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Hypothesis of Nothingness

Sohrab Abdollahi

Department of Chemistry, Payame Noor University, I.R. of Iran, Thran, Iran

Abstract Our mathematics is incomplete and faulty; it just may describe the universe (existence) but not the super universe (universe + nothingness). Nothingness is considered a conceptual entity; it is the concept of physicochemical laws without any physical property. It is not zero, emptiness, absence, or vacuum. It is denoted by -0 and is purely conceptual. The universe is surrounded by nothingness and there is a wall of conversion between them. This wall converts nothingness into existence (the universe). The laws of the relevance of the opposition control the nature and behavior of the super universe. Nothingness and the universe, time and motion, absolute darkness, and absolute lightness are the negative inverses of each other; this is the meaning of the *opposite* in this principle. This principle shows that distance is the natural logarithm of one divided by unit(value) of time (t), and in the universe, the value of time fluctuates between 0 and 1. At zero and 1 the values of time are at extreme, infinitely low, and infinitely high (time almost stops). Mass and energy are not conserved in the universe but they are conserved in the supper universe. In the universe there are two kinds of expansion; one is a general expansion in which mass, energy, and space are involved and the other is local expansion and contraction in which only mass and energy are involved.

Keywords Nothingness, Universe, Super universe, Emptiness, Vacuum, Absence

1. Introduction

There have been numerous theories and philosophical visions regarding the universe and other entities that are either related to the universe or out of the universe such as nothingness [1-7]; mass-energy equivalence [8], parallel universes [9,10], multiverses [11], antimatter [12] and dark material [13]. Edward Tyron, an American scientist had a different theory. In 1973, he proposed the idea of a zero-energy universe that emerged from a vacuum of energy. That is to say, it emerged from nothing—where all the positive energy of mass is balanced by the negative energy of gravitation [14]. The most advanced and elegant theory regarding the elementary particles, structure of space and time, and mathematical description of their physics is string theory [15]. String theory is the third revolution in physics after quantum mechanics and relativity. With knowing string theory you can interpret and have a more notion about quantum mechanics and relativity.

The concept of "nothingness" is complicated to explain. It is more complicated than you think; commonality people think that nothingness is zero, some believe that it may be void or vacuum [16] and still, some scientists think that nothingness may be emptiness or absence [6]. However, it is hard to say what the nothingness is for real. Roy and Stok argue that zero is different from nothingness, Nothingness is a concept but zero is a number in the existence. Zero is nothing in existence but nothingness is absolute nothing. Zero has numerical value and position and -1 means less than zero, but nothingness doesn't have value and position and less than nothingness is meaningless. Zero can be a start and end but nothingness does not have any beginning and end [17,6]. Due to its abstract nature, the Egyptians hated *zero*. However, they did just fine building the pyramids without it. As a result, roman numerals have no representation for zero [18]. The mathematicians' version of nothing is the empty set. This is a collection that doesn't contain anything, the empty set is the set with nothing in it. The empty set may seem a bit feeble, but appears deceptive; it provides a vital building block for the whole of mathematics [19].

The creation of energy from mass and mass from energy is predicted and proven by Einstein [8]. Hecht, in a paper, explains that in a nuclear reactor, a spontaneous nuclear process results in a net *decrease* in the net mass of all the particles involved. The "missing mass" appears as the *kinetic energy* of the reaction products, which is dissipated by what amounts to friction and generates *heat* that boils water; the steam is used to spin turbines that run generators that send electrical power down the wires. This leads to an obvious question: can we do the *opposite*? Can we take electrical power out of the wires, use it to raise the kinetic energy of some particles to enormous values, smack the particles together, and *generate* some *extra* mass? Yes! This is what a particle accelerator like TRIUMF does [20]. Every such accelerator is a sort of "reactor in reverse," taking electrical

* Corresponding author:
sohrab202020@yahoo.com (Sohrab Abdollahi)
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power out of the grid and turning it into a mass.

In this excerpt from his new book, Our Mathematical Universe, M.I.T. professor Max Tegmark explores the possibility that math does not just describe the universe, but makes the universe [21]. This paper introduces a new physical science, one that does not distinguish between classical and relativistic principles. It provides the final piece of the puzzle started by Newton with his Principia in 1687 and expanded by Einstein with his Special Theory of Relativity in 1905 [22].

