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A Single System Universe: A Cognitive Approach

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Abstract

Discovering the Universe requires upgrading the means that man is utilizing for this endeavor. The power of cognitive thought has long been neglected in favor of mathematical formulas. The only tool that can roam the Universe 'from corner to corner' is the human mind. This study attempts to construct, from a cognitive perspective, a complete model of the Universe and its mechanisms. The model is then contrasted to empirical and mathematical data. A theoretical model is deduced after a preview on the concepts of time and space. The model explains empirical observations and universal mechanisms, such as the first universe, universal expansion and contour, expansion acceleration, black holes, stars integration/disintegration, and the shape of the Universe. It also introduces the most likely phenomenon of ripples. The model predicts an alternative to the theories of gravitation, speed of light and universal dynamics. It also calls for rethinking of taken-for-granted phenomena. The model can be further validated and tested by testing the proposed hypothesis for contradicting empirical observations.

Keywords: Universal expansion and ripples; dark matter and dark energy; streaming and gravity; universal boundary; black holes.

1. Introduction

Science remains in great turmoil when it comes to define, even the guidelines, of the Universe we live in. Numerous theories have been proposed in this endeavor to meet the empirical results accumulated through space observations.

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Most of these theories comprise propositions supposed to explain the limited and immediate environment of an observation. When compared to theories proposed to explain other observations, they clash and contradict each other. A demonstration of the fact is the contradiction between 'large quasar group' (LQG) and Einstein's Cosmological Principle. Another contradiction is demonstrated in the work of [1, 2] related to the contradictions between the black hole and the Big-Bang Theories. In another event, the same observation leads to contradicting theories, namely, the acceleration of the Universe. 'This seems to be a big deal, because the 2011 Nobel Prize was awarded to the leaders of two teams that used supernovae to discover that the expansion of the universe is speeding up' [3].

The endeavor to comprehend the ocean by observing a drop of water seems to elude its purpose. In addition, summing up inaccurate interpretations of different observations necessarily leads to inaccurate sums. Again, summing up accurate interpretations of different observations does not necessarily lead to an accurate or even correct comprehension of a system. So if someone analyses thousands of drops of the ocean of different locations, temperatures, and salinity, one cannot assume any acute comprehension of the maritime world.

A system, such as the Universe, of profound complexity of interactive subsystems may require different means of analysis. An optimizing natural order implies that objects are founded or created on 'strictly required' basis to fill physiological gaps in the natural structure. Thus, Nature optimizes the use of its resources to create physiological requirements essential for its existence and propagation or development. As such, systems or bodies exist because of their essential role without which Nature cannot exist or develop. Consequently, it would be more adequate to explore a system that exists due to its necessarily interacting subsystems through comprehending the required roles of the building blocks rather than the essence of the building block themselves. Comprehending the essence of the building block would essentially follow. This resembles much the system thinking approach adopted in management.

Another challenge that seems to repel all scientific efforts to explore the Universe is scientific 'fundamentalism'. This resembles other sociological phenomena through which one strictly believes that his faith is exclusively correct. This, for example, includes mathematicians and scientists who strictly believe in Einstein and his relativity theory to an extent that they 'twist' empirical data or cognitive thought in order to meet the thoughts or theory of Einstein. They also reject any proposition or even assumption that might explore otherwise. It would be very peculiar that a mathematician would build a formula on a strict condition that the variables tested comprise the exclusive effecting variables of a phenomenon. So Einstein can conclusively conclude, from his Earthly positions, that the speed of light cannot be assumed, except by bodies that initially existed at that speed, and cannot be overcome in a Universe millions of light years wide. David Bohm among thousands of other scientists concurs [4].

One cannot claim that mathematics lead to erroneous results on cosmology; however, one doubts that mathematics can assume the whole spectrum of relevant variables for its deductions. Different conditions at different corners of the Universe can affect matter and energy such that they behave different from what is known from the present narrow perspective of humans of the Universe.

All the tools, instruments, machines, rockets, and space stations that man have utilized, in spite of their great importance, have not been able to scheme even a probable portrait of the Universe. They should not be utilized for such endeavor in the first place. The greatness of the Universe and its ever increasing vastness impose increasing challenges on the materialistic man to realize its built up. Only the mind, at this stage, can go further than Mars, the solar system, and the galaxies to the boundary of the Universe and return in an acceptable frame of time with respect to man's life. Mind is the only means that can build a construct of the vast Universe in the limited space available for man. Man's materialistic achievement can be effectively utilized to verify the construct built by the mind.

The mind construct of the creation of the universe can be inaccurate at the beginning of the process and may lead to multiple deductions induced by the empirical data accumulated by the related sciences of space. This construct can be iteratively refined to encompass the empirical data. The aim is to establish hypothesized mechanisms that are responsible for the observed structures of the universe and the condition under which they operate. This endeavor presumes the construction of a cognitive model of the universe and its main global mechanisms. The validation of the hypothesized model is confirmed through establishing its existence by an array of arguments constructed by the empirical data and scientific evidence. The commencement with this endeavor necessitates a prerequisite argumentative placement of this study among the relevant fields and propositions that comprise its ontological foundation.

2. The Universe in Existing Literature

Cosmology and astronomy have endeavored to propose predictive theories of the Universe and sometimes 'many different Universes' [5]. Ancient cultures reflected their predictions through myths of clashing titans, gods, or other imaginative forms. With almost nil empirical means, philosophy played a major role in early cosmology as illustrated by Aristotle, in about 350 B.C., and Ptolemy in about 130 B.C [6,7,8,9].

