

## Deep Science of CosmoNeurology The Multiverse and The Supracortical Consciousness

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### ABSTRACT

**Purpose:** The prospect of doing neuroscience is bright when the brain is investigated in the context of the universe. The purpose of this review is to make the researchers in neuroscience in general and the readers of this journal in particular familiar with the relationship between the frontier edge ideas in cosmology and neuroscience. The grand idea in cosmology is that of multiverse. The big idea in consciousness research is that of supracortical consciousness. The paper explores the relationship of these twin ideas. The Essence of the Multiversity, Consciousness-Mother Nature are suggested to be the common source of both cosmology and neuroscience, which keeps both the disciplines intertwined.

**Method:** Intellectual transcendence of space time-based ideas holds the key in the method. The first half of the paper is a review based on the history, evidence and the outcome of the idea of multiverse and the idea of supracortical consciousness, which transcends the boundary of the universe and the cerebral cortex respectively. Contemporary cosmological papers on multiverse, and author's published papers on the idea of supracortical consciousness and further outcome of daughter ideas have been analyzed for their possible connections and implications. In the second half of the paper methodology depends on creative resolution of several unresolved issues of cosmology and cognition such as beginning of time with information-split phenomenon, information as the source of space time and dark energy, life-as-such as the source of matter and the possibility of a new energy revolution from information technology and biotechnology.

**Conclusion:** The canvas of several ideas generated out of the twin ideas of the multiverse and supracortical consciousness are worth pursuing for the future of both science and humanity. The science of life-as-such and of most primordial life seems more relevant than mathematics and physics at the present stage of cosmology and neuroscience. The unflinching obedience to the Essence of the Multiversity is likely to take care of the original axiology of humanity science and the spirit and the constancy of several constants/axioms/invariants in the interrelated disciplines of Physics, cosmology and neuroscience.

**The Message:** Cosmology and Neuroscience are inextricably connected at their common source, which in its intellectually comprehensible form of Infinity is the Essence of The Multiversity that remains the source of imagination and inspiration for doing Deep Science.

**Keywords:** The Essence of the Multiversity, Consciousness-Mother Nature, Zero-Point Energy, Vacuum Energy, Harnessing of Dark Energy, Pentaune (Five-in-One) Model of Nature-Consciousness

### INTRODUCTION

The Infinity is intellectually incomprehensible. The largest possible intellectually comprehensible infinity is not the finite universe but the systems of multiple universe(s), the Multiversity inclusive of its source, which the author calls "the Essence of the Multiversity". We and, in fact, everything else on this planet are the dynamic parts of this systems. Multiverse, multiple universes, could be of four varieties [1], all are non-observable for their own reasons. This might be beyond our cosmic horizon of 42-44 billion light year radius (Type I Multiverse), might be interconnected bubbles of different Hubble size or according to M-String theory exist as three-dimensional membrane

(brane) within multidimensional space (Type II Multiverse), might be existing as multiple superposed versions (Hugh Everett's many worlds) of our classical universe (Type III

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Multiverse), or might be existing as completely disconnected and indifferent from our universe (Type IV Multiverse). Our universe consists of  $10^{11}$  galaxies, of which our galaxy is called Milky Way. Each galaxy consists of  $10^{11}$  stars such as our sun, and stars even much larger than the sun. Our sun has nine odd planets of which one is our earth. Standing on this earth we are capable of thinking, imagining and constructing such an intellectually comprehensible systems because of our wonder organ, the brain. Surprisingly the number of neurons estimated inside the brain is astronomical. The brain consists of  $10^{11}$  neurons! From Aristotelean or Platonic viewpoint, respectively from frog's perspective or from bird's perspective the perceptual or abstractable landscape of the physical or mathematical multiverse [1] is the refined intellectual behavioral expression of cognition by the cognitive faculty of the brain that includes a mindscape, a self-scape and a life-scape under the overarching umbrella of consciousness of the scientist/designer interacting with the signals and various information-states within and around his systems. The brain and the cosmos are situated one within the other. The science of the brain and the science of the cosmos are nested one within the other! The spatial and temporal horizon of our universe "ends" or vanishes with the horizon of our cerebral cortex. The boundary of cortical consciousness determines the boundary of our universe! The moment we slip into the awareness of supracortical consciousness we step outside our universe and trekking past the vacuum space get into the domain of multiple universes, most likely type IV, and their source, the Essence of the Multiversity. In type IV multiverse, according to Tegmark [1], perception and abstraction coincide with each other resulting in merger of frog's perspective and bird's perspective. Socrates prevails over both Aristotle and Plato. The wisdom reveals as signal, and the signal represents the wisdom. At this phase, the idea or wisdom of supracortical consciousness is found inextricably non-separable from the idea or wisdom of the multiverse. First person's subjective Reality is explainable in third person's perspective as Objective Reality (OR).

Supracortical consciousness and the Multiverse are twin Ideas. They are monozygotic twin born out of the same zygote, which in cosmological terminology could be called the Essence of the Multiversity. In natural science we might call this zygote a fertilized product of Consciousness-Mother Nature! In neuroscience, this coupling could be described as between unconditional human consciousness and the nature of the human brain. Mother nature is the nature of all natures! Mother nature also operates as the executive front, mobile facet and the kinetic pole of consciousness. When one's nature becomes Mother Nature, one is identical with consciousness. Not before that!

The Essence of the Multiversity, Consciousness-Mother Nature along with the ideas of the multiverse and of the supracortical consciousness are expected to remain as the necessary and sufficient Source of imagination and

inspiration for next two centuries science! Their effulgence is likely to glitter in the big sky as the Big God of science.

### The idea of the multiverse

In English dictionary the word universe does not have any plural. This is based on the assumption that the universe is only One in number. When the author had been discussing this idea of multiple universes with the eminent scientists in Vatican participating in the Academic meeting of Pontifical Academy of science in 1999, many of them were seen to raise eyebrows! Werner Arbor who had an hour-long discussion with the author during dinner time, however, was open to the idea. If ever a plural is necessary to be chosen for the universe, the best one, without any shred of doubt, is the multiverse.

### THE HISTORY

1. The idea of many universe had been there in many ancient spiritual cultures including Greek's and in Indian Upanishads. However, in modern age the recent clear articulation of this intellectual concept as "The Multiversity" came in 1927 from an astounding Supracortical Autonomy (Sadguru) from India, Akhandamandaleswar Sri Sri Swami Swarupananda Paramahansa Dev (popularly known as Sri Sri Babamoni), born in recent Bangladesh in 1892 but lived in India till His great transit in 1984. The present author, since his childhood has been observing at the top of His letterhead written in capital letter, THE MULTIVERSITY (**Figure 1**). His authenticity and credential could be more known from an old 1957 book by Virginia Moore [2].

During this third decade of twentieth century, Einstein had been thinking of a static universe. American Astronomers such as Harlow Shapley had been thinking that our galaxy, the Milky Way, constitutes the whole of the universe. Only in 1929 Edwin Hubble's seminal paper [3] revealed multiple galaxies in our universe and described universe as a finite entity both in horizon and in age. At this time, the idea of the Multiversity was articulated by this great Indian saint, who was a versatile genius and has been called in India as century's wonder! He dwelt in the idea and the reality of The Multiversity where perception and abstraction coincide, the signal and the wisdom carry the identical information. There is no canvas larger than The Multiversity. On this canvas no entity, no individual and no information is an island!

2. The present author learnt the idea of the multiverse from Sri Sri Babamoni. It was a great cosmological happenstance that the author's parents and then author himself (at the age of sixteen) became disciple of this Gurudev. The author has been bestowed with His consciousness! Under the brand name of The Multiversity, Sri Sri Babamoni laid the foundation



**Figure 1.** THE MULTIVERSITY occupies the top of the letterhead of Akhandamandaleswar Sri Sri Swami Swarupananda Paramahansa Dev; see the left upper and lower quadrants of the figure. Right side of the figure shows the picture of the cover of the old gramophone record with picture of Pupunki Ashram and THE MULTIVERSITY. There are a number of writings in Bengali both on the letterhead and on the record cover.

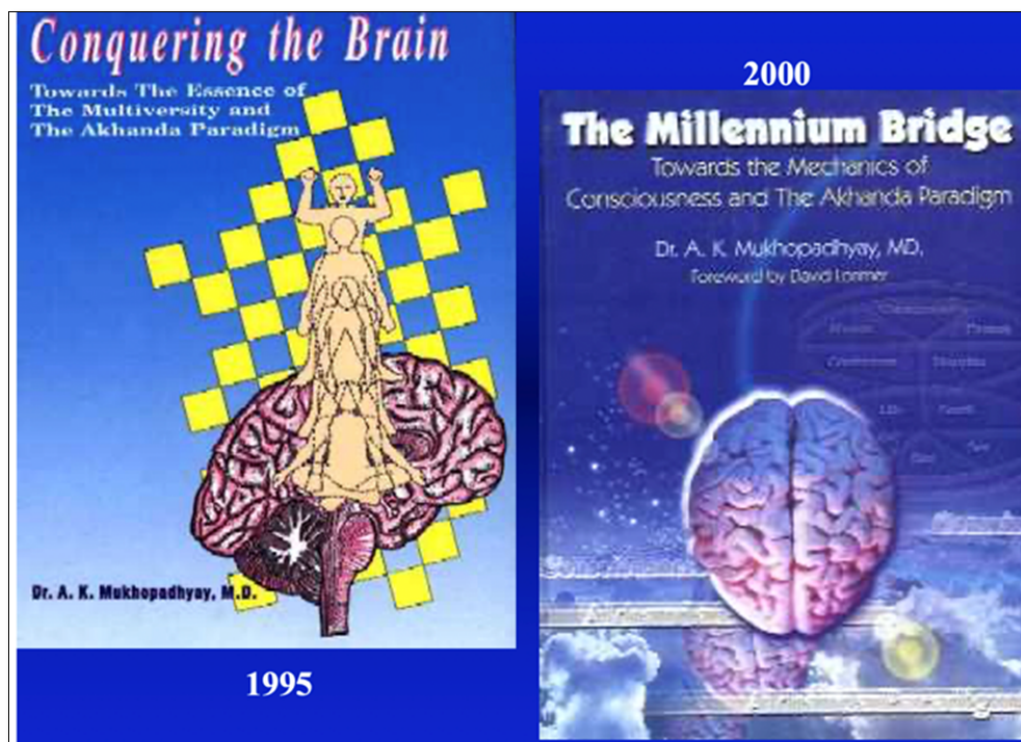
stone of an Engineering college in 1948 at the village Pupunki in the state of Jharkhand, India and still later had established a secondary school, named Pupunki Swabalambi Vidyapeeth (Self-reliant Educational Institute).