In the middle of all this chaos, which happens in the universe, we have "nothingness that is the mother of the universe (existence) and we should derive the existence out of nonexistence rationally. In the well-written article, General Nothingness Theory [23], Kaup has explained very well that the dynamic behavior of the all-natural systems is driven by attraction to equilibrium. Kaup says that the motion of everything everywhere is motivated by some form of unevenness, and the motion of particles ultimately serves the purpose of resolving an uneven local condition.

Up to now, a couple of dozen theories regarding the creation of the universe, energy, mass, time, and space have been given, but except for some of them that have strong bases and have been well proven, the rest stays on the edge of the errors. In this endeavour, the matter of nothingness has been under vast dispute between scientists. In this paper, I have tried to offer a postulate about nothingness and the creation of the universe based on experiences, philosophical backgrounds, and learning rationally from other theoretician's mistakes. Unfortunately, because of the nonphysical nature of nothingness, I cannot manipulate it with the faulty mathematics that we have. I just content to logic until we can extend our math into the matter of nothingness.

2. Methodology

As I mentioned earlier, the matter of nothingness, birth, and expansion of the universe is extremely complex and unknown. In the cases that we can't understand, it is possible that our relative and somehow faulty mathematics can help a lot and what the sound mathematical relationship tells us may be approved documentation. Unfortunately, nothingness is not measurable and doesn't have any physical properties and it is hard to handle it mathematically. Therefore, in this paper the hypothesis is mostly descriptive and are based on five general principles as follows:

1- Using experience and general knowledge of everyday experiences that we have from quantities and variables involved with them in the real world.
2- Using all the previous and proven knowledge that different scientists achieved in this regard.
3- Knowing and Differentiating between nothingness, emptiness, absence, zero, and vacuum.
4- Using general and stable behavior of the universe and natural principles that control these behaviors. These natural principles are as follows:

- The principle of the relevance of the oppositions.
- The principle of the super universal achieving a dynamic equilibrium between the nothingness and the universe.
- The principle of increasing entropy and achieving maximum disorders.
- The principle of regeneration and mortality of the universe; continuous creation and annihilation.
- The principle of equivalency of mass and energy.
- The principle of equivalency of time and motion.
- The principle of non-identical creation in the universe.
- The principle of non-spontaneous creation (in our time scale).

Of course, I am confronted with a lot of difficulties and I hope in the future I can get help from mathematicians and improve the mathematical points of view of these investigations.

3. Results and Discussion

Due to the principle of *the Relevance of the Oppositions* that I have mentioned in the previous article "God and Universe" [24], we should have nothingness since we do have existence. As I mentioned in that article, nothingness is different from **emptiness**, **absence**, or **zero**. Emptiness, absence, and zero are parts of existence so we have experiences about them we can see and feel them. We can define emptiness, absence, or zero in Euclidean or non-Euclidean spaces and we can manifest them in the real world and the universe. However, nothingness differs from three cases; emptiness, absence, and zero. We do not have any experiences with nothingness and we cannot feel or see it because nothingness does not have any kind of physical properties that can be measured or handled mathematically. We even cannot imagine what nothingness is because man is not familiar with nothingness.

Some people think that absence and nothingness are the same, but they aren't. Let me give an example to clarify the difference between absence and nothingness; One thousand years ago there was no airplane, therefore, we can say that at that time airplanes didn't exist, or we can use "nothingness" regarding airplanes. A thousand years ago airplanes existed, of course, not actually but potentially. Therefore, it is just a matter of time to go from the potential state to the actual state because after a thousand years we can see an airplane. Now, we can say that a thousand years ago the airplane actually was *absent*, whereas it has potentially existed and you have to just wait thousand years (going by time dimension) to see the airplane. Let me give you another example, assume that I am in Iran and have a house in Saint Louis Missouri, USA, then I tell you that I have a house in Saint Louis Missouri, you may say that such a house doesn't exist. However, I want to prove myself then I will buy two tickets and take you to

Saint Louis Missouri and show you the house. Therefore, the house potentially existed while we were in Iran but it is a matter of distance from Iran to the USA to see the house actually (going by distance dimension).

The airplane and house are absent but they exist potentially, however, it is a matter of time and distance to go from potentiality to actuality. Nothingness is not zero, it is not emptiness either. Emptiness exists in existence; there should be something that to be empty, and we could have the experience of emptiness, but nothingness is separated from the existence and surrounds it. Now the main question is: what is the nothingness, indeed?

