

## Brain Vacuum Interaction: A Fountainhead of Discovery. Zero-Point Energy State of the Brain

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### ABSTRACT

We have wasted almost a century by not building a science of ZPE state / fluctuations, which appears to be the fountainhead of discovery in science. The most valuable instruments available to science at this juncture of time are human brains poised at different brain-states equivalent to or approximation of physical ZPE state/fluctuations. This article describes the known facts of the physical vacuum, pulls up different brain-states which could be equivalent to ZPE states of the brain, describes the possible players involved in brain-vacuum interaction, visualizes the consequences of this interaction in cognitive evolution of the mankind and rediscovering brain functions. The article hints at the possibility of a discovery of a 'brain-washing machine' in precision medicine, and the techniques for harnessing dark energy.

### KEYWORDS

Physical Vacuum, Neurobiological Vacuum, Players of Brain-vacuum interaction, Re-discovering Brain, Buddha-state of the Brain.

### Introduction

Since little we know about the vacuum in the context of physics and psychology on one hand and cosmology and biology on the other hand, and little is known about the vacuum state or zero-point energy state of the brain we remain totally ignorant about the mode of interaction between the brain and vacuum.

First part of this paper describes knowledge available on the ZPE state/fluctuations. Second part deals with what the author understands by ZPE-state of the brain, or nearness to and approximation of ZPE-state of the brain. In the third part there is identification of the conditions of occurrence of brain-vacuum interaction. It raises several research questions, and tosses with probable physics of interaction between the brain and vacuum. Fourth part touches on the consequences, the awesome possibility

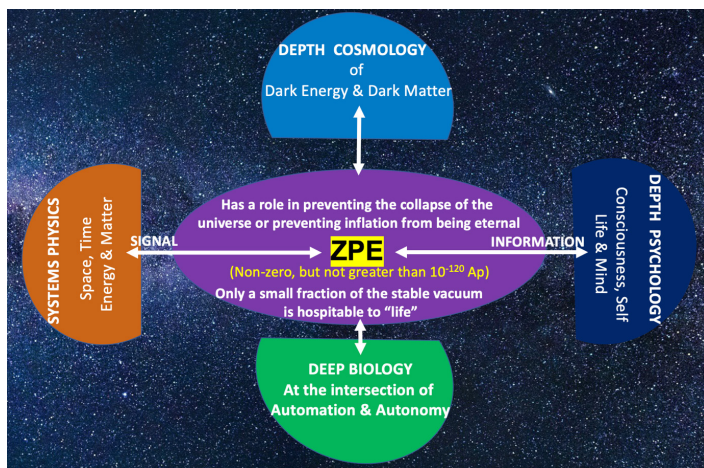
of cognitive evolution of the human brain. The fifth part has the discussion that ends with concluding remarks and potential discoveries.

### I. Zero-Point Energy State/Fluctuations

Vacuum state, in physics, is a space devoid of any matter but having fluctuations of non-zero but not greater than  $10^{-120}$  Ap energy. A small fraction of the vacuum is a stable vacuum. Einstein abandoned it as dark energy, labelling it as a cosmological constant, which recently has been found not constant even after chasing it by decimal [1,2]. "The Hubble's tension is becoming a Hubble's crisis" [3]. The observed *fluctuations* in this non-zero energy has a bigger implications for entry into the nature beyond ZPE, which is considered a nonlocal nature, that violates Einstein's constant (velocity of light), Planck's constants of space time and energy,

and the constancy in impenetrability of the entropy barrier. Zero-point energy fluctuation is the connecting link between local and nonlocal nature. ZPE fluctuations, by dissolving all divides, might show a straight or a whirling connection of the 4-D world with interstellar, intergalactic and inter-universal space.

Zero-point Energy is the transit gate from the observable to non-observable nature, and could be considered the point of meeting, exchange, coupling, conjugation, and fertilization for systems physics with systems psychology, systems cosmology with systems biology. System physics is driven by tangible visible energy. Systems psychology is mostly driven by intangible dark energy. System cosmology is all driven by dark energy, while systems biology balances visible and dark energy. The ZPE-site is for inter-conversion of dark and visible energy, and information to signal and signal to information inter-conversion (Figure 1).



**Figure 1:** ZPE is shown as the meeting ground of Systems Physics and Depth Psychology, Deep Biology and Depth Cosmology. The vertical axis shows how the dark Energy of Depth Cosmology communicates with a biological cell at a point of Deep Biology where the automation intersects with the cell's autonomy. The communication requires the finest balance between fluctuation of non-zero, but not greater than  $10^{-120}$  Ap energy, and a small fraction of the stable vacuum, which is hospitable to 'life'. On the horizontal axis the figure shows how Space, Time, Matter, and Energy of Local Science is connected with the Nonlocal Science of Consciousness, Self, Life, and Mind through inter-conversion of Signal and Information at ZPE.

