Astronomy and the Ultimate Culture: Elucidating the Origin of the Universe will spell the Integration of Science, Philosophy and Religion

Abed Peerally,former Pro-Vice Chancellor, University of Mauritius

"I want to know how God created this world. I am not interested in this or that phenomenon, in the spectrum of this or that element. I want to know his thoughts. The rest are details." Albert Einstein.

"God does not care about our mathematical difficulties. He integrates empirically. Albert Einstein.

The positivists have a simple solution: the world must be divided into that which we can say clearly and the rest, which we had better pass over in silence. But can anyone conceive of a more pointless philosophy, seeing that what we can say clearly amounts to next to nothing? If we omitted all that is unclear, we would probably be left with completely uninteresting and trivial tautologies".Werner Heisenberg,

"I take a positivist viewpoint that a physical theory is just a mathematical model and that it is meaningless to ask whether it corresponds to reality". Stephen Hawking,

"*The most difficult aspect of this problem is not the existence of the singularity itself, but the question of what was before the singularity . . . . This problem lies somewhere at the boundary between physics and metaphysics." Linde*

"The big bang, the most cataclysmic event we can imagine, on closer inspection appears finely orchestrated."George Smoot and Keay Davidson

Key words: origin of universe, singularity, inflation, relativity, quantum theory, philosophy/religion/science interconnection, astronomy/culture

Abstract

The world of astronomy could be at a new and pivotal crossroad. In recent decades the controversial debate on the origin of the universe in relation to the conflict among science, philosophy and religion has reached a crescendo to the extent that humanity is quite confused on how to interpret the nature of the realities of the universe. Is science an atheistic endeavor and are philosophers and prophets of religion just scientific illiterates. Astronomy, the oldest and biggest branch of Science, has been intimately linked to human culture including philosophy and religion for millennia or even longer. Advances in cosmology and astrophysics on the one hand and the natural sciences on the other hand are now producing insights which could, in the coming decade, elucidate in quite concrete scientific details how most probably our universe originated and what could be the nature of the intriguing realities of the universe such as the nature of matter, life, energy, gravity,

the mind and consciousness amongst many other riddles. This paper will show a bit of the trends in relation to mindsets on the universe and its origin and will predict that in due course we will have a new way of profoundly looking at the universe, its realities and of the place of humanity in it. This new view of our ultimate realities, when it materializes and mature, would progressively bring science, philosophy and religion under a common umbrella, spearheaded by a new Scientific Cosmological Argument.

Introduction

The five quotes, from Einstein, Heisenberg, Hawking, Linde, Smoot and Davidson following the title of this article, aptly convey the magnitude of the problems in relation to the ultimate realities of our world and which the author intends to gradually address in his work. The focus of the present paper is about the scientific understanding of the origin of the universe and about its possible impact on astronomy and human culture and it is implied that we need to develop a significantly more fundamental astronomical and cosmological concept. The colossal challenge posed in attempting to explain scientifically the origin of the universe has created, in contemporary cosmology, a melting pot of ideas and theories. A study of the history of man's interpretation of the universe shows that, throughout the ages, this interpretation has greatly influenced his views about himself, his belief or disbelief in a supernatural all powerful mind, his literary and political evolution, and has created around him various senses of purpose for his existence. However the debate between atheists and theists, firmly rooted in one's appreciation of the realities of the universe and of its manner of origin, continues unabated.

Generally speaking if we compare the views about the origin of the universe in modern times with those of ancient philosophers we find that today's concepts of experts, although firmly grounded in generally accepted but mostly speculative scientific and mathematical concepts, are basically as philosophical as those of ancient philosophers. The gist of the argument is that we are still far from being quite clear whether the universe 'just is' accidentally or has intrinsic scientific realities which would indicate a strong blend of scientific and metaphysical origin. Various contemporary concepts, sometimes mind boggling, offer little understanding for a useful and widely accepted mechanism of the origin of the universe. They range from Lemaitre's theory which paved the way to the Bing Bang concept, negative and positive energies in general terms, vacuum fluctuations, multiverses, a universe in your backyard, or universes in hidden dimensions centimeters away from your face, amongst others. These constitute simply modern philosophical approaches, couched in scientific mantle, which weakly attempt to unravel hopefully how our universe could have originated whether by design or by accident. Philosophy is a manner of reflective intellectual activity having as main aim a better appreciation of what constitutes the realities of existence and of the universe. Philosophy and religion interpret the realities of the universe while science explains them. Scientists are well versed on what constitutes solid scientific evidence. So far we have to make do with little that science can offer due to, we must admit, formidable challenges to unravel events at the earliest fraction of time during that first very beginning of creation of the universe and to the moment, if any, before that incredibly fateful instant of origin.

We may not be far from an initial tangible solution of how the universe originated and of how the universe is related to our existence in their various facets, including some of the unsolved puzzles of science such as for instance the evolution of matter and of life and the relationship if any between the quantum microscale and the macrostructure of the universe. Astronomy as the oldest intellectual cosmic culture of mankind is intimately linked to man's speculation about the mysteries of the cosmos, a deeper appreciation of which would have an enormous beneficial impact on the how we view the universe, ourselves and planet Earth.

The origin of the universe has been basically related to some act of creation or to an eternal existence. Starting from the Greek period down to modern times man's views evolved from a generally blind acceptance of a supernatural act of creation according to mythological or religious beliefs to a modern scientific notion of infinite universes leaving our own universe as a mere statistical and accidental event popping out from practically nothing, a view propagated by various authors in contemporary modern times.

Earlier the era of scientific reflection, starting as from the 17th century, brought about a decisive turning point in man's spiritual perception for we saw the development of a materialism which became a serious challenge to traditional religious observance. Subsequently the early parts of the 20th century were confronted with a dramatic new way of seeing reality based on quantum theory. Gradually the nature of the universe in terms of quantum and relativity concepts became significantly enlightened through the work of some of several key scientists (Young, 1802, 1804;Planck,1900, 1901; Einstein, 1905, 1916a, 1916b, 1917; Bohr 1913, 1935; Heisenberg,1927, 1958); de Sitter, 1917; Friedman, 1922; Dirac, 1928; Einstein, Podolsky and Rosen, 1935; Schrodinger, 1926, 1935;Hubble, 1929; Bell, 1964; Hawking and Ellis,1975: Peerally, 2008) and many others. That space and time are not absolute separate entities were done away with Einstein's relativity theories. Henceforth relative space/time replaced the old notion of absolute space and time. Peerally(2008) added a new concept of the universality of relativistic effects for massive objects in Keplerian orbits with a proportionality of 1:2 between special and general relativity. Quantum theory, strongly supported by Bohr, Heisenberg and Planck, introduced the notions of mystery, unpredictability and indeterminism in science, an approach which clashed with Einstein's vision of an eventually explainable, predictable and deterministic universe. These two views, deterministic or indeterministic, have remained a dispute up to now, but the indeterminism concept appears to win the debate. Strangely enough Einstein was one of the pioneers of quantum theory which heralds that an unpredictable nature characterizes our microscale structure of the universe but he quite adamantly hesitated to accept it.