Aristotle, as illustrated in his book 'On the Heavens' [10], believed that the Earth, the center of the Universe, is spherical in shape encompassed by spherical Universe comprising of an onionskin structure of nested spheres. He believed also that the motion of objects is due to innate properties of the objects themselves. Copernicus, in his 'On the Revolution of Celestial Sphere', upgraded the general understanding of the Universe by introducing the sun-centered model of circular planetary orbits to replace the Ptolemaic picture of center Earth.

After Copernicus, Kepler, Galilei, and Newton refined the system further by introducing the elliptical planetary orbits with the sun at one of the two focal points of the ellipse. The eighteenth century brought new ideas of the Universe through Wright and Kant who did extensive work on the Milky Way Galaxy, galactic shapes, and the infinite dynamic Universe. Kant [11] predicted that the solar system is formed from a spinning cloud of gas and debris. This was elaborated on more precisely by Laplace in his 'Nebular Hypotheses'.

In the nineteenth century, Wallace [12] and Lord Kelvin introduced new ideas to the universal model. They predicted that material and debris from around the Milky Way Galaxy would fall into the central region where the Milky Way is, due to gravity, generating heat and maintaining power output. Rudolph Clausius [13], on the

other hand, predicted that the Universe is a closed finite system tending towards thermal equilibrium and heat death.

At the end of the nineteenth century and beginning of the twentieth century, Schwarzschild [14] and Einstein [15, 16, 17, 18, 19, 20] introduced the positively curved space. Einstein also introduced his theory of relativity and the static Universe that was a finite curved space with no boundary until eternal existence. Then De Sitter [21] introduced the expanding Universe, where if one goes back in time the reciprocal of expansion never reaches zero, and the principle of dark matter or infinite density of matter. Hubble [22] made the observation that galaxies are moving rapidly away from us.

Many scientists have developed their own models of the universe. Friedman proposed the expanding and contracting universe. Lamaitre predicted a finite hot dense beginning of an expanding universe. Tolman's oscillating universe, Milne's uniform and isotropic universe, Rosen's undulating universe, Straus's Swiss cheese universe, Godel's spinning universe, and many other models have contributed significantly to the general understanding of the universe. The two main theories that modern astronomy adopt to explain universe are the general theory of relativity and quantum mechanics [5]. The general theory of relativity explains the universe from the space-time perspective; quantum mechanics describes everything in the universe, including light and gravity, in terms of particles due to the wave/particle duality it claims [23].

3. The Model

As a start, basic ideas imperative for understanding the cognitive construct must be defined within a general model. The general model comprises a different perspective in explaining universal phenomena and is constructed as the foundation to the cognitive construct represented in a theoretical model.

An essential pillar of this study is to define the concepts of time and space. The understanding of both concepts, from the perspective of this study, is a prerequisite for the theory itself.

3.1. On Space and Time

Many great researchers have committed themselves to identify the essence of time and space. The general relativity theory, for example, perceives the universe through the space-time relation. This theory collapses on the Bing Bang singularity. 'The concept of time has no meaning before the beginning of the universe.' [23] It is essential to explain time and space as adopted in this study.

3.1.1. On Space

A. The Big Bang Theory assumes that matter/energy has contracted into a singularity (from a volume that it has filled). Extensive debates through history tried to define the boundaries of this volume. Assuming that this volume, which will be referred to as Existence (with a capital 'E') is infinite, Universe (with a capital 'U'), which is a subset of Existence, is finite. Existence may manifest itself through an infinite 'sea' of simplest matter from which the Universe has been alternatively created. This requires the introduction of enormous

amounts energy. As another alternative, Existence may manifest itself through an infinite 'sea' of matter and energy. The Universe, in this case, would be the production of the interaction (for some reason) of both. In the empirical world, when one talks about matter, one implies properties of matter. The particles of infinite matter in Existence can have no properties, except the smallest inertia. These particles can also be thought of to have the same uniform minimal properties. Weinberg-Salam theory defines a property known as spontaneous symmetry breaking which can be explained as what appears to be a number of different particles at low energies are in fact found to be all the same type of particles, only in different states. At high energy, all these particles behave similarly. Matter in Existence is referred to with a capital 'M'. Therefore, one can imagine Existence as an ocean of the smallest, most dormant, almost massless initial particle of all creatures (includes living and non-living things) created thereafter [23, 24, 25, 26].

B. The Universe (and there is no reason to believe in its singularity) is a structure created for a purpose. Initially, Matter particles have been compressed, whether by introducing energy, or by directing an existing energy, in order to produce matter of properties. Then only, the involved building matter should have been given, or has claimed, its properties through the total entrapment of the existing/ introduced energy. The Universe is a subset of Existence and is built by defining, bounding, and shaping a certain field of Existence. There is no evidence that this compression of matter has led into a singularity. The logic that leads into the creation of a singularity is the same logic that can lead into a compressed dimensional structure: The smallest possible dimensional structure of energy entrapped in matter surrounded by an expandable contour that totally seals the young Universe. Without this contour, that preserves what is inside, conservation of matter and energy cannot be assumed. This will be discussed below. The Big Bang Theory claims that matter was condensed into its smallest possible entity just before the Great Explosion. This study claims that infinite Matter was changed into finite matter by claiming its properties through energy entrapment. In the creation process, the Universe may not have started from the smallest condensed possible entity of matter. This stage may have never been realized. However, in the process of pushing towards the center and giving matter its properties, the smallest Universe was created. Thus, the creation of a pressurized bounded entity within a vast ocean of particles of less pressure; this initiates the expansion of the entity because of pressure differential. The young Universe may have presumably been made up of condensed matter (the dark matter), entrapped energy (the dark energy), more structured matter, and matter as can be presently identified.