Fundamentally science visualizes space deeper to ZPE state/fluctuations at three depths; Vacuum space, Hyperspace and Multiversal (inter-universal) space. The three spaces are known by different names to different disciplines of Cosmology, Natural Philosophy, and Spiritual disciplines. Table 1 on the Science of the Void summarizes this uncharted terrain for doing science of the void.

While sensation, perception and concept formation could happen in the 4-D world, imagination, dream and experience require at least the void I, intention the void II and a "will"/"won't" void III.

The cognitive faculties such as mind, self, intangible part of life, and consciousness are all vacuum-dwellers and they connect with signal- and sense-driven 4-D world through information.

## II. Zero-Point Energy State of the Brain

### Characterization and Review of literature

First publication on this issue is by the author in 2019 [4], which was elaborated later with a figure like Figure 1 in late 2019 [5] in the context of science of information. In both papers, the concept of most comfortable restful state of the live brain has been brought into focus, a situation where the brain retains the possibility to remain connected with the Infinite Whole and behaviourally exhibits the highest bid for self-healing, regeneration and plasticity with cognitive spurts and evolution of the being as a whole. From a 4-D viewpoint one should not interpret the state as if the space within the skull cavity is empty of material brain, or the brain is at zero-degree temperature! The single most criterion is the organ brain's awareness of the whole in its best possible comfort zone, observable in behavior as self-healing, regeneration, plasticity, and insightful creative cognitive outpouring. This is an open-ended characterization of a unique brain-state, which is also true for a brainless single free-living cell not having in possession the infrastructure to comprehend or express the whole.

A decade earlier three notable important papers were there on the brain's dark energy in health and disease, one published in 2006 [6], and two others in 2010 [7,8]. Two more papers relating cosmological vacuum state and cognitive state of the brain by James Beichler [9,10] are also available.

The author published two more papers mentioning ZPE state of the brain in two different contexts, one in the context of deep science of cosmo neurology in 2020 [11], and the other in the context of its place in twelve ideas that can change science in 2022 [12]. A book could be found uploaded in Academia, *Symbiotic Existential Cosmology – A Scientific Overview* [13]. The readers are also referred to a paper on *Cosmopsychism and Consciousness Research* [14] and another paper relating ZPE fluctuations with *Hiranyagarbha* of Indian Knowledge system [15].

### Identification of Brain-states that could be investigated for ZPE-state

In a search for the brain-states which could be investigated, natural attention is drawn towards the meditation process, and meditator's and yogi's brains. However, the field appears so uncontrolled in every respect that it seems difficult to develop a trustworthy study.

At the end of the year 2024, the author could identify six brain-states, which could be the near-approximation of ZPE-state of the brain [16]. These are (i) the brain of a newborn human, (ii) the human brain in the state of dreamless deep, a sleep-state when the mind is at complete rest, (iii) the brain of a NDE-survivor, and (iv) of persons who are habituated to remain awake in the deep sleep state, also (v) an adult who has been educated to remain in

Table 1

## Science of the Void

ORDER of the VOIDS	BOUNDARY	ACTIVITIES		SENSITIVITY	MANIFESTATION	WHAT IS SO FAR KNOWN
		PLAY OF	PSYCHIC FACULTIES			
<b>Void III (Creative Void)</b> (Inter-universal space) <b>Multiversal Space</b> Nest V of Nature	Beyond Universe	Will	Consciousness	Surrender-sensitive	As a Willed Document  As a Statement	Nothing
<b>Void II (Great Void)</b> (Intergalactic space) <b>Hyperspace</b> Nest IV of Nature	Beyond Galaxies	Intention	Mother Nature 'Self' & 'Life'	Life-/Heart-Sensitive	As a Letter of Intent  As a Design	Temp (-)273°C <b>Full of Dark Energy &amp; Neutrinos</b> Often equated with science fiction
<b>Void I</b> (Interstellar space) <b>Vacuum Space</b> Nest III of Nature	Beyond Zero Point Energy State/ Fluctuations	Imagination Dream & Experience	Mind & Information (as an entity)	Mind- & Intellect-Sensitive	As a Plan, Feasible	<b>Full of Dark Energy</b> , Neutrinos, Low-density particles such as, Hydrogen, Helium, and Interstellar dust, Exotic condensed matter, Cosmic rays, Magnetic monopole, Electromagnetic radiation, Naked DNA, RNA
<b>No Void / 4-D World</b>  Nests II & I of Nature	Superficial to Zero Point Energy State/ Fluctuations	Conception Perception Sensation	Mind & Senses Signals	Sense- & Mind-Sensitive	As an Architecture	Quantum Physics Classical Physics World of Sensory Reality

newborn state, may be following strenuous practice to remain in the void. (vi) The sixth group includes the brain of day-dreamers and of those who have imagination, precognition and can identify retro-causation.