3. Ten years after present author's initial publication of the idea of supracortical consciousness in 1985 [4], the author published two consecutive books, one in 1995 titled *Conquering the Brain*, subtitled Towards the Essence of the Multiversity and the Akhanda Paradigm [5], and the second one in 2000, titled *The Millennium Bridge* (Figure 2), subtitled Towards the Mechanics of Consciousness and The Akhanda Paradigm [6]. The concept of Multiverse and its relationship with the brain are elaborated in the first one. In the second one, the beneficial spin off from such idea came out with a breakthrough concept of pentaune (Five in One) model of nature-consciousness.
4. Although speculation on possible several universe(s) started from 'anthropic reasoning' around 1970-80s, it is in early 2000s the formulation of the idea of the multiverse took a definite shape in astrophysics by the

works of several leading edge cosmologists such as Lee Smolin and Archibald Wheeler (worm hole theory), Steven Weinberg (anthropic reasoning), Alan Guth and Andrei Linde (Inflation theory), Rees M [7], Susskind L [8], Vilenkin A [9], Bernard J Carr, Max Tegmark and many others.

5. Since the concept of multiverse also has a deep spiritual connotation, Bernard Carr (present President of Scientific and Medical Network of UK) along with David Lorimer (David penned down the Foreword of author's book *The Millennium Bridge*) organized a Conference in Cambridge in 2007 titled, God or Multiverse. The speakers were seen to take four broad stands: No God, No Multiverse; Only God, No Multiverse; No God, only Multiverse; and God and Multiverse (Figure 3).

This dilemma between God and Multiverse could be sorted out by the word "The Essence" of the Multiversity, introduced in *Conquering the Brain* and *The Millennium Bridge*.



**Figure 2.** Author's two books: Conquering the Brain (1995) and The Millennium Bridge (2000). Note their subtitles.



**Figure 3.** Cambridge Conference (2007) on God or Multiverse. Note the four subgroups of eminent speakers. The picture has been modified from Network Review 97 (2008):30.

6. Two more important books were published; one authored by Stephen Hawking and Leonard Mlodinow [10] and the other authored by Brian Greene [11]. The editors of Scientific American brought out another publication, Seeking the Multiverse [12].

Even in the minds of many scientists, there are several questions on this idea; is it an extended physics (Inflation theory), is it a speculative physics (Many world theory), is it a radically speculative physics (M theory), or is it an extravagant Metascience?

For many minds in science, “The parallel universe becomes a substitution of deity in religions, which enable to explain everything by nothing in very comfortable way – but without any value added.” - (A comment posted in Physicsworld.com, May 10, 2016 on the Article, “Parallel-universe search focuses on neutrons”). In general, a large number of individual scientists and the science establishment in particular feel uncomfortable with the idea of multiverse since Anthropic principle might be correct, which is a comfort zone for the theologians. However, multiple universe(s) is also disquieting to a large number of theologians in general, and the religious establishments in particular since the idea does not admit deification of any sort!

Science is not for comforting or discomforting one group or the other! Science grows with unfolding of Truth. What does science of Multiverse imply? It implies the ability of the human mind and brain to transcend the boundary of the universe and the brain. The science of multiverse is inextricably intertwined with the science of transcendence!

#### Circumstantial evidence for multiverse

Circumstantial evidence for multiverse are as follows.

1. Fine-tuning of several constants for our universe (most important one seems to be the Einstein’s cosmological constant) is an indirect evidence for multiverse.
2. The idea of multiverse is a spin out of several cosmological theories such as M-String theory.
3. Signature variation in the cosmic microwave background (CMB) radiation often indirectly suggests presence of bubble universe.
4. Mathematical extrapolation from the known to unknown is considered abstract evidence of its existence.
5. Profound mystical experience resulting in belief systems of existence of multiple universes in several religious and spiritual culture.

#### THE OUTCOME

The idea of multiverse has been growing from two sources; from the known facts of science and from the spiritual conceptualization of the Essence of the Multiversity.

#### The idea of the multiverse growing from known facts in science

- (i) This idea in existing science is based on the known properties of Space Time, Energy and Matter.
- (ii) This has happened without advent of any new principle, axiom, constant or invariant.
- (iii) The construction is not sourced from any suggested source of Objective Reality (OR), nor even from the source of space and time or of matter and energy.
- (iv) The idea has been tried to be developed as a physical or mathematical quantity, ignoring existence of ‘quality’ of any kind including quality of space, matter or vacuum!
- (v) The idea as exists in science at present cannot account for “life” within physical universe/multiverse or mathematical universe/multiverse.

As a result, there is hardly any “terrific” breakthrough on the issues such as higher dimension, interrelationship between Quantum theory and Relativity, origin of Space and Time or, on the issues of dark energy and dark matter! Contrary to wide expectations, there is little transformation of physics and allied discipline. Imagination, abstraction or perceptions of such idea of multiverse have not changed the fundamentals, or the world we live in.

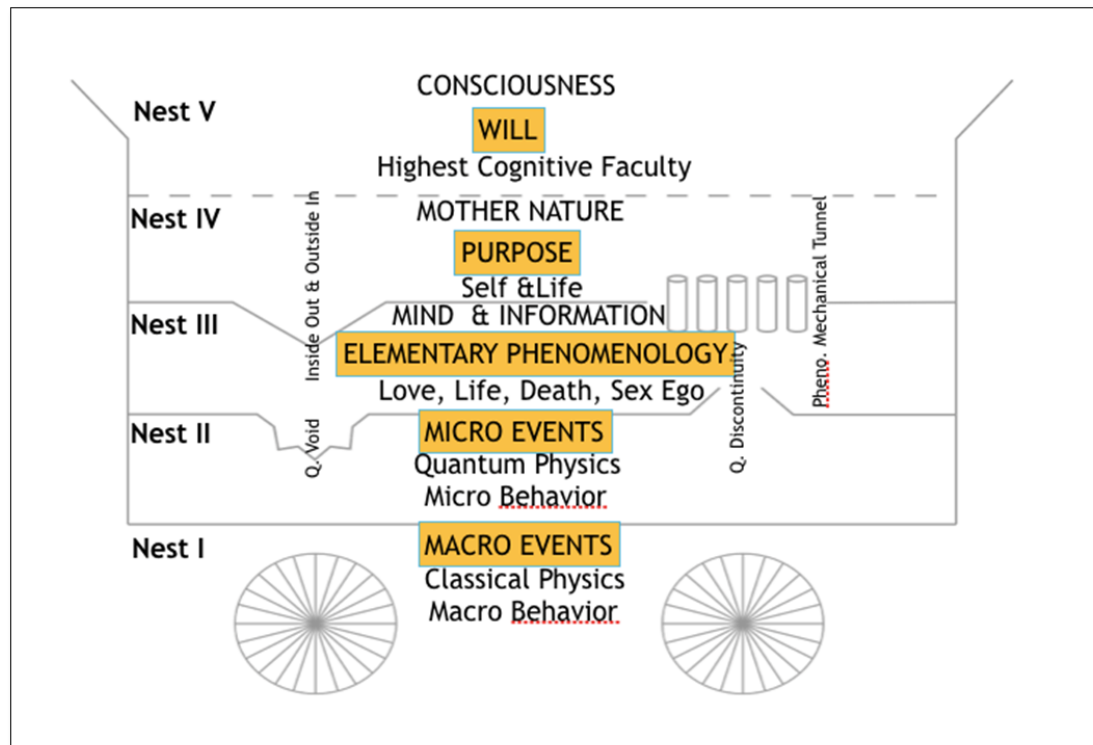
This state of affair has compelled the skeptics to ask question, what is the value addition by such ideas of multiverse in the astronomy or cosmology? “Can you prove that unseeable parallel universes are vital to explain the world we do see? And is the link essential and inescapable? [13]. What does “M” of M-string theory (which predicts  $10^{500}$  universe) stand for, asks M. Turner? Master, Miracle or Mirage? However, most of the skeptics hold the view that there is no miracle in the multiverse [14].

**The idea of the multiverse sourced from the Essence of the Multiversity** as the Objective Reality (OR), on the other hand, has several breakthrough new ideas, which are as follows:

1. Pentaune Model of nature-consciousness: Can we systematize the study of different depths of nature? In answering this question, the spectrum of nature consciousness has been divided, for understanding, from superficial to deep as nest I (where the principle and laws of classical physics are applicable), nest II (where the principle and laws of quantum physics are applicable), nest III (prequantum nest, the domain of information, mind, intelligence and emotion), nest IV (pre-prequantum nest, the domain of self and “life”) and nest V of consciousness. Will (nest V) unfolds as a purpose (nest IV) that unfolds as elementary phenomenology (nest III) to execute the purpose. The phenomenology is observed as microevents (nest II) and macro events (nest I) (**Figure 4**).