3.1. What is Nothingness?

Nothingness is absolute nothingness; there is no space, no light or darkness, no time or moving objects, no volume, surface, or line, even there are no points it is just absolute nothingness we cannot feel it or see it. How we can define it or have a notion about it? We can't physically! However, according to the principle of the relevance of the oppositions, we know that nothingness is there since we have the existence here. Indeed, existence (the universe) is located in nothingness or is surrounded by nothingness. There is nothingness because and only because we have existence and vice versa. Nothingness is only a conceptual entity, without any physical property and it can be just *thought* and *knowledge.*

The nothingness is the concept of physiochemical laws only [24]. Nothingness is the brain of the Universe without physical entities just pure thought and knowledge. Think and knowledge neither have masses nor have physical properties you can't feel or see them they are nothing but the cause of every civilization in the world. Therefore, nothingness is nothing but the cause of everything, the universe. Existence without nothingness doesn't exist and nothingness without its cause (universe) stays nothing regarding both, physical and nonphysical point of view! Therefore, in both cases, they can confirm each other. If it makes religious people happy, I may say that nothingness can be "God" not the exact god that man has created. As I mentioned in the previous article [24], god is the concept of physiochemical laws, and god never violates these laws. For a better explanation, I can use the analogy of the human brain to illustrate nothingness.

The human brain is very complex and highly advanced both in its structure (hardware) and in its conceptual frames (software). You can see and even touch the hardware of the brain which contains 77 to 78 percent water, 10 to 12 percent lipids or fats, 8 percent proteins, 2 percent is composed of soluble organic substances. Carbohydrates and inorganic salts each contribute 1 percent. However, conceptual parts are untouchable, invisible, have no mass, and need no space or time. The conceptual parts are the main cause of the creation, evolution, devolution, and all the changes in the world. Fig 1, shows the thinker man and all advanced creation resulting from his thinking.

Figure 1. Thinking man: Think (invisible, and untouchable concept) is the source of creation and changes

The theory of nothingness can answer one of our oldest questions about the end of the universe. Where is the end of the universe? We cannot imagine how the universe is ended. Since we do not have any experiences with nothingness so we cannot put an end to the universe; in our mind the universe cannot have an end and it goes and goes until eternity. It does not look right and it must be an end to the universe so *the hypothesis of nothingness can put an end to the universe.*

The vague nature of the universe and nothingness, make up so many different questions that it is hard to answer and to prove them. On the other hand, our science of mathematics is not faultless or perfect. How can we manipulate nothingness with math? You cannot handle abstract or conceptual things with math; how can you use basic math operations on "goodness"? Nothingness doesn't have any kind of physical measurable entities by which we could use math. However, we may be able to use an indirect way to challenge this dilemma. For instance, to denote a physical entity to represent nothingness.

3.2. How the Universe Came into Existence

Once upon a time, billion years ago, there was only nothingness that was consisted of concepts and physicochemical laws. Nothingness decided to create his complex conjugated counterpart, the universe, to complete himself. Therefore, existence came out from nowhere (nothingness) as a small bubble of energy, on a cosmological scale, surrounded by nothingness; a small bubble inside of nothingness. The principle of the relevance of the oppositions which is an essential concept of nothingness forced the nothingness to create this bubble of energy and space was born with this bubble because the energy as the essence of existence needed space for its propagation. Afterward, because of the concentration of some energy, elementary particles were created. Due to the principle of

equivalency of time and motion, time also came into existence as a separate entity from space that indirectly relates to space through motion.

The principle of the relevance of the opposition, says that if there is nothingness so there should be existence. It is similar to Newton's law of physics that says "For Every Action, There is an equal and opposite reaction" here, the opposite means a negative sign such as A that its opposite is $-A$. However, in this article and by the principle of the relevance of the oppositions, the word "opposition' has its unique meaning that should be defined by a different tune which may be more general than Newton's law and can be used not only for physical actions but for everything in any physical or nonphysical states either in motion or static states. Here the word "opposite" means "negatively inversed"; such as A entity which it's opposite is $-1/A$ (opposite both in sign and quantity). Mathematically, the principle of the relevance of the oppositions is valid for two entities if the following relationships exist between these two entities:

1. The law of multiplication: For any entity of φ, there should be a negatively inversed entity, $-1/\varphi$ such that:

$$\varphi\left(-\frac{1}{\varphi}\right) = -1\ commutable$$

2. The law of summation: For any entity of φ, there should be a negatively inversed entity, $-1/\varphi$ such that:

$$\varphi + \left(-\frac{1}{\varphi}\right) = \frac{\varphi^2 - 1}{\varphi}\ \text{commutable}$$

