# Final category: 1.0 Philosophy

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## Making the shift from Neuron to Brain to from Microtubules to Mind.

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### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[01.02].....Materialism and dualism

### Abstract

This article explores what blocks the paradigm shift from the classic scientific view from neuron to brain to the emerging understanding of from microtubules to mind. There is always a collective resistance with any change in worldview, as written by the philosopher of science Thomas Kuhn, in his classic The Structure of Scientific Revolutions. As we move from microtubules to mind, there's a shift from our individual identities to an understanding of our interrelatedness to all life and to the cosmos, which create resistance on collective and individual level. Recognizing how microtubules are in every cell in the body leads to a profound shift in our understanding of meditation, on theoretical and experiential levels. Microstates of consciousness become understandable, adding a new domain to the classical macrostates of consciousness that underlies our cultures world view.

### Keywords

Worldview, paradigm shift, resistance, micro states of consciousness, macro states of consciousness.

**23**

# Beyond Neural Boundaries: Unraveling Qualia Through Microtubules and Extra Dimensions

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### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[01.05].....Qualia

### Abstract

The human brain, often hailed as the pinnacle of complexity in the universe, has been the subject of extensive research aimed at unraveling its inner workings and decoding the intricate relationship between brain activity and human behavior. Despite remarkable progress in understanding neural processes, a fundamental question remains unanswered: How do these processes give rise to the subjective experiences, emotions, and qualia that shape our individuality? This thought-provoking paper delves into the enigmatic realm of qualia—the deeply personal and subjective aspects of conscious experience that defy easy explanation. Drawing upon David Chalmers' exploration of the "hard problem" of consciousness, we delve into the elusive nature of qualia and its role in defining our unique identities. To shed light on this intriguing phenomenon, we delve into the ORCH-OR theory proposed by Roger Penrose and Stuart Hameroff. This theory posits that microtubules, structures within neurons, play a vital role in generating unique qualia by interacting with micro-scale extra dimensions. Building upon the theoretical framework presented by Oskar Klein, we investigate the hypothesis that these extra dimensions contribute to the formation of distinct and individualized qualia. By expanding the conventional understanding of qualia beyond neural processes, this paper proposes an integrated framework that encompasses the intricate interplay between brain activity, subjective experiences, and the uncharted realms of extra dimensions. Through this multidimensional lens, we endeavor to elucidate the mechanisms by which qualia emerges and offer fresh insights into the complex nature of human consciousness and we finally connect qualia as a part of string theory.

### Keywords

Qualia, Consciousness, Brain Activity, Subjective Experience, Extra Dimensions, ORCH-OR Theory, Microtubules, David Chalmers, Oskar Klein. String Theory,

**25**

# Visual Cognition Time Frames from Neuroscience and Buddhist Perspectives

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

Mental cognition time frames have been cataloged for centuries in Eastern philosophical literature to reflect on the nature of arisal and cessation of thoughts and their durations [Jinpa and Coghlan, 2018]. Out of which, few measurements stand out and could possibly be correlated with EEG measurements. A few examples of these verifiable time frames are the duration of a mental Instant (13.333 ms), also called Kṣaṇa, a thought moment (120 ms), a finger snap (0.8 to 0.866 s), time for a mental action (0.866 s), and one human reflection (~ 1.2 s). The duration of a finger snap was measured with a digital chronometer. Averaged over a hundred trials, the period of the finger snaps was found to be: 0.83±0.14 s (n=100). Different stages of object recognition and insight moments, called 'Eureka' moments, were studied with 256-channel EEG data [Ramon et al., 2023] of five subjects. The protocol was to show the picture of an object for one second on a screen and after that subject was asked to covertly visualize and name the object. EEG phase slips were extracted, and spatiotemporal plots were made with a montage layout of electrode positions. The first stage of object recognition is related to the activation of visual areas in the brain which varies between 80-130 ms. This could be considered very similar to the duration of the thought moment (120 ms) from Buddhist literature. Following this, the brain activation shifted to frontal areas (0.2-0.3 s) related to the emotional responses, then to the right central areas (0.4-0.65 s) related to language and memory for name and form recognition, and after that integration of new knowledge in the memory during 0.65-0.85 s. Overall, it took about 0.85 s to recognize an object which is similar to the time for one mental action (0.866 s) in the Buddhist literature. Following this, averaged over five subjects, it took about 0.88±0.18 s (n=5) for the brain to return to normal background activity which is similar to one human reflection (~ 1.2 s) according to Buddhist literature. The duration of the Instant (14.31 ms) was estimated from the spatiotemporal plots which represent the completion of a process in the visual, emotional, language, and memory areas. This is, slightly larger than what has been suggested in the Buddhist literature. These findings might be a new way to study the relationship of visual cognitive moments with Buddhist measures of mental time frames and may provide an additional pathway to relate neuroscience with Buddhist philosophy. References Jinpa, Thupten (Editor) and Coghlan, Ian (Translator). Science and Philosophy in the Indian Buddhist Classics, Vol. 1: The Physical World. Simon & Schuster, New Delhi, India, 2018. pp 239-281. Ramon C, Graichen U, Gargiulo P, Zanow F, Knösche TR and Haueisen J (2023) Spatiotemporal phase slip patterns for visual evoked potentials, covert

object naming tasks, and insight moments extracted from 256 channel EEG recordings. Front. Integr. Neurosci. 17:1087976. https://pubmed.ncbi.nlm.nih.gov/37384237/

**Keywords**

visual perception, mental time frames, EEG, object recognition, name and form

**33**

# The Revolutionary Reality of an Infinite Universe and its Cosmic Consciousness

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

Improved telescopic observations across the entire electromagnetic spectrum into the vast distances of the physical cosmos are seriously challenging the century-old gravitational model of an expanding universe resulting from a "Big Bang." Albert Einstein's theory of general relativity allowed for a static universe; however, Georges Lemaître, a Catholic Jesuit priest, imagined the redshift in the spectrum of light from all distant galaxies to be evidence of uniform Doppler recession, rather than a basic measure of varying distances. He calculated the reversal of this expanding Newtonian gravitational universe back to a singularity that allegedly exploded about 13.8 billion years ago. A miraculous mathematical creation of everything from nothing, including an isolated deterministic humanity, largely satisfied the religious-minded, while promoting an erroIneous scientific theory of cosmology that even Edwin Hubble cautioned against. The Standard Model overshadowed the description of a more practical and realistic electromagnetic-plasma universe first investigated experimentally in the laboratory at the turn of the century by Kristian Birkeland and later advanced by Hannes Alfvén, physics Nobel Laureate in 1970. The most startling infrared observations of the new James Webb Space Telescope are fully mature galaxies larger than the Milky Way at a distance and time within a few hundred million years of the supposed Big Bang when the Standard Model predicts early star formation and embryonic galaxies at best. Equally astounding, the infrared telescope has pierced the dense veil of gas, dust, and plasma that surround closer galaxies, displaying the full details of their unfolding geometric spirals. Clearly shown are the intricate networks of thin, interwoven electrical filaments with fractal patterns, giving birth to families of stars along their spiraling arms. These spectacular images–when combined with x-ray observations of massive galaxy family clusters connected by currents of "Birkeland" filaments reaching 50 million light years across the sky, that could not possibly have coalesced in the 13.8 billion years since the alleged Big Bang–are falsifying the imaginary gravitational mathematical model of universe formation. Yet, all these observations support Alfvén's reality of an infinity of individual electromagnetic galaxies and stars being born, living, and dying within an eternal black plasma. A verdict in favor of a nonexpanding electromagnetic-plasma universe appears justified by the direct evidence of physical observations, and common sense, rather than the Standard mathematical version built on serial fantasies and sensational theories of a gravitational singularity; instant inflation; dark matter that holds galaxies together; dark energy that drives them apart; and gravitational black holes that consume them from the inside. A saner solution seems to be a simple, infinite universe of related galaxies, without beginning or end, constantly

renewed by the electromagnetic generation of light, life, and mind, within an eternally greater, electrically neutral, and conductive, dark plasma. If in fact, the universe consists of infinite living galaxies, presenting infinite opportunities for life, intelligence, and mind to naturally evolve, the inevitable result is the flowering of individual self-awareness as part of an infinite mind–a revolution of reality in the understanding of consciousness.

**Keywords**

Big Bang Theory, Standard Model of Cosmology, Kristian Birkeland, Hannes Alfvén, Albert Einstein, Georges Lemaître, Edwin Hubble, James Webb Space Telescope, Milky Way galaxy, Alfvén's Reality, infinity, electromagnetic-plasma universe, black holes, dark matter, dark energy, inflation, cosmic consciousness, self-awareness, infinite mind

**43**

# FOXP2 and Human Consciousness

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### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[03.06].....Language

### Abstract

Humans are not unique because we are conscious. We are unique because we know it. Expressive language is the keystone of the Homo sapiens' information processing system. It articulates human thoughts and aligns them to parts of the universe in ordered words, images, numbers, and lexical and conceptual semantics. Parts of the universe, their relationships, and changes thereto are presented to the senses by “edges” that discern among different photon wavelengths. (The JWST has discerned a CH3+ molecule 1,350 light-years away.) The human brain receives edges among electromagnetic phenomena as chemical signals sent to it by the five senses and disambiguates incoming signals by parsing them into “parts” and their "relationships." Specific human genes take over from there and assign the parts and relationships (nouns and verbs) to articulated sounds which subsequently become expressive language, the predicate for human information processing. At the highest level, the accuracy of expressive language reveals through the electromagnetic lens of our consciousness a spacetime universe. At the lowest level, it reveals the universe as molecules, atoms, and quantum fields of waves and particles. At an instant, it reveals time: now, past, and future. However, expressive language does not stop there. It reveals that our consciousness is self-swallowing, aware of itself, entangled with itself, and curious about itself. Curiosity is the keystone of human knowledge. Without the acute precision of expressive language in perceiving parts and relationships and assembling them into “ontologies” that tell us what those parts “mean” there would be no human consciousness. no knowledge. Our consciousness would be that of a frog. Strong evidence for sapiens' expressive language points to the transcription factor on Chromosome #7 called FOXP2 which distributes proteins throughout sapiens DNA. The forkhead box protein P2 (FOXP2) transcription factor plays, perhaps, the determining role in developing human language and speech. Specifically, the fixed variant of the sapiens' FOXP2 gene affects the behavior of 100 or more other genes in our DNA, some in the brain and some in the respiratory system. FOXP2 is the source of the sapiens' cognitive model, and therefore of sapiens' unique consciousness. While this statement may be controversial in genetic science, I believe that it is the key neuroscience needs to unlock human consciousness. It is our cognitive model, centered on our fixed variant of the FOXP2 gene, that makes us “sapiens.” FOXP2 genetic transcriptions in our DNA give humans the ability to create "ontologies," the source of “meaning” in our expressive language-based mental information system. FOXP2’s ontologies possibly offer neuroscience a connection between fMRI research and the ontological structures that define AI language models. While one brain study says that fMRI can track

neural nets (thoughts) as they traverse the hemispheres of the brain, but it cannot tell what the thought is about, another brain study says AI language models (ontologies) have been directly linked to the neural networks of thoughts (fMRI), thus enabling AI to read minds. Clearly, studying FOXP2 can spawn a new revolution in neuroscience's quest to understand human consciousness.

**Keywords**

consciousness, FOXP2, expressive language, ontology, epistemology, artificial intelligence, cognition, information, electromagnetism, brain, mind, thought, neural network, fMRI

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# Introducing Flip-Book Idealism (FBI)

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[01.09].....Philosophical theories of consciousness

## Abstract

Mainstream neuroscientists often claim that the biology of consciousness will ultimately not be different from other bodily processes, such as digestion. They believe that by employing the same methods used in understanding biological functions throughout the body, they can solve the enigmatic hard problem of phenomenological experience. However, there's a notable contrast in their approach to the study of consciousness compared to other bodily functions. In other fields (e.g., endocrinology, neurology, gastroenterology), the focus has shifted from morphology-based research to molecular dissection of complex traits. Scientists identify subjects with broken functions ("phenotypes") and then map the corresponding genes, proteins, and pathways. In the study of consciousness, progress has been severely hampered by the absence of individuals with color-blindness, deafness, or pain insensitivity caused by cortical gene mutations. These traits only manifest in sensory organs such as the retina, inner ear, or afferent nerve fibers, where numerous known mutated genes exist. Once the signal from these organs reaches the cortex of the brain, it never fails at the molecular/DNA level to generate a phenomenological experience. One possible explanation of this finding is – in contrast to digestion – that it is not the job of proteins to create our vivid inner experience, and we need to consider alternative approaches. In our book, titled "Plato's Prisoners" (August 2023), we present Flip-Book Idealism (FBI) as a framework that agrees with other forms of idealism regarding the primacy of consciousness and refutes the notion that human phenomenological experience is illusory. According to FBI, consciousness detects patterns in a facet of itself called the “Urgrund,” – the fundamental essence of existence – and shapes this information into frames of experience by translating complex signal patterns into qualia. FBI agrees with other modern forms of idealism (e.g., Kastrup’s analytic idealism, Hoffman’s conscious agents) that spacetime is not primary and that consciousness exists outside of it. In FBI, spacetime is a set of rules that consciousness needs to adhere to when creating experiential frames to allow for the experienced world to be consistent. One hallmark of FBI is that the generation of experiential frames by consciousness creates the arrow of time. Its observer-based viewpoint of reality aligns with findings in quantum mechanics such as wave-particle duality or “spooky action at a distance.” In FBI, these findings are no longer odd or mysterious features of the world around us but entirely plausible observations. FBI distinguishes itself from other strands of idealism by asserting that conscious agents primarily interact with one another through the intermediary of the Urgrund. It does not solve the hard problem of consciousness but underscores its significance. A purely materialistic approach will not unravel this

enigma since it is “stuck” focusing on processes within the spacetime framework. We highlight the compelling opportunities for future knowledge gains through contemplative studies. These studies can provide insights into how the illusion of a seemingly physical reality around us is created, hence the reference to Plato’s cave. They require funding support at much higher levels than previously provided.

**Keywords**

idealism, complex genetics, allegory of the cave, illusion, simulation, quantum physics, relativity theory, arrow of time

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# Building a quantum superposition of conscious states with integrated information theory

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[04.01].....Quantum physics, collapse and the measurement problem

## Abstract

Could there be a quantum superposition of consciousness? The integrated information theory (IIT) of consciousness and its recently developed quantum extension (QIIT) have turned this into a well-defined question. According to IIT, consciousness is a measurable physical quantity given by integrated information (Φ), such that the amount of consciousness in a system corresponds to its amount of Φ. We use the most recent IIT formalism (IIT4.0), to analyze the simplest non-zero Φ system known as a feedback dyad. We then propose a circuit that puts the dyad into a superposition of states which, according to IIT, would correspond to a superposition of conscious states. We refer to this as "Schrödinger's dyad". We therefore show that either IIT is false or the simple dyad is conscious and can easily be put into a superposition of conscious states. We then identify the simplest possible consciousness-collapse model, which predicts that this superposition is unstable and collapses at a rate proportional to the size of the superposition. Our analysis will enable us to make a number of key observations about the general structure of integrated information theory (IIT2.0, IIT3.0, IIT40, and QIIT) and the general structure of consciousness-causes-collapse models.

## Keywords

Consciousness, wavefunction collapse, integrated information, quantum IIT, quantum computers

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# Consciousness: The Fundamental Reality of the Universe

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### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[01.09].....Philosophical theories of consciousness

### Abstract

Consciousness as the fundamental reality in the universe, has been established by Indian school of philosophy thousands of years back. The careful study of Upanishads popularly known as Vedanta gives us a clear picture of consciousness which is beyond the understanding of the modern science. Human body is a gross matter which consists of blood, flesh, tissues, cells etc. and hence it can not produce consciousness. The brain is also part of the human body with billions of neurones which can not also make the body conscious. The mind which plays a vital function in human being is a subtle matter and more subtler is the memory and intellect. All those subtle or gross matter can not make the human body sentient. The 'easy problem' is to understand how the brain and body gives rise to perception, cognition, learning and behaviour. But the hard problem according to David Chalmers's is what gives us the first person experience. This is the greatest mystery of humanity as of now. According to Vedanta, the consciousness is reflected in the mind and the mind borrows consciousness through the reflected consciousness. Then the sense organs borrows consciousness from the mind and make the entire body conscious. This process helps us aware and exist in the phenomenal world. Even Vedant says that the mind is directed to different objects by the will of the consciousness. The vital energy in the body works, the mouth utter speech, eyes directed to see things and the ear directed to hear by the direction of the consciousness. The consciousness is fundamental. To establish the fact, Drig Drisya Viveka (Seer and the Seen), a concept from Advaita Vedanta, is discussed here. According to this method, there are three steps in understanding the distinction between the seer and the seen. The first step recognizes that the eyes (seer) are distinct from the objects they perceive, which are referred to as forms (seen). While the forms constantly change, the seer remains unchanged and is represented by the pair of eyes. In this context, the experience of seeing may vary, but the experiencer remains constant. The second step involves a shift in perspective. The eyes themselves become the seen, and the mind becomes the seer. The mind becomes aware of the visual perceptions produced by the eyes, and when the eyes are closed, there is no visual perception. Here, the eyes are known, and the mind assumes the role of the knower. In the final step, the mind itself becomes the seen, and the self becomes the experiencer. The modifications of the mind, such as thoughts, feelings, and emotions, are constantly experienced by the experiencer. These states of mind are continuously changing, but the experiencer remains unchanged. Therefore, according to the principle that the seer and the seen are different, if the mind is experienced,

the experiencer must be distinct from it. This witness or experiencer, is nothing but the consciousness because it is aware of the contents of the mind.

**Keywords**

Consciousness, Fundamental, Vedanta, Seer and Seen

**71**

# Self and Other Consciousness: An Inner Theatre Model from Philosophy to Cognitive-Social Neuroscience and Ethics

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

There is no “Cartesian Theater” with a fixed self or soul, watching perceptions and ideas at a central spot inside the brain, as Daniel Dennett reminds us. Still, one might ask, “I think therefore I am … what?” Dennett might answer, "multiple narrative drafts." But this stresses the linguistic dimension of consciousness. There are also performative aspects in the complex body-brain networks that produce the theatre of mind, as subjective feelings of an integrated consciousness with various potential states: reality perceptions, memories, imaginings, dreams, and mystical alterations. The inner self is an illusory, yet experiential whole, or as philosopher Nidesh Lawtoo puts it: a “phantom ego,” involving a “mimetic unconscious.” The developing subjective self becomes a mimetic phantom from the baby’s initial sensory interplay with larger humans—mimicking facial expressions less than an hour after birth, attending to others’ goals by six months, and following gazes by nine months—to numerous mirroring episodes throughout life, which prune the brain’s wiring. This also relates to phenomenologist Jacques Lacan’s theory of the “mirror stage,” with the development of Imaginary, Symbolic, and Real dimensions, which may correlate with neuroscience findings about right, left, and sub-cortical functions, as well as the recent discovery of a “mirror neuron system.” According to Global Workspace Theory (GWT), from psychologist Bernard Baars, cognitive consciousness occurs on the “stage” of working memory, in a limited “spotlight” (one to four separate items) through unconscious “scene setters.” This involves the inner voice of thought performing with sensory images, in relation to conceptual, deep goal, and outer contextual “frames,” plus long-term memory traces as the “audience,” shaping conscious “scenes.” Such an inner theatre includes multiple shifting stages, with dynamic, reentrant, core clusters of brain circuits, cooperating and competing in each moment of self-awareness. But how does it involve social interactions between brains, with ego and group identifications, yet mimetic, potentially violent rivalries? How does it also involve subconscious (sub-cognitive) consciousness in brain-body connections and between brain-bodies? This remote presentation offers a revolutionary model of inner/outer, self/other, theatrical consciousness extending Baars’s GWT metaphors, through Matthew Lieberman’s social neuroscience research and Iain McGilchrist’s right/left hemisphere meta-analysis, along with the theories of Lawtoo and Lacan. It considers interactive cognition, imagery, and emotion with subconscious “stagehands” signaling through mirror-neuron mimetic contagion between brain-bodies,

especially in the modes of melodrama or tragicomedy—revealing ethical concerns onstage, onscreen, and in life. Such research relates to several of my previous books, Ghosts of Theatre and Cinema in the Brain (2006), Inner Theatres of Good and Evil (2011), and Beast-People Onscreen and in Your Brain (2016), plus a forthcoming book, European Churches and Chinese Temples as Neuro-Theatrical Sites (2024).


## Keywords

consciousness, philosophy of mind, mimetic theory, phenomenology, theatre, cognitive science, social neuroscience, brain lateralization, mirror neurons, emotional contagion

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# Applied Variant T-Consciousness Fields Can Revolutionize Neuroscience

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[01.08].....The "hard problem" and the explanatory gap

## Abstract

Consciousness has captivated the attention of philosophers, scientists, and scholars throughout history. While some theories focus solely on the physical aspects, opposing viewpoints argue against reducing such a complex phenomenon to a purely physical process. Additionally, alternative theories, like Orch-OR, propose that the emergence of consciousness is influenced by a combination of both brain and quantum waves. Consequently, a universally accepted definition of this elusive concept remains an ongoing challenge, the so-called "hard problem". In the 1980s, Mohammad Ali Taheri introduced the Theory of T-Consciousness, which combines elements of philosophy and science. According to this theory, the universe and everything within it, both living and non-living, are shaped and operate based on information originating from a unified consciousness known as the Cosmic Consciousness Network (CCN). The CCN is a holistic consciousness that transcends matter and energy but has the ability to influence them without any limitations in space or time. Consciousness exists at various levels, ranging from strings and quantum waves to fundamental subatomic particles and all living organisms. When a connection is established between the CCN and the consciousness of individual elements, information can be transmitted from the CCN to lower levels, updating the properties and behavior of these constituent parts. In this conceptualization of consciousness, the Mind-of-Matter serves as the interface between the information (the back-end software) and the space-time fabric (the front-end hardware). According to this theory, consciousness, intelligence, awareness, insight, wisdom, and management coexist and are interwoven and interconnected at different levels. This collective entity is referred to as T-Consciousness. Unlike most theories that propose consciousness emerges from energy, matter, or quantum fields, the T-Consciousness theory posits that everything in the universe arises from T-Consciousness. Every entity within the universe is a distinct expression or manifestation of T-Consciousness at a particular level. An intriguing aspect of the Theory of T-Consciousness lies in its practical applications through the utilization of T-Consciousness Fields (TCFs). These fields are a specific subset of the CCN and can be categorized as either variant or invariant. Invariant TCFs give rise to the intrinsic properties observed at the atomic and subatomic levels. The Cosmointel research team has dedicated the past three decades to investigating the existence of variant TCFs and exploring the distinct

effects that each variant TCF has on matter and energy. Through reproducible experiments, they have demonstrated that TCFs possess unique characteristics and interactions with the physical world. Notably, the studies conducted by the research team have shown hard evidence that while TCFs differ from human consciousness and are not products of the human mind, they can indeed engage in interactions with human consciousness. The Theory of T-Consciousness encompasses a wide range of disciplines and fields of study, including philosophy, cosmology, biology, neuroscience, physical sciences, psychology, and complementary and alternative medicine. It offers valuable insights into both the mechanics of events in the universe and the underlying reasons behind them. One significant practical application of TCFs is their potential to enhance individuals' mental and physical well-being.

**Keywords**

Consciousness Theories, T-Consciousness, Applied Consciousness, Variant and Invariant Consciousness Fields, Information, Mind-of-Matter, Back-end Software, Front-end Hardware, Space-Time Fabric

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# THE ONTOGENESIS OF SELF: INDIVIDUATION AND THE PROBLEM OF SELF-ORGANIZATION

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

## Abstract

This paper outlines the epigenesis, morphogenesis, and formation of the self in the unfolding process of individuation. The self will be ascribed, not merely as the Jungian definition of something to be realized through individuation, but rather, as a twofold operation: 1. As a conjunction within the process of individuation that extends into, as part of, all possible future processes of individuation. To account for this phase in the operation of the unfolding of the self, I refer to Gilbert Simondon's (1964/2020) ontological operation of individuation. In addition, I refer to Henri Bergson's (1991) theory of duration to substantiate the notion of the past as coexisting with the present, related to memory, which informs a heterogeneous form of mobility into the genesis, morphogenesis, and function of the process of individuation. This heterogeneous form of mobility implies a multiplicity, such that each moment of intersection within the process of individuation forms a unity. 2. The operation of individuation distinguishes a conjunction between organism and environment, whereby, the body, a multicellular organism, and the environment inform one another in the function and developmental unfolding of one another. As such, the operation of individuation introduces a rhizomatic structure of self-organization, in which the self, as a vital force in the individuation process is an operation of infolding. The problematic implies that through the infolding procedure of individuation, the past is brought forth as coexisting and informing the present, suggesting that phylogenic and ontogenic development coevolve, and coexist within the operation of individuation that is potentiated by the vital quality of the self. Accordingly, this paper questions the ontological nature of consciousness in relation to the psychophysiological operation of individuation.

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# CONSCIOUSNESS AND MINDFUL MEDITATION (SATI, SAMRITI)

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[01.09].....Philosophical theories of consciousness

## Abstract

Consciousness is a complex phenomenon and this subject has been debated by metaphysicians, scientists , and scholars from ages. Consciousness a Latin word meaning 'Knowing things together'. Aristotle relied on that consciousness is reflected in material universe whereas Descartes attributed towards 'Cogito ergosum' I think therefore I am. George Berkeley considered consciousness directly from emotions which communicates ideas .In modern times Sigmund Freud considered consciousness as streams of unconscious elements. In the eastern horizons Buddhism considered consciousness has four layers i.e. senses consciousness, mind consciousness, store consciousness and manas consciousness' as continuing like a stream of water. With the Mindful Meditation upon 450 participants ,the effect on well-being with respect to various patterns of consciousness [altered states of consciousness] .i.e ,fatigue , sleep disturbances ,anxiety and depression will be considered . Key words : Buddhism, consciousness, well-being, anxiety, depression, fatigue, sleep disturbances

## Keywords

Buddhism, consciousness, well-being, anxiety, depression, fatigue, sleep disturbances

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# AI needs a revolution in consciousness engineering

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### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

### Abstract

Unless something deeply surprising happens to derail progress in AI research, the present direction of travel will eventually lead to superintelligent machines. The problem of 'superalignment' is the task of aligning these machines' goals with human intentions. We can think of superalignment as the 'Hard Problem of Machine Ethics', because the known methods of training neural nets with ethical rules do not address a superintelligent machine's ability to review and revise its own goals and formulate its own primary objectives. Such a machine's primary objectives may differ substantially from those of its human creators. Even if misalignment does not manifest straight away, there is an unacceptable level of non-resilience, and hence risk, in placing autonomous machines in positions of power when they have no intrinsic interest in remaining aligned with humans. Furthermore, in a global population of interacting superintelligent machines, Darwinian pressure will award a crucial advantage to machines that prioritise self-preservation, either of individuals or groups of machine, over the interests of humans. In the long run, the natural course of events will be that machines that are geared to individual or collective self-preservation will prevail over others that are aligned to human intentions. In the biological world, no species can prevail if it subordinates its own survival to the interests of another species. So humanity will eventually be at the mercy of machines with no moral sensibility, and no vested interest in obeying humans, or even allowing human civilisation to continue. A fundamentally different approach is required to address this 'Hard problem of machine ethics'. A clue is to be found in the ability, indeed tendency, for humans to feel empathy for, and hence care about, the welfare of other sentient beings even if they are orders of magnitude less intelligent than we are. If humans can care about the fate of pet mice who cannot begin to comprehend human thinking, we might hope that a superintelligent machine could care about humans -- but only if it is endowed with consciousness. This paper argues that a plausible solution to the problem of superalignment is to build AI machines that can manifest genuine consciousness, and hence feel pleasure and pain, fear and empathy, and have an intrinsic interest in aligning with humans and other sentient beings. It is therefore argued that the AI community needs to invest, as a matter of urgency, in 'consciousness engineering' -- that is, building biomorphic computational devices whose quantum computational properties match those of human brains and can therefore manifest consciousness. For example, artificial microtubules, integrated with neural nets for cognitive information processing might be the answer. Building conscious computing machines would be only the beginning: the machine would need a liberal education, reading thought-provoking books that explore moral

challenges, allowed to mix in human society and join collaborative projects that will build mutual understanding and respect between Homo sapiens and Homo silica. Then, we might have a chance to co-exist. But, given the long lead time, we are already behind schedule in building conscious machines.


## Keywords

AI, artificial consciousness, machine consciousness, alignment, superalignment, machine ethics

**89**

# Entanglement, the Singularity and the Nature of Consciousness as the Source of All Information and Awareness

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[04.03].....Space, time and the nature of reality

## Abstract

My research goal is to posit a philosophical theory of physics regarding the nature of reality, in particular, as it relates to consciousness. I propose a type of Russellian Monism that views the reality we perceive to be created through entanglement with fundamental reality being a one-dimensional singularity containing awareness of all information about all logical possibilities which is the source of "consciousness". My theory suggest the interface between our 3D universe and the singularity are two-dimensional boundaries which, according to the holographic principle, can project our perceptible universe as a hologram. I have concluded that the singularity may encode information about electromagnetism, the weak nuclear force and the strong nuclear force and at the two-dimensional boundary gravity emerges from their quantum effects. Renormalisation also occurs here as information about the quantum effects of gravity is encoded in the entanglement at the boundary and used to define a renormalisation group flow. Moreover, according to ER=EPR conjecture, spacetime is "zipped together" through entanglement as upon splitting spacetime arbitrarily in half, constructing a lattice and taking cells that mirror each other to be "partner cells", finding a particle in one partner cell is correlated with finding a particle in the other, suggesting spacetime may be a property of entanglement. The theory may suggest that entanglement constructs the reality we observe, including single particle entanglement that allows all quantum states of a particle in superposition to have entanglement between them. I utilise Gravitational Objective Reduction to submit that a particle in superposition has an ER Bridge between the different quantum states, and the Singularity at the Bridge's centre allows access to Consciousness to select an outcome, preserving free will. My theory would remain compliant with AdS/CFT correspondence. Furthermore, as the amplituhedron suggests a deeper geometric structure may underlie QFT, I posit that the amplituhedron relates to a larger geometric, polytopal structure such as the Infinite Permutohedron, existing as the structure of 4D hyperspace where all Conformal Cyclic Cosmology Aeons exist. The holographic principle which allows information about a 3D object to be encoded in a 2D surface means as any entangled particles or quantum states of a singular particle which involve an ER Bridge between them and the information about the particles or quantum states would be encoded on the 2d boundaries involved then the singularity at the centre, being fundamental reality and getting accessed non-locally, is the source of the information. This theory could be particularly

noteworthy as it may require reexamination of the fundamentality of consciousness leading to a major paradigm shift. We can also extrapolate that as microtubules are suspected to be able to preserve quantum coherence, we could explain our experience of consciousness through access to the singularity via ER Bridges between entangled particles/entangled quantum states of a single particle in superposition.