A known brain-state which is closest to the ZPE-states of the brain is the state of Default Mode Network (DMN, or M-FPN, medial frontoparietal network). There is a difference between ZPE and DMN state in adults. In addition to passive tasks in the internal forum of the brain as observed in default mode, there is a focused external attention too in awakened ZPE state. DMN has been reported to have a causal relationship with creative thinking [17].

### III. Brain-Vacuum Interaction

We first describe the situations for such communication, next raise the twenty odd research questions, then consider possible physical players in such interaction, and finally move towards the study design and method, leaving it incomplete for other precious inputs in future.

#### Cerebral-Extracerebral Communication

For sensation, perception and concept formation, no global cerebral-extracerebral communication is required.

This communication is essential for all conscious experiences. *Bottom-up*, it happens when a) any sensation, perception, and conceptual development leads to conscious experience, b) the person is consciously dreaming, imagining, and playing with pure intention, and c) the being takes a leap in faith, devotion and love (Figure 2). Francis Crick has a paper related to dreams and

information exchange with outside [18]. We have a paper on dream sleep in connection with such statements in Upanishads [19]. *Top down*, it happens when the brain behaves in a transmissive way a) either consciously converting the unknown to imagination, imagination to intelligible, intelligible to possible, and the possible to verifiable state, or b) during non-conscious happenings of intuition, illumination and revelation (Figure 2).

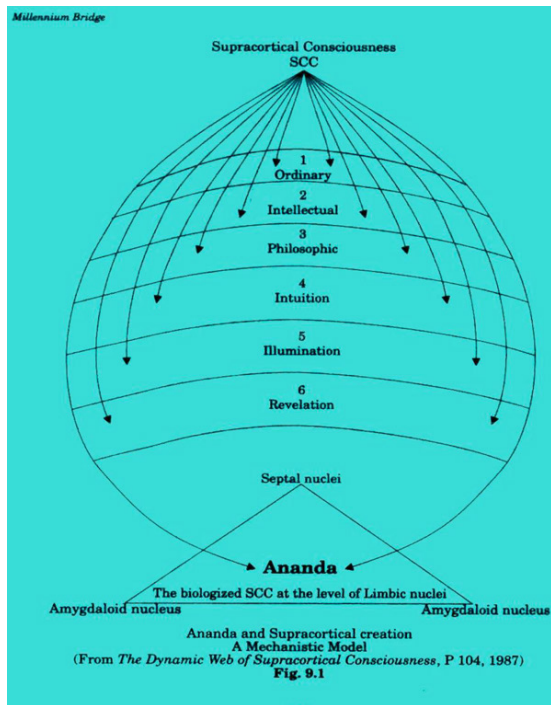
In both bottom-up and top-down events, the top of the cerebrum of both the hemispheres is involved, the phenomenon for which the author coined the term and concept of *supracortical consciousness* in 1985. Following an hour-long discussion with the author on the phenomenon in the canteen of the National Physical Laboratory of Delhi in 1988 October, Sir John C Eccles started talking of extracerebral consciousness more explicitly.

Cerebral-extracerebral interaction is, however, not always synonymous to brain-vacuum interaction. The author formulated several research questions on the brain-vacuum interaction in 2012, most of which are not answerable at this phase of science [20].

#### Research Questions

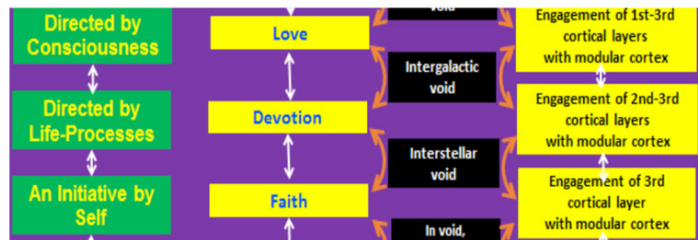
Can the brain as an organ remain alive in a physical vacuum?. If yes, will other organs, which support the brain's survival (e.g., heart, lungs) remain alive and functional too?. Or, is it such a state of the brain where the support from heart and lungs supplying nutrients and oxygen is not necessary, or the requirements are reduced to negligible minimum?. Does this interaction ever happen