3.1.2 On Time

A. Imagine that a clairvoyant 'B' is created at the Existence stage. He cannot define his location in an infinite space. All locations and directions are the same for him. If he chooses to move, it is from nowhere to nowhere because there is no benchmark; thus, he cannot illustrate change. Time has no essence in that situation. Therefore, time has no essence before Existence (before Universe, to be more accurate). Let us suppose that the clairvoyant is given a ball, with a breaking mechanism with one black dot drawn on it. He and the ball are nowhere with respect to another very far clairvoyant 'C'; however, if he leaves the ball and moves, then his location can be defined with respect to the ball. B decides to spin the ball while he steps one step in such a manner that at the end of his step, the dot on the ball returns to its initial position. Therefore, B moved at a speed of one step per spin to reach his new location; or, the ball spins one spin per one step of B. He could have

moved two steps or more or less per one spin of the ball. The spin of the ball or multiples of it, in other words the cyclic motion, defines the concept of time and can be used by B for later reference.

The faraway Clairvoyant 'C' has a similar ball. He moves two 'B' steps for one similar spin of the ball. In this case, the ball spins one spin for 2 times 'B' step. Therefore C can use the spins of the ball to define the concept of time but with different value for the same change, that is the number of spins associated with steps. If there is no consensus between B and C on the correlation between the numbers of spins per step, then the concept of time remains local. Therefore, time is an instrument to measure change; it has to be calibrated and universal to be of real value.

B. The ball with clairvoyant B is exchanged with another ball that rotates much faster than the initial ball with a dot also. At the end of his step, B saw the dot at the same place when he started; however, he was not able to count the number of rotations per step. The same ball is given to C who was able to count the spins per step because he had the right apparatus to do so. Faster spinning balls require other adequate instruments to measure. If, on the other hand, B can move millions of steps against one spin of the ball, then the spin of the ball is not adequate to measure his motion or change of location. This implies that B requires a much faster ball to synchronize with his motion. Therefore, one cannot use a single instrument to measure or calibrate time. Each threshold of change in motion requires a different measuring apparatus.

3.2. The Universal Structure, Expansion, and Contour

'The old idea of an essentially unchanging universe that could have existed, and continue to exist, forever was replaced by the notion of a dynamic, expanding universe that seemed to have begun a finite time ago, and that might end at a finite time in the future.' [23] The compressed matter and energy to form a singularity can only form a spherical explosion with matter and energy scattered equally in all directions. There is no real empirical data that confirms this. The analysis of data retrieved from the Wilkinson Microwave Anisotropy Probe, which was launched by NASA in 2001, tends to confirm that the universe is egg-shaped. The egg-shaped universe may cognitively prove more viable as discussed below. Before compression, at Existence, time had no value because there was no change. At $t=0$, compression of Matter, thus change, commenced and time started to claim its meaning. At $t=@$, the young Universe was created to presumably consist of at least dark matter, dark energy, and a sealing contour. The compression stopped when 'sustainable' forms of matter and energy were formed. There is no logical meaning, from conservation of resources perspective, for continuation of compression beyond that point. The time interval between $t=0$ and $t=@$ can take any value. The process then may have been pre-natural laws and thus beyond comprehension. By $t=@$, matter would have claimed its properties; and nature would have set its laws. At $t=@$, a huge turbulence of matter and energy is released to reflect the dynamics of its constituents under natural laws.

At $t=@$, a singularity would complicate a logical explanation of the Universe in lieu with the present empirical data. A singularity explosion without a sealing contour in a non-limiting medium, Existence, can only mean a total uncontrollable disperse of matter and energy. They, matter and energy, may retrieve their initial state of 'nothingness', which is obviously not the case.

At time $t=@$, the Universe commences expansion under the differential pressure effect between its interior and exterior. Its shape at that instant depends on the functionality of its constituents. Nature does not squander its resources but optimizes their use to integrate its essence. If it were not the case, squandering resources is easier than building; thus, Nature would have retained its simplest form through dumping its resources into Existence in the first place.

If the Universe at $t=@$ has been uniformly constituted, a spherical shape would have been predicted. A spherical shape of the Universe would pose a number of contradictions to empirical data, as will be explained hereafter. With an egg-shape, the internal constituents of the Universe should include balancing mechanisms with directional effects to flatten the curvature of a sphere into an ellipse. Such balancing mechanisms may be the reason for black holes that play a critical role in the built up of the Universe. The mechanism of black holes will be explained hereafter after the discussion of some prerequisites.

3.3. The Contour

Interpreting the empirical and observable data via this model gives rise to numerous questions. The expanding egg-shape can only retain its shape and 'content' if a barrier exists, a contour, which impedes their scatter. What can this 'malleable' contour comprise of? The expansion denies a purely solid contour. The containment of the universe 'contents' denies a purely gaseous contour. A definitive constituent of the contour that allows it to expand in a retainable mode is liquid.

If the contour comprises of liquid, what is this liquid? For a confined containment, a continuous film of liquid should always exist. The surface tension of this substance should be higher than the penetration threshold of the expanding Universe. The cohesion force among its particles should exceed the forces induced by the expansion process. The contour under consideration may be at least subjected to turbulent internal radial expansion forces, very minimal external forces (or none), and huge inertial forces related to changes in speed, direction, and reaction to the turbulent radial forces.

When the first compression occurred, the simple substance in Existence may have filled the created void. When the Universe was released to expand, the push of the contour seems to bring the particles of the simplest matter together in a manner that may create a resistive force to the expansion process itself. The simple substance in Existence may also be too small for any interaction with any Universal matter, thus creating negligible resistance to the expansion process.

For the contour to be able to confine the expanding Universe, a generation of liquid process should make up for the 'consumed' liquid per increase in the contour's surface area. The generation of the liquid can only happen from the interior of the Universe at the direct internal edges of the boundary. Outside the contour, Matter in Existence cannot build up to form any integrated matter without another compression process, which cannot take place in conjunction with the Universe for reasons to be discussed later.