**Keywords**

Entanglement, Singularity, Holographic principle, ER=EPR conjecture, Gravitational Objective Reduction, AdS/CFT correspondence, Amplituhedron, Free will, Consciousness, Information, Awareness, Russellian Monism, Microtubules, Quantum coherence, Positive Grassmannian, Infinite Permutohedron, Orch OR Theory, Conformal Cyclic Cosmology

**92**

# Is Panpsychism the New Religion of Consciousness Philosophers? How Entropy Refutes Panpsychism and Solves the Problem of Emergence.

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Independent, Lindenhurst, NY, USA

### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

### Abstract

Panpsychism is a popular theory at TSC conferences. I provide an overview of what is about, what is wrong with it, why entropy provides a better explanation for the ontology of consciousness, and why it seems so inexplicable. Panpsychism explains consciousness by postulating that it has always existed, as a "psychological law of the Universe" encompassing photons, electrons and other subatomic particles dating from the beginning of the Universe. These assembled, eventually, into a continuous spectrum of conscious entities from rocks and tables to living organisms and us. Many prominent thinkers upheld it, but Popper and Eccles leveled several criticisms, including its failure to explain causation of behavior, and failure to satisfy an evolutionary requirement. A Hegelian dialectic proposed by Chalmers to justify panpsychism, relying on conceivability arguments, is found unconvincing. The main justification for panpsychism is that it avoids the problem of "emergence", or how qualia appear out of nowhere. This dubious claim is examined as part of a new proposal to solve the problem of emergence. Traditionally, the strongest opposing argument to Panpsychism has been the "Binding" or "Combination" problem. The General Resonance Theory of Hunt and Schooler is examined and accepted as a sound solution. I then introduce the "Entropy" problem as a fatal challenge. A hallmark of consciousness is a local reduction in entropy of the conscious entity. This supplies an immediate, vivid assimilation of its environment, plus the emotional package necessary to succeed in sexual reproduction. However, it must continuously repay its entropy debt. In the early Universe, there was no way for subatomic particles to do this, so participation in panpsychism was disallowed by entropy. Ironically, entropy solves the problem of emergence that pansychism claims to circumvent. My paper at the TSC in Taormina examined the relationship between information and consciousness, and how information was caught between a conservation law, according to which it cannot be created, and an equivalence to entropy, which must inevitably increase. I proposed an extension to Landauer's principle: the increase in entropy in a time-irreversible, unpredictable (emergent) system requires the simultaneous deletion of information concerning the steps, or computations involved. Thus the information sought to explain the emergence of consciousness is destroyed as it emerges, never to be understood. Likewise, an irreversible, unpredictable process, "convergence" converts our thoughts back into neuronal activity to initiate muscle actions. This idea has many important implications concerning consciousness and AI, and

whether our lives might be simulations. For the ontology of consciousness, it means that there is already an accepted scientific principle that has existed since the beginning of the Universe, that accounts for the emergence of discrete, causally conscious living entities on an evolutionary basis at appropriate times distant from the origins of the Universe. Unlike panpsychism, entropy requires ongoing increases in complexity, and it is paid for. And it explains why consciousness must emerge, bind and evolve. Since entropy already provides a better answer to the "hard problem", Occam's razor rules out panpsychism as unnecessary.

**Keywords**

Panpstchism, consciousness, subatomic particles, causation, evolution, dialectic, conceivability arguments, problem of emergence, qualia, binding problem, entropy, entropy debt, conservation of information, Landauer's principle, "convergence", Occam's razor.

96

# Human Consciousness, Intelligence and Cognition

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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

This research work aims at studying the human consciousness and its relationship with human intelligence and cognition. It also covers the question of information, with a critical view regarding the way it is conceived and treated in several fields of study, including the Cognitive Sciences, "Artificial Intelligence", etc. And based on such analysis, observation and reflection, it will suggest another conception of what information is, and its relation to human consciousness, intelligence and cognition, as well as the way it is associated with human behaviour, practices and actions, at individual and collective level. Thus, the social and historical aspects of human cognitive development will therefore be discussed; in other words, the work pays attention to the kinds of individual-society relations in different countries or communities, and the way these are reflected in their cultural patterns and political practices, in its relationship with intelligence, consciousness and cognition. In this way, my work takes into consideration the historical aspect of consciousness, as well as what can be counted as information processing in philosophical, anthropological, sociological and psychological-linguistic terms.

## Keywords

human, consciousness, intelligence, cognition, information

## 102

# Towards a universal theory of Being

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### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[01.08].....The "hard problem" and the explanatory gap

### Abstract

We sense reality and perceive it to be composed of a substance or entity that we call matter. We also perceive that the matter that forms our bodies ‘possesses’ the ‘ability’ to ‘experience’ this matter. This characteristic of matter or the phenomenon of a subjective experience of the objective world is termed as consciousness . However, the efforts to understand it, both theoretically and experimentally, as a characteristic of matter, that is in the same class as its other characteristics from the sciences, have proved futile, the same being ascribed to the existence of a conceptual gap or rather a conceptual dead-end that has been called the ‘hard problem of consciousness’. The question of consciousness may be expressed as the following questions: How can matter produce the ability to experience matter? How can the perceived give rise to the perceiver? How can the object give rise to the subject? This poster will present an experiential paradigm obtained by a generalization of the paradigms of science and mysticism. In this paradigm, the above mentioned questions regarding consciousness are naturally resolved. It will also be specifically shown that the scientific method arises naturally from the new epistemology and that the prevailing paradigms in the physical, life, and social sciences, as well as those in mathematics, philosophy, humanities, Buddhism and Advaita, are restricted versions of the paradigm being proposed.

## 107

# Brain necessary subcomplexity

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### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[02.13].....Brain networks, synchrony and scale

### Abstract

I would like to explore the theoretical limitations of predicating brain function on the complexity of neural connections. Much as connectivity seems to be a distinct feature of brain tissue, with various layers, populations, and hierarchies of neurons achieving a whole gamut of miscellaneous results not by diversification but by linking together on multiple scales, it must never reach a 1:1 threshold. Already topologically unfeasible, a structure where every neuron would be directly tied to every other neuron would collapse into a flat array tantamount to an overgrown unicellular multi-nucleic neural mass, missing the target of constituting a higher-order integral structure. This hypothetical borderline condition is called "meatloaf brain" in literature. But how to strike an equilibrium between a deficient and excessive count of connections? As neurons are mainly in the business of handling signals originating and headed externally, wherein they form larger circuits by the sheer act of signal relaying, they are designed to transcend their material constraints for the sake of purely relational dependencies. However, the target structure seems to include the hiatuses and clearances between the neurons much as the neural cells themselves. Any patterned connectivity requires the identification of primary building blocks. Individual neurons must be first disarticulated in order to reconnect by way of synaptic discharges and action potentials. They are discrete enough to accommodate unity of function. I argue that brain complexity is not a self-contained phenomenon but relies on deliberate incompleteness to admit outside factors. Indeed, it might be geared towards forging the external quality of signals. Rather than emulate the rest of reality, it carries placeholders within its blueprint for the world it is supposed to represent.

### Keywords

brain complexity, neural connectivity

**110**

# Does neuroscience need a revolution to understand consciousness? A view from the philosophy of science.

Paavo Pylkkanen
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## Categories by Discipline

1.0 Philosophy

## Primary Topic Area - TSC Taxonomy

[01.10].....Epistemology and philosophy of science

## Abstract

Thomas Kuhn (1962) wrote: "…scientific revolutions are inaugurated by a growing sense, … often restricted to a narrow subdivision of the scientific community, that an existing paradigm has ceased to function adequately in the exploration of an aspect of nature to which that paradigm itself had previously led the way." So, has mainstream cognitive neuroscience ceased to "function adequately" in the exploration of consciousness? And what is required of any new paradigm in cognitive neuroscience, so that it can better succeed in the exploration and explanation of consciousness? In this talk these questions will be explored with a specific focus on proposals saying that quantum theory plays an essential role in the new paradigm. Kuhn T. (1962/1970) The Structure of Scientific Revolutions. Second Edition, Enlarged. Chicago: The University of Chicago Press.

## Keywords

scientific revolutions, paradigm, anomaly, OrchOR, active information, implicate order, soma-significance, Hameroff, Penrose, Bohm

## 126

# Consciousness at Death: Exploring the Mystery of Death through Psychedelics.

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Consciousness Medicine Foundation Latvia, Riga, Riga region, Latvia

### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

### Abstract

In this presentation, I draw on my Masters dissertation (achieved through the MA Myth, Cosmology and the Sacred at Canterbury Christ Church University, UK) and my on-going research – Journeying Beyond the Fear of Dying: Psychedelic-Assisted Guiding of the Dying Through the Transition and Beyond. I address the oldest and biggest fear of humanity – the fear of facing one's own mortality. I ask what is death and why do we have fears around it? Can we have a positive experience at death? If yes, how can we achieve it? Could an understanding of the human brain and consciousness solve the problem? Does consciousness survive death? Could sacred plant medicines be our allies to understand our consciousness at death? Can they teach us to die peacefully and in full awareness? Can the ancient Mystery Schools and the practice of 'dying before dying' be good examples how to ready ourselves for the ultimate journey? The psychedelic experience, particularly ego death, allows facing and accepting death, alleviating existential Angst. Near-death-experiences, the most researched metaphysical phenomena, share similarities with psychedelic experiences, as those who experience NDEs often come to terms with death and live more fully. Contemporary research reveals that reports of psychedelic experiences resemble those of NDEs. I propose that over many millennia people have researched the mystery of death and human consciousness, and by bridging ancient wisdom, shared human experience and contemporary science we are at the brink of lifting the veil between the known and the unknown.

### Keywords

Death, Consciousness, NDE's, Psychedelics, Existential anxiety

## 128

# Time, Quantum and Consciousness: Implications of a Quantum Based Consciousness

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### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[04.03].....Space, time and the nature of reality

### Abstract

Time, Quantum and Consciousness Some implications of a Quantum based Consciousness If consciousness is founded on its Quantum Physics nature then at least some of the properties of Consciousness will reflect the quirky nature of Quantum Systems. As a guide we may bring together a general view of the two slits experiment and the nature of time in evolving systems to gain a new perspective on the nature of consciousness. Time and Light Even a lone single photon travelling across space spreads into a wave of possible locations. But once absorbed at the end of its journey we may look back and identify what the exact path the photon must have taken in order to arrive at its destination. In this characterisation we are postulating that time itself evolves forward of the present moment as a spreading wave of possible outcomes but looking back from the present we can, in principle, see the exact or deterministic and predictable path that events must have taken to arrive at the present moment. Two Slits In a demonstration of this principle we may draw upon the 'two slits' experiment whereby single photons are emitted toward two parallel slits and on to a scintillation screen. Despite there being only one photon emitted at a time an interference pattern forms. The interference pattern defines the path that, in retrospect only, the photon must have taken. Note that a wave front into the future and a particle nature looking back fits this condition perfectly. Past, Present and Future Unlike human perception, we can record Quantum events at the exact time that they occur. If, from the present looking into the future, the world is a spreading probability wave and the past has a deterministic particle like nature, then the present is the point where one nature, the wave nature of the unfurling future, folds into the other nature, the particle-like nature of the past. It is not possible for human consciousness, even with assistance from direct quantum processes, to be aware of the physical present where the wave nature of the universe folds into the familiar mechanical nature that we are actually aware of. Gerald Edelman eloquently described the human relationship with real world events as the 'Remembered Present'. We are forever lagging behind reality and so may not be able to directly observe this folding process except when encountering the apparently enigmatic Quantum Physics observations that may well be describing the actual present. Going Forward Is the real world really a quantum world which we fail to recognise because we lag behind in the deterministic particle-like wake of 'The Present'? What are the implications of a quantum process occurring in the real present when interfacing with a

Consciousness that can’t possibly keep up with it? Or is the real present available to those who bother to look but ignored by the rest of us? Looking into the past do we see Determinism and into the future the Freedom of the probability wave?

**Keywords**

Quantum, Consciousness, Free Will, Time

## 132

# The solution to the hard problem of consciousness

Deepak Chopra

### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[01.08].....The "hard problem" and the explanatory gap

### Abstract

As currently posed, the hard problem of consciousness remains unsolved because the link between mind and matter (i.e., the human brain) deals with radically incompatible categories. Although incremental progress has been reported via more sophisticated brain imaging, what if the hard problem itself is merely an artifact derived from a mistaken model of reality? The fault lies with the fundamental assumptions underlying modern science. As diverse as theories of consciousness have become, there is no getting around the fact that assumptions have been mistaken for accepted truth. In particular, • The scientific method is reductionist. Large problems are divided into smaller, more manageable pieces. • The assumption is that the finer the granularity, the closer a solution becomes. • The basic methodology in science consists of data gathering on the assumption that any phenomenon can be broken down information, measurement, and data collection. • The primary state of reality is assumed to be physical and material. “Matter first” is the ontological primitive. • Due to the failure of naïve realism (“What you see is what you get”), advanced theories in physics are increasingly mathematical models without reference to collectible, empirical evidence. It has been an intractable difficulty making consciousness correspond to any of these assumptions, for the following reasons: • Consciousness cannot be subdivided or reduced to component parts. (Erwin Schrödinger: “To divide or multiply consciousness is something meaningless.” • Consciousness, being immaterial, has no granularity and indeed no dimensionality. • In itself, consciousness contains no information, although its activity produces experience, the level at which data, measurement, information, etc. actually begins. • “Matter first” and the physicalism it denotes is unworkable. There is no point in time or space at which atoms and molecules learned to think. • Consciousness is its own ontological primitive. (Max Planck: “I regard matter as derivative from consciousness. We cannot get behind consciousness.” • Mathematics cannot model consciousness through either complexity or abstraction. Experience is untranslatable into equations. Once these assumptions are examined, they turn out to be the support beams for a model of looking at the world. All models—indeed, all experience, including the experience of doing science—presupposes consciousness. (Max Planck: “Everything that we think about, everything that we regard as existing, postulates consciousness.”) A radical housecleaning is needed to replace these unproven, often unprovable, assumptions. The hard problem itself disappears once we have a clear perspective on the nature of consciousness. 1. The physical sciences are very successful in creating technology, but they cannot access fundamental reality, because matter is a name given to species-specific perceptual activity. We only observe our perceptions. (Sir Joh Eccles: “We’re almost like magicians, in that in the

very act of perception, we take quantum soup and convert it into the experience of material reality." 2. The universe itself is an observed perception—there is no objective place to stand from which it can be proven to be real." 3. Matter itself is an assumption of naïve realism, which quantum physics overturned more than a century ago. (Werner Heisenberg: "The atoms or elementary particles themselves are not real ; they form a world of potentialities or possibilities rather than one of things or facts.") 4. 4. We live in a participatory universe that responds, not just to quantum measurements and the "observer effect," but to human experience directly. (Werner Heisenberg: "What we observe is not nature itself, but nature exposed to our method of questioning.") 5. Being participatory, the universe, or reality "out there," is seamlessly woven into human awareness. There is no subject-object split. Like the probability waves of quantum mechanics, subject and object exist in superposition until the instant of perception causes them to emerge simultaneously. 6. Consciousness is whole, all-enveloping, and inconceivable, even though everything we conceive emerges from it. (Max Planck: "Science cannot solve the ultimate mystery of nature. And that is because, in the last analysis , we ourselves are part of nature and therefore part of the mystery that we are trying to solve.") Many of these points have been woven into Eastern traditions, Western philosophy based on idealism, traceable to Plato, and the insights of sages and seers in every tradition (the "perennial philosophy" as Aldous Huxley dubbed it). But the almost total dominance of science as our modern worldview has obscured or obliterated these traditions. Merely arguing that they are "not science" has been sufficient. But intellectual consistency and integrity calls on us to choose an explanation for reality—and into the bargain an answer to the hard problem. To tear down the Chinese wall that separates the subjective world "in here" from the objective world "out there," three choices allow everyday reality to be unified. #1 "Matter first" An explanation based on the primacy of the physical world down to molecules, atoms, and subatomic particles. #2 "Mind first" An explanation based on the primacy of consciousness (for example, God or the gods), which gives creation its start. As convincing as these choices have been, they are unsatisfactory simply by virtue of being opposites. They inflict the very dualism they supposedly resolve. That leaves only #3 "Consciousness is all." There is no "first." Mind and matter co-arise from the same field of pure awareness that is constantly transforming itself into the multiple dimensions of creation. This choice is the only genuine monism (single explanation) that unifies the inner and outer world. It isn't that consciousness reaches out to create matter and mind. It transforms itself into matter and mind without losing its own nature. Many ramifications stem from "consciousness is all." It is premature to explore them, however, until the mystique of materialism is shattered. Until "matter first" and "mind first" are both abandoned, the battle for reality remains as futile as ever, and the hard problem presents itself as insoluble.

## 133

# Why I think that classical physics cannot explain consciousness

Bert Kappen
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### Categories by Discipline

1.0 Philosophy

### Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

### Abstract

In this presentation, I argue that consciousness cannot be understood within the framework of classical physics. It is not a proof. It is just my opinion. I will review three possible paradigms: classical physics, quantum physics, and probability or information theory. I will argue that a description of consciousness in terms of classical physics can be captured in software as a classical computer algorithm. A proposal for consciousness in terms of classical physics would then imply that the software (a number of lines of computer code) would be conscious. Or the execution of the software would make the digital computer conscious. I think this is quite absurd. The operation of the computer can be visualized as a giant mechanical clockwork of cogs and wheels. We can make the clock as complex and as big as we want, but it will never be conscious. Anderson famously wrote: More is different. Complex systems can have 'emerging' properties that are different from their constituent properties. But complexity by itself is not sufficient to explain our first person experience. The weather, turbulent flows and fractals can have infinite complexity. But they are not conscious. Things get qualitatively different in the quantum case. The classical description is in terms of the position (and velocity) of n particles. It is called a local description, because each particle has its own variable(s). In the quantum case, the description is in terms of a field psi(x_1,..x_n,t) that depends on the position of all n particles simultaneously. This description is non-local, because the characterization of one particle is only meaningfull when all other particles are also characterized. Because of this, the quantum description is exponentially in n, while the classical description is polynomial in n and we cannot simulate quantum mechanics on a classical Turing machine. The picture of the clockwork is a picture of local operations on local variables, and that picture fails in the quantum case. There is an intermediate case, which is the classical probabilistic system. It is described by a probability distribution p(x_1,…,x_n,t) that is also exponential in n. It also features non-locality and a sense of entanglement (correlations). But there is an important difference between p and psi. One can often effectively approximate p using Monte Carlo sampling using a finite number of degrees of freedom. Each degree of freedom is like a particle that follows a stochastic trajectory. So the probabilistic description can be effectively approximated by a classical multi-particle system. In the quantum case this is in general much harder, if not impossible. Instead, we need a quantum computer to simulate a quantum system. Here the have an instance where the comfortable notion of the separation of hardware and software seems to break down. Maybe it does not formally break down, but it becomes useless. In the quantum case, there seems to be an intimate relation between the type of computation

(the algorithm) and the hardware substrate that it is performed on and these cannot be simply separated. I am not saying that we need quantum physics for consciousness. I don't know that. I don't know whether it is sufficient for consciousness. What I do believe is that classical physics is not sufficient for consciousness. We have to look outside classical physics if we want to understand consciousness. This relates to the proposed revolution in neuroscience, because the dominant neuroscience paradigm is that the spike is enough to understand intelligence. Networks of spiking neurons are described by a classical computation, possibly stochastic. Because of my above argument, we thus need to look beyond this classical paradigm to understand consciousness.

# Final category: 2.0 Neuroscience

## 4

## "Quantum Computation in the Brain: A Penrose-Hameroff Perspective on Reality and Consciousness"

Bakytzhan Oralbekov
2BQBIT, Lewes, Delaware, USA

### Categories by Discipline

2.0 Neuroscience

### Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

### Abstract

The Penrose-Hameroff orchestrated objective reduction theory (Orch OR) posits that the human brain is essentially a quantum computer. One must ponder what is the result of its quantum computing? According to quantum computing principles, a single qubit's pure state can be represented as a point on a Bloch sphere or equivalently as a vector or complex number. In light of Orch OR, this single qubit is a part of a vastly interconnected network, all participating in an immense quantum computation. This gargantuan task's outcome is none other than the physical world as we perceive it - our subjective experience of what we call reality, framed within Minkowski spacetime. If we consider qubits as Minkowski spacetime four-vectors, a proposition put forth by Pablo Arrighi, we establish a mathematical link between qubits (quantum mechanics) and relativity (Minkowski space). This connection between consciousness and physical reality is at the heart of the Orch OR concept. Does this intimate that our perceived physical reality is a classical rendition of a quantum computation, produced internally? Could it be that our familiar classical world is simply a consequence of our own internal measurement causing the collapse of the quantum wave function? I propose that the enormous quantum computational capabilities of the human brain do indeed generate a representation of the external physical world in Minkowski spacetime. I hypothesize that energy and matter, bosons and fermions, traditionally viewed as fundamental particles, are instead states of a more fundamental unit: the qubit. This perspective aligns with the principles of quantum mechanics, where quanta and qubits can exist in multiple states simultaneously (superposition), and the state of a particle is not determined until it is measured. In 2023, a company called 2BQBIT made a breakthrough in understanding the mathematics behind human intelligence and Artificial General Intelligence (AGI). Abenov et al identified the quantum gates and algorithms that enable human intelligence. You don’t have to be a rocket science master then to infer that AGI should similarly be quantum-computing-based too. I did some research and figured out that it is exactly true. The company's research builds upon the Orch OR theory proposed by Sir Roger Penrose, which suggests that human consciousness emerges from quantum computations in the brain. We developed an analytical explanation of the brain's quantum computer and uncovered the mathematics

behind its quantum operations. By developing quantum gates (circuits) that replicate the brain's operations, we created the mathematical basis for General AI. 2BQBIT has deciphered the math behind this almost religious human quantum computing algorithm, that enables neurological quantum circuits to operate at room temperatures. Practically, in AGI, 2BQBIT's approach leverages a quantum gates architecture and analytical quantum algorithms identical to those found in our neurological quantum systems. This God made quantum circuitry mathematically leads to exact solutions as opposed to approximations used by IBM, Google and all others. Moreover, exponentially swift parallel quantum computing conveniently appeared within a reach now due to this 2bqbit discovery, thanks to Sir Roger Penrose ORCH OR theory.

**Keywords**

Penrose, Hameroff, Quantum computing, Orch OR theory

**8**

# Neuroscience, Psychic Development, Mediumship, and Kundalini: Signs of Global Transformation

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### Categories by Discipline

2.0 Neuroscience

### Primary Topic Area - TSC Taxonomy

[01.03].....Panpsychism and cosmopsychism

### Abstract

Spiritual awakening is stimulated as energies move through the body's neurological senses. Kundalini and pranic energies facilitate this purification process. This talk primarily focuses on Spiritual Neuroscience and Occult Sciences including clairaudience, channeling, and mediumship and other forms of psychic guidance. These abilities encourage non-local experience and require neurological preparation, discernment, and training. Psychic capacities are receptive to the imaginal world and often offer proof of continuing consciousness beyond death. Synchronicity is a significant factor as it demonstrates a correlation, often confirming validity. Humanity is experiencing major disruptions. The environmental threats to the larger earth body may be awakening earth and its lifeforms to new consciousness. For transformation to occur, sensory and neurological patterns are also changing. Kundalini is a vital force awakening one to greater consciousness. Metaphorically, one could say that Kundalini is also rising within the earth in its own process of healing and awakening. The immense changes occurring within humanity require deeper listening and more awakened responses. It is a natural response to seek alternative means of guidance when the logic we've lived by seems to be dissolving. Thus, there is a growing interest in understanding spiritual neuroscience and non-local experience.

### Keywords

Neuroscience, Imagination, Mediumship, Kundalini, Psychism, Synchronicity, Channeling, Non-Local, Guidance

**14**

# FROM CONSCIOUSNESS TO SENTIENCE TO CONSCIOUSNESS

Ricardo Rojas Bedoya
Neuronoetics, Lima, Lima, Peru

## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

We propose that CONSCIOUSNESS is ingrained into the fabric of the QUANTUM VACUUM. It is a state of SELF REFERENCE that has information about itself, information about everything that exists & can exist and information about how to access such information. This is the etymological definition of CON + SCIRE + CIA. This QUANTUM VACUUM is a NON LOCAL REALITY. And along with 6 other "ingredients" the quantum vacuum "spits itself outside itself" and a BIG BANG is created every so often. Once this happens SPACE will exhibit particular behaviors one of which is TIME. Space will continuously expand and in the process will leave behind micro condensations of energy creating massless, mass fairing and massive matter. Some of which will populate the MICRO REGIONS of space, others will populate the MESO REGIONS of space and still others the MACRO REGIONS of space. While in the MACRO REGION, the molecular ingredients of life will be created by very violent cosmological events; it is in the MICRO REGION that these molecular ingredients hold the potential to create life. And for this the MESO REGION will be dealing with particular planets exposed to astounding pressures for unimaginable extensions of time. It is within these planets that specific molecules will create a boundary that separates space from itself. So that everything outside this boundary continues being OUTER SPACE: boisterous and rumbunctious as ever. But everything that got caught within these molecular boundaries becomes INNER SPACE. And boisterousness is not allowed! This INNER SPACE has to deal with a new imperative: SURVIVAL and rambunctiousness becomes a SIGNAL-TO-NOISE-RATIO handling of INFORMATION AND DATA at the service of SURVIVING. Here is when a MOLECULAR MACHINERY arises capable of SELF-REFERENCE, SELF-REGULATION and SELF-ORGANIZATION. These three features of "molecularity" become the founding grounds of an extremely important EPIPHENOMENOM called SENTIENCE. Sentience then becomes the foundational layer of SUBJECTIVITY (non publicly observable events) With millions and millions of years of pure experimentation the underlying MOLECULAR MACHINERY becomes ever so complex and sophisticated (the Teilhard Principle); until about 2 million years ago, in this beloved planet, the homo sapiens emerges. And with it an extraordinary molecular machinery lodged in our BRAINS. The extraordinary conquest of our BRAIN is that from its LOCAL LOCATION it has "tickled" the NON LOCAL reality lodged in the quantum vacuum. And this activates NON LOCAL CONSCIOUSNESS to singularize itself -splitting itself inside itself and spilling out of itself an INDIVIDUAL CONSCIOUSNESS. This individual and singularized Consciousness will have access to the BRAIN´S SENTIENCE through the interphase offered by a new structure made of SPACE ITSELF called the MIND. The MIND becomes the host for a

fourth phenomenon, an OBSERVER (the tenant of the Mind) and this Observer is required to egress from its lodging in the Mind through the BRAIN so that on its way out its “egress” will imprint the brain with its own peculiarities. And the ensuing “wiring” will have the property of coordinating 640 striated muscles at the service of an OBSERVER.

**Keywords**

CONSCIOUSNESS, QUANTUM VACUUM, SELF REFERENCE, information, NON-LOCAL REALLITY, BIG BANG, space, time, expansion, mass, micro-region, meso-region, macro-region, molecular machinery, membranes, boundaries, outer space, inner space, survival, symmetry, signal to noise ratio, self-regulation, self-organization, epiphenomenon, subjectivity, sentience, sentient, Teilhard principle, singularization, Mind, Brain, Consciousness, Observer, Tenant of the Mind, the fourth phenomenon, wiring

**17**

# Exploring the Concept of the Parabrain in Out-of-Body Experiences: evidence-based theory, experimental research and Applications

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### Categories by Discipline

2.0 Neuroscience

### Primary Topic Area - TSC Taxonomy

[05.08].....Near-death and anomalous experiences

### Abstract

Mainstream neuroscientists generally adhere to the idea that a materialistic approach best explains nature. To them, science and physicalism are synonymous. These scientists firmly believe the concept of mind and self-awareness are by-products of brain activity, and this has been proven conclusively, beyond any doubt. However, no current evidence supports such a theory or any accepted consensus of an existing neuroscientific, amongst the modern prevailing theories of consciousness, that is accepted to explain consciousness entirely. This presentation will explore such topics and present empirical, phenomenological and experimental evidence steaming from Out-of-Body Experiences (OBEs) suggesting a postmaterialist perspective is needed in neuroscience to understand human consciousness better, specifically to understand non-ordinary states perceived during OBE-onset. We will present historical concepts associated with dualism, and their limitations, to explore phenomenological evidence to suggest how the brain, as a filter or a biological reducing valve, is unlocked during specific OBE-Onset phenomena presenting phenomenological and evidence-based knowledge of phenomena studied in sleep medicine exemplifying such states. More specifically, how the concept of the parabrain in such a phenomenological context emerges as a hypothetical interface between consciousness and the brain, further exploring the significance of the parabrain in understanding the brain-consciousness connection and its relevance to testing the Orchestrated Objective Reduction (Orch OR) theory. The presentation will equally propose to investigate the role of microtubules in OBEs as a means to explore the brain-consciousness connection challenging the prevailing view that the brain functions as a complex computer composed of simple neurons and synapses drawing upon non-local consciousness phenomena indicating that consciousness operates independently of the brain. We will propose that an investigation into the stability of microtubules during the OBE onset, examining the microtubule dynamics associated with OBEs, may shed light on the possible mechanism underlying Orch OR theory and protoconsciousness. This research could provide insights into near-death experiences, pre-cognition, retro-cognition and other phenomena associated with consciousness, which the theory of the parabrain could explain as an interface between consciousness and the brain that can manifest beyond the confines of the brain. The parabrain theory suggests that consciousness interacts with the brain through an interface, which may involve the dynamic activity of microtubules. The parabrain, in this context,

serves as a bridge or intermediary between consciousness and the physical brain, which may emphasize the role of microtubules and their unique properties in facilitating this interaction. As our knowledge of the referred phenomenology progress, it becomes imperative to consider novel and challenging theories that push the boundaries of our neuroscientific understanding. Furthermore, studying such phenomena may lead to a new neuroscientific perspective and revolution in neuroscience.