Our limited comprehension of the nature of the infinitely minute singularity which led to the cosmic inflation and expansion in the Big Bang Theory, has resulted in a fertile speculative ground for modern writers to propose a wide range of theories on the origin of the universe, some arguing in favour of a singularity and others strongly opposing it in disbelief proposing instead equally incredulous alternatives. The more modern hypotheses, as alternatives to the Big Bang theory, are for instance those of, Alan Ruth (creating a universe in your laboratory or in your backyard, 1981, 1982, 1995,1998), Linde (chaotic inflation, 1982, 1983,1984), Martin Rees (multiverses, 2007, 2009), Bojowald (cosmic bounces, 2007, 2008) and others. The whole situation is far from scientifically and philosophically clear so that it is opportune to wrap up the

gist of the debate. The lacuna created by this state of affairs encourages hectic debates between the atheists and the theists.

There are, in the scientific literature, some reliable notions in broad terms, of the origin of the universe, particularly arising from Einstein's general relativity such as time frame, the possibility of inflation and subsequent continuing expansion. However the quantum basis of gravitational attraction and of the Big Bang singularity, a very critical consideration in this scientific riddle, cannot be resolved using current theories. This paper will hopefully arouse additional interest towards a more scientific approach to unraveling how the universe came up some 13.7 billion years ago in a manner which should encompass the nature of the various realities of the universe.

Since the beginning of the scientific era in the 17^{th} century we have seen how an intellectual conflict has been, by and large, the most prevalent phenomena characterizing the relationship between religion and science. Dialogue and integration have up to now been looked upon as two beneficial interactive processes of how the human intellect is potentially capable of bridging science and religion. From a look at the available literature it appears that such an ambition is yet to become healthy reality. This is largely due to the notion that religion and science are duplicating the same fundamental goals of understanding the world and that only one is the necessary eternal reality, and clearly the most common claim is that religion would eventually disappear as humanity evolves more and more intellectually and scientifically. In a gist it strongly implies that only an extreme kind if materialism and positivism would eventually prevail. Nothing can be a more unfortunate fate for humanity. The reason being that currently, but not necessarily forever, science is meant to provide the material explanation of things while religion gives the spiritual explanation. There are many who, understandably, believe that these apparently incompatible features, spirituality and scientific materialism, are inextricably and mutually exclusive concepts and could never integrate. However it is well documented that quantum physical realities are mysterious and indicate realities beyond the current comprehension of science and may actually remain so forever, albeit in a better understood way. Science and religion could ultimately deal with both material and spiritual matters and these two disparate disciplines would become mutually intelligible and in some ways would merge into a new way of thinking. Consequently Philosophy would thrive anew in a grand modern fashion.

There is hope for a new interpretation of cosmological phenomena based on scientifically coherent arguments, especially with respect to the integration of quantum mechanics with the large scale appreciation of the universe. If successful, which is not unlikely, such a development will be the springboard of a new era of culture for astronomy and cosmology by disentangling humanity from the current science/religion conflict. Hopefully a new acceptable cosmological interpretation would, in retrospect, materialize Einstein's dream of reading the ultimate mind on how the universe came into existence to better understand the role of humanity and of consciousness, of energy and matter in the universe.

Astronomy sparks the imagination of people. The sheer mysterious marvel of the complexity and magnitude of the universe, if its origin can be attributed to some universal scientific notions, could catalyze a new astronomy culture. In spite of the scientific deadlock in terms of understanding the initial moments of the origin of the universe, there is hope of new dramatic findings. While it was strongly believed that Einstein's theories were an end to themselves the

author was able to show the occurrence of a new universal law of proportionality of relativistic effects (Peerally, 2008). We will in due course produce concepts of cosmology based on a quantum integration of special relativity and general relativity to show the road ahead for new vision of the universe. That fits in with the declaration of the International Astronomical Union Strategic Plan 2010-2020 as follows: *"Astronomy (IYA) 2009, which commemorates 400 years since Galileo first turned a telescope to the sky to make fundamental discoveries that changed people's perceptions of the Universe, has motivated the IAU to commit even more ambitious programs of educating the world to the beauty of the Universe and the sense of common humanity that derives from it"*.

A profound scientifically based philosophy of astronomical knowledge which gathers public support could sprout a less materialistic scientific culture, rather than perpetuating a permanently speculative affair as much of astrophysics and cosmology is presently(Markus. The STOQ project created by Pope John Paul II established in 2003 and the Templeton Foundation aim at promoting constructive dialogue between theology, philosophy and the sciences. In due course one could realize that Einstein's desire to understand God's mind was not a vain hope.

Science, theology and philosophy

The manner philosophers, theologians and scientists have viewed the origin of the universe has shown a dramatic evolution since Plato and Aristotle popularized their observation on the nature of the universe.

Plato (429-347 BCE), based on a discovery of Parmenides(born 515 BCE) that all only five shapes(triangles, squares, hexagon, octahedron and dodecahedron) exist whose sides are regular polygons, believed that the atoms of matter were produced by these five shapes. Thus the composition of air, water, fire and earth could thus be explained. The fifth of Plato's five elements of matter, was subsequently identified by Aristotle(384-322 BCE) as the ether, composed of dodecahedronal atoms. Plato's dodecahedron recently inspired a dodecahedronal universe (Luminet et al., 2003). In the view of Plato and other Greek philosophers of that early first millennium, the universe must have an infinite existence for that was compatible with their philosophy of absolute perfection. Later natural theologians preached that the universe was caused to exist through an act of creation by a cause. The most documented and authoritative references are those of Al-Ghazali(A.D. 1058-1111) and Thomas Aquinas(AD 1225-1274).

However consistent and progressive development of modern science in relation to the realities of the universe occurred since the 17th century after Isaac Newton published his *Philosophiae Naturalis Principia Mathematica* in 1687. Several other scientists, often well versed in philosophy, of the period made significant advances: Robert Hooke (1635-1703), Johannes Kepler(1571-1630), Galileo Galilei (1564-1642), Pascal and others. Francis Bacon (1561-1626), Rene Descartes (1596-1650), Wilhelm Leibniz (1646-1716) and Samuel Clarke(1675-1729). Their philosophical and scientific contributions inevitably affected religious thoughts especially in the appearance of positive atheism and of the latter's impact on science/religion interconnection.