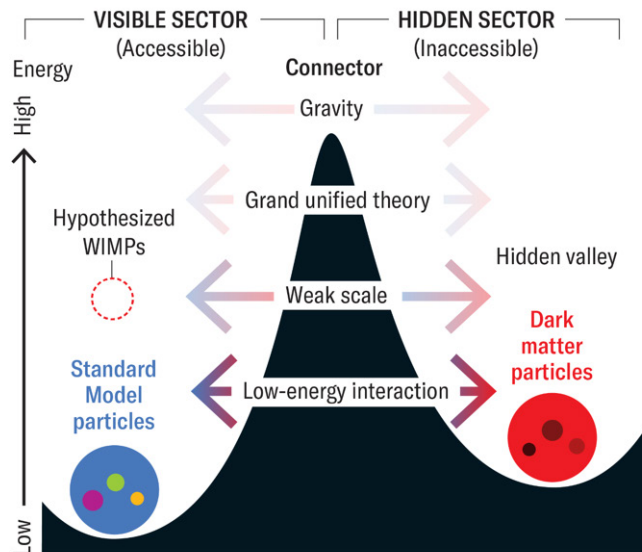
## The Cerebral cortex – as a supracortical machinery

Incorporation of		Results in
Third layer cortical neurons	In the executive machinery of downstairs modules of cerebral cortex	Intuition
Third, Second layer of cortical neurons		Illumination
Third, Second and First layer of Cortical neurons		Revelation



**Figure 2:** On the left side of the figure there is a picture from Author's book, *The Millennium Bridge* (2000) showing neurobiology of supracortical creation, where supracortical consciousness catches up with the cerebral cortex, layer by layer, to create intuition, illumination and revelation. The mechanism is explained on the upper right part of the figure. The right lower part of the figure explains the cosmo-neurobiology of Faith, Devotion, and Love while the brain experiences different depths of voids. Hierarchical engagement of different cortical layers are shown at its extreme right yellow column. The left side figure also explains neurobiology of genesis of the feeling of Ananda, through biologization of supracortical consciousness at the level of limbic nuclei.

## Dark Sector Particles and the Hidden Valley



Jen Christiansen

The author acknowledges with gratitude *Scientific American*, April 12, 2025, in taking screenshots of this picture.



With gratitude, the author acknowledges taking this background Image from *justenergy.com* Dark Energy: The biggest Mystery in our Expanding universe, updated March 10, 2025. The candidates, in yellow and white color, are author's suggestions from his cumulative thought process in the context of consciousness.

**Figure 3:** The left side of the figure is a screen-shot from *Scientific American* and is self-explanatory. On the right-side picture, the background image is from *justenergy.com*. The suggested mediators by the author are written in yellow and white scripts.

naturally regularly, for example during lucid dreaming or during deep NREM sleep?. Does such interaction happen more easily or regularly in a new born baby where the sensory perception has yet to establish its electromagnetic network inside the brain?. Does it happen in a state which can be described as awakened while in a deep sleep state! Also, does it happen when one is alive while the brain exhibits electro-cerebral silence?. What should be the experimental design for creating such different depths of vacuum while the brain is insulated inside a Faraday's cage! Or, inside any other better cage?. If neutrinos are players on the brain in vacuum state, how could neutrinos alter brain-electricity?. How does one record brain electrics etc. in such a graduated vacuum space?. What are the biomarkers by which the brain-vacuum interaction could be monitored?. Besides neurons in the cerebral cortex do specialized cells elsewhere inside the brain (e.g., Pineal gland) have access to such voids while the organ brain continues to express itself in the 4-D world?. Is transformation of quantity to quality an occurrence of communication through ZPE state/fluctuation? Does the explanation of qualia in the brain phenomena remain hidden in the science of ZPE?. Does such interaction retard the aging process of the brain? Does it retardate physiological neuronal loss with aging?. Do the brains which are habitual for such an interaction have less frequent neurodegenerative disorders like Alzheimer's disease?. Can we use such an interaction therapeutically selectively in psychiatric cases? Can a structured therapeutic brain-vacuum interaction replace other harmful therapy?. By investigating brain-vacuum interaction, are we heading towards discovering a "brain-washing" machine, a machine which will selectively remove thoughts, dreams, imagination, and intention creating uneasiness in the persons or inviting sickness?. How much depth of the brain is involved in such an interaction? Does it involve merely supracortico-cortical depth? Or, the depth goes straight down through the striatum and the rostral end of the Brain-stem! How long does it take to affect/transform the deeper subcortical structure like thalamus and striatum?. In such a depth-interaction, does it have anything to do with causation or prevention of Parkinson's disease, that involves substantia nigra and the striatum?. What is the evolutionary imperative of brain-vacuum interaction, if there is any?. Do the dormant stem cells residing in the periventricular region of the brain get an impetus to proliferate by such brain-vacuum interaction?