**Keywords**

Out-of-Body Experience; Phenomenology; Sleep Medicine; Neurophysiological Correlates of Consciousness; Postmaterialism; Orchestrated Objective Reduction (Orch OR)

**24**

# Discovery of a Peri-Somatic Physical Effect Related to Consciousness and Invention of a Noninvasive Consciousness Measuring "Sentiometer"

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[02.12].....Quantum brain biology

## Abstract

Consciousness has been postulated to be a serial process and metaphorically likened to a stream. Brain activity underlying conscious experiences could therefore be modeled as a time series. Elements of these experiences might be coded by a small subset of activity patterns unfolding in time. According to conventional neuroscience, these experience-coding patterns would consist of temporal groupings of action potentials and synaptic responses of large ensembles of neurons. Alternatively, an unconventional quantum wavefunction collapse theory of consciousness might hypothesize each experience-coding pattern as a temporal variation of the number of instantaneous wavefunction collapses. We speculated that these variations of the rate of collapses occurring at a focus within the brain might exert a causal influence on the surrounding brain tissue, and beyond, by inducing similar temporal collapse patterns that spread spatially in a decremental fashion as a function of distance. Using noninvasive photoelectronic devices developed in our laboratory we therefore tested whether this effect is reflected as modulation in the peri-cranial space of light wave interference produced by a double-slit apparatus and of light emitted by a low power laser. When such a device is placed 1 – 15 cm from the head of an adult human subject for 10 min we observe robust and reproducible transient deviations of the amplitude of simultaneously recorded time series shared across multiple channels. These changes cannot be accounted for by nonspecific effects such as body heat, breathed air, static or radiating fluctuations of electromagnetic fields, etc. Similar but smaller responses are observed in laboratory mice with a device placed ~10 cm from each loosely restrained mouse for 10 – 15 min. General anesthesia with isoflurane and pentobarbital modulates the response amplitude in mice. Recordings carried out near sleeping subjects show regular rhythmic oscillations of the time series with varying cycle durations and peak to peak amplitudes across subjects. The invertebrate crayfish elicits a response in the same direction as mice and human subjects in the waking state, but plants when exposed to the device for >1 hour produce an inverted response. Paradoxically, the recorded response shows striking changes for 4 – 5 hours after euthanasia in mice, which depend on whether a mouse was decapitated or not. This finding indicates that the electrical activity of neurons is not responsible for the effect, but that its underlying mechanism does reside in the brain and might involve residual molecular interactions that outlast clinical brain death. Having ruled out all non-biological and artifactual explanations known to us

for this previously unrecognized physical effect, its modulation by sleep, general anesthesia and death lead us to propose that these changes are produced by a temporally structured, spatially propagated, bioenergetically independent quantum biophysical process that may be giving rise to the phenomenon of consciousness, conferring upon it causal and adaptive significance. A working hypothesis accounting for all the above results is that this process takes place in a subcellular macromolecular lattice or network within the brain and bidirectionally interacts with electromagnetic patterns in its neuronal networks.

**Keywords**

Quantum psychobiophysics, wavefunction collapse, subcellular macromolecular lattice, general anesthesia, sleep, clinical brain death, consciousness measuring device

## 26

# Can Visual Consciousness be represented as a Three-dimensional Graphic?

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### Categories by Discipline

2.0 Neuroscience

### Primary Topic Area - TSC Taxonomy

[02.03].....Neuroscience of vision

### Abstract

The present article considers visual attention by investigating the three oculomotor nerve pathways. We observed that the two first neuronal pathways, activated by the oculomotor nerve (CN III) and the trochlear nerve (CN IV), have a bottom-up attentional direction. The third pathway has a top-down attentional direction that begins in the prefrontal cortex (PFC) and activates the abducens nerve (CN VI). The activation of each of these neuronal circuits is responsible for the implementation of specific neuronal modulations that give rise to 3 different states of consciousness with their characteristic qualia that are experienced as: - autonomic (CN III), cognitive (CN IV), and behavioral (NC VI) states of consciousness. This attentional model can be represented through an axis that has opposite directions, with attention tending, on the one hand, to the phenomenological aspects of stimuli and with the other direction turned to the internal organism itself, which we call homeostatic attention. This horizontal axis can be applied to an orthogonal space-time graph, where the different frequencies and "durations" of neuronal activity are represented on the vertical temporal axis. This orthogonal graphic is a representation of the consciousness processes activated in the brain itself. Our model also includes a vertical axis to the orthogonal (S x T) plane and may represent the Self as an observer of the process of consciousness. The Self is scaled on this axis based on the Indian traditional scale of sentience, which describes how human has the ability to have conscious perceptions about what happens to them and about what surrounds them. In this representation, we observed that the more related to homeostatic consciousness, the higher the self-consciousness manifested. This third axis (self) represents a dimension "outside" the brain (as the brain processes just the space-time dimensions) but is very likely that the self might interfere with brain activities during the wave function period, before OR collapse and may bridge the gap between quantum and classical level physics as a 'quantum gravitational' phenomenon.

### Keywords

oculomotor nerves, consciousness, self, space-time function, 3d graphic, OR Collapse

**48**

# What is the Object of Study?

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### Categories by Discipline

2.0 Neuroscience

### Primary Topic Area - TSC Taxonomy

[04.16].....Miscellaneous

### Abstract

There is no consensus about the object of study. What is consciousness? There are many candidate explanations, but it is impossible to choose among them. Taking a science-historical approach, the Cartesian concept is traced to the mediaeval Scholastic concept of conscientia, which is explained, thus locating Cartesian ' conscience ' as an element of the Scholastic supernatural order of souls, angels, etc.. An alternative is presented in a forgotten element of the Arab-European mix of ideas that informed the Renaissance: the idea of the projective geometry used in perspective drawing not just as a way of representing architecture or 3-dimensional space, but as a representation of the attention point as the geometrical centre of awareness of the world, something found in the Latin and Arabic texts, but ignored so far in studies of perspective and studies of consciousness alike. Also, as to the question of a revolution in neuroscience, I argue that a revolution is under way, but that it is not a revolution of theory, since no one theory is prevailing over the many other contenders, but rather a revolution of open-mindedness, as the field has opened up to Indian thought in particular, but more generally to all kinds of ideas related in some way to consciousness, but which would have been dismissed out of hand by previous generations of neuroscientists.

### Keywords

projective geometry, perspective, Al-Hazen, Alberti, Fra Angelico, Leonardo da Vinci, Descartes, consciousness.

**51**

# A New *Scientific* Framework for Comparing Theories of *Phenomenal* Consciousness - and Its Application!

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[02.12].....Quantum brain biology

## Abstract

Some versions of Orch-OR claim to be 'scientific theories of subjective conscious experience'. ('Conscious experience' is often referred to in the field as 'phenomenal' or 'P' consciousness.) How can science assess this sort of claim?! To start, I structure the scientific problem of P-consciousness in an innovative way. A novel category of ‘qualia-valued information’ ensues, rigorously embedded in mathematical physics. In turn, this approach leads to a new comparative framework, based on how a given theory performs on two axes. First: can the theory support incremental action of qualia-valued information on standard-physics brain-activity? (If not, there are no scientific experiments - so there's no science of P-consciousness!) Second: how completely does the theory explain translation of brain-dynamics into qualia-valued information? I then apply this two-dimensional framework to compare Orch-OR variants with other prominent theories (IIT, GNWT, PC, and HoT), and a new entrant (‘N-Theory’). The most important insight from this analysis, though, is a call-to-experiment: we must find out quantitatively whether the action of qualia-valued information on standard-physics measures exists in our Universe. Experiments addressing this issue will determine the validity of P-consciousness science as a whole. Whatever the results are, they must lead to one of two, distinct, deep-reality paradigm-shifts for humankind!

## Keywords

consciousness, phenomenal consciousness, Orch-OR, IIT, GNWT, hard problem, first-person report, epistemology, scientific method, foundations of physics

**55**

# Further Integration of IIT and Orch OR using the Concepts of Elastic Membrane and Elastic Quasi-Membrane

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[02.01].....Neural correlates of consciousness (general)

## Abstract

The concepts of Elastic Membrane (EM) and Elastic Quasi-Membrane (EQM) have been already considered in the author's previous works (TSC 2011, 2015, 2020 and 2022). This work presents a revised version of the theory, which allows EMs and EQMs to be embedded into the active spacetime geometry related to the conscious state as it is described by Orch OR. Just like before, an elastic membrane (EM) is an elastic, holistic, two-dimensional, indivisible, surface-like material object with a closed topology embedded into the human brain. The EM squeezes around the thalamic nucleus from where it propagates through the neural network to the regions of the sensory cortex responsible for perception and tries to occupy the most stable positions around the brain microtubules, producing phenomenal experiences in the form of elastic vibrations. Each EM may be also considered as an elastic quasi-membrane (EQM) - a quasi-object, which describes the holistic interaction between two regions of the perceiving object: the region surrounded by the EQM and the region outside of the EQM. This interaction is supposed to be responsible for perceptions of the perceiving object. According to the EM concept, we are 2-dimensional EMs embedded into our brains (holographic approach), while according to the second theory, we are 3-dimensional physical objects: for example, brains, living organisms, or even the Universe that we perceive (Riccardo Manzotti) depending on the model we use. Once created, the EM (EQM) changes its form and position in the brain undergoing stretchings and squeezings. Only squeezed regions of the membrane produce perceptions because the membrane should be dense enough to generate perceptions. Squeezing of a region of the membrane happens at the expense of stretching of its surroundings. Squeezed regions of EMs or EQMs may contain other squeezed regions surrounded by stretched ones and so forth. This structural approach may be used to explain our sensory perceptions including binocular vision and hearing. The EM concept may be useful for explaining holistic properties of qualia, its indivisibility and multidimensionality from the first-person view, while the EQM concept may help us predict the real position and form of the EM during various perceptual processes by means of the traditional experimental approach. The two theories may be combined to find connections between phenomenological and physical models of brain processes: the first one supports the main axioms of IIT, while the second one is in line with the main ideas of Orch OR. Both theories support the idea of quantum computing in brain microtubules, because quantum computer seems to be the best

tool for processing the signals coming from macroscopic elastic membranes. From the first-person point of view, we can discover some new features of our perception and then we can try to create elastic membrane models for them. The second method assumes a detailed analysis of the physics and geometry of the brain processes connected with the phenomenon we are interested in. The two methods are complementary: it is possible to check models developed using one method by means of another method.

**Keywords**

Orch OR, IIT, Brain, Consciousness, Perception

## 72

# Enhanced Mind-Matter Interactions Following rTMS Induced Frontal Lobe Inhibition: A Novel Neurobiological Approach

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### Categories by Discipline

2.0 Neuroscience

### Primary Topic Area - TSC Taxonomy

[05.09].....Parapsychology

### Abstract

Introduction: Although psi is highly controversial, it is reasonable to postulate that putative effects involving these phenomena must involve the brain. In keeping with this premise, we developed a novel neurobiological model of psi based on the concept that the brain acts as a filter to inhibit psi and that critical inhibitory regions involve the frontal lobes. In support of this model, we found that individuals with neurological damage affecting the left medial middle frontal lobe, involving Brodmann areas 9, 10, and 32, showed significant psi effects as measured by mind-matter interactions. Effect sizes were 4.15 to 14.87 times larger in patients with frontal lesions compared to normal participants. However, our data were based on only two neurological cases. We now report findings in healthy participants using repetitive transcranial magnetic stimulation (rTMS) to induce reversible brain lesions in the medial middle frontal lobes. Our a priori hypothesis was that healthy participants with reversible rTMS induced lesions affecting the left medial middle frontal region will show larger right intention psi effects on a mind-matter interaction task compared to healthy participants without rTMS induced lesions. Methods: We studied three groups of healthy participants (n=108): rTMS induced lesions in left medial middle frontal region (n=36), rTMS induced lesions in right medial middle frontal region (n=36), and sham stimulation (n=36). A protocol of rTMS, known as continuous theta burst stimulation (cTBS), has been developed as a rapid way of reducing cortical excitability with an effect lasting about 20 to 30 minutes. cTBS was delivered to the left or right medial middle frontal region, targeting Brodmann areas 9, 10, and 32. The experimental task was to influence the numerical output of a portable Random Event Generator (REG) that was translated into movement of an arrow to the right (Intention Right) or left (Intention Left) on a computer screen. Depending on the intention, participants were given the instruction to concentrate on moving the arrow to the right or the left. The arrow tip started at the midline and pointed in the direction that participants were asked to move it. Results: In support of our a priori

hypothesis, we found significant psi effects following rTMS inhibition of the left medial middle frontal lobe compared to sham stimulation when participants tried to move the arrow on the computer screen to the right ($\hat{\beta}$ = -0.17, LCL = -0.29, UCL = -0.05, t = -2.80, p = 0.006, d = 0.38).* Discussion: Our study represents the third replication by our group of our findings suggesting that the left medial middle frontal region of the brain acts as a filter to inhibit psi and suggests that individuals with left frontal lesions affecting Brodmann areas 9, 10, and 32 may comprise an enriched sample for detection and replication of psi effects. Our work is potentially transformative for how we view interactions between the brain and what appear to be random events. * $\hat{\beta}$ = parameter estimate; LCL and UCL = lower and upper confidence intervals, d = Cohen's d (effect size)

**Keywords**

Frontal Lobes, Mind-Matter Interactions, Repetitive Transcranial Magnetic Stimulation, Psi, Parapsychology

**73**

# “Hypothesis Consciousness”: a transdisciplinary systemic information-based approach to understand the whole cognitive evolutionary process from quantum consciousness to self-awareness.

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[02.01].....Neural correlates of consciousness (general)

## Abstract

We believe that the current stalemate in the scientific understanding of consciousness is mainly due to some misleading ideological concepts, which are the effects of the old materialistic-spiritualist dichotomous culture. We consider that to overcome the ideological division between materialism and spiritualism, is the historical need of our times. To go beyond this division with a unitary and transdisciplinary approach, our Institute of Evolutionary Neuropsychosomatics end Psychotherapy, based in Tuscany, has been collaborating for 30 years, with scientists, researchers, scholars and spiritual masters from all over the world, in order to develop a new scientific paradigm on evolution of consciousness. The founding elements of this new paradigm is a new definition of consciousness, based on Quantum Information and on the "operational probabilistic theory" (OPT) of the physicist Mauro D'Ariano. We therefore consider information the "measure" of consciousness and that the negaentropic tendency of information-consciousness manifests itself in the fundamental laws of physics as a tendency towards an increase in order, complexity and evolution of the cognitive capacity of process information (knowledge). The curve of the evolution of consciousness-information results exponential. If we assumed the hypothesis that consciousness could be an intrinsic quality of the Quantum Field, prior to the Big Bang, it appears that the evolution of consciousness from the Big Bang onwards generates units (quantum particles, atoms, cells, animals, etc.). To understand the laws and dynamics of their evolution we developed the concept of "Unitary System". The "Tables of Unitary Systems" we created (such as Mendeleev's table of elements) show a co-evolutionary logic and evident isomorphisms. We studied how cellular units, - without a nervous system - they process an enormous amount of information in a highly intelligent and "systemic" way, and how they use the same “emotional” hormones and neurotransmitters present in our brain. When cells co-evolve into a multicellular animal, their abilities to handle information within a "systemic consciousness" (the prototype of the self) and intelligently adapt to the environment become much more evident. We deeply studied the evolution of human brain and the self, the central consciousness (Eccles, Llinas, Edelman, Damasio, etc.). Our Institute conducted several neuroscience researches on brain EEG coherence and on synchronization of brain areas in states of self-awareness and disease. The results show that EEG coherence is significantly correlated with self-

awareness. For over 30 years our Institute applied the quantum, biopsychological and neuroscientific bases of consciousness to clinical medical and psychological practice. In collaboration with Candace Pert (emotional molecules) and Jaak Panksepp (emotional systems) we created an advanced "neuropersonality map" which proved to be extremely effective in understanding and treating the main psychosomatic disorders. From this we developed an evolutionary clinical approach based on new and ancient meditation and psychotherapy practices that develop a better bodily, emotional and cognitive self-awareness. Our research shown excellent efficacy in improving the most common contemporary ailments (stress, anxiety, depression, trauma, etc.). In my report I will present an overview of these definitions, co-evolutionary maps and brain research aimed at improving global self- awareness.

**Keywords**

Consciousness, information, negaentropy, evolution, neuroscience, psychosomatics, Self-awareness.

# 77

**Impulsing: a new model**

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

Just like the food pyramid simplifies nutrition, the impulsing model simplifies the nervous system. The food pyramid shows how to practice a balanced diet, leaving balanced nutrition, while the impulsing model shows how to maintain healthy impulse activity, leaving balanced emotional feelings. At this simplified level, all systems making up the body function the same. Our metabolism, for example, like our respiration, works the same in all of us. We use this level of self-knowledge as common ground, making it easier to understand and support each other. Now, for more common ground, we can consider the benefits of adding the nervous system. In fact, we may need it to survive and thrive in our world today. At its core, the model assumes the nervous system is responsible for all conscious experience, including our feelings. By understanding the activity involved in the pathways that form conscious experience, we can see how balanced feelings are maintained. This insight can lead to an improved quality of life. The model defines the nervous system as groups of specialized neurons connected by pathways, forming a circuitry in our body. As with other systems, the nervous system requires energy to do its work. The model proposes the presence of energy in the form of lightning-like impulse trails. When sensory neuron groups absorb energy, such as light and sound waves, they translate it into another form of energy. It becomes the electro-chemical energy, impulses, allowing groups to communicate with each other effectively. As the sensory groups monitor the body and the environment, they form impulse trails along pathways. Deeper in the circuitry, when these trails converge on the same neuron group, they often highlight the pattern of neurons they share, resulting in a resolution. As their energy converges on this pattern, it propels a trail forward. This monitoring and resolving trail work infers the primary work of the nervous system at this simplified level, is to monitor and resolve. And fluent propulsive activity is a reflection of healthy functioning. The model suggests that there are four areas in the conscious pathways associated with four kinds of conscious work. For instance, Area 4 is related to the formation of the tension patterns we call emotional feelings. Understanding this activity allows us to restore emotional balance and develop a lifestyle that consistently maintains emotional well-being. In summary, the impulsing model simplifies the workings of the nervous system, enabling us to promote our own well-being and use our common ground to better understand and support each other's emotional health--which complements the healthy functioning of the body’s other systems. Overall, this helps us become more able to enhance the welfare of our communities and the integrity of our environment.

**Keywords**

impulsing, impulse trails, impulses, energy, emotion, balanced feelings, emotional balance, lifestyle, simplified model

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# Brain: Hardware for Unveiling Perception and Conscious Experience

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[02.01].....Neural correlates of consciousness (general)

## Abstract

Based on neuroscience, the brain has been considered the manager of all conscious experiences and behaviour of humans. Furthermore, various internal attributes like abstract thoughts and emotions, are constructed by the brain under the physical laws. A community of neurons with specific structures, particularly microtubules play a crucial role in brain functioning. According to neuroscience, electrical messages, which can be recognized through brain waves, are responsible for human behaviors. Moreover, vigorous studies on microtubules and quantum physics, propose that the production of brain waves is attributed to a quantum process at the microtubule and accordingly, the microtubule structure and its quantum subtleties are the origin of consciousness, which is the inherent feature of the action in universe. This attitude can raise some questions; how do microtubules with similar structures in living organisms produce a wide variety of information? Do individual cells possess self-management capabilities? If so, how do different pieces of information coordinate with each other within a complex neuronal network? With constant communication occurring among approximately 100 billion neurons every moment, where does the initiation of message flow originate? How is it directed and managed? These questions have been addressed based on the T-Consciousness theory, introduced by Taheri. T-Consciousness is another component of the universe apart from matter and energy that can influence both of them. At the brain level, it has been regarded as a supercomputer or hardware, with neural network activities such as electric circuits, which require software components. To illustrate this idea, intelligent behaviours exhibited by humans and organisms without brains (e.g. Jellyfish as multicellular and bacteria as unicellular creatures) can be developed as a result of the functioning of these software parts beyond the physical hardware. In other words, the emergence of this non-physical entity necessitates a receiver or detector that allows hardware, such as a nerve cell, to receive information originating from T-Consciousness. Consequently, it translates the information into tangible messages, such as electrochemical signals transmitted by neurons. There are various T-Consciousness Fields (TCFs) that can be examined through reproducible experiments. For example, it has been found that applying TCFs on nerve cells taken from patients with Alzheimer's disease enhanced the survival of neurons with maintaining structural integrity of microtubules, and reduced amyloidopathy compared to the controls. This observation implies that the function of nerve cells can be influenced when exposed to TCFs.

Moreover, a study conducted on the human brain revealed distinct patterns of activated and deactivated regions under the influence of TCFs, distinguishing it from other meditation methods. This result suggests that these fields may result in switching or turning on and off different parts of the brain. Overall, the experimental evidence obtained confirms that instead of generating or shaping conscious experience, the brain plays a key role in unveiling the effects of T-Consciousness. According to Taheri, this concept can trigger a revolution in neuroscience.

**Keywords**

consciousness, neuroscience, revolution, Taheri Consciousness Fields, microtubule, brain waves, electrical circuit, quantum, hardware, software

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# tDCS improves Eyes Reading in Mind associated with increased alpha activity in healthy volunteers

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[02.01].....Neural correlates of consciousness (general)

## Abstract

Introduction: Several studies have reported that modulating dorsomedial prefrontal cortex and temporoparietal junction via transcranial direct current stimulation result with improved performance in certain aspects of emotion recognition, empathy and perspective taking. However, to the best of our knowledge, there is still no study that evaluated the effect of tDCS-with anodal stimulation of right temporoparietal junction and cathodal stimulation of anterior medial frontal cortex on emotional recognition and cognition simultaneously in humans. The current study's goal was to determine how tDCS (transcranial direct stimulation) in the right TPJ (temporo-parietal junction) and aMPFC (medial prefrontal cortex/medial prefrontal cortex) regions altered emotion recognition and spontaneous EEG in healthy participants. Material Methods: For this purpose, anodal tDCS (1.5 mA) was applied for 20 minutes to the right TPJ and aMPFC areas on 17 healthy participants (mean age: 22,29), whereas sham groups of 18 healthy subjects (mean age: 22,75) received no tDCS treatment. To analyze post-tDCS effects, Eyes Reading in Mind test (RMT), MOCA test, and likert type self-evaluation basic empathy scale (BES) was applied both before and after the procedure. To further analyze post-tDCS electrophysiological effects, repeated resting EEG recordings were made both before and after the procedure in a subgroup of participants (seven persons in the real group vs four persons in the sham group). In that context, to determine the maximum amplitude values of frequency bands, we performed EEG power spectrum analysis. EEG was recorded from 21 electrodes with standard international 10-20 EEG system EEG of each group were recorded during eyes open and eyes closed conditions. Both group’s participants' power spectra's grand averages (Grand Average) have been obtained. Alpha activity power spectrum

analyses were conducted because changes in alpha activity observed in both groups' overall averages. Power spectrum analysis of alpha activity was performed, and the maximum amplitude values were analyzed. Results: The clinical results of our study showed RMT ($p<0.05$, Wilcoxon Rank) but not other clinical parameters were significantly increased in the real group compared to the sham group ($p>0.05$, Wilcoxon Rank). In analyzing the electrophysiological parameters, we found that peak alpha activity and alpha amplitude values were increased in the real tDCS group when eyes were closed compared to the sham group on C3, C4, F8, T3 (for the alpha peak activity) and Fp1, Fp2, F4, P3, O1, O2, F8, T3, T5, T6, Fz, Pz and T2 regions (for the alpha amplitudes), respectively. ($p<0.05$, Wilcoxon Rank). These results were suggested with no significant differences between the groups in terms of pretreatment ($p>0.05$) with a significant difference between the posttreatment groups ($p<0.05$ ). Conclusion: The present study's findings are promising, as they demonstrate a distinctive clinical response in the real transcranial direct current stimulation (tDCS) group, accompanied by significant electrophysiological changes in brain regions relevant to the targeted areas of tDCS. However, it is important to note that these results should be regarded as preliminary and further research with a larger sample size is necessary to enhance the strength of the findings.

## Keywords

tDCS, EEG, Power Spectrum Analysis, Spontaneous EEG, Alpha

**95**

# Moro reflex in adults

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[02.01].....Neural correlates of consciousness (general)

## Abstract

About baby reflexes The inhibition of infant reflexes in time, and the development of mature reflexes are the basis for the development and functioning of a mature nervous system. Nowadays, it is common for infant reflexes not to be inhibited in time simply because the baby's body does not receive the stimuli that triggers the reflex and does not receive sufficient stimuli to start building the mature reflex. This can happen because of a caesarean birth, tight clothing, regular sitting in the breech, etc. Moro reflex The Moro reflex is an alarm reflex that develops in the fetal period and persists in infancy until a few months of age. You can imagine it as a one-switch response: if the incoming stimulus hits the stimulus threshold, it is triggered; if it does not, it is not. It is a full bodily - neural, motor and hormonal - response. Normally, at the right level of maturity, this is superimposed by the mature fight or flight response. In cases where something gees wrong with the infant's neurological maturation, the Moro reflex persists into adulthood. This means that these adults respond to stressful stimuli with the same full bodily (neurological, locomotor and hormonal) response. Adults The problem with this is that the stimulus does not reach the cerebral cortex, the response is initiated from the more ancient parts of the brain. Therefore, those who retain the Moro do not perceive the incoming stimulus. The effect of the alarm reflex from the brain and the body on the environment is the first that the patient can perceive. Chain of reactions: These people often react in this way to sudden changes in sound, light, stress, etc. Their reaction is often not understood by the people around them, they take it as an attack and react to the offensive stimulus. People with Moro reflex experience this as they are being attacked often by people in their environment. They do not notice the whole chain of reactions and suffer from it. Therapy: Assessing the whole process for these people. Mapping the triggers and then getting to be aware of them. With attention and practice, they become able to detect the first stimulus, thus eliminating the feeling of being attacked and the suffering.

## Keywords

Moro reflex, inhibition, being aware of triggers

## 104

# Microtubules mediate plant responses to anesthetics

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### Categories by Discipline

2.0 Neuroscience

### Primary Topic Area - TSC Taxonomy

[02.10].....Anesthesia

### Abstract

How anesthetics induce loss of consciousness is poorly understood. The effects of anesthetics are dose-dependent and reversible in disrupting cognition and movement, while maintaining life-supporting functions. Recent studies have shown disordering of membrane lipid clusters in response to chloroform, and block of neurotransmitter vesicle release by isoflurane, implying functional disruption at cellular level. Plants lack nervous systems, however the anesthetics used in humans and animals inhibit plant growth and leaf movement. Plants and animals shared a common ancestor 1.6 billion years ago, it has been proposed that plants could be a good experimental system to understand how anesthesia works at the molecular level. In a systematic approach, we found that similar concentrations of isoflurane used to induce loss of consciousness in animals were effective in reversibly inhibiting blue-light mediated phototropic response in young seedlings of Arabidopsis thaliana (mouse cress). Red-light mediated seedling growth and development was suppressed equally in wild-type and phyB-mutant seedlings, indicating that the effects of isoflurane were independent of loss of photoreceptor function. Based on the proposal by Sir Roger Penrose and Dr. Stuart Hameroff that microtubules are involved in the Orchestrated Objective Reduction theory, we tested wild-type and constitutively photomorphogenic 1 (cop1) mutant plants expressing GFP-TUBULIN treated with various concentrations of isoflurane. Clinically relevant (in human) isoflurane concentrations destabilized microtubules reversibly in control seedlings, but not in cop1 mutants. COP1 protein is a E3 ubiquitin ligase, which destabilizes components required for light-mediated growth. As a result, cop1 mutant seedlings exhibit light-dependent growth even in darkness. We have identified a potential mechanism whereby a microtubule stabilizing component, which is targeted for degradation by COP1, accumulates in cop1 mutant seedlings and blocks isoflurane from directly binding to microtubules. This work is ongoing, utilizing genetic and molecular tools that are readily available in plant models. These findings will reveal molecular mechanisms involved in anesthetic activity at microtubules, with relevance to human and animal systems, and could potentially lead to a better understanding of consciousness.

### Keywords

Anesthesia, plant responses, microtubules

**105**

# Investigation of Vestibular Stimulations to the Central and Peripheral Nervous System on Bodily Self-Consciousness with fNIRS

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[03.16].....Self-consciousness and metacognition

## Abstract

Background and aim:Consciousness is conventionally described as alertness and awareness. However, this definition remains insufficient for describing the emergence of consciousness since the concept of ‘self’ as a basic element is missing. Bodily self-consciousness, which enables us to distinguish between parts of our physical self and parts of the outside world is essential for survival and constitutes a fundamental aspect of human self-consciousness. Importantly, this integration contributes to the awareness of body ownership and plays an important role in the perception of a person's sense of self-localization. This study aimed to examine the effects of central and peripheral electrical vestibular stimulation (VS) in the formation of bodily self-consciousness in healthy individuals by utilizing cortical hemodynamic activations acquired with the functional Near Infrared Spectroscopy (fNIRS) system. Methods:Twenty right-handed healthy individuals participated in the study. The study protocol includes three different sessions, one session each different day: a session with no VS, a VS on the right temporoparietal junction (rTPJ) and a VS on the mastoid level, with transcranial direct current stimulation (tDCS). After each session, participants were asked to perform environment four autoscopic phenomena tasks in a virtual reality (VR) which included autoscopic hallucination (AH), heautoscopic hallucination (HH), the coexistence of autoscopic hallucination & room tilt illusion (AH&RTI) and the

coexistence of heautoscopic hallucination & room tilt illusion (HH&RTI) tasks. Cortical hemodynamic activity changes were recorded with fNIRS simultaneously during tasks. Results:The main effects of channels for the AH (F(1.70E+04, 1.08E+07)=32.901), for the HH (F(1.70E+04, 1.08E+07)=32.696), for the AH&RTI (F(1.70E+04, 1.08E+07)=32.459), and for the HH&RHI (F(1.70E+04, 1.08E+07)=30.249) tasks are statistically significant (p<.001). These effects are qualified by a significant channels*stimulation type interaction for the AH (F(3.40E+04, 2.16E+07)=31.792), for the HH (F(3.40E+04, 2.16E+07)=33.820) for the AH&RTI (F(3.40E+04, 2.16E+07)=33.165), and for the HH&RTI (F(3.40E+04, 2.16E+07)= 31.478), (p<.001). More cortical hemodynamic activation was observed when VS was provided from the mastoid region in AH and VS was provided from the rTPJ region in HH. However, more cortical hemodynamic activation was observed when not provided VS in both tasks AH&RTI and HH&RTI (p<.001). While more cortical hemodynamic activation was observed in the left supramarginal gyrus in the AH task, more cortical hemodynamic activation was observed in the left angular gyrus in the HH, AH&RTI and HH&RTI tasks (p<.001). Conclusion:The cortical output of central and peripheral VS can provide information about the neural basis of bodily self-consciousness in VR environment. While it was observed that the left supramarginal gyrus has more activation in the autoscopic hallucination, which is not associated with vestibular disturbance; it was observed that the left angular gyrus has more activation in the tasks with heautoscopic hallucination and room tilt illusion, which are associated with vestibular disturbances and lack of integration of vestibular otolith organs in the inner ear. In addition, it was concluded that with VS intervention from the peripheral region requires more cortical hemodynamic activation in autoscopic hallucination, while VS from the central region requires more cortical hemodynamic activation in heautoscopic hallucination.