The assumption of outward pressure holds; however, turbulences at the direst vicinity of the contour may have a local effect. The structure of the contour is such that it does not fall into the Universe. This implies that the

contour itself should include a mixed liquid-solid structure. So the temperature and, presumably, high pressure in the boundary area should allow for the existence of the contour in both liquid and solid states. So, if the contour is assumed to be made up of water, the existence of ice is what supports the Universe impeding the skies from falling in.

3.4. The Expansion

As the contour expands due to the pressure differential, liquid hammering effect, inertia, and the solid cracks to create ripples into the Universe. In order that one comprehends the universal expansion, one has to perceive it in two dimensions through a planar cross section of the egg parallel to its line of centers. Suppose that the boundary of the resultant ellipse is divided into 100 equal intervals. Suppose that the expansion takes place iteratively with the first interval, where the highest pressure differential exists, then follows the second interval, where the second highest pressure differential exists and so on. The expanding intervals are not necessarily adjacent or consecutive. The internal dynamics behind each boundary interval dictates its expansion time and distance under the limitation of the preservation of the egg shape of the universe.

With each expansion step the boundary interval takes, an inward ripple/s or wave/s is/are initiated towards the interior of the ellipse. As the ripples of different expansions meet, they initiate a huge pressure on the adjacent mixture of dark matter and dark energy changing it into a more compressed matter/ energy mixture that exhibits itself as particles. With continuous clashes of ripples, the particles are brought together to form star dust and then stars and planets. The intensity, shape, and strength among other factors of the cosmic ripples define the products of their clashes that maybe galaxies, black holes...

If the shape of the Universe were spherical, then the ripples should propagate such that they create uniformly dispersed objects in order that the shape is preserved. This implies that the timing and strength of the initiated ripple should be exactly copied from all contour intervals. This will be closer to an accurate and precise machine with a feedback system and a central processing unit than to a turbulent Universe.

The ripples travelling from one side of the ellipse at the boundary inwards reaching its other side may be creating matter in the form of different gases in a manner similar to the formation of star dust, but with less energy involved. This low ripple energy can be assumed because as some ripples from one end of the ellipse reach the other end, they may be exhausted enough to create less compressed matter at impact with other ripples. The reason for this is to generate liquid enough to make up for the expanding contour during the expansion of the Universe.

As these ripples pass by stars and galaxies, they should alter their speed and direction that were initiated by the expansion process. So the galaxies may not all be travelling at the same expansive speed or initial direction. Some cosmic objects may head towards or away from each other as the ripples alter their trajectories. This deduction agrees with the empirical findings of modern science. 'In the real universe, galaxies are not just moving directly away from each other, they also have small sideways velocities' [23]. The waves themselves reflect back as they clash with other waves, to clash with other waves creating different cosmological objects.

As sound waves consist of vibration of a medium, which is air, it was postulated that electromagnetic waves, including light, are propagated through a medium that fills all space called 'Ether' [4].

Michelson-Morley experiment contradicts that light is carried by ether. Other scientists, such as Sir Oliver Lodge, suggested that Earth, and other heavy bodies, drag Ether with them as they move, in order to explain the contradiction of Michelson-Morley experiment. Experiments on the drag postulate ruled out such suggestion. Lorentz experiment suggested a compromise when he calculated that the speed of light is independent of the speed Earth and the speed of Earth with respect to Ether [4].

The main observation is that these experiments are done from within a minute area within an enormous and dynamic Universe. Before it becomes possible to evaluate and judge universal phenomena, such as light dynamics and ether, it would be crucial to comprehend the dynamics of the universe itself.

As discussed earlier, the clash of universal ripples due to the expansion process initiates the transformation of dark matter into matter, as we may know some forms of it. These clashes within different turbulent high-pressure areas of matter, where the turbulences were initially induced by the initial contraction at $0 < t < t_0$, may have created different forms of universal objects. These areas "hammered" by the clash of the waves, or maybe sometimes the pass of a strong wave, absorb the local energy (dark energy or any of its forms) in the process of transformation of dark matter, or simpler forms of matter, into simple galactic objects such as stardust; and, with higher pressure due to the 'hammering', star clusters, for example, start to form. These transformations and absorption of energy should create a 'local' relatively homogeneous (pressure and density) area of space. These areas might be as wide as galaxies or star clusters, which sound enormous to the humans but minute reference to the expansive universe. As such, it would not be feasible to generalize according to such minute areas of relative stability and homogeneity on properties and dynamics of phenomena as wide as the turbulent universe.

Some might wonder why would such matter formations persist and not re-disperse into space or re-dissolve into their primitive simple form. The reason is the "streaming effect" of matter. It requires huge volumes of simple matter to produce one Kilogram of gas, liquid, or solid that quantitatively form the galactic objects. As the simple/dark matter converts into quarks that form protons and neutrons, it creates a vortex caused by the consumed simple matter. Quarks are much smaller than the wavelength of the visible light; so, they do not display any color on the normal sense. Protons and neutrons are made up of three quarks each [27, 28, 29].

The surrounding matter accelerates toward the vortex due to the differential pressure created. The strongest the clash between the particles, the heavier the atoms or the elements created. This movement of particles towards the vortex that later form an object, such as a star, is referred to as "streaming". During the streaming process, matter and the trapped energy within are 'mixed' to form a more complex form of matter in essence or in properties. Energy can display itself in different forms through the structure and properties exhibited by matter. There cannot be any real mutual transformation or equivalence between energy and mass as implied by Einstein mass-energy relation. Mass simply returns to a less integrated structure, that humans are still unable to detect. In this process, the trapped energy is released to be re-trapped by other forms of matter. The phenomenon of streaming is referred to in the Newtonian theory, the General Relativity Theory, and quantum mechanics as

gravitational forces; though 'today scientists describe the universe in terms of two basic partial theories- the general theory of relativity and quantum mechanics' [23].