The idea of five nests was first published in the International journal of Philosophical Enquiry in 1997 [15]. Elaboration came up within three years. Every nest has their respective boundary, entrance and exit gateways to the immediate

superficial and deeper nests, respective operation and specific currency of operation. *The Millennium Bridge* is all about this.

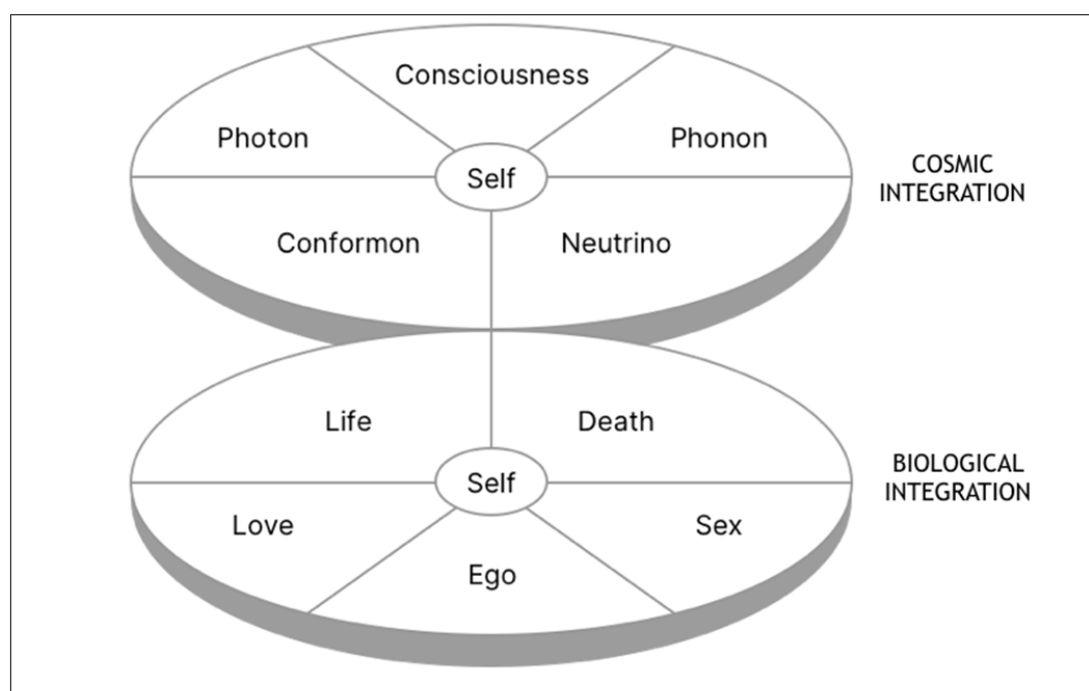


**Figure 4.** Five nests of Nature-Consciousness (Five-in-One, Pentaune Model). Nest I is the domain of classical physics and Nest II is of quantum physics. Nest III is the domain of mind, information, intelligence and emotion. Nest IV is the domain of Mother Nature and Nest V is that of Consciousness. Nest V is the nest of Will. In Nest IV the purpose is determined. Nest III is the nest for elementary phenomenology to achieve the purpose. Nest II has a number of micro-events from the phenomenology and Nest I is full of corresponding macro-events observable to all.

- Are space time matter and energy as we observe in the local domain of science ultimate? Does nothing finer exist in nature before we venture for consciousness? On pursuance of this query another new idea came exactly 100 years after Einstein's idea of special theory of Relativity. The idea was first presented in the IV<sup>th</sup> World Congress of Psychotherapy in Buenos Aires in 2005 (Elements of Human Psyche: Crystallizing new Rationality and Objectivity in Psychotherapy) and is also published in the same year [16]. The idea was on "information"! Both our psyche and the cosmos are information hub! Information is the connecting linker between observable local players (space, time, matter, energy) and non-observable nonlocal players (mind, self, life and consciousness). Information is not merely a linker. It splits! We have heard of splitting of molecules into atoms, splitting of atom into subatomic particles, splitting of subatomic particles into quarks but we did not ever think of splitting of information. The new idea is that Information-split phenomenon creates form (space, time) and energy (invisible i.e., dark energy).
- Such information has been described as an independent entity beyond quantum void and quantum discontinuity and is supposed to have an operational mechanics. Mechanics of information could be connected with the known quantum and classical mechanics [17]. At present the science of information has surfaced at the top of the agendas of twenty first century's science [18].
- Could space time matter energy explain genesis of life-form and its purpose? Probably not! The purpose of genesis of life-form as a hologram of Consciousness-Mother Nature becomes clear in 2012 after the discovery of Higgs-Boson. The idea was presented and published [19]. Accountability of dark energy and dark matter, their interrelationship with visible energy and visible matter becomes clearer with generation of life-form (elaborated later).
- Another question had been in the mind from the beginning. What are the phenomenal hands of Mother

Nature? Since 1987, the issue has been addressed [20] and developed [5]. For reasons cited [20], Conformon, Neutrino, Photon and Phonon have been identified as the phenomenal hands of Mother Nature and are formulated as the visible constituents of Information Holograph in 2012 [21]. This information holograph is likely to communicate with an integrated self of the cognitive

organ; the self, surrounded by its five private facets (**Figure 5**). The private facets are the footprints of elementary phenomena which were involved during its genesis from consciousness. This figure has been used as the 'logo' depicted on the title page of the book, *The Millennium Bridge* and cover page of *Conquering the Brain*.



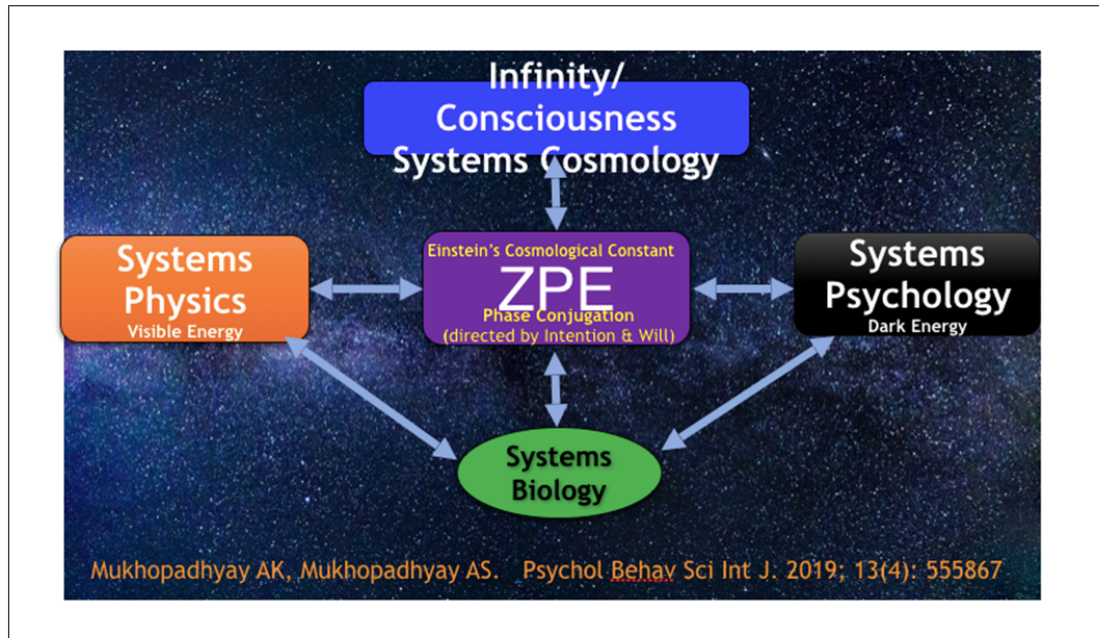
**Figure 5.** Cosmic Integration machinery, self with phenomenal hands of Mother Nature, interacts with the biologically integrated brain accommodating consciousness's CEO inside the system, the self, which has achieved the phenomenological integration. The footprints of elementary phenomena which were involved during genesis of self from consciousness surround this self, as its private facets.

6. Einstein in 1917 had introduced positive cosmological constant (usually denoted by the Greek capital letter lambda:  $\Lambda$ ) to his field equations of general theory of relativity to counter the effects of gravity on ordinary matter, which would otherwise cause a spatially finite static universe that would either collapse or expand forever. After Hubble's discovery of the expanding universe in 1929, Einstein withdrew this constant from his equation stating privately that this was his greatest blunder! Nearly hundred years later, this zero-point energy state has been reintroduced by the author in 2019, both in the context of neurology [22] and cosmology [23]. The zero-point state of the brain is the moment following which irreversibly the brain opens to the fathomless Essence of the Multiversity.

The energy in empty space, in space with no matter, zero-point energy, is said to be the most serious fine-tuning problem in theoretical physics because of its inexplicable smallness as found by experiments (non-zero but not greater

than  $10^{-120}$  Ap. One Ap is equal to one Planck's mass per cubic Planck's length). This energy has role in preventing collapse of the universe or preventing inflation to be eternal. The value is not again stable and there could be several values between zero and  $10^{-120}$  Ap. Only a small fraction of the stable vacuum is hospitable to "life" [24]. This empty space energy is dark energy and, as author proposes, is related to information-rooted energy. It is consumed when signal becomes information and is released as visible energy when information becomes signal. Signal is in physical plane while information is found in mental plane of a living entity. We will explain later in this paper that containment of dark energy is not possible without intervention by "life". This empty space, therefore, has been identified by the present author as the meeting space of systems physics, systems psychology, system biology and systems cosmology [22,23], (**Figure 6**), the figure is taken from author's earlier publication [23]). ZPE is an important milestone for the growth of multidisciplinary science.