From the 17th to the present time science/religion debate has been characterized by conflicts and independence. Religion has always been a matter of pure faith where believers have to follow suit or run the risk of being branded as indifferent or sinful. On the other hand a scientific notion of reality is what emanates from theories and experiments. Professor J. Polkinghorne(2003, 2007a, 2007b), (Templeton Prize, 2002), renowned British particle physicist and theologian, described the relation between science and religion as having the following interactions:

- Conflict when a take-over bid is attempted by either over the legitimate concerns of the other
- Independence, each is entitled to be regarded as an independent form of enquiry.
- Dialogue, in which both can benefit through constructive interaction.
- Integration, where matters of common interests can be unified into a single common concept of enquiry.

Dialogue and integration could apparently be beneficial interactive processes of the human intellect potentially capable of bridging science and religion. From a look at the available literature it appears that such an ambition is yet to become reality in relation to both the micro and large scale structure of our universe.

The philosophical literature on the natural and supernatural origin of the universe (Craig, 1979, 1997; Mackie, 1982; Koons, 1997; Davies 1984,1988, 2000; Ellis, 1993), is voluminous and intellectually significant. The belief based on a supernatural origin, is supported by an impressive list of eminent cosmologists, astronomers, astronauts and Nobel Laureates who have often instinctively, attributed a superior intellect to the unbelievable orderliness and perfect mathematics inherent in the nature of the universe. On the other hand there are various scientists who have argued in favour of a natural origin. The concepts of Carl Sagan described in 'Cosmos'(1980), S. Hawking (1988), and of Paul Davies(1988), believe in a universe which is 'just is', without any previous temporal or atemporal history of any kind.

The Cosmological Argument

For three millennia there has existed and there continues to exist a powerful debate on the moment of creation of the universe if any. The reasoning behind this philosophy reached a climax when two natural theologians, Al-Ghazali (A.D. 1058-1111) and Thomas Aquinas (A.D. 1225-1274) fully developed what is called the Cosmological Argument. Al-Ghazali's cosmological argument relies on the fact that every being which begins has a cause for its coming into existence. Therefore the universe must have had a beginning at a finite moment in time. The reasoning was that an infinite series of events into the past was not possible for the present would not have come. This concept has been revisited and popularized by the American philosopher William Lane Craig(1979, 1997)as " The Kalam Cosmological Argument". As Craig pointed out, if there was an infinite series of events in the universe how could we have 'today'. Since such an infinite scenario was impossible, for an event to begin there must have been a cause, one can conclude the universe, an event, had a time in the past when it was created through a cause.

Thomas Aquinas' Cosmological Argument is based on the absolute existence of an "unmoved mover" of motion. Since the universe started in a state of motion, there must have been a mover

from an outside dimension to set it in motion. That was the "unmoved mover", a supernatural force. These early thoughts in retrospect were very profound and valid ideas which thinkers and philosophers are capable of but such interpretation requires scientific support, a typical example of how science and religion could be catalyzed into a common debate.

Clearly the power to create a universe must be out of proportion with what the human imagination can possibly visualize. As George Ellis (1993), Templeton Laureate, said: "To *make sense of this view (design as opposed to accident), one must accept the idea of transcendence: that the Designer exists in a totally different order of reality or being, not restrained within the bounds of the Universe itself."* The notion of transcendence implies the possibility of having, as Aquinas proposed, an unmoved mover, if the universe started through an unknown mover, that was equivalent to having creation with a cause by an uncaused cause. Here obviously the uncaused cause means a supernatural force which the author of the present article would call the "mind" behind the universe. The Cosmological Argument was also supported and enlightened by such great thinkers like Wilhelm Leibniz (1646-1716) and Samuel Clarke(1675-1729).

In the foregoing discussion we have seen that the cosmological arguments of Al-Ghazali and Thomas Aquinas, during the period of the 11 to the 13th century, and as subsequently argued by Craig, in the 20th century, strongly support the thesis of a finite universe similar to what is indicated from modern scientific work influenced by Einstein's general relativity theory mainly. This suggests that our present knowledge of the nature and origin of the universe historically started from a substantial combination of theological, philosophical and scientific concepts.

The evolution of our scientific knowledge of the origin of the universe

The historical scientific evolution of ideas relating to the origin of the universe can be seen to consist of two broad periods: the first from the 10th century starting with Al-Haytham up to the second half of the 20th century with the establishment of the Big Bang theory as a credible idea of the origin of the universe; the second starting late 20th century up to the present time which has seen the development of various alternatives to the big bang.

The earlier scientific period

Our present state of modern science, unfortunately, has had a relatively brief historical period of development, spanning just over eleven centuries if we regard Ibn al-Haytham as the initiator of the scientific method of investigation. Richard Powers(1999) has praised al-Haytham extraordinary scientific methods and influential ideas. Al-Haytham is credited with evolving the first notion of inertia which was later further developed by Descartes and Newton. In addition to Al-Haytham, Galilei Galileo(1564-1652) is recognized as being the father of modern observational astronomy, father of physics and father of modern science. Descartes (1596-1650), another great mind of that early period, is particularly recognized for his laws of motion, which must have influenced Newton. A profound appreciation about the deep nature of the universe was Descartes' intriguing belief of the universal conservation of the quantity of motion as one of the fundamental governing principles of the entire cosmos since its origin. Of much philosophical and possibly cosmological interest is Descartes famous statement: *Cogito, ergo sum*: I think, therefore I exist.

In addition to Descartes, Galileo and others, another great scientist of the period was Borelli (1608-1679), who made several important researches in astronomy. Not only did he observe that comets follow a parabolic path he also observed Jupiter's satellites during which he reflected on their orbits. As a result Borelli postulated that a centripetal tendendy of orbiting attracted them towards the body around which they orbit and that this centripetal force was balanced by a centrifugal force. The balance of these forces was realized by Borelli as the reason which kept the satellites in a regular path in their orbits. These ideas could have influenced Newton who actually acknowledged Borelli's work in his Principia.