The questions have merit for frontier neuroscience to ponder with.

### Probable Physics of this Interaction

Did we ever formulate a research question whether ZPE fluctuations could have a straight or a whirling continuity with the inter-universal space! No! Have we ever asked the simple question why this sector across ZPE is dark? We observe darkness for three simple reasons. There is no light in the environment. Our receptors for light (retina), optic nerve, or perceptual occipital cortex are non-functional or outside the bandwidth of the prevailing environmental light. Also, when we move faster than light and light follows us from behind. On the third occasion our material body has been 'finished' as energy (Einstein) at ZPE, but

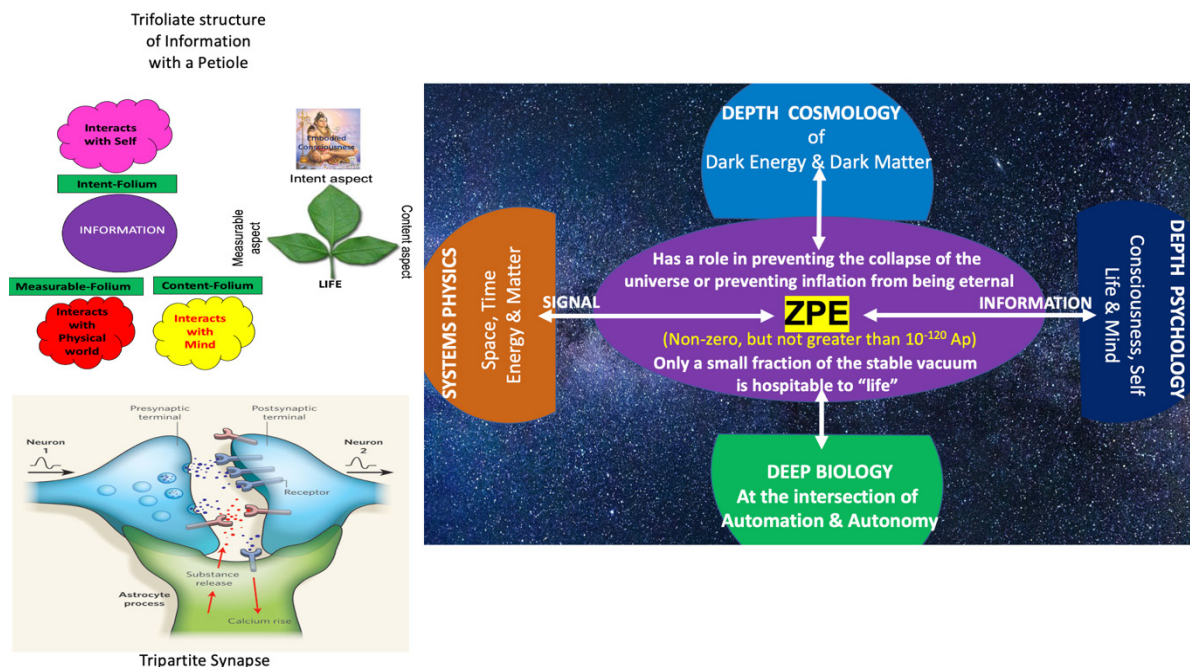
our mind, self, life and consciousness are not! In a body and the brain where such psychic faculties are inseparably stabilized in a stable vacuum, the 'self' which is categorically identical with consciousness as substance, has been observing Photon as Photon-equivalent of Consciousness (Phot-E-C), Phonon, the essence of condensed matter, as Phonon-equivalent of Consciousness (Phon-E-C), Neutrino, a particle beyond the standard model of physics having a mass less than one millionth of electron, one of the recognized dark matters as Neutrino-equivalent of Consciousness (Neut-E-C), Confromon, that maintains conformity with the whole, as Confromon-equivalent of Consciousness (Conf-E-C). Inside the visible sector, we receive them in a unique energy-information combination, where photon is carrying information on the dynamicity of the whole, phonon is carrying information on the rhythm of the whole, neutrino is carrying information on the openness of the whole, and confromon is carrying information on the conformity with the whole.

The researchers, physicists or biologists, observe the dark sector from different points of view. The dark sector has now become the focus of mainstream science too. Extensive research of Kathryn Zurek has hypothesized [21] the connection between the dark and visible sectors of matter through Gravity or Grand Unification Theory (GUT), or Weak scale or Low Energy Interaction (Figure 3).