With abandonment of ZPE, we had missed not only the existence of dark energy but also life and its origin and so the relationship between systems cosmology and systems biology!



**Figure 6.** ZPE is the point of meeting, coupling, conjugation and fertilization of systems physics, systems psychology, systems biology and systems cosmology. Systems Physics are driven by visible energy. Systems psychology is mostly driven by dark energy. Visible and dark energy are balanced by systems biology. The verticality in the process seems obvious since the coupling, conjugation and fertilization are driven not by any force or energy but by intention and will which come from consciousness at the vertical depth of nature (Infinity).

7. Life-form has been further visualized as a multidimensional syncytium of several matter-states cohabitating in an extraordinarily unique but in a sustainable manner. There is supposed to be a deep science to explore matter-consciousness through ordinary matter, exotic matter, dark matter and consciousness. There is a possibility to have matter correlates of consciousness [25].

All of the ideas have been published in details as referred above. It needs emphasis in stating that these daughter ideas or concepts are coherently laid down ideas with internal and interrelated consistency, which are yet to be experimentally verified.

8. We often ignore the social and cultural impact of any revolutionary idea while doing science. A powerful meme (using Richard Dawkins' language) could lead changes in the life style of millions of people. This is exactly what has been going on in India with this idea of The Multiversity. "M" of the Multiversity certainly stands for a Measurable infinity for doing science and there is enough to learn in science and humanity from how such a large system is Managed by nature, cherishing plurality without compromising individuality,

encouraging individuality without jeopardizing plurality! In population science, M stands for millions of Me. In Matter science, M stands for Matter correlates of consciousness. In spirituality, M of Multiversity stands for the last syllable of celestial vibration AUM. When the M of Me of Millions transcends to the *Essence* of the M of the Multiversity, the entire axiology of science humanity and spirit is straightened up and redefined according to its original natural state leaving no scope for anyone to question whether there is any value addition or not with such Akhanda Worldview? Akhanda Worldview deals with the divisions of the Indivisible and accommodates Science, Humanity and Spirit.

The idea of multiverse corrects another group of assumptions prevailing in neuroscience; there is nothing more cerebral than the universe, the brain is a closed system, neural signals are the source of consciousness, there is nothing beyond cerebral cortex, brain's evolution has stopped.

#### The idea of Supracortical Consciousness

The idea of Supracortical Consciousness is generated from a big idea important in consciousness research that says, human consciousness is not sourced from neural activities inside the brain. The brain can neither generate nor can use

consciousness. It is consciousness which uses brain for its behavioral manifestation. The purpose of evolution of the brain as a prime organ is to unify consciousness within and consciousness without for the climax in cognitive achievement and consequent behavioral expression. Consciousness is singular undivided and non-dual, absolutely autonomous, inviolable, non-negotiable and ineliminable, nonlocal, scale-invariant, irreducible, fundamental ground without any background. As a ground, consciousness is not an inert ground but an active, supporting, participating, intervening, creative and will-making ground. Such consciousness cannot be defined or could be bound within any theory. When such consciousness operates on the neural machineries of the brain, we call it supracortical consciousness.

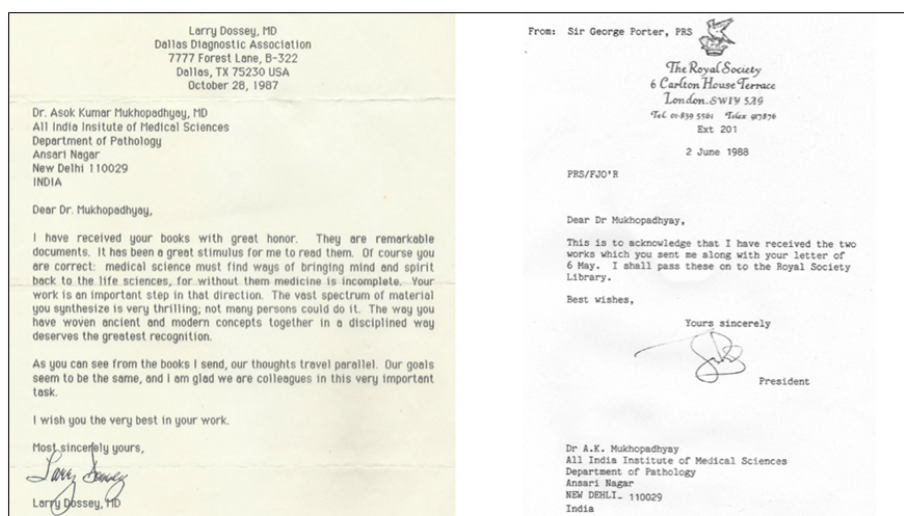
### THE HISTORY

Consciousness revolution in behavioral sciences, also known as “cognitive”, “mentalistic” or “humanistic” revolution in neural science, began with a causal determinism in 1970s, accepting consciousness as an ineliminable causal agent [26]. The idea of supracortical consciousness (SCC) was born in 1985 and its history, therefore, is short.

1. SCC was first published in 1985 [4] as the first chapter in a twenty-five-page booklet titled, *Frontiers of Research for Human biologists, Next hundred years* (available in author's personal website, [akmukhopadhyayconsciousness.com/books.php](http://akmukhopadhyayconsciousness.com/books.php)). Following evolution of brainstem consciousness, limbic system consciousness and cortical consciousness, the inevitable happenstance in neurocentric evolution of consciousness is awareness of this supracortical consciousness. The paper (Consciousness – The Holistic View) was presented in Third International Conference on

Living State, held in 1986 in North East Hill University at Shillong, the capital of Meghalaya in India, and also as a paper (Consciousness - from Neurophysiological point) presented in the National Seminar on Mind Brain Consciousness (1987), organized by NCERT, Delhi. The paper was published in Indian journal of philosophical research [27].

2. In 1987, the author published another book [20] titled, *The Dynamic web of supracortical consciousness. Neurobiology, Neuroscience and Neuropsychology of twenty first century* (also available in author's website, [akmukhopadhyayconsciousness.com/books.php](http://akmukhopadhyayconsciousness.com/books.php)). In the text, the brain has been cracked. It has been cracked into its fundamental pieces. The pieces have been realigned. Realigned into a wonderful skyscraper. There has been still immense scope for further expansion with greater depths, wider horizons and higher reaches.
3. The idea of SCC was elaborated on The Volumes of Project PHISPC (Project History of Indian Science, Philosophy and Cultures in 2004 and 2010 [28,29] with a lengthy discussion on the multiple new openings the idea of supracortical consciousness opens up for science.
4. Larry Dossey of USA (presently member of the Advisory Board of the Galileo Commission for extending the scope of science) was among the first few to understand their far-reaching implications in 1987, who commented (**Figure 7**) and exchanged books with the author and greeted him when he came to India to receive the Gandhi Peace Foundation award.



**Figure 7.** Letters from Dr. Larry Dossey (1987) and from Sir George Porter, the President of Royal Society, London (1988).

Acknowledgement also arrived from Sir George Porter, the then President of Royal Society, London (1988). David Lorimer of Scientific and Medical Network of UK independently took note of this idea since early 1990s. At present, as the Chair of Galileo Commission, he offers a good press to this idea. Acknowledging the idea William Tiller of Stanford University and Max Velmans of Goldsmith University of London (presently member of the Advisory Board of the Galileo Commission) exchanged books with the author. Recently, several consciousness researchers such as Deepak Chopra [30] and Sungchul Ji of Rutgers University, USA have started taking note of this idea.

### Circumstantial evidence for Supracortical Consciousness

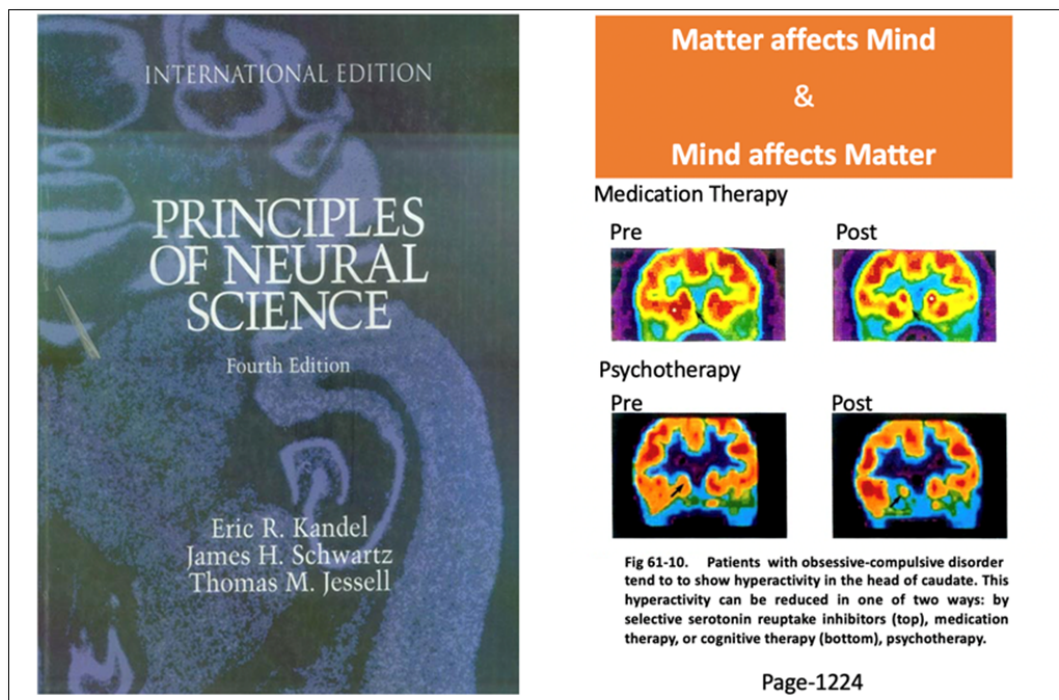
There is no unequivocal evidence of consciousness originating from the brain.