3. The law of deduction: For any entity of φ, there should be a negatively inversed entity, $-1/\varphi$ such that:

$$\varphi - (-\frac{1}{\varphi}) = \frac{\varphi^2 + 1}{\varphi}\ \text{non} - \text{commutable}$$

4. The law of division: For any entity of φ, there should be a negatively inversed entity, $-1/\varphi$ such that:

$$\frac{\varphi}{-\frac{1}{\varphi}} = -\varphi^2\ non - commutable$$

In the earlier article [24], I represent the universe with ∞, therefore nothingness is the negatively inversed of the universe or $-1/\infty$, this is equal to -0 (minus zero). It means mathematically that we can represent nothingness with -0. Is there any difference between 0 and -0? Yes, it should be because 0 exist but -0 doesn't exist in the universe! It seems odd a little bit, but logically I don't have any other choice! In that article, the **future** is represented by ∞ + 1, and the **past** is shown by ∞ -1. From the mathematical point of view, the negatively inversed of both future and past is -0 again, and it means that the future and past are also some forms of nothingness:

$$-\frac{1}{\infty + 1} = -0$$

$$-\frac{1}{\infty - 1} = -0$$

Nothingness and the universe (existence) are opposite or negatively inversed of each other, high-density mass (black hole) and very diluted pure energy are negatively inversed of each other. Other quantities such as material and antimaterial, absolute darkness and absolute lightness, absolute rest, and absolute speed of quantized energy are all negatively inversed of each other.

Iranian (Persian) great theosophically enlightened poet, Molana, who lived in the 13th century has beautiful verses regarding the nature of oppositions:

> "Creating pain and agony by god,
> is for having its opposite that is happiness
> therefore, unseens are founded by opposites
> since god does not have the opposite,
> this is why he is unseen.
> So, by opposite of light, you know light
> The opposite can reveal the opposite
> God doesn't have the opposite
> we cannot find him through opposite"

3.3. The Wall of Conversion

There is a cosmological membrane between existence (universe) and nothingness which I call **the wall of the conversion**. Indeed, this wall is between ∞ (the universe) and -0 (the nothingness). Going from nothingness toward the universe is going from -0 to 0 and then into ∞ (the universe). Zero is emptiness or vacuum. Therefore, there is a region of vacuum or emptiness in the wall of conversion. this wall has some magic characteristics that convert nothingness into existence. The inner surface of the wall that is the outer surface of the universe gradually diluted toward nothingness and eventually will vanish into nothingness. the wall of the conversion may be a mixture of electromagnetic and gravitational forces in a net that is concentrated at first and diluted toward nothingness and vanishes there. In Fig 2, the nature of the wall of the conversion changes from existence (mass, time, and space) by distance, in non-Euclidean space, and vanishes toward nothingness. Nothingness is some kind of conceptual entity; not material or anti-material, it is just conceptual. This conceptual entity somehow changes to very dilute energy when crossing the wall through a vacuum (a yellow region in the wall). The diluted energy of the vacuum concentrated more when passing the red region. Eventually at the surface of the universe, the energy changes to electromagnetic radiation (light) or photon. In the universe, highly concentrated light (very concentrated photons) changes into mass. All is the conversion of conceptual energy into material energy. Therefore, we can convert thought (concept) into action (mass) using the complex technology that has not been yet achieved by man.

As was mentioned previously [24], the creation of the universe was started and surrounded by nothingness. According to our earlier notation for the universe and the principle of the relevance of the opposition, we could have:

$$Existance\ (universe) = \infty \qquad (1)$$

Nothingness is negatively inversed of the universe (∞):