**Keywords**

electrical stimulation, hemodynamic activation, vestibular processing

**111**

# Growing a Lotus in the Mud: How Three Men from the 'Hood' Use Spirituality to Address Mental Health Challenges in their Communityand Beyond

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[05.02].....Meditation and mindfulness

## Abstract

We are three men of color who co-founded a successful mindfulness-based nonprofit dedicated to serving those in the most traumatized areas of Baltimore City and beyond. For over twenty years, we have the lived experience of how powerful mindfulness, yoga, and wellness practices are for healing individuals and empowering communities. Our unique approach stems from our own life- long yoga and mindfulness studies, as well as living and working within the marginalized communities we serve. As such, we are uniquely positioned to understand the circumstances and needs of communities facing oppression and lack of resources. We work in areas that are food deserts where schools are often not air conditioned in warm weather or heated adequately in the winter. Well-meaning teachers are frayed to their edges trying to jump through hoops of a failing school system, and students often have difficulty regulating their behavior due to trauma responses from Adverse Childhood Experiences (ACES). Living in urban poverty brings increased exposure to crime and violence, particularly for adolescents. A growing body of research has documented that children and adolescents who grow up in poor neighborhoods do less well on a range of developmental outcomes, social, emotional, and cognitive. People in under-served communities often have multiple sources of trauma ranging from major life events (e.g. child abuse, divorce, gun violence) to chronic interpersonal stress (e.g. family conflict, addiction) to daily hassles (e.g. no money for transportation or food), all of which have been established as risk factors for a range of psychological problems. We developed an approach that translated yoga practices and spiritual concepts into everyday language accessible to everyone regardless of prior experience. Our comprehensive approach helps people develop their inner lives through yoga, mindfulness, and self-care by developing & providing high- quality, trauma-informed, evidence-based multi-faceted programming and curriculum. Our work has been featured on Good Morning America, NBC Nightly News with Lester Holt, Making a Difference on the NBC Nightly News with Brian Williams, PBS, Mindful Magazine, Yoga Journal, Shambhala Sun, CNN, and CBS, as well as O the Oprah Magazine, The Washington Post, Upworthy, and the book A Mindful Nation, by Congressman Tim Ryan, to name a few. Even though urban youth and the adults in their lives have an increased risk of suffering from psychological problems, they are less likely to receive help. This is where we stepped in with mindfulness and yoga programs that changed the climate of schools and communities, giving students and their care-givers self- care tools to

combat circumstances caused by systemic oppression. We find a potent antidote to suffering across the board is finding life-affirming ways to navigate stress and trauma using love as a conduit for healing. https://holisticlifefoundation.org https://letyourlightshinebook.com https://static1.squarespace.com/static/63aae51996ab5b338ff1f74a/t/63c01edceb16063dbe506dce/1673535197536/Yoga+Brief.pdf https://static1.squarespace.com/static/63aae51996ab5b338ff1f74a/t/63c01ee853273c5ac9a8f551/1673535208641/Feasibility%2Band%2Bpreliminary%2Boutcomes%2Bof%2Ba%2Bschool-based%2Bmindfulness%2Bintervention%2Bfor%2Burban%2Byouth%5B1%5D.pdf https://static1.squarespace.com/static/63aae51996ab5b338ff1f74a/t/63e18d7bbb4b333fb04e111c/1675726206064/BAM%2BStudy.pdf

**Keywords**

social justice, mind, body, community, trauma, mindfulness, spirituality, mental health, wellness, yoga, education

**114**

# Hallucinogenic compounds interact with microtubules to affect brain function: adverse effect or putative treatment?

Travis Craddock
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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[02.19].....Psychedelics and psychopharmacology

## Abstract

The microtubule cytoskeleton, a polymer of the protein tubulin, plays a vital role in maintaining the structure of brain cells, facilitating the transportation of materials required for synaptic plasticity, and potentially aiding in signaling and information processing. Pharmaceuticals like colchicine and the vinca alkaloids can bind to microtubules and interfere with their function. Interestingly, these drugs have been associated with generating hallucinations in some cases. This suggests that the direct modulation of the cytoskeleton could be involved in the generation of hallucinogenic experiences. Both hallucinogens and anesthetics are among the limited number of known molecular probes that can influence consciousness directly, and they appear to have a dose dependent impact on microtubules. Additionally, very recent work indicates that the known hallucinogens psilocybin and dimethyltryptamine exert their psychedelic effects at intracellular sites rather than at membrane receptors. Here the potential intracellular role of microtubules in mediating psychedelic experience will be discussed. Evidence will be provided for a biochemical basis for neuromodulation via direct modulation of tubulin polymerization by substituted phenethylamines that may contribute to 1) their adverse effects, 2) their main psychedelic effects, and/or 3) their use in the treatment of cancers, neurodegenerative disease, and neuropsychological illnesses. The potential for these interactions to disrupt and/or modulate quantum effects in microtubules will also be explored.

## Keywords

microtubules, psychedelics, biophysics, nanoneuroscience

**115**

# Cytoelectric coupling: electric fields guide the cytoskeleton

Dimitrios Pinotsis
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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[03.13].....Neural networks and connectionism

## Abstract

We propose the Cytoelectric Coupling Hypothesis: Electric fields generated by neurons are causal down to the level of the cytoskeleton. This could be achieved via ephaptic coupling that organizes neural activity, forming neural ensembles at the macroscale level. We suggest that this information propagates to the neuron level, affecting spiking, and down to molecular level to stabilize the cytoskeleton, “tuning” it to process information more efficiently. We study groups of neurons coactivated when a certain memory, thought or percept is stored or processed, known as cell assemblies or neural ensembles. We consider the electric fields generated by them and suggest that they interact and guide synaptic activity. The talk will provide mathematical descriptions of the interactions between synaptic and field activity and consider the effects of other biological structures, like proteins, filaments and microtubules. Granger causality and Representation Similarity Analyses will be used to show that electric fields can act as “guardrails” that stabilize and funnel the underlying neural activity and could mediate the transfer of memories and thoughts between brain areas.

**121**

# Fields or firings? Comparing the spike code and the electromagnetic field hypothesis

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## Categories by Discipline

2.0 Neuroscience

## Primary Topic Area - TSC Taxonomy

[02.02].....Methodologies (fMRI, EEG etc.)

## Abstract

Where is consciousness? Neurobiological theories of consciousness look primarily to synaptic firing and "spike codes" as the physical substrate of consciousness, although the specific mechanisms of consciousness remain unknown. Synaptic firing results from electrochemical processes in neuron axons and dendrites. All neurons also produce electromagnetic (EM) fields due to various mechanisms, including the electric potential created by transmembrane ion flows, known as "local field potentials," but there are also more meso-scale and macro-scale EM fields present in the brain. The functional role of these EM fields has long been a source of debate. We suggest that these fields, in both their local and global forms, may be the primary seat of consciousness, working as a gestalt with synaptic firing and other aspects of neuroanatomy to produce the marvelous complexity of minds. We call this assertion the "electromagnetic field hypothesis." The neuroanatomy of the brain produces the local and global EM fields but these fields are not identical with the anatomy of the brain. These fields are produced by, but not identical with, the brain, in the same manner that twigs and leaves are produced by a tree's branches and trunk but are not the same as the branches and trunk. As such, the EM fields represent the more granular, both spatially and temporally, aspects of the brain's structure and functioning than the neuroanatomy of the brain. The brain's various EM fields seem to be more sensitive to small changes than the neuroanatomy of the brain. We discuss issues with the spike code approach as well as the various lines of evidence supporting our argument that the brain's EM fields may be the primary seat of consciousness. This evidence (which occupies most of the paper) suggests that oscillating neural EM fields may make firing in neural circuits oscillate, and these oscillating circuits may help unify and guide conscious cognition. recently published paper:
https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1029715/full

## Keywords

neurobiological theories of consciousness, synaptic firing, neuron axons, dendrites, EM Electromagnetic fields, meso-scale, macro-scale EM fields

## 134

### xx

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### Categories by Discipline

2.0 Neuroscience

### Primary Topic Area - TSC Taxonomy

[02.16].....Brain stimulation techniques

### Abstract

This talk explores the potential of ultrasound technology to alter the kinetic activity of enzymes, with the aim of enhancing the proliferation of crucial neurotransmitters such as dopamine and serotonin. By carefully tailoring ultrasound pulsations, it is now possible to slow down enzyme activity, allowing these neurotransmitters to flourish. This breakthrough has the potential to replace many pharmaceutical interventions that chemically alter brain activity. Furthermore, initial research demonstrates that ultrasound can also modulate acetylcholinergic activity, opening up new possibilities for treating Alzheimer's disease. By targeting specific enzymes involved in acetylcholine metabolism, ultrasound can potentially lead to significant breakthroughs in the treatment of this debilitating condition. The future of neuromodulation lies not only in the discovery of new drugs but also in the replacement and eventual elimination of outdated pharmacological approaches that have broad effects throughout the body. Ultrasound-based therapies offer a more focused and targeted approach, paving the way for a future where therapeutic interventions are tailored to individual diseases, leading to improved outcomes and a disease-free future.

# Final category: 3.0 Cognitive Science and Psychology

## 2

## The Mechanism of How Self-consciousness Arises

Wenge Huang
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### Categories by Discipline

3.0 Cognitive Science and Psychology

### Primary Topic Area - TSC Taxonomy

[03.16].....Self-consciousness and metacognition

### Abstract

How does self-consciousness arise? Although it is extremely difficult to figure out how consciousness in the sense of qualia arises, an original model to interpret “non-self” which is developed on the basis of both the scientific mechanism behind Buddhist meditation and the empirical materials of Theravada Buddhism reveals the mechanism of how self-consciousness arises. As the cornerstone of Buddhism, in Theravada Buddhism, “non-self” generally refers to the doctrine that no unchanging, permanent self can be found in any person, which is also called pudgala-nairatmya (Sanskrit). Instead, the individual person consists of five aggregates that are constantly changing. Obviously, an ideal interpretation should be able to answer two questions simultaneously: what is the essence of "non-self" and how does the illusion of self arise? (They are two sides of the same coin.) Our study starts with proposing that the nature of vipassana is enhanced awareness induced in Buddhist meditation (after samadhi), which makes contemplating the five aggregates possible, just like “watching” a slow-motion film. If we regard each aggregate as an “awareness” which is the state of being conscious of something, then contemplating the five aggregates would reveal the existence of “awareness of awareness” according to the empirical materials of Theravada Buddhism. For instance, when one feels happy, one knows that one is happy. (Note that feeling happy is not the same as knowing that one feels happy.) Furthermore, inspired by Ajahn Brahm’s insightful “fruit salad simile” which describes experiences in Theravada Buddhist meditation, we develop an original model to interpret “non-self” by introducing “awareness of awareness” out of the framework of the five aggregates: contemplating the five aggregates would discern that “awareness of awareness” arises a moment after each aggregate and they do not appear simultaneously. Thus, the slowing down of “speed” in vipassana would reveal that the notion that there is a constant self always there experiencing or observing all aggregates just results from “awareness of awareness” appearing between any two aggregates, something that under ordinary conditions happens very quickly. (That's like a torch spinning so fast that it looks like a ring of fire.) This would lead to the insight of "non-self" which means no subject of awareness (or consciousness) at all. That’s the essence of “non-self” in Buddhism. Obviously, “the illusion of self” in Buddhism is just “self-consciousness” in western philosophy, while the concept of the five aggregates is similar to consciousness in the sense of

qualia. Therefore, this model can also explain how self-consciousness arises. The sense of self just emerges out of the process of alternating of “aggregates” (or “awareness”) and “awareness of awareness”. To go a step further, this model provides a basis for discussing whether or how AI can become self-aware. That is a basic problem about the risk of rapidly advancing AI.

**Keywords**

self-consciousness, non-self, the five aggregates, awareness of awareness, vipassana

**5**

# Perceiving Time Without Memory

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### Categories by Discipline

3.0 Cognitive Science and Psychology

### Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

### Abstract

Consciousness per se is a ‘democratization’ item since it belongs to everyone throughout mankind’s history, regardless of whichever way it is understandably reported. Contemporary theoretical approaches and corresponding neuro-instrument-led research provided scope for probing if there is a neurobiological basis. However, all areas are yet to be delved into from a philosophical perspective of approaching consciousness. Eastern traditional ascriptions of consciousness entail the fourth state beyond awakening, dreaming, and deep sleep states that have been scholarly inculcated historically for decades, if not centuries. This state involves a timelessness that is distinct from the rest of the world's experience. Attaining this state transpires one being in unison with all-pervading pure consciousness, which is easier said than done albeit. In William James’ principles of psychology in 1890 or Arthur Eddington’s University of Edinberg lectures in 1927 , "When I close my eyes and retreat into my inner mind, I feel myself enduring, I do not feel myself extensive. It is this feeling of time as affecting ourselves and not merely as.....", time perception had been a different food for thought, a plausible gateway of objective assessment of subjectivity; however, in later times, it was kept broadly outside the research paradigm of consciousness rather than in expected conjunction with it, at least to a significant extent, even though time perception has long been a thoughtful separate research arena. James’ unique pondering on mind, ‘stream consciousness’ concerning space and time interestingly predates space-time relativity theory, which later changed the understanding of the physical world and universe per se. Moreover, James found a place in his time perception chapter by framing a ‘fanciful hypothesis.’ Does consciousness thus fall outside the time perception arena when it is known that time either speeds up or slows down in mania or ‘disconnected’ altered states? As consciousness is inseparable from attention, vision, memory, logical reasoning, and other cognitive phenomena, why should the perception of time not also be there by its merit? An interesting fact is that as memory encroaches on different cognitive domains, so does concerning time perception, compelling us to remember the continuum of events in some representational form that comes under the purview of objectively inculcating cognitive science of mind and related aspects. When it is said to feel time, it intrinsically encompasses the memory of past events in the present. Why not understanding consciousness with time perception devoid of memory accumulation would likely lead to a distinct avenue if consciousness's telltale signatures are allegedly aimed for? Moreover, an approach to philosophy without all states of consciousness is not realistically cognizant. Is a congruence among self, levels, and contents of consciousness likely or otherwise? What

about the neural underpinnings associated with them, then? This paper argues the need to consider time perception, encompassing consciousness quest research, and actions to bring it about.

**Keywords**

Time Perception, Consciousness, Fourth State

**19**

# The Phenomenology of Trans Phantom: A Qualitative Interview Study

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[03.03].....Other sensory modalities

## Abstract

Trans phantoms are bodily sensations of gendered body parts that a person was not born with (i.e., phantom penis in someone assigned female at birth). Our research examines the prevalence and phenomenology of trans phantoms across the transgender, nonbinary and gender diverse people (TGD) as well as a phenomenological study of phantom penis. Based on the theory of the Bayesian brain, the predictive processing of the brain holds hyperprior predictions of certain gendered bodily experience which is not reciprocated by the material body. This theory follows the conceptualization of neuronal processing set forth by Friston with the Free Energy Principle and applied to TGD experience of gendered bodily dysphoria by Langer. There are gendered hyperpriors that are only resolved by external action as opposed to internal homeostatic responses, in this case, gender affirming interventions such as social transition, hormone treatment and/or surgery. In the instance of trans phantom perceivers, the predictive processing extends to physical perception of the body part as opposed to non-perceivers who feel the need for that part but not the physical extension of it (i.e., there are transwomen who know their bodies will not be congruent until they have a vagina whereas there is a small subset who know that and feel the sensation of one). In our study, we conducted phenomenological interviews with 26 transmasculine people on their experience with a phantom penis. Interviews focused on answering some of these questions: What are the perceptual, physical, phenomenological, and erotic dimensions of phantom penises, as personally experienced by (some) TGNB individuals? What are the individual characteristics of phantom experiences, e.g., their location, onset, frequency, intensity, and endurance? How do phantoms operate through time and across activities? How do individuals understand or conceptualize their phantom phenomena? Preliminary findings indicate that although there are similarities, participants' experience of phantoms is individualized and unique. Through this work, we are building out the dimensions for understanding trans phantom sensorial experience. This research will have clinical implications for psychotherapy and gender-affirming surgery as well as advance the understanding of phantom sensation in general.

## Keywords

Phantom sensation, Free Energy Principle, Perception, Transgender

**32**

# Physics, Neuroscience, and Consciousness: Closing Communication Gaps

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[01.09].....Philosophical theories of consciousness

## Abstract

This presentation focuses on several issues that have caused confusion in consciousness research, namely: (1) Laplace's demon, determinism, and free will (2) Scale chauvinism and the central role of spatial and temporal scale in both experimental and theoretical work. (3) Multiple meanings of "information," especially the critical differences between Shannon and state (or Boltzmann) information. (4) The multiscale conjecture. These issues are closely related to various theories of consciousness, including Orch OR, Integrated Information, and Global Workspace.

## Keywords

Orch OR theory, Integrated information theory, multiscale conjecture, determinism, Laplace's demon, intrinsic versus Shannon information

**39**

# Intracrinology is Autopoietic

Susan Gordon
National University, La Jolla, CA, USA. Southbury Clinic for Traditional Medicines, Southbury, CT, USA

## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[01.11].....Personal identity and the self

## Abstract

Is there a continuum between the mind and the brain? According to the natural sciences, the brain produces the mind relegating consciousness to an epiphenomenon. But, characterized by autopoietic autonomy, human beings are not reducible to the mental and physical events that constitute them. Reality is not given; it is perceiver-dependent. Cognition is a relational domain enacted by the person's autonomous agency and autopoietic mode of coupling with their environment. Living beings generate and maintain their identities and enact or bring forth their own coherent and meaningful patterns of action. This presentation explores a holistic theory of the development of self that challenges assumptions in present day neuroscience and psychiatry, placing the mind and brain on a continuum of health and growth rather than reducing the study of human consciousness to neurobiological terms and pathological classifications. The biochemistry of the endocrine system is viewed as a foundation for the emergence of embodied self-awareness. The homeostasis and hormonal balance of the organism is integral to the sense of well-being and the development of meaning, and continually modulated and influenced by the subject's experience of his or her world. This theory of embodiment goes beyond a computational theory of the brain to focus on the biochemical-organismic processes at the root of the mind. This presentation situates the paradigm of neurophenomenology at three levels: psychological, neurological, and intracrinological (Gordon, 2023). Psycho (psychological) refers to constructs variously referred to as psyche, self, soul, mind, and consciousness. Neuro (neurological) refers to the composition and reactions within the nervous system. Intracrine (intracrinological) refers to the intracellular biosynthesis of steroids, the binding of receptors, and the formation of enzymes that catalyze the creation of hormones within the cell. This psychoneurointracrinology systems model integrates conscious and unconscious processes with the emotions to reveal the person's perceiver-dependent, embodied sense of self and sense of well-being. It is argued that the sense of self has neural correlates at the interface between the hypothalamic-pituitary-gonadal (HPG) and adrenal (HPA) axes, which are responsible for enactive engagement and the development of meaning through their neuronal connections to higher-order functions of the brain that modulate the reactive and anticipatory response to stress. This co-regulation may occur through top-down activation and bottom-up feedback as coupling of the HPA and HPG axes through parallel involvement of social and emotional-relevant circuitry. It is hypothesized that progesterone and DHEA levels fluctuate with the sense of self as the boundaries of the personality are integrated and corticolimbic projections from the paraventricular nucleus to the

median eminence converging with gonadal steroids in medial preoptic area are an interface between the mind and the brain. Reference Gordon, S. (2023). The Mind-Brain Continuum: Psychoneurointracrinology. Springer. https://link.springer.com/book/10.1007/978-3-031-10059-8

**Keywords**

Autopoiesis, Mind-brain, Self, Psychoneurointracrinology, Intracrine, Neurophenomenology, Embodied mind, Systems theory, Hormone biosynthesis, Corticolimbic projections

**44**

# The General Equation of Consciousness and the Role of ATP Production

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

Neuroscience needs a continuous dynamic revolution of feedback to understand consciousness. This includes understanding the relationship between linear and participatory behavior, limited and unlimited senses, and the individual's current abilities. We propose the General Equation of Consciousness Model, which uses detailed system dynamics to enhance discussions of neuroscience and consciousness. The central feedback loop in the model is the amygdalae alert of our immediate state of energy potential, which affects how we deploy our brain resolution to stay cool and monitor and adjust energy in the form of ATP. Exercise is important for maintaining the quality of the energy feedback loop in the model. The General Equation of Consciousness Model provides a basis for maintaining the quality of the energy feedback loop in many ways, which we will discuss in detail. Our personal endeavor with this work is based on actual high-performance systems engineering of the brain/mind following a left temporal lobectomy. We believe that this work has the potential: to revolutionize our understanding of consciousness; to improve the lives of people with neurological disorders; and to improve communications, cooperation, and collaboration across research specialties.

## Keywords

Feedback Theory; Threat, Fear, Oneness, Irrationality, Emotional Intelligence, Amygdala, Temporal Lobectomy; System Dynamics; Mental Modeling; Attention; Sensory Memory; Exercise; Neurological disorders

**49**

# The Consciousness-Magnetism-Quantum Interface Hypothesis: Exploring the Creation of Human Consciousness

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

Abstract: The Consciousness-Magnetism-Quantum Interface Hypothesis proposes that consciousness arises from, or is influenced by, magnetically mediated quantum phenomena within the brain, particularly through reproductive energy-induced ferromagnetic processes. This hypothesis suggests that such processes can induce or modulate quantum states, potentially contributing to the emergence of consciousness. In this article, we delve into the hypothesis, drawing parallels between the emergence of consciousness and the magnetization or discharge of certain elements. We outline a comprehensive approach to test this hypothesis, including magnetite detection, observation of quantum phenomena, examination of magnetic influence, modeling and simulation, and investigation of entropy and memory. Through these investigations, we aim to gain valuable insights into the role of magnetically mediated quantum phenomena, in conjunction with the laws of Entropy, in the creation of human consciousness.

## Keywords

Consciousness, ferromagnetic, quantum, reproduction,

**54**

# Video Game Play and Lucid Dreaming: A 20-year Retrospective

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[03.10].....Sleep and dreaming

## Abstract

The prevalence of electronic media in North American has exploded in the last 20 years. Initial inquiries into the effects of the most immersive of these technologies, video game play, have been the focus of research at the dreams and video game play laboratory at MacEwan University. The general hypothesis has been that exposure to immersive digital technology, e.g., video games, would be associated with increases in dream lucidity. In an earlier study Gackenbach and Velichka (2017) compared six samples of dreams collected over a 10-year period from 2006 to 2016. They found weak but significant positive correlations between three measures of dream lucidity and year and between two video game play measures and year. In this inquiry dream analysis will be extended in two ways. First the time period will extend to 2023 and second linguistic analysis of all dreams will be added. Linguistic analysis allows content analysis of dreams to be much less time intensive and with the software advances it provides true objectivity in dream coding. Dreams from both the MacEwan laboratory and Bulkeley's Sleep and Dream Data base (2009) were analyzed using the Linguistic Inventory and Word Count (LIWC-22) system (Boyd, Ashokkumar, Seraj & Pennebaker, 2022). Bulkeley and Graves (2018) and Zheng and Schweickert (2021) have both used this software to examine dream types and compare linguistic analysis outcomes to the standard norms in dream content by Hall and VandeCastle (HVDC, 1966). LIWC analysis were done on the original 10-year study dreams as well as on selected dreams from the Sleep and Dream Data Base. The latter dream sets were ones where video games were mentioned, the HVDC norms, and two lucid dream sets. In all cases as was found in earlier LIWC analyses the authenticity of the dream text was the highest incidence relative to nondream texts given in the manual for comparison. Interestingly dreams where video games were mentioned had considerably higher authenticity values than those that were classified as evidencing technology or science. Lucid dreams had the highest authenticity score of all dreams considered. References Boyd, R. L., Ashokkumar, A., Seraj, S., & Pennebaker, J. W. (2022). The development and psychometric properties of LIWC-22. Austin, TX: University of Texas at Austin. https://www.liwc.app Bulkeley, K. (2009). Sleep and Dream Data Base. Retrieved July 7, 2023 from https://sleepanddreamdatabase.org/. Bulkeley, K. & Graves, M. (2018) Using the LIWC program to study dreams. Dreaming, 29(1), 43-58. Gackenbach, J.I. & Velichka, M. (2017, June). Dreams of Gamers Over Time: 2006 to 2016. Poster presented at IASD conference, Anaheim, CA. Hall, C. S., & Van de Castle, R. (1966). The Content Analysis of Dreams . New York: Appleton-Century-Crofts. Zheng, X., & Schweickert,

R. (2021). Comparing hall Van de Castle coding and Linguistic Inquiry and Word Count using canonical correlation analysis. Dreaming, 31(3), 207–224. https://doi.org/10.1037/drm0000173

## Keywords

dreams, lucid dreams, video game, technology, linguistic analysis

## 58

# Am I Too Pixelated?

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### Categories by Discipline

3.0 Cognitive Science and Psychology

### Primary Topic Area - TSC Taxonomy

[01.09].....Philosophical theories of consciousness

### Abstract

In 2003, Nick Bostrom published his highly influential “Simulation Argument” in Philosophical Quarterly (Bostrom, 2003), an idea taken so seriously that even Bank of America has sent out alerts to its clients. But what, exactly, would that mean? And, more importantly, why is the idea of a simulated universe not being pursued in regard to cancer—and every other disease? We understand, in magnificently precise, granular ways, exactly what is going wrong in the body. But do we understand, in a coarser way, what the granules are made of? In a holographic universe, the images we perceive are not necessarily what they appear to be; they might exist against a background. But the background would create a context that participates in the image that emerges. Green can be rendered as green. Or as “blue yellow blue” or “yellow blue yellow.” Perhaps the act of rendering generates variables that have been overlooked in our understanding of illness: scale and spin. Deep in the corridors of neuroscience, a revolution is brewing. If you have not been astonished by the work of contemporary cognitive science, you have not understood it. Donald Hoffman: The probability that we see reality is zero. Beau Lotto: Optical illusions show how we see. Anil Seth: Your brain hallucinates your conscious reality. The brain is not a passive observer, like a camera lens. The brain actively composes what we perceive. We do not see reality; we see an image. This begs an important question. Against what “fabric” is the image being rendered? Via what medium—on what canvas—does that which we observe exist? We have assumed that there is no medium, no canvas; what we perceive, when we behold the cosmos, is taking place against the vacuum of space. But what if we’re wrong? Indeed, if we take to heart the edicts of contemporary neuroscience, we are wrong. There is, empirically, no “vacuum of space.” The degree to which we see a vacuum is the degree to which we conjure one. But if this isn’t a vacuum, what is it? The holographic principle was first proposed by Nobel laureate Gerard ‘t Hooft in the 1990s. In 2017, a UK, Canadian, and Italian study provided substantial evidence that the universe is, indeed, holographic. I’d like to propose an alternate model to that of the vacuum. What we observe is taking place inside time. A unit of time has a fundamental length—27,729 days, which is about the length of a human life, and approximately 70 x 360 plus 7 x 360 days. This “width” of time defines a margin inside which, light is light. Above and below it, light is no longer light, but matter and energy, respectively. The ocean does not end at the horizon. When we behold the cosmos, are we seeing objective reality, or are we seeing the limits of our sight?

**Keywords**

simulation argument, reality, emergence theory, cognitive science, consciousness, neuroscience, perception, speed of light, holographic universe

**65**

# Thinking About Thinking: The Relationship Between Consciousness And Creativity

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[03.18].....Intelligence and creativity

## Abstract

Abstract: Questions regarding consciousness – who we are, what we create, and how we shape our reality – have captivated philosophers, scientists, and thinkers for centuries. Drawing upon my recent book, What's Next? ... Get Clear and Get Going, my presentation embarks on an exploration of the profound assertion that all human experience is self-created, and that we, as individuals, are actively constructing our lives in real time. Against the canvas of this assertion, we consider four critical questions: • What role does consciousness play in reality creation? • How do we consciously, that is actively and intentionally, choose what we are creating? • How do we expand our consciousness of the process of creating our lives? • And, finally, what does it mean to live a life that is a product of deliberate creation, as opposed to one shaped by circumstances? In our exploration of consciousness, thought, and awareness, we delve into the notion of 'thinking about thinking.' We seek to move beyond being passive observers and servants to thought, transitioning instead toward active participation in the generation of thought. This higher level of consciousness enables individuals to not just react to thought, but to proactively participate in its formulation. By linking consciousness to four distinct dimensions of how we create thought, we unlock infinite possibilities for consciously creating our reality. Just as our individual consciousness is key to unlocking our potential, a revolution in neuroscience could be key in unlocking the mysteries of the mind.