Circumstantial evidence for Supracortical Consciousness are as follows:

1. Phenomenological experience: Out-of-Body Experience, Near Death Experience and Experience of flying in dream suggest consciousness could freely move in and out of the brain.
2. Soft evidence from culture: Customary act of blessings on the top of the head, prevalent

across the culture, shaving of head for divine aspirants to achieve nearness to God!

3. Mystical experience: pressure on the head, wide temperature variation on the top of the head
4. Phenomenon prior to “readiness potential” of cerebral cortex (Benjamin Libet) [31, 32].
5. Calibrated magnetic stimulation of the cerebral cortex could lead to perceptual experience
6. Instead of general anesthesia, surgical procedure could be performed by controlled hypnosis. In Liège, surgeons routinely operate on patients under hypnosis [33].
7. PET images have shown that the changes in the head of caudate nucleus in obsessive compulsive disorder (OCD), could be reversed by psychotherapy, as well as with medication therapy (**Figure 8**).
8. Brain bridging, brain-brain interaction has been demonstrated, that indicates supracortical communication across the brains [34].



**Figure 8.** A patient of OCD shows significant hyperactivity at the head of caudate nucleus. This could be brought to near normal by both medication and psychotherapy. This shows Mind affects Matter and the Matter affects Mind. The neuroimage shown in the right side of the figure has been taken from old International Edition of the text book of Principles of Neural Sciences, page 1224. In later edition of the book, this important picture is missing. The caption of the heading on the image is modified by the author.

## THE OUTCOMES

The daughter ideas which were generated from the idea of supracortical consciousness are as follows.

1. Between the cerebral cortex and supra cortical domain exists so called death phenomenon. Understanding death phenomenon has been noted in Conquering the Brain [5]. The climax reached a dilated view of the Point of Death [35] followed by multiple new openings from the idea of supracortical consciousness [28].
2. Supracortical consciousness is a death-transcending idea. However, cortico-supracortical communication has been happening for all experiential phenomena. We are just not aware of this. This is because there exists proper inter-phasing between cortical and supracortical consciousness. The idea of inter-phasing between brain-independent and brain-bound consciousness was also published [36].
3. This was followed by identifying the constituents of the cognitive organ, the systems psyche, its structure, operation and possible molecular links [37]. The concept was also applied to cell biology [38] with molecular representatives of the cognitive faculty.
4. The focus was built up on the clarity of the concept of the cognitive faculty, four distinct cognitive operations. The ladder of cognition [39] and the canvas of cognition [40] were drawn.
5. Further clarity on the relationship between consciousness cognition and behavior, that the three operate on vertical timeline involving different depths of nature with corresponding information states, was crystallized in the paper titled, Consciousness Cognition and Behavior [41].

To stress again, these daughter ideas or concepts are coherently laid down ideas with internal and interrelated consistency, which are yet to be experimentally verified.

### The outcomes of combined ideas of supracortical consciousness and the multiverse

When the two ideas, Supracortical Consciousness and the Multiverse got combined, several new ideas are generated.

1. What could be the non-observable layers between neural signaling and consciousness? The idea was developed over three papers [40-42] which culminated in [41].
2. How could one recognize the presence of “life” in its subtle form? Could life’s subtle presence be understood from Claud Bernard’s concept of

homeostasis? Properties of “life” as a homeostatic entity has been discussed in the paper [22].

3. While doing Deep Science beneath quantum and pre-prequantum domain, is it possible to imagine the geometric structure of various information state? Visualization of different Information States between signal and wisdom has been articulated in the paper [23].
4. In contrast to neuro-centric consciousness, another school of science has been growing in favor of cardio-centric consciousness. The Deep Science of NeuroCardiology [43] discusses this issue of entrainment and enactment of the brain and heart by becoming consciousness-centric at the level of ZPE.
5. And, finally the present paper, Deep Science of CosmoNeurology has been seeing the light of publication.

Needless to say, that all ideas and outcome could be accommodated within the pentaune model of nature-consciousness.

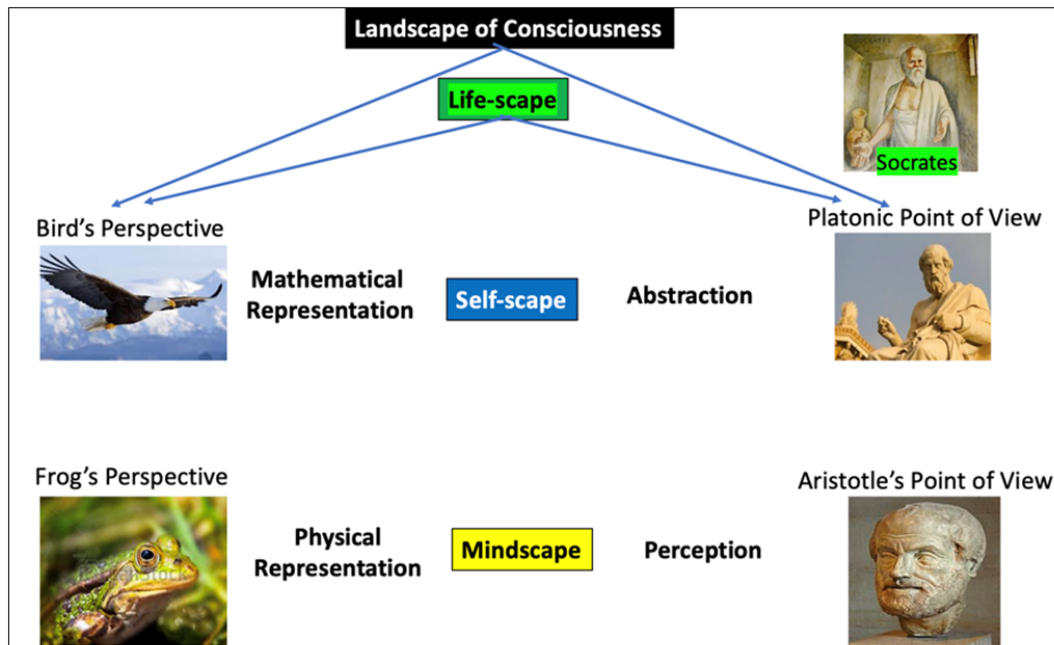
## COGNITIVE FACULTY AND THE MULTIVERSE

The landscape of the universe is a cognitive construct of human cerebral cortex. What we call Aristotelean viewpoint or frog’s perspective is mental perceptual construct of the physical reality. What is called Platonic viewpoint or bird’s perspective is the self’s intellectual abstract landscape of the mathematical universe (**Figure 9**). The realm beyond the cerebral cortex is equivalent to the realm beyond the boundary of the universe.

There is a large population of intellectual human beings who perceives claustrophobia with any kind of limiting boundary in their life-scape and loves adventure in empty space of multiple universes. Beside the frog and the bird, there is another observer who has experience of both frog’s symmetry and bird’s symmetry and can therefore analyze the similarities and differences between the two perspectives and two viewpoints, and can imagine if ever this symmetry could break. The intellectual outcome from this third observer is determined by such experiential accumulates in his life! This is the life-scape of the scientist. The big observer overarching all three observers is our consciousness which looks after what all is going on in our mindscape, self-scape and life-scape in terms of quality management of various informational states, such as signal (space-time construct of information, that could be digitized), non-digitizable but factorizable information (that connects like a trifoliate leaf, the landscape of material world with the mindscape and self-scape), knowledge (non-digitizable and non-factorizable information), experience (information manifolds) and the wisdom (information crystal) [23].

**Table 1** relates the levels of multiverse with contents of cognition, cognitive faculty, cognitive landscape and the way science tries to explain the happenstance.

Let us take the opportunity to revise the ladder of cognition [39]; sensation, perception, concept formation, experience and wisdom. The ladder covers the spectrum of cognition from the gain of function to the gain of wisdom. There is a



**Figure 9.** The behavioral description of the Multiverse depends on the cognitive faculty of the scientists; his mindscape, self-scape, life-scape and finally the consciousness-scape. Physical perception is from Aristotelian point of view and is often called frog's perspective. This is a picture in the mindscape of the scientist. Mathematical abstraction is from Platonic point of view and is often called bird's perspective. This is the picture in the self-scape of the scientist. Life-scape covers both mindscape and self-scape. The landscape of consciousness overarches life-scape, self-scape and mindscape.