Newton (1642-1726) is recognized as one of the most influential scientists who ever lived. His accomplishments in theoretical astronomy, physics and mathematics have left a permanent imprint in scientific books and encyclopedia all over the world. Newton's monumental work on motion and gravitation has led to his being regarded as one of the greatest scientific giants. His laws of motion, along with the work of his contemporary scientists and philosophers constitute the basis of the coining of the term Classical Mechanics from its precursor, Newtonian Mechanics. A lot of the mathematical concepts and methods were invented by Newton and his predecessors and contemporaries. A particularly deep reflection of Newton was made in a letter he wrote to Bentley in 1682 as follows: *That on body may act upon another at a distance through a vacuum without the mediation of anything else, by and through which their action and force may be conveyed from one another, is to me so great an absurdity that, I believe, no man who has in philosophic matters a competent faculty of thinking could ever fall into it".* The so called force of gravity has to this day remained a scientific puzzle in terms of its physical quantum reality. The quantitative approach of Newton based on his force of gravity, he believed, could also govern the motions of stars and planets, which was rejected by Descartes who believed in a non-mathematical model consisting of vortices of cosmic matter. To Descartes the invisible force of gravity was an occult phenomenon, hidden from human senses. Though Descartes was generally accepted within the 17^{th} century conception, his vortex notion fell in disrepute in the 18^{th} century and Newton's mathematical models moved from success to success. However Descartes' view of gravity illustrates the mystical nature of a phenomenon yet to be elucidated. While to Newton there was in the manifestations of heavenly orderliness a sign of divine perfection and will, there were those who criticized his work as a destabilizing philosophy for religion and philosophy.

In terms of hypotheses put forward in the 18^{th} century relating to the universe are those also of Kant, which made such an impact, that for over a century astronomers were either Kantians or Laplacians. Kant's hypotheses were related to nebulae. The first Nebular Hypothesis reasoned that diffuse nebulae, made up of gas and dust, would in the course of time collapse under the force of gravity. They consequently start to spin and flatten into a disk that would then produce planets and stars. It was Laplace who turned the hypothesis into a mathematical theory. Interestingly both Kant and Laplace were proved correct. It was Kant's second hypothesis that created a huge debate for nearly a century. After Thomas Wright in 1750 proposed that the Milky Way was itself a spinning disk, Kant imagined that the spiral nebulae were in fact external galaxies themselves, outside the Milky Way. In fact this astronomical imagination of Kant eventually proved to have been a correct guess. The difficulty of verifying these hypotheses was

mainly then due to technological know-how, for without spectroscopy it was not possible to see the three dimensional large scale distribution of celestial bodies.

It was gradually realized, contrary to Newton's philosophy that cosmic orderliness was a manifestation of divine will, that the stability of planets in the solar system could also be contemplated as being due to gravity in a purely mechanistic explanation so that a divine power was not required to explain the orderliness of the heavenly bodies. As a result it started to dawn on the mind of people that science started to pose as a rival to religion, in the sense that now people could turn to a new source of knowledge, scientific knowledge, for understanding the truth about the universe and cosmological phenomena. The theological rhetoric that various manifestations were the work of a supernatural power was becoming less and less acceptable to some groups of people, philosophers, writers and scientists.

The nature of the universe as an infinite static one was beginning to attract some questioning especially from Loys de Cheseaux(1718-1751), a Swiss astronomer. He studied nebulae and discovered several and was among the first to remark that if the universe is infinite, then the night sky would be bright, a notion later to be called Olbers' paradox.

The 18th century scientific and cosmological revolution catalyzed a literary, theological and political reassessment that would express itself in the following century accentuated by further and sometimes dramatic new scientific knowledge.

The period of the 19th century

On the other hand a significant revolution took place in the 19th century, where the applications of mathematics, chemistry and physics to astronomy led to a better understanding of the composition and origin of the universe. Fundamental discoveries were made, including all the planets and satellites of our solar system. The application of instrumentation like photography and spectroscopy and improved telescopes made possible the study of the chemical composition of the sun and stars. Astrophysics began to develop into a new scientific field, for astronomers were now able to map and know the nature of stars and other cosmological bodies and photographed them as well. It became possible also to start to realize that there could be different kinds of nebulae. The century also saw dramatic new perceptions of the origin of species, including the natural evolution of man from primates, and the manner characters are transmitted from generation to generation. The realization that man could have originated from apes together with the general belief in an infinite static universe provided the 19th century with the basic ingredients for fostering atheism and the unquestionable natural origin of man and of the universe.

Maxwell's theory and studies of electromagnetic radiation, together with the work of Faraday, were crucial in giving a new interpretation to energy and magnetism. It was then widely believed that there was an'ether' in the universe which was a propagating medium for light. In 1878 Michelson conducted an experiment to investigate the influence of the ether and of the earth's rotation on the speed of light. The result was reported in 1881 with the conclusion that the hypothesis of stationary ether was incorrect. With significantly improved experimental procedures Michelson and Morley did the measurement again in 1887 with the same negative

result for an 'ether', which led to the discovery of the constancy of the speed of light, one of the pillars of Einstein's theories of relativity.

Another genius of the period was Boltzmann who was a protagonist of the atomic theory of the matter while the period was dominated by energetics, a concept which held energy as the fundamental physical unity. Boltzmann came up with the concept of a kinetic energy theory strongly linked with an atomic theory while opponents to the atomic theory included powerful intellectuals like Ernst Mach(1838-1916). Boltzmann (1844-1906) proposed one of the first rudimentary representations of the atomic orbital overlap diagrams. Referring to the then known dissociation of molecular iodine vapour into atoms, he speculated the presence of 'sensitive regions' on or inside atoms which allow them to associate into molecules. Boltzmann in his kinetic energy theory also developed ideas of entropy law or disorder law. He argued that the second law of thermodynamics was one of increasing disorder basing himself on colliding particles in a gas for he concluded that in a world of colliding particles, the disordered states are the most probable.

The second law of thermodynamics thus introduced strong barriers in the concept of a static universe. However the notion of an infinite static universe which was conceived by the early Greek philosophers continued to be generally accepted.

Of all the sciences undoubtedly cosmology and astronomy, in view of their ethereal nature and mental proximity with the divine consciousness and heavenly phenomena and beliefs of the unknown, would have lasting impressions on scientists, writers, philosophers, poets and theologians, and eventually on social systems and politics. Thus during the Romantic Period (1800-1840) writers and poets reacted against the domination of new scientific findings particularly astronomical and cosmological hypotheses of the 18th century, which, like a tidal wave, had an inexorable impact on what was previously a blind belief in the central position occupied by humanity in the universe and in an all-powerful Deity. The new reality, resulting from science, was considered as a tangible materialism and rationalism which was dragging people away from a more fundamental religious allegiance. That period of materialism and rationalism was the period of positivism where only strictly provable science was useful.

