Sphere suffers a tear when obstructed and repairs itself through movement of photons across the surface

Dark Energy makes universe expand. Universe expands because of pressure difference between existence and nothingness. Universe expands as long as energy exists. Rate of expansion may reduce. Expansion continues till space wins contest with energy

Space and Time form the fabric of universe. Space and Time are independent of each other but need energy to exist. They affect each other only in presence of massive mass.

Space is the elephant in the room. Unacknowledged. Space has a construct of its own and holds the universe. Space is in perennial tussle with energy. When space wins, existence is driven into nothingness. Only nothingness has the capacity to contain infinity. Energy escapes nothingness almost instantaneously since time does not exist. New universe is born.

TRIBUTE

This work of science would not have been possible without the contribution of my Family and Friends. Hearty thanks.



My father Mr. Ashokrao N Khatavkar, whose beginnings may have been modest, but his dreams were always Nobel Worthy.

Man, who was brave enough to make us believe that all it takes to follow a cause, is heart and commitment. He may have set this work in motion many decades ago, how I wish it were concluded a few months ago.

True to his life's teaching, real tribute would be to not have any regrets. A son in debt.



My Mom Smt Arati Ashokrao Khatavkar who instilled a sense of self belief in us to take on the best in the world.

Without imbibing her 'No-task-is-big-in-life' attitude, this work would not have been possible.

Thank you for making us believe that means are never an impediment to a cause.

& THANK YOU



A mighty thanks to my wife Gayatri. Concluding this work was not possible without her unflinching support

To pen one's thoughts is basis for giving shape to one's work. Her perseverance in bringing this to a logical conclusion was great motivation. At times, she seemed to have a stronger belief in MANTHAN being worthy of a read than me myself.

Thank you for being there.



To all those crazy friends who de-criminalised the concept of 'out-of-syllabus'.

Some who seeded many thoughts, Some for introduction of paradoxes of life, some for their infectious passion.

I thank all those faceless friends for their assistance.

ABOUT AUTHOR



RAJAN ASHOKRAO KHATVKAR

Born and brought up in the cradle of nature that is Gokak Falls. A place not far from City of Belagavi in the state of Karnataka, India. Studied in State Board Kannada Medium Gokak Mills' Schools, Gokak Falls.

Graduated in Mechanical Engineering from Karnataka Regional Engineering College, now known as NITK. Concluded his Post Graduation Diploma in Marketing from Symbiosis Institute of Foreign Trade Pune, now known as SIIB.

An interesting career spanning various cities of India leading up to his entrepreneurial venture Alpha Sierra Fze in UAE, now serving the Middle East Aviation and Rail Industry.

Intrigue and fascinations of Astronomy had always been mesmerising to engage. Understanding Universe's design and unravelling its mysteries have been comforting to the soul. An exercise not just for the grey cells, but soul too.

Presenting an alternate model of the universe was never an idea to begin with. Intention was to find answers to the vagaries of the universe, paradoxes that scientific community was grappling with. But you cannot keep following the same path and expect to reach a different destination.

Thus, propped the need to question the long-accepted concepts of Gravity and seek uncharted, long-neglected paths. While gravity was attributed to everything that happens in the universe, space was an elephant in the room.

Hypothesis of spacity helped explain the Two-slit experiment paradox but it cannot explain the genesis of galaxies and planetary systems. So, an alternate model could not be complete without addressing the formation of galaxies and planetary systems. That is when the idea of ionisation struck root and grew to explain the basis of formation of celestial bodies. Ionisation is a feature that we are so familiar with in the form of Lightning. A violent force in our own backyard.

The alternate model assumed a holistic proportion when it addressed equally important issues such as Dark Energy, Dark matter, Light travel, Infinity, Nothingness, Matter and Life.

However, proposing Hypothesis is not the be all and end all of it. It must stand the test of time, situations, and conditions. If Hypothesis has truth on its side, it will run its full course. The only way to check that is to go public. Thus, the document MANTHAN- An Alternate Model of Universe took shape.

There will be holes blown into the hypothesis but that is healthy. What does not kill you, will only make you stronger. However, what will last a lifetime, is the itch to seek truth.