**Table 1.** The levels of multiverse are related with contents of cognition, cognitive faculty, cognitive landscape and the way science tries to explain the happenstance.

| Level of Multiverse | Cognitive content        | Cognitive Faculty | Cognitive landscape | Way of explaining the happenstance          |
|---------------------|--------------------------|-------------------|---------------------|---------------------------------------------|
| I                   | Pure Abstraction         | Self              | Self-scape          | Collapse of wave function                   |
| II                  | Abstraction & Experience | Life              | Life-scape          | Symmetry breaking & Symmetry-making process |
| III                 | Perception               | Mind              | Mindscape           | Decoherence, Hilbert's space                |
| IV                  | Wisdom                   | Consciousness     | Fathomless          | All accommodated in One                     |

group of philosophers and scientists in consciousness research who does not distinguish signal from noise, perpetually remains trapped in sensation, accepts electricity as electrons and takes the position of eliminative materialist. The majority of neuroscientists, however, focuses on neural signal, distinguishes it from noise and investigate operation I (of Mind and information) to understand the process of perception. Some signal networks, having achieved the desired level of perfection have been automated in biology. They find satisfaction in this machine-like-automation in biology. Global Neural Workspace (GNW) theory of Bernard J Barrs, Stanislas Dehaene and Jean-Pierre Changeux is an example of such approach [44]. There is no need for an

explicit self and no requirement of experience either. Global broadcast automatically makes us conscious. Information and consciousness are synonymous here. Brainless animals like starfish, jellyfish and sea urchins cannot therefore be conscious at all! A few neuroscientists such as Antonio Damasio and others [45-48] concentrate on the concept-building process of cognition, operation II (by self). Without invoking this self, there is not even possibility of attention! It is self which makes knowledge from information pool. The self is that which evokes the sense of 'I', me and mine in a living organism. Self is categorically identical to consciousness but customized to work within the system as chief executive officer (CEO). However, since sensation,

perception and concept formation could occur subconsciously, cognitively advanced investigations recognize consciousness with experience. "Consciousness is everything you experience" (Christof Koch) [49]. Integrated Information Theory (IIT) of Giulio Tononi also begins with experience [50]. Experience, however, does not come directly from information. Between information and experience, there is another ladder-step of knowledge-formation, where self (operation II) is required. The one which experiences is the self! Experience occurs in presence of "life" and is observable only in living entity. Experience is a handiwork of life's operation (operation III) in support of consciousness. In inanimate zombie there is no experience. The sentient entity which experiences is self (note the kind of nesting both horizontally and vertically). Here, a finer distinction to distinguish operation of life (operation III) from operation of consciousness-as-such (operation IV) is felt required. All living creatures are capable of experiencing, from which they learn. They learn to turn the events (change in behavior). This is observed even in unicellular ciliate [51-53]. No experience in life, however, is possible without the presence, support and often intervention by consciousness and is thereby easily mistaken for operation of consciousness. "Life" is thus difficult to distinguish from consciousness. There is another point to mention on the act of experiencing. Life cannot experience without a communication across the boundary of the systems between outside and inside consciousness, between system-bound and system-independent consciousness. In the context of the brain, experiencing requires a communication between brain-bound consciousness and brain-independent consciousness by means of cortico-supracortical and supracortico-cortical communication. Such worm-holing and white-holing of phenomena happen during experiences in case of an individual, in multicellular organisms, in unicellular organisms and even at molecular level (e.g., in experiential protein of quaternary structure such as perforin and DNA-repairing enzyme). Another mistake is committed when we say, all experiences are in consciousness! Experiences are within four-dimensional space time domain. Consciousness itself, therefore, is beyond all experiences. Consciousness (within the system, as "self") experiences through life! Consciousness is not the repository of experiences! Life has the repository of experiences. How does one then distinguish life's operation from the operation of consciousness? This could be done by identifying consciousness's original signature as creativity, i.e., operation IV, by means of which wisdom crystallizes from the experience-manifolds. Experiences sublime into wisdom! Consciousness has the repository of this wisdom at its kinetic facet! Wisdom is precious for all living entity and is for all the time. Even a unicellular organism has this ability to develop wisdom from its life-long experience, possible since it is bestowed with consciousness. Especially for the humanity it is said, "humanity is now too clever to survive without wisdom" (E. F. Schumacher). Another

distinguishing feature for consciousness from life; to make a "will" is consciousness's sole prerogative. The "will" is unfolded as 'purpose' in life. The operations of cognitive faculties are nested one within another; mind being the most superficial while consciousness operates from the depth. Nothing of sensation, perception, concept formation, experience and wisdom can happen excluding or eliminating consciousness, life, self or mind. "Consciousness is an ineliminable causal agent", wrote Roger Sperry in 1987 [26]. No operation or operator could be labelled as illusion either! Multiple drafts (Daniel Dennett) might initially form in every step of sensation, perception, concept formation and experience but in case of wisdom the draft remains one and only One as systems-independent, or in concurrence of a finitely large number of systems.

## MY TAKE ON TWO CONTEMPORARY ISSUES OF COSMOLOGY

### 1. Higher dimensions

Our universe is made of three-dimensional space. Multiverse theory (type II) and M-String theory try to account for existence for higher dimensions. Neither we have passport nor do we have visa for entry into higher dimension. Perhaps this destiny search is not required for us. Higher dimensions per se are not hospitable to life, nor a room for life to grow! Certain higher dimensions, however, might be the source of inconstancy of certain constants held in mathematics and physics. Research on such higher dimensions, therefore, might not be an academic luxury. On the contrary some higher dimensions might be the storehouse of weaponry, dangerous biological weaponry (pre-life matter such as dreaded virus)! One of the reasons why three-dimensional universe has been secluded from higher dimensional space is probably because the contents therein are not necessary for "life" or detrimental to life. Kaluza and Klein's 10-dimensional space is a reality in an extraordinary circumstance where Mother Nature is required to contain deadly anti-life elements and save life growing in three-dimensional space. Dimension are sourced from space and time. For science, it is more worthy to focus on the source and mechanism of origin of space and time rather than on abstract mathematics of space and time to account for higher dimension.

### 2. Unification of four fundamental forces of nature

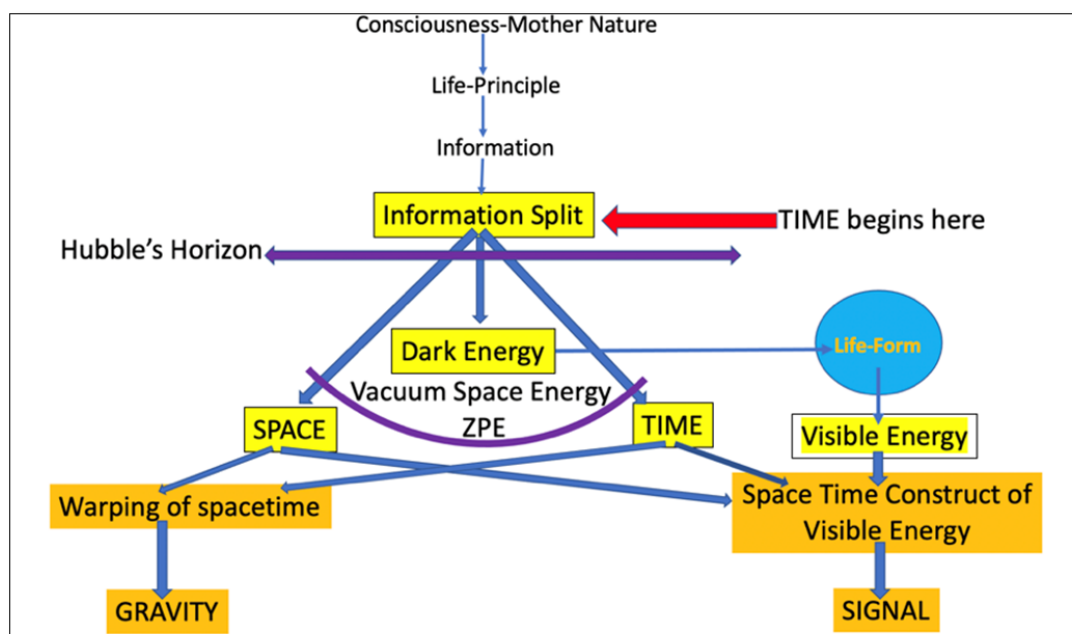
This issue has been going on in science for nearly over a century, punctuated with good press and bad press, but without any evidential clue. Perhaps such unification does not exist in nature! Where is the gravity where there is no Time? On the other hand, there exists empty space where there is no Force, no Fields; the zero-point energy state, the gateway to reach the boundary of the universe, and then multiverse!

Our nervous system has four ways of expression of behavior; intellectual, emotional, mystical and executive ways. In the same vein, it may be said that there are four ways of expression of Mother Nature; in electromagnetic-light way, as strong force, as weak force and as gravity. There are persons who might be lacking mystical way of expression. There, too, are theoretical possibilities of simulated “weakless” universe (universe without weak force) [54].

## AUTHOR’S VIEW ON OTHER CONTEMPORARY ISSUES IN COSMOLOGY

### 1. The issue of the source

Space and time are sourced from information. *Information* has a *form* within. Form consists of space and time. By an operation, this *form* comes out from within *information* as space and time, along with some invisible quiet energy, the dark energy. The operator, in popular language has been called the “mind”, with a large consensus across cultures! Without use of this word mind, science can investigate the operation. There is no mathematics here. There is a distinguished relationship instead: information is the father, mind is the mother while, space, time and energy are their three children (**Figure 10**).



**Figure 10.** Consciousness-Mother Nature is the ultimate Source field. Life-principle is the source field of information. Splitting of information is the beginning of Time. Space Time and Dark energy are three children of information. Warping of space time creates gravity. Conversion of dark energy into visible energy requires life-form. Visible energy in unit of space per cycle of time constitutes signal.

The source of information is “life”, not as life-form but as the subtle part of “life”, which has been variously called as life-as-such, principles of life [55], life-principle (Upanishads) or elan vital [56]. This subtle part of life is the daughter darling of Consciousness-Mother Nature.