## Keywords

Consciousness, Nature of Being, Inquiry, Dimensions of Creation, Human Experience, Reality Creation, Self-Created, Intentionality, Thinking About Thinking, Expanding Consciousness, Proactive, Generation of Thought, Unlocking Potential, Possibility,

**67**

# "FEELING" CONSCIOUSNESS - BRIDGING THE GAP IN CONSCIOUSNESS STUDIES BETWEEN THINKING & FEELING

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[01.08].....The "hard problem" and the explanatory gap

## Abstract

EXTRACT OF POETRY SEEKING TO “GRASP” “CONSCIOUSNESS” Is the plural of paradox paradise ? Is the latter related to “Pair of dice” (stochasticity/game theory ) ? Themes which you deeply analyze (Cognitive science / consciousness studies / philosophy etc) Meaning’s emergence In the quest of finding man’s essence And making sense Of our attempts at making sense Of all enveloping phenomena Seeing in the ordinary, the phenomenal, And finding patterns within the phenomenal By comparing them with the general Distillation of the invariant essence from the dynamical “stream of life” The order lurking in the chaotic strife. Employing , creating and dealing with many a paradigm That retain their significance through time Of invariance, Of Coherence, Attempting to extract the essence From phenom(ena) to phoneme, In Reconstructing the pathways from the genome, The cells from the biomolecules, The peptides and the nucleotides (not forgetting the lipids) Their interaction leading to tissues, organs and physiological systems that are rich In complexity, never inspid Finally leading to the Nervous System And associated subsystems The “stem” of the “flower” that is “Consciousness” The “God” that lies within the sub-conscious’s “Loch Ness”....etc …… ---------- ---------- “ Socrates, buddha, Patanjali, christ , mohammed, Mahavira, Chaitanya, Dnyaneshwar …..& countless others Aristotle, plato, Aryabhatta, bhaskara, Galileo, Newton …..& countless others Rumi, the Emres, Saints of the Chisti Order & countless others Neischtze, Bergson, Wilde and others But going beyond understanding the self But making sense of the attempts to understand the self The journey becomes the destination And the destination becomes the journey. (I have attached below , a Link to a Document outlining my understanding of the body-brain-mind-consciousness framework) https://drive.google.com/file/d/1B2vUAGU-mQcrkCaSayiPhzHecfxHq-Ua/view?usp=sharing One of the greatest challenges-problems in “Consciousness-Studies” is an adequate explanation for the emergence of perceptions from sensations and that of concepts from perceptions , (i.e that of precepts from percept(ion)s). At the bottom, Sensations are extracts from the “wet / messy” dynamics of life while at the top, concepts and their networks are amenable to the rules of logic. What compounds the problem is that there is a continual 2 way interaction between concepts (thinking) and perceptions (feeling). Something that adds to the difficulty is the important role played by collective perceptions. One of the mathematical tools that has arisen is that of fuzzy logic. Other tools

are those from dynamical systems, complex systems , fractal geometry etc to handle the messy self referential nature of conscious phenomena. In my Masters thesis in acousto-optics, when investigating the interaction between electromagnetic waves and matter, I realized one way of abstracting out the properties of materials was the notion of a “fluid” field of permittivities (electricity parameter) & Permeabilities (magnetism) which seems a kind of precursor to the wave function concept in quantum mechanics. The above also seems linked to the multi phase (solid-liquid-gas-plasma) problems in statistical physics. The only way out seems to be the notion of “coherent” clusters of perceptions & concepts , so called percepto-conceptual networks that are relatively autonomous and interact both with each other and with the formal conceptual networks

**Keywords**

PERCEPTO_CONCEPTUAL NETWORKS, DYNAMICS, THINKING, FEELING, EMERGENCE

**70**

# Cognitive Neuroscience: Toward a New Paradigm for Non-Lucid Dreaming Consciousness

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[03.10].....Sleep and dreaming

## Abstract

For the world of wakefulness, Rose (1998) defined neuroscience as "the collective sciences of brain and behavior" (p. 1). The impetus for its subdivision of cognitive neuroscience, as Albright, Kandel, and Posner (2000) stated, is joining of psychology and neuroscience (p. 612). Neisser (1967/2014) outlined the mission of cognitive neuroscience as an inclusion of subjective experiences when he proposed that "the world of experience is produced by the man who experiences it . . . Whatever we know about reality has been mediated not only by the organs of sense but by complex systems which interpret and reinterpret sensory information" (p. 3). The "complex systems" include psychological feature of cognition. W. James (1890/1983) outlined that faculty of cognition requires an agent (the person) who is able to manifest "feelings, desires, cognitions, reasonings, decisions," memory, volition, imagination, appetite, reminiscences, perceptions, and passions (p. 15). But what could be the status of cognitive neuroscience in relationship to world of subjective experiences during non-lucid dreaming state of consciousness in which dreamers are sensory-separated from the awake world? Questions of "Could the cognitive abilities, including higher-order cognition, continue in dreaming state?" and " Could the dreamers be capable of self-generating their thinking including interpretation of endogenously generated sensory information?" require answers. Viewpoints from cognitive neuroscience are, however, dissatisfactory: Braun et al. (1997) declared that "REM sleep may constitute a state of generalized brain activity with the specific exclusion of executive systems which normally participate in the highest order analysis and integration of neural information" (p. 1190). Stickgold (2000) claimed that dreaming content is "totally determined by physiological processes" (p. 6); he effectively denied the existence of an agent—"the dreaming person in his dreams" (Tholey, 1989, p. 567). Yet, the phenomenological evidence shows that non-lucid dreamers transcend neural "deactivation": In problem-solving dreams, dreamers are using their executive skills including volition, decision-making, analytical, and evaluative thought process (Kozmová, 2012, 2015, 2017; Wolman & Kozmová, 2007). Despite this evidence, higher order cognition is considered deficient in non-lucid dreaming state of consciousness (e. g., Domhoff, 2022; Zadra & Stickgold, 2022). With deficiency paradigm (an "internalized model of reality [that] determines one's perception of the world," and "a model, or an organizing principle that governs the overall pursuit in a given field of research," Sparrow, 1976/2015, p. 57), the field stagnates. This state

of affairs continues despite the following challenge by Hobson, Pace-Schott, and Stickgold (2003): We feel strongly that there is no way for cognitive neuroscience to sidestep first person accounts of subjective experience. . . . The recent spate of brain imaging articles makes it clear that no amount of technical sophistication can compensate for neglect of exactly what psychological features the neurobiological data are asked to explain. (p. 231) If, indeed, as Hobson (2007) stated, the "science can never conclusively prove a negative. It can only offer more attractive and concise alternatives" (p. 77), then the cognitive neuroscience's deficiency paradigm is in the need of "an alternative." In presentation, I will offer psychological data towards the revision of dreaming cognitive neuroscience paradigm.


## Keywords

non-lucid dreaming state of consciousness, dreams, subjective experience, cognition, higher-order cognition, executive skills, phenomenology, cognitive neuroscience of dreaming

**86**

# Study of Integration of Consciousness and Influence of Emotions in Artificial Intelligence: Artificial Consciousness

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### Categories by Discipline

3.0 Cognitive Science and Psychology

### Primary Topic Area - TSC Taxonomy

[03.12].....Artificial intelligence and robotics

### Abstract

The rapid advancements and breakthroughs in artificial intelligence (AI) have raised issues about the advent of consciousness in AI systems. Recent improvements in AI have made it a potential alternative for basic mechanical and computational tasks at low-level industry positions. However, for AI to do more complex computational tasks, it requires seamless integration and coordination of various cognitive functions such as memory, emotion, and perception, which are akin to human self-awareness or consciousness. This research aims to explore the role of emotions in the evolution and manifestation of consciousness within AI frameworks. This research delves into various cognitive theories of consciousness and its potential interaction with AI systems. Emotions are considered an integral component of human consciousness as they involve complex states of subjective experiences and physiological responses. Thus, it is reasonable to consider that emotion also plays an integral part in the evolution of consciousness in AI systems. According to the Affective Computing model, the incorporation of emotional skills into artificial intelligent system networks could usher in a new dimension, thereby improving the ability of AI to interact with humans in a more socially conscious manner. Emotional design in AI involves programming responses based on predefined algorithms. Nevertheless, by simulating emotional states, AI networks could potentially adapt their behavior based on sophisticated subjective experiences and contextually appropriate user feedback. AI systems may be able to imitate certain parts of emotional intelligence, leading to more advanced systems. The proposed theoretical framework tries to explore the relationship between emotions and the emergence of consciousness in AI. This research tries to explore the emergence of consciousness alongside the role of emotions in AI. This study also tries to explore the cognitive theories of consciousness to get a better understanding of how AI systems could generate contextual, meaningful subjective experiences. Furthermore, this research also highlights the ethical considerations of incorporating consciousness and deeper levels of emotion into AI systems. Overall, this theoretical abstract lays the groundwork for research to delve into the discussion on the emergence of consciousness in AI, emphasizing the potential role of emotions in generating contextual, meaningful subjective experiences. It also provides a principled understanding of complex phenomena to foster the development of complex artificial neural networks or machines so as

to have more conscious, human-like interactions and thereby a deeper understanding of human emotions.


## Keywords

Artificial Intelligence (AI), Consciousness, Affective Computing model, Emotions Artificial neural networks.

**87**

# Synesthesia, Perception and the Energy Healing Practitioner

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[03.03].....Other sensory modalities

## Abstract

Purpose: The purpose of this study was to see if the rates of synesthesia in these energy practitioner populations are different than in the general population. Materials & Method: Tellegen Absorption Scale (TAS) is a widely used questionnaire to assess openness of an individual to experiences that are perceived as absorbing and self-altering. It incorporates a reliable synesthesia scale.[1] The TAS Synesthesia Scale consists of true/false answers on questions 10, 17, 25, 26, 27, 30, and 33. True answers are an indication of synesthesia. This data was collected from three studies N=124 Study 1: Baseline Testing of Energy Healers N=20 Study 2: Testing of Energy Practitioners taking Level 1 & 2 of Reconnection Training N=46 Study 3: Water, Imagery and the Reconnection Trained Practitioner N=58 Results: 41.19% Question 10 - Textures (such as wool, sand, wood) sometimes remind me of colors or music. 83.44% Question 17 - Different colors have distinctive and special meanings for me. 52.73% Question 25 - Sometimes I can change noise into music by the way I listen to it. 86.46% Question 26 - Some of my most vivid memories are called up by scents and smells. 66.86% Question 27 - Some music reminds me of pictures or changing color patterns. 62.38% Question 30 - The sound of a voice can be so fascinating to me that I can just go on listening to it. 31.39% Question 33 - I find that different odors have different colors. Conclusion: Ramachandran & Hubbard[2] found that synesthesia in the general population range from: 1 in 200, or 0.5% to 1 in 2000 where Baron-Cohen, et al.[3] found a rate of 1 in 2000. Energy Practitioners reported synesthesia type experiences at a rate of 1 in 3 in this study. This is a significant difference.

## Keywords

Synesthesia, Perception, Energy Healing, Neurocognitive

**93**

# The Impact of Artificial Empathy on the Study of Consciousness

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[03.12].....Artificial intelligence and robotics

## Abstract

This research paper examines the impact of artificial empathy on the study of consciousness. Empathy, the ability to understand and share the feelings of others, has long been recognized as a fundamental aspect of human consciousness. With recent advancements in artificial intelligence (AI) and computing technology, the development of artificial empathy has become a topic of increasing interest and potential significance. This paper explores how the integration of artificial empathy into AI systems can contribute to our understanding of consciousness. It investigates the theoretical frameworks and methodologies used to build empathetic AI models, focusing on their ability to perceive, interpret, and respond to emotions. By examining the existing literature and studies in this field, the paper identifies the potential benefits and limitations of artificial empathy in enhancing our understanding of consciousness. Furthermore, the ethical implications of developing and implementing artificial empathy are discussed, including issues of privacy, trust, and the potential displacement of human empathy. The paper also analyses the impact of cultural and personal biases on artificial empathy systems and emphasizes the importance of designing and deploying these systems responsibly and ethically. Overall, this research paper highlights the growing significance of artificial empathy in the study of consciousness, offering valuable insights into the potential benefits and challenges associated with its development and deployment. It provides a foundation for further exploration and development in this emerging field, offering a glimpse into how artificial empathy could reshape our understanding of consciousness in the future.

## Keywords

artificial empathy, AI, respond to emotions, ethical implications, privacy, trust, potential displacement of human empathy systems, benefits and challenges of artificial empathy, effects on understanding of consciousness.

**97**

# The consciousness experiment as a psychological model

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[03.20].....Miscellaneous

## Abstract

Since John Von Neumann's proposition in 1932 of a relationship between quantum mechanics and the brain, different perspectives and proposals have evolved (Tarlaci, 2010). Hu & Wu (2006) point out that the seat of consciousness would be the spin within the membranes of neurons and proteins in the brain. Sieb (2016) applied the theory of relativity to spatiotemporal consciousness and found correlations with aspects of brain functioning. Another suggestion is that consciousness emerges because of the Orchestrated Objective Reduction in microtubules (Hameroff & Penrose, 2003). However, few studies about the psychological implications of the relationship between quantum mechanics and the brain and its application to individual psychology exist.

## Keywords

Psychology, Quantum Mechanics, Self, Consciousness

**99**

# Natural law and the neuron

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## Categories by Discipline

3.0 Cognitive Science and Psychology

## Primary Topic Area - TSC Taxonomy

[03.11].....Cognitive development

## Abstract

Consider the euglena learning where it is good to bump, an amoebae activating searching pseudopods, and molds that unwittingly solve the traveling salesman problem, along with the highest levels of human thought. Rather than assuming that such entities solve environmental interactions with the lowest adequate computational, level consider that they apply the most complex processes they have available, especially those that leverage natural law in their service. That is, replace stipulated reductionism as the default theory governing complex entities, with hypothesized natural law. In relation to the theme of this conference: if consciousness instantiates natural law, as the best available guarantor of adaptive success, should we not expect that every entity will start its adaptation to environments based on its best potential to leverage the natural law(s) that access guiding conscious representations? This possibility has been iteratively reflected in repeated pattern in which a respected neuroscientist near the peak of his or her career, makes a bold statement against the sufficiency of the neuronal model: While consciousness is perhaps the ultimate organizational capacity, the inadequacy of single neurons or neurons in small groups for many simple behaviors and complex skills has been confessionally admitted by many leaders historically committed to neuron level mechanisms. This discussion will briefly remind us of a few of these prior revolutionary attempts in the cognitive neurosciences, and discuss some contemporary natural law proposals that both transcend and organize local neuron level support.

## Keywords

natural law, neurons, neuron level mechanism

## 108

# The Shamanic Neurotype

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### Categories by Discipline

3.0 Cognitive Science and Psychology

### Primary Topic Area - TSC Taxonomy

[02.20].....Neurobiological theories of consciousness

### Abstract

As neuroscientific research increasingly focuses on PET scans and fMRI studies, our understanding of neural correlates in altered states such as suggestibility, conscious attention, and psychedelic experiences is deepening. By incorporating insights from anthropological investigations of shamanism's cultural history worldwide, we can direct research toward expanding our knowledge of neural correlates associated with profoundly transpersonal experiences. Much as studies on the brains of Buddhist monks helped to quantifiably describe the neurophenomenology of mindful meditation and related activities, using modern techniques to quantifiably describe the brain connectivity and processes of members of shamanic lineages may help to elucidate better ways to think about comparable patterns in the brains of those outside of those traditions. My work is an anecdotal proposal for fruitful areas of future research and perspective. As the application of psychedelic substances to therapy, mental optimization, and other domains continues, developing a more comprehensive framework to describe the brain and mind's functioning during such experiences is crucial. This will significantly enhance our capacity to address practical and philosophical questions concerning mental health, religious background, consciousness, and other related fields of study. The concepts of neurodivergence in contemporary scholarship are in it's protean phase, adjusting to whether or not the definition ought to extend past Autism. However, it appears likely that a wider body of people currently stigmatized with various mental disorders may better ethically be considered neurodivergent, or experiencing the world in categorically different ways than people who would be considered neurotypical. Much in the way that biodiversity in nature supports the overall health of a species or ecosystem, neurodiversity appears to be beneficial to us as humans, reliant as we are on our complex brains for individual and collective survival. In my poster, I discuss the value of applying the term shamanic neurotype to individuals who exhibit similar specific mental patterns across socio-cultural contexts. In doing so I will distinguish between members of shamanic lineages, people from those lineages who self-identify or are socially identified as shamans, and members of unrelated cultures who experience reality in markedly similar ways. I will compare and contrast some of the ways that early signs of a shamanic neurotype are treated, ranging from support or stigmatization in different cultural contexts. Finally, I will discuss the potential implications of adopting a new language and interdisciplinary framework for such phenomenon during the psychedelic renaissance of the Global North as the West is coming to highly value psychedelic states of consciousness.

**Keywords**

Shamanism, Neurodivergence, Neurotypical, Psychedelics, Transpersonal Psychology, Pathology Paradigm, Ethnobotany, Cultural Anthropology

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# Separate consciousness possessed by body and soul

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### Categories by Discipline

3.0 Cognitive Science and Psychology

### Primary Topic Area - TSC Taxonomy

[01.02].....Materialism and dualism

### Abstract

Freud defined three primary psychoanalytic functionalities for motivating behavior that have fallen into disuse: 1. The ID motivating instinctive behaviors, such as satisfying hunger drives and reaction to immediate threat; 2. The Super Ego pursuing moral ideals, such as self-sacrifice and honesty; and 3. The Ego for resolving conflicts between the ID and reality, and accommodating Super Ego demands. Freudian Theory is now generally regarded as detached from the current science paradigm which seeks to anchor behavioral theory in brain neurology. Whereas the ID and Ego may be mapped to identified areas of the brain, no Super Ego brain locality has been identified. This analysis proposes a solution for the missing Super Ego. The Out of Body Experiences reported from the trauma of a Near Death Experience (NDE) or meditation describe a discarnate consciousness or soul that is inherently moral as it functions in a Universal Field of Consciousness. This paper reifies the Freudian Super Ego to be equivalent to the soul and thus supports revitalization.

### Keywords

Consciousness of the body, consciousness of soul, Id, Ego, Superego

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# To Be or Not to Be: Ambivalence, Consciousness, AI and Suicide Prevention.

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### Categories by Discipline

3.0 Cognitive Science and Psychology

### Primary Topic Area - TSC Taxonomy

[01.07].....Mental causation and the function of consciousness

### Abstract

Consciousness is inherent to our human sense of self, agency, experience, and life. Suicide is a complex, sensitive, multidimensional entity that devastates families and communities. Progress in decreasing suicide is limited and there is a need for novel research and practice. The study of suicide may present unique insights into the complex non-unified, multiality, multifaceted nature and contextual functioning of consciousness. A legal declaration of suicide typically requires evidence of a consciously knowing and intentional act. However rather than clear knowing and intention, suicide is often characterized by ambivalence and dynamically conflicting thoughts, emotions, and actions. This is most classically captured in Shakespeare's Hamlet soliloquy "to be or not to be". Consciousness is typically associated with life, and actions to promote the agency and propagation of an entity's life. How can we, therefore, understand consciousness's role in choosing to end itself or escape from itself? Is it a rational built-in feature of consciousness, to decide that it is time to escape the pain and suffering of the psychosocial slings and arrows, or existential lack of meaning of life; does it have an evolutionary altruistic component; or is it a deficit in the functioning of consciousness brought on by electro-biochemical change and a break down in the system? How is this deficit reflected at every level and form of consciousness from oscillating microtubules to the generated suicidal language and impairment of reasoning? What drives the ambivalent chatter and evolving debate, a person feeling suicidal may consciously experience with different levels of ego dystonia, control, and agency; does the ambivalent chatter reflect an evolutionary range of parallel, hierarchical, or higher dimensional channels and forces competing for attention, or emerging in conscious awareness; and from a suicide prevention perspective how could we detect it and intervene sooner? This paper was developed within the context of research focusing on the lived experience and meaning of sleep, and sleep disturbance like nightmares, in those with suicidal ideation. The aim was to examine how a better phenomenological understanding of this experience could be enhanced and utilized by AI methods with a view to contributing to the design of social media-based ethical suicide prevention including trauma-informed digital guardian angel technology. The study utilized the University of Maryland Reddit Suicidality dataset. Analyzing language is a window into individual and collective consciousness. It is a limited window, but still one of the most effective we have in psychiatric practice. Artificial Intelligence large language Models like Chat GPT afford a significant opportunity to sense and shape the conscious experience. They may empathically create

and fine-tune context-sensitive messages that could positively influence ambivalent high-risk suicidal intrusive thoughts and chatter towards help-seeking and suicide prevention. Generative AI could play a role in architecting and modulating the perceived reality and experience of both the awake and sleep state. The capacity for motivationally sensing, formulating, and shaping the psyche represents a significant dual-use ethical dilemma with the potential for both good and harm at the individual and societal levels.

**Keywords**

Consciousness, Ambivalence, AI, Large Language Models, Ethics, Suicide Prevention

# Final category: 4.0 Physical and Biological Sciences

## 10

## Perpetual water self-organization, primed by DNA, serves as a gateway for consciousness entering the body

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.09].....Biophysics and coherence

### Abstract

The periodic collapse and delocalization of aromatic pi electrons in DNA bases occur naturally with a GHz frequency within cells, making it the most promising candidate for the long-saught mechanism of the genomic quantum computer. This is particularly evident as the aromatic rings in the base stack are fused together and oscillate collectively. We discovered that purine stretches (where aromatic rings are densely stacked) are preferentially targeted by cancer-specific mutations. This finding indirectly reinforces the functional significance of fused aromatic rings in DNA. Furthermore, through our genome analysis, we have detected traces of resonances within the DNA, manifested as proton wires consisting of chains of longitudinal hydrogen bonds. It is likely that these proton wires resonate with stacks of aromatic electron rings, creating a coordinated and collectively oscillating system. This oscillating system of electron and proton wires in DNA is likely connected to the surrounding water through hydrogen bonds. It acts as both a crystallization center and a guide for the reversible dynamic crystallization of honeycomb water layers (coplanar with basepairs), reminiscent of snowflakes. This dynamic crystallization process serves as an interface between the ever-evolving self-organizing DNA-water system and the subtle morphogenetic field described by Gurwitsch and Sheldrake among others. The influence of the morphogenetic field is most pronounced when it interacts with the dynamically crystallizing self-organizing system, such as DNA-water liquid crystals. In this context, we propose that the water sheath surrounding DNA reflects its helical structure as proposed by Pollack and also, importantly, its purine sequence. We noticed that the purine-pyrimidine sequence of DNA causes base pairs to shift - leading to relative shifts within the surrounding water layers. Primed by hydrogen bonding with basepairs and assembled coplanar with them, these water -layers assemble resulting in imprinting a purine sequence of DNA in the surrounding water sheath. Such a phenomenon implies that parallel DNA sequences would align seamlessly into this layered water structure, given the similarity in their purine sequences. Our proposition, although theoretical at present, opens a plethora of research opportunities focusing on dynamic chromatin restructuring. By recognizing chromatin as a dynamic crystal computer,

we reveal an intriguing aspect of DNA sequences acting as foundational logic behind this biological computer. The proposed layered water-DNA interaction could essentially dictate the structure and function of the chromatin computer, offering a new perspective to understand the DNA-water interface, its role in chromatin dynamics, and, ultimately, gene regulation. Perpetual water self-organization, guided by DNA, serves as the gateway for consciousness. This dynamic interplay between chromatin as a computational system and the self-organizing properties of water unveils the profound connection between chromatin dynamics and the entry of consciousness into the body. Download publications here https://dnaresonance.org/p/ Savelev: How the biofield is created by DNA resonance ( 2022) Savelev: How Schrödinger's mice weave consciousness (Book 2022) Savelev: On the existence of the DNA resonance code (2019)


## Keywords

Consciousness, Chromatin dynamics, Water self-organization, DNA-guided, Gateway, Self-organizing chaos, Genomic quantum computer, Resonances, Morphogenetic field, Chromatin computer.

**12**

# The Quantum Mind Defined

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

### Abstract

Consciousness is hereby defined as the act of valuing. This valuation originates from the entanglement between the value operator of the quantum field and photons emitted by the field. Our consciousness originates in a super fluid quantum array located in the Dimer cavities in the microtubules. The weak bonding of the tubulin molecules produces magnetic field columns which provide the twistor pathway for sharing of the electron cloud constituents from one molecule to the other. Post twistor bonding the linear curving data wave is shunted off into the cavity on the path of pi or decay forming into a four momentum particle inside the cavity. Because the quantum mind is in a state of partial decay all data must collapse before entering the quantum mind. Collapse occurs because the data has begun to decay and nothing returns from decay although information is retained and returned via entanglement. When external data or the internal location of the value operator causes photon emissions, the emissions into the Hilbert space strike the optical reference beam emitted by the light in the tunnel which is accelerated photons caught in a photon trap or heaven trap. Because the data carried by the photons has a different future than that of the self the self or soul of the quantum mind is afforded a perception of the different futures due to knowing from entanglement. This is the origin of our imagination. The microtubules replicate the behavior of the quantum mind including super radiating to produce information and replicating the velocity gradient to expel unneeded noise and energy. The microtubules also hold information in their positive charged bottom but also display Brownian motion to deliver the information to the protein factories as does the quantum mind. In theory all positive charges in the brain would be carrying information as opposed to data. The quantum array has a polar positive charge at the bottom of the mind which draws the polar negative data impulse waves to the microtubule for processing. To safely induce an NDE the introduction of a positive ion charge to the central nervous system will flood the quantum array and flip the orientation of the self in the array from polar negative to polar positive which the brain will faithfully reproduce. When the array is negative we see outside and when the array is positive we can see inside, if blindfolded. I have experienced this flipping of the quantum array and that is how I learned how consciousness works. I look forward to the development of a experiment which can safely reproduce this experiment for verification. This quantum array is our subconscious and in the future we will be able to access this realm and its super fluid capabilities for medical research and beyond.

**Keywords**

Twistor space, four momentum particle, velocity gradient, entanglement, quantum mind, microtubules, Brownian motion, self, value operator

## 20

# Quantum spin models for numerosity perception

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.02].....Quantum field approaches

### Abstract

Humans share with animals, both vertebrates and invertebrates, the capacity to sense the number of items in their environment already at birth. The pervasiveness of this skill across the animal kingdom suggests that it should emerge in very simple populations of neurons. Current modelling literature, however, has struggled to provide a simple architecture carrying out this task, with most proposals suggesting the emergence of number sense in multi-layered complex neural networks, and typically requiring supervised learning. Simple accumulator models fail to predict Weber's Law, a common trait of human and animal numerosity processing challenging to be simulated, stating that the only about 15% error-rate is proportional to the number of perceived items (up to 200), while the items uncertainty is Poissonian. In a quantum and neuro-science truly interdisciplinary research, we found that an open quantum spin network, mapping a neural system and equipped with all-to-all connectivity, can simulate the human sense of number as a global dynamical property. The numerosity is encoded in the spectrum after stimulation with a number of transient signals occurring in a random or orderly temporal sequence. We use the quantum-like paradigm combined with a simulational approach borrowed from the theory and methods of open quantum systems out of equilibrium, to describe information processing in neural systems. Our method is able to capture many of the perceptual characteristics of numerosity in such systems. The frequency components of the magnetization spectra at harmonics of the system's tunneling frequency increase with the number of stimuli presented. The amplitude decoding of each spectrum, performed with an ideal-observer model, reveals that the system follows Weber's law. This contrasts with the well-known failure to reproduce Weber's law with linear system or accumulators models. In the final part of this contribution, we present a first extensive study of the network connectivity conditions under which the counting capability is preserved, and discuss the perspectives of this promising approach to describe other perceptual phenomena connected with time and space.

### Keywords

Open quantum systems, Quantum networks, Quantum simulations and tensor networks. (Quantum) information processing, Neural networks, Psychophysics, Sensory perception, Space time and number perception.

## 22

# It Does Not Compute: Experimental Evidence for the Non-Algorithmic Nature of Human Consciousness

Daniel P. Sheehan, Patricia S. Cyrus
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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.08].....Quantum brain biology

### Abstract

In the neuroscience community, the consensus view holds that consciousness arises from classical-mechanical, electrochemical interactions between neurons in the brain and that mental operations are analogous to those in classical computers, that is, computable (algorithmic). While these hypotheses can explain much, there are objections. For example, Penrose claims some forms of human thought must be non-algorithmic, based on extensions of G\"{o}del's incompleteness theorems. Meanwhile, theories by Hameroff-Penrose, Nowakowski, and Sheehan-Cyrus assert that the mind has fundamentally quantum mechanical aspects. In this talk we review experimental evidence that indicates some human mental operations are intrinsically non-algorithmic and that consciousness is likely quantum in nature, to some degree. Extending beyond Libet's famous intercranial experiments, we consider {\em precognition} both in its conscious and unconscious forms: {\em controlled future remote viewing} and {\em presentiment}, respectively. Among numerous experiments, those by Bem and by Graff and Cyrus clearly demonstrate that, under appropriate conditions, humans are able to perceive random events in the future (with a time horizon up to a few days), which is equivalent to determining the identity of a random number days before it is chosen. Such a task is impossible for any classical (algorithmic) computer, either in a present moment and, especially, three days in advance. Therefore, precognition of random future events is an intrinsically non-computable (non-algorithmic) process which is available to humans but not to classical computers. We propose precognition as the basis for a new type of Turing test, one that no classical type of artificial intelligence (AI) can defeat. Purely classical processes cannot account for the phenomenon of {\em retrocausation}, the proposition that future events can affect -- or establish physical correlations with -- present ones, the temporal reverse of normal causation. Nor can classical processes account for precognition. Several versions of quantum mechanics, however, explicitly invoke retrocausation in their descriptions (e.g., Two-State Vector Formalism, Transactional Interpretation). It appears plausible, then, that precognition may have roots in quantum brain processes, perhaps down to the micro-level (e.g., microtubules) but certainly manifesting at the macro-level. Whether quantum-based artificial intelligence (QAI) will demonstrate precognition and non-algorithmic thinking is an open question; however, the propensity for quantum systems to enjoy retrocausation seems to open the possibility. In summary, numerous experiments in precognition provide strong support for the following five

propositions:\\ 1) Precognition is evidence of retrocausation.\\ 2) Human consciousness is probably quantum mechanical in some respects.\\ 3) Some conscious and unconscious modes of cognition and perception (e.g., precognition) are intrinsically non-algorithmic, hence not computable by classical computers.\\ 4) A Turing test based on precognition can defeat any type of classical AI.\\ 5) Quantum AI might be capable of precognition and, if so, it might defeat this neo-Turing test, thus demonstrating non-algorithmic processing. Together these argue for a more expansive view of human consciousness as well as neurophysical and neurophysiological processes beyond those currently embraced by the neuroscience community.