The period of the 20th Century

Strange as it may seem, considering where cosmology and astronomy are today, at the beginning of the 20th century, science was still in a state of infancy. By 1905 cosmology and physics had two conflicting and problematic concepts, one at the macro dimension of the universe where we have stars, planets and nebulae, amongst others and the other, where the realities are waves and particles at the micro dimension. These were problematic because at that early beginning of the 20th century many areas of physics and cosmology were just beginning to be understood and they were nearly all at the frontiers of knowledge. The evolution of the atomic theory aptly illustrates this surprising fact. The atomic theory, which states that matter is composed of indivisible discrete ultimate units called atoms, had been a concept, in natural philosophy for thousands of years, in ancient India and Greece. It remained practically the same conceptual idea until the beginning of the 20th century when it started to be unraveled within mainstream scientific thoughts, in spite of the fact that Dalton stated the first truly scientific atomic theory in

the first decade of the 19th century. He formulated the concept that each chemical element is composed of atoms of a unique type which can combine to form complex substances. The atomic theory was not then accepted by the whole scientific community. By the end of the 19th century Boltzmann, one of the most ardent advocate of the atomic theory, postulated a kinetic theory of gases which strongly postulated the reality of atoms and molecules, but many of his colleagues like Ernst Mach, and Wilhelm Oswald, were against their existence. Actually there was then another school of thought which believed that all physical phenomena and behavior was ultimately the effect of a continuous electromagnetic state. This movement continued around 1900 with the strong opposition of the supporters of the concept of pure thermodynamics. That was how the 20th century started the beginning of modern scientific evolution. In 1909 Planck wrote a paper defending the atomic theory and pointed out the importance of physical constants like the gravitational constant and the existence of other such constants which were independent of the human mind. In 1910 Mach responded and again showed his opposition to atomic theory. Actually it was Einstein who, in 1905 published a paper on Brownian motion which was an experimental verification of the kinetic theory. The scientific importance of the theory was two-fold. First it provided experimental support of the occurrence of molecules in the liquid causing the motion of the pollen grains, but more importantly it confirmed the Boltzmann's kinetic theory account of the 2nd law of thermodynamics as an essentially statistical law. The idea of matter being made of particles went even further when Einstein's 1905 photoelectric effect paper described light as bundles or quanta of energy later to be called photons, a term coined by Gilbert Lewis(1926), so that even light behaves as a particle in addition to its wave nature.

Maxwell and Morley failed attempt to obtain experimental evidence of a permeating ether in the universe was dealt a death blow by Einstein in his 1905 paper on special relativity where he argued for the occurrence of a speed of light constituting a universal constant and of a space-time where the two together was a combined reality, and not separate parameters. This is a just one clear example of the frontiers of science moving forward at the beginning of the 20th century. By 1915 Einstein extended his special relativity to the general relativity to include Newtonian gravitation and a space-time involving gravitation. When Einstein realized that his theory of general relativity produced a universe that could either expand or contract, he was disturbed as the fashion of the period was a static infinite universe and to make his theory more plausible he introduced a cosmological factor that would counteract the attractive force of gravity by an anti-gravitation phenomenon. This modified version of his general theory was actually to eliminate totally the existence of any remnant of Newtonian absolute distance and time and also because it was compatible with Einstein adherence to the Mach's Principle, i.e. space time was the resultant of the effect of matter. The factor he inserted in his theory was basically equivalent to a vacuum energy density and could be put either on the right or left side of his equation. He thus missed the golden opportunity to predict an expanding universe, but in retrospect it is true that it was not then possible to make such a prediction, in view of the muddled state of knowledge about the universe. Einstein's cosmological constant led to a static universe and his 1917 paper emphasized that the cosmological constant was important to produce a closed static universe.

For example round about that time, strangely enough, cosmologists were still arguing on the macro scale structure of the universe in two opposing schools of thought: the Kantians and the Laplacians. The former believed in a universe with many galaxies while the Laplacians conceived of a universe of a single galaxy with the earth playing a role of some predominance

with our sun at the centre of that galaxy. What had been seen as a multitude of galaxies by the Kantians were interpreted by the Laplacians as just dusty clouds except the single galaxy of our cosmic system. This dilemma was eternalized by the debate on the two schools of thought between H. Shapley and H. D. Curtis, at the National Academy of Sciences, in the USA, and which became known as 'The Great Debate' on 26th April 1920. Shapley believed in a single large galaxy universe with the sun far from the centre, while Curtis defended a many galaxy universe with the sun at the centre of our small galaxy.

The big bang theory

Before the Big Bang model of the universe became an established theory, the universe was thought to be infinite and eternal. In1916 when Einstein put forward his Theory of General Relativity, the belief in an eternal infinite universe was so prevalent that when he found his theory would produce a universe that could expand, he inserted a cosmological constant in his equation in order to stabilize it to produce a static universe. This episode in Einstein's work has been well documented by W. Jansen (1998). He described correspondences between De Sitter and Einstein starting from 1916. They agreed that that the model of the universe in Einstein's general relativity had a remnant of Newtonian absolute space and time due to the occurrence of boundary conditions in an infinite universe. Einstein subsequently came up with the notion that there could be distant masses near the boundary which could influence space time there to which De Sitter objected sharply. Subsequently in 1917 Einstein came back to Sitter with a new idea, that of abandoning a static infinite universe by introducing his Cosmological Constant simply by removing the infinity element to produce a closed universe. The cosmological constant was introduced (Einstein, 1917) into Einstein's field equations in order to make the universe static and finite. The factor was meant to be a vacuum energy density, in other words one where nothing would happen, such as contraction or expansion of the universe, thereby giving a static universe. However, the cosmological constant was in 1931 modified by Einstein to give the universe a finite expanding nature.

When Hubble's research and the Lemaitre- Friedman model revealed that the universe was expanding as time moved forward then questions were put as to the past history of the universe. Therefore extrapolating the expanding universe backwards through time would produce in the very distant past a progressively smaller universe until we reach a point structure of infinite mass and infinite energy. The expansion of this point mass would eventually produce the universe as we know it now. The interpretation of this model was that the universe has existed for a finite time and was created out of nothing just before the big bang, or more of less along these lines.

To many scientists and non-scientists it is hard to believe, as indicated by Lemaitre's Cosmic Egg concept, how the Planck's density of at least 5.1 x 10 power 96 Kg/m cube, which represents our whole universe could be compacted into a space with the size of an atomic nucleus. This represents 10 power 23 solar masses packed into the volume of one atomic nucleus. The cosmic egg singularity in the modern concept of singularity has also been represented as an infinitely dense singularity with zero volume, zero curvature and with infinite energy, and some authors have argued it would be very hard if not impossible to explain how the universe could be produced from such an incredibly infinitesimal initial condition. This has been used as strong arguments for claiming that science cannot explain creation ex nihilo and

therefore there could not have been a supernatural power to cause the beginning of the universe. Accordingly the universe just popped out into existence from nothing.