During the star formation process, the passage of ripples, reflected ripples, and pressure differentials in the formation area persists causing the star to move from its position into a more stable position in the cluster where the streaming of particles stabilizes its position relative to the system it belongs to. If the catalytic constituents are still available, a new vortex and a new star may be formed.

3.5. Streaming and Gravity

The Newtonian theory of gravity and the general theory of gravity show discrepancies on the macro level. Einstein's theory seems to be more accurate in predicting gravitational dynamics and this was reflected in the prediction of the orbit of Mercury. 'Very accurate observations of the planet Mercury revealed a small difference between its motion and the predictions of Newton's theory of gravity.' [23] Presently, scientists are relying on two theories to describe the universe- quantum mechanics [23, 30, 31, 32, 33, 34] and the general relativity theory [26, 35, 36, 37, and 38]. 'Unfortunately, these two theories are known to be inconsistent with each other, they cannot both be correct' [23].

The general theory of relativity describes gravity as a warp of space-time by the mass and energy in them. Objects try to move on straight lines but their paths appear bent because space-time is curved. Quantum mechanics describe phenomena at their micro atomic levels and below. From the streaming perspective, equal masses require equal amount of particles irrespective of the composition of the mass itself. The same cannot be assumed about energy. The pressure and the ripple effects may cause a denser body of mass m and of heavier element to form due to high velocity of the accelerating particles in different intensities towards the vortex, such as the heavier stars. The ripple-pressure combination may produce also a less dense object, due to a larger amount of uniformly energized particles with lower velocities, with a larger volume of the same mass m of elementary elements, such as the sun's hydrogen and helium. Matter remains accumulating together until the outside area if the formed object becomes large to the extent that the intensity of clashes per unit volume of the streaming particles can no longer form the required form of matter.

The streaming particles towards the formed objects create a pull towards the center of the object. The 'pull' of objects of the same masses are equal at steady state condition since they displaced equal amounts (and thus volumes) of the simple particles. The objects will be displaced by new vortices in their immediate vicinities, if the volume of clashes permits reaction under the available pressure conditions, or by unequal streaming on their surfaces. The objects will move until they feel stable streaming of particles, or equal pressure, from all sides. A volume of the streaming particles may not have the required energy to react during the formation streaming and, consequently, reflect back. These same particles might form atoms or molecules on the surface of the object held by the streaming effect itself of other particles thus creating a 'planet's atmosphere', such as the Earth's. The reaction in the mantle and outer core of the Earth may exhibit the change of simpler matter into bulkier and more integrated matter released through natural phenomena, such as volcanoes. Disturbed streaming distribution may cause the formation of bulkier matter under one location of the Earth's crust thus creating differential

pressures that may be the cause of earthquakes.

3.6. Ripples, Streaming and the Solar System

The solar system is approximately planar, where the orbits of the planets and the sun all fall into the same plane. This may imply that the initial “solar” ripples that formed the sun are the same ones that formed the planets. At that time, the universe was much smaller and the expansive ripples were stronger in the area of the solar system.

The streaming particles persisting after the formation of the sun, in this case, were partly reflected after the collision with the sun particles, some exited from side to side, and others were consumed by the sun. The reflected ones create outward waves that at one time, with the sun at its center, collided with other expansive ripples to form solar planets. The stronger the ripples collision is, the denser the planet formed. As the ripple moves away from the sun, and as it collides by other ripples to form planets or other objects, the ripple gets weaker. Further collisions with other ripples should produce less dense planets or objects. This agrees well with the densities of planets calculated from the Jet Propulsion Laboratory results as presented by Standish [39]. The densities of planets increase from Saturn to Mercury.

However, from Uranus to Neptune to Pluto the densities increase presuming that these three objects might have been formed by the collision of the ripple reflections from the sun and another body that would have acted as the center for the three objects should the sun cease to exist. Pluto would have been the closest to it and Uranus the furthest. However, this object disappeared for a reason. It might have been the second star to form directly after the sun has moved to its equilibrium position. In 1948, Bondi, Gold and Hoyle predicted that as galaxies move away from each other, new galaxies were continually forming in gaps in between from new matter that was continually created.

Other possible indications of the disappearing object are the rings around Jupiter, Saturn, Uranus, and Neptune. These rings might be a proof of the clash of ripples initiated from the object and those reflected from the planets. Sparrow [40] highlights a discovery done in 2010 by a team led by Phil Nicholson regarding a ring complexity in the form of ‘ice tsunami’ (p.218) within the Saturn C ring. ‘They identified spiraling walls of ice, roughly 1.6 km tall, on either side of a narrow 0.5 km gap in the ring material. This structure which seems to consist of piled-up ice fragments cleared out from the gap, is similar to a tsunami and its associated drop in sea level, and ripples through the sea ring every 16 days. This suggests that it is linked to the gravitational influence of Saturn’s distant giant moon Titan.’ [40] The “plane” of the ring reflects the angle of the ripple initiated from the disappearing object.

3.7. Streaming and the Speed of Light

The fact that light travels at a very high but finite speed was discovered in 1676 by Roemer. Maxwell predicted in 1965 that there could be wave-like disturbances in the combined electromagnetic field, and that these would travel at a fixed speed, like ripples on a pond [23]. Michelson and Morley [41] discovered that light has the same speed to all observers whatever their speeds. The general theory of relativity claims that nothing can travel faster than light. ‘Because of the equivalence of energy and mass, the energy, which an object has due to its

motion, will add to its mass. In other words, it will make it harder to increase its speed. As an object approaches the speed of light, its mass rises ever more quickly, so it takes more energy to speed it further. It can in fact never reach the speed of light, because by then its mass would have become infinite, and by the equivalence of mass and energy, it would have taken an infinite amount of energy to get it there' [23].