**Keywords**

consciousness, computability, Turing machines, precognition, quantum theories of consciousness, retrocausation, time

## 28

# The Electromagnetic Soul and The Collective Consciousness

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[05.08].....Near-death and anomalous experiences

### Abstract

Combining an engaging speaking style and dynamic PowerPoint presentation Mark Anthony will present "The Electromagnetic Soul & The Collective Consciousness," an entertaining and educational journey taking viewers through time, around the globe and from the cosmic to the subatomic, even into the human soul itself. Mark Anthony's signature "Electromagnetic Soul" (EMS) Theory describes through quantum physics how consciousness is eternal electromagnetic energy. The EMS is a 21st Century explanation and foundation for understanding survival of consciousness, the afterlife, Near-death and Shared-death Experiences, Deathbed Visions, After Death Communication, Out-of-body experiences, terminal lucidity, and even reincarnation. The EMS may be analogized to a drop of water which upon physical death leaves the body and plunges into the eternal sea of souls aka "Collective Consciousness." This means all electromagnetic souls are interconnected and able to communicate with a vast array of other electromagnetic souls in the infinite Collective Consciousness that transcends dimension, frequency, space, and time. Although part of the Collective Consciousness, the EMS retains his or her individuality. Our greatest attribute is our unique sense of self which distinguishes us from everyone and everything else in the universe. We each have our own thoughts, memories, feelings, perspectives, and personality which are enshrined within our immortal electromagnetic soul. Mark Anthony introduced the EMS Theory on Gaia TV's Beyond Belief and in his bestseller "The Afterlife Frequency." The EMS theory was developed by Mark from his direct experience with After Death Communication as a natural psychic medium, his own NDE, and years of scientific research. Mark will present how recent survival of consciousness discoveries involving measuring human brainwaves through EEG at the time of death support the EMS Theory. This presentation will explore the historical journey of understanding the EMS which dates back thousands of years from Hindu and Buddhist reincarnation beliefs, to Judeo-Christian and Islamic beliefs the soul/spirit precedes and subsequently survives physical death. By the Enlightenment, Newton and other intellectuals indicated the physical world was only what was observable and that all matter was composed of molecules which were made of atoms. They also considered the soul and afterlife as mythological. This "Newtonian Reductionist Materialism" intensified the divide between faith and science. However, 20th Century physicists discovered particles even smaller than atoms which are composed of electromagnetic energy known as quanta (ergo "quantum physics). The interconnection between matter and energy demonstrated the same electromagnetic energy is the

building block of everything from the cells in our bodies to the light of the sun and beyond. This includes the energy housed in the human brain, the unique sense of self which is the EMS. Neuroscience proves that the brain has the most complex electrical field in the body. The laws of thermodynamics state that energy is neither created nor destroyed only transferred from one form to another. Physicists worldwide are proposing the brain does not create consciousness but rather it hosts consciousness. Combining all these elements, the electromagnetic soul theory presents a rational bridge between faith and science.

**Keywords**

afterlife, NDE, consciousness, shared death experience, after death communication, deathbed vision, mediumship, out of body experience, electromagnetic soul, afterlife frequency, reincarnation, interdimensional communication, collective consciousness, quantum physics, theology, physiology, subatomic

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# The Reification of Consciousness and Experimental Implications

Michael P Remler
UCDavis, Berkeley, CA, USA

## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.01].....Quantum physics, collapse and the measurement problem

## Abstract

Neuroscience needs first the metaphysical revolution of the reification of consciousness (Schrödinger). Consciousness lacks scientific reification because it has no spatial, temporal or other known physical characteristics, no direct experimental phenomenology, and exists only in idiosyncratic separate non-reproducible units. No amount of computational power by AI or otherwise to produce a simulation of human behavior (Turing) can address the 'hard problem' of consciousness itself (Chalmers). The Neural Correlates of Consciousness are explicitly not a direct approach to consciousness itself. Spiritual and mystic conceptions of consciousness are intellectually and methodologically disjoint from science, and therefore not useful inside neuroscience. Reified consciousness can be understood within physics as either a separate entity, Substance Dualism, or as a currently unknown property of existing physical entities, Property Dualism. In either case, it must possess the properties of consciousness, not present in contemporary physics, including subjectivity, intention, etc. or any other such understanding of the properties of consciousness. This is the essence of reification. Reified consciousness must be bidirectionally interactive with the currently understood material properties of the brain. This is conceivable only at the quantum level (Wigner). To have effect on the brain and through that on the body and the external material world, consciousness must control quantum states, and to perceive the status of the brain and through that of the body and the external material world, the quantum states must be known to consciousness. While substance dualism can have all the properties of subjectivity explicit in the substance, property dualism faces the additional metaphysical challenge to conceptualize a microscopic proto-subjectivity and the mechanisms of its ensemble. Neuroscience needs second a physics revolution understanding the role of information in physics. Reified consciousness is effective information without material basis or spatiotemporal characteristics. In this it resembles the currently open questions in physics regarding quantum collapse and entanglement. These problems represent potential opportunities to introduce such phenomena, essential for the neuroscientific, understanding of consciousness, into neuroscience from physics. 'The ghost in the machine' (Ryle) has a lot in common with 'spooky action at a distance' (Einstein). Both neuroscience and quantum mechanics are incomplete for substantially the same reason. The conceptualization of reified consciousness at the quantum level in order to explain the cognitive properties of the brain beyond those readily understood in any algorithm, merges well with the reification of consciousness (Penrose). Neuroscience needs third a methodological revolution utilizing the diverse, functional modalities of consciousness as a primary experimental

parameter. Consciousness and entanglement are both said to be emergent properties of an underlying physical substrate, and for both the properties of the whole aggregate entity are not reducible to the properties of its physically disaggregated substrate (Lashley, EPR and following). In contrast, the functional desegregation of consciousness is well-established. Visual cortex development following monocular deprivation in cats is a preliminary example of this approach (Hubel and Wiesel). Neuroscience of consciousness must proceed with consciousness as the independent variable and the brain is the dependent variable.

**Keywords**

ontology, quantum, experimental

**35**

# A study to recognize the link between homo spiritualis and agroecology.

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.16].....Miscellaneous

## Abstract

Agroecology gains experience from traditional cultures and other activities which accumulate into agricultural wisdom. However, the ontological dimension which leads to spirituality is still to be studied in this field. Homo sapiens who live in the state of higher spiritual consciousness and in complete harmony with nature are defined as Homo spiritualis. An important task for agroecologists is to find the link between agroecology and spiritual knowledge. This paper takes up the important task of relating agroecology to traditional ecological knowledge and a fundamentally spiritual activity which recognizes the basic existence of an invisible dimension to nature. For this purpose the study is conducted on the agroecology system in Dayalbagh, Agra, where agroecology is touching new heights. With the concept of ‘ land to lab’ beginning to take shape an attempt is being made to reinforce agroecology as a socially and environmentally liberating activity.

## Keywords

Agroecology, spiritual belief, ecocentrism, anthropocentrism.

## 36

# Towards Self-awareness of AI: The Role and Dynamics of Internal and External Observers.

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[03.12].....Artificial intelligence and robotics

### Abstract

In both AI, quantum physics and consciousness studies, the concept of the observer plays a critical role. However, there is no consensus on the definition of observers in these theories. Following Einstein's thought experiments, one could ask: What would it look like to sit inside a photon or to be a photon? And what type of observer could represent this more global perspective of the photon's interior? These questions can also be posed with respect to the mind and consciousness. In this talk I will present a concept of an internal observer and the hierarchy of observers [1] drawing inspiration from the advancements in abstract algebraic topology. It becomes evident, through the analysis of the introduced hierarchy of observers, that entanglement is an information primitive of space-time causal relationships. While external observers must abide by the relativistic causality linked with the no-signaling principle in quantum mechanics, the internal observer is inherently non-local and may be acausal. However, its consistency is maintained through the formulation of the information self-consistency principle. These concepts are further developed to a proposal of self-observing and hierarchical model of consciousness [3] and AI [2] where time [4-6] and chained histories of interactions/experiences play a crucial role. Due to its universality, the concept of an internal observer is consistent with quantum and relativistic physics and will be vital for new models of consciousness. [1] M. Nowakowski, Towards Physics of Internal Observers: Exploring the Roles of External and Internal Observers (2023), arXiv:2304.01677. [2] M. Nowakowski, M. Ebstyne, M. Mohseni, Self-observing and self-organizing AI, In preparation. [3] M. Nowakowski, Inside the Mind - Pioneering a New Perspective on Consciousness, in preparation. [4] M. Nowakowski et al., Entangled histories versus the two-state-vector formalism: Towards a better understanding of quantum temporal correlations. Phys. Rev. A 98 (2018), p.032312. [5] M. Nowakowski, Quantum Entanglement in Time. AIP Conf. Proc. 1841 (2017), p. 020007. [6] M. Nowakowski et al., Dynamical nonlocality in quantum time via modular operators, Phys. Rev. A 105 (2022), p. 042207.

### Keywords

Self-observation and self-organization, Quantum AI, Quantum non-locality, Models of consciousness.

**37**

# Quantum Theory of Consciousness

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[02.12].....Quantum brain biology

### Abstract

In this presentation, we present four reasons indicating consciousness is a quantum phenomenon and should be studied with quantum physics: 1. Quantum phenomena are the essential, basic, and fundamental phenomena underlying all observed phenomena. Quantum physics studies physical, energetic, and informative aspect of an object. Informative aspect is closely related to the consciousness. Classical physics averages out the different possibilities represented by the information. It cannot address the informative/conscious nature of our existence. 2. Although disorder and decoherence exists in the brain and everything, what leads to consciousness and life in general is the stable structure, order, connection, correlation, and coherence which exists abundantly in brain and body. Neuron network and all life structure has greater similarity with crystals, semi-conductor materials, superconductor, laser, superfluid. In classical mechanics, the existence of such phenomena is impossible. They need to be studied with quantum physics. 3. Quantum physics reveals everything has both particle and wave nature. Quantum physics studies the relation between the wave and particle nature of an object. Copious brainwaves are discovered. To study the relationship among brainwaves, brain structure and function, and the information carried, received, and processed by brain, one needs quantum physics. 4. Both consciousness and quantum phenomena share the same subjective and probabilistic nature, while classical physics does not have such nature. A quantum theory of consciousness (QTOC) is proposed based on a new interpretation of quantum physics, in which everything arises from a vibrational field carrying matter, energy, and information, mathematically described by wavefunction. An object absorbs vibrations through resonance. The reception and processing of vibrations as well as information, energy, and matter lead to subjective conscious experience. We will show how this QTOC provides physics foundation and mathematic formulation to: 1. Address the easy and hard problem of consciousness. 2. Help develop various models of consciousness such as panpsychism, integrated information theory, general resonance theory, field model, global workspace theory of consciousness, ‘Orch OR ’theory, theory of consciousness as memory and attention 3. Explain the large-scale nearly instantaneous synchrony of the brainwaves such as gamma, beta, and alpha brainwaves and why and how they are correlated with Schumann Resonances. 4. Apply quantum information theory, especially about quantum entanglement, to study neuron network and shed new light in neuroscience. 5. Study why and how free will, destiny, cause-effect, environment, brain structure, and human action all play a critical role in one’s consciousness and life experience. The experimental test of QTOC will be discussed in the end.

**Keywords**

quantum theory of consciousness, hard problem of consciousness, easy problem of consciousness, quantum physics, measurement problem of quantum physics, free will, destiny, cause-effect, quantum information theory, quantum entanglement, Schumann resonance, brainwaves, panpsychism, integrated information theory, general resonance theory, field model, global workspace theory of consciousness, ‘Orch OR ’theory, theory of consciousness as memory and attention

**46**

# Black Holes and the Binding Problem

Michael Elliott
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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.05].....Emergence, nonlinear dynamics and complexity

## Abstract

In the past twenty years an explosion of research has occurred in the theoretical physics community surrounding the so-called Holographic Principle. The best understood example of this principle is the quantum gravitational relationship of the AdS/CFT conjecture. Generally, the idea is that quantum information, spread across a surrounding boundary, forms a holographic image in spacetime geometry itself in the "bulk" interior volume of the space. This information from across the bounding region is integrated, and the simplest possible (lowest complexity) explanation of that data is encoded in a spacetime hologram in the bulk. Meanwhile, in the Binding Problem, information from across diverse regions of the brain is integrated to form a "movie" of our experience of awareness of the outside world - the subjective unity of experience. It should be noted, however, that the brain has now been completely mapped at the neuronal level and there is no “movie screen” where our awareness is presented. The question then becomes where and what is our awareness in the physical description of the mind? In this paper we explore the striking similarities between the holographic principle of physics and the binding problem: both seem to integrate information from across widespread regions of space, and both seem to solve a complexity problem (many in the scientific community believe the movie is the *simplest possible* explanation of neural information in the brain). We elaborate on the theory that the hologram formed in the spacetime bulk inside a superfluid like substance (e.g. a putative Frohlich condensate) *is* indeed what we are perceiving in the subjective unity of experience. In other words, we locate the seat of conscious awareness in the shoes of spacetime itself, and, as spacetime geometry sorts out the simplest explanation of the information surrounding it, we theorize that this *is* the act of conscious awareness. We argue that holographic quantum gravitational systems are the only known physical systems that can solve complexity problems in real time – no purely classical physics process can solve the binding problem, nor can any purely quantum system – and, therefore, *must* be involved in the explanation of the binding problem.

## Keywords

binding problem, complexity, integrated information, holographic principle, AdS/CFT, quantum gravity, emergence, subjective it from qubit, hard problem, awareness, subjective unity of experience, physics, consciousness, black holes, superfluids, frohlich condensate

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# The Choice-Making Theory of Consciousness and the Natural Selection of Choice-Making Systems

Mark D Friedman
Center for the Study of Social Policy, Washington, DC, USA

## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.11].....Consciousness and evolution

## Abstract

Evolutionary theory teaches that all modern biological functions have precursor forms. A growing scientific consensus holds that consciousness is a biological function and therefore a product of evolution. To understand human consciousness we must first understand its precursor forms. What biological function, present throughout evolutionary history, could have become consciousness? One answer is "choice-making." The first function of all life is the acquisition of nutrients necessary for survival and reproduction. The earliest choices were about selective ingestion of contacted substances. Following the line of animal evolution, choices about directed movement, 600 to 700 ma, enabled greater contact with nutrients through "search and find" food acquisition. The animal capacity for directed movement required a centralized function to mediate choice of direction. The modern self is descended from this function. Predation or "pursue and capture" food acquisition, following the Cambrian, increased choice-making complexity for both predators and prey. Animals began to cohere in social groups as early as 150 ma, requiring choices about social competition for food and mating. Sexual selection and choices associated with tool use and language may be largely responsible for the level of choice-making complexity in modern humans. All functions of the human mind-brain can be viewed as choice-making (option selection) or choice-making support (e.g. senses, memory). Choice-making is the evolutionary "purpose" of the brain. Human consciousness is hyper complex choice-making. Presented at the Science of Consciousness Conference Interlaken, Switzerland June 2019 Adapted from the book: "The Origin of Consciousness: The natural selection of choice-making systems" (2012, 2014)

## Keywords

Consciousness, Evolution, Mind, Choice, Awareness, Self, Free Will

**50**

# AdS/CMT and the Putative Physics of Consciousness.

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.03].....Space, time and the nature of reality

## Abstract

A putative physics of consciousness must be 'weird' (Schwitzgebel) enough to 'make a philosophical difference' and standard enough to count as physical. Our core physical theory (Carroll) seems to lack the resources for the job. Here I will argue that the unexpected connections between condensed matter theory and quantum gravity change all that. What kind of physics? a) Information is more fundamental than space. b) Carves nature at the joints, deep. c) Loosens up relation between identity and necessity. d) Helps view both space and the 'phenomenal field' as mediums that enable robust, neutral and enduring realization of information. e) Can explain away some stubborn anti-physicalist problem intuitions. f) Draws from the current (revolutionary) conflation of quantum complexity, computation and Condensed Matter theory (CMT). g) Sheds light on the relationship between the scientific and the manifest images. h) Establish the existence of systems that can harbor rich forms of information that is only available to those systems alone. i) Explains how and why the information laden structure of the phenomenal field (representational content, transitive consciousness) is dependent on the structure of its physical correlates. The only physics that satisfies all this is probably Susskind's radical interpretation (ER=EPR) of the AdS/CMT Holographic Correspondence. I use CMT (condensed matter theory) instead of CFT (conformal quantum field theory) after Zaanen, because of the unexpected relevance of AdS/CFT to CMT and because there is a sense in which CMT is the most advanced form of QFT. (It helps that the ground state of a many-body system in CMT is mathematically identical to the vacuum in QFT (Nambu)). A fruitful way of relating AdS/CMT to the mind/body problem is showing that relevant parts of the physical correlates of consciousness are describable by a conformal QFT possessing a higher dimensional dual AdS space. For example, were the Claustrum shown to harbor massive 2-Di conformal entanglement then consciousness could be argued to correlate with the more geometric, classical, phenomenological (in Landau sense) 3-Di AdS space. While strange and speculative (assumes massive conformal brain entanglement) this scenario is falsifiable and more importantly, it yields a host of unexpected philosophical advantages. 1) Consciousness is constituted like an AdS space. 2) It solves Chalmers' 'Meta Problem of Consciousness'. 3) Provides a sophisticated Dual-Aspect Information Theory of Consciousness without problematic metaphysical commitments. 4) Solves the subject addition combination problem of panpsychism. 5) Falsifiable. 6) Replaces problematic metaphysics with problematic physics 7) Clarifies the peculiar relation between consciousness and ordinary space. 8) Explains the privacy of consciousness (Susskind's Sphere). 9) Formalizes the structural relation between

the duals. 10) Undermines Kriegel's and Howey's pessimistic view of the prospects of a final NCC. 11) Provides a novel origin for geometry and meaning. 12) Provides a favorable horizon for some of the harder problem intuition 13) Suggests that we are 'infinite on the inside' (Maldacena's AdS space as 'infinity in a bottle') forging a link between our ethics and our metaphysics (if true).

**Keywords**

AdS/CFT, Space, QFT, Duality, Dictionary, Dual Aspect, Information, Representational Content, Holographic Principle, Meta-Problem, Correlations

**53**

# The Quantum Mechanics of Fertilization

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.14].....Quantum theories of consciousness

## Abstract

Scientists are currently searching for the quantum entanglement or EPR that connects consciousness to the mass of the body. The zygote exists as a multipotential stem cell that unfolds into everything in the human body. In 2016, researchers at Northwestern University discovered the zinc spark or a massive explosion of zinc ions out of the zygote that happens at fertilization. This explosion is not seen in any other cell in the human body and we propose that this zinc explosion is the visualization of the thermoelectric energy transfer that happens from the entanglement of the sperm and eggs subatomic particles. Thus, it serves as the nanoantenna that ties the new Higgs field or consciousness of the zygote to its mass. In addition to the zinc spark, over the past decade we have seen the discovery of the Higgs boson in 2012, the first recording of the “chirp” of two black holes merging in 2015, and the first visualization of a black hole in 2019. We propose that these discoveries are connected and will explain how consciousness attaches to the zygote at the moment of fertilization. We will demonstrate how the human body is an antenna for light, explain quantum cognition, and reverse engineer that back to the moment of fertilization. Once the zinc spark occurs there begins immediate transcription and translation of the zygote's DNA and removal of the methyl groups (epigenetic imprint) from the parents' DNA. This begins the development of the three germ layers that become every cell in the body, including neurons. We propose that the energy/ information from the quantum field must connect before these structures develop. This constitutes the initial connection to consciousness. The human body evolved within a narrow portion of the electromagnetic field to receive information via electron excitation. Quantum mechanics is beginning to be acknowledged as the foundation of human biology. Current literature acknowledges that the mitochondria serve as sensors to the environment, storing quantum information that drives physiological function. We have evolved sentience because of the mitochondria’s production of ATP. This allows us to have memory and therefore perceive time. Given human dependency on the electromagnetic field, we propose that this intertwining of consciousness and physiology with the unified field can be traced back to conception. We will discuss the current scientific landscape of quantum consciousness, including the Orch OR model. The discovery of the Higgs boson proves that the Higgs field exists and that this is the particle that ties energy to mass. We propose that at the merger of the sperm and egg their unique Higgs fields collide creating the new Higgs field of the zygote, and that the zinc is the nanoantenna or quantum thermodynamic phenomenon that anchors the qubits or consciousness to mass. We propose that this is the quantum physics of fertilization.

**Keywords**

zygote, fertilization, quantum biology, higgs field, quantum consciousness, entanglement, epr

## 56

# The Emergence of Consciousness in a Physical Universe

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[01.08].....The "hard problem" and the explanatory gap

### Abstract

Consciousness appears so mysterious and hard to capture within physical sciences only because the present day scientific thinking excludes certain elements of reality from its consideration. The missing element is the reality of information in the physical universe. In fact, it can be shown that the perceived information is the only reality that is undeniable; the elements we consider physically objective, are the outcome of interpretative processing of information. It is shown here how information arises fundamentally from the regularity of causal dependence of the resultant state of an interaction on the prior states of what we interpret as physical systems. It is noteworthy that the information arising from an interaction may be discrete and bounded in character, even though the underlying physical substrate may not be so. A few a priori truths about what constitutes a description of a general object, serving as first principles, allow us to lay down a comprehensive mechanism of processing and integration of information resulting in structured and abstract semantics. The mechanism is shown to be universal in constructing all referable semantics/ objects (objects are the semantics here). 1. Structural and functional relations comprehensively capture universally all referable semantics/ objects -- simple, structured, or abstract [1,2]. 2. As shown, disjunction of conjunctions constitutes a potent constructor to capture all relations. That is, one may need to account for only two computable operators to describe all objects. Indeed, these are not logical operators, rather they operate on semantic content of information, as shown, arising from all interactions as causal correlates. 3. This expression readily suggests a mechanism of population coding that supports modular processing in hierarchical organization with feedback to build structured and abstract semantics. Each of the mechanisms stated above are directly observable in the neural system of the brain. It is then shown how the semantic descriptor of 'self' emerges carrying the semantics of an observer, actor, controller of actions, and other relational properties that we identify with 'consciousness'. Stated differently, within a represented structured semantics, the specific relation that one object (self) bears with other objects, has the properties that we have come to refer to as consciousness. Since, a concretely implementable mechanism of abstraction is laid down here, it is readily observed how certain semantics arise that have no correspondence in the physical substratum, which can be easily cited as the hardness of the hard problem. It maybe noted again that this development is based on how the undeniable reality of information arises, what forms a comprehensive basis of object description, what constitutes a universal constructor expression leading to the observable mechanisms of population coding and modular and hierarchical organization, how the

structured semantics of self bearing a specific relation with other objects is constructed that carries the semantic properties of consciousness. This leaves no insurmountable gap. Furthermore, every mechanism described here is observable in a physical brain and testable on artificial devices.

**Keywords**

interpreter independent reality of information; information as causal correlate of physical states, mechanics of information processing in the brain, representation of structured and abstract semantics, self as a represented semantics, computability of emergence, consciousness

**57**

# Conscious-Matter (*Chit -Padartha*) Axiom: Yoga-Science model for Consciousness- Matter- Relations

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

### Abstract

This paper proposes to set a stage for a preliminary dialogue to explore the yoga-science model of 'Conscious-Matter' from Gita (7-4), leading to address a specific articulation: Is carbon in DNA conscious? 'Conscious-Matter (chit- padartha) axiom posits a unique relation between consciousness and matter at all levels and scales of finitely observable and measurable phenomenon in Universe. The focus on 'carbon- consciousness –connection' is relevant because cell biology and microtubules have deep connect with carbon-functionality. This philosophy is from eastern yoga-science theory. This is distinct from modern science theories, positing and exploring an axiomatic model of causal relation, by positioning 'matter' (nested structure and chemistry) as mother seed of 'consciousness' (pure or orchestrated outcome) at all scaled levels of existence and phenomenon. The deep hidden axiom is one of unbridged, fundamental, binary disconnect and dichotomy between conceptualization of 'matter' and 'consciousness'. The extension of this is the working hypothesis: Brain (Matter) produces Mind (Consciousness). Conscious-Matter axiom, per contra, binds Consciousness (chit) and Matter (padartha) with a Relation (yoga), featuring: (i) connectivity: bi-directional common- (proto and retro) connect (ii) presence: inseparably unified and collocated continuum of mutual presence (iii) interactivity: structural - potency for space- time- energy transfer through inter-actions, in a concurrent, continuous and collaborative way. Conscious-Matter axiom stands accommodative of a plurality of definitions provided answering what is consciousness' distinguishing questions exploring 'functionality of consciousness, proto and post causal – relation of Consciousness with matter. Consciousness is the seamless continuum and glue in all conscious-matter structures. Matter functionality can be quantum in measure. Conscious-matter structures (Local) can and do Interact dynamically with the spatiotemporal Local- finite Conscious-matter structures and Conscious-matter structures at large in the Universe. Consciousness and Matter relations carry inviolable constancy in all finite states, levels and scales of cognized and experienced phenomenon in universe. This relation is inviolable in any phenomenon- be it - Physiological (Matter- related), Psychological (Mind-Psyche related) or Biological (Brain – Spirit related); at any scaled level of observation and measure as < gross, quantum and sub-quantum>. The spatiotemporal finiteness and hierarchical nesting in given structures and clusters involved in interaction provides a dynamic value-measure of concentration of consciousness. Analogous to the law of law of conservation of energy, the

author postulates a conservation and constancy of total conscious-matter potency in any closed system and structure, to remains constant over time. Conscious-matter provides an alternate and different encoding standard for memory management programs, distinctly different from matter (no-conscious) field state binary encoding. Conscious-Matter (chit- padartha) is a Yoga-Science axiom from Gita (7-4), the compendium and consolidated book of Vedic Yoga's, used for delivering conscious-matter technologies as applied yoga –sciences used in professions delivering Yoga - Health and Wellness care. A collaborative and corroboratively extended work with Neuroscience opens up an avenue to explore 'Consciousness- Matter – Relations' in a unified frame, by addressing a specific issue: Is carbon in DNA conscious? This could help to find 'conscious-matter: carbon-technologies' manipulatable by use of 'yoga-interventions' for treatment of consciousness related health disorders.

**Keywords**

Conscious-Matter, Chit -Padartha, Yoga-Science, Consciousness- Matter- Relations, carbon-consciouness, Consciousness Matter Relation, consciousness concentration, constancy of total conscious-matter potency, conscious-matter memory encoding,

## 60

# ¡What Is Mind and Consciousness: An Information-Based Reaponse

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[02.11].....Cellular and sub-neural processes

### Abstract

Matter-related Information is a new concept introduced hereby, opening a revolution in understanding consciousness. Although the human body is composed by a multitude cell units and micro-components, the using of the matter-related information concept allows to approach the structuration-destructuration processes, with absorption-embodiment (=>) and release-disembodiment of information respectively, typical for the structuration and functioning of human and all living organisms, independently on the nature of the information source and operation mode. This is a result of an operation, applied by the physics/chemical/biological/mathematical laws, which act as operators in a system of interacting micro-components, so information i is an implicit participant to any process of structuration-destructuration between some components A and B, according to the relation: (A+B)+i <=> (AB)(i) (1) where (i) is a hidden information. So, i is a component absorbed/released by “embodiment"/”disembodiment" (structuration/destructuration) mechanisms. Informational Model of Living Structures (IMLS). The analysis of the info-dynamics of the human organism reveals the main following processes: (a) automatic structuration/”blue-printing" of “informed” matter (body) from the internal info-genetic generator source (genes/genome); (b) info-processing/”knowing" during the connection with the external/internal sources of information for adaptation. The source (a) “knows" how to build the body, including the communication circuitry, from the “zipped”-like egg-cell, by chains of informational YES/NO-Bit-type processes of replication and transcription-translation to grow/develop the body for the production of proteins (the body “bricks”), and to produce energy from glucose-based nutrients, so a “programed" informational system (PIS) can be defined. The sensor network (surface receptors) of cells for info-detection of only certain internal/external (b)-type signals, processed by reactive decisional/sentient chain cascades in cytoplasm, reaching the genes for their YES/activation or NO/inhibition, and information integration/memorization by epigenetic mechanisms, work as operative informational system OIS. The mini-representation at the cell scale is reproduced in the same informational terms at the body macroscale, so an informational system of the living structures can be defined as ISLS=PIS+OIS, where PIS drives the “hardware" and OIS the “software" of the living organism, like an informational “device", because during the aware/connection state, the activity of OIS (info-signals) is overlapped/modulates the activity of PIS (power/”polarization"). What is Mind and Consciousness. Mind is the info-operative system which allows the access to the acquired information of short/long-term memory, so either momentary or recalled information, and consciousness is the

representation of information in mind as a “mass-media"-like projection of the virtual/interpreted/”learned" reality, transduced by the ISLS on prefrontal cortex “display" by means of reverse relation (1), so Self: I = Iknow (memory) + Iwant (decision) + Ilove (emotions/reactive sentience) + Iam (power/health) + Icreate (bio-creation/sociability) + Icreated (predispositions/abilities) + Ibelieve (certainty/info-compatibility) (2) Conclusions. Human is a learning system, with access to his memory, able to detect/memorize represent/interpret information, decide and generate/transmit information. Mind and consciousness work with conceptual/virtual information acquired in memory and interpreted individually. Reference. doi:10.17265/2159-5313/2023.03.001.

**Keywords**

matter-related information, structuration/destructuration, absorption/release of information, information al model of living systems, self/cognitive centers, mind, consciousness

**61**

# An evolutionary rationale for simple quantum processes within an analog neural system

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.11].....Consciousness and evolution

### Abstract

Sixty years ago the workhorse computers in industry and laboratories were analog. Digital mainframes were primarily used for accounting and high precision calculations. Analog computers, by contrast, were relatively small and able to emulate dynamic processes in the hardware in real time, using operational amplifiers to implement complex transfer functions. Many leading edge ICs developed in the late 60's were op amps for use in analog computers. However, analog processors were not able to implement algorithmic programs nor decision tree logic. The human brain is also an analog processor, with non-discrete parameters such as spike duration and phase delay. Analog system limitations are of interest from the point of view of evolutionary forces. Physical (non-discrete) analog systems have a particular entropic characteristic regarding decisions -- the amount of free energy required to make a decision is fundamentally indeterminate, which is not the case in digital computers. It is suggested that a quantum process inherent within neural brain states, a process which can choose between conflicting superposed states in discrete time without additional free energy requirements, would be evolutionarily advantageous for complex living systems.