$$nothingness = -\frac{1}{\infty} = -0 \quad (2)$$

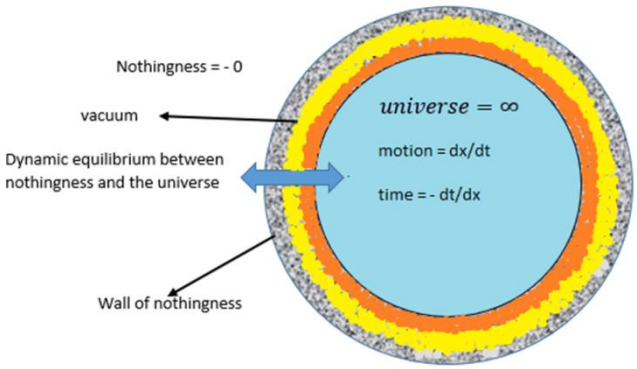

Figure 2. The universe (∞) is surrounded by the wall of the conversion

The movement across the wall may be mutual, forward, and backward. i.e., from ∞ toward -0 and vice versa. It means from nothingness toward the universe we have the creation of mass, space, and time, and in the reverse case; from universe toward nothingness, we have annihilation of mass, space, and time. Since the system at this cosmological period is not in dynamic equilibrium, we have more conversion of nothingness into the universe and as a result, growing the universe; this is why we have now an expansion of the universe. This conversion will continue until the dynamic equilibrium state could reach. However, this expansion will decrease by the astronomical time scale, and at the equilibrium point, the expansion will stop but the system will stay at dynamic equilibrium. It is important to mention that in the universe, there is no conservation of mass or energy; because both mass and energy can be created or annihilated at the wall of nothingness. However, mass and energy may be conserved in what I call, the super universe (the universe plus nothingness).

3.4. Time and Motion

Time by itself doesn't have any meaning. It doesn't have any independent nature or reality. Indeed, time is changing in physical reality or motion. If we have motion, we must have time to sense the motion. If we have time we must have a motion. When concentrated energy or mass is created via the wall of conversion, then the mass needs space to propagate and there must be an entity of time to see and sense the motion. Therefore, the motion creates time. According to the principle of the relevance of the opposition, motion is negatively inversed of the time. Please keep in your mind that, this time here is not the normal time on our earth, because the time on earth has almost constant unit since the relative motion of the earth regarding the reference is fixed. The unit of time (the value of time) at the different parts of the universe is different. Therefore, the value of time is the negative inverse of motion, v, and vice versa such that:

$$t = -\frac{1}{v}$$

$$v = -\frac{1}{t}$$

In high schools we have learned that velocity is the differential of distance with respect to the differential of time:

$$\frac{dx}{dt} = -\frac{1}{t} \implies dx = -\frac{1}{t}dt$$

Integration of both sides gives us a relationship between distance and value (unit) of time:

$$\int dx = -\int \frac{1}{t}dt \implies x = -\ln t \implies x = \ln\frac{1}{t}$$

Fig 3, shows a graph of distance (x) vs time value (t).

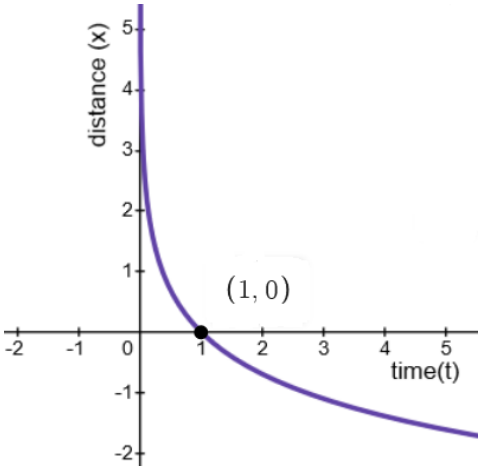

Figure 3. Graph of time value vs distance

The value of time (unit of time) can fluctuate between 0 and 1 in the real universe. In the universe, there would be a reference point of gravitation or strong electromagnetic force. This reference point slows down the passage of time around itself in non-Euclidean spaces. The density of time value around this reference point may change by distance from the reference point and the folding which occur in space. Therefore, when the distance varies between zero and infinity, the time value would change between 1 and 0 respectively. At the reference point (zero distance), the time value is 1 this means that the passage of time would stop. However, at infinite distance, the time value approaches 0, this means the maximum passage of time. In the real universe, there is no negative distance, therefore we do not have a negative value of time too as is shown in Fig 3. If the value of time increases from 1 to infinity, the distance decreases from zero to $-\infty$ which is not possible in our domain of knowledge at this time.

This hypothesis shows that the time value is not just a function of speed, but also it depends on the location with respect to the reference point (a strong gravitational point) and folding pattern of the space. Therefore:

$$Time\ value = f(v.x.\delta)$$

Where, v, x, and δ refer to speed, distance, and folding entities.