Assume that a body of mass m is moving at very high speed and part of its energy is changing into mass, as claimed. If the energy of an object in motion adds to its mass at high velocities, then what form of mass is meant? What state? What matter? What shape? What velocity of formed particles? If energy changes into the simplest or one of the simple forms of matter, then these small particles should not be retained in the speeding or accelerating object. The "voids" between the molecules would be very huge compared to the newly formed particles that would seep out of the object, especially that there is no force to hold them or integrate them into the body. These small formed particles may be emitted from the object that retains approximately its original mass.

There is no decisive empirical evidence to support the claim of the limitation of the speed of light. Contrary to the known theories, this study claims that there is lots of skepticism that speed of light is the maximum speed moving objects can reach. There is no actual real limiting speed in the Universe including the speed of light. One cannot imagine that the expansion process of the Universe, with all its complications and peculiarities, restrains itself just short of the speed light. Or even before that when the mass at the boundary becomes so great, as the theory of relativity implies, such that it practically hinders itself from propagating or expanding. Yet, a more peculiar proposition would be the conversion of all that energy into a close to infinite mass, that is, infinite energy.

If, for instance, a star that emits light is created on the borders of the expanding universe. If light speed is the optimal, then light emitted from the newly born star moves at a speed exceeding the speed of expansion of the universe. Light emitted and reflected by all universal objects tend, in the end, to reach the universe boundaries. Therefore, light has either to be stored in the boundaries, or reflected by them, or penetrates them to Existence. Conservation of mass and energy in the universe is a natural law so light cannot exit the universal boundaries.

If the light is reflected by the boundaries, then some of the light that is hitting the surface of the boundaries at all possible angles has to be absorbed by the boundaries. If the boundaries receive non-homogenous quantities of energy, then the solid-liquid contour structure may be compromised. There is no evidence that this is the case. Therefore, the only safe assumption remaining is that light speed is exceeded by the universal expansion speed.

Experiments reveal that light is bent or pulled by the gravitational force of heavy objects, such as the sun. 'The mass of the sun curves space-time in such a way that although the Earth follows a straight path in four-dimensional space-time, it appears to us to move along a circular orbit in three-dimensional space' [23]. This study is predicting that streaming towards heavy objects maybe the reason for pulling the particles through which light is propagating towards the object. As such, light may be distorted as it passes through heavy streaming areas in space. 'Certain very specific colors are missing from star spectra, and these colors may vary from star to star' [23]. The speed of light may also be distorted by the expansive ripples when one is looking at

the great universe. In the small portion of the universe through which the solar system is floating, matter is almost uniform in density compared to the other turbulent parts of the universe. Light may exhibit more uniform properties in stable galactic areas; it may also exhibit different properties in unstable areas.

The same phenomenon is what pulls light into black holes when these holes are either absorbing or dormant. The black holes are predicted by this study to be acting as balancing weight to maintain the egg-shape of the universe. They act also as recycling plants of the straying objects. In the black holes, matter is created, where simpler, and maybe the simplest, forms of matter transforms into more complex forms of matter in an endothermic reaction. This study predicts that black holes should be emitters of particles/energy as well. 'A black hole with a mass a few times that of the sun would have a temperature of only one ten millionth of a degree above absolute zero'[23].

'Einstein's general relativity theory on its own predicted that space-time began at the big bang singularity and would come to an end either at the big crunch singularity (if the whole universe re-collapsed), or at a singularity inside a black hole (if a local region, such as stars, were to collapse). Any matter that fell into the hole would be destroyed at the singularity, and only the gravitational effect of its mass would continue to be felt outside. On the other hand, when quantum effects were taken into account, it seemed that the mass or energy of the matter would eventually be returned to the rest of the universe, and that the black hole, along with any singularity inside it would evaporate away and finally disappear'[23].

4. The Theoretical Model

The theoretical model is the source for the hypothesis to be tested in research. 'A theoretical model is conceptualization of a group of phenomena, constructed by means of a rationale, where the ultimate purpose is to furnish the terms and relations, the propositions, of a formal system which, if validated, becomes a theory'[42].

- A. The Universe is a finite subset of a wider infinite field referred to as Existence. Matter, in its simplest form and with the least properties, occupies Existence.
- B. The Universe is an enclosed system within boundaries. Matter within the universal field claims its properties that are essential to display its function. Matter particles inside the boundaries are pushed toward the center of the field closer to each other to construct the building particles of matter as we know it, such as electrons, protons, atoms...
- C. The compression of Matter particles inside the bounded field persisted until the smallest version of the universe was created. The energy of compression was stored in the transformed matter. The Universe is bounded by a solid-liquid contour. The laws of nature were set and time calibrated through the rotation of planets and stars around their axis or in orbits.
- D. The shape of the universe resembles the egg. The shape is preserved in the sense that the universal expansion is bounded by the egg-shape.
- E. The initial universe within its boundaries contained a large differential inertial potential and stored energy with respect to the matter in Existence. Consequently, the Universe expands.