Scientific theories, on the basis of which various researchers have been developing their origin of universe concept, invoking cosmic egg, singularities, positive and negative energies, vacuum fluctuation(Tryon, 1973), negative gravity energy and positive matter energy, and from nothing (Vilenkin, 1982), have in the final analysis ignored important scientific facts such as the law of conservation of energy, and elusive issues relating to quantum theory and matters like consciousness. All of these concepts could be very good mathematical models, Extrapolating from them the origin of the realities of the universe could be very misleading. How can we know for certain that a singularity with or without a crucial boundary of space time should be what was definitely present to initiate the big bang scenario? Could there not have been another scenario with real time to initiate the big bang? How do we know for sure that general relativity, which correctly applies to the macro structure of the universe, cannot explain the moment of earliest origin of the universe and cannot be transformed with additional reasoning into a quantum gravitation theory? There are reasons to speculate that it is possible to integrate within general relativity a theory of quantum gravity and such a theory could then be used to describe in some details how the universe was possibly created. There would then ensue various approaches to explain the mysteries of quantum theory and those of the realities of existence.

The difficulties created by our inability so far to resolve the conceptual problems associated with a singularity of infinite density, infinite energy, infinite heat and infinite size and zero volume, arising ex nihilo have opened the doors to disbelief. This in turn has motivated several authors to speculate on other theories of the origin of the universe, many of which seem to suggest that a universe, or universes or an infinite number of universes arise ex nihilo easily. Several eminent scientists have taken a statistical or probabilistic attitude to the origin of the universe because of the anthropic belief ingrained into their theories. Thus they imply that a universe like ours with its living creatures and particularly man is such an improbable possibility that this could only have happened if we have an infinite number of universes. Strangely and paradoxically enough the author takes the view that even an infinite number of random universes would not be able to produce a universe like ours, if that depends only on chance phenomena.

One would expect that the emergence of our universe through the mediation of a mystical singularity, although taken seriously, was over the years sort of set aside. The main explanation was the difficulty of understanding by the scientific community how a singularity with the mass of our universe compressed into an infinite size could have originated according to some, ex nihilo, and according to others, from an unknown source of some unknown kind of energy. This is quite understandable and the inability of cosmologists and physicist to find an adequate theory became intolerable. However the possibility of our universe having had another origin than the one suggested by the big bang theory became irresistible to several scientists who started to speculate of other scenarios of the origin of matter and life was brought in to make the accounts of origin somehow more anthropic. However that produced, in some of the new theories, a scientifically major departure from the line of thought which led to the big bang notion, an observation worth noting, for the context of the emergence of the big bang theory is a scientifically extraordinary story. On the other hand most of the big bang theories, like

multiverse, infinite universes, metaverse, bouncing universes, inflationary universe with infinite budding off of new universes, a universe in your backyard for example, are non-falsifiable theories, and are not strictly speaking scientific, for you they are not theories which can be modified by using scientific arguments. The two scientific theories are the big bang and the steady state theories, and as of date the big bang remains the most acceptable version of how the universe originated.

However the Big Bang has, over the decades, due to its inherent implication of a finite creation of the universe, been rated as philosophically acceptable. Big Bang according to Hubert Reeves rests on a metaphysical connotation which may be either appealing or revolting. Thus John Maddox, a former Editor of the science journal Nature, wrote an editorial in 1989, describing the theory as philosophically unacceptable, for theological creationists find sufficient justification for their theist creed in it. On the other hand Emeritus Professor Christopher Isham of Imperial College, believes that theories which challenge the Big Bang finite universe model have been tenaciously advanced in a manner which far exceeded their intrinsic worth.

Steady state theory

The Lemaitre's cosmic egg and the Big Bang singularity had a strong tinge of a supernatural origin and found its way well into the 20^{th} century as an acceptable theory of the origin of the universe. The Steady State Model of Gold and Bondi (1948) and Hoyle(1948) proclaimed an infinite universe in time and space which otherwise would possess the same physical parameters of our universe in terms of homogeinity and isotropy. New matter in the universe would arise and would balance the continuous availability of negative energy thus explaining the existence of an expanding universe which maintains its density and the steady state of an infinite universe.

The state of scientific and cosmological knowledge was such in the 50s and 60s that the predictions of the Steady State theory had to be verified. Two such predictions were the unchanging nature of the universe over time and the second the requirement for new hydrogen and deuterium being continuously produced to form the new matter. When put to the test, the postulate that our universe is static as against the non-static universe of the big bang model the Steady State model failed quite miserably. No evidence could be obtained to prove that new hydrogen and deuterium as required by the quantitative prediction of the theory is actually being formed. The non-static nature of our universe predicted by the big bang model was further supported by the fact that new heavy elements were continuously being added from the activities of supernovae. Further non-static evidence was provided by the evolution of galaxies during cosmological history such as the occurrence of unusually shaped galaxies in earlier times of history than in more recent times. Due to lack of cosmological evidence the Steady State Theory lost most of its adherents as from the late 60s, particularly with the demonstration of the occurrence of the cosmic microwave background radiation which dealt a death blow to the theory. The CMBR was a prediction of the big bang concept to the effect that the universe had been actively evolving rather than being unchanging and static over time. The CMBR has been a product of the very early phase of inflation of the big bang and not a continuous cosmic activity originating from ancient stars and subsequently progressively dispersed by cosmic dusts. Finally another observation discrediting the notion of a universe being invariant with time was that quasars and radio galaxies which have not been seen in near galaxies had been detected only in

very far away regions of the distant past. The declining fate of the Steady State theory was met with attempts to modernize its concepts to prevent it from disappearing into oblivion. Thus in 1993 Hoyle, Burbidge and Narlikar resuscitated the theory by inserting the notion of minibangs or little bangs but the new Quasi-steady state version of the theory has not incited any significant positive impression and is not likely to do so. In spite of the negative outcome of the Steady State model, its progressive loss of support is actually a great plus for it. Only a theory which had had a good support in the past would take decades to lose its glamour for it must have made sense to a range of good scientists. It was instrumental, because of its clear cut predictions, in catalyzing cosmologists to undertake research on matters like the homogeneity and isotropism of the cosmos. It was in the light of research and scientific reasoning that the Steady State model gradually lost its appeal. One can therefore regard Fred Hoyle's theory as being a worthwhile attempt to understand the origin of the universe.