The approach of the author for a consciousness-centric science brings out a few more other 'connectors', namely scalar fields, subquantum physical events, certain exotic states of matter as media, subtle energies, and dark energy-life interactions.

The vector-less scalar waves which propagate vertically through vacuum, quantum and classical domain of nature could be a mechanism for communication between dark sector and visible sector of physical worlds, and also between inside and outside the brain. In the context of the brain, scalar interaction is individualistic, and may be true for certain prepared individuals! Most of the scientists have dismissed the sub/pre-quantum physics where information is supposed to be structured like a trifoliate leaf with an intent folium interacting with the sentient self which is operating from sub-subquantum nest of nature, a content folium interacting with the 'mind' or mind-like operations in the vacuum space deeper to ZPE, and a folium that reduces uncertainty in the 4-D nest of nature, while the petiole of the leaf is immersed in 'life' (Figure 4).

We have missed certain exotic states of matter which could become the medium for 'self'-operation, 'life'-operations and 'mind'-operation, as suggested by the author [22]. We have never asked how intention, 'the letter of intent' from the 'will' gets drafted as an instruction sheet for expressing it as signals for the 4-D world [23]? Such ideas, although seem bizarre to mainstream science, may be relevant in brain-vacuum interactions. We have ignored those energy waves which carry information on the conformity of the whole, dynamicity of the whole, rhythm of the whole,



**Figure 4:** The right side of this figure has already been described earlier in figure 1. The upper figure on the left side (above the ZPE line shown on the right side) describes trifoliate structure of information like a Bael leaf. While the petiole draws sap from 'life', the intent folium interacts with consciousness or its representative in the system as 'self'. Content folium works with the mind. Measurable folium works with the physical signal world and reduces uncertainty. Lower figure on the left side (below the ZPE line on right side) is of a tripartite synapse (author acknowledges Google image for it) raising a question whether it has anything to do with trifoliate structure of information?

and openness of the whole. These are subtle energies! There are occasions when dark energy itself is a connector to an intangible part of 'life'. During near-death experience, the 'life' of the being thrives on dark energy. Based on the circumstances, one, two or all of the five namely, scalar waves, subquantum physics, exotic matter-correlates of consciousness, information-carrying Energy i.e., subtle energy, and harnessing of dark energy by 'life' could be the active players in this interaction.

The Multiversal musical code, which is often recognized as 'spiritual', is decoded as subtle energies for science and as scalar fields for humanity! We do not know yet how universal subtle energies are made into individualistic vertically propagating scalar waves?

### Control and Cases

In the experiment on brain-vacuum interaction new-born's brain state may be taken as "control".

Cases may be selected from other five brain-states.

- Day-dreamer-, Imaginative-, Precognitive- and Retro causative-brain-states with scalar waves
- Deep sleep state of the brain, with Information-carrying subtle energy
- The brain-state that remains awake in deep-sleep state, with subquantum physical states
- Adult with brain-state of a newborn, with exotic-matter-state correlates of consciousness

- The brain-state of NDE-survivor, with mechanism for harnessing intangible dark energy.

### Methods of Investigation

The moot question is whether the available high radiation brain-scanning methods are ethical for application on the newborn babies and the disease-free healthy individuals? Alternate mapping/ scanning methods without radiation, or acceptable radiation are to be adopted. Experiments with neutrinos on Dolphin, Elephant, and Ape may be explored, so also on brainless sea-animals with subtle energy.

### IV. Consequences

To speak in the language of computer science, brain-vacuum interaction leads to 'reformatting' of the 'IC's in the 'mother-board' of the brain-as-a-computer. In the language of cognitive science, new feelings and intentions make their presence felt during such an interaction. In the language of consciousness-centric neuroscience, the psychic faculties, unlike matter, are imperishable at ZPE. Their stable embodiment within the brain keeps the brain stable on an identity basis for doing science. The person develops new skills for articulation in their creative spurts. Often the subject develops a unique 'will' for execution. All are signs of new cognitive development. Multilevel integrity of the brain is most desired for sustainability of the process; classical integrity, quantum integrity, informational integrity, phenomenal integrity leading to integrity for remaining conducive to Mother Nature.