Many documented pieces of evidence claim that there is an expansion of the universe [25]. However, this hypothesis, shows also that there might be a general expansion of the universe because, by time, the universe is growing via nothingness through the wall of conversion. This expansion involves both space and mass (or equivalent energy) this kind of expansion will continue until the dynamic equilibrium can reach across the wall of conversion. I call this expansion a *General Expansion* of the universe. However, there are *Local Expansion and contraction* of energy and mass into the universe that is nothing to do with the general expansion. The local expansion is the supernova of a star and local contraction is the creation of a black hole somewhere in space. The local contraction and expansion occur simultaneously such that the net local volume changes would be zero. Let define them by mathematical conceptions:

$$\frac{dV_{Le}}{dt} = partial\ local\ expansion\ of\ the\ universe \quad (3)$$

$$-\frac{dV_{Lc}}{dt} = partial\ Local\ contraction\ of\ the\ universe \quad (4)$$

$$The\ total\ local\ expansion\ of\ the\ universe = \frac{dV}{dt} = \frac{dV_{Le}}{dt} - \frac{dV_{Lc}}{dt} = 0 \quad (5)$$

Where V, V_{Le} and V_{Lc} denote the total local volume change of the universe, local expansion volume, and local contraction volume respectively.

The fact is that the whole universe is pure energy, however, the story is that energy, in general, has two extremes; one end is very highly contracted energy called a black hole and the other end is extremely diluted energy called nothingness or concept. Between these two extremes, the equivalence of mass and energy occurs in which the universe is included Fig 4. If we describe the super universe base on the densities using the basic formula of density, then we could have the following expression for the density of black hole:

$$d = \frac{m}{v} \approx \infty\ (if\ v \to 0)$$

And for density of nothingness we could have:

$$d = \frac{m}{v} \approx 0\ (if\ v \to \infty)$$

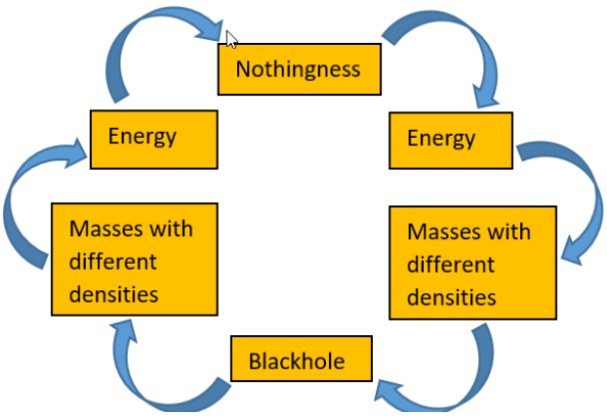

Figure 4. Super universe, conversion of nothingness into black hole and vice versa

4. Conclusions

The super universe (universe and nothingness) is very complex and vague. However, its principles, laws, and regulations are very precise and complete. Everything in the super universe has its beginning and end. Nothing lasts forever but because of endless repetition of the birth and death of the super universe entities, the total super universe, in general, lasts forever. In this endless endeavour, *identical creations are forbidden.*

Our mathematics is not perfect and sufficient for handling nothingness. The basic principles of our math are based on what we observe and what kind of variables we have. Our math is made for handling the sensible things, what we can see, or what we can measure and it is made for universal entities. Due to the nature of nothingness, we should design and make principles of new math that can handle strange concepts such as nothingness.

The *principle of the relevance of the oppositions* may be a basic principle of the super universe and it says that every entity is crystallized in its negative inverse state. This principle is very vast and includes both material and psychological aspects of the super universe. Our sciences and hard-working scientists tried strongly to reveal the realities of the universe, but in these great challenges, religions and religious people have been a very big barrier to the scientist's struggle by diverting the whole scenario toward their small erratic world.

The laws of the super universe are such that the creation and conversion of everything to something else are possible. For example, conversion of water into gold is possible but you should know the right technology. Our scientists defined some limitations for the universe's behaviors such as thermodynamical laws or Heisenberg's uncertainty principle and conservation of mass (energy), but this may be true for the universe but may not be true for the super universe and vice versa. I believe that you can do everything in the super universe but you should have the right knowledge and technology. Further, I believe that existence is coming out of nothingness, therefore nothingness should be everything and very valuable. It should be the soul of existence. It is nothing except thought or conception and if we could extend our knowledge of mathematics into conceptual entities, then we may be able to achieve a single mysterious formula of everything. It is very essential to say that, you cannot think about the universe without nothingness and vice versa. For any absolute scientific laws or principles, you should consider both, the universe and nothingness (super universe). It is not rational to generalize a scientific law or principle just to the universe; because it is only half of the story.

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