- F. The expansion of the universe happens in intervals releasing ripples towards the interior.
- G. The dynamics of the universal expansion with in guiding boundaries that preserve the egg-shape create ripples, turbulences and differentials in the distribution of matter and energy within the Universe. Wherever “inertial pressure” builds up, due to a clash of ripples, or a clash of turbulence and a ripple, the remaining distributions of simple/dark matter and energy condenses into particles, gases, liquids and solids. Formations such as stardust, stars, and other universal structures are created.
- H. The gravitational force is probably caused by the streaming of particles into a vortex that develops at the early seed stages of a star. It may not be the property of the mass itself. This streaming remains until the final formation of the star. The star’s outer area reaches a stage that weakens the clashes of streaming particles and thus stopping any further transformation. The star is probably moved a region in space of equilibrium streaming.
- I. Wherever “inertial pressure” decreases, material structures disintegrate into simpler particles to fill the induced void. In such cases, stars explode, concentrated masses drift, and galaxies disintegrate.
- J. Light is bent by the streaming effect towards the object. The transformation process of energy into mass, and vice-versa, cannot be real. Dark masses and the entrapped dark energies interact to produce different structures of matter with different properties. The expansion of the Universe can imply that objects can move at a higher speed than light.
- K. Black holes act as controls and balances of concentrated masses to help preserve the egg-shape of the universe and create thresholds for matter integration/disintegration. Whenever a decrease in “inertial pressure” occurs, black holes eject some of their stored matter in a more dynamic structure to move and fill other spaces. Black holes digest more rigid structures or particle and energy formations and invert them into adequate formations to fill the voids. Whenever a build-up of “inertial pressure” occurs, the black holes absorb the imbalance. Black holes have their finite ability to control, beyond which, more severe occurrences take place such as bulk matter integration/disintegration (formation or explosion of stars, for example).
- L. The enormous streaming of the black holes acts as an anchor of the egg-shape of the universe. This means that their dispersion in space is such that they maintain the shape of the universe that resembles an egg. If it is not for the black holes, the Universe may shift to a spherical shape.

5. Hypothesis

- A. Time is an instrument to measure motion and change. High-speed motions require different time instruments to measure. Time was calibrated via cyclic moving objects.
- B. The Universe is a bounded egg-shaped field in expansion. The egg shape is preserved.
- C. The expansion of the universe in an egg-shaped format creates ripples and turbulences that cause the cosmic dynamics scientists observe.
- D. Dark energy and Dark matter are the reservoirs and building blocks of more complex energy and matter. Energy, in its multiple forms, can only manifest itself through matter. The interaction of matter and energy gives matter its properties.

6. Discussion

The universe and beyond cannot be realized by the empirical potential of man. This realization requires cognitive powers able to construct a model that explains all observed phenomena, or at least not contradict them. The model is built; and, empirical data used to validate it. The challenge is that no empirical data should be collected to contradict the above model or not be explained by the model.

On time and space, there are no real empirical data, to date, that validates any previously proposed theory. The weakness of all models that tend to explain the cosmos is their inability to predict an integrated set of systems and theories that explain universal phenomena.

The analysis of data retrieved from the Wilkinson Microwave Anisotropy Probe, which was launched by NASA in 2001, tends to confirm that the universe is egg-shaped. This empirical finding is the basis of this model. Empirical data and observations have recorded different phenomena that can be explained or predicted by this model. Simulations and further empirical research should be utilized to explore the predictions of this model, for example, the black holes role as an anchor to preserve the egg shape of the universe can be tested by computer simulations that validate their dispersion in this respect.

The model also predicts and explains universal expansion and universal acceleration. Empirical data in this respect confirms the expansion and acceleration of the universe. The proposed model explains also the stardust phenomenon, the integration/disintegration of universal objects such as stardust, stars, planets, and galaxies among many others. This is due to the turbulence and ripples created by universal expansion. Taken-for-granted phenomena such as the speed of light and gravitation of masses should be revisited as they fail to explain many of the universal observations.

This model presents a wholistic system that embraces and explains the observed universal occurrences. Some propositions above can be empirically validated and others cannot be refuted. Other interpretations or ideas may complement or add to the proposed model. The general model can be presented in a more detailed and complete literature. The hypothesis and theoretical model can be further tested and validated to produce a more comprehensive and coherent theory of the creation of the universe.

7. Conclusion

The essence of this study is the endeavor to present the Universe in one system composed of multi interacting subsystems. This reflects the logic of synergy that nature adopts to optimize its resources. This model presents a wholistic system that embraces and explains the observed universal occurrences. It can be a cornerstone to assumptions related to the far unseen bodies in the Universe.

Human mind is the most effective tool that can be utilized to explore the far corners of the Universe. Some ideologies, traditions, and taboos have set this tool on chains. This study has imperatively proposed a review to some of Einstein's theories as a step to free itself from such chains.

This cognitive model is a non-rigid portfolio of related ideas and propositions. Some propositions above can be empirically validated and others cannot be refuted. Other interpretations or ideas may complement or add to the proposed model.

Cognitive studies are always limited by the limitations imposed by the mind of the researcher. The Universe is too vast and requires iterative rounds for proper comprehension. The limitation of empirical data and tools pose further challenges for such studies. Historical clashes among various schools of thought and research ideologies also hinder interactions between cognitive and empirical studies.

This study recommends presenting the general model in a more detailed and completing literature through introducing new and missing empirical findings. The hypothesis and theoretical model can be further tested and validated through proficient computer models. Empirical and cognitive scientists are called upon to enrich and expand this study produce a more comprehensive and coherent theory of the creation of the Universe.

References

- [1] Tian Ma and Shouhong Wang. Gravitational field equations and theory of dark matter and dark energy, *Discrete and Continuous Dynamical Systems, Ser. A*, 34:2(2014), 335-366; see also arXiv: 1206.5078v2.
- [2] Tian Ma and Shouhong Wang. *Mathematical Principles of Theoretical Physics*, Science Press, Beijing, 524pp. August, 2015.
- [3] Tamara Davis. "Relax, the expansion of the universe is still accelerating." Available: <http://theconversation.com/relax-the-expansion-of-the-universe-is-still-accelerating-67691>, October 28, 2016 6.08am [Jan. 29, 2017].
- [4] D. Bohm. *The Special Theory of Relativity*. London: W.A. Benjamin, Inc., 1965.
- [5] J.D. Barrow. *The Book of Universes: Exploring the Limits of the Cosmos*. New York: W.W. Norton and Company, 2012.
- [6] M. Eliade. *The Myth of the Eternal Return: Cosmos and History*. Princeton: Princeton UP, 1954.
- [7] E.O. James. *Creation and Cosmology: A Historical and Comparative Inquiry*. Leiden: Brill Archive, 1969.
- [8] M. Leach. *The Beginning: Creation Myths around the World*. New York: Funk and Wagnalls, 1965.
- [9] C.H. Long. *Alpha: The Myths of Creation*. New York: George Braziller, 1963.
- [10] S. Leggat. *On the Heavens I and II*. Warminster: Aris & Phillips, 1995.