Carl Sagan: The Universe "just is"

Carl Sagan(1934-1996), famous science writer is clear about the nature of the universe and his famous quote on this puzzle as follows: "The Cosmos is all that is or ever was or ever will be", (Sagan, Cosmos, 1980) reflects a lot of his notion of the universe, which he felt was beyond human comprehension as can be seen in the following quote again from his book Cosmos: *" The size and age of the Cosmos are beyond ordinary human understanding…….In a few millennia we have made the most astonishing and unexpected discoveries about the Cosmos and our place within it, explorations that are exhilarating to consider. They remind us that humans have evolved to wonder, that understanding is a joy, that knowledge is prerequisite to survival."* However he did say also that while some scientists when confronted with new scientific evidence contrary to those held by them do admit they were wrong and would never again repeat the same mistake, a similar attitude is not usual in religion and philosophy. He has also been reported to say that the existence of a creator of the universe would be impossible to substantiate if the universe is proved to be eternal.

Parallel Universes, Multiverses Theory

Martin Rees(2009), a powerful proponent of the theory of Infinite universes or multiverse, remarked, *"Our big bang may not be the only one. An option to consider is brane worlds- many universes embedded in a higher dimensional space. Bugs crawling on a large piece of paper, in their two dimensional universe, would be unaware of other bugs on a separate sheet of paper. Likewise, we would be unaware of our counterparts in another unverse only a millimeter away- if that millimeter were measured in a fourth spatial dimension- we are imprisoned in just three.*"

He is perplexed by the incredible fine-tuning of the physical properties of the universe due to the impossibility of understanding what happened just before the big bang or at the earliest moment of the origin of the universe, he came to the realization that the universe of ours was a statistical event arising from an infinite number of similar but less successful events.

Martin Rees(2001) in his book "Our Cosmic Habitat" asks a number of pertinent questions. To start with the Prologue's title "Could God have made the world any differently" shows that

Rees thinks that God did make different universes differently for he believes that our universe would be a special possible unique one where the laws of physics we have are unique and allowed life to emerge.

It would be appropriate now to comment on Einstein's famous question about whether God had any other option for the model of universe which He created. In addition to asking that question as the title of his prologue to his book, Martin Rees also in the prologue quoted another observation of Einstein*: The most incomprehensible about the universe is that it is comprehensible*. This is actually a fabulously interesting question coming from Einstein but we have to note that Einstein did not accept the uncertainties of quantum mechanics and he had a materialistic view of the secrets of nature. We know that he was well aware that time would elucidate the secrets of nature but the truth of the matter up to now is that the biggest riddle of science is that we find the universe is very incomprehensible as Rees himself implies. Actually, in a manner of speaking, if these deep secrets behind the deep realities of the universe had been comprehensible we would have already understood quantum mechanics, quantum gravity and the nature of charges and the ultimate building blocks of matter at the most elementary levels, thereby linking the microworld with the cosmos as Rees emphasized. However reality is an entirely different kettle of fish. The inability to view the deep reality has a lot to do with the current deadlock of cosmogony and of a lot of physics and of biology, not to speak of theology. To attempt to probe into the meaning and implications of Einstein's statement about whether God had any alternatives in creating our universe, and if we believe He did create it, then looking at the micro and macro structure of the universe there appears to be the possibility of having different kinds of universes, but our universe seems to tell us that the mind behind it would be able to create different universes which would imperatively be also able to sustain intelligent beings of some kind or another, in other words orderly systems of matter and space time in a universe sustainable over time. If we fail to understand this possibility and substantiate it, then the only consequence would be a game of loto with infinite universes where hopefully one or two would sustain life as ours do. In the author's opinion no matter how many sets of infinite universes we reasonably speculate could exist without a cause, it is not possible to produce the scientific biophilic universe like ours by a process of chance and probability alone. Far too many variables and challenges have to be brought together, but other conceptual issues like what is reality, matter, and uncertainty have also to be taken on board before trying out all sorts of speculations, which nevertheless produce good reading and reflections.

Inflationary concepts

Lemaitre's expanding universe from a cosmic egg had actually implied a rapid phase of expansion in the initial early moment of creation of the universe. Later de Sitter realized that Einstein's static universe could not be correct for there was a real possibility of having an expanding universe. Decades later various authors (Guth, 1981, 1982; Linde, 1982. 1983, Vilenkin, 1983) turned these early ideas into dynamic new ways of viewing the realities of the early universe. Now generally speaking the inflation which took place during the first earliest fraction was an exponential one, which became an important topic of deep reseach and various explanations have been proposed in attempts to understand how and why that event occurred. The cosmologist Alan Guth was the first to use the term Inflation to refer to that inflationary epoch of creation. Why the inflationary epoch gave way to a slowly expanding universe is also

considered to be a mystery to the extent that a hypothetical particle, inflaton, has been coined to try to give a quantum basis to the phenomenon. There is room according to other workers to include the phenomenon of inflation into the concept of supersymmetry or of a supersymmetric grand unified concept. The Large Hadron Collider project plans to find experimental support for both inflation and supersymmetry.

The Inflationary concept has been criticized by various authors including John Earman and Jesus Mosterin (1999) and by Roger Penrose(1988). In a future publication the author will show that the inflationary epoch during the earliest fraction of a second of the origin of the universe could be scientifically and soundly linked to an exponential entropic event due the rapid formation of particles from pure energy. It is thus believed that the law of entropy produced the inflationary epoch and the current expansion to eventually lead to a slowly expanding universe that in due course dies completely. The current superluminal expansion rate of the universe, although apparently a mind boggling velocity, is just a very minute fraction of the incredible hectic inflation which occurred at the time of creation.

Stephen Hawking on the origin of the universe

Stephen Hawking in his 'Brief History of Time' prominently based his philosophy of the origin of the universe around such a measureless singularity in the following manner. Under the classical general theory of relativity the origin of the big bang could have been a singularity of infinite density and infinite curvature where no laws of physics would exist. Actually no physical laws applicable at that stage can be imagined. Classical theories would not be applicable and one necessarily must resort to theories based on quantum gravity but so far the combination of quantum mechanics and quantum gravity has not been successful on a scale which would be desirable apart from the speculation which such an approach may engender. One may have to speculate on the passage of waves through imaginary time. Even more mind boggling is the need to speculate that imaginary time might actually be more real than real time! The choice might be to decide to resort to imaginary time without a singularity or resort to a singularity without the possibility of understanding how you would fit real time into it. To conclude Hawking says that as we have no scientific laws that can explain how the universe started with a singularity, then it is possible to speculate that God blew over the singularity to breathe action into it for evolving into the universe that we know. On the other hand if imaginary time is an acceptable possibility then we could have had a beginning of the universe that had no boundary, as opposed to a singularity which imperatively must have, and such a universe without edge would not require creation so that it would just be, without the need to invoke a creator. What he means is that if there was no time preceding the big bang stage then there was no need for any creation by a God, for the universe would have been an accidental occurrence.