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## On Multilevel integrity

### The Buddha State of the Brain

Imagine what could be the Buddha-state of the brain constructed from the zero-point energy state of the brain. The readers may recall the image of Lord Buddha doing meditation. At this stage of neuroscience, one can only imagine what could be the subject's brain-state that might tentatively be called the Buddha-state of the Brain! In a calm and quiet environment the person is in a state of meditation posture of both body and mind, when his brain has been performing bodily functions maintaining thoughtless and dreamless mental hygiene. The 'life' is in the state of complete homeostasis in terms of both body and mind. The mind is still; neither converting any sensory signal into a piece of information, nor splitting information into a 'form' and energy, neither 'form'ing nor processing any thought! The decision-making sentient entity, the self, the Chief Executive Officer (CEO) of consciousness within the brain has taken complete control of the mind, and quieted it completely. Cool consciousness feels 'at home' with the operations of 'self', 'life', and the mind with little fluctuation from external signals, or internal information. One hundred billion neurons, and several hundred billions of astrocytes, all observable, and 'local'izable within the brain, are fine-tuned with the operations of non-observable and 'non-local'-izable faculty members of the system psyche, namely consciousness, life, self, mind, and information. This is when the brain could be said to be at the Buddha-state of the being [24]. In the Buddha state of the brain, the cell biology of neuron-astrocyte tango is like yang-yin, where one quenches its thirst while the other drinks. One sends nutrients before the other feels hungry. One cell's signal carries meaning for the other. One's thought is another's action. One's feeling translates into another's emotion. Buddha state of the brain is that which has achieved classical, quantum and informational integrity of the brain.

## On Multilevel Integrity

### A Person with the Buddha state of the Brain in a War Zone

Phenomenology, which revolves around 'self', could be divided into three strata according to their depth. Surface phenomenology is confined to classical and quantum worlds. Depth phenomenology is of a leap of faith, devotion and love. Elementary phenomenology, sandwiched between the superficial and depth strata, involves elementary phenomena, the elements of conscious experience, such as sex and ego, love and life, death or near-death, which is beyond mental, but deep emotional and phenomenal. Observe the reality behavior of a nonviolent person having a Buddha state of brain asked to handle or guide a violent situation. His brain is likely being tossed in a either-life-or-death situation in abundance of sex and love leading to multidimensional dismantling and re-mantling of the subject's ego. The being's brain passes through the phase of a *Buddha, stabilized in a warzone* and develops over time the phenomenological integrity. Since "violence never ceases through hatred and is only through love that it ceases" (—The Buddha, the Dhammapada), the being prepares for Supreme Consummation. Neurobiologically, Love is a cortical manifestation of supracortical

consciousness. Supracortical love is inexhaustible, limited by the biology of the cerebral cortex only. To ensure that all-devouring Love could halt such violence and hatred, consummation of the cerebral cortex in supracortical consciousness seems essential.

## On Multilevel integrity

### Integrity following Supreme Consummation

Following the development of classical integrity, quantum integrity, informational integrity and phenomenological integrity of the brain, cognitive evolution of the brain moves on the leap of faith, devotion and love, and takes preparation for Supreme Consummation for an absolutely immersive brain, immersed in the multiversal consciousness.

"In the abyss of deep blue, the sempiternal light is lit. The destined human cerebral cortex faces Infinity's finite front. Hidden asymmetries in the external cosmos are complemented by reciprocal asymmetries in neurobiology. In cyclic symmetry and in the metric plane, the quivering limbs of the cosmic facet embrace the virgin vibration of the dreamy cords of the living biological corpse. The undying love of the cosmic integration center impregnates the passionate heartbeat of the biological integration centre." – Mukhopadhyay, AK (The Grace Phenomenon, *Conquering the Brain*, 1995, p. 247).

"A vast quiescence swallows up all sounds into a voicelessness of utter bliss." (Sri Aurobindo, in *Savitri*).

Supreme Consummation, although individualistic, dissolves a number of mysteries (cf., *the mysterium tremendum et fascinans* of d'Aquili & Newberg, 1998) in spiritual science, and demystifies the Multiversal musical code for science and humanity.

## V. Discussion and Concluding Remarks

### From 'Zero' to Hero!

The article draws science from a vast uncharted terrain to multiple frontier areas. In an uncharted terrain, science initially begins with identifying levels and layers, and looks for principal players there, local or nonlocal. It tries to find out their operational mechanics, and whether those uncharacterized mechanics could be connected with mechanics known in science. It searches for any logic driving the events, formulates research questions, makes research hypotheses, develops methods to answer those questions systematically. In this way the uncharted territory gets connected with several frontier disciplines leading to the platform of multi-disciplinary research. This is what has been done in this paper.

We have wasted half a century in science with an assumption that the brain is the source of consciousness. We have done neuroscience, developed neural networks, and robotic expertise in complex pattern recognition, marketed it as Artificial Intelligence, but neglected the science of consciousness, cognition, qualia and feeling. The marketed intelligence does not have a wide range of activity as observed in human intelligence (Table 2).