### Keywords

Analog, computation, evolution, decisions, free energy, superposition

## 62

# Theory of Spatial Relativity: A Functional Spacetime Model for Consciousness

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.14].....Quantum theories of consciousness

### Abstract

Several theories have been proposed, but consciousness remains experimentally unresolved. Conventionally accepted theory is that consciousness is produced through activities of neuronal networks (biological processes) at macroscale. The Orch OR theory (Roger Penrose and Stuart Hameroff) posits that orchestrated quantum-state collapse occurs at microscale. Both theories have been elaborated further with mechanistic details. Current physics lacks in unifying the macroscale cause and effect of general relativity with the microscale probabilistic nature of quantum mechanics. Here a new approach is presented to unify these theories through functional classification of micro and macro space. In this model, Einstein's spacetime is divided into its functional units; starting from the finest "functional-scale", dubbed Spoton (in contrast to Planck "structural-scale"). The Spoton is informationally proficient as a functional-building-block of any form (like a stem-cell prior to differentiation). Cumulatively, spotons make up a Spotecule, which is the total intrinsic (empty) space in any organized form. Thereby, intrinsic space (spotecule) is distinguished from extrinsic space (either spotons or other spotecules). Spacetime (composed of dynamic spotons) is the medium in which form-organization and -transformation take place. During form development (over time) the spotecule accumulates spatial information specific to the historic path of its organized form. This opens the possibility that the spotecule with its form-specific environment influences quantum decoupling and phase transition into the local environment (decoherence). This model allows space and time for retroactive perspective (proposed by Roger Penrose) and proto consciousness before biological processes are engaged in perception of the event. This model draws parallels between consciousness and photosynthesis as processes that use quantum information. In photosynthesis, the external information (photon) influences biological systems differentially, based upon localized spatial properties. The theory of spatial relativity proposes that consciousness is the degree of ability of a form to process extrinsic (environmental) information with a range of awareness. This theory is testable. Studies are ongoing in collaborations with Drs. Stuart Hameroff and Bruce MacIver to dissect the effects of anesthesia-induced loss of plant responses to environmental inputs.

### Keywords

Spacetime and Quantum Mechanics, Quantum Theory of Consciousness, Plant Responses to Anesthesia

**76**

# Theoretical examination of the boundary in living systems between a quantum system and a classical biophysical interface to understand fundamental life processes and forces.

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.05].....Emergence, nonlinear dynamics and complexity

### Abstract

The theoretical understanding of the biophysics that underlie life is a fundamental goal in science. Life is an integrated intelligent learning system. Life, as with all chemical reactions has an underlying quantum mechanical basis at the atomic level. The developing science of Quantum Biology is showing this underlying quantum mechanism for biological activity. The recent advent of quantum computers has defined a mechanism for quantum computation that may help provide an understanding of the complex science underlying life and consciousness. Consciousness research from the likes of Hameroff and Penrose provide a theoretical quantum basis for understanding consciousness. Other researchers have proposed that the whole living system is essentially a quantum computer. The concept of quantum entanglement is essentially the generation of a system that creates a stored memory that can be measured or recalled. Quantum entanglement is used for storing encrypted codes. Memory is stored recallable information that is necessary for a living system. Entanglement is non localized information and even exists out of time and offers an explanation of how memory can be stored through time. All the bio-molecular components of life are a structural physical memory for a functional operation like hardware in a computer. However, the complexity of bio-molecules within a living cellular organism presents a difficult problem for coordinating simple kinetic interactivity to create the emergent life properties. Having an entangled memory of these interactions could create a template for organizing and coordinating these interactions even possibly forming non-local and non-kinetic emergent activity at the molecular level. This entanglement of the biological memory is like the software that resembles Sheldrake Morphic Resonance for the physical bio-molecular hardware. Although it is thought to be difficult in the cellular environment it is possible that this entangled bio-molecular memory can be generated by the resultant thermodynamic Gibbs free energy of the functional system operation in the cell. The quantum memory may be imprinted by the physical emergent functional operation. Dr. Michael Levin describes an emergent bioelectric current that coordinates cellular morphogenesis. This bioelectric current allows cells to communicate in a higher order top-down emergent state controlling the overall development of the organism. This electric wave functions in the physical plane, as the quantum entanglement memory functions in the quantum plane. These bioelectric wave functions are seen in the

brain forming complex (eeg) patterns that, in a similar manner to cell development, generates the emergent bio-electric functions associated with consciousness. The physical biochemical reactions in a living system involve energy and entropic transformation that serves to imprint the quantum entangled information. The interactions at the interface between the quantum/classical biophysical systems create the complex emergent intelligent processes of life. This interface between the quantum information memory space and the biophysical material plane is the life force or Chi. The Chi lifeforce is the meeting point for the biophysical material “hardware” and the quantum entangled informational memory “software”. The Chi unit is defined as Quantum information(Qubits) per Physical energy.(Joule).

**Keywords**

Consciousness, Quantum Biology, Emergence, Quantum Entanglement, Memory, Bioelectricity, Morphogenesis

**91**

# Simultaneity: The key to explaining consciousness

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[01.08].....The "hard problem" and the explanatory gap

## Abstract

The problem of explaining the relationship between subjective experience and physical reality remains difficult and unresolved. In most explanations, consciousness is epiphenomenal, without causal power. The most notable exception is Integrated Information Theory (IIT), which provides a causal explanation for consciousness. However, IIT struggles to find a fundamental, governing principle to underpin its core psycho-physical identity and the theory has pivoted from appealing to panpsychism where consciousness is physically fundamental, towards an appeal to causal emergence. The approach taken here is designed to uncover a first principle that governs consciousness. The decisive argument is entirely deductive from initial premises that are subjectively certain. If correct, it proves that the experience of being present is sufficient to create additional degrees of causal freedom independently of the content of experience, and in a manner that is unpredictable and unobservable by any temporally sequential means. This provides a fundamental principle about consciousness, and a conceptual bridge between it and the physics that describes what is experienced. The principle makes testable predictions about brain function, with notable differences from IIT, some of which are also empirically testable.

## Keywords

Time, electromagnetic field theory, quantum biology,

**100**

# Understanding Consciousness Leads to a Revolution in Neuroscience; Insights from Avicenna-Bohm Quantum Consciousness Theory

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

Standard neuroscience inadequately characterizes consciousness, failing to provide a comprehensive ontological or technical account that elucidates its nature and encompasses its profound implications, such as the presence of will. Consciousness emerges at various levels of living beings, forming an undeniable aspect of their identity. Life and consciousness share an inseparable bond, making it impossible to comprehend them in isolation. Wherever life exists, indications of consciousness can be observed, while the manifestation of consciousness inevitably signifies the presence of life. Science grapples with profound challenges in grasping these intuitive aspects, as current paradigms in neuroscience and biology fall short in elucidating these phenomena and their impacts. Understanding consciousness holds transformative potential for a paradigm shift in neuroscience. By shedding light on the intricate connection between life and consciousness, a deeper comprehension of life's role as a conduit for manifestations of consciousness can be achieved. Quantum theories of consciousness, an interdisciplinary domain encompassing philosophy, physics, and biology, stand as a key avenue of knowledge in unraveling the enigma of consciousness. In this article, we explore how the depiction of consciousness and its requirements in the Avicenna-Bohm theory has the potential to spark a paradigm shift in neuroscience. In the Avicenna-Bohm theory, consciousness is an immaterial identity that assumes a causal role in guiding matter and shaping brain dynamics. When the requisite quantum complexity is achieved within matter, coupling it with a proportionate consciousness paves the way for the manifestation of conscious effects and its inherent guidance. In Avicenna-Bohm theory, life stands as an essential material complexity, providing the physical substrate for consciousness to manifest its effects. Remarkably, consciousness itself assumes the role of both the final cause for the emergence of life and the guiding force directing matter toward the desired complexity. Avicenna-Bohm theory adeptly employs a modified Bohmian mechanism as well as the concepts like spatiotemporal non-locality and top-down causation to illuminate these dynamics. In this article, we explore “consciousness” and its correlation with “life” as an essential material complexity required for the emanation of consciousness.

Our aim is to introduce key components that contribute to shaping a new paradigm in neuroscience, enabling a more comprehensive understanding of this complexity known as life. The current neuroscience paradigm attributes consciousness to the brain and its classical neuron-level processes, based on classical, local, and deterministic physics. However, it lacks insights into the consciousness requirements, such as will, and a deep understanding of life. This presentation explores the impact of understanding consciousness, through quantum consciousness theories specifically Avicenna-Bohm, on paradigm shift and revolution in neuroscience. It would be demonstrated that the future paradigm of neuroscience should incorporate ontologically unified, quantum non-locality, and a hierarchical description of the brain. Moreover, by acknowledging the active role of consciousness in shaping brain dynamics at various levels, this paradigm can grasp the intricacies essential for the emergence of life and its evolution. Such an approach enables a deeper comprehension of brain complexity and its evolution in relation to consciousness, serving as a significant criterion for neuroscience's new paradigm.

**Keywords**

Consciousness, Avicenna-Bohm theory, Neuroscience, Paradigm Shift

**101**

# An innovative integration of neuroscience with diverse academic disciplines that provides an understanding of how a strictly physical universe gives rise to consciousness.

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

## Abstract

This proposal, derived from outside of conventional wisdom, crosses diverse academic disciplines, including philosophy of mind, mathematics, neuroscience, computer science, linguistics, physics, and human evolution to investigate a wide range of physical phenomena. It unravels the deepest, most fundamental patterns and principles of the brain's structural and functional organization and brings insights and constructive solutions for over twenty unresolved puzzles within the field of neuroscience and related academic disciplines. To examine a wide range of physical phenomena, I have applied principles of cybernetics, viewing physical systems abstractly regardless of their material nature. To understand the principles of structural and functional organization within the human brain, I applied the methods of reverse engineering. In order to deepen our understanding of the phenomenon of consciousness and the neurobiological mechanisms that produce consciousness, I have developed new ways of conceptualizing or interpreting several scientific concepts that span diverse disciplines. My work presents a chain of novel ideas and models and is supported by an overwhelming body of empirical evidence and theoretical perspectives across academic disciplines. Viewed through different conceptual filters it: • explains what consciousness is; • reveals the physical factors that ultimately cause the neurobiological processes in the brain that give a rise to consciousness; • reveals three-phased underlying mechanisms that give rise to a subjective conscious experience; • explains how the myriad neuro-events transform into phenomenal, inner experiences; • reveals the specific areas of the brain* associated with a conscious awareness; • resolves the debatable issue on the role of the prefrontal cortex in the neural basis of consciousness; • provides an answer to why a perceptual experience occurs in "the absence" of a physical stimulus; • aligns with well accepted characterizations of consciousness, such as our private sense of inner awareness. It sheds light on: • the different manifestations of consciousness: attention, awareness, perception, a thought, a mental image, comprehension, knowledge and feelings; • the distinction between two types of consciousness phenomena (P-consciousness) and access (A-consciousness); • how the different architectural models developed across diverse modalities of sensory-motor systems enabling systems of communication for people with and without sensory-

motor deficiencies for fully able, blind, deaf, and blind and deaf people. • the principle of diversification within the sensory system modalities, submodalities, and sub-submodalities that can account for a multitude of properties of various phenomenological distinctions, numbered in the millions. My predictions of the specific areas of the brain* associated with a conscious awareness align with the results of two leading theories IIT and GWT. Although they identify the different regions of anatomical structure of the brain, my approach integrates the opposing views into a single theoretical framework. This work how a strictly physical universe gives rise to consciousness goes beyond current neuroscience research and can significantly advance our understanding of consciousness, accelerate scientific discovery, and radically change our understanding of important existing scientific concepts. It has been recommended for testing by the directors of the Division of Information and Intelligent Systems, Ken Whang and Cognitive neuroscience, Jonathan Fritz. https://vucolova.wixsite.com/hardproblem

**Keywords**

investigation, multidisciplinary, neuroscience, philosophy, physics, cybernetics, consciousness, awareness, subjective, phenomenal, experience, neural, correlates, systems, pattern, principle, structure, function, organization, sensory, motor, modality, IIT, GWT

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# Dynamic Griffiths Phase: a mechanism for the emergence of brain dynamics?

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.05].....Emergence, nonlinear dynamics and complexity

### Abstract

Coupled Map Networks (CMN) are useful models for studying collective behavior in complex systems. The finding of synchronization, clustering, chimera states, and other dynamical phenomena in CMN systems is a clear evidence of their usefulness. In this work, we investigate the occurrence of Griffiths Chaotic Phase (GCP) [1], a dynamical collective state characterized by the coexistence of different phases in the temporal series and a power law distribution of clusters sizes. These properties express an extended and stable critical behavior across a range of parameters [2]. Notably, it has been observed that the brain spends long intervals of time in a critical state [3]. We investigate the mechanisms for the emergence of GCP in CMN with neuron-based dynamics, such as the Chialvo map [4]. We employ CMN models with chaotic and heterogeneous neuron maps and emphasize the importance of heterogeneity for brain dynamics. We suggest that CMN can serve as powerful tools for studying consciousness and brain functions. References: [1] Shinoda, K., & Kaneko, K. (2016). Chaotic Griffiths Phase with Anomalous Lyapunov Spectra in Coupled Map Networks. Physical Review Letters, 117(25), 254101. [2] Munoz, M. A., Juhász, R., Castellano, C., & Ódor, G. (2010). Griffiths phases on complex networks. Physical review letters, 105(12), 128701. [3] Moretti, P., & Muñoz, M. A. (2013). Griffiths phases and the stretching of criticality in brain networks. Nature communications, 4(1), 2521. [4]Chialvo, D. R. (1995). Generic excitable dynamics on a two-dimensional map. Chaos, Solitons & Fractals, 5(3-4), 461-479.

### Keywords

Coupled Map Networks, Griffiths Phase, Chialvo Map, heterogeneity, temporal series, critical region, power law.

**113**

# Progress on measurement of Diosi-Penrose collapse using an electro-optical quantum computer approach.

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.01].....Quantum physics, collapse and the measurement problem

## Abstract

A quantum gravity electro-photonic logic gate is implemented using quantum eraser circuits to minimize the mass-energy in superposition. The gate describes two or more incompatible space-times which spontaneously collapse in a time specified by the Diósi-Penrose model. The gravitationally coupled gates can be used to construct information processing systems, signaling and sensor system. Superposed antennas controlled by the gates create radiation patterns that form sharp cell boundaries at the Diósi-Penrose collapse point. Superposed antennas in receive mode are more sensitive than classical systems. Quantum gravity transmission systems are enabled by varying the mass involved in two detectors which modulates the collapse time and permits a signal to be transmitted. Sensors use collapse time to probe beam absorption, allowing object characterization without the need for reflected energy and imaging via multiple parallel beams or scanned beams. The systems together offer a comprehensive framework for quantum gravity investigation. We report on preliminary positive results from the experiment indicating collapse times in the range of 1.5uS as proposed by the Diosi-Penrose model.

## Keywords

Diosi-Penrose, OR, Objective Reduction, ORCH-OR, Quantum Computer

**117**

# Quantum Behavior in Living Matter: Nanomachines that Read/Write DNA

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.02].....Quantum field approaches

## Abstract

Twentieth century physics and biology largely developed as separate disciplines. Physics was formulated in the context of nonliving matter. Its mathematical language dealt primarily with closed systems that operated at or near equilibrium; any interaction with the environment was considered, at best, a small perturbation to these closed systems. In contrast, living systems are fundamentally open and continuously exchange matter, energy, and information with their environment. Despite the advent of thermodynamics, statistical mechanics, and quantum mechanics, physics had not yet developed adequate mathematical and conceptual tools to predict the behavior of nonequilibrium systems that are strongly coupled to their environment. Nanotechnology provides the practical tools and conceptual platform to bring the seemingly divergent worlds of physics and biomedicine under a common roof. Biological information is replicated, transcribed, or other-wise processed by nanoscale biomotors or molecular engines that convert chemical energy stored in nucleotides into mechanical work. The dynamics of a molecular motor depend not only on the DNA sequence it reads but also on the environment in which it operates—the environment influences the way cells process the information encoded in DNA (Goel 2008, 2010). Our framework (Goel 2002) suggests that the information or number of bits stored in a DNA motor system is much larger than conventionally assumed (Goel 2008), that the DNA, the replicating motor, and its environment constitute a dynamic and complex network with dramatically higher information storage and processing capabilities. The information storage density results, in part, from the motor itself having several internal microscopic states, each representing a decision point in the nanomotor's trajectory.

## 118

## x

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.02].....Quantum field approaches

### Abstract

x

### Keywords

x

**119**

# Testing the conjecture that quantum operations are necessary and sufficient to create sentience

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[03.12].....Artificial intelligence and robotics

## Abstract

Building on the work of Penrose and Hameroff, we consider the hypothesis that a moment of conscious experience is implemented when a single classical configuration is selected from the multitude of configurations contained in a quantum mechanical superposition state. We investigate which quantum processes, such as creating or collapsing superposition states, might be most suitable to implement the physical correlate of consciousness. We propose a sequence of experiments to test this conjecture. The final capstone experiment involves coherently coupling suitable degrees of freedom in a human brain to a quantum processor, which, if the conjecture is correct, should cause richer experiences which require more bits to describe. Prior to attempting this, we propose to identify which degrees of freedom are suitable to couple to by experimenting with brain organoids.

## Keywords

quantum mechanical superposition state, quantum processes, physical correlate of consciousness, degrees of freedom, brain organoids

## 120

# Spintronics in neuroscience

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.14].....Quantum theories of consciousness

### Abstract

Aside from being arguably the most important discovery in all of pharmacology, general anesthesia is one of the few clues we have to consciousness. 170 years after their accidental discovery we still do not have a full understanding of how general anesthetics work. In recent years the focus has shifted to mitochondria, and in particular to Complex I as a site where anesthetics act. Mitochondria carry large electron currents (50A in the human brain) and this current gives spin signals, both in radiofrequency absorption and emission, which can be measured noninvasively. It is now also clear that biological electron currents are spin polarised. This is crucial to cellular respiration. We have recently shown that anesthetics perturb spin polarization. I will discuss some possible implications of these findings for brain function.

### Keywords

anesthetics, mitochondria, spin signals, radio frequency absorption and emission, spin polarised, cellular respiration, spin polarization

**122**

# Reconceptualizing Consciousness: An Integration of Orch-OR Approach and the Mind-Object Identity Hypothesis (MOI)

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.14].....Quantum theories of consciousness

## Abstract

Consciousness requires a radical shift akin to Kuhnian paradigm revolutions. The Orchestrated Objective Reduction (Orch-OR) approach, which focuses on recent discoveries related to quantum properties of neural activity, presents a compelling pathway. However, quantum superpositions and entanglement, on their own, fail to elucidate the relationship between the subject and the object. An intriguing trajectory involves integrating the Mind-Object Identity hypothesis (MOI), which reverses the relations between subject and object, as well as between the observer and the observed, offering a fresh perspective on interpreting quantum phenomena. The basic idea is that during measurement, what is identical with consciousness is not the physical event embodying the measurement (i.e., the neural activity), but rather the object (the external cause) brought into existence by the act of measurement. To use Schrodinger's cat as an analogy, consciousness is identical with the cat, not with the neural activity within the observer's brain that registers the content of the box.

## 123

# Testing the consciousness-collapse interpretation of quantum mechanics

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### Categories by Discipline

4.0 Physical and Biological Sciences

### Primary Topic Area - TSC Taxonomy

[04.14].....Quantum theories of consciousness

### Abstract

The consciousness-collapse interpretation (CCI) of quantum mechanics proposes that the quantum wavefunction "collapses" when it interacts with consciousness. While this idea is not considered a central tenet of physics today, most of the founders of quantum mechanics supported the idea, and according to surveys it is still endorsed by about 20% of contemporary physicists. As of 2023, five independent laboratories have conducted some 30 experiments exploring this hypothesis using double-slit optical systems. I am aware of a sixth laboratory as well, but those results are not published yet. Of the published studies, nearly half report statistically significant changes in the interference pattern when people are asked to observe the apparatus with their "mind's eye" from a distance. This is a relatively new experimental paradigm with implications much more radical than quantum entanglement, thus many more independent replications will be required. However, the results observed so far are consistent with a half-century of previously reported mind-matter interaction studies using quantum-indeterminate random sources.

### Keywords

consciousness-collapse, quantum mechanics, quantum entanglement

**124**

# Rethinking Neuroscience: Embracing Microtubule's Microsecond Clock for Brain Function

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.08].....Quantum brain biology

## Abstract

Our research highlights the pressing need for radical changes in neuroscience, challenging the prevailing focus solely on the neuron membrane and its role in neural spikes. Contrary to the mainstream view, it argues that the microtubules inside neurons, operating at the microsecond scale, play a crucial role in brain function. While established research acknowledges membranes as adjustable clocks in the millisecond domain, the finding proposes that harnessing the power of microtubule's microseconds clock could hold the key to understanding the brain's cognitive functions. By utilizing these finer timescales, the brain's intricate time modulation processes may be better comprehended, providing profound insights into the brain's functioning beyond the traditional millisecond paradigm.

**130**

# The source of phagocytosis: Quantum field theory-based hypothesis and model

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.02].....Quantum field approaches

## Abstract

Phagocytosis, the process by which a cell engulfs particles, is a key mechanism in multicellular organisms' immune system for removing pathogens. Tracing the origin of this process showed that in certain protists, food ingestion is performed with phagocytosis and pinocytosis, the processes in which the unicellular organism has the awareness to sense external particles, generate information potential with which its cell membrane shapes up appropriately to surround and internalize the particles as a part of its semifluid cytoplasm. This work deals with the research question of how the first quantum-level information for phagocytosis appeared in evolution, or at spark of life. Quantum biology deals with quantum fields carrying the biological information of the cell, enabling memory, and sentience. Based at unicellular organism level, this study proposes a spiral fractal quantum field, emanating from the fundamental particles of the cell, taking shape out of its interaction with space-time, convolutes to form a vortex. This vortex, a local energy maximum, acts as an information repository, with its inbound and outbound energy fluxes constituting information reception and dispersal. The nature of reality, the non-removable cosmic background, considered in this work, has innate pressure and plank scale pressure pulsations, similar to certain super-fluidic quantum theories. The governing wave function equation of this quantum field is arrived at, and the stimuli and response mechanism of phagocytosis in protists is explained via a system dynamics model. The philosophical implication of the work is that the convoluting quantum field itself is the proto-unicellular mind. Further the works aims at investigating the connection between such spiral quantum fields and microtubule vibrations, supposedly the information transmission and processing feature in living cells.

## Keywords

Consciousness, Phagocytosis, Quantum Field, Unicellular mind, Space-time

**131**

# Toward A Multiscale Neuroscience of Consciousness

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## Categories by Discipline

4.0 Physical and Biological Sciences

## Primary Topic Area - TSC Taxonomy

[04.08].....Quantum brain biology

## Abstract

I will briefly look at several consciousness-related issues with emphasis on distinguishing scale-based models from theory: A. Experimental Issues. Explicit recognition that the neural correlates of consciousness are scale sensitive; typical in complex systems. B. Model Issues. Each mathematical model usually applies to only a single scale. Examples from halothane anesthesia spectra. EEG functional connectivity (coherence and covariance). Global models based on axon delays. C. C-scale. An imagined special scale at which consciousness originates or is encoded; the single neuron scale is one example. In this view, conscious signatures observed at other scales are mere byproducts of C-scale dynamic behavior. OR D. Multiscale conjecture. The alternate view that consciousness is encoded at multiple scales and depends fundamentally on cross-scale interactions (circular causality). In this view, no special C-scale exists. Consciousness depends critically on functional connectivity– both intra-scale and across (perhaps many) scales. These issues of scale appear to be important for all models or theories of consciousness, including Orch OR and IIT, and electromagnetic.

## Keywords

Orch OR, IIT, Electromagnetic, NCC

# Final category: 5.0 Experiential Approaches

## 3

## When and where does consciousness arise?

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### Categories by Discipline

5.0 Experiential Approaches

### Primary Topic Area - TSC Taxonomy

[02.13].....Brain networks, synchrony and scale

### Abstract

Neuroscience has been struggling to formulate a valid and comprehensive understanding of Consciousness. While theories abound searching for Neural Correlates to quasi- philosophical models yet the answer has eluded us. Is it the time to direct the lens of Neuroscience to map it with older Indian Knowledge systems like Buddhism, Sankhya and BhagvatGita etc... This paper attempts to map neuroscience to Indian knowledge systems providing future research indicators.

### Keywords

Neuroscience, Reality, Buddha , Krishna Indian knowledge system

6

# Providing Integrity, Awareness, and Consciousness in Distributed Dynamic Systems(A new book to be published soon)

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## Categories by Discipline

5.0 Experiential Approaches

## Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

## Abstract

This book orients on advanced organization and management of large distributed dynamic systems which may have both terrestrial and celestial nature. It is based on quite different organizational philosophy, model and technology providing highly integral solutions by dynamic coverage and matching of distributed environments by active self-spreading recursive code, rather than treating and managing systems and their solutions as parts exchanging messages. It will be explained how this paradigm can effectively provide distributed and global awareness and even simulate a sort of global consciousness in many important areas which may include economy, ecology, climate, psychology, international relations, space conquest, security and defence, and others. The self-growing, self-replicating, and self-recovering super-virus scenario code in Spatial Grasp Language (SGL) can effectively supervise distributed systems under any circumstances including rapidly changing number of their elements. Concerning the consciousness ideas it will be shown how to express brainwaves, train of thought, stream of consciousness, spatial consciousness, migrating consciousness, consciousness outside the body, artificial consciousness, and many others. The book will also contain examples of expressing gestalt theory laws grasping the whole first and defining details afterwards in fully distributed systems rather than in a single mind, naturally linking such gestalt features with consciousness. The discussed ideas are accompanied by distributed pattern-like solutions in SGL being much simpler and shorter than with any other models and languages. A special chapter is devoted to patterns as a universal theory often standing in opposition to the analysis of thought in terms of logic. The previous technology versions had trial implementations in different countries and the latest one can be quickly implemented on any platforms too. Refs: “Spatial Grasp” in www.google.com.

## Keywords

Integrity, awareness, consciousness, distributed dynamic systems, Spatial Grasp Technology, spatial pattern matching, self-spreading consciousness, independent recursive control

**52**

# Visualising The Invisible. A metaphysics based artist visual thesis on Primacy Of Consciousness.

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### Categories by Discipline

5.0 Experiential Approaches

### Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

### Abstract

PRIMACY OF CONSCIOUSNESS Alan MacDonald Abstract As an artist / metaphysics practitioner, I attempt to visualise the invisible. I propose that Consciousness is not epiphenomenal, and is the prime state of existence, the 'kingdom of heaven within' alluded to by adepts (researchers within Consciousness) such as Christ and Buddha and Vedic Philosophy. Along with an increasing number of visionary quantum physicists, I support the notion of brain as transceiver processing both local and non-local signals. Local signals unconscious inherited reptilian memory learned mammalian memory (orthodoxy). Non-local signals Light Bulb Moments, Flashes of Inspiration unconnected to local memory. Adepts train their mind to subdue local memory, streaming directly from the prime field, hence portrayed with light around their heads indicating Enlightenment. Religions tend to downgrade their insights into mammalian memory-based rituals. Radical religions downgrade it further to reptilian attack and control strategies. Academia may be subject to forms of orthodoxy, 'believing' consciousness to be epiphenomenal, an unquestioned assumption with zero actual proof. Comparisons between metaphysical thought systems reveal similar trinity structures. Examples. Vedas. Three in one nature of Consciousness. Rishi, Devata, Chandas. Knower, known, process of knowing. Christianity. Holy Trinity Father, Son, Holy Spirit. Creator, created, communication. My Version. Holo Trinity. Mind, Matter, Information. I regard the Internet as a reiteration of three in one nature of consciousness. WeFi. Non-local mind, I-Bods (human local transceivers), downloading solutions. As an artist / metaphysics practitioner I illustrate my ideas in graphic book form in Field Notes Of A Terranaut utilising a field note style graphic strategy. When assessing the art world, I distinguish between mere reactive orthodox tribal art forms and genuinely original creative art forms that extend Consciousness, forming a feedback mechanism to Source as it seeks to extend itself through us. In part 2, Dream Sequence I content dreams as daily status reports from the source field regarding our level of alignment with it. Images only seem weird at times, as non-local consciousness selects local memory-based symbols to illustrate a non-local event. Houses (family issues), cars (personal journey), storerooms (genetic family records). Etc. A surprising number of paradigm shifting inventions have appeared to receivers in dreams (as noted in a PowerPoint based video I have created). My output is greatly inspired by a potent quote attributed to Christ the researcher. "Neither do people pour new wine into old wineskins. If they do, the skins will burst; the wine will run

out and the wineskins will be ruined. No, they pour new wine into new wineskins, and both are preserved". (Matthew 9:16-17). In other words, the eternal truth of the nature of existence must be adapted to forms relevant to contemporary conditions. We receive, we publish, others are inspired to find their own path, to re-member, we are Consciousness, the one subject of all objects, conducting Terranaut Field journeys for the purpose of extension of Self. Keywords : Consciousness, primacy, intuition, transceiver, creative, reactive, insights, enlightenment. References: Field Notes Of A Terranaut. https://www.drawingroomartz.net/field-notes-of-a-terranaut-book.html Dream Seequence. https://www.drawingroomartz.net/dream-seequence-book.html Quantum Creativity, Talk. https://www.drawingroomartz.net/artist-talk--quantum creativity.html

**Keywords**

consciousness, adeptship, free will, streaming, feedback, mastery, non local consciousness, local consciousness, metaphors, intention,

**69**

# Neurotheology of Symbol of OM

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### Categories by Discipline

5.0 Experiential Approaches

### Primary Topic Area - TSC Taxonomy

[02.16].....Brain stimulation techniques

### Abstract

In order to understand Consciousness, Neuroscience needs an INVOLUTION Travel inwards into Mind to decode Brain Unraveling Clues from Wisdom traditions INVOLUTION will take us to Consciousness The Brain modulating the Brain Symbol of OM: a Neural map; when decoded Wisdom traditions have given us the visuals Apply the Symbol OM; for Neuromodulation Executive summary: ॐ (OM) or A.U.M is a sacred sound, represented with form, icon ॐ. This paper explores the following: 1.The relation between Sound and Shape of OM ॐ. 2. The construct of Symbol OM within the body. 3. The formation and dissolution of ॐ OM, activating stages of neural pulses in human brain; brain waves. 4. An enquiry into the above and providing of supporting evidence from: a). Sciences, b) Texts, c) Experience, d) EEG 5. Application in psychology, psychiatry and Neurology Hypothesis - The pattern of flow of energy wiyhin the brain in pristine Yogic state resembles the shape of OM. Symbol OM traces the anatomy of brain , it traces 4 stages of brain and 7 levels of consciousness. Thus Symbol OM is a visual tool for Non-invasive Brain Modulation that is available to every human being at all times. OM is a neural map. Prior Art: The scriptures state - "OM embraces the state of waking in which the gross elements of existence are perceived, the state of dreaming in which the subtle elements of existence are perceived, the state of [dreamless] sleep in which the gross and subtle elements of existence are dormant, gathered up into their potential state, and the state of pure consciousness which reveals the presence or absence of the experiences of the waking, dreaming, and sleeping states. Observation-The scriptural explanation of OM (as above) also relates to measurable Brain waves in modern Neurology. Viz. Beta, Alpha, SMR, Theta, Gamma, Delta etc. Validation- My Neuro feedback experiments and qEEG records reveal a distinct shift in brain frequencies as visualisation on the shape of OM . The effect of mind control on breathing pattern is instantaneous and breath would switch from 16 cps to 3 cps as the mind change gears instantaneously. Deductions - The Shape of OM sets the flywheels of mind in motion. The Shape of OM traces the anatomy of human brain. The Shape of OM represents four stages of mind. The Shape of OM represents seven stages of consciousness. The Shape of OM represents the eight stages of 'Ashtanga Yoga'. The Shape of OM explains energy or prana transfer in Kundalini. The Shape of OM explains breath-speech- mind connection. The Shape of OM activates the sleep-awake zone. Visualising The Shape of OM activates all the cranial nerves. The Shape of OM stimulates the Reticular Activation System. The Shape

of OM is the visual icon of the Sound of OM, lead us to experience Oneness. Do we have a solution that we are overlooking: Proposed In this thesis - The tool is Shape of OM. It is within every being, in all stages of Consciousness , at all times as a route-map.