Hawking's account of the possible act of creation of our universe from a singularity illustrates a bit of the problematic in attempting to unravel the realities of the universe. Originally Lemaitre's notion(1927) was a straightforward theory of the universe having possibly arisen from a cosmic egg but he foresaw the possibility of an expanding universe. Friedman's interpretation of General Relativity without Einstein's stabilizing cosmological factor produced an expanding

universe which Lemaitre also independently concluded. However this was not taken as adequate presupposition by Hawking who introduced the occurrence or not of real time or imaginary time in his theory. As irrespective of whether it is real time or imaginary time Hawking was unable to reconcile creation by a supreme mind with either scenario and therefore there is no possibility of the universe having had a supernatural origin.

Conclusion

Scientific theories, on the basis of which various researchers have been developing their origin of universe concept, invoking cosmic egg, singularities, positive and negative energies, vacuum fluctuation, negative gravity energy and positive matter energy, extra dimensions etc have in the final analysis not been quite convincing enough to create a consensus on how the universe could have credibly originated and have decidedly not been able to explain things like the various physical realities of the universe like gravity, mass and others like consciousness and biological evolution. All of these concepts could be good mathematical or physical models but extrapolating from them the origin of the realities of the universe would be very misleading and difficult. How can we know for certain that a singularity with or without a crucial boundary of time should be what was definitely present to initiate the big bang scenario? Could there not have been another scenario with real time to initiate the big bang? How do we know for sure that General RelativityTheory, which applies impressively to the macro structure of the universe cannot explain the origin of the universe in greater details and cannot be transformed with additional reasoning into a quantum gravitation theory? There are reasons to speculate that it is possible to integrate within general relativity a theory of quantum gravity without invoking additional dimension and such a theory might then be used to describe in some details how the universe was created. There would then ensue various approaches to perhaps explain the mysteries of quantum theory and those of the realities of existence.

The difficulties created by our inability so far to resolve the conceptual problems associated with a singularity of infinite density, infinite energy, infinite heat and infinite size and zero volume, arising ex nihilo have opened the doors to disbelief by some on the merit of the Big Bang as a theory of creation. This in turn has motivated several authors to speculate on other theories of the origin of the universe, many of which seem to suggest that a universe, or universes or an infinite number of universes arise ex nihilo easily. Several eminent scientists have taken a statistical or probabilistic attitude to the origin of the universe because of the anthropic belief ingrained into their theories. Thus they imply that a universe like ours with its living creatures and particularly man is such an improbable possibility that this could only have happened if we have an infinite number of universes. Strangely and paradoxically enough the author takes the view that even an infinite number of random universes would not be able to produce a universe like ours, if that depends only on chance phenomena. That would not imperatively produce the physical constants, space-time, all the appropriate matter particles, the energy carrying particles, the atoms and molecules, the DNA and subsequently the proteins and organic molecules leading to life and humans, through just a probabilistic process arising from a kind of an infinite game of chances. The parameters needed to produce a universe like our, including the parameters imperatively required to produce the initial stuff from which the universe/universes would arise all that makes it hard to imagine that it is a matter of statistics and chances to produce our

universe. Mathematics can indicate such a statistical possibility but we would always suspect that the methodology used could be faultless.

One would expect that the emergence of our universe through the mediation of an elusive to explain singularity, although taken seriously for decades, is being gradually over the years sort of side lined. The main explanation was the difficulty of understanding by the scientific community how a singularity with the mass of our universe compressed into an infinitely small size could have originated ex nihilo, and according to others, from an unknown source of some unknown kind of energy. This is quite understandable and the inability of cosmologists and physicists to find an adequately credible theory of creation appears increasingly as an impossible hurdle. On the other hand most of the alternative theories to the classical Big Bang , like multiverse, infinite universes, metaverse, bouncing universes, chaotic inflation universes with infinite budding off of new universes, a universe in your backyard for example, are non-falsifiable theories, and are not strictly speaking scientific, for they are not theories which can be verified by using scientific arguments or by circumstantial evidence at least. As of date the big bang still remains the most acceptable version of how the universe originated and with it the notion of creation.

The Big Bang concept, over the decades, due to its inherent implication of a finite creation of the universe, has been rated as philosophically acceptable. Big Bang according to Hubert Reeves rests on a metaphysical connotation which may be either appealing or revolting. Thus John Maddox(1989), a former Editor of the science journal Nature, wrote an editorial describing the theory as philosophically unacceptable, for theological creationists find sufficient justification for their theist creed in it. On the other hand Emeritus Professor Christopher Isham of Imperial College, believes that theories which challenge the Big Bang finite universe model have been tenaciously advanced in a manner which far exceeded their intrinsic worth.

On the other hand the quotations at the beginning of this article by Einstein, Heisenberg, Hawking, Linde, Smooth and Davidson hide a deep cavern of meaning which the world will have to elucidate as our comprehension of the mysteries of ourselves and the universe unfold. The theories we have globally all say there was a mass of energy at the very beginning from which one or zillions of universes originated. Clearly such approaches leave us with a lot to wonder about due to the obvious inadequacy engrained in what they are able to explain. The quotes from their reputed authors referred to above tell us in no uncertain terms that we have to delve much deeper into the mysteries surrounding our realities and hopefully we may not be too far from such a possibility.

The search for a theory of everything to explain the realities of the universe including its origin has always been regarded with suspicion. Such an idea was strongly supported by Hawking in his popular book on Time and he even predicted that it would materialize by the end of last century. That not only proved incorrect but we do not seem to be getting nearer to anything like a universal theory capable of unifying a large number of physical and perhaps even biological phenomena. The future will tell. To start with ongoing experiments like the LHC will in due course substantiate or repudiate many claims and concepts on the ultimate physical realities of the universe including issues like mass, supersymmetry, the Higgs Boson on which important theories of the origin of the universe rest as well as the quantum nature of gravity. If all that fails to reveal any breakthrough it will be the duty of science to continue to generate new concepts

which would hopefully enlighten humanity about our ultimate origin and nature. There are reasons to be hopeful that the coming decade would bring new ways of thinking towards the fulfillment of such a dream. We have Cosmological Arguments in theology and philosophy which are quite clear and which may be accepted or discarded depending on one's way of thinking, but in science the critical issue is that we do not have a universally acceptable Scientific Cosmological Argument for the origin of the universe. Such a modern scientific cosmological argument should make sense not only scientifically and philosophically but also to various disparate creeds.

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