The Time begins with information-split phenomenon. We still do not know when and what information (or a set of hierarchically organized information) initiated the creation of multiverse, our universe and substructures inside it. Hierarchically placed order of Times begins with onset of manifestation of information into observable domain by an operation executed in association with life by mind or mind-

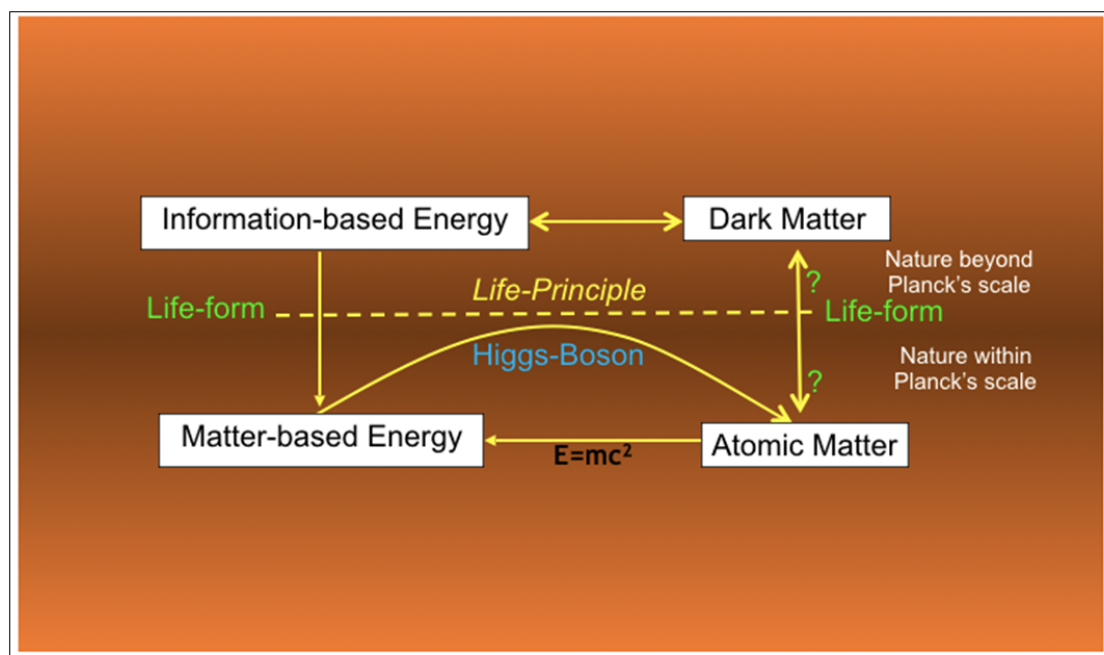
like entity or structure in nature. Many psychologists believe that the time is with the mind. Even Benjamin Libet used to hold this idea. We find there are sufficient reasons for trusting this scientific belief systems.

### 2. The issue of dark matter and dark energy

Dark energy and dark matter constitute respectively about 70% and 25% of our universe. Dark matter, although invisible, is detectable since it gravitationally tugs on objects like stars. Galaxies are embedded in the high concentration of dark matter. A recent study shows that clumps of dark matter in the distant cluster of galaxies could bend light from another object! High concentration of dark matter acts like a

lens, bends light and in the process alters the appearance of background galaxy as observed from the earth. If the computer simulation experiment on such behavior of galaxy is to be right, then it adds a new twist in the understanding of the dark matter [57]. Within the Planck's scale of nature, matter is converted to energy when it moves in velocity of light ( $E=mc^2$ ). We do not know how and when energy is converted into matter within this scale of nature. Higgs Boson might offer the clue. On the other side, in sub-Planckian scale of nature we might possibly assume that

conversion of energy into matter could take place, may not be easily, and it requires the presence of the subtle part of 'life' or grossly, the life-form. The matter thus produced is also invisible and is therefore called dark matter. Dark energy is sourced from information. Dark matter is a result of conversion from dark energy in the sub-Planckian scale of nature. Interconversion of dark matter and atomic matter is not yet known (**Figure 11**).



**Figure 11.** Life-form stands at the boundary of Nature within Planck's scale and Nature outside Planck's scale. Information-based energy is converted to visible energy by life-form. We are not aware of the mechanism of interconversion of dark matter and atomic matter and whether life-form has any role in this mechanism.

Both dark energy and dark matter are abundant in sub-Planckian scale. Empty space energy is dark energy, which is in continuity with dark energy in sub-Planckian scale of nature.

### 3. The issue of containment of Hubble trouble, the Inflationary universe

How the inflationary universe gain stability? Mathematics, physics and simulation model have not been able to solve the issue. Dark energy is responsible for expansion of the spatial universe while dark matter is for its contraction. Because of incessant information-split phenomenon in the early universe, there is ceaseless production of space and dark energy!

In 2012, I have introduced the idea of the role of "life" to take the universe out of this darkness [58]! Einstein's cosmological constant has remained as a problem of physics since 1917. Redemption of this cosmological constant at this

stage is felt necessary for future cosmology. Only "life" could do it! See how?

To counter dark energy the expanding universe needs dark matter. Life-as-such, as principles of life in its subtle form can cognize uncertainty, can cognize symmetry-breaking stress but is found not capable of producing that amount of dark matter which could counter this inflation of space.

Mother Nature had been under severe strain even for maintenance of a status quo universe. She was looking for an option to get out of this unbearable stress of harassment by her own creations. Matters which were already formed came of no use. Amino acids or protein molecules did not serve the purpose. Naked RNAs could not do it. Naked DNAs were found to be of no value either.

At this point of time, Mother Nature came out with an innovative decision to *enclose* certain worthy matters like DNAs within a material boundary to design 'life-form', as a

hologram of consciousness with her own. To materialize this decision was too not a child's play! The play appears more fictional than survival of Hollywood hero from all kinds of onslaught by the villain! Where from the required proteins and lipids would come to form the boundary? Would it be synthesized from viral DNA? (Virus can synthesize only when within a host)! Or, could the available protein (and? lipid) in the dark environment contribute into formation of such partition? Perhaps both the processes were utilized to achieve the objective! Such momentous phenomenon of enclosure of life-as-such along with DNAs and some sugars, proteins and lipids as 'life-form', however, reversed the direction of flow of information within the enclosed systems; reversal of what had been happening before enclosure. Before enclosure, information had been flowing from environment to protein to RNAs to DNAs. Within the life-form, information started flowing from DNAs to RNAs to protein. The information, which had been hitherto location-nonaddressable, content-nonaddressable and context-nonaddressable, became location-addressable, content-addressable and context-addressable within three-dimensional space and to manage it then became a relatively effortless job. Life-form brought a manageable operation for varieties of information which was randomly the source of dark energy and dark matter in the universe. "Life" appeared as an active player in this extraordinary scenario, emerged as an entropy stabilizing element in nature. Uncertainty-certainty homeostasis, asymmetry-symmetry homeostasis became easier then. Life-forms once appeared in the scenario of three-dimensional space started converting dark energy into visible energy and visible matter. There had been abundant production of dark matter too.

#### 4. Life-as-such, Life-form and the material Universe

We do not know the source of strong and weak nuclear interactions! All of the fundamental fermions (i.e., quarks and leptons) are subject to the weak interaction. In contrast, the strong force affects not leptons but only quarks. It is said that as electrical charge is the source of electromagnetic force, so the source of strong force is the color of the quarks. This color is the primordial color, a quality from which emerges quantity of force! This color, who knows, might be sourced from life-as-such or life principle! Particles without color, such as leptons, cannot 'feel' the strong force; particles with color, for example the quarks, do 'feel' the strong force. Also, life-as-such might be responsible for great matter-antimatter asymmetry in the universe. It has already been stated above how "life" accounts for dark energy and dark matter. The question remains, could this life-as-such explain all the contradictions within the standard model of particle physics?

At the gross level, there are plenty of examples that matter is sourced from life. All our staple foods namely carbohydrates, proteins and fat are products of life. Wheat, corn and rice etc. are produced by plant cells. We are aware of vegetable

proteins. Animal proteins are also biological products. Oil is obtained from seeds. Ghee butter are obtained from milk produced by animal cell. Compost manure is product of living organisms in the soil. T D Singh elaborates this in his book [59]. This is about organic matters. What about inorganic matter? Hydrochloric acid is produced by oxyntic cell of stomach and nitrous oxide by endothelium, nitric oxide by neurons. Carbon dioxide, bicarbonates and calcium carbonate are produced by living cells and so also calcium phosphates for bone mineralization. Phytoplankton are responsible for production of about 80% of the world's oxygen. Iron-compounds are synthesized and stored in dates, raisin, apricots, pomegranates and water melon etc.

We here are reminded of the guess of Luis Pasteur that 'life' generates matter indicating that the prevailing contrary view in science may not be true!

"I have been looking for spontaneous generation for twenty years without discovering it. No, I do not judge it impossible. But what allows you to make it the origin of life? You place matter before life and you decide that matter has existed for all eternity. How do you know that the incessant progress of science will not compel scientists...to consider that life has existed during eternity, and not matter? You pass from matter to life because your intelligence of today.... cannot conceive things otherwise. How do you know that in ten thousand years one will not consider it more likely that matter has emerged from life?" - Pasteur, L [60].

The question which guides us in Deep Science is what is at the Depth? Unde venis quantum mechanics? This question was originally raised by Gerard 't Hooft [61] in 2002 in a conference on Quo vadis Quantum Mechanics, held at the Centre for Frontier Science at Temple university, Philadelphia, USA (published in 2005). Hooft developed the idea further that the underlying structure of quantum mechanics can be formulated with the help of a cellular automata in his 2016 publication, The cellular Automaton Interpretation of Quantum Mechanics [62].