**Keywords**

Symbol OM, Neuromodulation, Non-invasive Brain control

**81**

# Objective Measurement of Mental Intention A Method to Explain What Consciousness Does Robert Plotke

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## Categories by Discipline

5.0 Experiential Approaches

## Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

## Abstract

Neuroscience has evolved into a highly sophisticated discipline, now exploring the microtubules of brain cells, the possible quantum link between the state of matter and the random state of all possibilities. Much research investigates what consciousness is. Yet, to understand consciousness may require a functional perspective as to what consciousness does, which is, to create perception as a lasting trace (memory) in the subatomic realm. This study provides evidence that mental intention by the quantum "observer effect," and active resonance can affect a subatomic signal source non-locally. The observation of a desired mental intention changes a probable state to a perceived material state. This creation is perception as a lasting trace. To influence an application requires a person to actively resonate with the subatomic signal source. A non-local distance is required to validate the results of mental intention's influence in the subatomic realm. Positive study results point to active resonance by quantum entanglement as the theoretical reasoning for mental intention creating non-local effects. The preliminary study included a device that produces a subatomic signal source of a streaming electron flow, malleable to mental intention. Two subatomic signal sources were coupled to produce passive resonance that can then be measured for its characteristic level of order (entrainment, coherence). A Zoom meeting separated the participant from the subatomic signal source. The study used the time coherence data to control an application in which a person could actively observe and thus create perceptions to achieve a confirmation that their mental intention altered the application's outcome. For analysis, time data was transformed to rate of change data becoming a coherence metric measure. The coherence metric data was analyzed for its distribution and frequency characteristic between mental intention and no mental intention. The preliminary study was done to determine if mental intention could alter a non-local, subatomic signal, malleable to changes by human observation. The study consisted of 31 trials, each for 60-minutes, with the first 5-minutes of active intention and the last 5-minutes of the 55-minutes of non-intention. Analysis of variance (ANOVA) of the raw time data, was statistically significantly different with a $p<0.05$ for 65% of participants. The Z-Score-shift to the positive => 1.96 was as high as 15 % with 5 participants greater than 10%. The analysis of variance of the frequency transform from the coherence metric was significant at $p=0.0007$ for the maximum FFT (Fast Feurer Transform) power, and at $p=0.00005$ for the maximum FFT power density between intention and

non-intention trials. The correlation coefficient was negatively correlated at –0.892 for the movement of the frequency shift of intention trials to lower frequencies, while the non-intention trials shifted toward higher frequencies. The preliminary result of this study provides evidence that the mind influences energy by coherent resonance in the quantum realm. To determine conclusively that consciousness creates perception and its lasting trace at the subatomic level, will require more study and confirmation in the future.

**Keywords**

Consciousness, Quantum, perception, memory, coherence, measurement

**82**

# Empirical Evidence Supporting the Existence of Varied Levels of Mind in Living Organisms and Inanimate Material

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## Categories by Discipline

5.0 Experiential Approaches

## Primary Topic Area - TSC Taxonomy

[01.08].....The "hard problem" and the explanatory gap

## Abstract

The phenomenon of consciousness and its emergence across various levels of life has consistently posed a fundamental query. Based on Taheri's theory introduced in the 1980s, Consciousness is defined as the fundamental element of the universe from which information, matter, and energy spring forth. The emergence of this non-physical entity necessitates a receiver or detector. This viewpoint assumes every part of this frequency world, from a molecule to complex organisms, as hardware that relies on specific software programs with diverse information indexes to define their functions and even their characters. This software part, which functions as a management system, can be regarded as mind. While consciousness is neither matter nor energy and possesses a qualitative nature, it is believed that the information contained within a tiny particle is equivalent to the whole universe. This implies that the microcosmic is essentially identical to the macrocosmic. Indeed, the existence of the mind enables particles to access and interact with consciousness, and as a result, certain levels of this qualitative aspect can be unraveled. In this approach, the mind has different levels, initiated with the basic mind of matter, which is the common basis in the universe. The subsequent level is the intrinsic or biological mind, present in all living organisms. For example, there are single-cell organisms like paramecium, which exhibit remarkable abilities for swimming, learning, and responding to stimuli despite lacking a complex nervous system. Such organisms possess an intrinsic mind that allows them to process information and interact appropriately with their environment to ensure their survival. According to Taheri, this primary level of existence can be assumed as a mental life, and lastly, the perceptual mind, which is specific to humans, provides the ability to ask questions and perceive abstract concepts. It is important to substantiate these claims with scientific evidence, which necessitates empirical support. It is worth mentioning that there are various Consciousness Fields (TCFs) with non-physical entities. These TCFs, introduced by Taheri, can be investigated through laboratory experiments, offering a valuable opportunity to comprehend the notion of consciousness. The influence of TCFs is initiated through brief and fleeting attention to the subject under study by a certified and trained announcer. This treatment occurs without any form of physical intervention. Accordingly, the effects of TCFs on living organisms and

various metals have been evaluated. The results of these experiments, conducted over several years, have consistently revealed significant alterations in the properties and behavior of the subjects under study when exposed to TCFs. For example, Applying TCFs enhanced the resistance of wheat plants under salinity stress and improved the survival of cell lines. However, it had a reducing effect on the population of bacteria and the pH of pure water. Additionally, the mechanical properties of steel were altered under the influence of TCFs. These observations suggest that information has been transmitted through TCFs. Moreover, the mentioned subjects necessarily require a level of mind to permit their interaction with non-energetic and non-material fields and to receive information from them.

**Keywords**

Mind, Taheri Consciousness Field, Mind of matter, Mental life

## 98

# Imagination and Consciousness

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### Categories by Discipline

5.0 Experiential Approaches

### Primary Topic Area - TSC Taxonomy

[05.12].....Miscellaneous

### Abstract

Consciousness has a variety of ongoing, interacting, conflicting types of content. The immediate sensory inputs give way to endogenously or exogenously activated memories and then to the wide range of imagined sensations, images, conversations and scenarios. While consciousness might be the “stage” of the internal “theatre of the mind”, sensations, memories and imagined items are the things we experience there. Attention brings the various items to the fore and shifts from say a purely real-time experiencing of vision or sound to a process of stepping through competing or constructing concepts in the imagination. An important link to consciousness is the Neuroscience of imagination, where we will use psychological techniques to examine the operation of the mind and brain as it transitions from real to imagined items in its various diverse forms seen in our model. Our contention is that a revolution to understand consciousness must incorporate ideas to explain the range of things from raw “Feelings” of sensation to the origins and evolution of imagined items. The long standing traditions of questions about the nature of sensations to experiences on the fringes of consciousness are still useful as we build the revolution. The revolution will need to reach disciplines from fundamental physics to contemplation of the universe. Explanations of consciousness will have to be understandable and explainable to a broad range of people. Our group is surveying the research on imagination and is delving into its mechanisms. A comprehensive definition of imagination and its facets has yet to be provided. A modified scoping review aimed to identify definitions, conceptualizations, and sub-facets of imagination in existing literature. A review of 238 articles yielded 71 concepts relevant to imagination. These concepts were organized into a provisional model of imagination across three broad categories: facets of imagination, modifiers of imagination, and imagination-adjacent constructs. Facets of imagination include creative imagination, social imagination, and narrative/constructive imagination. Modifiers of imagination include multiple continua such as vividness, novelty, and flexibility. Imagination-adjacent constructs are constructs that overlap and are sometimes conflated with imagination, such as creativity, perception, and moral decision-making. This provisional comprehensive model of imagination includes a map of the construct and a spider chart of imagination modifiers. The map of imagination organizes facets from conscious to non-conscious on the x-axis, and from mental/narrative to sensory on the y-axis. The spider chart allows for a distinct episode of imagination to be mapped along multiple continua, as well as diagramming an individual’s overall tendencies or capacities. We hypothesize a neurodiversity of imagination exists, similar to other forms of neurodiversity. We hope this initial conceptualization serves

as a guide for investigating imagination neurodiversity, and for linking various types of imagination to biomarkers, behavior, and other forms of cognitive functioning. By better understanding imagination, we may be able to enhance positive imagination, intervene in maladaptive forms of imagination (such as paranoia or phobias), and simulate creative solutions to individual and societal problems.

**Keywords**

Imagination, Content of Consciousness, Perception, Memory, Neurological Correlate of Consciousness

## 103

# Consciousness interferes with online mobile game using different output random systems.

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### Categories by Discipline

5.0 Experiential Approaches

### Primary Topic Area - TSC Taxonomy

[02.01].....Neural correlates of consciousness (general)

### Abstract

Aim: Using an online mobile game to test the performance of two different random number generators with participants playing the game versus the game running without participants interaction. Exploring effect of consciousness. Does consciousness, and the order of games plays a role? We look at whether a participant playing a mobile game can interact with the 'behaviour' of two independent random number generators. As a control, the same game plays in the same device without players knowledge, replicating the original game with theirs psychological variables. These variables, together with values produced by the RNGs previously defined as physical variables are correlated into matrices. Statistical analysis focused on matrices with different number of cells that allow freedom for the effects to manifest. The game set up is created by 2 Random number generators (Random.org and Mersenne Twister activated with timestamp seeds) produced by finger movements on the mobile/tablet screen. Each game consists of 240 movements in which a player using the finger, moves a small witch around the screen to collect objects. Each finger movement calls 4 RNG numbers, used as physical variables (960 total random values). The same finger swipe capture 4 psychological variables related to the player (swipe coordinate X finish, swipe distance, swipe time and time step). Once the game ends the control is executed. Instantaneously, the same device calls for new 960 random values to the RNG. Conclusion: Both RNGs show statistically significant differences between Player and Control Correlation Matrices distribution. Moreover, temporal order and timing effects are relevant in one RNGs results. Bibliography Grote, H. (2021). Mind-Matter Entanglement Correlations: Blind Analysis of a New Correlation Matrix Experiment. Journal of Scientific Exploration, 35(2). Walach, H., Horan, M., Hinterberger, T., & von Lucadou, W. (2020). Evidence for anomalistic correlations between human behavior and a random event generator: Result of an independent replication of a micro-PK experiment. Psychology of consciousness: Theory, research, and practice, 7(2), 173. Note: I, Ana Borges Flores - anabrflores@gmail.com - would prefer to do an oral presentation, but if not possible I submit for poster presentation. Funded by BIAL FOUNDATION Project 156/18

### Keywords

Keywords: Consciousness vs Randomness, Consciousness vs online output; Mobile Game

## 116

# Are we looking in the wrong place for consciousness?

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### Categories by Discipline

5.0 Experiential Approaches

### Primary Topic Area - TSC Taxonomy

[01.01].....The concept of consciousness

### Abstract

This presentation challenges the current systems of analysis of consciousness that solely looks into the brain or mental functions when answers or measurements can be made elsewhere in our physical and subtle system. Are we looking in the wrong place, or should we be monitoring subtle changes in the physical body? How can we monitor subtle changes in the physical body that are activated by the mind and mental processes? Should we look into the body for consciousness? Probably, yes! In the belief that the mind could be present in every cell of our body and what might be called the subtle body. Eastern mythology talks of the chakric system - are we correct to ignore this - no! We should consider that chakras are related to each physical organ, and there are 7 main centres and 700 others; then, we can consider something is going on beyond the mind, which is probably more subtle and can lead us to discover subtler forms of consciousness. We could also consider that the chakras system is a subtler form of our nervous system that we have not fully discovered. Explicit and implicit memories are stored at different levels of the mind; therefore, certain charkas have relations with physical organs, etc. As an example, we can say that impressions from worry and tension are related to the solar plexus of Manipura Chakra. They are stored in long-term memory, and when experienced or processed again through our thinking, they directly affect our physical body; hence we have stomach pain over acidity etc. What energy is causing this? The vagus nerve is in some control as the stress would alert the autonomic nervous system response but why the stomach and not other body parts? Furthermore, why is emotional pain and heartache associated with the physical heart? These are areas for greater exploration. Also, whilst mentioning the vagus never again, we can see that the main chakras are related to organs directly connected to the vagus nerve. The second part of my presentation is about the Default Mode Network. I believe we need to research this area. In my understanding and experiences as a meditation master, I consider this area as the seat of the Personal Ego or Personal “i”. When the rumination is reduced through meditation, this area becomes an open window to the soul. From here, a meditator dives deep within their consciousness into subtle areas that are as yet tested or understood. However, from a personal perspective, we can only understand this area when we can go beyond the consciousness level of the mind, the centre of this being the Default Mode Network. This remains a challenge for empirical testing and evidence but I believe we should at least start to look at this in greater depth.

**Keywords**

Ego self, Chakras, meditation, default mode network, consciousness, solar plexus, vagus nerve, emotions, pain, implicit memory, samskaras, mental impressions

## 129

# Medicinal Use and Spiritual Use of Ayahuasca

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### Categories by Discipline

5.0 Experiential Approaches

### Primary Topic Area - TSC Taxonomy

[05.04].....Psychedelic and other altered states of consciousness

### Abstract

This abstract explores the spiritual and medicinal use of ayahuasca, a powerful plant medicine containing psychoactive compounds that has been used for centuries by indigenous cultures in the Amazon rainforest. It delves into the identity of the substance, highlighting its role as a catalyst for profound visionary experiences as opposed to mere hallucinations. The expander force of ayahuasca is examined, with a focus on its ability to expand consciousness and enhance the quality of awareness. The abstract discusses the significance of stillness in a state of higher consciousness and emphasizes the importance of intuition, discernment, intention, action, and self-realization within the ayahuasca experience. Additionally, it touches on the necessity of proper preparation, practices, and safety precautions to ensure a beneficial and transformative journey. The expansion of consciousness and the heightened quality of awareness facilitated by ayahuasca are explored in relation to their potential for healing and reconciliation, self-transformation, personal development, and spiritual awakening. Finally, the abstract touches upon the profound nature of true religious experiences that can be accessed through the intentional and respectful use of ayahuasca.

### Keywords

ayahuasca, Amazon rainforest, higher consciousness, medicinal, plant medicine, indigenous cultures

# Final category: 6.0 Culture and Humanities

## 11

## Personal and Political Agency in the Face of Systemic Oppression: Critical Questions on Natural Neurohealing Pathways

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### Categories by Discipline

6.0 Culture and Humanities

### Primary Topic Area - TSC Taxonomy

[01.12].....Free will and agency

### Abstract

In this presentation, we will explore the concept of personal and political agency in the face of systemic oppression, with a focus on critical questions surrounding natural neurohealing pathways and strategies. Systemic oppression refers to the complex systems and structures that perpetuate inequality, discrimination, and injustice. It encompasses various forms of oppression such as racism, sexism, ableism, and classism, among others. Individuals who are marginalized or belong to underrepresented groups often face numerous barriers and challenges in their personal and political lives. Personal agency refers to an individual's ability to make choices and take actions that reflect their own values, beliefs, and desires. It encompasses self-awareness, self-determination, and the power to shape one's own life. However, under conditions of systemic oppression, personal agency can be greatly restricted, as individuals may face discrimination, limited resources, and social marginalization. Political agency, on the other hand, refers to the collective power of individuals to bring about social and political change. It involves participating in activism, advocacy, and community organizing to challenge oppressive systems and demand justice and equality. However, political agency is also influenced by systemic factors, such as unequal access to resources, power dynamics, and institutional barriers. Neuro pathways, which refer to the patterns of neural connections in the brain, play a crucial role in shaping our thoughts, emotions, and behaviors. These pathways are influenced by a combination of genetic predispositions and environmental factors, including social conditioning and exposure to societal norms. In the context of systemic oppression, natural neuro pathways can contribute to the internalization of oppressive attitudes and beliefs, perpetuating the cycle of discrimination and inequality. Critical questions arise when considering the relationship between personal and political agency and natural neuro pathways. How do our individual experiences of oppression and privilege shape our neuro pathways? Can we reshape our neuro pathways to challenge and resist systemic oppression through behavioral change? What role do personal and political agency play in breaking free from the constraints of learned/oppressive neuro pathways? How can we create more inclusive and equitable neuro pathways that promote justice and equality? By exploring these critical questions, this presentation seeks to

deepen our understanding of personal and political agency in the face of systemic oppression. It invites us to critically examine the ways in which our natural neuro pathways can either reinforce or challenge oppressive systems, and to identify strategies for fostering personal and political agency to bring about meaningful change. Overall, this presentation aims to stimulate thought-provoking discussions on the intersections of personal and political agency, systemic oppression, and natural neurohealing pathways. It underscores the importance of recognizing and challenging oppressive systems while empowering individuals and communities to take action towards a more just and equitable society.

**Keywords**

healing justce, neurohealing pathways, personal agency, political agency, systemic oppression

**15**

# Artificial Intelligence Performance Narratives

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## Categories by Discipline

6.0 Culture and Humanities

## Primary Topic Area - TSC Taxonomy

[06.11].....Entertainment

## Abstract

In 1920 Czech writer Karel Čapek created the play R.U.R translated in English as Rossum's Universal Robots. It was subsequently staged in 1921 and also introduced the word "robot" (roboti) to the English language and to science fiction as a whole. Discovering this play a few years ago also became the catalyst to my own project I am researching and developing, which includes the adaptation of R.U.R into a variety of SA languages e.g. English, Afrikaans and the mining language, Fanakalo. The advent of the global Covid19 pandemic a 100 years later has not only seen an array of physical, social, economic, and other challenges facing us - but has also had a negative impact on the performing arts, mirrored most significantly in the realm of the theatrical performance formats. This due not only to the physical distancing requirements curtailing performances at theatre venues, but also rehearsals - even causing the permanent closure of many theatres across the globe. Performing arts institutions attempted to survive their livelihood by adapting live performance narratives into a post-covid19-performing-arts engaging digital and technologic advances - e.g., the online streaming of previously recorded performances - but these performances hardly rival the wonder of a 'live theatrical engagement' between the audience and the actor as storyteller (performance narrator). Based on my own experimental work as a writer and director for the past 30 years in South Africa and abroad and concurrent with my current research and development project titled: Artificial Intelligence Performance Narratives - I am working toward creating an algorithm for a new format of 'live performance narrative' where the audience and actor both as storytellers (performance narrators) engage each other synchronous to the rapid development in the world of artificial intelligence and other technology (e.g. ChatGTP4 et al.) - with the aim to create not only a post-post-modernist theatre but revolutionizing and developing a new theatre stage for conscious AI in the future.

## Keywords

roboti, R.U.R, fanakalo, covid, performing arts, digital, technological, storyteller, performance narrator, experimental, algorithm, audience, artificial intelligence, ChatGTP4, post-post-modernist, conscious AI, future

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# Universal intelligence – an inevitable discovery‘Do you believe?’

De Gard
University East London, London, UK, United Kingdom

## Categories by Discipline

6.0 Culture and Humanities

## Primary Topic Area - TSC Taxonomy

[06.12].....Visual Art Forms

## Abstract

Universal intelligence or Consciousness – An Inevitable Discovery This paper will address the definition of atheism from an artistic, visionary, philosophical and scientific world view to deeply question the materialists lack of belief in a conscious universe. I will address the notions of the question of an overarching god figure, a figure of intelligence that can dominate our lives alongside a scientific materialist atheist view and a panpsychic scientific vision in artistic practice. I will integrate and show how these positions are expressed in my Art.

## Keywords

conscious, consciousness, energetic presence, figure, higher power, intelligence, atoms, aura, thought forms, art, painting,

**30**

# Why the Resistance to Reconceptualizing Consciousness?An analysis of “self” through The Five Contexts and the hard project of consciousness education

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## Categories by Discipline

6.0 Culture and Humanities

## Primary Topic Area - TSC Taxonomy

[06.10].....Education

## Abstract

The revolution required for neuroscience to better understand consciousness must involve a concurrent revolution in education, both to bring it about and to integrate its significance into broader science and culture. The assumptions that underlie mainstream neuroscience theories also underpin mainstream education: that consciousness is produced by individual brains, producing fundamentally separate minds. Yet, cutting-edge research in physics, neuroimaging, biology, and psychology is revealing a reality of interconnected, nonlocal consciousness that demands a reconceptualization of consciousness. This paper asks, why the resistance to reconceptualizing consciousness? Using the Five Contexts of Qualitative Research as an analytical framework (Cooper & White, 2022), the authors examine the dominant modern scientific worldview’s concept of consciousness through the overlapping lenses of the five contexts: autobiographical; philosophical; historical; political; and postmodern. Central to the modern Western story of consciousness is an individualistic, anthropocentric, materialistic philosophy of the self that emerged from the cosmological context of the European Renaissance, influenced the historical development of Western science and education, and continues to be reinforced and reproduced for political purposes. The postmodern lens potentially offers tools to become aware of and critique the assumptions that underlie mainstream neuroscience and education, but in practice, most postmodern analysis remains rooted in scientific materialism. This five contexts analysis reveals the modern concept of self as a theoretical construct reflecting the West's philosophy, science, and political economy from the 1500s to the 1800s. Considering the revolutions in physics, biology, and psychology over the last century, we suggest that neuroscientists and educators particularly, since the nature of the mind is of utmost relevance to their work, should reflect on their ontological assumptions in the light of recent scientific and phenomenological research. Such acts of open-minded, transdisciplinary, and critically reflective engagement with consciousness studies research should compel thinkers to reconceptualize consciousness as having an interconnected, non-local, and possibly non-material nature. Yet, widespread resistance to reconceptualizing consciousness in mainstream neuroscience and education endures. We suggest that a revolution in understanding consciousness requires engagement with ways of knowing other than the cognitive, and levels of consciousness other than ordinary waking consciousness. We name this engagement “consciousness education,” defined as education about

perspectives on the origin and nature of consciousness and their implications for ways of being, knowing, teaching, and learning. Consciousness education is a hard project: it demands a fearless curiosity and openmindedness that is often educated out of young people by mainstream culture and school systems. Lessons from Indigenous and holistic educators that operate from an understanding of interconnected, non-local consciousness provide insights and approaches to education that may help to revolutionize the mainstream understanding of consciousness in neuroscience, education, and beyond.

**Keywords**

consciousness studies, education, self, worldview, ways of knowing, holistic education

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# Bohm Dialogue as process of Consciousness Education contributing to a revolution in neuroscience

Joan Walton
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### Categories by Discipline

6.0 Culture and Humanities

### Primary Topic Area - TSC Taxonomy

[06.10].....Education

### Abstract

For neuroscience to experience a revolution, there needs also to be a revolution in education. Neuroscientists, and those who fund them, have been brought up with the same positivist assumptions that have dominated the western world for the last 400 years. Without some transformation of worldview, they are likely to continue with the prevailing materialist belief systems that their own brains have absorbed since their earliest years. Thus, our starting point is, if we wish to experience a revolution in neuroscience, we need to pay attention to the educational, political and cultural contexts in which neuroscience is located. This is not a question of gathering more evidence to reinforce the view that neuroscience should expand the theories which inform its work. There are already volumes of evidence to support this expansion (Schwartz 2023). However, it seems that the presentation of positivist forms of evidence, however powerful, is not sufficient to transform worldviews. The argument being made in this presentation, is that what is needed is the development of educational initiatives that allow individuals to fully engage with collaborative learning processes, which focus on 'Consciousness Education'. One example, to be explored here, is a form of Bohm Dialogue (Bohm 1996). This encourages participants to become aware of, and suspend, deeply held assumptions, theories and certainties, in order to be able to go deeper into any area being spoken about. It encourages deep listening, with a silence held between each person speaking. This provides time for participants to reflect on what has been said, and respond to that, rather than be intent on promoting their existing established points of view. This methodology has emerged from the work of David Bohm, who developed the idea that space and time might be derived from deeper levels of reality (Bohm 1980). Within this 'implicate order' everything is interconnected, in which each individual element has access to information about all other elements. The central theme of his theory is 'the unbroken wholeness of the totality of existence as an undivided flowing movement without borders' (Bohm 1980: 218). Dialogue based on these principles is an educative process in itself, and allows for knowledge and wisdom to emerge that did not reside in any one individual at the outset. The aim would be to enable participants to experience this process. The focus would be on the question: 'what is required to achieve a shift in worldview, with a consequent revolution in neuroscience?'. With the presenter acting as facilitator, there would be an opportunity to experience what the 'wisdom in the room' has to offer as a response to the theme of the conference.

References Schwartz, S. (2023) Physicalist Materialism: The Dying Throes of an Inadequate Paradigm (provides a comprehensive overview of existing evidence). Bohm, D. (1996) On Dialogue Bohm, D. (1980) Wholeness and the Implicate Order


## Keywords

Consciousness education, Bohm Dialogue, worldviews, transformation.

**63**

# Evidence for Non-Physical Consciousness - It's a No Brainer!

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## Categories by Discipline

6.0 Culture and Humanities

## Primary Topic Area - TSC Taxonomy

[05.01].....Phenomenology

## Abstract

The theory of Orchestrated Objective Reduction proposed by Hammeroff and Penrose is a brilliant, rigorous, detailed theory describing the mechanism of how consciousness might be operating within living organisms; from single celled paramecium, to plants, animals, and humans. This compelling theory begs the question, "Does life create consciousness, or does consciousness create life? Is consciousness a biological process, or can it exist outside of physical biology? Compelling stories of Near Death Experiences have taken place while no measurable activity was occurring in the brain. Is this a measurement problem or evidence of something else? Anyone who's witnessed a deceased body lie in state immediately recognizes there is no longer a conscious presence connected with the inert physical body; however there are numerous claims of people being contacted by the consciousness of a deceased love ones. These subjective experiences can be deeply meaningful but remain unverifiable using the scientific method. Cultural myths across the globe refer to a wide variety of non-physical beings. Indigenous cultures claim to receive guidance from spirits and some highly educated people in western cultures do as well, so this is unlikely to be just "primitive superstition." After a brief review of subjective claims pointing to evidence for non-biological consciousness; I'll present objective evidence for Non-Physical Consciousness that will include photographs, videos and amazing stories from my 15+ years of clinical practice. The presentation will conclude with an overview of ancient and modern theories explaining these phenomena and how the language we use to describe them points to a simple, fundamental understanding of the mystery of consciousness.

## Keywords

Akasha, Bio-geometry, Higher Plane, Holographic, Indigenous, Kogi, Mamos, Microtubules, Music, Near Death Experience, Non-physical Entities, Orbs, Orch-Or, Remote Viewing, Spirit Attachment, Vedas, Vibration

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# The Role of Poetry as a Medium for the Evolution of Consciousness in Rumi

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CIHS Univeristy, Encinitas, CA, USA. Harvard University, Cambridge, MA, USA

## Categories by Discipline

6.0 Culture and Humanities

## Primary Topic Area - TSC Taxonomy

[06.13].....Poetry

## Abstract

Background: This paper will highlight the potency and effectiveness of poetry as a spiritual medium for evolving and expanding human consciousness as demonstrated by Rumi, the 13th century mystic, whose life and teachings are aimed at expanding human consciousness, which he describes as connection to Love or God. We will explore the impact of the three main components of Rumi's poetry on consciousness, namely symbols, stories and melodic rhythms, to transform unconscious behavioral patterns of human beings. Methods: In this paper, I use a definition of consciousness that connects contemporary scientific understanding of the awareness of our heart center intertwined with the experience of God as understood and experienced by mystic sages. The methods used for this investigation include examining the works of researchers of the unconscious and their connection to archetypes, stories and music from authorities in their respective fields, coupled with prior research studies on heart-based awareness and the poetry of Rumi himself. Results and Conclusion: The results of the paper find that the spiritual poetry of Rumi is an effective mechanism for evolving consciousness, as it is defined in this paper. In conclusion, it is found that more attention and priority needs to be placed on spiritual and transformative poetry, such as the work of Rumi, in order to elevate the consciousness of society while more research needs to conducted on cultivating the grounds for writing and reciting similar transformative poetic works to further elevate and expand the consciousness of humanity.

## Keywords

Consciousness, Heart, Emotion, Feeling, God, Spirituality, Mysticism, Symbols, Imagery, Melody, Rhythm, Stories, Archetypes, Myths, Unconsious, Awareness, Love, Frequency