- [11] I. Kant. *Universal Natural History and Theory of Heaven*, 1755. Translated by Stephen Palmquist in *Kant's Critical Religion*. Aldershot: Ashgate (2000).
- [12] A. R. Wallace. "Man's place in the universe: as indicated by the new astronomy". *Fortnightly Review* 73, pp.395–411, 1903. <http://web2.wku.edu/~smithch/wallace/S602.htm>.
- [13] R. Clausius. *Abhandlungen über die Mechanische Wärmetheorie*, 1864. Electronic manuscript from the Bibliothèque nationale de France.
- [14] K. Schwarzschild. *Über das Gravitationsfeld eines Massenpunktes nach der Einstein'schen Theorie*. Berlin: Reimer, 1916.
- [15] A. Einstein. "The Foundation of the General Theory of Relativity". *Annalen der Physik* 49 (7): 769–822, 1916. Bibcode: 1916AnP...354...769E. doi:10.1002/andp.19163540702. Retrieved 7 June 2014.
- [16] A. Einstein. *Über die spezielle und die allgemeine Relativitätstheorie*. First published in English translation as *Relativity: The Special and General Theory*. 1917. Available in English translation in CPAE 6 (Doc.42). <http://einsteinpapers.press.princeton.edu/vol6-doc/448>
- [17] A. Einstein. "Fundamental Ideas and Problems of the Theory of Relativity", *Nobel Lectures, Physics 1901–1921*, July 1923. Amsterdam: Elsevier.
- [18] A. Einstein, A. "On Science and Religion", *Nature*. Edinburgh: Scottish Academic 146 (3706): 605, 1940. Bibcode: 1940Natur.146..605E.
- [19] A. Einstein. "On the Generalized Theory of Gravitation", *Scientific American*, 1950.
- [20] A. Einstein. *Ideas and Opinions*. New York: Random House, 1954. ISBN 0-517-00393-7.
- [21] W. De Sitter. "A proof of the constancy of the velocity of light", *Proceedings of the Royal Netherlands Academy of Arts and Sciences*, 15 II: 1297–1298, 1913.
- [22] E. Hubble. "A relation between distance and radial velocity among extra-galactic nebulae". *PNAS* 15 (3): 168–173, 1929.
- [23] S. Hawking. *The Illustrated a Brief History of Time*. New York: Bantam Books, 2012.
- [24] F.R. Klinhamer & N.S. Manton. "A saddle-point solution in the Weinberg-Salam theory", *Physical Review D* 30, 2212 – Published 15 November 1984.
- [25] N.S. Manton. "Topology in the Weinberg-Salam theory", *Physical Review D* 28, 2019 – Published 15 October 1983.

- [26] L. Susskind. "Lattice models of quark confinement at high temperature". *Physical Review D* 20 (10): 2610, 1979.
- [27] C. Amsler et al. "Review of Particle Physics: Gauge and Higgs bosons". *Physics Letters B* 667: 1, 2008. Bibcode: 2008PhLB...667...1P.
- [28] M. Munowitz. *Knowing*. Oxford University Press, 2005. ISBN 0-19-516737-6.
- [29] M. Riordan. *The Hunting of the Quark: A True Story of Modern Physics*. Simon & Schuster, 1987. ISBN 978-0-671-50466-3.
- [30] M. Jammer. *The Conceptual Development of Quantum Mechanics*. New York: McGraw Hill, 1966.
- [31] G. Ludwig. *Wave Mechanics*. London: Pergamon Press, 1968. ISBN 0-08-203204-1.
- [32] G. Mackey. *The mathematical foundations of quantum mechanics*. Dover Publications, 2004. ISBN 0-486-43517-2.
- [33] A. Messiah. *Quantum Mechanics (Vol. I)*, English translation from French by G. M. Temmer. North Holland: John Wiley & Sons, 1966.
- [34] O. Roland. *Understanding Quantum Mechanics*. Princeton University Press, 1999. ISBN 0-691-00435-8. OCLC 39849482.
- [35] W. M. Clifford. *Was Einstein Right? : Putting General Relativity to the Test*, 2nd ed. Basic Books. ISBN 0-465-09086-9, 1993.
- [37] A. Einstein. "What Is The Theory Of Relativity?", *German History in Documents and Images*, 1919. Retrieved 7 June 2014.
- [38] A.I. Miller. *Albert Einstein's Special Theory of Relativity. Emergence (1905) and early interpretation (1905–1911)*, Reading: Addison–Wesley, 1981. ISBN 0-201-04679-2.
- [39] M. Standish. "JPL Planetary and Lunar Ephemerides, DE405/LE405". *JPL Interoffice Memorandum* 312.F-98-048, 1998.
- [40] G. Sparrow. *The Universe in 100 Key Discoveries*. London: Quercus, 2012.
- [41] Albert A. Michelson and Morley W. Edward. "On the Relative Motion of the Earth and the Luminiferous Ether". *American Journal of Science*. **34**: 333–345, 1887. [doi:10.2475/ajs.s3-34.203.333](https://doi.org/10.2475/ajs.s3-34.203.333)
- [42] D. Willer. *Scientific Method: Theory and Method*. Englewood Cliffs, NJ: Prenticehall, 1967.