Table 2:

### Categories of Human Intelligence and their Characteristics

Category of Human Intelligence	Cognitive Faculty Involved	Memory	Alternative name, as given by the author
Ordinary Intelligence	Self and Mind with Information (Involvement of 'life' is indirect, through information)	Informational (Semantic) Memory.	Dry Intelligence
Phenomenal Intelligence	Self and Mind with Information & Life (direct but only non-emotional part)	Episodic & Informational Memory	Moist Intelligence
Emotional Intelligence	Life, Self, Mind with Information Memory of Emotional Experience Episodic & Informational Memory	Memory of Emotional Experience Episodic & Informational Memory	Juicy Intelligence
Intuitive Intelligence	Consciousness, Life, Self, and Mind, with Information	Overarching Memory of consciousness Memory of Emotional Experience Episodic & Informational Memory	Crystal Intelligence

AI-devices do not have a sense of 'self', a sense of its parts and itself as a whole! Robot's intelligence totally lacks memory. Memory needs the presence of 'life'[25], tangibly or intangibly. It begins with the ability of information-handling, and is absent in any signal processing system. Machine learning is a passive familiarization with all realistically available signal patterns, helped by 'sensations' in 'sensors'. Live entity learns from information-sourced perception. A thin line of difference exists between algorithmic logic and logistic. The 'self' offers logic. Logistic preparation requires involvement of intangible parts of 'life' as well. In the absence of 'life', AI-devices have no ability to manage unexpected uncertainty. It does not have a choice outside algorithmic pre-specifications. It does not have the ability to learn from its past mistakes and improve. AI-devices might compete with human beings for a job but without any intention to do or not to do it. It does not have any feeling and emotional response for the task it is engaged in and therefore has no desire or will to resign or improve.

Intelligence is an outcome of interaction of operations of mind and self with active participation of stored semantic and episodic memories. Some of the properties of mind have been mechanized in robotic intelligence. The ability of context-based choice from different available options is a very preliminary property of self, which has been inculcated in AI. In robotic intelligence, full properties of mind and self are difficult to blossom. It requires a live conscious situation.

We have wasted more than a century in science concurring with Einstein on ZPE as a cosmological constant, and considering it as

nothing but stable dark energy! In mainstream science, ZPE ends at the Truth of Absence, without a wish to understand that absence of immediate evidence is not the evidence of absence! ZPE seems to be the gateway for knowledge across doubts, contradictions and disinterest, in the context of Total Science that deals with both quantities and qualities, signal-forms and formless or dark form of information, the revealed and the concealed, explicate and implicate realms, the visible and the dark sectors, the finite and the Infinite.

We have ignored the fact that ZPE has a fluctuating as well as a stable part. ZPE- fluctuations are the swinging doors for the 4-D world to have access to interstellar, intergalactic, and inter-universal/multiversal space. The stable part of the vacuum is responsible for maintenance of the stability of the 4-D signal world, brain's formatted algorithmic systems, and life's formatted operations. The fluctuating vacuum opens the source for an unprecedented evolution of 'life' in the 4-D world and clears signal's access to the world of information, and tangible energy's access to the infinite world of intangible energy! Clarity in the science of ZPE is likely to initiate necessary changes in the standard model of Physics as well.

Development of a science of consciousness is intertwined with the development of science of ZPE, which would let us know how the automated behavior of the brain transits to its autonomous and holonomic behaviors? For last fifteen years the author has been deliberating on the possibility of harnessing of dark energy by living entity through ZPE, and also possibility of developing a personalized brain-washing machine for psychologically disturbed



patients for removing stains of unwanted thoughts, memories and dreams (Precision Medicine), which would also likely to open the lock how universal subtle energies could be made into individualistic scalar fields! It seems we are at the threshold of rediscovering the brain through its different ZPE-states.

ZPE is the connection between gross and subtle parts of 'life'. To understand 'life', and the mechanism of memory formation, and how memory could be holographically stored and accessed, the science of ZPE and brain-vacuum interactions are necessary. The brain-vacuum interaction generates evidence from insights and intuition. Understanding of 'life' is mandatory to harness dark energy for a 4-D world. Dark energy could be harnessed through ZPE only by 'life'.

Since psychic faculties, like mind, self, life and consciousness are not destroyed in ZPE and the brain with embedded psychic faculty can reach biological equivalence of ZPE state, it opens up a new corridor for consciousness-centric neuroscience. Everyone engaged in this science can taste the real fulfilment of life, being stationed at such a zero state. All of us retain the possibility of becoming a unique hero from biologization of this physical vacuum within our brain. A road opens towards Immortality, Eternity, Infinity, and their realization as *Ananda*.

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