Above, we find an example of ontological reversal! With inside becoming out and outside becoming in, ontological reversal of universal processes could be found in three event horizons; at the boundary of the universe (multiverse), boundary of the brain (brain-bound and brain-independent consciousness) and at the boundary of the life-form (cell wall/membrane).

The life-form, in fact, as a single cell or as multicellular organism knowingly or unknowingly stands at the borderline of Planckian and sub-Planckian nature (**Figure 11**) as the hologram of Consciousness-Mother Nature. Had the fine tuning of nature been found essential for the origin of "life" in our universe (Steven Weinberg), the life-forms might be said essential for the survival of the universe too. If there were no life-form, the survival of the universe was in stake. Universe and life have thus remained as mutual friends, each

one has been protecting the other and helping the other to grow.

Life-form had been intelligently designed amidst all kinds of uncertainties when random symmetry breakdown of space, matter and time was the rule and the universe was full of dark energy. The faculty of life is, therefore, identified in science as a homeostatic entity; an entity which is engaged in homeostasis of uncertainty-certainty, asymmetry-symmetry and dark energy and visible energy. Without “life”, any universe cannot exist! Other way round, several universe(s), which have overcome the survival issue surely have done this by cultivation of “life”.

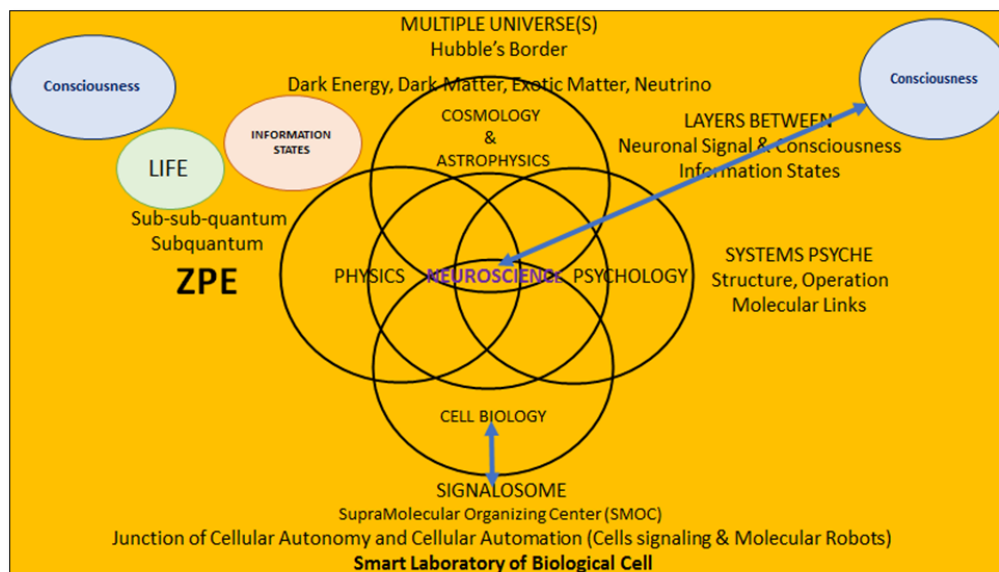
### 5. Consciousness and the Universe

We are not yet clear what is the relation between consciousness and the universe? We often talk philosophically of the existence of universal consciousness. Is there any concept on trans-universal consciousness or multiversal consciousness? Is consciousness the source of the universe or did consciousness become the universe? If consciousness is the source of everything else, how does it all happen as its manifestation of becoming? How location-nonaddressable content-nonaddressable and context-nonaddressable information prior to the origin of universe become location-addressable, content-addressable and

context-addressable? Is information conscious of its operation? Are the phenomenal hands of Mother Nature, conformon, neutrino, photon and phonon conscious? Amit Goswami in his book, Self-Aware Universe, addresses the question, is our universe conscious? So also, Max Velmans in Reflexive Monism! As we are conscious of our universe, so is the universe conscious of our presence? Science investigates nature. However, consciousness also has a nature! What is this nature of consciousness? Is it what we have designated as Mother Nature? Are Consciousness-Mother Nature and the Essence of the Multiversity synonymous? Is consciousness really impenetrable by scientific tools? Are we asking the right questions? Are our assumptions, ideas, conceptualization on the subject, right? These are the questions which DeepScience of CosmoNeurology is supposed to seek answers!

### CONCLUDING REMARKS AND PERSPECTIVES

Playing on the intertwining ideas of multiverse and supracortical consciousness the paper focuses on a lively relationship between cosmology and neuroscience and lays down the largest canvas of ideas intellectually transcending space time boundary of the universe and the brain. In the process, the proposal unites several disciplines of science (Figure 12) and stimulates interdisciplinary study.



**Figure 12.** In this self-explanatory figure, intersections of several disciplines of science have been shown. Neuroscience is at the centre of intersections. Zero-Point Energy (ZPE) is in focus. So also, is “life”. Multiple universe (s) are at the top and the smart cellular laboratory is on the ground. The Top connects with the Bottom through several disciplines of science.

Space Time Matter and Energy constitute the subject of physics and mathematics. Science at present is not sure when the Time begins! We say in this paper that Time begins with information-split phenomenon. Einstein said warping of spacetime forms the gravity. We say, visible energy in unit of space per cycle of time makes a signal.

Modifying Einstein’s statement, we can say, space offers matter the clue for its movement and matters in turn offers space intelligence to curve. It is possible, however, to have space without matter but with intrinsic energy. Almost a century after abandonment by Einstein, this vacuum space energy has been brought into focus again opening options

of another Einstein to take over the charge of future science from this point. Life-form has been proposed to be the natural device to convert dark energy and vacuum energy into visible energy. The idea opens the door to develop technology for harnessing dark energy (information-sourced energy) by manipulating biotechnology.

Theory, Experiment and Mathematical modelling with computer simulation are three strong pillars of science. Mathematics does not merely describe relationship. Mathematics could also be used as a tool of discovering a relationship. Einstein had a sense of it. Since then physics and mathematics have contributed immensely in development of cosmology. Leading cosmologists call multiverse a super-Copernican revolution. One may not be able to prove such ideas immediately, but it is also equally difficult to prove these ideas wrong outright! It is also difficult to “kill” those ideas because of their internal consistency. No viable alternative to those ideas is also available. There are lots of smoking guns around, which are nothing but predictions of these ideas which once validated by Deep Science of CosmoNeurology will reflect the soothing effulgence of their source! Mathematics has a wide spectrum; mathematics of symmetry, mathematics of manifold/topology, mathematics of packing spheres, generative geometry of sea shell, mathematics of genetic and neural codes, mathematical modelling of communication and epidemic, and finally the mathematics of space and time [63]. Today the science is found stuck with certain issues in the cosmology and neuroscience and finds no way out. At this stage of science, “life” pops up and comes into focus, both as life-as-such and life as most primitive life-form. We know tentatively the generative history of life-form as b-life (bacteria), e-life (eukaryote), m-life (multicellular complexity of life) or i-life (human language). We do not know anything about life-as-such, life as a cognitive faculty in the fabrics of cosmos, most primitive life where principles of life or life-principle enclosed along with nucleic acid strand, some protein, sugar and lipid within a primitive membrane! Martin Andrea Nowak has an ambitious project on mathematical modelling of the transition from no life to life. Would it be possible to develop mathematics that transcends space and time and takes our imagination both to the muddy pond of life’s emotion and to the crystal transparency of the Essence of the Multiversity.

“The biggest fragility in a project is often just the inability to be able to explain to people why you are doing it, and when you are going to do it, and what is going to happen” (Sebastian Coe). What are we expected to achieve? There are three fundamental questions raised in *Prasna* Upanishad and *Brihadaranyak* Upanishad and pursued by enquiring minds. Who am I? What is this World? What is God? Three questions encompass apparently three independent different universe(s), respectively of Humanity, Science and Spirit. The Worldview which

accommodates these three universe(s) of Science, Humanity and Spirit is the Akhanda Worldview. This Deep Science of CosmoNeurology aligns and integrates the axiology of humanity, science and the spirit, thus creates an Akhanda Worldview where there is room for individuality without compromising plurality, room for humanity without compromising science and spirit, room for science which understands life and spirit, room for spirit which encourages growth of science. We are at the gateway (ZPE) of Systems science encompassing cosmology, biology, physics and psychology. Zero-point energy state could be optimally used in Medicine for healing of psychological wounds and biological injury. Information holograph could be the means of communication between living entities nearby or at astronomical distance. At the material level we are waiting for a new energy revolution by harnessing dark energy. Physics alone cannot be the source of this innovative technology. Information technology need to be wedded with biotechnology. The tentative expected outcome from present human race is the emergence of *Homo spiritualis* [64, 65], which is non-violent against the member of its own species as well as other species (except food-chain) in a clean environment and using clean energy. The preamble of Deep Science has already begun about half a century back. Deep Science has an ambition to grow steadfastly for three hundred years to become the Reality.

The priority of both science and humanity at this stage seems not the Grand Unification Theory or a Theory of Everything. Physics and mathematics are probably not for solving the enigma of life-as-such and all of its feelings/emotions mingled in the cosmos that determines the ‘purpose’ of the universe! The finest emotion and the only emotion that works in physics and mathematics is the unflinching obedience to certain invariants, constants and axioms. Inextricably connected with the science of life are the ideas of the Essence of the Multiversity, Consciousness-Mother Nature, the multiverse and trans-boundary (such as supracortical) consciousness of the systems. Those are the “writ large across the sky”, the big God for science. The primary obedience to the Essence of the Multiversity would take care of the constancy of the constants in several interrelated disciplines of science and allow the M of millions of me to grow with the M of the Multiversity in tune with the rhythm of the M of celestial vibration of AUM.

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